

## -CHAPTER 1: INTRODUCTION

### 1.1 BACKGROUND

Eskom is the South African utility that generates, transmits and distributes electricity. Eskom supplies about 95% of the country's electricity, and about 60% of the total electricity consumed in Africa. Eskom plays a major role in accelerating growth in the South African economy through the supply of high-quality electricity. Electricity is primarily generated in coal-fired power stations across the country. The electricity is transported from these stations along high voltage Transmission power lines (usually 400kV, but also 220kV, 275kV, 533kV and 765kV lines) to Transmission substations or load centres. These substations then feed local Distribution substations with power lines from 132kV and smaller voltage, from where electricity is distributed to communities and other users.

Eskom is in the process of undertaking major infrastructure investments, including the construction of substations and new transmission power lines. The transmission network supplying electricity to the Northern Cape and Free State Provinces requires strengthening to meet the growing demand in these provinces and to improve service quality and reliability. To address this situation Eskom has to construct a number of new transmission lines, linking its main generating facilities with the demand centres. The strengthening of the electricity network entails the phased construction of various 400kV transmission lines in the proposed Eskom Kimberley Strengthening Phase 4 Project.

The construction of a 400kV power line is a listed activity in terms of Section 24(5) of the National Environmental Management Act (NEMA), Act No 107 of 1998, as amended, and therefore requires environmental authorisation from the Department of Environmental Affairs (DEA). Eskom Transmission has therefore appointed Landscape Dynamics Environmental Consultants as an independent company, to conduct an Environmental Impact Assessment (EIA) to evaluate the potential environmental and social impacts of the proposed project.

### 1.2 PURPOSE AND CONTENT OF THE DOCUMENT

In terms of the NEMA legislation, a Scoping & Environmental Impact Assessment process is applicable. The first part of this process, namely the Scoping Phase is documented in this report.

The objectives of the Scoping Study and therefore this Scoping Report are

- to identify the issues relevant to the activity for which authorisation is being applied for;
- to identify the potential impacts of the activity to enable authority to take into consideration the environmental effects of activities before development decisions are taken;
- to identify potential alternatives to the proposed activity to ensure the objectivity of the assessment process.
- to give all registered Interested & Affected Parties (I&AP's) the opportunity to comment on the Scoping Report.

#### **According to the NEMA the following information must be supplied in a Scoping Report:**

"A scoping report must contain all the information that is necessary for a proper understanding of the nature of issues identified during scoping, and must include –

- (a) details of –
  - (i) the EAP who prepared the report; and
  - (ii) the expertise of the EAP to carry out scoping procedures;

- (b) a description of the proposed activity and of any feasible and reasonable alternatives that have been identified;
- (c) a description of the property on which the activity is to be undertaken and the location of the activity on the property, or if it is –
  - (i) a linear activity, a description of the route of the activity; or
  - (ii) an ocean-based activity, the coordinates where the activity is to be undertaken;
- (d) a description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;
- (e) an identification of all legislation and guidelines that have been considered in the preparation of the scoping report;
- (f) a description of environmental issues and potential impacts, including cumulative impacts, that have been identified;
- (g) information on the methodology that will be adopted in assessing the potential impacts that have been identified, including any specialist studies or specialised processes that will be undertaken;
- (h) details of the public participation process conducted in terms of regulation 28(a), including
  - (i) the steps that were taken to notify potentially interested and affected parties of the application;
  - (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the application have been displayed, placed or given;
  - (iii) a list of all persons or organisations that were identified and registered in terms of regulation 57 as interested and affected parties in relation to the application; and
  - (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;
- (i) a plan of study for environmental impact assessment which sets out the proposed approach to the environmental impact assessment of the application, which must include –
  - (i) a description of the tasks that will be undertaken as part of the environmental impact assessment process, including any specialist reports or specialised processes, and the manner in which such tasks will be undertaken;
  - (ii) an indication of the stages at which the competent authority will be consulted;
  - (iii) a description of the proposed method of assessing the environmental issues and alternatives, including the option of not proceeding with the activity; and
  - (iv) particulars of the public participation process that will be conducted during the environmental impact assessment process; and
  - (j) any specific information required by the competent authority.

In addition, a scoping report must take into account any guidelines applicable to the kind of activity which is the subject of the application.”

### 1.3 LEGAL REQUIREMENT

#### 1.3.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998)

This application is done in terms of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA) and the Environmental Impact Assessment Regulations published in Government Notice No. R.543, June 2010. Environmental Authorisation is requested for the following listed activities:

<b>Government Notice 544 (Listing Notice 1)</b>	
<b>Listing Notice 1: Number 10</b> The construction of facilities or infrastructure for the transmission and distribution of electricity (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; <b>(ii) or inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.</b>	The 400kV line may run inside of urban areas or industrial complexes.
<b>Listing Notice 1: Number 11</b> The construction of: (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50m <sup>2</sup> in size; (ix) slipways exceeding 50m <sup>2</sup> in size; (x) buildings exceeding 50m <sup>2</sup> in size; or <b>(xi) infrastructure or structures covering 50m<sup>2</sup> or more</b> where such construction occurs within a watercourse or within 32m of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	Finality in this regard will be obtained during the EIR phase when the final route has been determined.
<b>Listing Notice 1: Number 18</b> The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from <b>(i) a watercourse;</b> (ii) the sea; (iii) the seashore; (iv) the littoral active zone, an estuary or a distance of 100 metres inland of the high\water mark of the sea or an estuary, whichever distance is the greater; but excluding where such infilling, depositing, dredging, excavation, removal or moving (i) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or (ii) occurs behind the development setback line	Finality in this regard will be obtained during the EIR phase when the final route has been determined.
<b>Listing Notice 1: Number 23</b> The transformation of undeveloped, vacant or derelict land to (i) residential, retail, commercial, recreational, industrial or institutional use, inside an urban area, and where the total area to be transformed is 5 hectares or more, but less than 20 hectares, or <b>(ii) residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares;</b> except where such transformation takes place for linear activities	The proposed Ulco TX Substation will be constructed on land bigger than 1 hectare but smaller than 20 hectares outside of urban areas.

<b>Government Notice 545 (Listing Notice 2)</b>	
<b>Listing Notice 2: Number 8</b> The construction of facilities of infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.	The proposed 400kV power line will run outside of urban areas or industrial complexes.

<b>Government Notice 546 (Listing Notice 3)</b>	
<b>Listing Notice 3: Number 4</b> The construction of a road wider than 4 metres with a reserve less than 13.5 metres: i. In an estuary; ii. Outside urban areas in: <b>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</b> <b>(bb) National Protected Area Expansion Strategy Focus areas;</b>	Finality in this regard will be obtained during the EIR phase when the final route has been determined.

<p>(cc) <b>Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</b></p> <p>(dd) Sites or areas identified in terms of an International Convention;</p> <p>(ee) <b>Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</b></p> <p>(ff) Core areas in biosphere reserves;</p> <p>(gg) <b>Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve;</b></p> <p>(hh) Areas seawards of the development setback line or within 1 km from the high-water mark of the sea if no such setback line is determined.</p> <p>iii. In urban areas</p> <p>(aa) Areas zoned for use as public open space;</p> <p>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for 'a conservation purpose</p> <p>(cc) Seawards of the development setback line or within urban protected areas</p>	
<p><b>GN 546, June 2010, Number 12</b></p> <p>The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.</p> <ul style="list-style-type: none"> <li>• <b>Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</b></li> <li>• <b>Within critical biodiversity areas identified in bioregional plans;</b></li> <li>• Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuary, whichever distance is the greater, excluding where such removal will occur behind the development setback line on even in urban areas.</li> </ul>	<p>Finality in this regard will be obtained during the EIR phase when the final route has been determined.</p>
<p><b>GN 546, June 2010, Number 13</b></p> <p>The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:</p> <p>(1) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the activity is regarded to be excluded from this list;</p> <p>(2) the undertaking of a linear activity falling below the thresholds mentioned in Listing 1 in terms of GN R.544 of 2010.</p> <p>(a) <b>Critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority.</b></p> <p>(b) <b>National Protected Area Expansion Strategy Focus areas.</b></p> <p>(c)(i) In an estuary</p> <p>(c)(ii) Outside urban areas the following:</p> <p>(aa) <b>A protected area identified in terms of NEMPAA, excluding conservancies;</b></p> <p>(bb) <b>National Protected Area Expansion Strategy Focus areas;</b></p>	<p>Finality in this regard will be obtained during the EIR phase when the final route has been determined.</p>

<p>(cc) <b>Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</b></p> <p>(dd) Sites or areas identified in terms of an International Convention;</p> <p>(ee) Core areas in biosphere reserves;</p> <p>(ff) <b>Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;</b></p> <p>(gg) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.</p> <p>iii. In urban areas, the following:</p> <p>(aa) Areas zoned for use as public open space;</p> <p>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose;</p> <p>(cc) Areas seawards of the development setback line;</p> <p>(dd) Areas on the watercourse side of the development setback line or within 100m from the edge of a watercourse where no such line has been determined.</p>	
<p><b>GN 546, June 2010, Number 14</b></p> <p>The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:</p> <p>(1) purposes of agriculture or afforestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or afforestation purposes;</p> <p>(2) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) in which case the activity is regarded to be excluded from this list.</p> <p>(3) the undertaking of a linear activity falling below the thresholds in Notice 544 of 2010.</p> <p><b>i) All areas outside urban areas</b></p>	<p>Finality in this regard will be obtained during the EIR phase when the final route has been determined.</p>
<p><b>GN 546, June 2010, Number 16</b></p> <p>The construction of:</p> <p>(i) jetties exceeding 10m<sup>2</sup> in size;</p> <p>(ii) slipways exceeding 10m<sup>2</sup> in size;</p> <p>(iii) buildings with a footprint exceeding 10m<sup>2</sup> in size; or</p> <p><b>(iv) infrastructure covering 10m<sup>2</sup> or more</b></p> <p>where such construction occurs within a watercourse or within 32m of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p> <p>i. In an estuary</p> <p>ii. Outside urban areas, in:</p> <p><b>(aa) A protected area identified in terms of NEMPAA, excluding conservancies</b></p> <p><b>(bb) National Protected Area Expansion Strategy Focus areas;</b></p> <p>(cc) World Heritage Sites;</p> <p><b>dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</b></p>	<p>Finality in this regard will be obtained during the EIR phase when the final route has been determined.</p>

<p>(ee) Sites or areas identified in terms of an International Convention;</p> <p><b>(ff) Critically biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</b></p> <p>(gg) Core areas in biosphere reserves;</p> <p><b>(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;</b></p> <p>(ii) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.</p> <p>iii. In urban areas:</p> <p>(aa) Areas zoned for use as public open space;</p> <p>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, zoned for a conservation purpose; or</p> <p>(cc) Areas seawards of the development setback line.</p>	
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In terms of the NEMA legislation application for environmental authorisation is lodged with the National Department of Environmental Affairs (DEA). DEA has to evaluate this Scoping Study and based on the findings and proceedings documented in the Scoping Report supply the Environmental Assessment Practitioner (EAP) with a decision to proceed with the EIA or to amend the Scoping Report.

The following departments and government institutions are key commenting authorities:

- Department of Economic Development, Tourism and Environmental Affairs, both Free State and Northern Cape Provinces: (Section Environmental Quality Management).
- Department of Water and Sanitation (DWS), Northern Cape Region (please note that the Free State DWS commented that this project falls outside of their jurisdiction and that the Northern Cape DWS has jurisdiction within the applicable catchment).
- The South African Heritage Resources Agency (SAHRA). They will advise whether authorisation is also required from the Free State and or Northern Cape Provincial Heritage Authority.

The NEMA can be regarded as the most important piece of general environmental legislation. It provides a framework for environmental law reform and covers three areas, namely:

- Land, planning and development;
- Natural and cultural resources, use and conservation; and
- Pollution control and waste management.

The law is based on the concept of sustainable development. The objective of the NEMA is to provide for co-operative environmental governance through a series of principles relating to:

- The procedures for state decision-making on the environment; and
- The institutions of state which make those decisions.

The NEMA principles serve as:

- A general framework for environmental planning;
- Guidelines according to which the state must exercise its environmental functions; and
- A guide to the interpretation of NEMA itself and of any other law relating to the environment.

NEMA principles are the following:

- Environmental management must put people and their needs first;
- Development must be socially, environmentally and economically sustainable;



- There should be equal access to environmental resources, benefits and services to meet basic human needs;
- Government should promote public participation when making decisions about the environment;
- Communities must be given environmental education;
- Workers have the right to refuse to do work that is harmful to their health or to the environment;
- Decisions must be taken in an open and transparent manner and there must be access to information;
- The role of youth and women in environmental management must be recognised;
- The person or company who pollutes the environment must pay to clean it up;
- The environment is held in trust by the state for the benefit of all South Africans; and
- The utmost caution should be used when permission for new developments is granted.

### 1.3.2 THE NATIONAL WATER ACT (ACT NO 36 OF 1998)

The National Water Act guides the management of water in South Africa as a common resource. The Act aims to regulate the use of water and activities which may impact on water resources through the categorisation of 'listed water uses' encompassing water extraction, flow attenuation within catchments as well as the potential contamination of water resources. The Department of Water & Sanitation (DWS) is the administering body in this regard.

Should the proposed activities associated with the substation or power line impact on water resources e.g. cross through rivers, the applicant would be responsible to obtain a Water Use License or General Authorisation for the activity from the regional office of DWS.

### 1.3.3 THE NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

The proposed project falls within the scope of Section 38 of the **National Heritage Resources Act, (Act 25 of 1999)** and the applicable activities are:

- (a) the construction of a road, wall, power line, pipeline, canal or similar form of linear development or barrier exceeding 300m in length;
- (b) any development or other activity which will change the character of a site-
  - exceeding 5 000m<sup>2</sup> in extent
  - involving three or more existing erven or subdivisions thereof
- (c) the re-zoning of a site exceeding 10 000m<sup>2</sup> in extent

### 1.3.4 ADDITIONAL ACTS, FRAMEWORKS AND GUIDELINES

#### **National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)**

The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed. Should protected species and ecosystems be impacted on by the proposed substation or power line, this Act may be applicable and the necessary measures should be taken for implementation.

#### **National Environmental Management: Protected Areas Act (No 57 of 2003)**

The Act came into operation on 01 November 2004. The aim of the Act is to provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity, natural landscapes and seascapes. In 2004, the National Environmental Management: Protected Areas Amendment Act 31 of 2004 was promulgated to amend Act 57 of 2003 with regard to the application of that Act to national

parks and marine protected areas. The NEM: Protected Areas Amendment Act was published for public information on 11 February 2005 and came into operation on 01 November 2005. The NEM: Protected Areas Act, as amended by the NEM: Protected Areas Act 31 of 2004 repeals sections 16, 17 & 18 of the ECA as well as the National Parks Act with the exception of section 2(1) and Schedule 1.

#### **National Environmental Management: Air Quality Act, 2004 (No 39 of 2004)**

Section 32 Control of dust; Section 34 Control of Noise; Section 35 Control of offensive odours.

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

Strategy for achieving the objectives of the United Nation's Convention on Biological Diversity, to which South Africa is a signatory (NEMBA), Sections 65-69. These sections deal with restricted activities involving alien species; restricted activities; involving certain alien species totally prohibited; and duty of care relating to alien species Sections 71 and 73 These sections deal with restricted activities involving listed invasive species and duty of care relating to listed invasive species.

#### **The Constitution Act (No 108 of 1996)**

Chapter 2 Bill of Rights; Section 24 Environmental rights; Section 25 Rights in property; Section 32 Administrative justice; Section 33 Access to information.

#### **Expropriation Act (No. 63 of 1975)**

Eskom has a policy of "willing buyer, willing seller", and therefore endeavours to purchase land where ever possible or necessary. However, the State and State-owned-enterprises can acquire the rights to use or possess the requisite land through the Expropriation Act (No 63 of 1975). The Expropriation Act requires the determination of compensation based on the principle of market value (i.e. what would the value be in the event of both a willing buyer and a willing seller trading the land). There is a suite of additional legislation, which, in conjunction with the Expropriation Act, could be used to determine the compensation value.

#### **Occupational Health and Safety Act (Act No 85 of 1993)**

This Act makes provisions that address the health and safety of persons working at the proposed substation and power line. The Act addresses amongst others the:

- Safety requirements for the operation of plant machinery;
- Protection of persons other than persons at work against hazards to health and safety, arising out of or in connection with the activities of persons at work;
- Establishment of an advisory council for occupational health and safety; and
- Provision for matters connected therewith.

The law states that any person undertaking upgrades or developments for use at work or on any premises shall ensure as far as is reasonably practicable that nothing about the manner in which it is erected or installed make it unsafe or creates a risk to health when properly used.

#### **The Tourism Act, 1993 (Act No. 72 of 1993)**

Policy and legislation governing tourism in South Africa emphasises the concepts of responsible tourism and sustainable tourism development. Tourism is legislated in terms of the Tourism Act (Act No. 72 of 1993), which was amended as the Tourism Amendment Act (Act No. 105 of 1996 and the Tourism Second Amendment Act no. 70 of 2000. The 1996 White Paper on Development and Promotion of Tourism in South Africa introduces the concept of "responsible tourism"; i.e. tourism with a responsibility towards the environment, through sustainable use of resources, involvement of local communities, and commitment to safety and security of all concerned. Taking this further, the drive towards "sustainable tourism" development emphasises the optimisation of benefits relating to tourism,

#### **The Conservation of Agricultural Resources Act (No 43 of 1983)**

Section 6: Implementation of control measures for alien and invasive plant species.



### **Atmospheric Pollution Prevention Act (No 45 of 1964) and regulations**

Sections 27 – 35: Dust control.

Section 36 – 40: Air pollution by fumes emitted by vehicles.

### **Occupational Health and Safety Act (No 85 of 1993) and regulations**

Section 8: General duties of employers to their employees.

Section 9: General duties of employers and self-employed persons to persons other than their employees.

### **National Forests Act (No 84 of 1998) and regulations**

Section 7: No person may cut, disturb, damage or destroy any indigenous, living tree in a natural forest, except in terms of a licence issued under section 7(4) or section 23; or an exemption from the provisions of this subsection published by the Minister in the Gazette.

Sections 12-16: These sections deal with protected trees, with the Minister having the power to declare a particular tree, a particular group of trees, a particular woodland; or trees belonging to a particular species, to be a protected tree, group of trees, woodland or species. In terms of section 15, no person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister.

### **Fencing Act (No 31 of 1963)**

Section 17: Any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5m on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora.

### **Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947) and regulations**

Sections 3 to 10: Control of the use of registered pesticides, herbicides (weed killers) and fertilisers. Special precautions must be taken to prevent workers from being exposed to chemical substances in this regard.

### **White Paper on the Energy Policy of the Republic of South Africa – 1998**

Development within the energy sector in South Africa is guided by the White Paper on the Energy Policy, published by the Department of Minerals and Energy (DME) in 1998. This White Paper sets out five objectives for the further development of the energy sector. The five objectives are as follows:

- Increased access to affordable energy services;
- Improved energy governance;
- Stimulating economic development;
- -Managing energy-related environmental and health impacts; and
- Securing supply through diversity.

Furthermore, the Energy Policy identified the need to undertake an Integrated Energy Planning (IEP) process in order to achieve a balance between energy demand and resource availability, whilst taking into account health, safety and environmental aspects. In addition, the policy identified the need for the adoption of a National Integrated Resource Planning (NIRP) approach to provide a long-term cost-effective resource plan for meeting electricity demand, which is consistent with reliable electricity supply and environmental, social and economic policies.

### **Department of Environmental Affairs Integrated Environmental Management Series**

DEA's Information Series were drafted as sources of information about concepts and approaches to Integrated Environmental Management (IEM). IEM is a key instrument of NEMA and provides the overarching framework for the integration of environmental assessment and management principles into environmental decision-making. The aim of the information series is to provide general guidance on techniques, tools and processes for environmental assessment and management.

### **National Spatial Biodiversity Assessment**

The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on their biophysical characteristics, which are ranked according to priority levels.

### **Protected species – Provincial Ordinances**

Provincial ordinances were developed to protect particular plant species within specific provinces. The protection of these species is enforced through permitting requirements associated with provincial lists of protected species. Permits are administered by the provincial departments responsible for environmental affairs.

### **All relevant Provincial Legislation and Municipal bylaws**

### **National Department of Environmental Affairs: Guidelines**

The National Department of Environmental Affairs has a set of guidelines that have to be adhered to during the EIA Process. The following guidelines are applicable:

- Companion Guideline for the Implementation of the Environmental Impact Assessment Regulations (Guideline 5), as published in Government Notice 805 of 10 October 2012.
- Public Participation Guideline for the Environmental Impact Assessment Process (Guideline 7), as published in Government Notice 807 of 10 October 2012.

### **Eskom Environmental Procedures**

Eskom Environmental Procedures in terms of:

- Acquiring of servitudes
- Bush Clearing
- Access to properties

## **1.3.5 ESKOM PLANNING PROCESSES**

The following section, although not legislative, provide supplementary information on some of Eskom's planning processes.

### **Integrated Resource Plan for Electricity (IRP) – 2010**

The Integrated Resource Plan (IRP) is a long-term electricity capacity plan, which defines the need for new generation and transmission capacity for the country. The IRP outlines the concepts and development behind the IRP for the electricity industry in South Africa as well as the strategic objectives of the IRP including the policy and technical parameters that drive the planning process.

The **National Energy Act of 2008 (Act 34 of 2008)** obligates the Minister of Energy to develop and publish an IRP for energy. As electricity forms a sub-component of the energy sector the electricity IRP needs to be integrated into the outlook for energy. The system Operations and Planning Division in Eskom has been mandated by the Department of Energy (DoE), under the New Generation Capacity regulations, to produce the IRP for electricity in consultation with the DoE and the National Energy Regulator of South Africa (NERSA). The objective of the IRP is to develop a sustainable electricity investment strategy for generation capacity and transmission infrastructure for South Africa over the next 25 years. The investment strategy includes implications arising from demand-side management (DSM) and pricing, and including capacity provided by generators (Eskom and independent power producers).

The IRP is intended to:

- Improve the long term reliability of electricity supply through meeting adequacy criteria over and above keeping pace with economic growth and development;

- Ascertain South Africa's capacity investment needs for the medium term business planning environment;
- Consider environmental and other externality impacts and the effect on renewable energy technologies;
- Provide the framework for Ministerial determination of new generation capacity (inclusive of the required feasibility studies) as envisaged in the New Generation Capacity regulations.

## 1.4 PROJECT TEAM

### 1.4.1 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Landscape Dynamics Environmental Consultants is the Environmental Consultants appointed for this project. Landscape Dynamics cc is an environmental consultancy firm, established in May 1997. The main line of business since that time up to the present date is the compilation of environmental impact assessments. Landscape Dynamics has a broad client base from both the private and government sectors which has developed over the past 17 years of professional services supplied. The operating base for Landscape Dynamics is the entire South Africa; with local representation in Gauteng, the Western Cape, Limpopo as well as Mpumalanga.

The Environmental Assessment Practitioners (EAP's) for this project are Ms Annelize Grobler and Ms Susanna Nel.

The Landscape Dynamics' Company Profile as well as relevant condensed Curriculum Vitae's are attached in Appendix F.

### 1.4.2 PROFESSIONAL TEAM

The impact that this project might have on the environment could only effectively be assessed if all the environmental project components had satisfactorily been identified and considered. A multi-disciplinary approach is therefore required for this Environmental Impact Assessment.

The EIA Project Team members are the following (condensed CV's are attached in Appendix F):

Company Name	Contact Person(s)	Responsibility and/or Project Component
Landscape Dynamics CC	Ms Annelize Grobler Ms Susanna Nel	EIA Project Management Environmental Assessment Practitioners Public Participation Programme
AMP Property Management & Land Acquisition	Ms Anna-Marie Botha Ms Maritha Duvenage	Route verification Liaison with landowners Socio-Economic, Tourism and Land Use Potential Impact
Evolutionary Studies Institute, University of the Witwatersrand	Prof Marion Bamford	Palaeontology Impact Assessment
Geoset Geotechnical Engineers	Mr David van der Merwe	Geotechnical Engineering Investigation
Terra Africa Consult CC	Ms Marine Pienaar	Soils & Agricultural Potential Report

Blue Science (Pty) Ltd	Dr Toni Belcher & Mr Dana Grobler	Freshwater Impact Assessment Water Use License Applications
Enviroguard Ecological Services CC	Dr Leslie Brown	Terrestrial Fauna & Flora
Chris van Rooyen Consulting	Mr Chris van Rooyen	Bird Impact
Archaetnos Cultural & Heritage Resource Consultants	Dr Anton van Vollenhoven	Heritage Impact Assessment
Newtown Landscape Architects	Mr Graham Young	Visual Impact Assessment
Ivan Pauw & Partners Attorneys	Mr Travis Baikie	Legal Review

The EIA Project Team is supported by the following team members from within Eskom Group Capital Division:

<b>Division within Eskom Group Capital Division</b>	<b>Contact Person(s)</b>	<b>Responsibility and/or Project Component</b>
Eskom Project Development Engineer	Mr Fick Booysen	Overall Project Management
Eskom Land Development: Manager	Mr Itumeleng Moeng	Project Management
Eskom Land Development: Environment	Ms Lindiwe Motaung	Applicant Representative & Environmental Manager
Eskom Land Development: Acquisition	Mr Koos van der Merwe	Compensation and Servitude Acquisition
Eskom Land Development: Survey	Ms Tinny Makaringe	Mapping
Eskom Land Development: Spatial	Mr Christo Bandehorst	Route Planning
Eskom Land Development: Project Planning	Ms Jamila Kombe	Project Planning
Eskom Land Development: Line Engineering Services	Mr Mdu Mthethwa	Line Designer
Eskom Land Development: Acquisition	Mr Koos van der Merwe	Acquisition

## CHAPTER 2: PROJECT INFORMATION

### 2.1 NEED AND DESIRABILITY

In the past 15 years load has increased in the Hotazel-Kuruman-Kathu-Kimberley-Dealesville corridor by 32.5%. The forecast in this corridor anticipates a huge load growth as a result of high mining activities (diamond, manganese and iron ore mining), electrification and the establishment of small businesses in underdeveloped areas as well as increased housing densities and commercial development in developed areas. Growth is anticipated to quadruple in the next 25-30 years.

The existing network will not be able to support the Hotazel-Kuruman-Kathu-Kimberley-Dealesville corridor load past 2021, therefore strengthening will be required to support the forecasted load and potential renewable generation. In addition, changes in the generation pattern have resulted in Beta Transmission Substation, which is in the Free State Province and the starting point of the Kimberley Strengthening Phase 4 Project, becoming a stronger injection source to this corridor.

The role of grid planning flows from the Eskom Transmission License issued by NERSA of which the main scope of activities is to plan and augment the transmission system in accordance with the South African Grid Code. The Transmission Grid Code (GCD) stipulates that the transmission network shall be N-1 compliant. This implies that the transmission network must be able to supply the load under loss of any of the power lines or equipment. The existing network is currently not compliant and the problem will worsen as the load in the region increases. The solution proposed is to construct a 400kV ring feed supply.

### 2.2 PROJECT DESCRIPTION

#### 2.2.1 LOCALITY & REGIONAL CONTEXT

The total Eskom Strengthening Phase 4 Project entails the construction of an approximate 390km 400kV power line. The line starts west of the town of Dealesville in the Free State and ends south of Kathu in the Northern Cape. The approximately 390km power line runs east to west, starting at the **Beta** Substation, connects to the **Boundary** Substation, then on to the **Ulco** Substation, connects at the **Olien** Substation, then **Manganore** Substation and ends at the **Ferrum** Substation. The Beta and Boundary Substations are situated in the Free State Province and the Ulco, Olien, Manganore and Ferrum Substations are all situated in the Northern Cape Province.

Due to the significant length and extensive study area across two provinces, the application for Environmental Authorisation for this project was divided into four different applications. These applications are as follows:

- Application 1 (DEA Reference No 14/12/16/3/3/2/647)  
Eskom Kimberley Strengthening Phase 4 Project: **Beta to Boundary** (Free State Province)
- Application 2 (DEA Reference No 14/12/16/3/3/2/646)  
Eskom Kimberley Strengthening Phase 4 Project: **Boundary to Ulco** (Free State and Northern Cape)
- Application 3 (DEA Reference No 14/1/16/3/3/2/645)  
Eskom Kimberley Strengthening Phase 4 Project: **Ulco to Olien to Manganore** (Northern Cape Province)
- Application 4 (DEA Reference No 14/12/16/3/3/2/644)  
Eskom Kimberley Strengthening Phase 4 Project: **Manganore to Ferrum** (Northern Cape Province)

**Note that this Scoping Report has ONLY been prepared for  
Application 2 – the BOUNDARY-ULCO section of the project.**

The Boundary Substation and a short section of the line are situated in the Tokologo Local Municipality in the Free State Province. The line runs in a westerly direction and then enters the Northern Cape Province north of Kimberley. It runs through the areas of the Sol Plaatjies and the Dikgatlong Local Municipalities and ends at the town of Ulco (refer to the Route & Locality Map attached in Appendix A).

Different route alternatives are being considered. The properties that could directly be affected by the proposed BOUNDARY-ULCO application include the following but are not necessarily limited to, various portions of the Farms Kareeboom, Tablefarm, Samaria, Picardi, Kenilworth Estate, Roodepan, Phoenix, Droogfontein, Plaas 193, Wildebeest Kuil, Platfontein, Nooitgedacht, De Hoop, Holsdam, Rosalind, Plaas 225, Barkly West 3010, Greeffputs, Plaas 172, Plaas 173, Rus en Vrede, Plaas 221, Karolusdrift, Delportshoop, Likatlong, Plaas 176, Plaas 216, Plaas 215, Pniel, Than, Waterkolk, Randt Plaats, Vogelstruis Pan, Klipfontein, Drooge Veldt, Mozib, Plaas 278, Plaas 293, Plaas 277, Plaas 232, Plaas 233, Plaas 217, Greeffputs 169, Plaas 222, Plaas 230, Longlands 231, Likatlong 317, Plaas 293 and Plaas 232.

Please note that these properties are applicable to the route alternatives as initially investigated as well as the properties that could be affected by the new route alternatives as determined during the Scoping Phase (refer to Chapter 3 of this report). Detail property descriptions will be given of the Final Route, which will be determined during the EIR phase of this project.

## 2.2.2 PROJECT COMPONENTS AND TECHNICAL INFORMATION

The project will consist of the construction of an approximately 95km 400kV power line from the Boundary Substation to the Ulco Substation, including a new Ulco TX (Transmission) Substation adjacent to the existing Ulco DX (Distribution) Substation.

A maximum area of 5 hectares is generally investigated and/or acquired for a transmission substation, although the actual footprint of the substation will be less than 5 hectares. The additional land is however necessary to allow for sufficient space for entries and exits of power lines from all directions.

Different pylon structures are being considered for this project. Find diagrams with their dimensions attached in Appendix B.

The pylon tower structures include the following, with the Guyed and Cross-Rope Suspension Type towers being preferred by Eskom:

- Guyed Suspension Type- Top width 23m; total base width 26 meters with pointed tower base in the centre, height average 33m;
- Cross-Rope Suspension Type – Top width 29m; distance between base towers 21 meters, height up to 38m;
- Strain Tower Type – Top width 22,8m; base width 22,8; total base 55 meters; height average 33m;
- Double Circuit (where more than one power line is carried via the same pylons) – Top width 12,6m; base width 8,05m; height average ranging between 30m and 61,22m;

The proposed “double circuit” line is a worst case scenario. It will only be used where no other viable alternative is possible due to huge financial implications and construction constraints.

The final pylon structure will however only be determined during the design phase. The choice of pylon structure will be guided by the site-specific characteristics, i.e. geology, soils, topography, landowners' preference, etc. At this stage it does however appear as if the 'Cross-Rope Suspension Type' pylon is favoured by the engineers specifically for this project.



### 2.2.3 SERVITUDE DETAILS

The servitude width is 55m, with 27.5m on either side of the line. Note however that for the purpose of the Environmental Impact Assessment a route corridor width of 2km is being investigated for each alternative and a 2km wide route corridor will ultimately be authorised by DEA. This enables slight adjustments within the corridor during the corridor walk-down and servitude negotiations with the relevant landowners without having to enter into an additional environmental authorisation process.

It will be strived to reach reasonable consensus during the EIA process with the directly affected landowners with regards to the route and the 2km wide corridor across their properties. As soon as environmental authorisation has been obtained, Eskom will appoint independent evaluators and the process of negotiation in terms of compensation with the relevant landowners will take place. It is also during this process that site-specific issues will be addressed that include the following:

- Specific placement of pylons so as not to interfere with farming activities; infrastructure and sensitive environmental features;
- Access and control requirements (i.e. gates, fencing; access roads; etc.);
- Communication channels during ongoing maintenance and inspection of the power line (relevant personnel with contact details; etc.);
- Communication channels emergency situations (i.e. power failures; veld fires; etc.);
- Clearing of vegetation (i.e. selective clearing; what to do with the cuttings (removal or place in heaps for the landowner for firewood; etc.).

After all agreements had been finalised; the servitudes will be registered against the properties at the deeds office. The property remains that of the landowner, but Eskom will have the right to build and maintain a power line according to the servitude conditions referred to above.

### 2.2.4 METHOD STATEMENT

The construction of a transmission line involves the following actions:

#### **Surveying (Pegging of tower positions)**

- Resources: Surveyor, assistants, survey instruments, 4x4 vehicle, hammers, steel tapes and steel pins.
- The tower positions are pegged using a single steel pin knocked into the ground. The position is reached by utilising GPS co-ordinates taken from the tower staking table. Cross sections of the site will be taken to facilitate the calculation of the tower leg extensions.
- Whilst driving in the field, special care is taken not to drive through visible wet areas and drive through streams. Existing tracks are preferred and will be utilised as far as possible.
- In the event that access is not available or impossible, walking will be an option.
- The surveyor will note all available access routes and problem areas. Access routes will be investigated and agreed upon in writing by the Environmental Control Officer (ECO), where after they will be marked.

#### **Geotechnical Soil Investigations**

- Resources: Geotechnical engineer, assistant, operator, ladder, geological pick, 4x4 vehicle and excavator.
- Access routes are followed as agreed upon and marked to reach the tower positions. No multiple tracks will be allowed.
- The excavator will dig a trail pit to the approximate depth of 3m deep x 2m square.
- The topsoil will be removed and placed apart from the rest.
- Geotechnical engineer will climb down the hole by means of the ladder and classify the soil type and propose the tower foundation type to be installed.
- The hole will be backfilled with the excavated soil and then covered with the topsoil.

- In the event of probable oil spillage from the excavator (all vehicles and machinery will be equipped with drip-trays), spillage will be removed using a spill kit as required by environmental specification and disposed of at a registered dumping site.

### **Setting out of towers**

- Resources: Surveyor, assistants, survey equipment, steel measuring tapes, hammers and 4x4 vehicle.
- Once the foundations have been designed and the drawings approved, the surveyor will peg the foundation as per the approved drawings, driving to the tower position via the approved access routes.
- Notes and photographs are to be taken of the position for record purposes both before and after construction.

### **Foundation Excavations**

A site plan or a tower foundation excavation layout plan shall be drawn up as a basis for discussion between the Contractor and the Employer (Site Representative and Environmental Control Officer) resulting in a formal signed document of how the foundation will be excavated at a given site. There are three basic part of this layout plan:

#### *Tower site information*

The tower site information includes all the limitations and restrictions as per the Environmental Authorisation for access, operation and demobilisation of the equipment required to install the spread foundation (conventional foundation) such as:

- Restrictions on points of access to the tower position
- Equipment limitations on site
- Underground and overhead services
- Existing structures
- Clearing restrictions
- Presence of surface water
- Environmental restrictions

#### *Foundation Construction Survey*

The construction survey establishes the foundation centre hub, reference points, elevations and required depth of the excavations. Before the excavation of the foundation can start, the outline of the tower foundation is set out as per the approved foundation drawing and the depth of the excavation calculated. The centre of the leg excavation is established and the depth calculated in relation to the foundation hub. The foundation hub is used to control the depth of the excavation. (The four corners of the foundation excavation should match the dimensions of the concrete foundation slab if the concrete is cast against in-situ material).

#### *Foundation Site Information*

Foundation site information in compliance of the Environmental Authorisation includes the following:

- Access to the tower position;
- Foundation assembly site;
- Spoil pile management;
- Erosion control measurements.

Access to the foundation sites and the sequence of excavating each foundation must be planned to avoid the undercutting of other foundations. Access limitations may require that only one leg foundation may be done at a time; excavated, assembled, set and backfilled. Large spread foundations are often required, which require a spoil pile management plan. The excavated material is normally used for backfilling. The topsoil and fines need to be separated so that they can be replaced as topsoil and used adjacent to the foundation. All surplus material will be removed from site. Erosion control measures to be done in consultation with the ECO.

## **Excavation**

The equipment and methods that are used for the excavation of the foundation depends on the type of soil that is encountered at the excavation site. The following types of soil can be encountered on site (TRMSCAAC1 rev 3):

- “Type 1”: competent soil with equal or better consistency than would be encountered in stiff cohesive soil;
- “Type 2”: less competent soil than “type 1” with weaker or equal consistency in firm to stiff cohesive soils;
- “Type 3”: dry loose non cohesive soil or very soft to soft cohesive soils;
- “Type 4”: submerged cohesion less and cohesive soils. This includes soils below the permanent water table, including soils below a re-occurring perched water table or permeable soils in low lying areas subjected to confirmed seasonal flooding.

Often the high water table will require dewatering of the excavation. Depending on the specific site conditions, open pumping, cut-off drains (trenches), or drainage pits may be necessary to remove the water. Should the water continue to run into or seep from the walls or the bottom of the excavation a sump hole may be dug at one of the corners of the foundation bottom and a small pump used in these pumping holes to keep the foundation dry during the construction of the foundation. Whenever personnel are in the excavations, the safety hazards shall be assessed. There must be good means of ingress and egress from the excavation. Excavated material shall be stock piled away from the edges of the excavation and round rocks and boulders will be preferably placed in a location and manner that will prevent them from rolling back into the excavation. The stability of the side walls shall be inspected to establish the soundness thereof in mitigating against the collapsing of the sides.

## **Foundation Preparation**

After the excavation the stability of the foundation bottom shall be checked to ensure that the bearing capacity is adequate. In the case of foundations in soil type “3” and “4”, a blinding layer of not less than 50mm shall be cast as to have a firm and clean surface to work on. The excavation shall be kept free of water and mud.

## **Foundation Installation**

All the reinforcing shall be placed using the specified bar sizes and spacing top and bottom before the stubs are placed in the centre of the foundation and the rake of the stub set at the required angles.

## **Foundation Setting**

Once the reinforcing and the stubs have been placed the final setting are done. Measurement and levels are set to within the allowable tolerances and checked. Cover blocks are placed and checked that the specified cover is obtained from the bottom and sides of the excavation before first layer of concrete is cast. Successive layers are checked and cast after the cover to the shuttering is checked and released for concrete casting.

## **Concrete Placing**

During the casting of concrete into the foundation slabs, plinths and columns care shall be taken to prevent any spillage of concrete from the concrete mixer trucks. Any spillage shall be cleaned and wasted concrete placed in special containers for this purpose and then disposed of at registered dumping sites. No washing or rinsing of the mixer drums will be undertaken on site. Rinsing will be disposed of in special constructed areas to contain the cement water in consultation with, and approval of the ECO.

## **Backfilling**

Backfilling will be done in layers of 300mm utilising suitable excavated material. Should the excavated material not be suitable, imported material shall be used from approved borrow pits. The final layers shall be done with the topsoil separated from the rest of the excavated material.

## Site Restoration

After the backfilling has been completed the excess soil shall be removed from site and dumped at an approved site as agreed with the ECO. The area around the excavation site shall be cleared of all debris and rubbish. The oversight of possible oil, cement and concrete spillage shall be cleared in the specified manner and properly disposed of. All site vehicles and equipment shall be equipped with the necessary oil drip trays.

## Tower Assembly and Erection

Access to the Tower sites and the sequence of assembly and erection of each tower will be planned to avoid unsafe working conditions. All site vehicles and equipment shall be equipped with oil drip trays.

## Stringing of Phase and Earth Conductors

### *Puller and Tensioner Site Information*

Tower site information in compliance with the EA will include the following:

- Access to the proposed Puller, tensioner and drum station positions as per the agreement and approval of the ECO.
- Access to tower positions to offload and dress towers with Insulators and Hardware.
- Access to Tower positions along the servitude to install the pilot ropes/ cables as per agreement with, and approval of the ECO.
- Possible clearing/ cutting of bush and trees that may foul the stringing of the conductors.

### *Installation of Pilot Cables*

Once the stringing section (approximately 2000m to 3000m depending on the terrain) has been established and agreed upon, the pilot cables/ ropes are run out along the servitude and installed onto the stringing pulley blocks. Should access along the servitude be inadequate for the pulling vehicle due to the presence of wetlands or deep valleys, a light rope or fish line can either be walked through or pulled through by other approved means and the pilot cable then pulled along the servitude. Both ends of the pilot cable are attached to the Puller and the Tensioner, ready for pulling the phase and earth wire conductors.

### *Stringing Operation*

The conductors (one phase at a time) are pulled through the tensioner from the drums and then attached to the Pilot cable. The puller then starts applying tension to the pilot cable to lift the cable off the ground, to a height of 1m to 3m to prevent any damage to the conductors by dragging them on the surface and the clearing of obstacles along the servitude.

### *Regulating and Sagging*

Once stringing has been completed, the conductors are pulled to the required tension as per the sag and tension charts using a dynamometer of sag boards attached to the towers in a predetermined span. The conductors are made of dead-ends applied and attached to the strain towers. Suspension towers and the conductors are placed in the suspension clamps and the pulley blocks lowered to the ground for collection and installation on the following stringing section.

## Site Rehabilitation

After the completion of the binding in of the conductors, all pulley blocks and ropes shall be removed from site using the access routes agreed upon. All rubbish will be collected and placed in the required bins for collection and disposal at registered dumping sites. Once the site has been cleared the ECO shall undertake an inspection to see that all the conditions as stated in the EA have been complied with and then sign off the release. Special care shall always be taken when crossing wetlands and river streams in compliance with the requirements of the Water Use License. All site vehicles and equipment shall be equipped with oil drip trays.

## 2.2.4 DESIGN, CONSTRUCTION AND OPERATIONAL TARGETS

The construction phase for the proposed project will take approximately 24 months to complete and will entail the following process post authorisation:

- **Corridor walk-down:** This will be undertaken by both the Eskom Engineers and the relevant specialists (Fauna & Flora Specialist; Bird Impact Specialist; as well as the Heritage Impact Specialist). The purpose of this walk-down is to ensure that all site specific sensitivities are avoided. During this process the exact design and co-ordinates of the proposed pylons will be established.
- **Construction Camps:** The specific areas will be confirmed during the design phase of the project, also to be visited during the corridor walk-down. These construction sites will be secured by temporary fencing and 24-hour guarding personnel.
- **Vegetation clearance:** A 55 metre (27.5 metres on either side of the power line) servitude is required for the proposed 400kV power line. Tall trees will be cleared along the entire length of the servitude. Maintenance of the vegetation will be done by Eskom during the operational phase of the project.
- **Pylon footings:** Foundations will be laid for the footings of the pylons.
- **Steelwork structures:** The pylons will be erected in segments.
- **Stringing:** Once the pylons have been erected, cables will be strung between the pylons.
- **Feeder bays and Transformers:** Feeder bays and transformers will be erected on vacant land identified adjacent to the existing Ulco DX Substation where the new Ulco TX Substation will be built.

Since the proposed power line will be approximately 94km in length, the aforementioned tasks may occur simultaneously along the power line corridor.

Draft Scoping Report to I&AP's	December 2014
Final Scoping Report submitted to DEA	February 2014
Finalisation of all specialist studies	March 2015
Submission Draft EIR and EMP's to I&AP's	April 2015
Submission of Final EIA and EMP to I&AP's	June 2015
Submission of Final EIR and EMP to DEA	July 2015
Environmental Authorisation	September 2015
Appeal period ending	October 2015
Servitude rights (valuations, negotiations and registrations)	November 2015 - November 2016
Detail Design and Detail Site Overwalk with Specialists	November 2015 - November 2016
Construction Period	November 2015 - November 2016



## CHAPTER 3: ALTERNATIVES

### 3.1 NO GO ALTERNATIVE

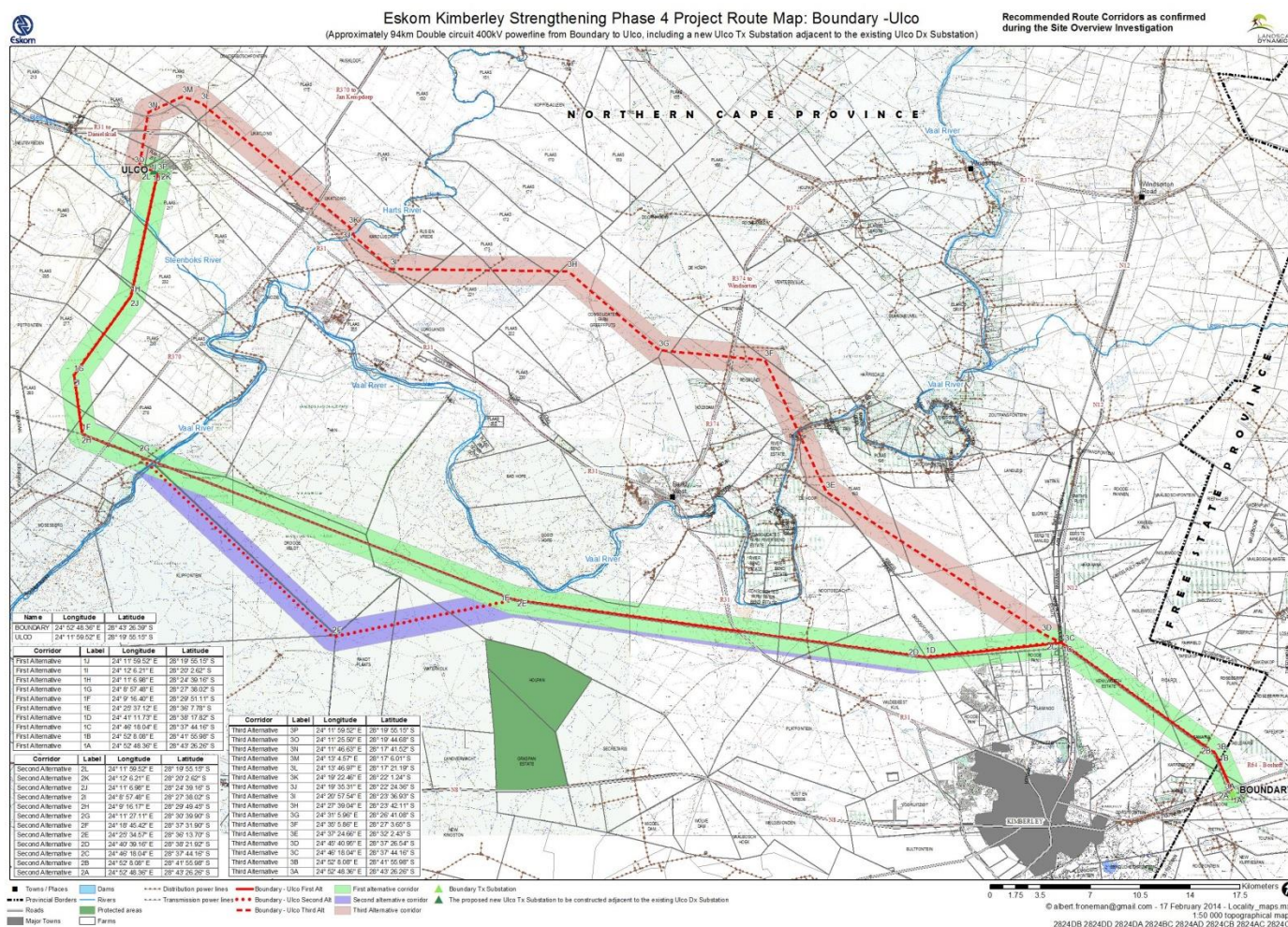
This is the “do nothing” alternative. Under these circumstances no power line will be constructed, a new substation will not be constructed and there would obviously be no changes to the environment.

With this alternative, current and future network constraints under N-1 contingency in the Northern Cape and Free State Provinces will not be alleviated. The reliability of electricity supply to the Northern Cape and Free State Provinces remain a significant concern unless other sources of power generation and transmission are identified and implemented within the very near future. It is important to realise that alternative sources of energy provision are also associated with significant project components and are also subject to relevant legal requirements for which the authorisation process can reasonable take between 12 and 24 months. With increasing economic activity and demand for electricity in these provinces, the regional impact of electricity failures would be significantly increasing.

The “No Go” option cannot be considered a responsible and viable alternative.

### 3.2 ROUTE ALTERNATIVES INITIALLY PRESENTED AND INVESTIGATED

The three route corridor alternatives initially investigated are the following (an A3 copy is attached as Appendix A(2)). Note that the specialist studies as summarise in Chapter 4 below are based on this route map.





### 3.3 ROUTE DESCRIPTION

A general description of the macro area of all three route corridors is provided below.

The Boundary substation at the eastern extent of the study area is located approximately 12km east of Kimberley and the various power line alternatives run parallel, either north or south, of the R31 road between Kimberley and Ulco, looping around the town of Barkly West. The Ulco Substation at the western extent of the study area is located adjacent to the Ulco Mine.

The town of Kimberley is set in a relatively flat landscape with no prominent topographic features within the urban limits. Hills in the landscape are largely of an artificial nature, created by mining debris dumps associated with more than a century of diamond mining. Since the 1990s these dumps have been recycled and poured back into De Beers Mine, with certain mine dumps being preserved as part of the historic industrial landscape of Kimberley.

Land use within the study area consists largely of a mix of natural areas and game or livestock farming. A number of Eskom power lines already transect the landscape. Degraded and excavated areas are scattered throughout the area where either intensive agriculture or mining activities occur.

The Ulco plant is situated on a limestone deposit near Ulco. Here limestone is mined from shallow open pits and crushed on-site to produce cement clinker, the base feedstock for cement.

The surrounding rural landscape consists of relatively flat plains dotted with hills and slightly undulating plains with Ghaap Escarpment at Ulco in the west of the study area. Outcropping basement andesite rock is present to the north and north-west of the study area.

The study area consists of the following natural vegetation types: Kimberley Thornveld in the eastern half of the area, Schmidtsdrift Thornveld in the central portion, Ghaap Plateau to the west and patches of Vaalbos Rocky Shrubland to the south of the proposed routes. There are still large portions of these vegetation types remaining and as a result they are considered to be Least Threatened. Other vegetation that may be affected is that of Highveld Salt Pans and the riparian vegetation along the Vaal and Harts rivers. This Highveld Salt Pan vegetation type is considered Least Threatened and is scattered throughout South Africa where the rainfall ranges between 300mm and 500mm.

The aquatic features occurring within the study area consist of the lower Vaal and Harts rivers and some endorheic pans and streams or drainage lines.

In terms of rivers, the area is located in the Lower Vaal River Catchment at its confluence with the Harts River. Both of these rivers were significantly modified by the surrounding farming activities which has taken place within the riparian zones. Near the confluence of the Harts and Vaal Rivers at Delporthoop a major irrigation system, the Vaal-Harts Scheme was set up in 1933 where water drawn from both the Vaal and the Harts rivers at Warrenton approximately 50km north of the study area to provide water for the intensive irrigation of numerous smallholdings through a system of canals in an otherwise dry area of the country. As a result both rivers are significantly impacted within their lower reaches.

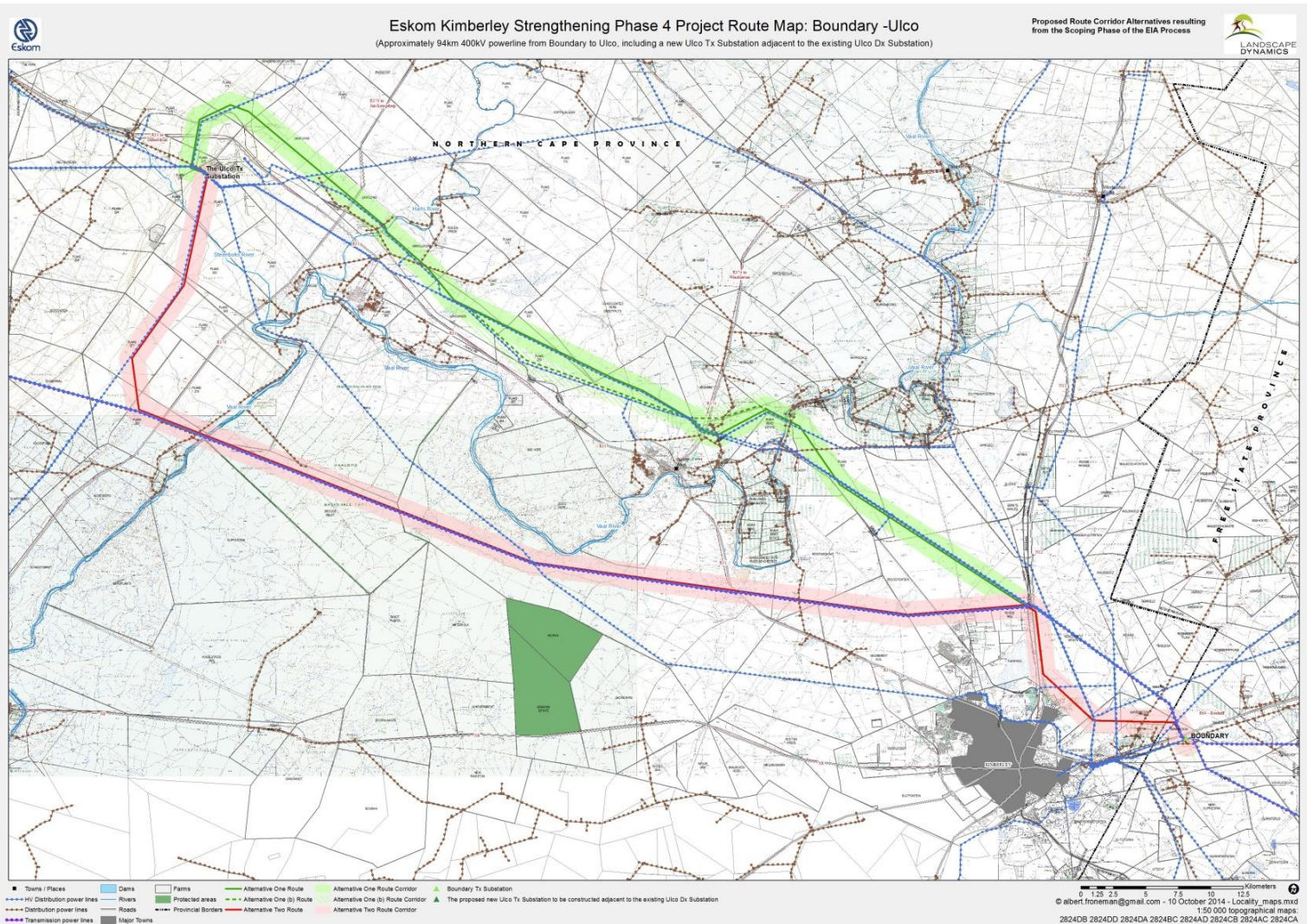
A wide variety of pan types occur throughout the study area namely salt pans, calcareous pans, gypsum pans, clay basin pans and other soils as well as fresh water pans. The pans vary slightly in condition and have been primarily disturbed by the grazing of livestock. Many of the pans have been modified into water storage structures while others contain roads, fences and power lines through them. Vegetation that can persist in these saline and seasonally inundated conditions consists of low grassy dwarf shrubland.

The ephemeral streams are only visible in the landscape as small grassy or earthen channels with little to no riparian associated vegetation. Larger streams have characteristic Sweet thorn *Acacia Karoo* trees along its banks.

In general the soils within the study area consist mostly of freely drained, structure-less red “Hutton” soils with a high base status that may have restricted soil depth, excessive drainage, high erodibility and low natural fertility. Along the Harts River and surrounding site floodplain and the lower Vaal River, the soils have a marked clay accumulation, are of a restricted depth and have slow water infiltration. In the western portion of the study area, the soils are shallow on rock with lime present.

### 3.4 RECOMMENDATION IN TERMS OF ROUTE CORRIDORS RESULTING FROM THE SCOPING PHASE

The three initially proposed routes were presented to all the stakeholders (government departments, municipalities and other) as well as directly affected landowners. The extent and detail of the community consultation is described in detail in Chapter 5. Extensive negotiations and constructive meetings took place with the affected parties and it was proposed to amend the proposed route corridors as supplied in the map below (an A3 copy is attached as Appendix A(3)). Note that only two route corridors are now proposed to be investigated in more detail during the Environmental Impact Phase. Note that these proposed routes could still be amended or could even result in a combination of both routes, depending on the outcome of specialist investigations and further community consultation.





- **New Alternative 1**

This alternative heads west from the proposed new BoSS towards the N12. Through this route the sensitive vulture restaurant and Camel Thorn Tree area on Dronfield is avoided by running on the similar position as the original Alternative 1, with the exception of deviations closer to farm boundaries as requested by the land owners in the area.

The route turns north parallel to the N12, after which it crosses the N12 and heads north-west similar to the original Alternative 1 route. The route then deviates to a more westerly direction and crosses the Vaal River parallel to an existing 66kV line. The route follows the Holsdam – Riverton 66kV power line bending in a south-western direction, then turning north-west parallel with the existing Weir – Gong-Gong 132kV power line and Holsdam – Ulco 1 132kV power line.

The alternative continues parallel to the last mentioned line, crossing over state owned properties. It bends parallel to the Kudu – Gong- Gong 132kV power line until it and continues straight until bending south towards the new proposed Ulco Tx Substation.

- **New Alternative 1A**

This alternative is similar to above-mentioned new Alternative 1 but deviates after crossing the Vaal River. This route continues straight and only bends parallel to the Holsdam farm boundaries. It then runs parallel to the Existing Weir – Gong-Gong 132kV and then parallel to the Kudu – Gong-Gong 132kV power line. The alternative then follows the same route as new Alternative 1 discussed above.

#### Advantages

- The route is adjacent to the road and existing infrastructure can be utilised during construction.
- Game farms like Matannu is avoided.

#### Limitations

- Sensitive areas, i.e. crossing of the Vaal River cannot be avoided.

- **New Alternative 2**

This route follows the same route as suggested in the new Alternative 1. After crossing the N12 it follows the same route as the original Alternative 2.

#### Advantages

- Most of the route is along existing transmission power line servitudes and access roads and gates have already been established.

#### Limitations

- Generally the land owners to the south of Ulco have had very negative experiences with Eskom and Eskom contractors.

## CHAPTER 4: STATUS QUO OF RECEIVING ENVIRONMENT

### 4.1 BIOPHYSICAL ENVIRONMENT

#### 4.1.1 CLIMATE

The area is known for its warm dry summers (November-February) and mild to cold winters (June-August). The average midday temperatures for Kimberley range from 18°C in June to 32°C in January and can be below 0°C in winter. The erratic rainfall occurs mainly during summer in the form of thunderstorms. The rainfall varies between 250 and 700mm per year with the average annual rainfall for the area being 400mm.

#### 4.1.2 GEOLOGY, SOILS & GROUNDWATER

An *Engineering Geological Investigation* was undertaken by Geoset CC and is attached in Appendix C(1). A summary thereof is provided below.

The proposed alternative corridors between the Boundary and Ulco Substations were investigated to determine the expected engineering geological properties that will influence the placement of pylons:

##### **Topography**

The site is located from flat areas to a gentle to low gradient slopes with small dolerite koppies or hills, with average elevations of 1250 MASL at the Boundary Substation and 1100 metres above mean sea level at the Ulco Substation, confirming the relative flatness of the area.

##### **Site Geology**

The general thickness of the soil cover will in general marginally decrease moving from east to west, and will increasingly be covered by recent Aeolian dune sand, underlain by calcrete. It is evident that the aeolian dune sand covers the calcrete which is found in depth, and it is mainly present in the north western last half of the route corridors.

The south-eastern area is underlain by recent Aeolian dune sand, underlain by calcrete or Karoo Supergroup sediment comprising Ecca Group consisting of shale, siltstone and sandstone of the Tierberg Formation. The shale is represented as micaceous mudrocks interbedded with infrequent carbonaceous mudrocks. Dolerite dykes and sills appear commonly along this area.

Andesitic lava of the Allanridge Formation (Ra), Platberg Group of the Ventersdorp Supergroup comprises the largest and centre portion of the corridors. It consists of amygdaloidal or porphyritic andesitic lava, quartzite and conglomerate, in many places covered by aeolian sand and calcrete gravel.

The last quarter of the corridors presented the Ghaap Plateau and Schmidtsdrift and Vryheid Formations of the Campbell Group of the Griqualand West Supergroup. The Ulco (Vgu) Member of the Ghaap Plateau was found north of Ulco and consist of fine grained dolomite and stromatolitic limestone with interbedded chert, with a banded iron formation at the top, underlain by the Vryburg Formation (Vv) comprising siltstone, shale, quartzite, gritstone and conglomerate.

Kimberlite pipes and fissures are also frequently indicated and their economic potential should be kept in mind.

The aeolian diamondiferous gravel (Qa) as well as the alluvium and scree (m) are associated with the river and paleo river systems, and in general only found near or at the Vaal, the Harts and Steenboks Rivers.

The geology map indicates some intrusive dolerite sills and dykes (Jd: dolerite) in general into the Eccra Group (Pt: shale, siltstone and sandstone) of the Karoo Supergroup sediment along the first eastern section from Boundary substation. These dolerite sills usually occur as small hills or koppies with slightly weathered to unweathered or fresh dolerite on top with some loose material or talus at the sloping sides of the koppies.

These dolerite dykes and sills are usually targeted as construction materials and should be adequate in providing efficient foundations for power pylons and also to be used as construction or founding materials. The specific contact zone between the dolerite and Karoo sediment usually has baked shale as indicator, and these zones should preferably not be used for the pylons as differential movement may contribute to unstable foundation conditions.

The upper soil may only consist of Aeolian dune sand and should be removed for construction on underlying competent bedrock or calcrete.

There are five old gypsum mines in the area and some economic deposits may occur along the corridors, and it should be addressed during the final geotechnical ground survey, should it be required. The locality of the four nearest gypsum mines were noted on the farms Wildebeest Kuil 69, between the road R31 to Barkly West and the proposed corridors and at the proposed crossing of the R31 and the proposed first and second preferred alternatives on the farm Pniel 281, on the farms Plaas 221 and Plaas 172.

Numerous Kimberlite pipes and fissures possibly containing diamonds were noted in the area, and diamonds are economically mined. There is an indication of a Kimberlite pipe on the farms Plaas 193 and Rosalin 224, near the power lines of the third alternative corridor, and outside the corridor on the farms Plaas 173, Plaas 172 and Plaas 171 where the Kimberlite were mined for diamonds. Two Kimberlite pipes also occur on the farm Longlands 231, with at least six Kimberlite pipes on the farms Bad Hope and Good Hope towards Barkly West. A large building sand and aggregate quarry is located next to the road R31 to Ulco, also on the farm Longlands 231.

No Kimberlite pipes and fissures were noted in the vicinity of the First and Second Alternative corridors, but alluvial diamond gravel was mined on the farm Droogveld at the old Vaalbos National Park that may still be economically viable. A large limestone quarry near Ulco is located next to the First and Second Alternative corridors.

The bedrock is in many portions covered by transported material which may consist mainly of dune sand.

### **Groundwater Conditions**

Drainage mainly takes place through sheet wash and a few drainage channels and pans are present adjacent to the corridors. Drainage occurs in a south-westerly direction towards the Vaal River, a tributary to the Orange River. The confluence of the Harts River and Vaal Rivers were noted at the Third Alternative corridor not far southeast of Ulco, at Delpotshoop. The river crossing needs extra attention and the 1: 100 year flood lines should be determined and used in spacing the pylons.

The permanent water table on site is expected to be deeper than 1,5m below natural ground surface.

A perched water table within the Aeolian sand may exist on shallow bedrock with low permeability characteristics of the rock mass, during long periods of consistent rain.

### **Soil Profiles**

All terrain land forms or mapping units should be sampled and more than adequate characterization of each represented soil horizon should be determined through evaluation of the gathered information.

The typical natural soil profiles of the test pits with substantial soil cover must be represented as an overall impression by the profiler and the complete logs should be considered for specific details, and some photos should be taken of rock outcrop and shallow rock for a visual characterization.

In many areas difficult excavation can be expected along the corridors, and a competent TLB, pneumatic tools and even blasting may be required to reach installation depths for services, or for the placement of the pylons. Refusal of a normal TLB is expected in almost all test pits, typically at depths less than 1,5m. To ensure the stability of excavations, it will need standard sidewall protection in excavations exceeding 1,5m.

### **Slope Stability and erosion**

The potential for lateral soil movement or erosion is medium, and the Aeolian sand can easily be washed away during thunderstorms. Except for local slope instability within opened trenches specifically within shale or layered mudstone, and the possible collapse of unstable open pit side walls encountered, no other slope instability is expected within these relative flat areas.

All open excavations exceeding 1,5m in depth must be supported.

### **Excavation classification with respect to services**

Problems regarding excavatability can be expected along the routes, with some outcrop and sub outcrop areas possibly classified as medium hard rock excavation in restricted and non-restricted excavation (SANS 1200 D).

The area may be classified regarding excavation properties and it can range from easily excavated by hand to intermediate excavation where a competent TLB, pneumatic tools and even where blasting is required.

Unstable pit side walls may be encountered and to ensure the stability of excavations, it will need standard sidewall protection in excavations exceeding 1,5m.

### **Impact of the geotechnical character of the corridors on the placement of pylons**

During the final engineering geological investigation it is essential to determine and quantify the extent of potential problems associated with the area.

The ideal conditions may be listed as follows:

- A smooth surface gradient with slopes less than 12E. Accessibility should not be restricted by topography (plateau areas).
- No potential for slope instability features - landslides, mud flows.
- Easy excavation for foundations and installation of pylons.
- Foundations above the ground water level or perched water table, with not too low permeability.
- Development above or outside the 1:100 year flood line.
- Adequate surface and subsurface drainage conditions, with minimal erosion potential.
- No presence of problematic soils, for example heaving clays, compressible clays, sand with some collapse potential, or dispersive soils, that will require expensive remedial measures.
- No potential for surface subsidence due to the presence of dolomite (sinkholes) or undermining.
- No damaging differential subsidence or movement (less than 5mm total movement at the surface allowed).
- The site should be placed away from potential pollutants such as waste disposal or sewer sites.

### **Evaluation for the placement of pylons**

No seepage or the presence of perennial fluctuations of ground water was encountered on site, but a seasonal perched water table may exist on top of the bedrock or within the pedogenetic layer comprising nodular or hard pan calcrete.



Special care must be taken to ensure adequate surface drainage to prevent the accumulation of water next to structures.

The area may contain low and low to medium expansive soil, and together with a medium compressible and a highly collapse potential, foundations will need special precautionary measures to minimize soil movement associated with a variation in moisture content of the soil.

Some problems regarding excavatability can be expected usually on the dolerite near or at the hills.

Retaining walls as well as slope stabilization measures are recommended on all constructed embankments exceeding 1,5m, as unstable pit walls may be encountered.

Storm water control measures such as ponding pools are recommended to control peak flows during thunderstorms. All embankments must be adequately compacted and vegetated with grass to limit any excessive erosion and scouring of the landscape.

Some mining activities on site or history of mining or contaminated land in the area were found, and gypsum mining as well as alluvial and Kimberlite diamond mining occur regularly in the area.

The likelihood for the development of borrow pits along the routes should be investigated to provide construction material.

All road building and construction materials will in the interim be sourced from established commercial activities in and around Kimberley and Ulco.

The placement of the ESKOM pylons is possible along the routes if the recommended precautionary measures and possibly difficult excavation of service and foundation construction is anticipated.

### **Drainage**

The corridors are located on shallow slopes less than 4%, with some steeper slopes next to the dolerite koppies, usually not affected by the placement of the pylons.

Drainage takes place through sheet wash, and prominent drainage channels intersects the corridors, with some pans and the Vaal River as well as the Harts River and the Steenboks River. Drainage generally occurs in a southwesterly (or northeasterly) direction towards the Vaal River, and then south to the Orange River.

No seepage or the presence of perennial fluctuations of ground water was encountered on site, but a seasonal perched water table may exist on top of the shallow bedrock sandstone, mudstone, lava, dolerite or where calcrete nodules or hard pan calcrete is expected.

Ground water in the form of seepage may be intersected in some test pits during the final field investigation, and some problems are foreseen and normal water tightening techniques such as damp course on foundation levels may be required.

The aeolian sand is expected to exhibit a moderate to high permeability, which possibly accounts for the absence of a connected network of proper drainage features between the pans.

Special care must be taken to ensure adequate surface drainage to prevent the accumulation of water next to structures. Storm water diversion measures such as ponding pools are recommended to control peak flows during thunderstorms. All embankments should be adequately compacted and planted with grass to stop any excessive erosion and scouring of the landscape.

## Development Zones

Provisional development zones were determined, indicating the expected geotechnical conditions of each site class: Potentially low to medium expansive and compressible and highly collapsible soil with thickness up to 750mm which classified as site class C2H1 (with up to 10mm differential movement measured at surface) requiring special foundations varying through to site class HCR (with less than 7,5mm soil movement measured at surface) requiring normal or modified normal construction or a soil raft, with associated site drainage provisions. Substantial financial implications are expected in Geotechnical Zone PR where scattered rock, shallow rock and rock outcrop are expected, but will possibly prove as excellent and stable foundation material for the pylons.

### 4.1.3 SURFACE WATER

A *Freshwater Assessment* was undertaken by BlueScience CC and is attached in Appendix D(3). A short summary thereof is provided below.

The aquatic features occurring within the study area consist of the lower Vaal and Harts rivers and some endorheic pans and streams or drainage lines. The habitat integrity of the Lower Vaal and Lower Harts rivers within the study area is deemed to be in a largely to severely modified state while all of the other tributaries in the area are in a largely natural to moderately modified state. The riparian habitat tends to be more impacted by the surrounding farming activities. The pans in the study area are subjected to physical habitat modification with some flow and water quality modification largely as a result of the surrounding farming and peri-urban activities. In terms of the current ecological state of the wetland areas, they are as a whole considered being in a moderately modified state.



The Vaal River upstream of the confluence with the Harts River at the proposed transmission line crossing for Alternative 1



The Vaal River downstream of the confluence with the Harts River at the proposed transmission line crossing for Alternatives 2 & 3

The ecological importance and sensitivity of the rivers within the study area is deemed to be high or moderate, with the Lower Vaal River upstream of the Harts River confluence having the highest ecological importance. The smaller drainage lines have a low ecological significance. The pans within the study area are in general small and of limited ecological importance.

Based on the consideration of the route alternatives undertaken as part of this study, the First and Second Alternatives both have the least potential impact on the freshwater features within the study area. The new Ulco Substation does not occur in close proximity to any freshwater features. Where the proposed power lines are located close to freshwater features it is proposed that a buffer of 50 from the centre of the drainage lines or from the top of bank of the Vaal, Steenbok and Harts rivers and approximately 500m (varies depending on wetland cluster) from the edge of the pans be implemented.

Providing that the recommended mitigation measures are implemented (adherence to the proposed buffers adjacent to freshwater features, minimisation of impacts and rehabilitation of disturbed areas and the utilisation of the existing access roads where possible) the significance of the impact is expected very low. A water use authorisation may need to be obtained from the Department of Water & Sanitation Northern Cape Regional Office for approval of the water use aspects of the proposed activities.

#### 4.1.4 VEGETATION

A *Vegetation and Faunal Scoping Report* was undertaken by EnviroGuard Ecological Services CC and is attached in Appendix D(1). A summary of the relevant sections is provided below.

##### **Vegetation Types**

On a small scale the proposed routes fall within the savanna biome and within a larger regional scale the proposed routes are according to Mucina & Rutherford (2006) located within the Eastern Kalahari Bushveld Bioregion (SVk).

In terms of vegetation types the proposed routes include the Kimberley Thornveld (SVk4), Schmidtsdrif Thornveld (SVk6), a few Southern Kalahari Salt Pans (AZi4) and one small section of the Upper Gariep Alluvial Vegetation (AZa4) (Mucina & Rutherford 2006).

##### *Kimberley Thornveld (SVk4)*

The vegetation comprises a mixture of trees and shrubs and is characterised by the dominance of trees *Acacia erioloba*, *Acacia tortilis*, *Acacia karroo* and *Boscia albitrunca*.

From a conservation point of view it is regarded as being a least threatened vegetation type, though large areas are already transformed due to agricultural practices.

##### *Schmidtsdrif Thornveld (SVk6)*

The vegetation is dominated by the woody *Acacia mellifera*, *Searsia lancea*, *Acacia tortilis* and *Tarchonanthus camphoratus*.

From a conservation point of view it is regarded as being a least threatened vegetation type, although only 2% is statutorily conserved. The vegetation is mostly used for cattle and game (hunting) farming.

##### *Southern Kalahari Salt Pans (AZi4)*

These salt pans occur in areas with altitudes ranging between 1000-1600 metres above sea level. They form depressions in bottomland plains and lower-lying landscapes where the central parts can be seasonally inundated with water as a result of rainfall. In some areas the pans can be without water for several years depending on the rainfall. The central parts are normally open with little or no vegetation or in cases where

water is present floating macrophyte vegetation can be present. The edges are normally sparsely covered with heavy grazing taking place by wildlife and domestic animals. The clayey (> 25% clay content) textured soil in these pans vary from dark coloured to lighter coloured soil, which are poorly drained.

From a vegetation point of view these areas comprise a mixture of herbaceous species such as *Zygophyllum tenue*, *Salsola scopiformis*, *Hirpicium gazanioides*, *Trianthema triquetra*, *Enneapogon desvauxii*, *Sporobolus coromandelianus* and *Eragrostis truncata* (Mucina & Rutherford 2006).

These pans are poorly conserved and under threat from agriculture activities. Grazing potential of these pans is relatively high comparing to the adjacent grassland plant communities.

#### *Highveld Alluvial Vegetation (AZa 5)*

The vegetation consists mostly of *Acacia karroo* thickets, flooded grassland and, due to the disturbance caused by floods, various weeds and alien invasive plants are present.

These areas are regarded as being Least threatened with close to 10% being formally conserved. Unfortunately many of these areas are heavily grazed due to the palatable grass species occurring there.

#### **Route description in terms of Flora**

The vegetation of the central and eastern parts of the routes (that constitute close to 75% of the proposed routes) was characterised by the tree *Acacia erioloba* together with the prominent species *Grewia flava*, *Acacia mellifera*, *Tarchonanthus camphoratus*, *Acacia tortilis* and the grasses *Eragrostis pallens*, *E. lehmanniana*, *Pogonarthria squarrosa*, *Schmidtia pappophoroides*, *E. trichophora* and *Aristida congesta*. This section is affiliated with the Kimberley Thornveld (SVk4) (Mucina & Rutherford (2006).

Vegetation typical of the Schmidtsdrif Thornveld (SVk4) was found to be present in the western sections of the route close to the Vaal and Harts rivers areas of the propose routes. The vegetation is characterised by the dominance of the trees *Acacia tortilis* and *Acacia mellifera* that form dense stands. The shrub *Tarchonanthus camphoratus* is also prominent in some areas. The grass *Schmidtia pappophoroides* was dominant in some areas together with *Fingerhuthia africana* and *Cymbopogon pospischilii*.

Proposed route alternative 3 crosses the Vaal River with Upper Gariep Alluvial Vegetation (AZa4) vegetation and also some irrigation agricultural land close to the town of Barkly West. The Vaal - and the Harts rivers are also crossed by all three proposed route alternatives closer to the Ulco substation.

#### **Protected species**

The following protected species were observed or previously recorded within the proposed routes:

##### Trees

*Acacia erioloba* (Camel Thorn)  
*Boscia albitrunca* (Shepherds Tree)

##### Forb

*Harpagophytum procumbens* (Devils' claw)

#### **Red data species**

A list of possible red data plant species that could occur within the different plant communities of the proposed routes are provided on page 17 of the Faunal Report.

#### **Sensitivity analysis**

A Sensitivity analysis concluded as follows:

- *1st Alternative Corridor*

The largest section of this route passes through the Kimberley Thornveld (SVk4) followed by the Schmidtsdrif Thornveld (SVk6). Only a small section passes through the Vaal River and its associated alluvial bank and



floodplain, though these areas are mostly used for mining and agricultural purposes. A section of this proposed route does however pass through the deproclaimed Vaalbos National Park that is still fenced with wildlife present. Thus from a conservation point of view this proposed activity would have impacted on the conservation of that area.

*Sensitivity: Low-medium*

- *Alternative 2*

The largest section of this route passes through the Kimberley Thornveld (SVk4) followed by the Schmidtsdrif Thornveld (SVk6). A section passes through the Vaal River and its associated alluvial bank and floodplain, though these areas are mostly used for mining and agricultural purposes. This route stretches along the fence line of the deproclaimed Vaalbos National Park.

*Sensitivity: Low*

- *Alternative 3*

This route passes through an estimated 10% of the Southern Kalahari Salt pans, 10% of the Highveld Alluvial Vegetation with the rest Kimberley Thornveld and Schmidtsdrif Thornveld. This proposed route is regarded as slightly more sensitive due to it crossing a river system twice as well as the presence of pans along the route and corridor.

*Sensitivity: Medium*

#### 4.1.5 FAUNA

A *Vegetation and Faunal Scoping Report* was undertaken by EnviroGuard Ecological Services CC and is attached in Appendix D(1). A summary of the relevant sections is provided below.

A detailed literature search was undertaken to assess the current status of threatened plants well as faunal species that have been historically known to occur in the Kimberly (Boundary)-Barkly West-Delportshoop (Ulco) 2824CD, 2824CC, 2824CB, and 2824BA quarter degree grid cells (QDGC).

##### **Reptiles**

The bio-geographical distribution of amphibians in the greater Kimberly area falls under the Central District. The Central District covers most of Lesotho, Free State and North West Province, together with northern parts of Northern Cape Province. In the west, the southern boundary follows the course of the Gariep River. In the east, the southern boundary lies in the ecotonal Grassy Karoo. In the northwest, the district ends where subtropical woodlands begin, and in the east the boundary follows the interface between sweet grasslands in the west and sour grasslands in the east. Amphibian species richness is generally low in the Central District and tends to decrease toward the west. Species counts just exceed 10 species per grid cell in the eastern extremes and are mostly <6 in the west. Species richness of endemics is <4 species per grid cell over the entire district, and no range-restricted species are present. This district is subdivided into two assemblages namely the Sweet Grasslands and Kalahari assemblages.

The Giant Bullfrog is currently assigned as a near-threatened species (IUCN Red List category). Giant Bullfrogs have been recorded from the area and adjacent grid squares during previous surveys as well as during the South African Frog Atlas Project (SAFAP). Specimens recorded were of road fatalities, migrating adult males as well as potential breeding localities in the deproclaimed Vaalbos National Park. Bullfrog density commonly varies within certain habitats (open grassland and woodland habitat). High densities are often associated with specific microhabitats or patches (hygrophytic or aquatic ephemerophytic grass and sedge dominated temporary pans) that can be identified and randomly sampled. Emphasis must be placed on remaining natural open grassland and woodland habitats (important migratory and foraging areas) as well as seasonal wetlands (pans, drainage and marshland vegetation) surrounding the alternative alignments. The seasonal wetland habitats offer the most suitable breeding habitat for Giant Bullfrogs in the area.

The majority reptile species are sensitive to severe habitat alteration and fragmentation. Due to human presence in the area coupled with increased habitat destruction and disturbances around the alternative sites are all causal factors in the alteration of reptile species occurring on the site and surrounding areas. Large low-lying rock outcrops occurs throughout the site and provide favourable refuges for certain snake and lizard species (rupicolous species). Several large termite mounds *Trinervitermes haberlandii* were observed along and around the proposed alignments. Termite mounds offer important refuges for numerous frog, lizard and snake species. Large number of species of mammal, birds, reptiles and amphibians feed on the emerging alates (winged termites). These mass emergences coincide with the first heavy summer rains and the emergence of the majority of herpetofauna. Termite mounds also provide nesting site for numerous snakes (Southern African Python), lizards (varanids) and frogs. Trees including stumps, bark and holes are vital habitats for numerous arboreal reptiles (chameleons, snakes, agamas, geckos and monitors).

#### *Threatened Reptile Species*

Four endemic reptile species namely Distant's Ground Agama (*Agama aculeate distanti*), the Marico Gecko (*Pachydactylus mariquensis*), Thin-tailed Legless Skink (*Acontias gracilicauda*) and Greater Padloper (*Homopus femoralis*) were previously recorded within the area. Both the Nile (*Varanus niloticus*) and Rock or White-throated Monitors (*Varanus albigularis*) are protected species.

#### **Mammals**

The majority of larger mammal species are likely to have been eradicated or have moved away from the area, as a result of previous agricultural activities, hunting and poaching as well as severe habitat alteration and degradation. The settlements surrounding the site as well as several informal settlements and associated hunting and poaching limits the suitability of the site for larger mammal species. High levels of hunting were noted on and surrounding the site with the use of dogs and wire snares as well as several empty shotgun cartridges. Several dog tracks were observed along the existing Eskom servitudes as well as hunting with dogs was observed during the site visit. The collection or harvesting of wood (stumps) and rock material as well as the frequent burning of the vegetation reduces available refuge habitat and exposes remaining smaller terrestrial mammals to increased predation levels. The use of wire snares for high intensity poaching activities will significantly affect remaining smaller mammal species such as rabbits and mongooses. Secondary access roads and vehicles (motor cars, motor cycles, quad bikes) which transverse the area and bisect the valley bottom wetlands increase access to the site as well as potential road fatalities. Major road networks (R31) with high vehicular traffic increase the risk of road fatalities (hedgehogs, hares) of mammals. Smaller mammal species are extremely vulnerable to feral cats and dogs.

#### **Threatened Mammal Species**

The study area falls within the distribution ranges of 15 species which are placed into one of known threatened species (0) Critically Endangered; (1) Endangered, (6) Vulnerable and (7) Near-threatened) as well as (1) species which is presently listed as Data Deficient. No sensitive or endangered mammals were recorded during the site survey but suitable habitat occurs on the site and surrounding conservancy areas for certain rare or threatened mammal species.

#### **Conclusion of Vegetation and Faunal Scoping Report**

The pans and river areas are considered to be sensitive ecosystems, however most of the river ecosystems are used for agricultural and mining activities. It is preferred that these ecosystems with the proposed activity being impacted as little as possible. The Kimberley Thornveld (SVk4) areas have protected tree species present and should be protected. All three routes pass through this vegetation type, though from a conservation point of view it is regarded as being least threatened. The same applies to the Schmidtsdrif Thornveld (SVk6) through which all three routes also pass.

From a floral and faunal point of view all three routes seem feasible. Proposed alternative routes 1 & 2 are regarded as being the least sensitive. Proposed alternative route 1 passes through the deproclaimed Vaalbos



National Park. This area is not currently formally managed as a conservation area and already has two Eskom power lines passing through it. The proposed lines seem to follow a similar route and should therefore have a low impact on the flora and fauna. Proposed alternative route 2 is similar to proposed alternative 1 except that it will pass along the boundary of the Rooipoort Nature Reserve and the old deproclaimed Vaalbos National Park. Although not very sensitive, the power lines along this route could affect the flora and fauna of the Rooipoort Nature Reserve.

Proposed alternative route 3 is regarded as being the least preferred based on a vulture colony, the crossing of two riverine areas and a few salt pans. This route is regarded as having a medium sensitivity and therefore it would be the least preferred from an ecological point of view. It is therefore recommended that a floral and faunal EIA is focused on proposed alternative routes 1 and 2.

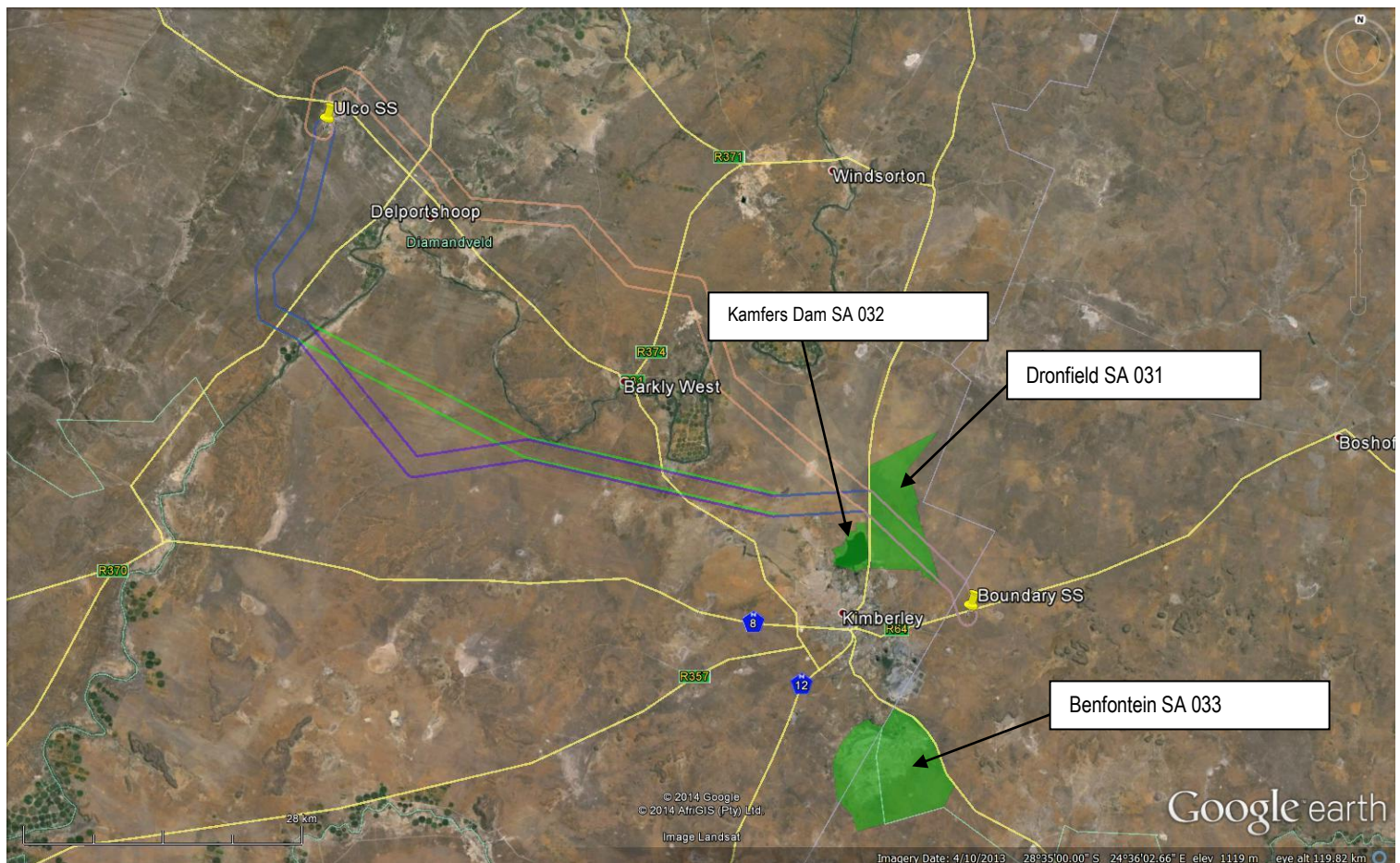
#### 4.1.6 AVI-FAUNA

A *Bird Impact Scoping Report* was undertaken by Mr Chris van Rooyen and Mr Albert Froneman and is attached in Appendix D(2). A summary thereof is provided below.

##### Important Bird Areas (IBAs)

Three IBAs are located within 11km from the Boundary substation, and one of them, Dronfield Farm, is bisected by the alignments. The three IBAs are the following:

- Benfontein (SA 033);
- Dronfield Farm (SA 031); and
- Kamfers Dam (SA 032)



Dronfield Farm lies 5km north of Kimberley on the road to Warrenton. The farm holds large numbers of breeding White-backed Vulture, an average 75 breeding pairs are resident in the colony. Two pairs of Martial Eagle and one pair of Verreaux's Eagle-Owl also nest on the property. This farm was privately owned by De Beers Consolidated Mines Limited (DBCM) and used purely for cattle farming from the 1920s to 1960s. Thereafter Springbok were introduced, and later Hartebeest, Eland, Gemsbok, Blue and Black Wildebeest, Zebra, Impala and Blesbok, and the land was used for game and cattle farming until 2004. In 2005 it became a game farm. A vulture restaurant on the property provides supplementary food for the vultures. In 2012 the sale of DBCM to Anglo American was concluded.

Benfontein lies 14 km southeast of Kimberley and consists of flat, unvarying plains. During good rains, a large 300ha calcrete pan in the northwest fills with water, creating a shallow fertile wetland. The vegetation is a semi-open thornveld savanna. The reserve holds small numbers (about 20 pairs) of breeding White-backed Vulture, and in the past a few breeding pairs of Blue Cranes. The plains hold Ludwig's Bustard, and the thornveld occasionally holds Kori Bustard. A pair of Secretarybirds and Tawny Eagles regularly breeds on the reserve. Lesser Kestrel ranges throughout the area in summer. The ephemeral pan in the northwest of the property holds large numbers of Greater and Lesser Flamingos in wet years, amongst a host of other waterbird species.

Kamfers Dam is located six km north of Kimberley and is natural in origin. It is an ephemeral (non-perennial), endorheic pan in a semi-arid environment, receiving water from three primary sources; its 160km<sup>2</sup> catchment, 30-40 megalitres of partially treated sewage effluent from Kimberley per day and half of the town's storm water runoff. Historically the pan dried up between October and December, and was inundated between February and March, with standing water for a few more months in above average rainfall years. Over the past ten years the pan has been transformed from an ephemeral pan to a permanent wetland due to a continual increase in sewage effluent inflow. The wetland provides a reliable refuge for waterbirds during periods of drought, when many of the surrounding ephemeral waterbodies dry out. Kamfers Dam occasionally supports extremely large numbers of resident, migratory and nomadic birds. It regularly holds more than 2000 water birds (excluding Greater and Lesser flamingos). A special feature is the large numbers (from a South African perspective) of Greater Flamingo and Lesser Flamingo that are found throughout the year. Kamfers Dam supports the largest permanent population of Lesser Flamingos in southern Africa, at times in excess of 80 000 individuals.

It is not expected that Benfontein and Kamfers Dam will be directly impacted by the proposed Boundary – Ulco power line. However, the proposed corridors currently run through the south-western area of Dronfield Farm, and there are a number of potential impacts, which is discussed below in more detail.

## **Description of bird habitat classes**

### *Savanna*

The study area is situated in savanna, and consists primarily of Kimberley Thornveld (between Kimberley and Delporthoop), Schmidtsdrif Thornveld (between Delporthoop and Ulco) with a few isolated areas of Vaalbos Rocky Shrubland, which only occurs on solitary hills and scattered ridges. Schmidtsdrif Thornveld occurs mostly between Delporthoop and Ulco – the vegetation is sometimes very disturbed due to overgrazing by goats and other browsers. Just west of Ulco Substation, the Ghaap Plateau starts with its distinctive Ghaap Plateau Vaalbosveld.

The power line sensitive Red Data avifauna occurring in this habitat is typically arid woodland species i.e. Lappet-faced Vulture, White-backed Vulture, Cape Vulture, Tawny Eagle, Martial Eagle, Lanner Falcon, Verreaux's Eagle (ridges and koppies), European Roller, Secretarybird and Kori Bustard.

### *Pans*

An important feature of the arid landscape where the proposed power line is located is the presence of pans.

Pans are endorheic wetlands having closed drainage systems; water usually flows in from small catchments but with no outflow from the pan basins themselves. They are characteristic of poorly drained, relatively flat and dry regions. Water loss is mainly through evaporation, sometimes resulting in saline conditions, especially in the most arid regions. Water depth is shallow (<3m), and flooding characteristically ephemeral. When flooded, pans are important for a variety of power line sensitive Red Data species which occur in the study area e.g. Black Stork, Greater Flamingo, Lesser Flamingo, Abdim's Stork, Chestnut-banded Plover, Greater Painted-snipe, Maccao Duck and Yellow-billed Stork. Pans are also used by raptors and vultures for drinking and bathing. Double-banded Coursers and Burchell's Coursers occur along the pan fringes and on dry pans.

The most significant pan in the study area is Kamfers Dam outside Kimberley.

#### *Rivers*

The study area contains two major rivers, the Vaal River and its important northern tributary, the Harts River, which are important for a variety of waterbirds, including Red Data Black Stork and Yellow-billed Stork, while Abdim's Stork are attracted to adjacent floodplain areas. Rivers are also corridors for woodland, which Kori Bustard often associate with.

#### *Vulture breeding areas*

A notable feature of the study area is the large number of breeding White-backed Vultures which are distributed in loose colonies over several areas within a 50km radius around Kimberley. These colonies are situated in savanna areas where there are scattered, large Camel Thorn Acacia *erioloba* trees. The most important breeding colonies known at this stage are Dronfield, Riet River, Paardeberg, Secretarius, Rivermead and Susanna. The total number of breeding pairs is estimated at around 240 pairs with a total of 650 individual birds across all the colonies. All three proposed route corridors cross through the Dronfield colony, consisting of an average of 75 breeding pairs, and a very active vulture restaurant. The third alternative corridor also crosses through the Rivermead colony, which holds at least 24 pairs. The small Secretarius colony is not directly affected.

#### *Agricultural lands*

The study area contains extensive irrigated agricultural lands, mostly along the Vaal and Harts Rivers. Although agricultural lands completely destroy the structure of the original vegetation, some birds do benefit from this transformation. Abdim's Stork and Ludwig's Bustard (to a lesser extent) are the Red Data species most likely to utilise agricultural lands in the study area. Abdim's Stork can occur in flocks of several hundred on irrigated fields.

#### *Cliffs and ridges*

The majority of the proposed alignments are located in topographically flat plains. However, in places the proposed alignments do cross steep terrain, specifically near Ulco substation, at the edge of the Ghaap Plateau, which consists of a series of low cliffs. These cliffs are potentially suitable roosting and breeding habitat for a number of Red Data power line sensitive species, e.g. Black Stork, Lanner Falcon, and Verreaux's Eagle.

### **Power line sensitive species occurring in the study area**

A total of 22 Red Data species have been recorded by SABAP2 in the QDGCs that are bisected by the various corridors. For each species, the potential for occurring in a specific habitat class was indicated, as well as the potential impact most likely associated with this specific species. Refer to page 15 of the Bird Impact Scoping Report for this list.

### **Potential impact on birds associated 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. The electrocution risk is largely determined by the pole/tower design.

Due to the large size of the clearances on overhead lines of 400kV, electrocutions are ruled out as even the largest birds cannot physically bridge the gap between energised and/or energised and earthed components. The risk of electrocution posed to Red Data species by the new power line infrastructure is likely to be negligible.

### *Collisions*

The most likely potential candidates for collision mortality on the proposed power lines are Kori Bustard, Greater Flamingo, Lesser Flamingo, Secretarybird, Abdim's Stork, White-backed Vulture, Yellow-billed Stork, Black Stork, Verreaux's Eagle and Cape Vulture. Ludwig's Bustard will also be at risk, based on the species flight characteristics and tendency to fly long distances between foraging and roosting areas and when migrating. Movements by this species are triggered by rainfall, and so are inherently erratic and unpredictable in this arid environment, where the quantity and timing of rains are highly variable between years. However, the alignments are all situated in the savanna biome, which is not the ideal habitat for the species - it was only reported in two QDGCs, with a maximum reporting rate of 2%. The highest risk for Ludwig's Bustard is likely to be on irrigated fields. Flamingos might be at risk near water bodies, particularly large pans. Kori Bustards might be at risk anywhere in the savanna habitat, particularly when flying to roost sites in the late afternoon and early evening. Secretarybirds will be most at risk in areas of open woodland with a prominent grass layer, and when descending to pans to drink. Abdim's Stork will be at risk at pans, where they often roost in large numbers, and in irrigated areas, where they forage in large numbers. White-backed Vultures are at risk in breeding colonies, particularly in Dronfield Farm and Rivermead colonies. Cape Vultures are at risk in areas where they roost on transmission towers. Black Stork and Yellow-billed Stork will be at risk at river crossings and pans. Black Stork, Lanner Falcon and Verreaux's Eagle might be at risk where the proposed lines cross the low cliffs at the edge of the Ghaap Plateau. Tawny Eagle, Martial Eagle and Lappet-faced Vulture might be at risk anywhere in savanna habitat, but particularly when descending to and leaving from pans which they visit to drink and bath. Burchell's Courser, Double-banded Courser, Chestnut-banded Plover, Caspian Tern and Greer Painted-snipe are also potentially at risk of collisions, but less so than the larger species as they are more agile and therefore less likely to collide with the earthwires of the proposed lines.

### **Displacement**

In the present instance, the risk of displacement of Red Data species due to habitat destruction is likely to be fairly limited, given the nature of the habitat. The one exception to the last statement is the White-backed Vulture breeding colonies, where the removal of large Camel Thorn trees could result in the destruction of nests, and the resultant displacement of breeding birds, particularly at Dronfield Farm (all three alternative corridors) and Rivermead (third alternative corridor).

Apart from direct habitat destruction, construction and maintenance activities also impact on birds through disturbance, particularly at the White-backed Vulture breeding colonies of Dronfield Farm (all three alternative corridors) and Rivermead (third alternative corridor). This could lead to breeding failure if the disturbance happens during a critical part of the breeding cycle. Construction activities in close proximity could be a source of disturbance and could lead to temporary breeding failure or even permanent abandonment of nests.

## **4.2 CULTURAL/HISTORICAL ENVIRONMENT**

### **4.2.1 PALAEOLOGY**

A *Palaeontological Impact Assessment* was undertaken by Prof Marion Bamford and is attached in Appendix C(4). A summary thereof is provided below.

Since none of the rock formations or sediments in the region is potentially fossiliferous, being too old or too young, the project to erect power lines and substations between the Boundary and Ulco substations may continue as far as the palaeontology is concerned. If however, any fossils are discovered during the excavations then it is strongly recommended that the fossils are rescued and a palaeontologist is called to assess their importance and make further recommendations.

No phase 2 palaeontological impact assessment is required.

#### 4.2.2 ARCHAEOLOGY & CULTURAL HERITAGE

A *Heritage Scoping Report* was undertaken by Archætnos Culture & Cultural Resource Consultants and is attached in Appendix D(4). A summary thereof is provided below.

From the desktop data the following potential impacts can be indicated:

- It can be concluded that the chances of finding Stone Age sites is reasonably high. Due to the lack of research in the area it will then most likely have a high cultural significance.
- Chances to find Iron Age sites and occurrences are very slim. However, finding some evidence such as pottery lying around is always possible.
- During the HIA survey one might find historical structures dating to the first white farmers in the area, the missionaries and early mining activities. These will include ruins and foundations of houses and other outbuildings on a farm as well as possible cattle kraals. Significance can only be determined on identification of such features.
- Graves always is a distinct possibility and four sites are already known. Graves always are of a high cultural significance due to the religious and social context thereof. If such sites are identified it will undoubtedly have to be dealt with in accordance with ethical guidelines and legislation in this regard.

### 4.3 SOCIO-ECONOMIC, TOURISM AND LAND USE

A *Socio-Economic, Tourism and Land Use Potential Impact Report* was undertaken by AMP Property Management and Land Acquisition and is attached in Appendix C(1). A summary of the relevant sections is provided below.

#### 4.3.1 LANDUSE

The proposed 400kV power line will not directly affect the residential areas, but will influence rural farms in the area. The power line may cross inhabited farm land, tourist and mining areas. Denser residences are, however, found near the Boundary Substation, close to the Vaal River as well as Delportshoop. The alternative routes cross over combinations of agricultural, tourist, game farms and mining properties.

Land use along the route corridors can be broadly described as follows:

##### *Alternative 1*

This is the most northern alternative, commences at the Boundary Substation and runs mostly parallel to existing power lines. It passes through multiple game farms including the De Beers Dronfield Reserve to the west of the substation, and runs parallel to the Boundary – Olien 1 & 2 275kV power lines after which it crosses over the N12 to the north of Kimberley. It then runs parallel to the Kimberley – Holsdam 132kV and Kimberley Weir 132kV power lines and passes on the southern side of Droogfontein Solar Power and over several properties owned by communal property associations, followed by crossing the Vaal River. The route passes to the north of Barkly West and over the R374. The line then follows a west and north-westerly



direction, crossing over game farms including Mattanu Private Game Reserve. It then runs parallel to the Kudu - Gong-Gong 132kV power line until it passes on the northern side of Delporthoop and Ulco and heads south towards where the new Ulco Transmission Substation is proposed in the vicinity of the current Ulco Distribution Substation. The length of this alternative is approximately 94km.



*The Droogfontein Solar Power plant to the north of Kimberley*

#### *Alternative 2*

The proposed corridor route follows the same route as in Alternative 1 until crossing the N12. It then continues west parallel to Boundary – Olien 1 & 2 275kV power lines over communal properties and bends in a north-west direction crossing over the state-owned property that was previously the Vaalbos National Park. After crossing over the Vaal River, the route then turns north and runs parallel to the Ulco – Herbert 132kV and the Douglas – KDS – Olien Tee 275kV power lines, to the area of the proposed Ulco Substation. Most of the proposed alternative is parallel to existing power lines. The length is approximately 98km.

#### *Alternative 3*

The proposed corridor follows Alternative 2. Instead of crossing over the previous Vaalbos National Park, it crosses over Rooipoort Game Reserve and joins the same corridor after crossing the Vaal River. The length is approximately 102km.

### **Game Farms and Nature Reserves**

Several game farms are located in the area of study. The following lists some of the possible game farms and nature reserves that may be affected:

- Dronfield: was proclaimed a nature reserve in 2004 and is owned by De Beers.
- Mattanu Private Game Reserve: Various species of exotic wildlife are being bred here since 1991.
- Rooipoort: situated 63km west of Kimberley and bordering 32km of the Vaal River. The total extent of the reserve is 40 000ha, making it one of the largest privately owned nature reserves in South Africa.
- Tarentaalrand Safari Lodge: situated North/North-East from Kimberley, it caters exclusively to foreign hunters.

### **Mining**

- De Beers is still discovering diamonds from Kimberley's tailings dumps. This, however, falls outside the scope of this project.
- Elandslaagte mine: falls within the corridor of alternative 1. According to Mining Atlas “the mine has been on care and maintenance for some time” and its status is suspended. InfoMine states that on the 25th of January 2008 there was reported that the reason for the suspension had been that the electricity supply in the NCP was increasingly unreliable, which impede the mine progress.
- Ulco: is one of the largest cement mines and factories in the Southern Hemisphere.
- In the area of Delporthoop and Diamondveld there several diamond diggings, however this falls outside of the proposed corridors.

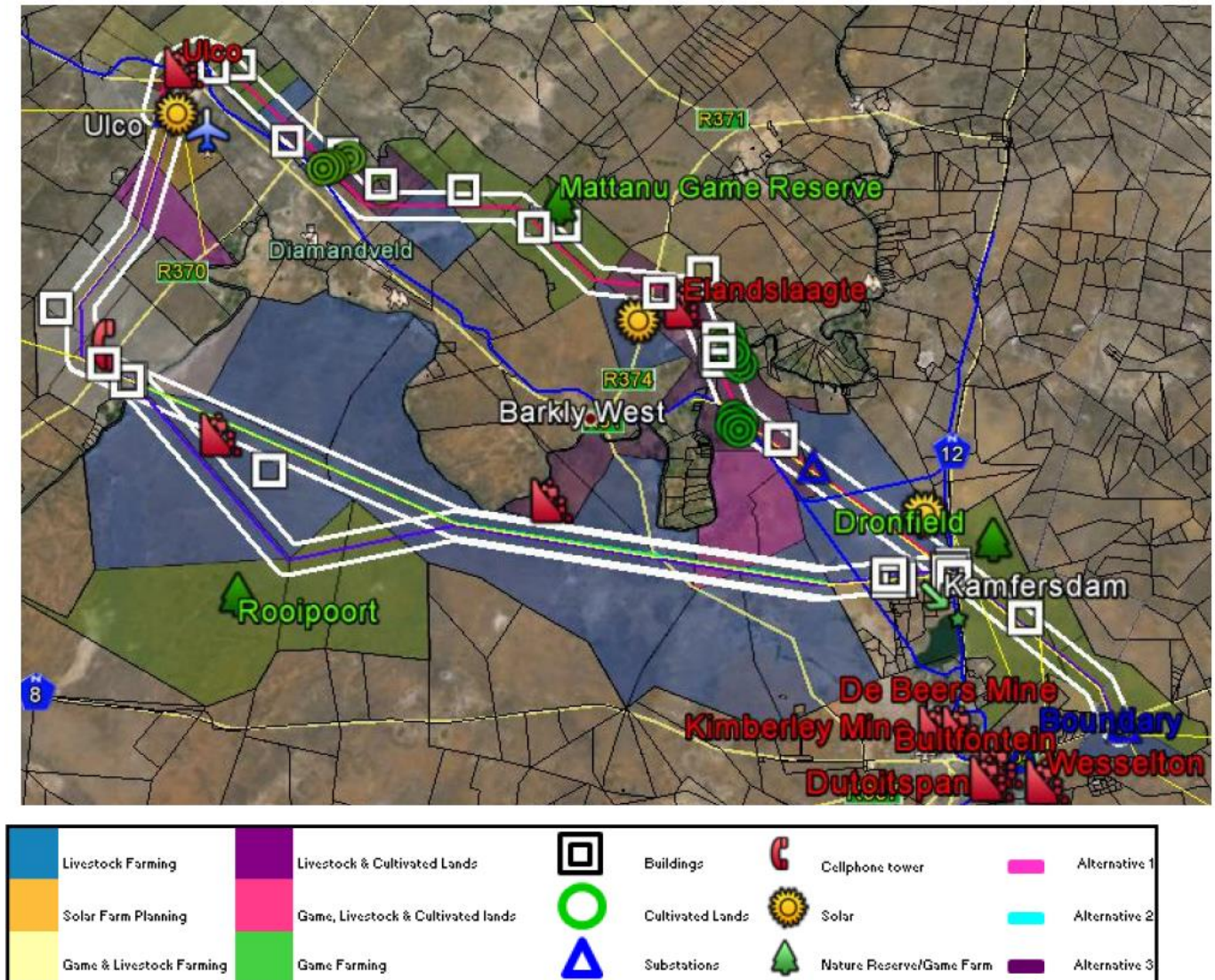
### Agricultural

Agricultural activities consist mostly of cattle, sheep and game farming. There are a few areas with arable lands, most of which are irrigated with pivots systems from the Vaal River.

### Solar Energy Facilities

According to Savannah Environmental (Pty) Ltd, EIA's are being conducted for Solar Energy Facilities on the following properties: Droogfontein 62, Portion 2 of Holsdam 229, Plaas 217 and Plaas 278.

Land Use Illustration



#### 4.3.2 SOCIO-ECONOMY AND TOURISM

A *Socio-Economic, Tourism and Land Use Potential Impact Report* was undertaken by AMP Property Management and Land Acquisition and is attached in Appendix C(1). A summary of the relevant sections is provided below.

### Social Change Processes

The purpose of this section is to describe the social processes that this proposed Eskom project will entail. It is important to understand that social and economic change processes can evolve to relevant impacts. The following processes are predicted in the different phases of the project:

- *Demographic Processes*

In small communities the movement of people looking for new opportunities is more visible. This may happen during the construction phase, where people of other areas will be looking for jobs. However job opportunities during the construction phase will be very limited since most contractors do not use many unskilled labourers. In the operational phase the greater electricity capacity may indirectly attract development of industries which may offer new work opportunities.

- *Economic Processes*

Macroeconomic factors as well as the way that people make a living in the area will have an effect on the economic processes. There may be a possibility for a small amount of temporary jobs for unskilled workers during the construction phase, but the operational phase will be performed by Eskom employees.

- *Geographic Processes*

These processes affect the land-use patterns of the community. Most of the land is grazing for game and livestock, but there are areas with irrigated lands and pivots. There will be a time period during construction when the farms will be encroached upon, should there be structures on the properties. During the design phase, pylon placing will be done in a matter that has minimum encroachment on the property and is most economically sustainable.

In the case of game farms the power line will not only impact the farms in terms of aesthetics but may also be a danger and inconvenience with regards to helicopters, which play a significant role in game farming in terms of game counting, capture and darting.

- *Institutional and Legal Processes*

These processes affect the efficiency of organisations, which include government and non-government agencies, as well as the commercial sector that is responsible for the supply of the services that the people depend on. The power line will not have a great effect on these processes with regards to normal livestock and agricultural farming. The negative aesthetic value associated with power lines is found to be a major concern for game farmers, since they are often involved with international investors who may be discouraged from the area.

- *Emancipatory and Empowerment Processes*

Emancipatory and empowerment processes lead to the ability of the local community to participate in the decisions that will have an effect on their lives. The proposed power line will not have a direct benefit for the local people, since it will be between two substations, the influence is therefore of an indirect nature since the substations will feed the local electricity network with a better quality supply. Therefore it will be applicable in the operational phase. As discussed above it will provide the possibility for economic growth in the area.

- *Socio-Cultural Processes*

The aspects in the culture and the way people live together are applicable in this section. During construction there may be an influx of people from other areas mainly for labour purposes.

## **Social Impact Assessment Categories**

- *Health and Social Wellbeing*

- Future aspirations – Economic growth regarding farming, tourism and mining activities.
- Feeling in relation to project – great sense of fear and resistance was experienced initially, but with consultation and explanation it changed positive regarding many private land owners. It was established to rather work together in planning an environmentally acceptable route than to force a route on the land owners. Special consideration needs to be taken into account where crossing over game farms.



- *Quality of living environment*
  - Quality of physical environment - There will be exposure to minimum dust and noise of vehicles in the construction phase. Construction workers will be fitted with PPE and be in the possession of identification when in the construction area.
  - Aesthetic Quality- The visual impact of the structures was addressed.
  - Adequacy of physical infrastructure. The route next to the existing roads as well as sections next to existing power lines will be preferred to minimise additional impacts. Gates should be closed at all times.
  - Personal safety and risk exposure. This is a high risk to property owners. No unauthorised entrance will be acceptable. Staying on next to existing roads where possible will be more acceptable – not accessing the total farm. No fires on construction sites.
  - Crime and violence. Eskom and the contractors are not welcome due to the perception that livestock thefts can increase.
  - Fire risk prevention. Eskom Transmission implemented the AFIS system where three satellites monitor (two of which are MODIS by NASA) which together track fires. The system updates every 15 minutes and fires as small as 0.25ha can be picked up. If these fires come within 2.5km from transmission power lines, warnings are sent via text messages to relevant Eskom employees mobile phones. Where possible national control can temporarily isolate the circuit under threat. Fire suppression teams are sent out where available.
  - Eskom registers servitudes for power lines. This means that the property still belongs to the relevant land owner, and Eskom owns the right to have a power line over the property. Since the property still belongs to the land owner, it is still the responsibility of the land owner. Eskom does however do maintenance of the vegetation under the power lines to decrease the fire risk under the lines.
- *Economic impacts and material wellbeing*
  - Property values. There may be a negative effect on the property values pending on the utilisation of the land. The influence will be taken into consideration during the valuation process where a valuation is to be done and land owners is to receive market value compensation.
  - Employment. Only limited unskilled work opportunities may be available to local communities.
  - Replacement costs of environmental functions. Land owners will be able to continue farming activities.
  - Structure planning must be liaised with land owners in cultivated fields.
- *Cultural impacts*
  - Loss of natural and cultural heritage. Refer to relevant report.
- *Family and Community impacts*
  - Social networks. The proposed route is mostly over game and agricultural farm land and a good neighbouring relationship exists.
  - Community connections. Social network exist in the community where a group will support each other. This is essential in the form of farmers associations. The relevant associations in the area have been informed about the proposed project and is considered part of the I&AP's.
- *Institutional, legal, political and equity impacts*
  - Impact equity. There should be a fair distribution of the impacts across the community. This project will ensure a better supply of electricity and fewer interruptions to all.
  - Other institutions that will also possibly be affected are state owned organisations like SANRAL, Transnet as well as the relevant municipalities and provinces.
- *Gender relations*
  - Gender division of labour. According to Statistics South Africa TLM have a greater than 50,3% female population. There are normally not woman employed as unskilled labour for the construction of power lines.

## Conclusion

The socially preferred route will have the minimum impact on individual properties. During consultation with land owners it became apparent that it will be preferred if the proposed power line can be as close as possible to farm boundaries and existing power lines and have the smallest possible impact on nature reserves.

Considering the information available from research conducted through desktop studies, site visits and consultation with Eskom, land owners and other relevant individuals it became apparent that new alternative corridors need to be considered for the proposed power line.

The route corridors as presented in Paragraph 3.3 and the map as attached in Appendix A(3) is a result of, amongst other, these studies.

### 4.3.3 SOILS & AGRICULTURAL POTENTIAL

An *Soil and Agricultural Potential Baseline Study* was undertaken by TerraAfrica Consults and is attached in Appendix C(3). A summary thereof is provided below.

#### Land Types

The following land types were identified within the macro study area:

- *Land Type Ae15*

The land type is found in landscapes where the slope is between 0 and 2% and slope length between 50 and 5000m. The soil forms in this land type mainly consist of shallow, rocky and limestone rich red and yellow well drained soils. These soils are derived from wind transported sands overlying hard rock with dolerite outcrops.

- *Land Type Ae44*

This land type is found in four different landscape positions in areas with slight hills and slopes of between 0 and 8% and slope lengths of 50 to 2000m. The soil forms in this land type mainly have high base status and are shallow, well-drained soils of red colour. The soils in this area are derived from wind transported sands overlying hard rock.

- *Land Type Ae45*

This land type is found in four different landscape positions in areas with slight hills and slopes of between 0 and 8% and slope lengths of 50 to 2000m. The soil forms in this land type mainly have high base status and are shallow, well-drained soils of red colour. These soils are derived from wind transported sands overlying hard rock.

- *Land Type Db2*

The land type represents areas where duplex soils with non-red B horizons comprise more than half of the area covered by it and where the slopes are relatively flat. The soils are dominantly shallow to deep structure duplex with a limited occurrence of swelling soils in depressions. According to this classification, the land capability and land use is predominantly extensive grazing due to climatic and soil constraints. Due to the level terrain soil erosion is not a major factor but the duplex soils are very susceptible to such if the terrain is physically disturbed. The site also falls into an area with low potential due to relatively low and erratic rainfall.

- *Land Type Dc5*

Land type Dc5 consist of a combination of duplex soils where clay accumulation through the soil profiles have resulted in more structured soil forms such as that of the Valsrivier, Swartland and Oakleaf forms. It is found in flatter landscape positions with long slope lengths.



- *Land Type Fb1*

The land type represents a combination of red and yellow-brown apedal soils interspersed with duplex soils. The soils are dominantly shallow to deep structure duplex with a limited occurrence of swelling soils in depressions.

### **Soil classification**

Three different main soil groups are present in the entire baseline area as well as in the areas currently indicated as the proposed alternative sites for the project. Below follows a description of each of the groups:

- *Lithic soil*

The lithic group is dominated by soils of the Mispah and Glenrosa forms and also include rocky outcrops (in this area more specifically dolerite outcrops). This soil group covers the smallest area of the three groups within the study area and is limited to the south-western part of the study site. The pans identified on site are endorheic pans that formed as a result of low infiltration rate of the soils present on site. These pans are underlain by rock and hardpan carbonate horizons where water accumulates during thunderstorms during the summer months. The water in the pans remains present until the high evaporation rate resulted in all the water evaporating. This leaves the soil surface barren and the lack vegetation on the soil surface cause sand to erode away as a result of wind erosion. The rock and/or carbonate horizon does not function as a conventional wetland and therefore the soils present in the pans are not considered sensitive. Sensitivity of these pans is more related to the ecosystems that are supported by the temporary water supply in the summer months.

- *Red-yellow apedal freely drained soil*

The red and yellow apedal horizons are per definition non-calcareous within 1500mm of the soil surface, but may contain small lime nodules as was the case on site. Textures are coarse to medium sand to sandy-loam in the topsoil and medium to fine sandy-loam in the subsoil. Structure is weak blocky (dominant) or apedal in all horizons. These red-yellow apedal soils dominate the western half of the entire study area. The clay content for this soil group is less than 15%.

- *Duplex soils (prismacutanic and pedocutanic soils)*

Duplex soils have strong B horizon structure and a marked increase in clay content down the soil profile, compared to the overlying horizon, from which it is separated by a clear or abrupt boundary. This clear change between adjacent horizons has resulted in the term “duplex soils” being given to this group. The soils have high erosion susceptibility and the B horizon is often sufficiently hard to be an impediment to both root growth and water movement. The marked enrichment with clay in the subsoil results in strong blocky structure and cutanic character (clay skins). The cutans give the peds shiny surfaces that reflect the light and are often a different colour to the interior of the peds. The orthic A horizon often has a weak structure and when it contains sufficient clay it may become hard or very hard when dry (a feature known as ‘hard-setting’).

Amounts of organic matter are low giving their (orthic) top soils a grey or brown colour. Base status varies from low to high, a range directly correlated to the amount of clay in either the overlying horizon or the B horizon itself. The soils have a low phosphate (P) fixing ability and often have moderate reserves of plant nutrients. Duplex soils dominate the eastern half of the site and the clay content ranges between 15 and 35%.

### **Soil Depth**

The Environmental Potential Atlas indicated that soil depths in the study area are divided into two groups i.e. soils shallower than 450mm and soils between 450 and 750mm. Deeper soils are present on the eastern portion of the study area and are associated with the pedocutanic and prismacutanic soil forms. The shallower soils are present on the western part of the side and are found in the areas associated with the red and yellow apedal soils as well as the lithic soil group.

## Agricultural Potential

The dominant land-use in the larger study area is cattle and small livestock farming. This included the commercial farming of cattle, goats and sheep. The average carrying capacity of the veldt is 14ha per unit of large stock. Game farming is also present in the study area. This region is not suited to the production of dryland arable agricultural owing to the low rainfall. Irrigated crop production is practiced in very small areas that are limited by the availability of irrigation water and proximity to the water resource.

The western portion of the study area is dominated by land with no or very low arable agricultural potential due to the shallow nature of the topsoil present. The eastern portion is considered to have intermediate suitability as a result of the deeper soil profiles however the climate only permits successful production in the presence of irrigation systems as a result of the erratic rainfall and high evaporation rate that results in soilwater losses.

## Conclusion

Based on the baseline soil and agricultural potential data gathered for this study, it is the opinion of the soil scientist, from a soil conservation and land capability point of view, that the first alternative for the proposed development be considered favourably. The reason for this is that the first alternative does not cut through a pivot irrigation area like the third alternative and is shorter than the second alternative which means it has impact on a smaller portion of land than the second alternative. Power line construction has a negative impact on centre pivot irrigation as it is not possible to continue with this practise directly underneath these power lines.

### 4.3.4 VISUAL COMPONENT

A *Visual Impact Assessment Scoping Report* was undertaken by Newtown Landscape Architects and is attached in Appendix D(5). A summary thereof is provided below.

## Study area

For the purposes of the visual specialist report the study area is defined as 3km beyond the proposed corridors. Beyond 3km the power line would tend to become part of background and will not have a major impact on views.

## Visual Resource

- *Value of the Visual Resource / Scenic Quality*

High Escarpment with Kimberly Thorn Bushveld, Dronveld Nature Reserve and Game Farms (last two types = moderate to high)	Moderate Rolling plains with savannah and grassland – mostly game and cattle grazing	Low Power infrastructure
<p>This landscape type is considered to have a <i>high</i> value because it is:</p> <ul style="list-style-type: none"> <li>○ A distinct landscape that exhibits a very positive character with valued features that combine to give the experience of unity, richness and harmony.</li> <li>○ It is a landscape that may be considered to be of particular importance to conserve and which has a strong sense of place.</li> </ul> <p>Sensitivity: It is sensitive to change in general and will be detrimentally affected if change is inappropriately dealt with.</p>	<p>This landscape type is considered to have a <i>moderate</i> value because it is:</p> <ul style="list-style-type: none"> <li>○ A common landscape that exhibits some positive character but which has evidence of alteration /degradation/erosion of features resulting in areas of more mixed character.</li> </ul> <p>Sensitivity: It is potentially sensitive to change in general and change may be detrimental if inappropriately dealt with.</p>	<p>This landscape type is considered to have a <i>low</i> value because it is:</p> <ul style="list-style-type: none"> <li>○ A minimal landscape generally negative in character with few, if any, valued features.</li> </ul> <p>Sensitivity: Generally not sensitive to change</p>

- *Sense of Place*

The study area's sense of place derives from the combination of all landscape types described above and their impact on the senses. The wide open, gently undulating grassland, in the eastern and central sections of the study area give it a relatively strong positive sense of place due to the openness and expansive panorama views that the visitor can experience. In the western areas, the openness still prevails but the addition of bushveld and the rising escarpment along the western edge create a greater visual interest and thus a more memorable landscape – hence a greater sense of place. The landscape associated with the eastern section at the Dronfield Nature Reserve, also conjures up a strong sense of place due to the large mature acacia trees. The presence of wild animals and vultures also add to this, however, the intrusion of transmission lines compromises the effect.

## Visual Receptors

- *Views*

Public views to the proposed alternative transmission line corridors area originate along the main public roads which are present throughout the study area. Private views, from residences, originate mostly from the farmsteads scattered about the site. Most of these occur along the northern alternative with the fewest along alternative one corridor. Due to the flat and open nature of the landscape many views from these vantage points would be exposed to one or other of the alternative alignments of the transmission line. However, due to the greater number of residences along alternative 3, the proposed 400kV power line would have the greatest impact on sensitive views along this corridor.

- *Sensitive Viewers and Sensitive Viewer Locations*

<b>High</b> Residential, Farmsteads and Game Farms	<b>Moderate</b> Public roads N12, R31 and local roads	<b>Low</b> Far eastern section of the study area
<ul style="list-style-type: none"> <li>○ Visitors of tourist attractions and travelling along local routes, whose intention or interest may be focused on the landscape;</li> <li>○ Communities where the development results in changes in the landscape setting or valued views enjoyed by the community;</li> <li>○ Occupiers of residential properties with views affected by the development.</li> </ul>	<ul style="list-style-type: none"> <li>○ People travelling through or past the affected landscape.</li> </ul>	<ul style="list-style-type: none"> <li>○ Visitors and people working within the study area and travelling along local roads whose attention may be focused on their work or activity and who therefore may be potentially less susceptible to changes in the view.</li> </ul>

## Comparison of Alternative Corridors

A visual sensitivity mapping exercise was done on the Visual Resource and Visual Receptor maps (attached in Appendix D5). Visually sensitive landscapes that have an inherent scenic beauty, including the escarpment and associated bushveld, the Dronfield Nature Reserve and the Vaal River valley were highlighted as being the most sensitive within the study area. Sensitive viewer locations impacted by the corridors were also mapped. These conflict points were highlighted as Conflict Areas, which are defined as a sensitive viewing point or receiving landscape occurring within a 3.0km radius of a proposed corridor. Within this range the viewer would experience a moderate to high visual exposure to the power line, which could result in a high visual impact.

For each of the corridors a map was generated by amalgamating the sensitivity mapping information and the proposed alternative corridors. By studying the maps (i.e. to determine which corridor has the most conflict areas) it becomes clear that the most favourable option would be the first alternative corridor which runs along the southern and western edges of the study area. This alignment has the fewest possible occurrences of conflict areas (21 potential conflicts). The second possible option from a visual perspective would be the second alternative corridor (28 conflicts) and the least preferred would be the third alternative corridor, which

has 38 potential conflict areas. It however needs to be stated that the far eastern section of all alternatives (they are all within the same corridor) is potentially problematic as 13 potential conflict points occur here and the line is proposed to be routed through a nature reserve, well known for its vulture colony.

### **Visual Issues**

The existing visual condition of the landscape that may be affected by the proposed power transmission line has been described. The study areas scenic quality has been rated and highly sensitive viewing areas and landscape types identified and mapped. The next phase, after the scoping phase, is to assess the impacts on the visual resource.

It is anticipated that visual resource impacts would result from the construction, operation, and maintenance of the proposed 400kV power transmission line. Specifically, impacts would result from the transmission line being seen from sensitive viewpoints (residential and tourist facilities) and from its effects on the scenic values of the landscape. Impacts to views are the highest when viewers are identified as being sensitive to change in the landscape, and their views are focused on and dominated by the change. Visual impacts occur when changes in the landscape are noticeable to viewers looking at the landscape from their homes or from tourism/conservation areas, travel routes, and important cultural features and historic sites, especially in foreground views. The visual impacts that would result from the construction and operation of a transmission line are usually direct, adverse, and long-term and will be addressed in the assessment phase of the project.

## **4.4 SUMMARY OF ENVIRONMENTAL SENSITIVITY**

From a natural environment point of view the First and Second Route Corridor Alternative are the most acceptable with the Third Route Alternative being the least acceptable. However, during the public participation process and community consultation it became clear that both of these routes could not be accepted as originally proposed. Exclusive game farms, private nature reserves and other developments would be affected and it was required that the routes be re-assessed with significant assistance of the directly affected landowners. The result being the amended route alternative map as included in Appendix A(3). The proposed routes on this map will be investigated in more detail during the environmental Impact phase of the project; however, it does appear that reasonable consensus among the directly affected landowners regarding a proposed route could be reached.



## CHAPTER 5: PUBLIC PARTICIPATION

### 5.1 OBJECTIVES OF THE PUBLIC PARTICIPATION PROGRAMME

The main aim of public participation is to ensure transparency throughout the EIA process. The objectives of public participation in this EIA are the following:

#### During the Scoping Phase

- To identify all potentially directly and indirectly affected stakeholders, government departments, municipalities and landowners;
- To communicate the proposed project in an objective manner with the aim to obtain informed input;
- To assist the Interested & Affected Parties (I&AP's) with the identification of issues of concern, and providing suggestions for enhanced benefits and alternatives;
- To obtain the local knowledge and experience of I&AP's;
- To verify that the concerns and issues raised by I&AP's define and guide the scope of further studies to be undertaken during the Impact Assessment;
- To ensure that all reasonable alternatives are identified for assessment in the EIA Phase.

#### During the Environmental Impact Assessment Phase

- To communicate the progress of the EIA study as well as the proceedings and findings of the specialist studies;
- To ensure that informed comment is possible;
- To ensure that all concerns, comment and objections raised are appropriately and satisfactorily documented and addressed;
- To obtain reasonable consensus with regards to the final route corridor proposed for the Eskom project.

### 5.2 PROCESS FOLLOWED

Significant measures were taken to ensure that all stakeholders and I&AP's were informed of the project and were allowed the opportunity to place their concerns and comment on record.

The Public Participation Process (PPP) followed is summarised as follows:

- The PPP for this project kicked-off during January 2014.
- All potential directly and indirectly affected landowners, stakeholders and government departments had been identified. The following I&AP lists were compiled (and is included in Appendix E(8) of this report):-
  - List of Government Departments
  - List of Municipalities
  - List of General Stakeholders
  - List of Directly Affected Landowners
- A Background Information Document (BID) was compiled and distributed to all the stakeholders listed. The method of distribution included e-mail, fax and/or postal service. Both the BID and the proof of distribution of the BID are included in Appendix E(1).
- Eighteen onsite advertisements (in both English and Afrikaans) were placed along the three route corridor alternatives initially proposed. Proof of placement of these onsite advertisements are included in Appendix E(2).

- Seven newspaper advertisements were placed in the following publications:

Regional Publications:

Kalahari Bulletin, 13 February 2014  
 Free State Times, 14 February 2014  
 Kathu Gazette, 15 February 2014  
 Volksblad, 15 February 2014  
 Diamond Fields Advertiser, 17 February 2014

National Publications:

Sunday Times, 16 February 2014  
 Rapport, 16 February 2014

- Two Public Open Days were held on Wednesday 25 June 2014 and on Thursday 26 June 2014:
  - Formal presentation at 17h00 at the Kimberley Big Hole Protea Hotel, followed by a discussion period up to 20h00.
  - Formal presentation at 10h00 at the NG Church, Pretorius Street, Barkly West, followed by a discussion period up to 13h00.

The objectives of this Public Open Day were the following:

- To communicate the purpose and details of the proposed project;
  - To communicate details of the Environmental Impact Assessment process;
  - To present the alternative routes which are being considered and investigated;
  - To present the findings of the specialist studies;
  - To enable informed input from landowners, stakeholders and interested and affected parties.
  - To provide an opportunity to address questions to a panel of specialists and/or Eskom personnel.
  - To reach a balance and agreement between the Technical Requirement, Environmental Requirement and the Community Requirement;
  - To strive for reasonable consensus regarding a proposed route corridor with viable alternative(s)
- The Distribution of the Draft Scoping Report is done as follows:
  - Notification to all the listed stakeholders of the availability of the Draft Scoping Report at a public venue was done via email, fax and/or postal service. Where an e-mail address was available an internet link to the Draft Scoping Report was provided. A 40-day response period is applicable.
  - The Draft Scoping Report would be linked to the SAHRIS website of the South African Heritage Resources Agency (SAHRA).
  - Hard copies of the Draft Scoping Report would be hand-delivered to the following authorities;

**Free State Province**

- Dept of Economic Development, Tourism & Environmental Affairs, Free State Province**  
 The Acting Director - Environmental Quality Management, Ms Grace Mkhosana  
 Bojanala Building; 34 Markgraaf Street; Bloemfontein; 9301  
 Tel 051 400 4812 / 051 400 4817
- Department of Water and Sanitation, Free State Region**  
 Please note that the Free State Department of Water and Sanitation informed us that they will not comment on this project because it falls outside of the Upper Orange Water Management Area. The relevant office on this matter is the *Northern Cape* Department of Water and Sanitation, which is responsible for the Lower Vaal Water Management Area. Free State DWS is however a registered I&AP and will receive all correspondence electronically.
- Tokologo Local Municipality**  
 The Municipal Manager: Mr Kelihle Motlhale  
 Market Square, Voortrekker Street, Boshof; 8340  
 Tel 053 541 0014

### ***Northern Cape Province***

- **Department of Environment and Conservation, Northern Cape**  
The Environmental Officer: Ms Dorien Werth  
90 Lang Street, Vasco Building, Kimberley  
Tel 053 807 7468
- **Department of Water and Sanitation, Northern Cape Region**  
Acting Director: Water Sector Regulation and Use: Ms Nosie Mazwi  
28 Central Road; Room B 24; Beaconfield; Kimberley, 8301  
053 836 7600 / 082 802 7128
- **Dikgatlong Local Municipality**  
The Municipal Manager: Mr Robert Harold  
33 Campbell Street, Barkly West  
Tel 053 531 0671 / 053 531 0624
- **Sol Plaatje Local Municipality**  
The Municipal Manager: Mr G Akharwaray  
Sol Plaatje Drive, Kimberley  
Tel 053 830 6911 / 053 830 6700

### ***Deviation requested***

The following deviations from the public participation process were applied for with the Department of Environmental Affairs in terms of Regulation 54(5) of GN R. 543:

#### Deviation from GN R. 543 Item 54(2)(b)(ii):

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

- (b) giving written notice to—
- (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

#### Deviation from GN R. 543 Item 54(2)(b)(iii)

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

- (b) giving written notice to—
- (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;

### ***Reason for deviation request***

Three different route alternatives were identified for this power line proposal and a total of 274km with a 2km wide corridor will be investigated. It is not possible, nor feasible to inform all the occupiers of the land or the adjacent land of this development proposal. Numerous steps were however taken to ensure that nobody is negatively affected by the allowance of the deviation request (refer to the public participation followed as described above). The deviation request was granted by the Department of Environmental Affairs by accepting the Application Form, dated 13 March 2014.

## 5.2 ISSUES RAISED DURING THE SCOPING PHASE

### 5.2.1 WRITTEN COMMUNICATION WITH I&AP'S: INITIAL ADVERTISING PERIOD UP TO THE PUBLIC OPEN DAY

Correspondence between I&AP's and Landscape Dynamics are attached in Appendix E(4)

*Please note*

- AMP Property Management & Land Acquisition (the route identification specialists on the project team) contacted the affected landowners directly to discuss issues as mentioned below. The proposed power line route corridors were adjusted in some cases to accommodate the landowners' concerns.
- Comment summarised below was either addressed by AMP via direct consultation with the applicable landowner or are responded to in Paragraph 5.2.2, "Main Issues Raised at the Public Open Day".
- The routes as proposed in the amended route map (attached in Appendix A4) could still be amended or could even result in a combination of routes, depending on the outcome of specialist investigations, further community consultation and input from the directly affected landowners.
- It is important to note that Eskom cannot construct any power lines without the written consent of the landowner, since a servitude has to be registered for the power line and substation.

#### **Van de Wall & Partners, Mr JJ Botma on behalf of Portion 1 of Farm 232 – Gert Venter Faber; Portion 2 of Farm 232 – Ostiprop 1155 (Edms) Bpk; and Farm 217 – Broekskeur Boerdery (Edms) Bpk**

- All three above-mentioned landowners object to the route as proposed in the Background Information Document.
- A request was made that the existing power lines should be shown on the proposed route maps.

*Response from Landscape Dynamics*

- The maps as presented during the Open Day, as well as the new route alternative map show the existing power lines clearly.

#### **Van de Wall & Partners, Mr JJ Botma on behalf of the Johan Kriek Family Trust**

- The landowner strongly objects to the power line crossing his property, a popular game farm.
- The Trust insisted that the following studies should be undertaken: an EIA as well as an Economic Impact Assessment, clearly indicating the financial implication of the power line on the existing business.
- The following two websites explain the extent of the business: [www.mattanu.com](http://www.mattanu.com) and [www.kriekheli.com](http://www.kriekheli.com).
- It is not understood why existing servitudes can't be used.
- A power line crossing the properties will have a severe negative impact on the operations of the game farm, since, amongst other, regular helicopter flights are undertaken in the effective management of the game farm (game counts, game capture, etc.).

Dr Johan Kriek also contacted Landscape Dynamics directly and the following objections were lodged:

- It is absolutely not acceptable for the line to cross the following properties: Rosalind 224 (portion Anex), Portion 2 of the Farm Greefputs 169 (current owner Mr Willem Van Zyl).
- They are at present running an eco-tourism business, a helicopter business and breed with exotic game species.
- The line could run adjacent to other existing lines close to Barkly West.

*Response from Landscape Dynamics*

- AMP (the route identification specialists) contacted Mr Johan Kriek and *New Route Alternative 1* (map attached in Appendix A.3) is a result of negotiations with Mr Kriek - the line will not cross his properties.



**Mr PA Versluis: Landowner - Farm Rosalind Portion 2 nr 224 (Buitenzorg)**

The planned route crosses his property and he is willing to enter into negotiations with Eskom.

*Response from Landscape Dynamics*

- Comment noted

**The De Beers Group of Companies: Ecology Division: Ecology Manager - Dr Corne Anderson and Exploration Administrator - Ms Anette Basson**

- The Ecology Division of De Beers Consolidated Mines (Pty) Ltd strongly objects to the construction of the proposed 400kV power line on any of its earmarked properties.
- The first of their properties directly impacted upon by the proposed power line route are Samaria 75, Picardi 72 and Kenilworth Estate 71. These properties form part of the bigger Dronfield Nature Reserve. The proposed alternative purple route (1E via 2F to 2G) also traverses De Beers's properties Waterkolk 95, Randt Plaats 96, Vogelstruis Pan 98 and Klipfontein 99. These properties fall within the bigger Rooipoort Nature Reserve system and they are vehemently opposing this option.

The following reasons for the objections are listed below:

- Both Dronfield and Rooipoort reserves have been managed as biodiversity offset areas for the mining operations in the Kimberley area for more than a hundred years, and these protected areas can be considered benchmark ecological and biodiversity reserves. Multiple Anglo Boer War sites (Dronfield) and world renowned Archaeological sites (Rooipoort) occur on these reserves.
- Dronfield is the home of more than 75 breeding pairs of African White-backed Vulture, a protected species, which is prone to power line collisions and electrocutions. As Dronfield is already crisscrossed by Eskom power lines, collisions and electrocutions are experienced. An additional line traversing the reserve will increase the risk of the above-mentioned. The vultures and other raptors also use the existing power lines for roosting purposes, which poses a risk to aviation in terms of aircraft-bird collisions. An additional line on Dronfield, which falls within the approach and take off angles for the Johannesburg/Kimberley route, will also definitely increase the risk of such collisions.
- An additional power line on especially Dronfield will seriously obstruct an already strained collision situation in terms of aerial censuses and game capture operations, where a helicopter is used to perform the tasks. Operational requirements will definitely be hindered by an additional power line on both the reserves. Hunting is forms part of their management strategy on both reserves, and Eskom personnel, who frequently arrive unannounced, not only endanger themselves, but also interrupting the hunting activities which obviously cannot continue while civilians are on the property
- Both Dronfield and Rooipoort are popular eco-tourist destinations, and this proposed power line will definitely impact negatively on the aesthetical properties of the reserves.
- The main revenue generators are game sales, hunting and ecotourism and this power line, in terms of visual impact, will negatively impact on our conservation and business objectives.
- DRONFIELD: The lodging of a public complaint from De Beers Ecology Division (09/12/2012) to Eskom, when protected Camel Thorn trees were cut and removed on Dronfield Nature Reserve by an Eskom approved contractor, without the appropriate licence from the Department of Forestry, resulted in the Safety, Health and Environmental (SHE) report (SAP Ref NO: 37215). This issue was addressed by Eskom.

Other impacts of the power lines are:

- The Vulture habitat as more big trees will have to be removed
- The impact on Kudu, Giraffe and impala habitat
- Sensitive game species - huge poaching risk
- Increased Eskom contractors affecting hunting operations/ safety risks

*Response from Landscape Dynamics*

- Their objections were forwarded to the avifaunal specialist, ecologist as well as heritage specialist for their consideration.
- AMP (the route identification specialists) contacted Dr Anderson and *New Route Alternative 1* (map attached in Appendix A.3) is a result of negotiations with Dr Anderson - the line will not cross the above-mentioned properties.

**Mainstream Renewable Power SA: Solar Development Project Manager: Mr Jonathan Frick**

- The servitude corridor between Boundary and Ulco impacts on 3 of Mainstream's projects:
  1. Most notably is the servitude route to the north designated to run through our constructed round 1 solar PV plant indicated by the red square in the image (Boundary – Ulco proposed route obstacles).
  2. Additionally the same northern route runs across the Droogfontein PV 2 (Bid in in round 2 of the REIPPP) and Droogfontein PV 3 both developed solar PV projects.
  3. Finally both routes potentially cross the 132kV grid connection planned for Droogfontein PV3 project connecting into Homestead SS.
- To the south of ULCO the servitude routes cross 3 land parcels which they have under option as well as the area where they are developing a number of solar projects. If the southern route into Ulco is taken there would overlap of the projects.

*Response from Landscape Dynamics*

- AMP would have contacted Mainstream to discuss possible routes crossing their properties.

**Bird Life SA – Policy and Advocacy Manager: Mr Simon Gear**

They requested to be registered as an I&AP, with particular reference to bird collisions with the proposed power lines. The following information must be pass on to the avifaunal specialist:

- Information on the nearest Important Bird and biodiversity Areas can be sourced here: <http://www.birdlife.org.za/conservation/iba/iba-directory>
- Although this project falls outside of an IBA, there are breeding areas for various collision prone birds, including vultures, in the vicinity.
- The guide for accessing avian data for EIAs.

*Response from Landscape Dynamics*

- The information was forwarded to the avifauna specialist for this project.

**Department of Labour, Free State Province: The Chief Director – Ms Marsha Bronkhorst**

- The correct contact person for the Free State province is Mr Nomfundo Douw-Jack
- The contact person in the Northern Cape is Ms Monica Lepheane

*Response from Landscape Dynamics*

- The I&AP list was updated to reflect above-mentioned names.

**Department of Agricultural and Rural Development, Free State Province: Chairperson: Subdivision Application and Evaluation Committee: Mr Izak Venter**

- The Northern Cape Department should comment on this proposal.

*Response from Landscape Dynamics*

- The Boundary-Ulco project stretch across both the Free State and the Northern Cape.
- The Department of Agriculture, Forestry and Fisheries (Land Use and Soil Management) commented on the Beta-Boundary Project as follows (it is concluded that this comment is also applicable to the Boundary-Ulco Project): They confirmed that the transfer of a portion of land to a statutory body, in this case Eskom, is not subject to the provisions of the subdivision of Agricultural Land Act, Act 70 of 1970.

**SANRAL: Statutory Control: Ms Rene de Kock**

If services need to be constructed within 60m measured from the road reserve fence or if a crossing of the national road (N12) is required, the services owner must apply for a wayleave.

*Response from Landscape Dynamics*

- Comment noted

**Northern Cape Department of Water Affairs: Deputy Director: Water Sector Data Management: Ms Mahadi S. Mofokeng**

- Future communication regarding this project should be communicated to Ms Mofokeng since Mrs Mazwi is on maternity leave until September and Ms Mofokeng am currently acting on her position.

*Response from Landscape Dynamics*

- The I&AP list was updated to reflect this information. No further comment from the Department was however received.

**5.2.2 MAIN ISSUES RAISED AT THE PUBLIC OPEN DAY**

The PowerPoint presentation as presented at the Open Day is attached in Appendix E(7)

The project components, EIA process as well as the key findings of the specialist studies up to date were communicated at the Open Day. A Draft Environmental Sensitivity Map was presented on which additional comment was added to during discussions.

It was explained during the introduction to the meeting that the route alternatives as presented are in draft form and that the routes may change considerably – the routes as presented were identified to kick-off route negotiations, specialist studies and investigations. Concerns raised during the EIA process will determine the final route which will be presented to DEA for Environmental Authorisation.

Once the Environmental Authorisation is in place, Eskom will appoint evaluators to evaluate the land and establish the compensation price according to the current market value of the land. This would be negotiated with the landowners. Servitudes with a 55m width will be registered for the purpose of the power line. Eskom will have the right to access the servitude for construction, maintenance and inspection purposes.

Discussions took place after the presentations were given at the two respective meetings.

It was stated by Landscape Dynamics that concerns raised at the meeting must also be put in writing so that formal responses thereto can be provided in the Draft Scoping Report. Very little written concerns were however received after the meeting. The main issues and comments raised can be summarised as follows:

- The Eskom maintenance teams which maintain existing power lines very often cause damage to property and farm roads, cutting trees without permission, leaving farm gates open, etc.  
*Response: Eskom has official complaint procedures which should be followed in this regard. The EMP that will be compiled during the EIA phase will include the relevant contact details and complaints structure to address these enquiries and claims.*  
*Regarding the new transmission power lines, it is important to note that the construction and maintenance teams will be bound by the stipulations as per the EMP. Each landowner will receive a copy of the EMP and they can ensure that the various contractors abide by the EMP. It was emphasised that the landowners could forward specific conditions to Landscape Dynamics for inclusion in the EMP.*
- It was suggested that a trust, with the landowners and Eskom being the trustees, should be established. The idea would be that the money in this trust should be used to compensate for any damage caused by Eskom on any property. This is recommended because previous experience showed that it is very

difficult, if not impossible to be compensated for damage to fences, roads and so on made by the Eskom construction and maintenance teams. It can take very easily up to 2 years before compensation is paid should the normal Eskom complaint structure be utilised.

*Response: Eskom responded that they would communicate the matter with the decision-makers at Eskom but they are concerned that it would create a precedent for projects all over the country and this is problematic.*

- Reasonable compensation would be required. Numerous game farms focus on eco-tourism, exotic farming and hunting and compensation negotiations should accommodate these land uses.

*Response: This should be communicated with the evaluators. The landowners will have the opportunity to meet with them on site.*

- A concern was raised that land is not usable for grazing for a period up to a year during the construction period. Compensation should take this loss of income into account.

*Response: This should be communicated with the evaluators. The landowners will have the opportunity to meet with them on site.*

- Eskom power lines are not suitable at all in areas where game farming is dependent on management via helicopters.

*Response: Noted*

- A question was raised on the safe distance between houses and power line servitudes.

*Response: Houses can be built immediately adjacent to the 55m servitude.*

- The concern was noted that from the Visual Impact Report it is taken that power lines are generally considered a visual intrusion within 3km from the line.

*Response: It will be strived to accommodate this issue as far as reasonably possible with the final route corridor alignment.*

- A concern was raised that some of the specialist reports were lacking important information, because not all game farms had been listed.

*Response: The reports were still in draft format and would be finalised in appropriate detail for the Scoping Report.*

- The need for the project was questioned. The concern was raised that eco-tourism and game farms will be impacted on to accommodate future mining that would ruin the current businesses.

*Response: Eskom has to plan and augment the Transmission System in Accordance with the South African Grid Code. In the past 15 years load, has increased in the Hotazel-Kuruman-Kathu-Kimberley-Dealesville corridor by 32.5%. The forecast in this corridor anticipates a huge load growth due as a result of high mining activities (diamond, manganese and iron ore mining), electrification and the establishment of small businesses in underdeveloped areas as well as increased housing densities and commercial development in developed areas. Growth is anticipated to quadruple in the next 25-30 years. The existing network will not be able to support the Hotazel-Kuruman-Kathu-Kimberley-Dealesville corridor load past 2021, strengthening will therefore be required to support the forecasted load and potential renewable generation.*

- Numerous solar developments had been confirmed and indicated on the Draft Environmental Sensitivity Map.

*Response: This will be considered in the final proposed route corridors.*

- The question was raised why the new power lines could not be strung on the existing pylon structures.

*Response: It was responded by Eskom that bigger conductors are required, resulting in a requirement for bigger structures and the existing pylons had not been built with that in mind. It would be required to decommission the existing lines, resulting in a break-down of power supply. Bigger servitudes would also have to be registered. It is not technically viable.*

- The power line should run as close as possible to railway lines, so that existing infrastructure can be utilised for the new power line. This could also assist in reducing habitat fragmentation and edge effects.

*Response: It was explained by the Eskom engineers that the Eskom power lines may cross railway lines, but it may not run adjacent to railway lines. It should be at least 1km away from existing railway lines.*



- It was requested that the routes focus on road alignments to limit impact.  
*Response: Eskom generally strives to restrict route alignments as far as technically and environmentally viable along existing infrastructure such as roads, property boundaries and existing power lines.*

The outcome of the meetings can be summarised as follows:

- Numerous objections regarding the proposed route alternatives were received.
- The fact that the power line project is a necessity was realised; therefore the general feeling of the affected landowners is that of support for the project. Further communication with regards to a practical and viable route corridor is required.

It was concluded that further stakeholder meetings and significant communication will take place between Landscape Dynamics, AMP (the route identification specialists on the project team) and the key stakeholders, specifically the directly affected landowners. The main aim of the discussions would be to establish a recommended route corridor with viable alternatives. Viable route alternative corridors which result from the Scoping Phase will be provided in the Draft Scoping Report on which all the Interested & Affected Parties would have the opportunity to comment.

Furthermore, the relevant specialist studies would be updated to accommodate new information supplied at the Public Open Day.

#### 5.2.3 WRITTEN COMMUNICATION WITH I&AP'S ON AND AFTER THE PUBLIC OPEN DAY

Correspondence between I&AP's and Landscape Dynamics are attached in Appendix E(8).

##### **Transnet Freight Rail Johannesburg: Mr Vincent Matabane**

Mr Matabane forwarded the invitation to attend the public open day to colleagues, requesting that they should deal with this application.

*Response from Landscape Dynamics*

- No further comment from Transnet was received

##### **South African Heritage Resource Agency**

SAHRA is unable to issue a Final Comment as more information is required. Based on the submitted information, it is likely that the proposed development will impact significant heritage resources. As such, SAHRA requires that a field based heritage impact assessment (Phase 1 HIA) be completed that assesses the impact of the proposed development on all heritage resources including, but not limited to, archaeological heritage, rock art, any significant structures and intangible heritage. This assessment must not only assess impacts in terms of the development footprint, but must also assess broader, indirect impacts to heritage that may result from the proposed development.

This assessment must satisfy SAHRA's minimum requirements for impact assessments and must comply with the requirements in Section 38(3) of the NHRA and as such, this assessment must provide recommendations regarding the mitigation of any identified direct and indirect impacts to heritage resources. No further assessment of impacts to palaeontological heritage is required.

*Response from Landscape Dynamics*

- Their comment was forwarded to the heritage specialist to take into account when the final studies are conducted during the EIR phase of this project.
- The Scoping Report as well as EIR report will be submitted to SAHRA via the SAHRIS website.

##### **Mr PA Versluis: Landowner Rosalind Gedeelte 2 nr 224 (Buitenzorg)**

Route Alternative 3 will be the best because it runs on the northern side of the exiting two lines.

*Response from Landscape Dynamics*

- Comment noted

**Mr Bennie Liebenberg, also on behalf of Mr Willem van Zyl: Farms Carolusdrif, Greeffputs & Melkvleie)**

- The power line route above the railway line is preferred. Mr van Zyl indicated that a possible route across Melkvleie would be negotiable, but not across Greeffputs.

*Response from Landscape Dynamics*

- Comment noted

**DO Potgieter & Son Farming: Ms Patsy Potgieter**

She requested that previous communication be forwarded to her, since no previous correspondence from Landscape Dynamics was received.

*Response from Landscape Dynamics*

- The Background Information Document and applicable maps were emailed to Ms Potgieter.

**Mainstream Renewable Power SA: Solar Development Project Manager: Mr Jonathan Frick**

- He will not attend the open day due to late notice. They still have had no contact from the land negotiators regarding the power line crossing land parcels they have under option. Consent need to be obtained from Mainstream to cross the land parcel with the proposed gridlines.

*Response from Landscape Dynamics*

- AMP will contact Mr Frick as the need arises.

#### 5.2.4 WRITTEN COMMENT ON THE DRAFT SCOPING REPORT

Comment received on the Draft Scoping Report (this document) will be included in the Final Scoping Report that will be submitted to the Department of Environmental Affairs for consideration.

### 5.3 CONCLUSION OF PUBLIC PARTICIPATION DURING THE SCOPING PHASE

The main issues raised during the initial advertising period are related to the following:-

- Impact on future planning , i.e. solar energy farms
- Impact on existing land use – eco-tourism, hunting, agriculture
- Impact on natural environment – vegetation, wildlife and avi-fauna
- Visual Impact
- Cumulative impact of additional power lines on properties with impact on property values
- More technical detail relating to the proposed project is required
- Eskom access during the operational phase is problematic

All these issues will be addressed in appropriate detail during the EIA Phase of the project.

## CHAPTER 6: IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

### 6.1 METHODS USED TO IDENTIFY IMPACT

Environmental issues and impacts have been identified through the following means:

- Correspondence with Interested and Affected Parties, including directly affected landowners, general stakeholders and relevant authorities;
- Consultation with the EIA Project Team, supported by the Eskom Project Team;
- Evaluation and consideration of relevant existing environmental data and information;
- The general knowledge and extensive experience of the Environmental Consultants in the field of Environmental Impact Assessments for linear development planning.

### 6.2 LIST OF IMPACTS ASSOCIATED WITH THE DEVELOPMENT

#### 6.2.1 EXPECTED NEGATIVE IMPACTS

##### Direct (Primary) Impacts

###### *Planning Phase:*

###### *Route selection:*

- Impact on future planning, i.e. solar energy farms, eco-tourism and game farming
- Impact on existing land use
- Impact on cultural heritage resources
- Impact on natural habitat
- Visual impact (Change of character and atmosphere of the area, change in land use)

###### *Construction Phase:*

- Impact on natural habitat
- Increased risk for surface and groundwater pollution
- Increased risk of erosion
- Influx of labourers to the area with associated crime, access control, fire risk and habitat destruction
- Impacts associated with construction activities such as noise and dust

##### Indirect (Secondary) Impacts

###### *During Construction & Operational Phase:*

- Influx of labourers to the area – associated increase in crime

###### *During Operational Phase:*

- Impact on property values
- Impact as a result of Eskom inspections and maintenance, i.e. on hunting activities, crime & safety and habitat destruction (pollution, cutting of trees, placement of snares, etc.)

##### Cumulative Impacts

- Impact on tourism potential in the macro area
- Impact on agricultural potential in the area

### 6.3 EXPECTED POSITIVE IMPACTS

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

- The project will result in a reliable supply of electricity to the Eskom grid – less power outages and failures are likely to occur;
- With the implementation of the project it is possible to accommodate new development and associated applications for electricity supply in the macro area;
- The proposed Eskom Strengthening Phase 4 Project is being planned in a legal, pro-active and structured manner taking all development components, potential and restrictions into account;
- The project will provide employment and training opportunities, mostly during the construction phase of the project development.

### 6.4 PROPOSED MANAGEMENT OF IMPACTS AND MITIGATION

Identified impacts and mitigation will be monitored through the application of the Environmental Management Plan (EMP) to be included in the Environmental Impact Report.

The main objectives of the EMP are 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.

Specifications will be supplied for the following project development phases:

Design & Pre-construction Phase  
Construction Phase  
Operational Phase



## CHAPTER 8: PLAN OF STUDY FOR EIA

The Department has to consider the Final Scoping Report and make a decision to

- Request amendments to the report;
- Request further alternatives to be considered;
- Reject the scoping report or plan of study for EIA because it does not substantively comply with the requirements of the Regulations;
- Or accept the scoping report.

The decision to grant or refuse the application cannot be made directly after the scoping process.

There are certain actions that should be undertaken and issues that would be addressed in the final Environmental Impact Report (EIR).

DEA has to review the EIR and EMP and one of the following decisions may apply:

- Grant authorisation of the activity
- Refer the report for specialist review
- Request further information or investigations
- Refuse the activity

**The following is recommended as a Plan of Study for the EIA to be documented in the EIR in order to finalise the environmental impact assessment procedure:**

### **A. BACKGROUND**

*The EIR will focus on detail compared to the Scoping Report (which is the basic overview). It will include the following:*

- *Confirmation of relevant legal requirement :*  
*Cognizance would be given to all the relevant legal requirement, documents and guidelines as identified during the Scoping Phase and documented in the Scoping Report. The most obvious relevant legislation that will be addressed in the Final EIR with proof of relevant submissions includes:*
  - *The National Environmental Management Act (Act 107 of 1998)*
  - *The National Water Act No 36 of 1998*
  - *The National Heritage Resources Act*
- *Project Description:*
  - *a clear description of all the project components;*
  - *relevant technical details;*
  - *a clear description of the final recommended route corridor with viable alternatives;*
- *Final specialist investigations;*
- *Proceedings; findings and recommendations a the Public Participation Process during the EIA Phase;*
- *An impact assessment based on issues and alternatives as identified during the Scoping Process;*
- *Mitigatory measures to address the identified impacts;*
- *An Environmental Management Plan to formalise legal requirement; communication channels as well as the mitigatory measures.*

## **B. SPECIALIST INPUT DURING THE EIA PHASE**

Status quo reports had already been prepared by the specialists during the Scoping Phase. Environmental components that are more site-specific had only been done in draft format. The purpose of these reports during the Scoping Phase was to identify obvious areas and/or “No Go” zones before the process has developed too far. Since the Draft Scoping Report is presented to all the I&AP's, it is possible that the route corridors could be changed in which case the specialists have to revisit the site in order to prepare their final reports for the EIA Phase of the project.

The specialist reports already finalised during the Scoping Phase due to the macro area investigated (not being site-specific) include the following:

- Socio-economic, Tourism and Land Use Potential Impact
- Palaeontology Report
- Geotechnical Engineering Investigation
- Soil & Agricultural Potential Report

The following draft specialists' reports will be finalised for the Environmental Impact Report:

- Freshwater Study – Proof of submission of the Water Use License (WULA) will be provided
- Terrestrial Fauna & Flora Study
- Bird Impact Report
- Heritage Impact Assessment – Proof of support for and/or final recommendations in terms of the project by SAHRA will be provided
- Visual Impact Report

Environmental Sensitivity Maps will be provided for each relevant component.

## **C. IMPACT ASSESSMENT**

Impacts will be evaluated and assessed in terms of

<b>Extent of impact</b>	<b>Explanation of extent</b>
Site	Impacts limited to construction site and direct surrounding area
Local	Impacts affecting environmental elements within the local area / district
Regional	Impacts affecting environmental elements within the province
National	Impacts affecting environmental elements on a national level
Global	Impacts affecting environmental elements on a global level
<b>Duration of impact</b>	<b>Explanation of duration</b>
Short term	0 - 5 years. The impact is reversible in less than 5 years.
Medium term	5 - 15 years. The impact is reversible in less than 15 years.
Long term	>15 years, but where the impacts will cease if the project is decommissioned
Permanent	The impact will continue indefinitely and is irreversible.
<b>Probability of impact</b>	<b>Explanation of Probability</b>
Unlikely	The chance of the impact occurring is extremely low
Possible	The impact may occur
Probable	The impact will very likely occur
Definite	Impact will certainly occur

<b>Magnitude/Intensity of impact</b>	<b>Explanation of Magnitude/Intensity</b>
<i>Low</i>	<i>Where the impact affects the environment in such a way that natural, social and cultural functions and processes are not affected</i>
<i>Moderate</i>	<i>Where the affected environment is altered, but natural, social and cultural functions and processes continue albeit in a modified way</i>
<i>Severe</i>	<i>Where natural, social and cultural functions or processes are altered to the extent that it will temporarily or permanently cease</i>
<b>Significance of impact</b>	<b>Explanation of Significance</b>
<i>None</i>	<i>There is no impact at all</i>
<i>Low</i>	<i>Impact is negligible or is of a low order and is likely to have little real effect</i>
<i>Moderate</i>	<i>Impact is real but not substantial</i>
<i>High</i>	<i>Impact is substantial</i>
<i>Very high</i>	<i>Impact is very high and can therefore influence the viability of the project</i>

#### **D. PUBLIC PARTICIPATION PROGRAMME: EIA PHASE**

- A second Public Participation Programme (PPP) will be undertaken as per the prescribed guidelines of DEA and according to the stipulations of the EIA Regulations (it is noted that a PPP is compulsory for both the Scoping and EIA phases).
- The PPP for the EIA Phase include the following :
  - Distribution of the Draft EIR for comment
  - Possibly a Public Open Day and/or Stakeholder Meeting(s)
  - Continuous and direct liaison with the directly affected landowners will take place to strive to ultimately present route corridors (preferred and viable alternatives) on which reasonable consensus have been reached.
  - Distribution of the Final EIR – to confirm that all comment has appropriately been documented and satisfactorily addressed in the document that will be submitted to DEA for final consideration of Environmental Authorisation
- All comment, objections and concerns raised and submitted by the I&AP's will be addressed during the PPP and all proceedings, recommendations and correspondence will be documented in the final EIA Report to be submitted to DEA.

#### **E. ENVIRONMENTAL MANAGEMENT PLAN**

An Environmental Management Plan (EMP) has to be compiled to complete the EIR. The main objectives of the EMP are to identify actions and mitigation measures to minimise expected negative impact and enhance positive impact during all development phases (design/pre-construction, construction, and post-construction/operation) in terms of community issues, construction site preparation, construction workers, habitat protection, security, etc. Communication channels and contact details must also be provided.

## CHAPTER 9: CONCLUSION

### 9.1 LEGAL REVIEW

The objectives of the Legal Review for an Environmental Impact Assessment are the following:

- To review the processes followed with relevant to applicable legislation including the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA); the National Environmental Management : Protected Areas Act, 2003 (Act No 57 of 2003) and the National Environmental Management : Biodiversity, 2004 (Act No 10 of 2004)
- To consider any legal issues and/or technicalities raised by the Interested & Affected Parties and provide legal opinion in respect thereof.
- To provide a legal opinion on the process followed and any legal issues emanating from that.

All the associated actions, proceedings, specialist input and relevant information as well as the Draft Scoping Report have been supplied to the Legal Review Specialist for the project. The assessment letter for the Scoping Report will be included as Appendix D(6) in the Final Scoping Report to DEA.

The final recommendations on the Scoping Report from the Legal Advisor will be summarised below in the Final Scoping Report.

### 9.2 RECOMMENDATIONS BY EAP

It is the professional and objective opinion of the independent EAP that the following is relevant:

- All reasonable actions had been taken to identify any relevant environmental components in the study area.
- The specialist input obtained up to date is comprehensive and effective in providing an assessment of the status quo of the study area and potentially sensitive areas and issues of concern that require re-consideration of route alternatives.
- Significant and reasonable actions were taken to identify and notify all Interested & Affected Parties that include government departments, relevant authorities, general stakeholders and potentially affected landowners of the project. Significant communication with the I&AP's has taken place up to date.
- The Scoping Report includes all proceedings, findings and recommendations from the Scoping Phase.
- All relevant legal requirement in terms of the Scoping Phase as per the Environmental Impact Assessment Regulations published on 18 June 2010 as per the National Environmental Management Act, 1998 (Act No 107 of 1998) as amended had been complied with.

The EAP can, with no reservation, recommend this Scoping Report together with the Plan of Study for the EIA Phase for approval by the Department of Environmental Affairs (DEA).

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