

Eskom Holdings (SOC) Ltd  
– Gauteng Operating Unit



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**FINAL BASIC ASSESSMENT REPORT FOR THE  
PROPOSED CONSTRUCTION OF THE BIGTREE-  
REFILWE-PELLY 132KV POWERLINE WITHIN THE CITY  
OF TSHWANE METROPOLITAN MUNICIPALITY  
(GAUTENG PROVINCE) AND TEMBISILE HANI LOCAL  
MUNICIPALITY (MPUMALANGA PROVINCE)**

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DEA REF: 14/12/16/3/3/1/1358

ORIGINAL

*June 2015*

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# BASIC ASSESSMENT REPORT

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## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

(For official use only)

**File Reference Number:**

**Application Number:**

**Date Received:**


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

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### Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **1 September 2012**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

# BASIC ASSESSMENT REPORT

## SECTION A: ACTIVITY INFORMATION

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

YES	NO
	X

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

### 1. PROJECT DESCRIPTION

#### a) Describe the project associated with the listed activities applied for

GIBB (Pty) Ltd (GIBB) has been appointed by Eskom Holdings SOC Ltd, Eskom Distribution – Gauteng Operating Unit (Eskom) to undertake an environmental authorisation process in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended (NEMA) and the Environmental Impact Assessment Regulations of 2010 for the construction of the proposed 132kV powerline connecting from the existing Bigtree Substation in the north to the newly proposed Refilwe Substation to the south connecting to the existing Pelly 132kV powerline in the west. Majority of the route is located within the City of Tshwane Metropolitan Municipality (CTMM) (Gauteng Province), however a small section between the Bigtree substation and the Refilwe Substation is located within the Thembisile Hani Local Municipality (THLM) (Mpumalanga Province) (refer to **Figure 1 & Appendix A**). A 500m corridor has been assessed along each of the proposed routes to determine the environmental impacts and significance of these impacts associated with the proposed development. Eskom has applied for environmental authorisation from the National Department of Environmental Affairs (DEA), Reference number: **14/12/16/3/3/1/1358**.

#### Study Area:

At a regional level, majority of the study area lies within the Gauteng Province located north of the Cullinan community, however a small section of the proposed lies within the Mpumalanga province, Kwamhlanga community. Three (3) route and three (3) substation site alternatives exist for the proposed Bigtree-Refilwe-Pelly 132kV powerline and associated Refilwe Substation with an approximate distance of 40km. The proposed development has been split into three (3) sections in order to simplify the descriptions of the powerline alignments and associated substation location. These sections will be discussed as follows:

1. Bigtree-Refilwe 132kV powerline;
2. Refilwe newly proposed substation; and
3. Refilwe-Pelly 132kV powerline

#### Section 1:

Three (3) route alternatives exist for the proposed 132kV powerline alignment connecting from the existing Bigtree substation to the newly proposed Refilwe substation with a total distance of approximately 34km. The three (3) route alternatives from the existing Bigtree substation to newly proposed Refilwe substation follow similar alignments with small deviations indicating the respective connections to each of the substation locations. Alternative 1 (preferred), 2 and 3 follow the same alignment for approximately 30km, where after they deviate from one another with **Alternative 1 (preferred)** extending in a south-westerly direction for a further 4km to connect to *Refilwe substation Alternative 1*. **Alternative 2** extends in a north-westerly direction for a further 800m to connect to the *Refilwe substation Alternative 2*. Lastly, **Alternative 3** extends in a south-easterly direction for a further 800m to connect to the *Refilwe substation Alternative 3*.

#### Section 2:

Three alternatives exist for the proposed location of the Refilwe substation. The three substation alternatives are located along the proposed powerline alignments for the connection from the existing Bigtree substation to the 132kV Pelly powerline. Alternative 1 (preferred) constitutes an approximate size of 3ha, Alternative 2 an approximate size of 10ha and Alternative 3 an approximate size of 2ha. The proposed Refilwe substation will be located adjacent to the Refilwe Township and

will be used to split the Zonderwater-Kraal feeder line due to potential capacity constraints envisaged for the future. It is important to note that the location of the proposed Refilwe substation is dependent on the proposed alignment of the connection from the existing Bigtree substation to the 132kV Pelly powerline.

### Section 3:

Three (3) route alternatives exist for the proposed 132kV powerline alignment connecting from the existing 132kV Pelly powerline to the newly proposed Refilwe substation with a total distance of approximately 10km. The three (3) route alternatives from the existing 132kV Pelly powerline to newly proposed Refilwe substation follow similar alignments with small deviations indicating the respective connections to each of the substation locations. Alternative 1 (preferred) 2 and 3 follows the same alignment for approximately 4.8km, where after they deviate from one another with **Alternative 1 (preferred)** extending in a north-easterly direction for a further 1.6km to connect to *Refilwe substation Alternative 1*. **Alternative 2** extends in a north-north-easterly direction for a further 4.8km to connect to the *Refilwe substation Alternative 2*. Lastly, **Alternative 3** extends in an easterly direction for a further 4.2km to connect to the *Refilwe substation Alternative 3*.

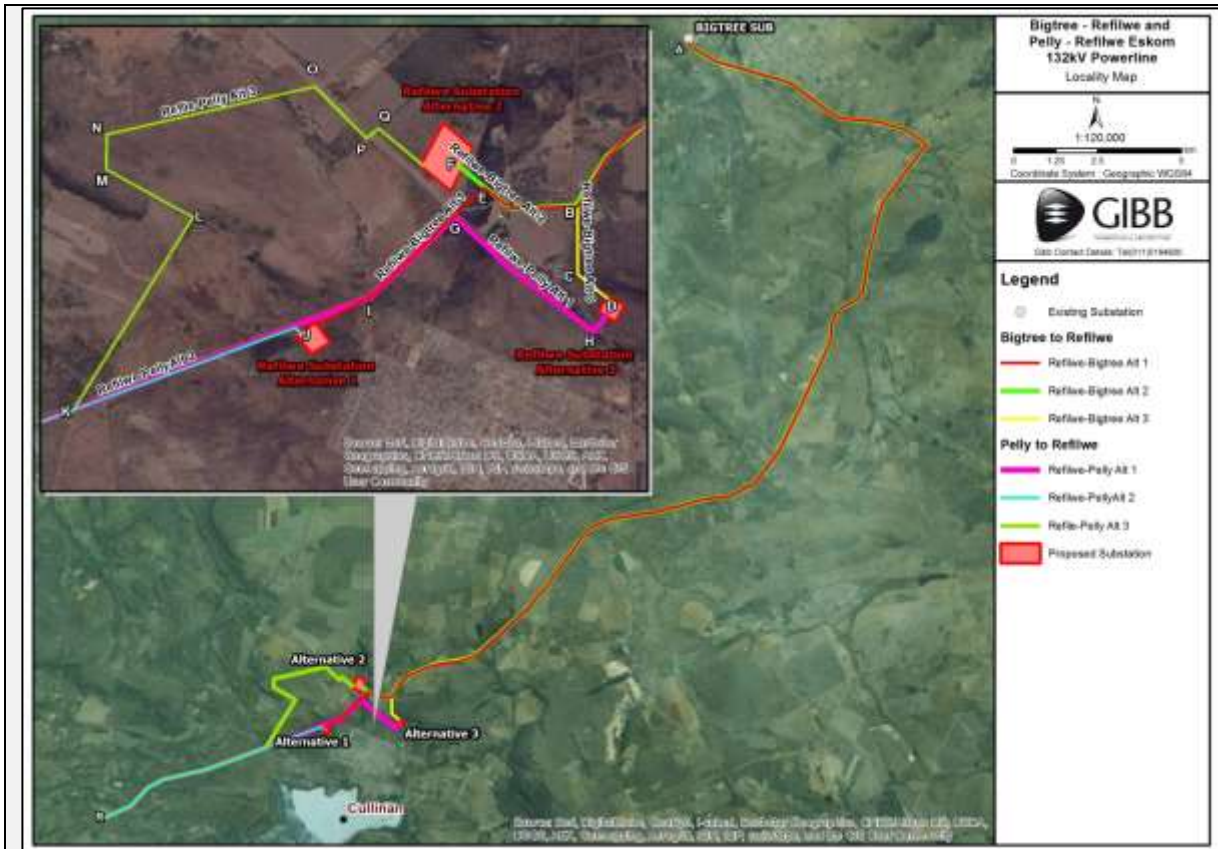
The proposed project involves the construction of:

- An approximate 40km 132kV overhead distribution powerline from the existing Bigtree Substation to the newly proposed Refilwe, and then a 132kV line from Refilwe Substation connecting to the existing Pelly 132kV powerline;
- Construction of the newly proposed Refilwe Substation.

Based on the proposed route and nature of the project, several watercourse features will be crossed by the 132kV powerline and as such a water use licence application (WULA) must be undertaken for the project.

It should be noted that the main purpose of the proposed powerline is to strengthen the existing electricity supply in the area, and as such provide the area with adequate and reliable power supply to meet current and future demands.

Please refer to **Figure 1** for the Bigtree-Refilwe-Pelly 132kV Powerline and associated Refilwe Substation.



**Figure 1: Bigtree-Refilwe-Pelly 132kV powerline locality map indicating route Alternative 1 (red line – preferred), route Alternative 2 (green line), route Alternative 3 (yellow line) and substation Alternative 1, 2 & 3 (red dots)**

**132kV Monopole Structures:**

The structures proposed for this project is the single circuit steel mono-poles (**Figure 2**). These self-supporting mono-pole structures will comprise the following characteristics:

- The footprint for the mono-pole structures is between **0,5 m<sup>2</sup> and 8m<sup>2</sup>** in size;
- The mono-pole structures will be buried to a depth of between **2m and 3.60m**;
- The height of the mono-pole structures will range between **18m and 30m**;
- The span lengths between the mono-pole structures will vary on average between **30m and 350m** depending on terrain. Span lengths can be to a maximum of 350m if the topography allows for this. These variations are due to a number of factors including the structure, the terrain, ground clearance requirements, topology and geology; and
- The operation and construction servitudes will be **31m** (i.e. **15.5m** on either side of the centre line).



**Figure 2: Single circuit steel mono-pole structures to be used for the Pylon structures**

In addition to this, various tower types can be used depending on the terrain and powerline profile. These tower types constitute the following:

- Mono-pole guyed intermediate suspension structures;
- Mono-pole self-supporting intermediate suspension structures;
- Mono-pole angle strain structures;
- Mono-pole intermediate strain structures;
- H-Pole structures; and
- 3 Pole strain structures.

The pylons will be steel and the average span between two towers can vary between 30m and 350m depending on the ground profile and the terrain it covers. The size of the foundation footprint is related to the soil type and structure to be used. The steel mono-pole structure has a concrete cap at the foot of each steel mono-pole structure (**Figure 3**) with a diameter ranging between 1,2m to 2m and 0,5m deep.



**Figure 3: Single circuit steel mono-pole structures to be used for the Pylon structures**

It is proposed that the Steel Mono-pole structures will be used along with strain structures located in between them, depending on the terrain. Please note that this will be finalised prior to construction. Refer to **Appendix C** for illustrations of the type of pylon structures that are under consideration.

**132 kV Steel Lattice Structures:**

Lattice structures will be considered for very long spans which can't be reached with steel mono poles or where space do not allow the installation of guys for strain steel monopole structures. Electrical safety clearance to ground which cannot be obtained by steel monopoles might also necessitate the installation lattice structures. The installation of lattice structures will however be the exception because of the high costs.

The single circuit steel lattice structures (**Figure 4**) will comprise the following characteristics:

- The footprint for the steel lattice structures is approximately between **36m<sup>2</sup>** and **64m<sup>2</sup>** in size;
- The the foundations will be installed to a depth of between **2m** and **4m**;
- The height of the lattice structures will range between **18m** and **30m**;
- Lattice structures will allow span lengths of up to **500m** depending on terrain and if the topography allows it. These variations are due to a number of factors including the structure, the terrain, ground clearance requirements, topology and geology.
- The operation and construction servitudes will be **31.0m** (i.e. **15.5m** on either side of the centre line).



**Figure 4: Single circuit steel lattice structure**

**Servitude Requirements and Clearances (same clearance specifications applies to both monopole and lattice structures):**

The servitude width for a 132kV distribution line is 31m (15.5m on either side of the centre line of the powerline). The minimum vertical clearance to buildings, poles and structures not forming part of the powerline must be 3.8m, while the minimum vertical ground clearance is 7.5m in urban areas and 10.5m for national road crossings. The minimum distance of a 132kV distribution line running parallel to proclaimed provincial road is 15m from the road reserve to the centre line of the 132kV powerline. The minimum distance between any part of a tree or shrub and any bare phase conductor of a 132kV distribution line must be 3.8m to allow for the possible lateral movement of this vegetation that could be a potential hazard for distribution lines that are operational and energised. The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) provides for statutory clearances. Table 1 summarizes some of the key clearances relevant to the proposed 132kV powerline.

**Table 1: Clearance specifications (Eskom, 2007)**



Clearances	Minimum Clearance Distance (m)
Ground clearance	6.3
Building structures not part of powerline	3.8
Above roads in townships, proclaimed roads	7.5
Telkom telephone lines	2.0
Spoornet Tracks	10.9

Should the preferred distribution line corridor receive positive environmental authorisation from the DEA, and following on from successful negotiations with landowners, the final delineation of the centreline for the distribution line and co-ordinates of each bend in the line will be determined. Optimal tower sizes and positions will be identified and verified through comprehensive ground survey of the preferred route and these positions will be reflected in, and appropriate management actions incorporated into the periodically updated Environmental Management Programme (EMPr).

Trees and large shrubs causing clearance issues will be trimmed or cleared. If any tree or shrub in other areas interferes with the operation and/or reliability of the distribution line it will be trimmed or completely cleared. In areas where distribution lines cross existing orchards or agricultural lands in use, the footprint of the structures will be minimised and full scale clearing of the servitude avoided to allow continued use of the arable land, unless otherwise negotiated with the affected farmer/s. Clearing of vegetation will take place along approved profiles and in accordance with the approved EMPr and the **Eskom Vegetation Management Standard 240-52456757**.

**Access:**

Access is required during both the construction and operation/maintenance phases of the powerline’s life cycle. Access to the 132kV powerline will be confined to the powerline servitude itself and existing access roads and tracks will be used to gain access to construction sites and the servitude. Therefore, transportation activities for construction (construction material and teams) and maintenance activities will make use of both existing access roads and the power line servitude.

It should be noted that there are existing tracks and access roads in and around the vicinity of the powerline for majority of the route. Where it is not possible to use existing tracks, transportation will occur along the approved powerline servitude.

**Foundations – 132kV monopole structures:**

The type of terrain encountered, as well as the underlying geotechnical conditions determines the choice of foundation. The actual size and type of foundation to be installed will depend on the soil bearing capacity (actual sub-soil conditions). Guided Strain structures require smaller foundations for support than in-line suspension structures, which contribute to the cost of the construction of the line. Foundations will be mechanically excavated then a layer of concrete is cast at the bottom of the foundation. It will then be back filled with soil/ cement mixture and then compacted in layers for the setting of the foundations. In areas where access to the structure position prohibits the use of concrete mixing trucks, uphill pumping or gravity feeding of concrete up to distances of 200m will be implemented. Prior to erecting the structures and infilling of the foundations, the excavated foundations will be covered/fenced-off in order to safeguard unsuspecting animals and people from injury. All foundations are back-filled, stabilised through compaction, and capped with concrete to a level of 200mm above ground level.

**Foundations – 132kV lattice structures:**

The type of terrain encountered, as well as the underlying geotechnical conditions determines the choice of foundation. The actual size and type of foundation to be installed will depend on the soil bearing capacity (actual sub-soil conditions). Strain lattice structures require bigger foundations and have a bigger footprint than in-line suspension structures of equal length, which contribute to the cost of the construction of the line. The foundations will be the “Pad and Chimney” type which consist of a steel reinforced pad and at the bottom of a mechanically excavated hole and a steel reinforced chimney column with a stub onto which structure legs are bolted above ground level. The pad and the majority of the chimney is buried and a small concrete column of between 150mm and

600mm will be visible above ground level at each leg of the tower – refer to picture 4 for the visible impact of the foundation. In areas where access to the structure position prohibits the use of concrete mixing trucks, uphill pumping or gravity feeding of concrete up to distances of 200m will be implemented. Prior to erecting the structures and infilling of the foundations, the excavated foundations will be covered/fenced-off in order to safeguard unsuspecting animals and people from injury.

### **Insulators: for 132kV insulation:**

Composite insulators have a glass-fibre core with silicon sheds for insulation and are used to insulate the conductors from the towers. Glass and porcelain have been used to insulate the conductors for many years, and is the most common. These products are, however, heavy and susceptible to damage by vandals, as well as contamination by pollution. Composite insulators are lightweight and resistant to both vandalism and pollution. Composite (Long rod type) insulators with silicone based weathershed material will be used.

### **Construction Process for distribution lines:**

*The powerlines will be constructed in the following simplified sequence:*

- Step 1:** Determination of technically feasible distribution line alternatives;
- Step 2:** EIA input into route selection and obtaining of relevant environmental permits;
- Step 3:** Negotiation of final route with affected landowners;
- Step 4:** Survey of the route;
- Step 5:** Selection of best-suited structures and foundations;
- Step 6:** Final design of distribution line and placement of towers;
- Step 7:** Issuing of tenders and award of contract to construction companies;
- Step 8:** Pegging of structures;
- Step 9:** Vegetation clearance and construction of access roads (where required);
- Step 10:** Construction of foundations;
- Step 11:** Assembly and erection of structures;
- Step 12:** Stringing of conductors;
- Step 13:** Rehabilitation of disturbed area and protection of erosion sensitive areas;
- Step 14:** Testing and commissioning; and
- Step 15:** Continued maintenance.

*The Substation will be constructed in the following simplified sequence:*

- Step 1:** Survey of the site;
- Step 2:** EIA and site-specific EMPr;
- Step 3:** Design of Substation;
- Step 4:** Issuing of tenders and award of contract;
- Step 5:** Establishment of construction camp, vegetation clearance and construction of access roads (where required);
- Step 6:** Construction of terrace and foundations;
- Step 7:** Assembly and erection of equipment;
- Step 8:** Connection of conductors to equipment;
- Step 9:** Rehabilitation of any disturbed areas and protection of erosion sensitive areas;
- Step 10:** Testing and commissioning; and
- Step 11:** Continued maintenance.

### **Stringing of Conductors:**

Tension stringing gear is used to string the conductors between towers. The line is strung in sections (from bend to bend). Cable drums are placed at the beginning of the sections of the line during this stringing process. In order to minimise any potential negative impacts on the surrounding area, these cable drums should be placed within the servitude.

### **Construction Period:**

## BASIC ASSESSMENT REPORT

An estimated construction period of 12-18 months is envisaged. The construction period will however depend on the season and environmental conditions in which construction is undertaken and may be fast tracked.

### **On-going Maintenance:**

During the life span of the powerlines, which is approximately 25 years, on-going maintenance will be performed from time to time. Eskom maintenance staff and contractors employed by Eskom will undertake the maintenance works as required.

The undertaking of the Basic Assessment process is a legislative requirement of the National Environmental Management Act (No 107 of 1998) due to the triggering of activities listed in the Environmental Regulations as amended in 2010.

As part of the process the following specialist studies have been undertaken to assess the impacts of the proposed project. All specialist assessment reports have been attached as Appendix D. The following specialists studies were undertaken during the Basic Assessment process:

- Heritage Impact Assessment - J van Schalkwyk
- Ecological Impact Assessment – Mark Custers
- Wetland Impact Assessment - Stephen van Staden
- Avifauna Impact Assessment - Andrew Jenkins

### **Details of the EAP:**

GIBB (Pty) Ltd. (GIBB) is an integrated group of scientists, project managers, engineers and architects providing cost-effective solutions and specialist services in a wide range of disciplines. The multi-disciplinary consulting, management and design approach allows for the execution of projects in a holistic way, as this is believed to be the best approach to fully meet the needs of our Clients.

The GIBB Environmental Services Division has a formidable track record and comprises highly qualified and experienced technical staff viz, environmental scientists, environmental engineers and geologists that collectively form the national environmental team. The team members have broad experience in terms of working on a range of environmental projects within the public and private sector. Refer to the Table below for the EAP and environmental scientist details.

<b>Project EAP:</b>	<b>Umeshree Naicker</b>		
<b>Contact Person:</b>	GIBB (Pty) Ltd		
<b>Physical Address:</b>	14 Eglin Road, Sunninghill		
<b>Postal Address:</b>	P.O. Box 2700, Rivonia		
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<b>Email:</b>	<a href="mailto:unaicker@gibb.co.za">unaicker@gibb.co.za</a>		
<b>Expertise to conduct EIA:</b>	<p><b>Umeshree Naicker</b> is a senior environmental scientist with six years of experience in the environmental management field. Her key experience includes Project management, Scoping &amp; Environmental Impact Reporting, Basic Assessments, and Client Liaison. She also has experience as an Environmental Control Officer. She has worked extensively in South Africa within the renewable energy sector.</p>		

**Environmental  
Scientist**

**Alécia Barnard**

## BASIC ASSESSMENT REPORT

<b>Physical Address:</b>	Block A, 1st Floor, East Wing, Lynnwood Corporate Park, 36 Alkantrant Road, Lynnwood 0081		
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<b>Email:</b>	<a href="mailto:albarnard@gibb.co.za">albarnard@gibb.co.za</a>		
<b>Expertise to conduct EIA:</b>	<p><b>Alecia Barnard</b> is an environmental assistant with three and a half years of experience in the environmental management field. Her key experience includes Project administration, Public Participation Process, Environmental site Audits, Scoping &amp; Environmental Impact Reporting, Basic Assessments, Water Use Licenses, Waste Management Licenses, Air Emissions Licenses and Section 24G Applications.</p>		

**b) Provide a detailed description of the listed activities associated with the project as applied for**

Listed activity as described in GN R.544, 545 and 546	Description of project activity that triggers listed activity – if activities in GN R. 546 are triggered, indicate the triggering criteria as described in the second column of GN R. 543
<i>e.g. GN R.544 Item XX(x): The construction of a bridge within 32m of a water course</i>	<i>e.g. A bridge measuring 5m in height and 10m in length, no wider than 8 meters will be built over the Vaal river</i>
GN R.544 Item 10(i): The construction of facilities or infrastructure for the transmission and distribution of electricity –  <b>(i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;-</b>	The proposed distribution line for the Bigtree-Refilwe-Pelly distribution line and associated Refilwe Substation will be 132kV.
GN R.544 Item 11(xi): The construction of:  <b>(xi) infrastructure or structures covering 50 square metres or more</b>  Where such construction occurs within a watercourse or within 32 metres of watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	Several watercourses may be crossed along the powerline route, and as such pylons may be constructed within 32 metres of the watercourse.
GN R.544 Item 22(ii): The construction of a road, outside urban areas,  <b>(ii) Where no reserve exists where the road is wider than 8 metres.</b>	Access road may be required at certain sections to access the powerline.
GN R.544 Item 23(ii): The transformation of undeveloped, vacant or derelict land to-	The proposed Refilwe substation is located outside the urban edge and size of the proposed substation will be approximately 1,5 hectares.

## BASIC ASSESSMENT REPORT

<p><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></p>	
<p>GN R.546 Item 4(b)(i)(iii)(viii): The construction of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p><b>(b) In Gauteng:</b></p> <p><b>(i) A protected area identified in terms of NEMPAA, excluding conservancies;</b></p> <p><b>(iii) 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><b>(viii) Any declared protected area including Municipal or provincial Nature Reserves as contemplated by the Environment Conservation Act, 1989 (Act No. 73 of 1989) and the Nature Conservation Ordinance (Ordinance 12 of 1983);</b></p>	<p>Access roads may be required along certain sections to access the powerline within Gauteng, where such roads and powerline alignments may extend through sensitive and protected areas.</p>
<p>GN R.546 Item 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> <p><b>(b) Within a critical biodiversity areas identified in bioregional plans;</b></p>	<p>Vegetation clearance would be required for the proposed construction of the Bigtree-Refilwe and Pelly-Refilwe 132kV powerlines, which extends through an identified Critical Biodiversity Area.</p>
<p>GN R.546 Item 14(a)(i):</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> <ol style="list-style-type: none"> <li>(1) purposes of agriculture or afforestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or afforestation purposes;</li> <li>(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;</li> <li>(3) the undertaking of a linear activity falling</li> </ol>	<p>Vegetation will be cleared to allow for the erection of the pylons. Bush clearing of approximately 16m wide (8m on either side of the powerline) will be required for the 132kV powerline.</p>

## BASIC ASSESSMENT REPORT

below the thresholds in Notice 544 of 2010. <b>(a)</b> In Eastern Cape, Free State, KwaZulu-Natal, <b>Gauteng</b> , Limpopo, Mpumalanga, Northern Cape, Northwest and Western Cape:  <b>(i) All areas outside urban areas.</b>	
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## 2. FEASIBLE AND REASONABLE ALTERNATIVES

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

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

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

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

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

### **DESCRIPTION OF ALTERNATIVES:**

Three (3) route and three (3) substation site alternatives exist for the proposed Bigtree-Refilwe-Pelly 132kV powerline and associated Refilwe Substation with an approximate distance of 40km. The development has been split into three (3) sections in order to simplify the descriptions of the powerline alignments and associated substation location. These sections are outlined below:

1. Bigtree-Refilwe 132kV powerline;
2. Refilwe newly proposed substation; and
3. Refilwe-Pelly 132kV powerline

### ***ROUTE ALTERNATIVES***

Section 1:

Three (3) route alternatives exist for the proposed 132kV powerline alignment connecting from the existing Bigtree substation to the newly proposed Refilwe substation with a total distance of approximately 34km. The three (3) route alternatives from the existing Bigtree substation to newly proposed Refilwe substation follow similar alignments with small deviations indicating the respective connections to each of the substation locations. Alternative 1 (preferred), 2 and 3 follow the same alignment for approximately 30km, where after they deviate from one another with **Alternative 1 (preferred)** extending in a south-westerly direction for a further 4km to connect to *Refilwe substation Alternative 1*. **Alternative 2** extends in a north-westerly direction for a further 800m to connect to the *Refilwe substation Alternative 2*. Lastly, **Alternative 3** extends in a south-easterly direction for a further 800m to connect to the *Refilwe substation Alternative 3*.

### Section 2:

Three alternatives exist for the proposed location of the Refilwe substation. The three substation alternatives are located along the proposed powerline alignments for the connection from the existing Bigtree substation to the 132kV Pelly powerline. Alternative 1 (preferred) constitutes an approximate size of 1,5a, Alternative 2 an approximate size of 1,5ha and Alternative 3 an approximate size of 1,5ha. The proposed Refilwe substation will be located adjacent to the Refilwe Township and will be used to split the Zonderwater-Kraal feeder line due to potential capacity constraints envisaged for the future. It is important to note that the location of the proposed Refilwe substation is dependent on the proposed alignment of the connection from the existing Bigtree substation to the 132kV Pelly powerline.

### Section 3:

Three (3) route alternatives exist for the proposed 132kV powerline alignment connecting from the existing 132kV Pelly powerline to the newly proposed Refilwe substation with a total distance of approximately 10km. The three (3) route alternatives from the existing 132kV Pelly powerline to newly proposed Refilwe substation follow similar alignments with small deviations indicating the respective connections to each of the substation locations. Alternative 1 (preferred) 2 and 3 follows the same alignment for approximately 4.8km, where after they deviate from one another with **Alternative 1 (preferred)** extending in a north-easterly direction for a further 1.6km to connect to *Refilwe substation Alternative 1*. **Alternative 2** extends in a north-north-easterly direction for a further 4.8km to connect to the *Refilwe substation Alternative 2*. Lastly, **Alternative 3** extends in an easterly direction for a further 4.2km to connect to the *Refilwe substation Alternative 3*.

## **SUBSTATION SITE ALTERNATIVES**

### Refilwe Substation Alternative 1 (preferred)

The Refilwe Substation Alternative 1 constitutes an approximate size of 1,500 m<sup>2</sup> and is located north-west of Refilwe. In order to access this substation site, an existing informal dirt road extending north from the R573 for an approximate distance of 10m will be used.

### Refilwe Substation Alternative 2

The Refilwe Substation Alternative 2 constitutes an approximate size of 1,500 m<sup>2</sup> and is located directly north of Refilwe. In order to access this substation site, an existing informal dirt road (extending north away from Refilwe for an approximate 0.35km will be used.

### Refilwe Substation Alternative 3

The Refilwe Substation Alternative 3 constitutes an approximate size of 1,500 m<sup>2</sup> and is located south-east of Refilwe. In order to access this substation site, an existing informal dirt road extending east from Collins Road for an approximate distance of 0.1km will be used.

Topography, hydrology, land ownership, servitude negotiations, line maintenance, socio-economic and environmental aspects were considered during the assessment of each route and substation

alternative as shown in **Section D** below.

Please refer to **Figure 4** below which outlines both routes and substation alternatives.





## BASIC ASSESSMENT REPORT

### a) Site alternatives

<b>Alternative 1 (preferred alternative)</b>		
<b>Description</b>	<b>Lat (DDMMSS)</b>	<b>Long (DDMMSS)</b>
Refilwe Substation Alternative 1	25°37' 55.279" S	28°31' 0.418" E
<b>Alternative 2</b>		
<b>Description</b>	<b>Lat (DDMMSS)</b>	<b>Long (DDMMSS)</b>
Refilwe Substation Alternative 2	25°37' 15.919" S	28°31' 32.383" E
<b>Alternative 3</b>		
<b>Description</b>	<b>Lat (DDMMSS)</b>	<b>Long (DDMMSS)</b>
Refilwe Substation Alternative 3	25°37' 48.937" S	28°32' 12.313" E

In the case of linear activities:

#### Alternative:

#### Latitude (S):

#### Longitude (E):

#### **Alternative S1 (preferred alternative)**

- Starting point of the activity  
**Connection from the existing Bigtree Substation**
- Bend 1
- Bend 2
- Bend 3
- Bend 4
- Bend 5
- **Middle/Additional point of the activity**
- Bend 6
- Bend 7
- Bend 8
- Bend 9
- **Connection to the newly proposed Refilwe Substation Alternative 1**
- Bend 10
- Bend 11
- End point of the activity  
**Connection to the existing Pelly 132kV powerline**

25° 27' 55.829" S	28° 36' 50.511" E
25°29'26.76"S	28°40'38.91"E
25°30'17.58"S	28°39'56.47"E
25°31'34.86"S	28°39'37.98"E
25°34'22.82"S	28°37'50.58"E
25°35'0.87"S	28°35'11.30"E
25° 33' 32.637" S	28° 38' 28.018" E
25°36'53.71"S	28°33'16.89"E
25°37'26.76"S	28°32'3.94"E
25°37'22.92"S	28°31'41.48"E
25°37'46.20"S	28°31'14.57"E
25°37' 55.279" S	28°31' 0.418" E
25°38'45.88"S	28°28'8.91"E
25°39'1.57"S	28°27'52.54"E
25° 37' 52.355" S	28° 31' 0.824" E

#### **Alternative S2**

Please note that Alternative S2 follows a similar alignment as Alternative S1 until Bend 8. Coordinates for the bends following Bend 8 will be indicated for Alternative S2 below:

- Starting point of the activity  
**Connection from the existing Bigtree Substation**
- **Middle/Additional point of the activity**
- **Connection to the newly proposed Refilwe Substation Alternative 2**
- Bend 9
- Bend 10

25° 27' 55.829" S	28° 36' 50.511" E
25° 33' 14.235" S	28° 38' 37.370" E
25°37' 15.919" S	28°31' 32.383" E
25°37'10.10"S	28°31'16.19"E
25°37'11.82"S	28°31'13.44"E

## BASIC ASSESSMENT REPORT

• Bend 11	25°37'0.77"S	28°31'0.91"E
• Bend 12	25°37'11.30"S	28°30'10.35"E
• Bend 13	25°37'18.87"S	28°30'10.52"E
• Bend 14	25°37'29.42"S	28°30'31.10"E
• Bend 15	25°38'11.10"S	28°30'2.75"E
• Bend 16	25°38'45.88"S	28°28'8.91"E
• Bend 17	25°39'1.57"S	28°27'52.54"E
• End point of the activity <b>Connection to the existing Pelly 132kV powerline</b>	25° 37' 52.355" S	28° 31' 0.824" E

### **Alternative S3**

Please note that Alternative S3 follows a similar alignment as Alternative S1 until Bend 7. Coordinates for the bends following Bend 7 will be indicated for Alternative S3 below:

• Starting point of the activity <b>Connection from the existing Bigtree Substation</b>	25° 27' 55.829" S	28° 36' 50.511" E
• <b>Middle/Additional point of the activity</b>	25° 33' 11.569" S	28° 38' 38.755" E
• Bend 8	25°37'41.57"S	28°32'4.02"E
• <b>Connection to the newly proposed Refilwe Substation Alternative 3</b>	25°37' 48.937" S	28°32' 12.313" E
• Bend 9	25°37'54.13"S	28°32'8.00"E
• Bend 10	25°37'29.27"S	28°31'34.57"E
• Bend 11	25°37'46.33"S	28°31'14.58"E
• Bend 12	25°38'45.88"S	28°28'8.91"E
• Bend 13	25°39'1.57"S	28°27'52.54"E
• End point of the activity <b>Connection to the existing Pelly 132kV powerline</b>	25° 37' 52.355" S	28° 31' 0.824" E

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

### **REFER TO APPENDIX A2 FOR GPS CO-ORDINATES TAKEN EVERY 500m.**

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in **Appendix A**.

#### **b) Lay-out alternatives – N/A**

Layout alternatives are not applicable to the construction of the proposed Bigtree-Refilwe-Pelly 132kV powerline.

#### **c) Technology alternatives – N/A**

Alternative technologies have not been considered as the technology to be used is already considered as the most appropriate technology and in some cases has been specifically designed for the existing environmental conditions and terrain, as specified by standard Eskom specifications and international best practice. The pylons under consideration for this project are the most appropriate based on the terrain and design integrity as well as for the purpose for which the powerline is to be constructed.

**d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)**

No other alternatives have been considered

**e) No-go alternative**

The No-go alternative in the context of this project implies that the powerline is not to be constructed. If the project does not proceed, the potential negative impacts related to the risk of collisions of birds, clearing of vegetation, soil erosion and wetland degradation would be avoided. The surrounding area will however, will be negatively affected due to the lack of a constant and reliable electricity supply. This will directly inhibit future developments and economic growth in the area. The need for stable and reliable power supply to meet current and future demand will outweigh the potential impacts to the surrounding environment. The impacts to the surrounding environment can be proactively mitigated to acceptable levels.

**The No-Go Alternative is therefore not recommended.**

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

**3. PHYSICAL SIZE OF THE ACTIVITY**

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

**Alternative:**

Alternative A1<sup>1</sup> (preferred activity alternative)

**Refilwe Substation 1**

Alternative A2

**Refilwe Substation 2**

Alternative A3

**Refilwe Substation 3**

or, for linear activities:

**Size of the activity:**

1,500 m <sup>2</sup>
1,500 m <sup>2</sup>
1,500 m <sup>2</sup>

**Alternative:**

Alternative S1 (preferred activity alternative)

Alternative S2

Alternative S3

**Length of the activity:**

38km
40.1km
39.3km

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

**Alternative:**

Alternative 1 (preferred activity alternative)

Alternative 2

Alternative 3

**Size of the site/servitude:**

1,178,000 m <sup>2</sup>
1,243,100 m <sup>2</sup>
1,218,300 m <sup>2</sup>

**4. SITE ACCESS**

Does ready access to the site exist?

YES	NO
-----	----

<sup>1</sup> "Alternative S" refers to site alternatives.

# BASIC ASSESSMENT REPORT

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

X	
m	

Describe the type of access road planned:

Due to the close proximity of distribution powerlines in the area, existing roads and tracks will be used during construction and maintenance activities. Where no access roads exist in close proximity to the proposed powerline route, temporary maintenance tracks will be created for the construction of the powerline. Please note that as far as possible all impacting activities will take place within the servitude for the approved powerline alignment. The approved servitude will in this instance be utilised for the construction of the powerline and also to allow the maintenance team to gain access to the proposed line itself once constructed for on-going maintenance. These tracks will as far as possible follow the powerline servitude and not entail the construction of formal roads.

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

## 5. LOCALITY MAP

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

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

## 6. LAYOUT/ROUTE PLAN

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

The site or route plans must indicate the following:

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

**7. SENSITIVITY MAP**

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

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

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

**8. SITE PHOTOGRAPHS**

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

**9. FACILITY ILLUSTRATION**

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

**10. ACTIVITY MOTIVATION**

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

<b>1. Is the activity permitted in terms of the property's existing land use rights?</b>	<b>YES</b> X	NO	Please explain
The powerline and structures will be located in a servitude area that will be registered by Eskom upon completion of landowner consideration negotiations.			

## BASIC ASSESSMENT REPORT

<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	<b>YES</b> X	NO	Please explain
<p>Both the Gauteng and Mpumalanga Provincial Spatial Development Frameworks (SDF) were completed in 2011 and are valid from the date of approval. The SDFs draw upon and aims to give effect to the vision put forward in the Gauteng and Mpumalanga employment growth and development strategy, namely building a prosperous, sustainable growing provincial economy to eradicate poverty and improve social development. Ensuring the sustainability of the resource base upon which the general well-being of the people throughout Gauteng and Mpumalanga depend.</p> <p>It is envisaged that the construction of the proposed powerline will have a positive impact on the local economies and growing population of surrounding areas. This is due to the provision of consistent and reliable supply electricity to the surrounding area which promotes economic growth. The economic growth in the local communities in the area is much needed as members of the community will directly benefit from the job opportunities created.</p> <p>The Gauteng and Mpumalanga Provincial Spatial Development Frameworks recognises that the electricity supply is under stress in both provinces (also at a national scale) and large development projects are affected by the electricity limitations.</p>			
<b>(b) Urban edge / Edge of Built environment for the area</b>	YES	<b>NO</b> X	Please explain
<p>The proposed development will take place outside the urban edge of both affected local municipalities.</p>			
<b>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</b>	<b>YES</b> X	NO	Please explain
<p>The Integrated Development Plan (IDP) is the over-arching strategic plan of the City of Tshwane Local Municipality (CTTM) as well as the Nkangala District Municipality. The IDP for both municipalities identified electricity as a service delivery need and prioritises the need to provide universal access to this service. Both municipalities will focus on providing basic services to areas that do not have basic services. Both municipalities have also identified insufficient provision and maintenance of electricity as a priority concern. In line with the National outcomes set for the implementation of the IDP, the proposed project will assist in speeding up the growth and transformation of the economy to create decent work and sustainable livelihoods. The proposed development is aligned to the IDP and supports the municipal objectives and priorities for service delivery and infrastructural development in the area.</p>			
<b>(d) Approved Structure Plan of the Municipality</b>	<b>YES</b> X	NO	Please explain
<p>The proposed development falls within the category of service infrastructure and as such will have no bearing on the municipality's Structure Plans.</p>			

## BASIC ASSESSMENT REPORT

<b>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</b>	<b>YES</b> X	<b>NO</b>	Please explain
<p>The Environmental Management Framework (EMF) aims to ensure that environmental limits to development are included in spatial planning documents. The need for spatial environmental information is critical both as a guide to areas that should be protected from excessive development, as well as to highlight to other planning disciplines the opportunities those environmental resources present to enhancing development. Further to this, the EMF aims to guide protection and enhancement of environmental assets as an integrated process with development patterns throughout the Gauteng Province.</p> <p>The proposed project is in line with the desired outcomes and objectives of the Environmental Management Framework adopted by the Department and will not compromise the integrity of the existing environmental management priorities for the area. Appropriate and effective mitigation measures, aligned to the desired outcomes, will be incorporated into the EMPr and adhered to throughout the various development phases of the proposed project. It should be noted that the pylon structures will have a minimal impact on the vegetation and all impacts have been rated as <u>low to medium negative</u> by the ecological specialist given that the mitigation measures are implemented effectively.</p>			
<b>(f) Any other Plans (e.g. Guide Plan)</b>	<b>YES</b>	<b>NO</b> X	Please explain
No other plans applicable			
<b>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</b>	<b>YES</b> X	<b>NO</b>	Please explain
<p>The Current land use for the affected area mostly consists of Agriculture. Apart from farming, various projects and programmes have been identified within the credible IDP of Gauteng and Mpumalanga to initiate skills development, economic development, and increase social economic growth, create much needed job opportunities and promote tourism development throughout the district.</p> <p>Based on the information outlined above, it is clear that the proposed project is aligned to the desired outcomes and objectives of the projects and programmes identified within the IDP specific to the area affected by the proposed development.</p>			



## BASIC ASSESSMENT REPORT

<b>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</b>	<b>YES</b> X	<b>NO</b>	Please explain
<p>Electricity provision in South Africa is a critical issue and it is impossible to create an economically sound country without a secure and reliable electricity source. As previously mentioned, the proposed development forms part of the country's strategies to meet future electricity consumption requirements.</p> <p>Given that the provision and maintenance of electricity supply has been highlighted as key areas of concern in both Municipalities' IDPs, increasing the capacity of the electrical infrastructure throughout the study area will provide a stable and reliable supply of electricity which will encourage development in areas which have previously been limited. In addition to this, the proposed development could also improve the livelihoods of local communities by assisting the Local Government in providing electricity to them. Local employment opportunities will also be created during the construction phase of the proposed development.</p>			
<b>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b>	<b>YES</b> X	<b>NO</b>	Please explain
<p>No additional services will be required to cater for the new electricity infrastructure. Water will be sourced commercially and locally from the municipality; however large volumes will not be required. During the construction phase, water will only be used for concrete batching activities and portable water will be required for drinking and cleaning activities. The municipality has been provided an opportunity to comment on this BAR. Proof of this communication (request for comments from the Municipality) will be included in <b>Appendix E4</b> of the Final BAR to be submitted to the competent authority (DEA) for decision making.</p>			
<b>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b>	<b>YES</b> X	<b>NO</b>	Please explain
<p>Provision and maintenance of electricity supply has been highlighted as a key area of concern in municipal IDP. The development will contribute to the service infrastructure of the municipality and is therefore mandated to prioritise the upgrade of the electricity supply network. The relevant municipality has been provided an opportunity to comment on this BAR and proof of this communication will be included in <b>Appendix E4</b> of the Final BAR for submission to the competent authority (DEA) for decision making. .</p>			
<b>7. Is this project part of a national programme to address an issue of national concern or importance?</b>	<b>YES</b> X	<b>NO</b>	Please explain
<p>The project forms part of the national programme to address the need for social and economic growth within the local communities of both the Gauteng and Mpumalanga Provinces.</p>			

## BASIC ASSESSMENT REPORT

<b>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</b>	YES X	NO	Please explain
<p>It should be noted that the powerline extends parallel to existing powerlines within the study area for various sections of the alignment. The development will also confirm to the typical visual character and pattern of elements that make up the landscape form.</p> <p>Thus the proposed development is within context for a section of the powerline and would not be highly incongruous within this setting.</p>			
<b>9. Is the development the best practicable environmental option for this land/site?</b>	YES X	NO	Please explain
<p>The proposed powerline crosses mostly farmland with minimal environmental impact. The regional importance of the development in terms of the improved reliability of electricity supply, economic and social growth in the surrounding communities, outweighs the potential loss of a minor amount of natural vegetation.</p>			
<b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b>	YES X	NO	Please explain
<p>Most of the negative impacts associated with the proposed development are of <u>low significance</u> following mitigation measures. Improved reliability of electricity supply and the increase of supply to the surrounding areas will result in both social and economic growth which is considered to be of high significance. The development will also create temporary employment opportunities during the construction and possibly the operational phases which are considered to be of a <u>High positive</u> significance.</p>			
<b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b>	YES	NO X	Please explain
<p>The construction of the electricity grid is not driven by profit gains but to ensure service delivery to the surrounding area and communities. This will inherently have a positive impact on the surrounding communities and region in terms of social and economic growth as well as economic stability. Infrastructure for service delivery will not set a precedent for similar activities in the area at large. However, should additional powerlines be required in the area in future it may be beneficial to align them parallel to one another in order to consolidate the impacts and lessen the severity thereof.</p>			

## BASIC ASSESSMENT REPORT

<b>12. Will any person's rights be negatively affected by the proposed activity/ies?</b>	YES	NO <input checked="" type="checkbox"/>	Please explain
<p>Potentially affected landowners (both directly and adjacently affected) have been notified timeously (please refer to <b>Appendix E2</b>) with regards to the proposed development and provided an opportunity to comment. A public meeting was held on <b>Thursday, 07 May 2015</b> during the public review period of the Draft BAR during which time various concerns from Interested and Affected Parties (I&amp;APs) were voiced and discussed. The attendance register as well as minutes from the public meeting held can be viewed in <b>Appendix E6</b> of the Final BAR.</p> <p>The proposed powerline will ultimately be owned by Eskom during the operation and maintenance phases thereof. Therefore, the proposed servitude and powerlines are being assessed on behalf of Eskom and all Eskom procedures will be implemented and adhered to with regards to landowner negotiations, land acquisition and access.</p> <p>As such, no juristic or natural person's right will be adversely affected.</p>			
<b>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</b>	YES	NO <input checked="" type="checkbox"/>	Please explain
<p>Urban edge is essentially a strategy to counter urban sprawl, encourage densification and protect natural resources.</p> <p>To promote integration of the social, economic, institutional and physical aspects of land development is one of the strategies that the urban edge for both municipal areas set out to accomplish. The proposed construction of the 132kV overhead powerline will be in line with this strategy and is therefore not seen as compromising the urban-edges of either one of the municipalities.</p>			
<b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b>	YES <input checked="" type="checkbox"/>	NO	Please explain
SIP 10. Electricity transmission and distribution to all.			
<b>15. What will the benefits be to society in general and to the local communities?</b>	Please explain		
<p>The potential benefit of the proposed powerline and associated infrastructure to the Gauteng and Mpumalanga Provinces are centred on the stimulation of the local economy through the additional employment opportunities created and supplied by the powerline construction and maintenance thereof. Some of the surrounding households are still reliant on domestic fires, which in turn negatively impacts on the environment in terms of air quality as well as through the uncontrolled harvesting of woodlands.</p> <p>On a local and regional scale, economies will also be stimulated in the form of additional employment opportunities which will act as a catalyst promoting economic growth in the area. The proposed development will align with Eskom's long term planning for the area and will provide a platform for future electrification of the surrounding households.</p>			

## BASIC ASSESSMENT REPORT

<b>16. Any other need and desirability considerations related to the proposed activity?</b>	Please explain
<p>As outlined previously, the proposed development is needed in order to improve the reliability of the electricity supply throughout the area and to support the various electricity improvement initiatives within the CTMM and Thembisile Hani Local Municipality (THLM). The project will promote economic growth throughout the area and furthermore decrease the number of residents who are still reliant on domestic fires. The use of domestic fires for household use impacts negatively on the environment in terms of air quality as well as through the uncontrolled harvesting of woodlands.</p> <p>The proposed project will therefore assist in speeding up the growth and transformation of the economy to create work, sustainable livelihoods and a stable economy.</p>	
<b>17. How does the project fit into the National Development Plan for 2030?</b>	Please explain
<p>The National Development Plan (NDP) for 2030 has a vision that by 2030 South Africa will have an energy sector that promotes economic growth and development through adequate investments in energy infrastructure and the provision of quality energy services (National Development Plan, 2011). It furthermore emphasises the need to create 11 million more employment opportunities.</p> <p>Based on the abovementioned statement and requirements associated with achieving this goal, the proposed development is aligned with the NDP in that it will assist with the promotion of economic growth by means of producing electricity, strengthening the local electrical feed supply and additional employment opportunities.</p>	
<b>18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.</b>	
<p>The proposed development has been adequately considered by the Environmental Assessment Practitioner (EAP) and identified specialists, and all potential impacts that may have a significant impact on the receiving environment have been considered and mitigated to acceptable levels as required by the NEMA 2010 EIA regulations. The findings of the specialist reports have been integrated into this assessment thus giving effect to holistic environmental management.</p> <p>The conclusions of the environmental impact assessment have been concisely summarised to adequately inform decision-making by the competent authority. A comprehensive Public Participation Process has been undertaken, which conforms to requirements in Chapter 6 of the Environmental Impact Assessment Regulations. Furthermore, all Interested and Affected Parties will be given an opportunity to review and comment on all documents and reports related to this project.</p>	

**19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.**

The primary objective of the project is to provide a stable electricity supply to the municipality and surrounding areas. Provision of a stable electricity supply with spare capacity will encourage future development in the area and will potentially improve the economic situation through additional employment opportunities.

The social, economic and environmental impacts have been identified and rated by the EAP with the assistance of numerous specialists. The Basic Assessment Process was advertised and members of the public were given the opportunity to register as an Interested and Affected Party (I&AP) as described in Section C: Public Participation and a Comments and Response report (CRR) has been attached to the Final BAR (**Appendix E3**).

Most of the negative impacts associated with the project will occur during the construction phase. Where negative impacts are unavoidable, they will be mitigated accordingly as stipulated in the EMPr. Recommendations and mitigations presented in the EMPr will reduce the disturbance to ecosystems and the loss of biodiversity. Where negative impacts are unavoidable, strict management and rehabilitation is recommended to minimise these potential impacts. The use of potentially polluting substances will be managed according to requirements stipulated in the EMPr. The Developer is bound to the stipulations of the EMPr and will be held accountable should the EMPr not be implemented as stated.

The impacts of the proposed powerline on wetlands will be reduced by micrositing of pylons to avoid placing them within wetland areas or their buffer zones (unless agreed upon). The workers will be given environmental health and safety training prior to commencing any work. Daily 'tool box talks' will be used to inform workers of any specific environmental issues or health and safety concerns relating to the activities or location. The cost of rehabilitation required due to pollution or unnecessary environment degradation resulting from the activity will be the responsibility of the developer.

## BASIC ASSESSMENT REPORT

### 11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Constitution of the Republic of South Africa	The constitution paved the way for the protection of the natural environment and heritage resources through the recognition of the rights to a safe and healthy environment.	South African Government	
National Environmental Management Act, 1998 (Act No. 107 of 1998)	NEMA is the key environmental management legislation and states in section 2(4)(k) that "the environment is held in public trust for the people, the beneficial use of resources must serve the public interest and the environment must be protected as the people's common heritage" thereby paving the way for EIA process to assess developments that may have a harmful impact on the environment	DEA	1998
Environmental Impact Assessment (EIA) Regulations, 2010 (Government Notice No. R543, R544 and R546, 18 June 2010)	The EIA regulations describe the EIA process to be followed including the public participation process, and the listed activities that may have a harmful impact on the environment and must be assessed.	DEA	2010
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	Under section 38(1) of the NHRA any person who intends to construct a powerline or other linear development exceeding 300m in length must notify the responsible heritage resources agency of its intention.	SAHRA	1999
National Water Act, 1998 (Act No. 36 of 1998)	This Act provides for the protection and management of water resources. A Water Use License Application is made to authorise water use activities pertaining to the altering of the bed and banks of a watercourse and diverting the flow of water in a watercourse. A WUL Application will be submitted as the need for construction of a powerline over a	DWA	1998

## BASIC ASSESSMENT REPORT

	watercourse has been identified, and the construction of tower structures within 500m of a wetland may occur.		
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	In terms of section 6 of the Act, the Minister may prescribe control measures with which all land users have to comply. The control measure may relate to the regulating of the flow pattern of run-off water, the control of weeds and invader plants, and the restoration or reclamation of eroded land or land which is otherwise disturbed or denuded. This act will regulate construction activities to prevent the spreading of invasive species and to ensure successful rehabilitation of the receiving environment.	DEA	1983
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The Biodiversity Act provides for the management and protection of the country's biodiversity within the framework established by NEMA. It provides for the protection of species and ecosystems in need of protection, sustainable use of indigenous biological resources, and equity in bio-prospecting. Some Critical Biodiversity Areas and vulnerable and endangered ecosystems have been identified by the vegetation specialist in the study site.	DEA	2004
National Forests Act, 1998 (Act No. 84 of 1998)	The proposed project may result in the disturbance or damage to a tree protected under the NFA.	Department of Agriculture, Forestry and Fisheries (DAFF)	1983
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	The Protected Areas Act provides for the protection and conservation of ecologically viable areas representative of the country's biological diversity, its natural landscapes and seascapes. The proposed routes both preferred and alternative routes runs through a non-statutory protected area.	DEA	2003
Electricity Regulations Act, 2006 (Act No. 4 of 2006)	This act establishes a nationally regulatory framework for the electricity	NERSA	2006

## BASIC ASSESSMENT REPORT

	supply industry, and provides for licenses and registrations as the manner in which generation, transmission, distribution, reticulation, trading and the import and export of electricity are regulated. The erection of new electricity distribution infrastructure is thus regulated in terms of this act.		
National Energy Act, 2008 (Act No. 34 of 2008)	The Act allows for the regulation, construction and maintenance of security of energy supply in South Africa. The act empowers the energy regulator to invest in the construction and maintenance of energy infrastructure, which includes the installation of electrical infrastructure in areas where the grids are operating at near maximum capacity as well as where electricity is needed for the successful operation of various economically empowering procedures.	South African National Energy Development Institute.	2008
National Road Traffic Act, 1996 (Act No. 93 of 1996)	All the requirements stipulated in the NRTA regarding traffic matters will need to be complied with during the construction, operation and decommissioning phases of the proposed powerline.	South African National Roads Agency Limited (SANRAL)	1996
City of Tshwane Metropolitan Municipality Integrated Development Plan (IDP)	The IDP identifies the need to install, upgrade and increase the electricity grid in the local municipality, thus supports the proposed installation of distribution line.	City of Tshwane Metropolitan Municipality	2011-2016
Thembisile Hani Local Municipality Integrated Development Plan (IDP)	The IDP identifies the need to install, upgrade and increase the electricity grid in the local municipality, thus supports the proposed installation of distribution line.	Thembisile Hani Local Municipality	2011-2016
Gauteng EMF	The Gauteng EMF is a decision making tool that should be used to facilitate the consideration of applications for environmental authorisation in order to protect the natural resources within the district.	Gauteng Province	2014
Gauteng Biodiversity Conservation Plan	This Conservation plan provides the boundaries and areas where critical biodiversity zones and important support areas have	GDARD	2011



## BASIC ASSESSMENT REPORT

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	been identified and accepted by the provincial authority. The location of the CBAs in the CTMM have been taken acknowledged and mitigation measures to minimise impacts on these CBAs have been proposed by the competent vegetation specialist		
Gauteng Spatial Development Framework	This GSDF was used to determine whether the proposed development is aligned to the outcomes and goals set in the Provincial Spatial Development Framework drawn up for the Gauteng.	Office of the Premier of the Gauteng	2012
Municipal by-laws	All municipal by-laws applicable to the study area will need to be complied with during the construction, operation and decommissioning phases of the proposed powerline development	City of Tshwane Metropolitan Municipality	Varies

## BASIC ASSESSMENT REPORT

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

#### a) Solid waste management

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

<b>YES</b> <b>X</b>	NO
Minimal	

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

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

All solid waste which is not reusable will be collected at a central location and will be stored temporarily until removed to a recognised landfill site. Waste will under no circumstances be allowed to be burned or buried on site. Please note that due to the nature of the project the amount of construction waste that will be generated will be minimal.

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

An approved registered municipal landfill site.

Will the activity produce solid waste during its operational phase?

YES	<b>NO</b> <b>X</b>
m <sup>3</sup>	

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

N/A

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

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

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

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?

YES	<b>NO</b> <b>X</b>
-----	-----------------------

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

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

YES	<b>NO</b> <b>X</b>
-----	-----------------------

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

#### b) Liquid effluent

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

YES	<b>NO</b> <b>X</b>
-----	-----------------------

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

m <sup>3</sup>	
----------------	--

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

YES	<b>NO</b> <b>X</b>
-----	-----------------------

## BASIC ASSESSMENT REPORT

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

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

YES	<b>NO</b> X
-----	----------------

If YES, provide the particulars of the facility:

<b>Facility name:</b>			
<b>Contact person:</b>			
<b>Postal address:</b>			
<b>Postal code:</b>			
<b>Telephone:</b>		<b>Cell:</b>	
<b>E-mail:</b>		<b>Fax:</b>	

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

N/A
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### c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?

YES	<b>NO</b> X
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If YES, is it controlled by any legislation of any sphere of government?

YES	<b>NO</b> X
-----	----------------

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

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

During the construction phase, it is expected that there will be short-term dust generation and emissions from vehicles and machinery. However, the dust and emissions will have a medium- to short-term duration and have a limited impact on the very immediate surrounding areas. Where appropriate, dust suppression measures will be implemented to reduce the impacts. It is recommended that construction vehicles be serviced and kept in good mechanical condition to minimise possible exhaust emission.

### d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?

YES	<b>NO</b> X
-----	----------------

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

### e) Generation of noise

Will the activity generate noise?

<b>YES</b> X	NO
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If YES, is it controlled by any legislation of any sphere of government?

YES	<b>NO</b> X
-----	----------------

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

## BASIC ASSESSMENT REPORT

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

**Noise control regulations and SANS 10103:** Short term noise impacts are anticipated during the construction phase of the project. It is however anticipated that the noise will be localised and contained within the construction site. The applicant must adhere to the relevant provincial noise control legislation (if any) as well as SANS 10103. Working hours should be restricted to 07h00 to 18h00 Monday to Friday excluding public holidays unless otherwise agreed with adjacent landowners.

### 13. WATER USE

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

<b>Municipal</b>	Water board	Groundwater	River, stream, dam or lake	Other:	The activity will not use water
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

litres	
<b>YES</b> <b>X</b>	NO

This powerline crosses drainage lines and watercourse features along various sections of the proposed alignment. The main impact of the powerline is due to construction of the pylon structures (which has a very small local footprint). The pylon structures will be positioned to avoid the actual drainage lines and watercourses, where applicable, but may occur within the buffer area of the watercourses.

A water use license application (WULA) will be applied for from the Department of Water and Sanitation in a separate process. Please note that Section 21 (c) and (i) activities are likely to be triggered

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

### 14. ENERGY EFFICIENCY

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

N/A

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

N/A

## BASIC ASSESSMENT REPORT

### SECTION B: SITE/AREA/PROPERTY DESCRIPTION

**Important notes:**

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

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

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

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

<b>YES</b>	NO
<b>X</b>	

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in **Appendix I**. All specialist reports must be contained in **Appendix D**.

**Alternative 1 (Preferred alternative); Alternative 2 & Alternative 3:**

**Property description/physical address:**

<b>Province</b>	Gauteng Province
<b>District Municipality</b>	City of Tshwane Metropolitan Municipality
<b>Local Municipality</b>	City of Tshwane Metropolitan Municipality
<b>Ward Number(s)</b>	Ward 99 & 100
<b>Farm name and number</b>	Refer to <b>Appendix E</b> for farm details
<b>Portion number</b>	Refer to <b>Appendix E</b> for farm details
<b>SG Code</b>	Refer to <b>Appendix E</b> for SG codes.

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

**List attached in Appendix E**

**Property description/physical address:**

<b>Province</b>	Mpumalanga Province
<b>District Municipality</b>	Nkangala District Municipality
<b>Local Municipality</b>	Thembisile Hani Local Municipality
<b>Ward Number(s)</b>	Ward 3 & 32
<b>Farm name and number</b>	Refer to <b>Appendix E</b> for farm details
<b>Portion number</b>	Refer to <b>Appendix E</b> for farm details
<b>SG Code</b>	Refer to <b>Appendix E</b> for SG codes.

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

**List attached in Appendix E**

# BASIC ASSESSMENT REPORT

**Current land-use zoning as per local municipality IDP/records:**

Agriculture

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

Is a change of land-use or a consent use application required?

YES	<b>NO</b>
	<b>X</b>

## 1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

### Alternative S1 (Preferred alternative):

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

### Alternative S2:

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

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

## 2. LOCATION IN LANDSCAPE

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

2.1 Ridgeline		2.4 Closed valley		2.7 Undulating plain / low hills	<b>X</b>
2.2 Plateau		2.5 Open valley		2.8 Dune	
<b>2.3 Side slope of hill/mountain</b>	<b>X</b>	<b>2.6 Plain</b>	<b>X</b>	2.9 Seafront	

## BASIC ASSESSMENT REPORT

### 3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

**Alternative S1 Alternative S2: Alternative S3  
(Preferred alternative):**

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

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

### 4. GROUNDCOVER

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

**Alternative 1 (Preferred alternative):**

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

**Alternative 2:**

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

**Alternative 3:**

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

## BASIC ASSESSMENT REPORT

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

### 5. SURFACE WATER

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

Perennial River	<b>YES</b>	NO	UNSURE
Non-Perennial River	<b>YES</b>	NO	UNSURE
Permanent Wetland	<b>YES</b>	NO	UNSURE
Seasonal Wetland	YES	<b>NO</b>	UNSURE
Artificial Wetland	YES	<b>NO</b>	UNSURE
Estuarine / Lagoonal wetland	YES	<b>NO</b>	UNSURE

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

Three riparian features, namely the Elandsriver, the Vandykspruit and the Hartbeesspruit are intersected by the proposed route alignments. In addition to this, several channelled and unchannelled wetland features were also encountered along the proposed route alternatives. The main impact of the powerline is related to construction of the tower structures, each of which occupies only a very small local footprint. The tower structures will be positioned to avoid watercourse features, where applicable.

The rivers identified in the immediate vicinity of the powerline routes are both perennial and non-perennial. Further to this, the wetland has been identified as being permanent due to its inundation and saturation periods. The proposed powerline falls within the **Eastern Brakenveld** and **Highveld Aquatic Ecoregion** and is located within **B31B**, **B31A** and **A23B** quaternary catchments. The Present Ecological State (PES) for the affected quaternary catchment areas are indicated to be **Category C** (moderately modified), depending on feature assessed.





**Figure 6: Representative images of the various wetland and riparian features identified features along the Bigtree-Refilwe-Pelly alignment alternatives**

A detailed study on the wetlands and drainage lines were undertaken by a wetland specialist (Mr Steven van Staden from Scientific Aquatic Services) and the full report is attached in **Appendix D3**.

## 6. LAND USE CHARACTER OF SURROUNDING AREA

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

<b>Natural area</b>	Dam or reservoir	Polo fields
<b>Low density residential</b>	Hospital/medical centre	Filling station <sup>N</sup>
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential <sup>A</sup>	Church	<b>Agriculture</b>
Retail commercial & warehousing	Old age home	<b>River, stream or wetland</b>
Light industrial	Sewage treatment plant <sup>A</sup>	Nature conservation area
Medium industrial <sup>AN</sup>	Train station or shunting yard <sup>N</sup>	<b>Mountain, koppie or ridge</b>
Heavy industrial <sup>AN</sup>	Railway line <sup>N</sup>	Museum
Power station	Major road (4 lanes or more) <sup>N</sup>	Historical building
Office/consulting room	Airport <sup>N</sup>	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam <sup>A</sup>	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

## BASIC ASSESSMENT REPORT

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

N/A

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

N/A

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

N/A

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

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

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

**7. CULTURAL/HISTORICAL FEATURES**

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

<b>YES</b>	NO
<b>X</b>	
Uncertain	

Various heritage resources were found in close proximity to the proposed powerline. A summary of the heritage resources that were found are summarised in the sections below:

*Ruins of a farmstead*

Ruins of a farmstead were found towards the northern section of the proposed powerline route. The ruins include the main house, some outbuildings and remains of the garden. This heritage resource is regarded as having a high significance and it is therefore advised that the proposed powerline be realigned further south to completely avoid the ruins.



**Figure 7: Ruins of a farmstead**

*Informal burial place*

A large informal burial place was found at the southernmost end of the proposed powerline route. It has been confirmed that the burial place holds an approximate hundred (100) graves. Further to this, an existing 400kV powerline already crosses over the cemetery and it is therefore advised that the burial site should be avoided at all cost in order to prevent any further impact on the heritage site. It is also proposed that the burial site be fenced off with red danger tape during the construction period of the proposed powerline to prevent any construction vehicles or workers from entering the site.



**Figure 8: Informal burial place**

### *Farm cemeteries*

Two (2) farm cemeteries were found 100m apart along the middle section of the proposed powerline alignment. The farm cemeteries contain graves of former landowners as well as farm labourers. These heritage resources are regarded as having a high local significance and it is therefore suggested that the site be completely avoided and fenced off during the construction phase of the project.



**Figure 9: Farm cemeteries**

### *Community cemetery*

A large community cemetery was found at the northernmost section of the proposed powerline. The site is located an approximate 250m north of the existing road along which the proposed powerline extends. The community cemetery is regarded as having a high local significance and it is therefore advised that the proposed powerline alignment be realigned further south to the other side of the road.



**Figure 10: Community cemetery**

**A detailed study on the Heritage resources of the affected area was undertaken by a Heritage specialist (Dr Johnny van Schalkwyk) and the full report is attached in Appendix D1.**

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

GIBB appointed Johnny van Schalkwyk Consulting to assess the potential impacts to heritage resources that may occur throughout the construction of a proposed distribution powerline and associated substation, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended, in compliance with Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), (NHRA) as amended.

Johnny van Schalkwyk Consulting identified that Archaeological resources were not widespread throughout the area, however various formal and informal cemeteries as well as farmstead ruins constituting a high local significance was identified. It was proposed that the powerline route be realigned further south along sections in close proximity of these heritage resources in order to limit and prevent any potential negative impacts on these heritage resources. With the implementation of the proposed mitigation measures, it is envisaged that all impacts on the various heritage resources can be limited to have an overall heritage significance of low to very-low.

It has been concluded from the assessment that the proposed powerline and associated substation development may proceed along either one of the alternatives, given that the required mitigation measures or recommendations are effectively implemented.

Should any palaeontological material, archaeological material or human burials be uncovered during the course of the development, work should be stopped immediately and the findings needs to be reported to the relevant heritage authorities.

**Based on the information provided above, Johnny van Schalkwyk Consulting, recommends that the development proceed with the effective implementation of the proposed heritage mitigation measures and have submitted the full HIA report to SAHRA in fulfilment of the requirements of the NHRA. Mitigation measures recommended by Johnny van Schalkwyk Consulting have been incorporated into the EMPr and should be implemented. Please refer to Appendix D1 for the complete HIA.**

Will any building or structure older than 60 years be affected in any way?

YES	NO <input checked="" type="checkbox"/>
YES	NO <input checked="" type="checkbox"/>

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

**Please refer to Annexure D for the full Heritage Impact Assessment specialist report.**

## 8. SOCIO-ECONOMIC CHARACTER

### a) Local Municipality

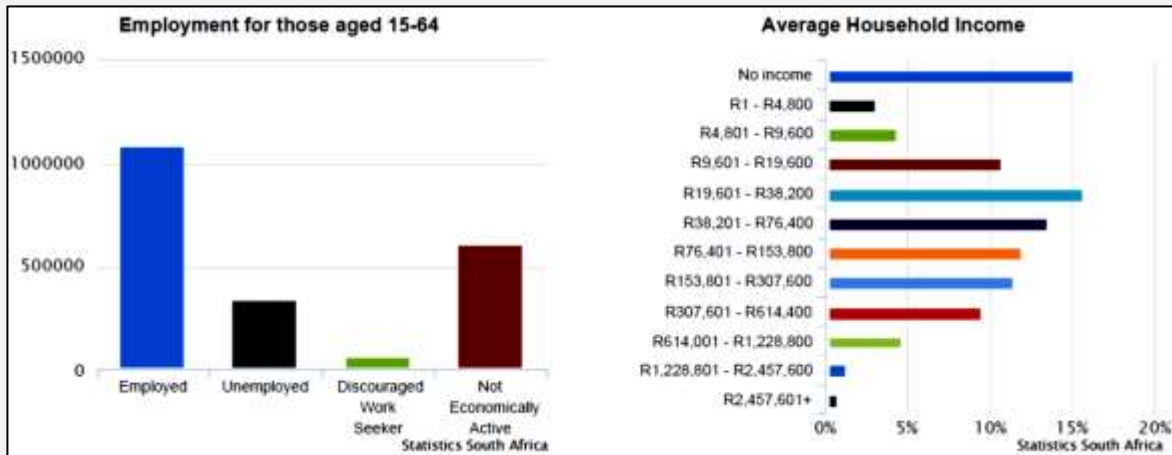
Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

#### **City of Tshwane Metropolitan Municipality:**

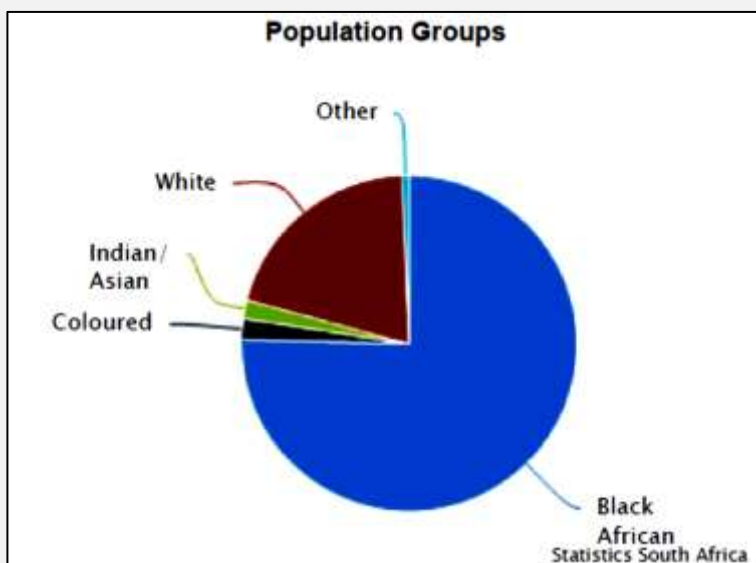
Even though the CTMM boasts a vibrant, diverse and growing economy which contributed 27% to Gauteng's Gross Domestic Profit (GDP) and 9% to the national GDP in 2011, employment opportunities are still an area of concern in the municipality. The total population size of this municipality is 2,921,488 and the unemployment rate is estimated at 24.2%. Amongst the working age group (15–64 years) in the area, constituting of 71.9% of the total population, it is estimated that 32.6% are unemployed. Only 23.4% of the population aged 20+ partook in higher education enrolment.

The unemployment concern is also further highlighted by the annual household income profile of the municipality. According to the Census 2011 data, nearly 15% of households have no source of income and approximately 46% of households in the municipality earn an annual income of less than R76,401.00. Individual monthly incomes vary greatly amongst population groups and over 44 per cent of individuals in the City have no source of income whilst another 9,6 per cent of the population earns less than R401 per month and almost 21 per cent of the population earns between R401 and R1 600 per month. **Figure 11** below represents the average percentage and household income of the CTMM.



**Figure 11: Average employment percentage and household income**

Of the 991,536 households within the CTMM, 88.6% have electricity for lighting; 76.6% has a flush toilet that is connected to sewerage systems; and 80.7% have weekly refuse removal. **Figure 12** below represents the ethnic makeup of the overall population in CTMM. According to this information, the most dominant ethnic group residing within this area, contributing 75.4% of the overall population size, is the Black African ethnic group. The remaining 24.6% of the population is spread across the remaining ethnic groups identified as Coloured (2%), Indian/ Asian (1.8%), White (20.1%) and other.

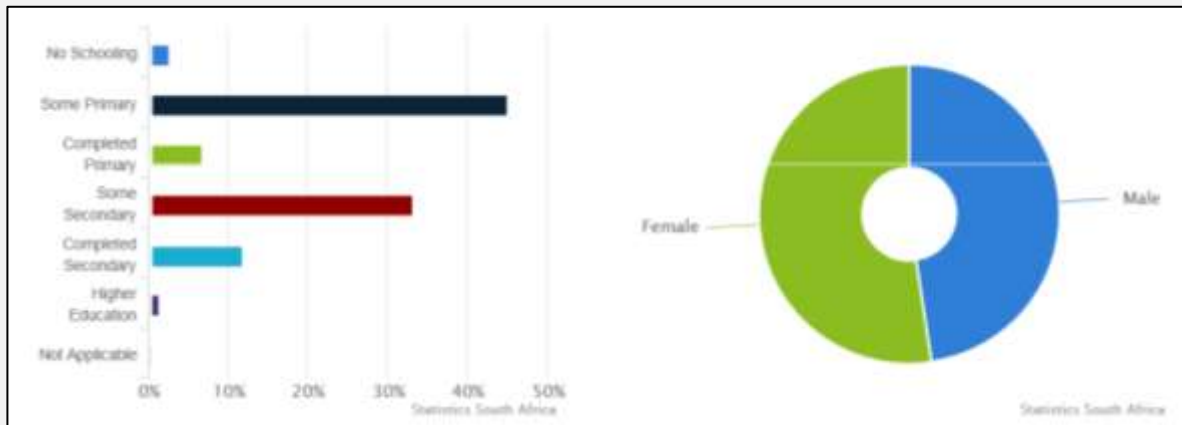


**Figure 12: Ethnic makeup of the CTMM**

(Ref: Statistics South Africa – [www.beta2.statssa.gov.za](http://www.beta2.statssa.gov.za)).

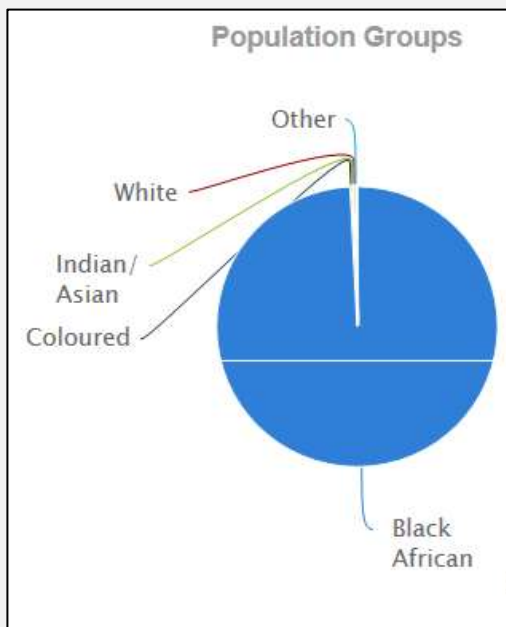
**Thembisile Hani Local Municipality:**

Thembisile Hani Local Municipality (THLM) is located in the Nkangala District Municipality of Mpumalanga province, South Africa. It is a semi-urban local municipality consisting of 57 villages within which there are five established townships. The municipality is named after Thembisile Chris Hani, Secretary General of the South African Communist Party, who was assassinated on 10 April 1993. The municipality's population growth is 1.91% during 2014 and the unemployment rate is 37%. From this, it is further estimated that the youth unemployment rate is approximately 49.4%. This is highly concerning and the biggest contributor to this high percentage of youth unemployment is due to the lack of education throughout this area. Only 5.2% of the entire population aged 20+ constitutes a higher education. **Figure 13** below represents the average percentage and household income of the THLM.



**Figure 13: Average employment percentage and household income**

Of the 75,634 households within the THLM, 92.3% have electricity for lighting; 6.8% has a flush toilet that is connected to sewerage systems; and 4.6% have weekly refuse removal. **Figure 14** below represents the ethnic makeup of the overall population in THLM. According to this information, the most dominant ethnic group residing within this area, contributing 99.2% of the overall population size, is the Black African ethnic group. The remaining 0.8% of the population is spread across the remaining ethnic groups identified as Coloured (0.2%), Indian/ Asian (0.3%), White (0.1%) and other (0.2%).



**Figure 14: Ethnic makeup of the THLM**

## BASIC ASSESSMENT REPORT

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Economic profile of local municipality:

The lack of energy resources within rural areas of South Africa is recognised as a major factor retarding socio-economic development.

**City of Tshwane Metropolitan Municipality:**

The total population size of the municipality is 2,921,488, and the key economic sectors are community services and government, followed by finance and manufacturing. Metal products, machinery and household products are the largest sub-sectors within manufacturing. The municipality further has a well-established manufacturing sector, with the automotive industry representing the most significant component.

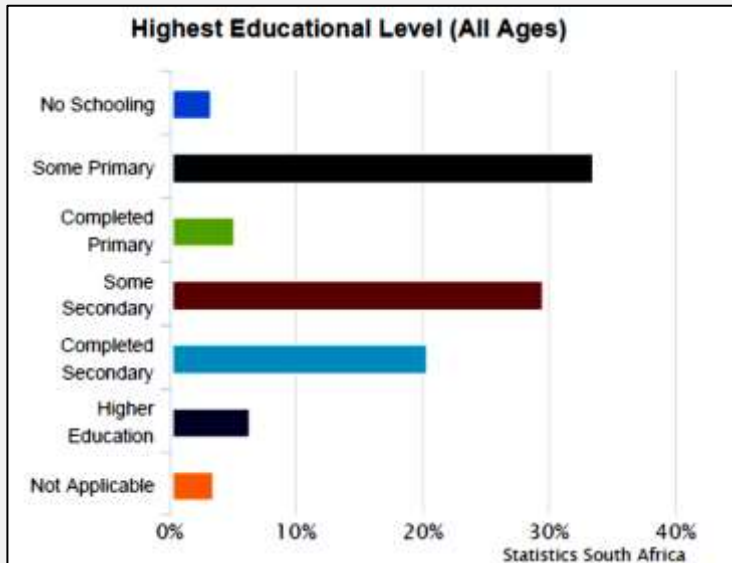
**Thembisile Hani Local Municipality:**

The total population size of the municipality is 310,458 and the key economic sectors are community services and government, trade and manufacturing.



Level of education:

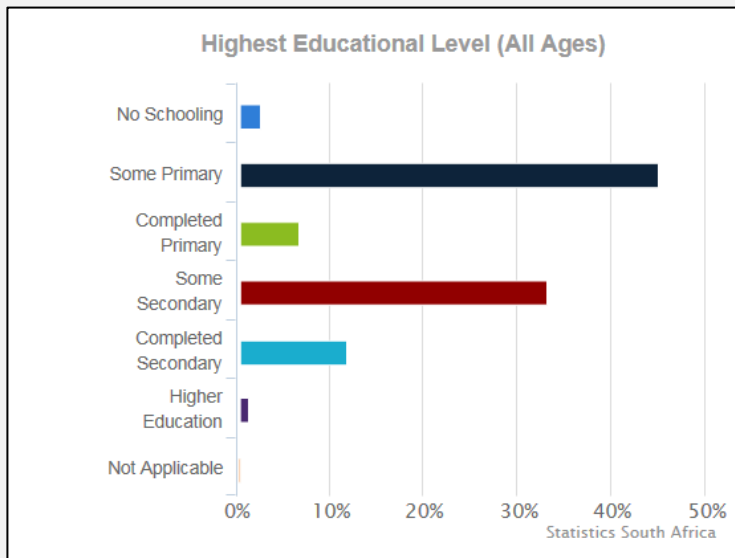
**City of Tshwane Metropolitan Municipality**



**Figure 15: Education percentage**

In 2011, an approximate 3.1% of the total population residing in the CTMM had no form of schooling. Coupled with those individuals who only completed some form of primary education (a further 33.3%). As such approximately half of the population had limited educational skills, which in turn would hinder their employability on the general employment market. It is statistically proven that only an estimated 6.1% of the population obtained a higher education.

**Thembisile Hani Local Municipality**



**Figure 16: Education percentage**

In 2011, an approximate 2.6% of the total population residing in the THLM had no form of schooling. Coupled with those individuals who only completed some form of primary education (a further 44.8%). As such approximately half of the population had limited educational skills, which in turn would hinder their employability on the general employment market. It is statistically proven that only an estimated 1.3% of the population obtained a higher education.

## BASIC ASSESSMENT REPORT

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

What is the expected capital value of the activity on completion?	R120 million	
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown	
Will the activity contribute to service infrastructure?	<b>YES</b> <b>X</b>	NO
Is the activity a public amenity?	YES	<b>NO</b> <b>X</b>

**The proposed 132kV powerline and associated substation will serve its purpose in upgrading and strengthening the existing electrical feed supply in the area.**

How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Eskom undertakes an open tendering process to employ suitable contractors to carry out the construction phase of the development. Contractors are required to employ local unskilled labourers for non-specialized work.
What is the expected value of the employment opportunities during the development and construction phase?	This can only be established once the contractor is appointed
What percentage of this will accrue to previously disadvantaged individuals?	>= 90 %
How many permanent new employment opportunities will be created during the operational phase of the activity?	None. Eskom will maintain the powerline once constructed
What is the expected current value of the employment opportunities during the first 10 years?	N/A
What percentage of this will accrue to previously disadvantaged individuals?	N/A

### 9. BIODIVERSITY

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

## BASIC ASSESSMENT REPORT

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

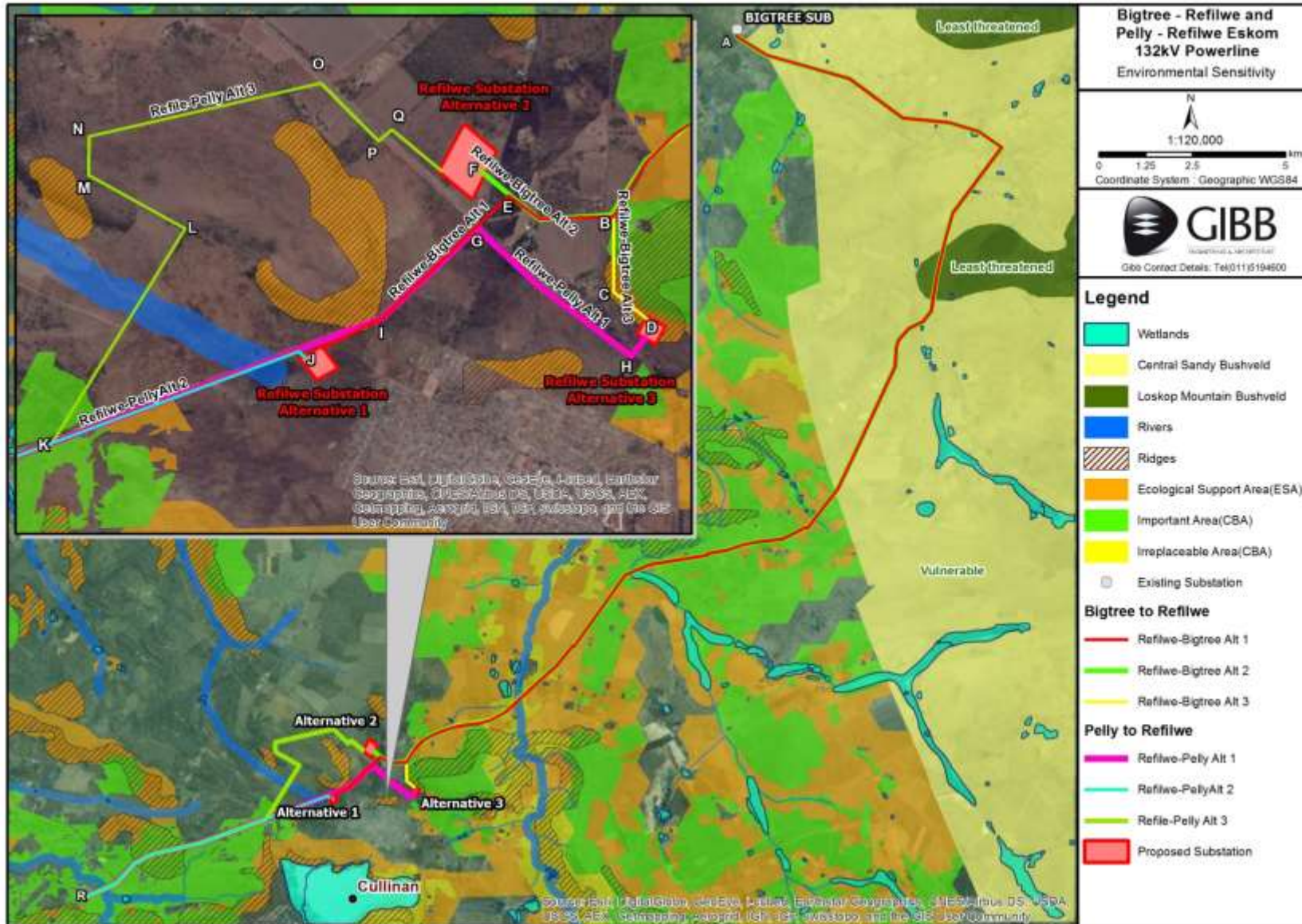
Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	Endangered vegetation types from the NCBCP and the WCBCP
				Vulnerable vegetation types from the STEP and NCBCP and WCBCP

Please refer to **Figure 17** below indicating the study area in relation to the identified CBA and ESA areas.

- b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	70%	The natural habitat units predominantly found throughout the study area includes the <i>Acacia karroo</i> – <i>Ziziphus mucronata</i> mixed woodland, <i>Burkea africana</i> – <i>Ochna pulcra</i> woodland, <i>Xerophyta retinervis</i> – <i>Senecio venosus</i> rocky grassland, <i>Combretum erythrophyllum</i> – <i>Rhus lancea</i> riparian and wetland vegetation, <i>Elionurus muticus</i> – <i>Themeda triandra</i> grassland and Altered vegetation.  Even though the vegetation units found throughout the study area constitutes a moderate to high sensitivity and support a vast array of species, alteration in the natural state of these vegetation units were noted. This is due to farming activities, overgrazing and invasion of alien invasive plant species.
Near Natural (includes areas with low to moderate level of alien invasive plants)	25%	Disturbances were related to farming and infrastructure development such as roads and houses. Several of the vegetation habitats were included in game farms where overgrazing has affected some areas.
Degraded (includes areas heavily invaded by alien plants)	0%	No areas exist which is heavily degraded and/ or invaded by alien plant species.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	5%	Throughout the study area, roads and existing powerlines are prominent along the proposed powerline route, where the vegetation has been transformed due to this infrastructure. This transformation of natural vegetation however does not comprise a significant proportion of the study area and further emphasises the need for the proposed alignment to be located parallel to the existing roads extending through the area.

# BASIC ASSESSMENT REPORT



## BASIC ASSESSMENT REPORT

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

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

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

The proposed development extends over four (4) terrestrial ecosystems namely the **Central Sandy Bushveld, Loskop Mountain Bushveld, Rand Highveld Grassland** and the **Marikana Thornveld**. The Central Sandy Bushveld ecosystem constitutes a vulnerable status, Loskop Mountain Bushveld ecosystem constitutes a least threatened status, Rand Highveld Grassland ecosystem constitutes an endangered status and the Marikana Thornveld ecosystem constitutes an endangered conservation status.

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

**Vegetation:**

The vegetation types that will be affected by the proposed development are the Central Sandy Bushveld, Loskop Mountain Bushveld, Rand Highveld Grassland and the Marikana Thornveld vegetation. These vegetation units constitute a *least threatened, endangered and vulnerable* conservation status and is made up by the following habitat units:

- *Acacia karroo* – *Ziziphus mucronata* **mixed woodland**
- *Burkea africana* – *Ochna pulcra* **woodland**
- *Xerophyta retinervis* – *Senecio venosus* **rocky grassland**
- *Combretum erythrophyllum* – *Rhus lancea* **riparian and wetland vegetation**
- *Elionurus muticus* – *Themeda triandra* **grassland**
- **Altered vegetation**

*Acacia karroo* – *Ziziphus mucronata* mixed woodland

The dominant species that were visible throughout this vegetation unit were *Acacia karroo*, *Acacia caffra*, *Ziziphus mucronata* and *Rhus leptodictya* trees. Shrubs such as *Grewia flava* and *Lippia javanica* were present in the herbaceous layer with *Eragrostis superba*, *Eragrostis chloromelas* and *Heteropogon contortis* grass types commonly found throughout.

From a habitat sensitivity point of view, this habitat unit is considered to constitute a high sensitivity due to its high species richness and habitat value for a wide variety of faunal species.

*Burkea africana* – *Ochna pulcra* woodland

The dominant species that were visible throughout this vegetation unit were Wild seringa (*Burkea africana*), Peeling plan (*Ochna pulchra*), Transvaal Beech wood (*Faurea saligna*) and Sugarbush (*Protea caffra*). In some instances *Burkea africana* were the only woody species present in a grassy savannah. This vegetation unit consists of a well develop grass, forb and tree layer and is likely to support scarcer plant species especially on rocky ridges. Trees such as *Burkea Africana* and *Protea caffra* are very sensitive to disturbance as they do not re-establish easily once disturbed. Based on the information provided above, this habitat unit is considered to constitute a high sensitivity.

*Xerophyta retinervis* – *Senecio venosus* rocky grassland

The dominant species that were visible throughout this vegetation unit were *Melinis nerviglumis*, *Loudetia simplex* and *Urelytrum agropyroides*. The shrub *Cryptopelis oblongifolia* were also prominent in this grassland. Distinctive species included *Xerophyta retinervis* and *Boophane disticha*. The high species richness present in this vegetation unit indicates a high sensitivity. The species often includes sensitive species such as orchids. Based on the information provided above, this habitat unit is considered to constitute a high sensitivity.

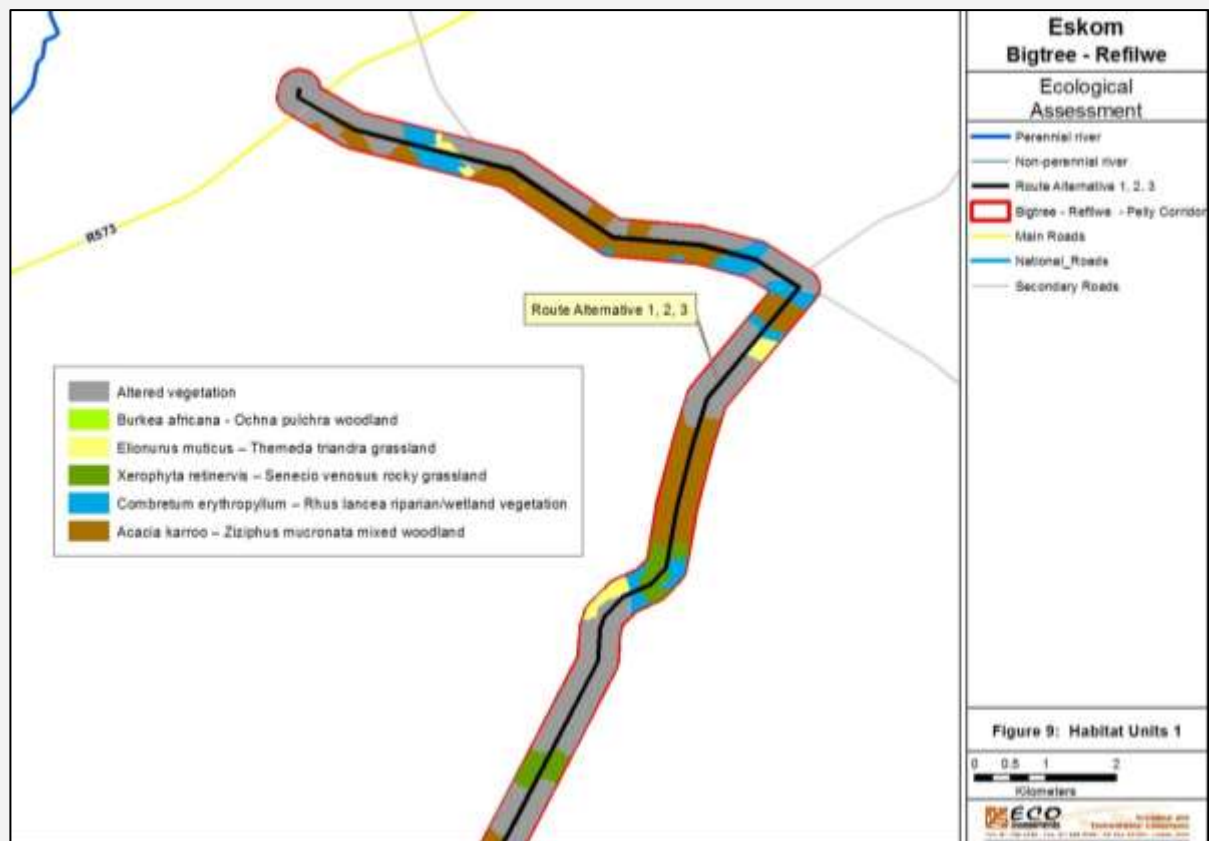
Combretum erythrophyllum – Rhus lancea riparian and wetland vegetation

The dominant species that were visible throughout this vegetation unit were *Combretum erythrophyllum* (river bushwillow) and *Searsia lancea* (Common Karee). On the edges of the streams found throughout the study area, plants such as *Typha capensis* (Bullrush) and *Phragmites australis* (Reed) were commonly seen. Various alterations to river and wetland features were noted throughout the study area, however these features still support several species that are heavily dependent on water and in need of shelter throughout the habitat area. Based on the information provided above, this habitat unit is considered to constitute a high sensitivity.

Elionurus muticus – Themeda triandra grassland

The dominant species that were visible throughout this vegetation unit were *Elionurus muticus*, *Themeda triandra*, *Eragrostis superba* and forbs and dwarf shrubs such as *Dicercaryum eriocarpum*, *Dicoma capensis* and *Tephrosia lupinifolia*. Due to moderate levels of disturbance experienced throughout the study area by means of farming activities and overgrazing, this vegetation unit is considered to constitute a low to moderate significance.

Please refer to **Figure 18-20** below for the map indicating the location of the habitat unit in respect to the proposed development.



**Figure 18: Habitat Units found throughout the study area**

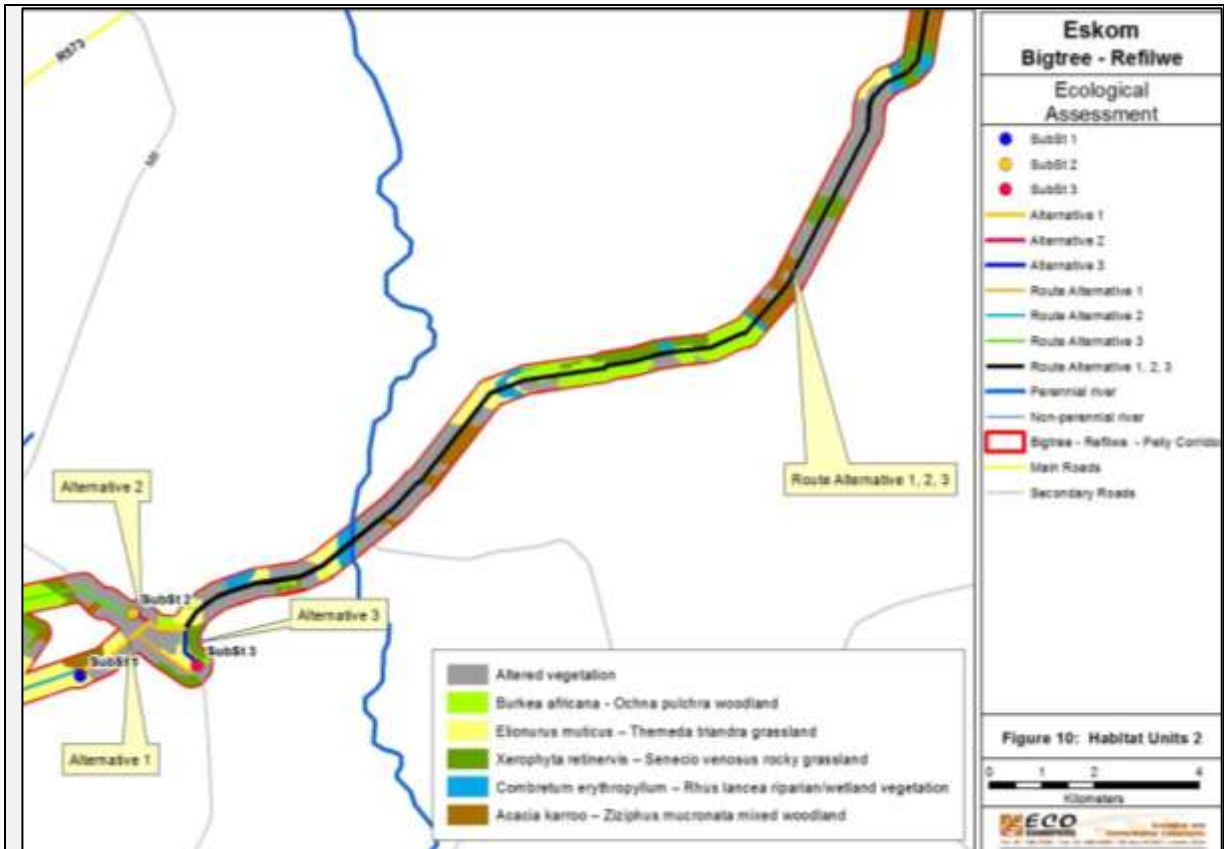


Figure 19: Habitat Units found throughout the study area (continued)

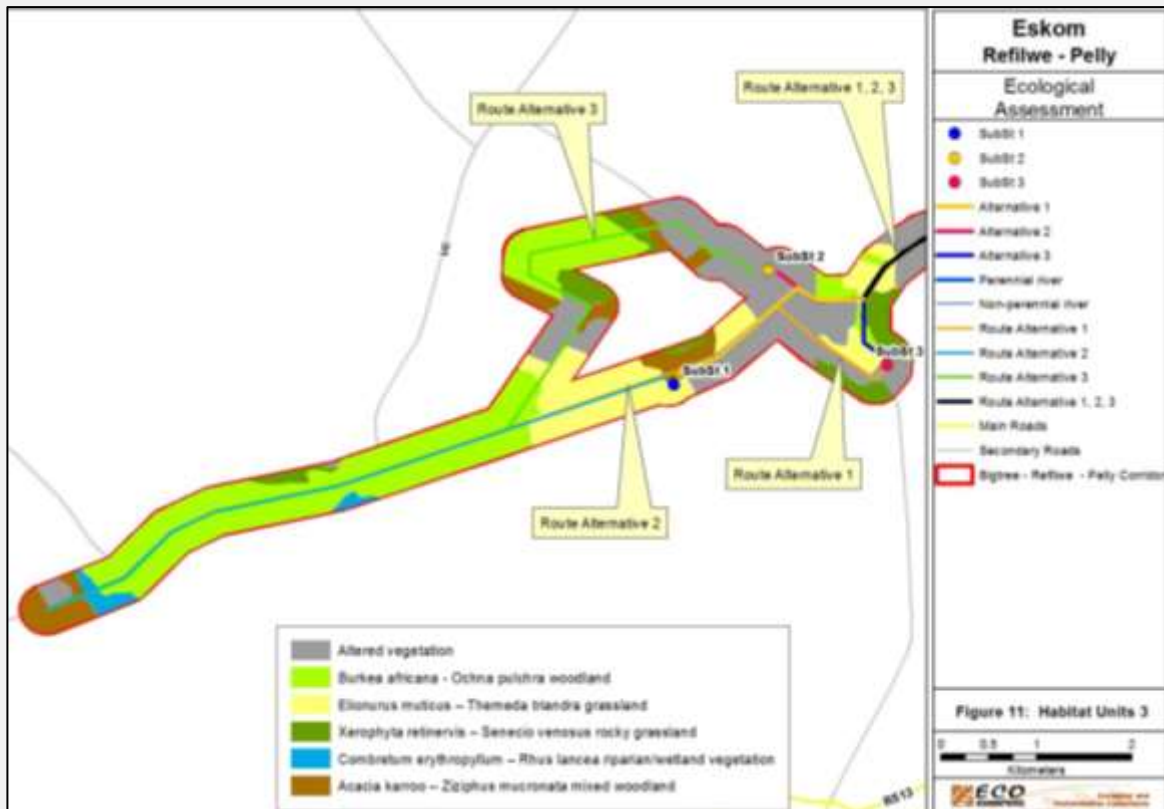


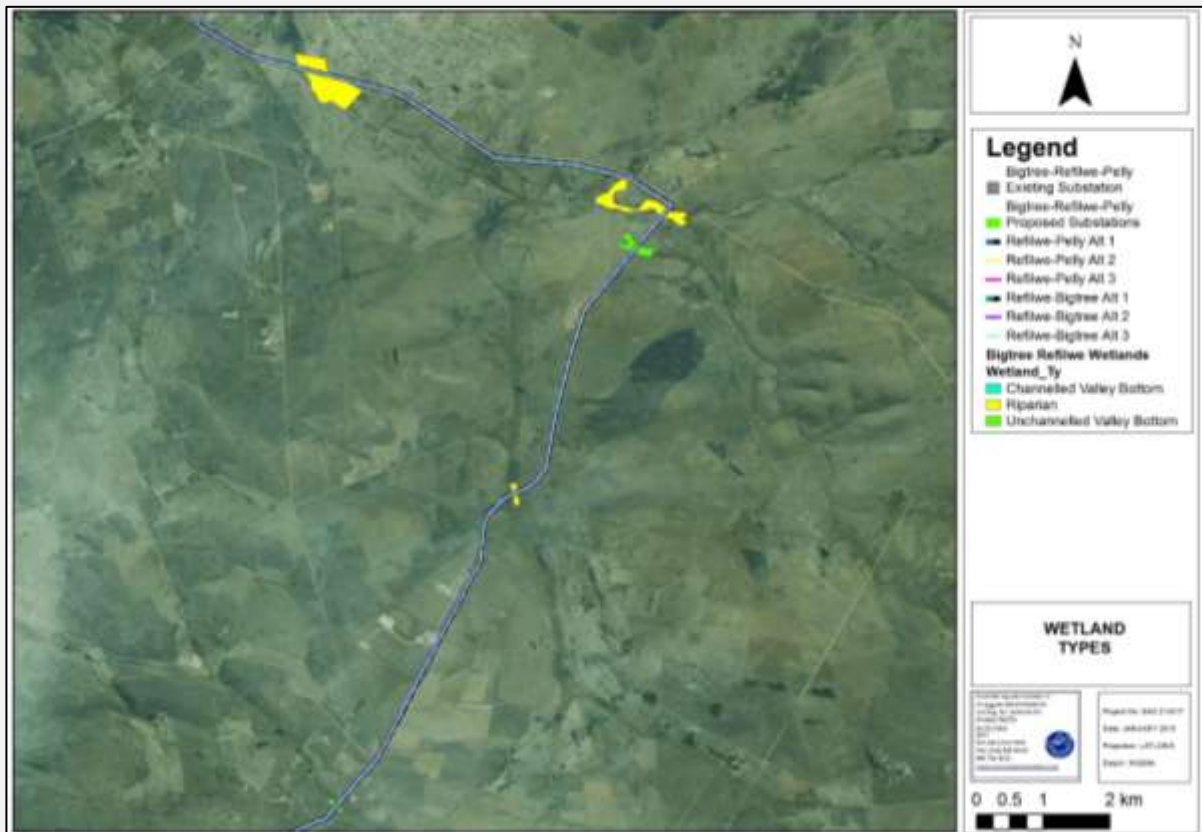
Figure 20: Habitat Units found throughout the study area (continued)



**Topography, geology and soils:**

The study area is characterised by undulating plains and several Class 2 ridges. The Marikana Thornveld is typically represented by open Acacia karoo woodland, occurring in valleys and slightly undulating plains and some lowland hills in the southern portion of the study area. Shrubs are more dense along drainage lines and specifically found on termitaria and rocky outcrops or in other habitat protected from fire.

Several watercourse features of significance were identified along the proposed powerline route. These include the Elandsriver, the Vandykspruit and the Hartbeesspruit as well as several channelled and unchannelled wetland features. A map indicating the location of the wetland feature is included in **Figure 21 & 22** below.



**Figure 21: Watercourse features found along the northern end of the study area**

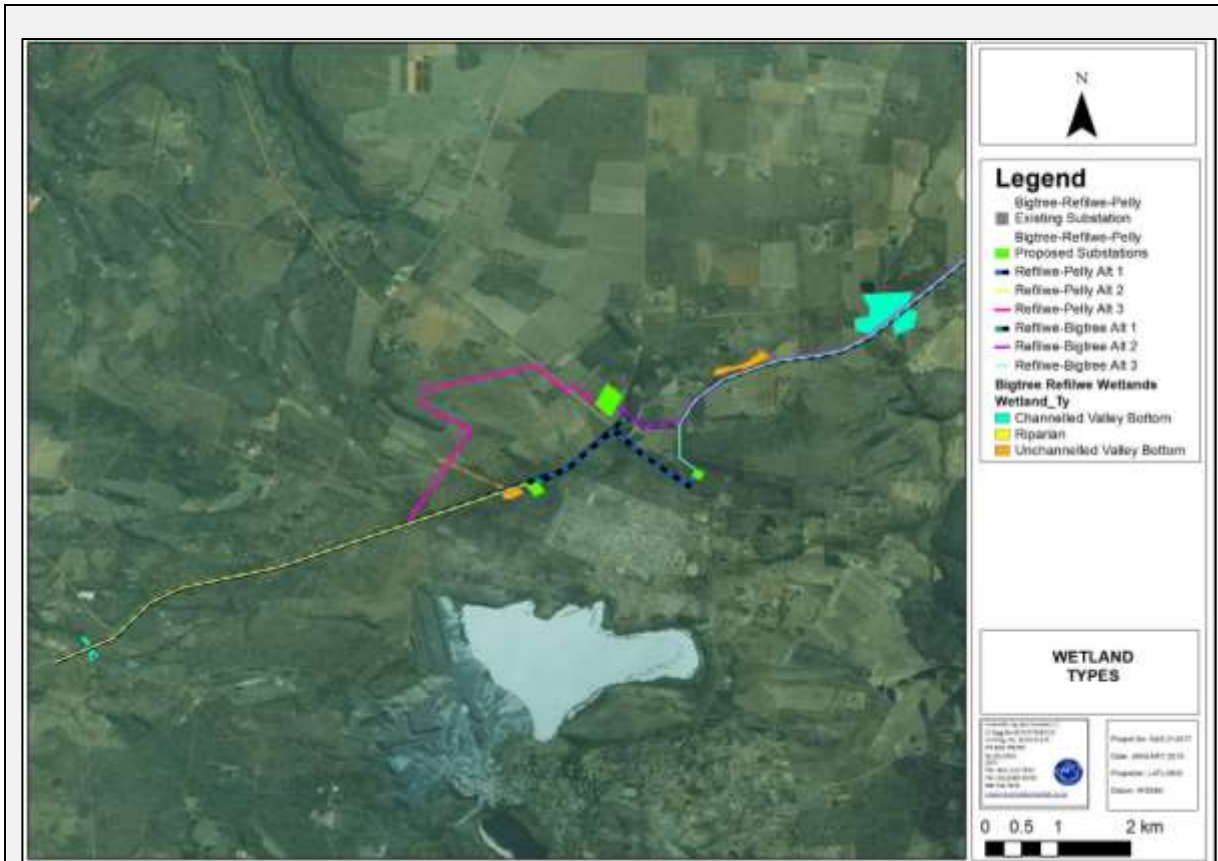


Figure 22: Watercourse features found along the southern end of the study area

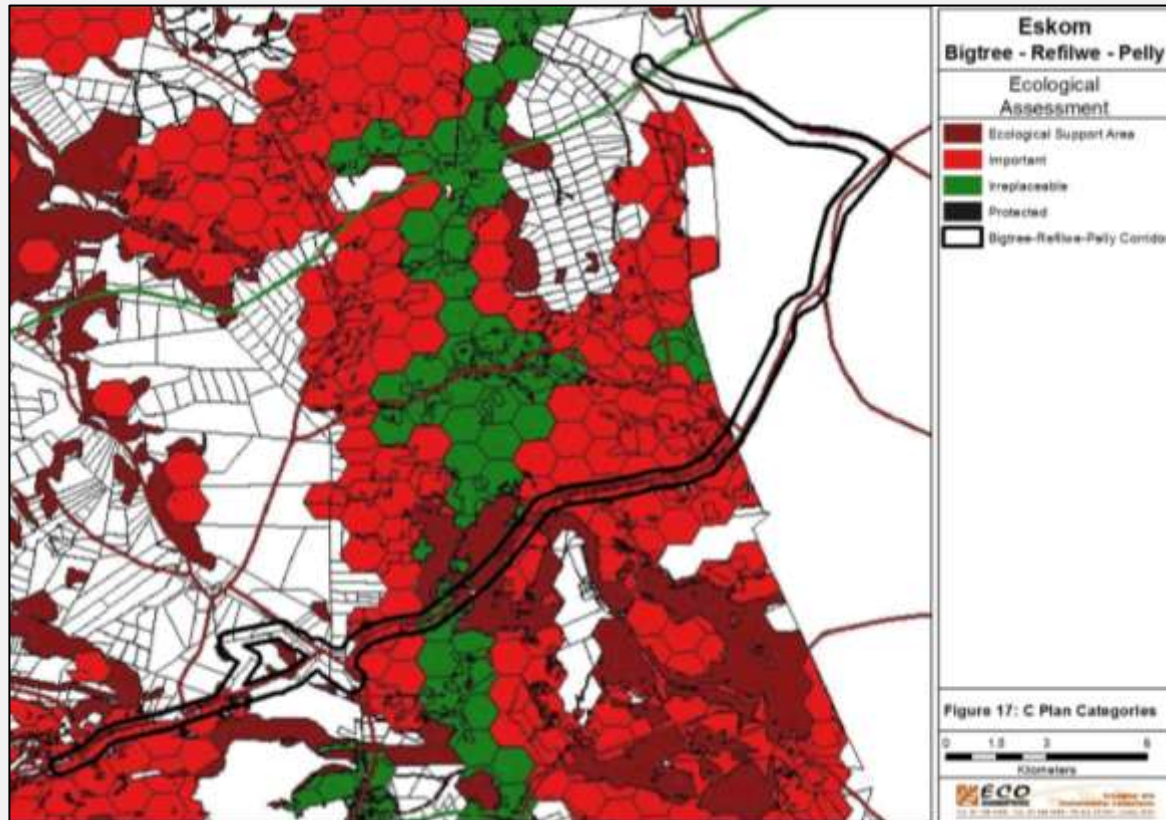
**Local Climate:**

The climate typically constitutes a summer rainfall climate with very dry winters. Three seasons characterize the climate including a cool dry season from May to Mid-August, a hot dry season from Mid-August to October and a hot wet season from November to April. The study area normally receives about 517mm rain per annum, with most rainfall occurring mainly during the summer months. Temperatures experienced in summer are hot, reaching maximum temperatures of 28°C by day and dropping to a temperature of 14°C at night. Day temperatures in winter reach a maximum of 19°C, however night temperatures can drop to as low as 3°C, with occurrence of occasional frost.

**Biodiversity:**

It has been identified that the proposed alternatives intercept various areas of environmental sensitivity. Various sections constituting an *important* conservation status was found along majority of the proposed powerline route. Towards the middle section of the of the route alignment sections constituting an *irreplaceable* conservation status was found along with several areas deemed as *Ecological Support Areas*. The vegetation found in these areas are deemed fairly natural, however moderate alterations have occurred as a result of farming practices.

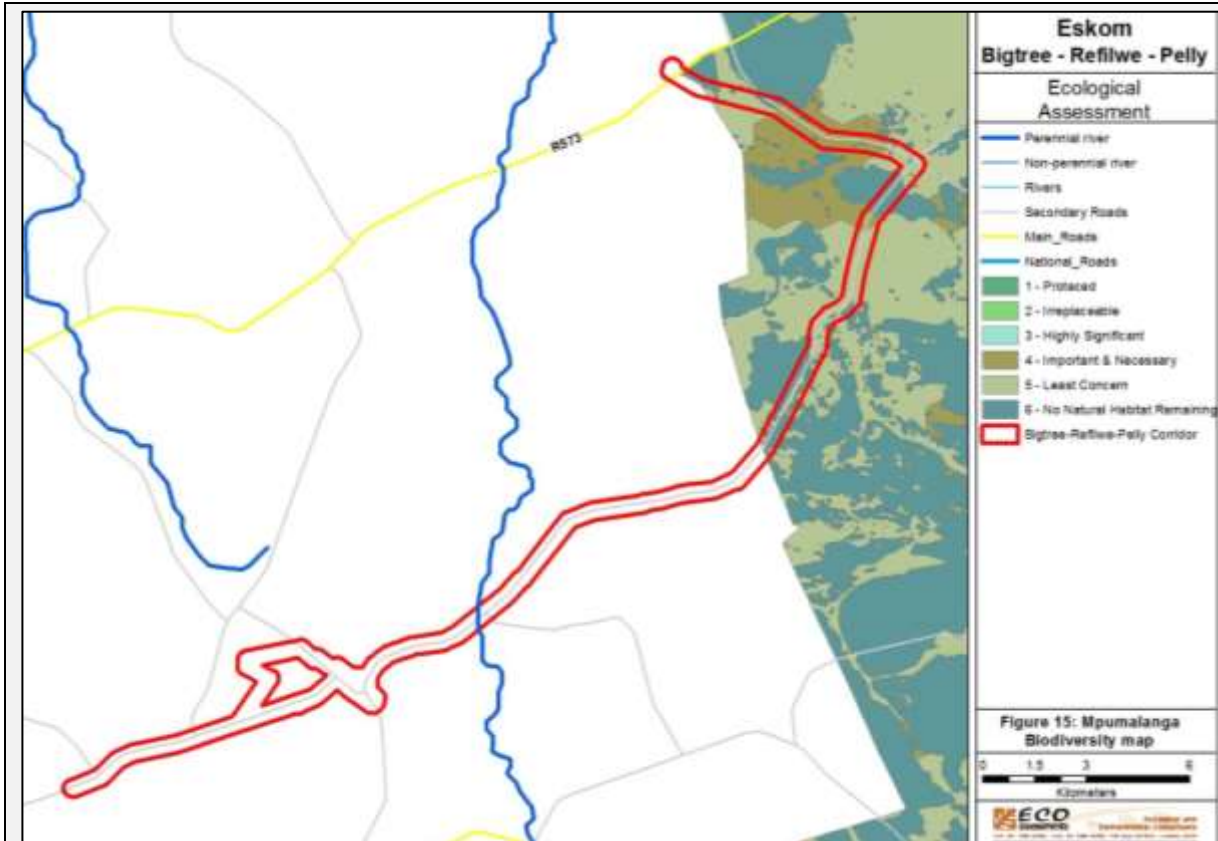
The conservation status according to C-Plan data is outlined in **Figure 23** below.



**Figure 23: Conservation status of the study area according to C-Plan Data**

Given that majority of the northern section of the proposed powerline is located within the Mpumalanga Province, environmental sensitivity data was obtained from the Mpumalanga Biodiversity Plan. It is indicated by this plan that majority of the powerline extends over areas constituting a *least concern* conservation status. However, a small area towards the northern most end of the powerline route constitutes an *important and necessary* conservation status, which is inevitably extended across.

The conservation status according to the Mpumalanga Biodiversity Plan data is outlined in **Figure 24** below.



**Figure 24: Conservation status of the study area according to the Mpumalanga Biodiversity Plan Data**

**Flora:**

Several Red listed species are recorded for the study area where the habitat of these plant species includes rocky grasslands, open and closed woodlands, rocky hillsides, riverine and wetland habitats. The conservation status for these vegetation types are indicated as *least threatened*, *endangered* and *vulnerable*. It should however be noted that due to the nature of the proposed development and the span distance of the powerline itself, it is not envisaged that these sensitive plant species will be impacted upon.

## BASIC ASSESSMENT REPORT

### **Fauna:**

#### *Mammals*

Eleven (11) species has been identified as threatened throughout the study area. These species include the following:

Scientific name	Common name	Status
<i>Mellivora capensis</i>	Honey badger	Near Threatened
<i>Atelerix frontalis</i>	South African hedgehog	Near Threatened
<i>Myotis welwitschii</i>	Welwitsch's hairy bat	Near Threatened
<i>Myotis tricolour</i>	Temminck's hairy bat	Near Threatened
<i>Pipistrellus rusticus</i>	Rusty bat	Near Threatened
<i>Miniopterus schreibersii</i>	Schreiber's long-fingered bat	Near Threatened
<i>Rhinolophus clivosus</i>	Geoffroy's horseshoe bat	Near Threatened
<i>Myotis welwitschii</i>	Welwitsch's hairy bat	Near Threatened
<i>Rhinolophus darlingi</i>	Darling's horseshoe bat	Near Threatened
<i>Rhinolophus blasii</i>	Peak-saddle horseshoe bat	Vulnerable
<i>Clootis percivalli</i>	Short-eared trident bat	Critically Endangered

**SA Hedgehog** - The SA hedgehog has a wide tolerance for various habitats. They are nocturnal and although they can be found in most environments they prefer grass and bushveld that is not too damp, with a good covering of leaves and other debris.

**Honey Badger** - The ratel tolerates a wide range of conditions. It is an opportunistic insectivore and carnivore, but takes an even wider range of invertebrate and vertebrate prey, from insects to the young of large mammals, and it eats carrion. It also eats berries and fruits. It's digging ability, perhaps second only to the aardvark's, with whose holes its holes are often confused, enables it to extract buried food that is inaccessible to less-accomplished excavators. In addition, the ratel is one of the few mammalian predators on bees, feeding both on larvae and honey, hence the scientific name *Mellivora*, "honey eater," and its common name, honey badger (Wildlife campus 2014).

**Bats** - A range of bat species can potentially occur in the study area. Sufficient savanna and food sources exist in the study area to support bat populations. Several species are dependent on caves where they rest during the day. They will also use hollow trees and crevices in rocks for this purpose. Given the nature of this project, it is deemed unlikely for bats to be disturbed by the construction of a powerline.

### *Reptiles & Amphibians*

The reptile atlas of South Africa indicates that 77 Reptile species occur within the Bigtree-Refilwe-Pelly area. These species include snakes, skinks, lizards, geckos, terrapins and tortoises. Six (6) endemic species are listed including the Black-spotted Dwarf Gecko (*Lygodactylus nigropunctatus*), Spotted Dwarf Gecko (*Lygodactylus ocellatus*), Transvaal Gecko (*Pachydactylus affinis*), Coppery Grass Lizard (*Chamaesaura aenea*) and the Western Natal Green snake (*Philothamnus semivariatus*). Other species that are worthy to mention are the Southern African Python (*Python natalensis*), Leopard Tortoise (*Stigmochelys pardalis*) as well as the Striped Harlequin Snake (*Homoroselaps dorsalis*) with a Near Threatened status. It should also be noted that the habitat of the Leopard Tortoise is varied, the Python often keep to rocky areas and riverine scrub, and the Striped Harlequin snake prefers grassland areas.

Further to this, amphibians are largely associated with wet areas such as rivers, streams, wetlands and pans. Most of the amphibian species have a least Concern status, except for the Giant Bullfrog (*Pyxicephalus adspersus*) that is *Near Threatened* and listed for the area.

The Giant Bullfrog has this status in South Africa because many of its populations have been destroyed or otherwise adversely affected by human activities. Habitat loss, which is the most severe in Gauteng province, is having the greatest impact on the species. Bullfrogs use shallow, still-standing, seasonal water to breed.



**Figure 25: Giant Bullfrog constituting a Near Threatened Conservation Status**

**Ecological Impact Assessment**

Please refer to Table 2 below for the Impacts and Mitigation measures identified in the Ecological Impact Assessment:

**Table 2: Ecological Impact Assessment**

Impacts:	Mitigation Measures:
Loss of vegetation and associated faunal species	<ul style="list-style-type: none"> <li>• Clearing of the servitude should be as narrow as possible;</li> <li>• A summer walkthrough should be conducted by a qualified botanist to identify any rare or threatened plant species;</li> <li>• Trees in the grassland habitats should be avoided as far as possible;</li> <li>• The relevant licenses and permits will need to be obtained for the removal of protected trees, sensitive plants;</li> <li>• Sensitive habitats should be avoided as far as is possible;</li> <li>• Demarcate the servitude with semi-permanent markers;</li> <li>• No painting or marking of rocks or vegetation shall be allowed;</li> <li>• No trees or branches should be used for fire making;</li> <li>• If herbicides are used for the removal of trees, it should be species specific;</li> <li>• Big trees that need to be removed must be cut and treated with pesticide.</li> </ul>
Disturbance of eco-system processes	<ul style="list-style-type: none"> <li>• A Fire Management Plan must be compiled by the Project team. No open fires will be allowed;</li> <li>• Rehabilitation efforts should be implemented along steep slopes to prevent erosion;</li> <li>• An indigenous grass mix must be used for rehabilitation;</li> <li>• Strips of bush must be maintained on steep slopes to limit risk of erosion;</li> <li>• Game must be fenced out of areas where rehabilitation efforts are underway;</li> <li>• A strategy must be developed to prevent the dispersal of alien plants.</li> </ul>
Disturbance of riverine habitat	<ul style="list-style-type: none"> <li>• No disturbance of riparian vegetation (riverine or wetland) should be allowed;</li> <li>• Existing roads must be used around riverine areas;</li> <li>• Pylons should be located further than 32m from the edge of riparian zones.</li> </ul>
Loss of Red Listed plants	<ul style="list-style-type: none"> <li>• Should any sensitive species be found, management measures should be adopted for the species and fenced if at all possible;</li> <li>• Sensitive plant species should be removed and relocated from points of direct impact before construction commences.</li> </ul>
Loss of Red Listed bird species	<ul style="list-style-type: none"> <li>• Incorporate bird perches onto the pylon structures;</li> <li>• Install bird flappers or devices in high risk sections of the powerline.</li> </ul>
Loss of common and Red Listed faunal habitat	<ul style="list-style-type: none"> <li>• No wild animals are allowed to be harmed or hunted;</li> <li>• Tortoises and porcupines should be removed to surrounding areas;</li> <li>• Relevant work personnel must be briefed and trained on the presence of dangerous species;</li> <li>• Vehicle traffic after dark should be limited as far as possible.</li> </ul>

**A detailed study on the ecological resources in the study area was undertaken by an Ecologist (Mr Mark Custers from ECO Assessments cc) and the full report is available in Appendix D2.**

**From an Ecological point of view, route Alternative 2 and its associated substation location 2 is preferred from an ecological point of view.**

**Avifauna Assessment:**

Of the total avifauna, twelve (12) priority species were recognized as key in the assessment of avian impacts of the proposed Bigtree-Refilwe-Pelly 132kV powerline near Moloto. These are mostly nationally and/or globally threatened species which are known to occur, or could potentially occur, in relatively high numbers throughout the development area and could potentially be negatively affected by the proposed development. These species include the Blue Crane, Cape Vulture, Martial Eagle African Fish-Eagle and African Hawk Eagle. These species were included because they are scarce, impact susceptible, predatory species that potentially play an important role in maintaining ecological balance in the local environment.

Please refer to Table 3 below for the Impacts and Mitigation measures identified in the Avifauna Assessment:

**Table 3: Avifaunal Impact Assessment**

Major Impacts:	Mitigation Measures:
Disturbance of raptors, large, terrestrial, wetland and savanna birds	<ul style="list-style-type: none"> <li>• Ensure that all new lines are marked with bird flight diverters;</li> <li>• Ensure that all new powerline infrastructure are adequately insulated and bird-friendly;</li> <li>• Minimize disturbance impacts associated with maintenance of the lines by proper scheduling of activities;</li> <li>• Minimise the extent of woodland cleared in the servitude required for the route of the alignment; and</li> <li>• Establish practical and sustainable management plan for dealing with raptor stick nests built on the new line.</li> </ul>
Habitat loss for raptors, large, terrestrial, wetland and savanna birds	
Mortality of raptors, large terrestrial and wetland birds	

A detailed study on the avifauna species of the study area was undertaken by an Avifauna specialist (Mr Andrew Jenkins from Avisense Consulting) and the full report is attached in Appendix D4.

**From an Avifaunal point of view, the proposed alternatives have similar impacts and any of those can be implemented provided the stipulated mitigation measures are implemented effectively.**



**Wetland Assessment:**

The proposed project footprint falls within the Eastern Bankenveld and Highveld Aquatic Ecoregion and is located within B31B, B31A and A23B quaternary catchments. Three (3) riparian features, namely the Elandsriver, the Vandykspruit and the Hartbeesspruit are intersected by the proposed route alignments. In addition to this, several channelled and unchannelled wetland features were also encountered along the proposed route alternatives. Following the assessment of the channelled valley bottom wetland feature, the wetland was classed as having a *moderately high importance*.

The Present Ecological State (PES) of the **riparian features** falls into a Category C, which indicates that this area is largely moderately modified.

Please refer to **Figure 26** for representative images of the various watercourse features along the proposed Bigtree-Refilwe-Pelly powerline alignment alternatives.



**Figure 26: Wetland and riparian features along the proposed Bigtree-Refilwe-Pelly powerline alignments**

## BASIC ASSESSMENT REPORT

Please refer to Table 4 below for the Impacts and Mitigation measures identified in the Wetland Impact Assessment:

**Table 4: Wetland Impact Assessment**

Impacts:	Mitigation Measures:
Impacts on Wetland Habitat and Ecological Structure	<ul style="list-style-type: none"> <li>• No support structures should be constructed within the wetland and riparian areas;</li> <li>• Limit the footprint area of the construction activities. Construction vehicles must use existing roads where possible;</li> <li>• During construction all building materials should be kept out of the wetland and riparian areas as well as any active stream channels;</li> <li>• All waste and remaining building materials should be removed from site on completion of the project;</li> <li>• No vehicles should be allowed to indiscriminately drive through the wetland and riparian areas or within the active stream channels;</li> <li>• The wetland profile should be re-instated to prevent incision and erosion;</li> <li>• Concurrent rehabilitation is to take place as far as possible;</li> <li>• Implement alien vegetation control program;</li> <li>• Monitor all disturbed areas for erosion and incision;</li> <li>• Continually maintain access roads;</li> <li>• Avoid unnecessary site clearing/vegetation clearing.</li> </ul>
Changes to Wetland Ecological and Sociocultural Service Provision	
Impacts on Wetland Hydrological Function and Sediment Balance	

With the implementation of the relevant mitigation measures proposed by the wetland specialist, it is envisaged that the significance of all impacts on wetland feature can be limited to have a low to very-low significance.

Based on this, it is recommended by the wetland specialist that all watercourse features be managed as a Category B. This is deemed sufficient to enhance and maintain the currently ecology of the feature, provided that the mitigation measures set out in this report are adhered to. Specific emphasis is placed on avoiding unnecessary disturbance to wetland and riparian zones, avoiding placement of pylons in wetland and riparian areas and where such actions are absolutely unavoidable, sufficient rehabilitation measures must be implemented.

Based on the findings from the wetland assessment, no significant difference in impact on wetland resources are anticipated for any of the route and substation alternatives. It is however the opinion of the specialist that the proposed development may take place, provided that the proposed mitigation measures be implemented and adhered to.

Please refer to **Figure 27 & 28** for the various watercourse features found throughout the study area, depicting the required buffer zone required to maintain the integrity of these features.

# BASIC ASSESSMENT REPORT

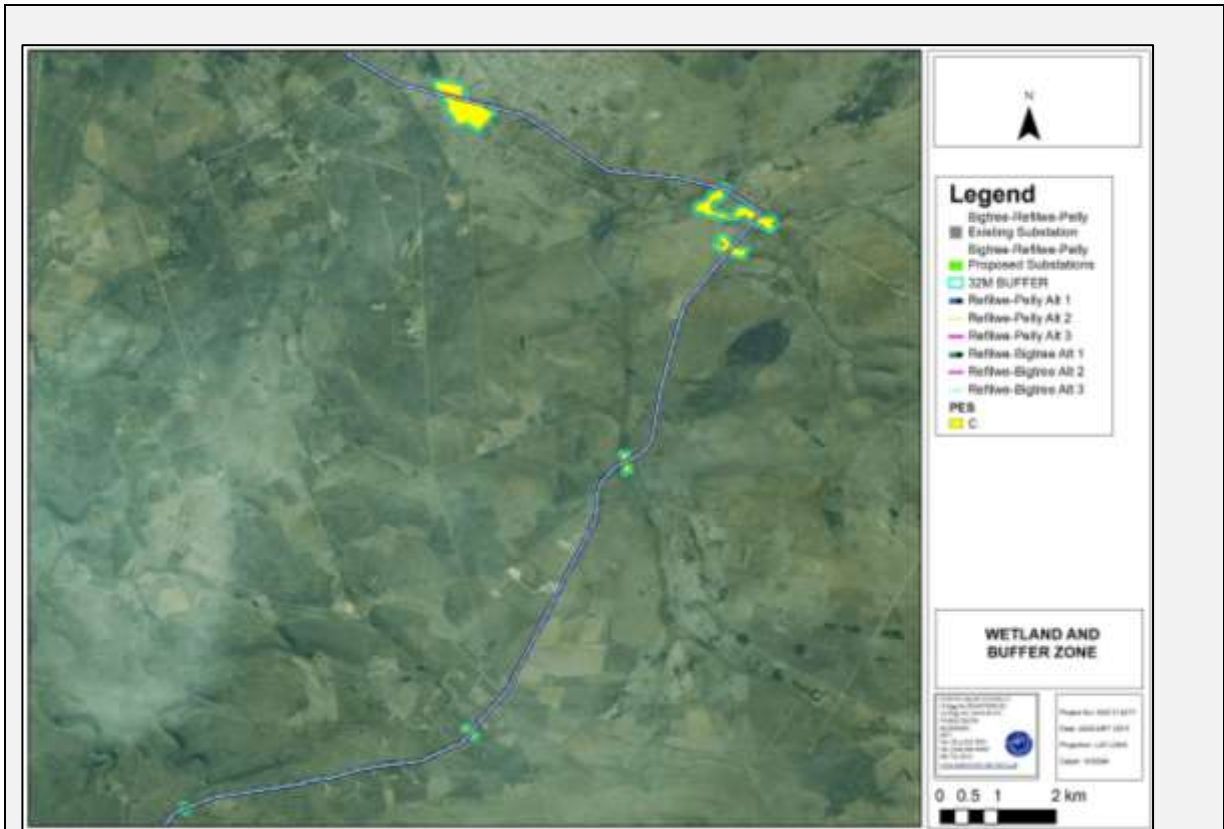


Figure 27: Wetland features affected by the proposed powerline and associated buffer zone



Figure 28: Wetland features affected by the proposed powerline and associated buffer zone

**From a wetland point of view, the proposed alternatives have similar impacts and any of those can be implemented provided the stipulated mitigation measures are implemented effectively.**

A detailed study on the wetlands and drainage lines were undertaken by a wetland specialist (Mr Steven van Staden from Scientific Aquatic Services cc) and the full report is attached in Appendix D3.

## BASIC ASSESSMENT REPORT

### SECTION C: PUBLIC PARTICIPATION

#### 1. ADVERTISEMENT AND NOTICE

<b>Publication name</b>	The Streeknuus		
<b>Date published</b>	01 April 2015		
<b>Site notice position</b>	<b>Description</b>	<b>Latitude</b>	<b>Longitude</b>
	Existing Bigtree Substation	25° 27' 55.829" S	28° 36' 50.511" E
	Newly Proposed Refilwe Substation 1	25°37' 55.279" S	28°31' 0.418" E
	Newly Proposed Refilwe Substation 2	25°37' 15.919" S	28°31' 32.383" E
	Newly Proposed Refilwe Substation 3	25°37' 48.937" S	28°32' 12.313" E
	Intersection north of Refilwe	25°37'27.78"S	28°31'34.41"E
	End point of activity – connection to the existing Pelly 132kV powerline	25° 37' 52.355" S	28° 31' 0.824" E
<b>Date placed</b>	26 March 2015		

Include proof of the placement of the relevant advertisements and notices in **Appendix E1**.

#### 2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.

Key stakeholders (other than organs of state) identified in terms of Regulation 54(2) (b) of GN R.543:

SURNAME	FIRST NAME	ORGANISATION / COMPANY	TEL
Malan	Dawie	DGRMA	083 251 4614
Venter	Piet	DGR	011 085 2513 082 894 9473
Prins	Stephan	DGR	011 085 2513 072 693 7780
--	--	Madidaba Game Ranch Pty Ltd	No contact details available
--	--	Trytsman Gerhardus	No contact details available
Arslanian	Henry	Private Person	No contact details available
Smit	Hendrikus	Private Person	012 732 1805
Klingler	Josef	Private Person	012 732 0152
Snyman	Gysbert	Private Person	012 331 3640
Swart	Johannes	Private Person	012 347 4890 082 873 3623
--	--	Riet Wannenburg Trust	No contact details available
Kruger	Abraham	Private Person	012 734 7000 072 939 0786
Kruger	Juliana	Private Person	012 734 1038 082 858 4853

## BASIC ASSESSMENT REPORT

--	--	Hjr Machinery Cc	No contact details available
Liebenberg	Stephanes	Private Person	No contact details available
Tolmay	Andries	Private Person	No contact details available
Matthee	Lambert	Private Person	013 245 2728 082 805 6168
Brink	Hendrik	Private Person	012 358 4952 083 655 645
Grobler	John	Private Person	012 732 1355 082 445 0529
Steenkamp	Jacobus	Private Person	012 732 1799
--	--	Lamprecht Wilhelmina Martha	No contact details available
Paul	Ursula	Private Person	011 748 6205 082 782 3353
--	--	Long Trail Inv 97 Cc	No contact details available
Jansen Van Vuuren	Johannes	Private Person	No contact details available
--	--	Dante Beleggings Trust	No contact details available
Snygans	Heila	Private Person	012 547 1403 082 495 4537
--	--	Van Der Smit Boerdery Cc	No contact details available
Leach	Gerald	Private Person	012 386 0113 084 581 0018
Dumbu	Stanford	Private Person	012 667 5480 083 380 1903
--	--	Elandsdraai Pecan Growers Cc	No contact details available
Greyling	Martha	Private Person	012 732 1935
Mortimer	Hester	Private Person	011 991 5615 082 512 3940
Van Der Poel	Johannes	Private Person	No contact details available
--	--	Dancus Trust	No contact details available
--	--	Doornkraal Landgoed Pty Ltd	No contact details available
Van Niekerk	Jacobus	Private Person	012 732 1296 072 622 3330
Du Plessis	Andries	Private Person	No contact details available
Van Der Smit	Petronella	Private Person	No contact details available
--	--	Cullinan Kloof Ontspanningsoord	No contact details available
Moloney	Norman	Private Person	012 998 9286 082 583 0407
--	--	Matelot Prop Pty Ltd	No contact details available
--	--	Robusta Trust	No contact details available
Joubert	Lourens	Private Person	012 333 0476
--	--	Benstra Developments Cc	No contact details available

## BASIC ASSESSMENT REPORT

--	--	Agrop Service-Comercio & Industrial Limitida	No contact details available
--	--	Abloom Cc	No contact details available
--	--	Skellembos Cc	No contact details available
Du Casse	Sharon-Rose	Private Person	031 782 3515 082 773 9420
Botha	Jacobus	Private Person	012 734 0482 072 678 1724
Morsner	Johann	Private Person	013 767 2100 072 546 8848
		Bestiame Trust	No contact details available
Munro	Anthony	Private Person	012 809 2880 083 754 1587
Waters	Andre	Private Person	011 706 6402 082 783 5074
Waterston	Warren	Private Person	012 732 0432 082 832 1264
--	--	Tweelingfontein Boerdery Cc	No contact details available
--	--	Cavalier Abattoir Pty Ltd	No contact details available
--	--	Diamond Duo Prop 169 Cc	No contact details available
--	--	Spaarkamp Beleggings Pty Ltd	No contact details available
--	--	Leana Swart Trust	No contact details available
--	--	Premier Transvaal Diamond Mining Co Pty Ltd	No contact details available
--	--	Platgeslaan Eiendomme Cc	No contact details available
Bodenstein	Charles	Private Person	No contact details available
Mokoena	Patricia	Cashbuild	013 947 2844
		Moloto Super Spar	013 949 2297
Masumy	William	Private Person	013 947 2284
Morrisa	Ragel	Private Person	072 650 2130
Moya	Stoffel	Private Person	076 244 4989
Venter	Danie	Private Person	076 789 4459
Gottsae	Harlie	Private Person	072 940 0443
Buys	Louis	Private Person	071 236 5338
Van Deventer	Anja	Petra Diamonds Mining – closure & rehabilitation specialist	012 305 2555 063 257 8491
Howarth	Gail	Private Person	082 370 2828
Seeley	Hanlie	Petra Diamonds Mining	012 305 2566 076 410 8288
Thorpe	Jeremy	Tshwane FM – Station Manager	012 382 4650
Van der Smit	Jacques	Private Person	082 829 9131
Snyman	Seun	Private Person	082 655 3900

## BASIC ASSESSMENT REPORT

Include proof that the key stakeholder received written notification of the proposed activities as **Appendix E2**. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

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

Summary of main issues raised by I&APs	Summary of response from EAP
<p>The public review of the Draft BAR took place from <b>07 April 2015 to 18 May 2015</b> for a period of 40 days. All comments received during this period forms part of a Comment and Response Report (CRR) that is submitted along with the Final BAR to the competent authority (DEA) for decision making.</p> <p>During the public review period for the proposed development, comments were received from the following I&amp;APs:</p> <ol style="list-style-type: none"> <li>1. Mr W. Waterston – Landowner</li> <li>2. Mr K van Niekerk – Landowner</li> <li>3. Mr J. Swart – Landowner</li> <li>4. Mr &amp; Mrs Bouwmeester – Landowner</li> <li>5. Ms G. Howarth – Landowner</li> <li>6. Ms A. Essop – GDARD</li> <li>7. Mr N. Moloney – Landowner</li> <li>8. Ms H. Seeley – Petra Mines Representative</li> <li>9. Ms T Mphephu– City of Tshwane Metropolitan Municipality</li> <li>10. Mr A. Shawn – landowner</li> <li>11. Mr. S Snyman – Landowner</li> <li>12. Mr A. Kruger - Landowner</li> </ol> <p>A summary of the main concerns raised and responses from the EAP is provided in the section below:</p>	
<p>Mr Waterston expressed his strong objection against the powerline extending over his property as he believes that the proposed development will have a negative impact on his protea farming business and will also devalue his property. He further suggested that the proposed powerline alignment be shifted further south to extend over farm portions that are currently uninhabited as this route will be much shorter and direct compared to the current proposed alignment. He indicated that he was never consulted by Eskom when determining the proposed powerline alignment.</p>	<p>GIBB indicated that the proposed powerline alignment extends along an existing powerline as well as the provincial road. Therefore, the visual absorption capacity of the powerline is regarded as being <u>high</u>. Pylon structures will not be placed in the driveway entering his property. Due to the nature of the project and the fact that existing powerline infrastructure exists in this area, it is not envisaged that the proposed powerline will impact negatively on his business. GIBB confirmed that various aspects including topography, sensitive features and accessibility are taken into consideration when selecting a route. However, following receipt of the positive environmental authorisation, Eskom Land and Rights division will commence with their landowner consideration negotiations. Eskom assessed the route suggested by Mr Waterston and the following constraints were noted:</p> <ul style="list-style-type: none"> <li>• No formalised roads for access – will need to construct new roads;</li> <li>• Extends over a Class 2 ridge area;</li> <li>• Extends over more river features and wider sections of sensitive wetland features;</li> <li>• Extends over larger section constituting</li> </ul>

## BASIC ASSESSMENT REPORT

	<p><i>irreplaceable</i> conservation status;</p> <ul style="list-style-type: none"> <li>• Route is 6km <u>longer</u> in distance;</li> <li>• Route is <u>further away</u> from the centre of electricity load demand; and</li> <li>• Exposure to veld fires – security hazard;</li> </ul> <p>Based on the constraints outlined above, the newly proposed route alignment is not considered to be feasible from an environmental point of view.</p>
Mr van Niekerk was mainly concerned with regards to the security of his property during the construction phase of the proposed development and subsequent maintenance activities.	GIBB indicated that Eskom will establish private gates or locks to existing gates, along the powerline servitude border in order to gain access through a landowner's property. These gates will be kept locked at all times and Eskom alone will have the keys of the locks. Gates will also be closed immediately behind vehicles passing through.
Mr Swart requested information with regards to the exact location of the proposed powerline alignment. He further requested confirmation of the proposed timeframes for construction and also whether the landowners will be provided with another opportunity to engage with Eskom on the matter.	GIBB indicated that a 500m corridor is currently being assessed within which the proposed powerline alignment will extend. The exact location of the approved route Alternative will only be determined post receipt of the positive environmental authorisation and subsequent landowner negotiations. GIBB confirmed that the proposed development will take an approximate 5 years until completion and that the Eskom Land and Rights division will commence with their landowner consideration negotiations following the receipt of the positive environmental authorisation.
Mr and Mrs Bouwmeester only requested an electronic copy of the locality map for the proposed development.	GIBB provided them with the locality, sensitivity as well as the cadastral boundary maps relevant to the proposed development.
Ms Howarth was mainly concerned with regards to the how access to the powerline will be gained through her property. In addition to this, she requested clarity with regards to whether vegetation will be completely cleared underneath the powerline structures.	GIBB confirmed that existing access points and roads will be used to gain access the powerline servitude. In addition to this, Eskom will erect a single gate/ private lock at the location where the powerline extends over the property boundary. GIBB further confirmed that strip clearing of vegetation will not occur, however Eskom will maintain their powerline height restriction of 3m by means of trimming the vegetation.
Ms Essop confirmed that she has begun to review the Draft BAR and further requested the kmz file of the proposed route and substation alternatives in order to view them in Google Earth.	GIBB provided her with the kmz file of the proposed route and substation alternatives for her perusal.
Mr Moloney was mainly concerned with regards to the impact that the proposed powerline development will have on the various protected species found throughout the area. He further requested information with regards to the type of structures that will be used for the proposed powerline. Lastly, he requested confirmation in terms of whether Eskom will be held liable for any damage to property fences etc. during the construction phase.	GIBB confirmed that an ecological, wetland and avifauna specialist impact assessment has been undertaken, where their findings and recommendations have been incorporated into the BAR and associated EMP. Further to this, GIBB provided him with facility illustrations of the proposed structures to be used for the powerline. Lastly, GIBB confirmed that Eskom will be held liable for any damage caused to landowner's property during the construction and operational phases.
Ms Seeley was mainly concerned with regards to the potential impact of the proposed development of sensitive heritage, wetland and ecological features throughout the area.	GIBB confirmed that an ecological, wetland and avifauna specialist impact assessment has been undertaken, where their findings and recommendations have been incorporated into the BAR and associated EMP.
Ms Mphephu requested the following information to be included in the Final BAR: <ul style="list-style-type: none"> <li>• All recommendations from specialist reports be incorporated;</li> <li>• The Department supports route Alternative 2 and substation Alternative 2 as being the preferred alternatives;</li> <li>• Bird diverters be installed along the powerline alignment;</li> </ul>	GIBB confirmed that the recommendations from the BAR and specialist studies have been incorporated into the EMP. All measures will be adhered to during the planning, construction and decommissioning phases. The Department of Water and Sanitation was consulted during the public review period of the Draft BAR, however no comments have been received to date. GIBB indicated that a Water Use Licence will be applied for following receipt of the positive



## BASIC ASSESSMENT REPORT

<ul style="list-style-type: none"> <li>• Apply for a Water Use Licence from the Department of Water and Sanitation;</li> <li>• No waste water/ effluent may be discharged to the environment;</li> <li>• Rehabilitation of areas immediately after construction of each section;</li> <li>• Confine construction activities to the development footprint;</li> <li>• Waste materials to be disposed at a registered landfill site;</li> <li>• Chemical ablution facilities to be located more than 50m away from rivers/ streams/ wetlands/ flood lines;</li> <li>• All activities should comply with municipality By-Laws;</li> <li>• Conduct a geotechnical investigation study;</li> <li>• Conduct a final walk-through of the approved route alternative prior to construction;</li> <li>• Maintain a 50m buffer zone surrounding all wetland and riparian zones;</li> <li>• Monitor the proposed powerline on an annual basis;</li> <li>• Develop a rehabilitation plan and include in the Final EMPr;</li> <li>• Tree canopies between 3-7m needs to be retained;</li> <li>• Longest possible span between pylon structures need to be implemented;</li> <li>• No ploughing and removal of natural species allowed;</li> <li>• Develop an on-site storm water retention report; and</li> <li>• A buffer zone of 100m for rivers and 50m for wetlands need to be maintained.</li> </ul>	<p>environmental authorisation.</p> <p>Eskom will undertake the necessary geotechnical investigation study following receipt of the positive environmental authorisation. A final walk-through exercise along with the ecological, wetland, avifauna and heritage specialists will also be undertaken prior to construction.</p> <p>GIBB indicated that the wetland specialist confirmed that a 32m buffer zone will serve to be adequate in maintaining the ecological state of the various river and wetland features. The proposed powerline will also span over the features and not be located within the sensitive features themselves.</p> <p>GIBB confirmed that monitoring of the powerline will occur 1-2 times per year and a rehabilitation plan will be developed following the receipt of the positive environmental authorisation, prior to construction. All alien vegetation will be removed along the approved powerline alignment and indigenous/ protected trees will either remain or be relocated depending on recommendations from the ecological specialist. In addition to this, Eskom will endeavour to utilise the maximum span length of the powerline structures, however this is dependent on the terrain and topographical conditions. Natural vegetation underneath the powerline will be trimmed and an on-site storm water retention report will be developed prior to construction.</p>
<p>Mr Shawn was mainly concerned with regards to the potential impact that the proposed development may have on the bird and fish-life throughout the area. In addition to this, he requested clarity with regards to where the Eskom gates will be located along the powerline alignment.</p>	<p>GIBB confirmed that an avifauna impact assessment was undertaken for the proposed development and that the mitigation measures proposed by the specialist will serve to be adequate in minimising the potential impacts on birdlife. In addition to this, the powerline will span over the river and wetland features and therefore no physical structure will be located within the water feature itself. Eskom will also erect a single gate/ private lock at the location where the powerline extends over the property boundary.</p>
<p>Mr Snyman was mainly concerned with regards to his borehole being located along the proposed powerline alignment. In addition to this, the powerline alignment extends very close to an airfield located on his property.</p>	<p>GIBB confirmed that during the landowner consideration negotiations, inputs and special requests received from landowners will inform the exact location of the pylon structures. Eskom will also request inputs from the aviation authority during their separate process of obtaining approvals from services affected by the proposed development.</p>
<p>Mr Kruger requested confirmation in terms of the width of the final servitude. In addition to this, he requested information with regards to the amount of properties that may be affected by the proposed development.</p>	<p>GIBB confirmed that the servitude will be 31m wide (15.5m on either side of the powerline). In addition to this, approximately 50 properties may potentially be affected by the proposed development.</p>
<p>Please refer to the Comments and Response Report (Appendix E3) for detailed information with regards to the comments received and responses provided on the concerns raised. All comments received during the review period has been addressed, responded to and adequately captured in the Comments and Response Report (CRR). In addition to this, the CRR will be submitted along with the Final BAR to the competent authority for decision making.</p>	

## BASIC ASSESSMENT REPORT

Please refer to **Appendix E** for the proof of stakeholder engagement –  
 E1: Proof advert placement ;  
 E2: Proof of I&AP notifications (E2);  
 E3: Comments and Response Report;  
 E4: Proof of organs of state notifications;  
 E5: I&AP database; and  
 E6: Minutes of meetings held.

Please note that public review of the Final Basic Assessment (BAR) will take place from **Friday, 12 June 2015 to Monday, 06 July 2015** for a period of 21 days. All comments received during this period must be submitted to the competent authority (DEA) directly.

#### 4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as **Appendix E3**.

#### 5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

AUTHORITY/OR GAN OF STATE	CONTACT PERSON (TITLE, NAME AND SURNAME)	TEL NO	E-MAIL	ADDRESS
Gauteng Department of Agriculture and Rural Development (GDARD)	Azrah Essop	011 240 3068	AZRAH.ESSOP@gauteng.gov.za	11 Diagonal Street, Diamond Building, Newtown, Johannesburg, 2000
Provincial Heritage Resources Authority Gauteng (PHRAG)	Maphata Ramphele	011 355 2572	maphata.ramphele@gauteng.gov.za	Surrey House, Cnr. Fox & Rissik Street, Johannesburg
Department of Water Affairs (DWA)	Lillian Siwelane	012 392 1454	siwelanel@dwa.gov.za	185 Francis Baard Street, Pretoria 0001
City of Tshwane Metropolitan Municipality	Tshinyadzo Mphephu	012 358 8667	TshinyadzoM@tshwane.gov.za	11 Schoeman Street, Pretoria, 0001
Gauteng Ward 100 Councillor	Christopher Mahlatse	083 744 9139	--	1270 Ext 1 Masina Street, Refilwe, Cullinan, 1000
Gauteng Ward 99	Peter Matsela	072 495 3205	--	5083 Ext 2 Joe Slovo Park, Refilwe, Cullinan, 1000
Mpumalanga Ward 32	S Hlungwani	078 318 3315	--	24 Kwaggafontein C, Moloto Road, Moloto
Mpumalanga Ward 3	T Huma	078 318 3315	--	24 Kwaggafontein C, Moloto Road, Moloto

Include proof that the Authorities and Organs of State received written notification of the proposed activities as **Appendix E4**.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

### **6. CONSULTATION WITH OTHER STAKEHOLDERS**

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

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

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

Copies of any correspondence and minutes of any meetings held must be included in **Appendix E6**.

## BASIC ASSESSMENT REPORT

### SECTION D: IMPACT ASSESSMENT

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

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

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

Activity	Impact summary	Significance	Proposed mitigation
<b>Alternative 1 (preferred)</b>			
<b>Construction Phase</b>			
<i>Increased soil erosion due to the removal of vegetation along servitude route</i>	<b>Direct Impact</b> <i>Soil erosion and degradation</i>	Very Low	<ul style="list-style-type: none"> <li>Undertake vegetation clearing during the dry season;</li> <li>Only clear vegetation where absolutely necessary; and</li> <li>Stockpile areas will be decided and approved by the Project Manager and appointed ECO before construction commences on site and should not be located within drainage lines.</li> </ul>
<i>Surface water contamination and degradation due to oil and fuel leaks from construction vehicles</i>	<b>Direct Impact</b> <i>Surface water contamination and degradation</i>	Very Low	<ul style="list-style-type: none"> <li>All construction vehicles should be kept in good working condition;</li> <li>All construction vehicles should be parked in demarcated areas when not in use, and the soil in this area should be rehabilitated (if required);</li> <li>Drip trays should be placed under construction vehicles when not in use; to collect any spillages/leaks if necessary;</li> <li>Construction activities associated with the establishment access roads through wetlands or drainage lines (if unavoidable) should be restricted to a working area 10m in width either side of the road, and these working areas should be clearly demarcated. No vehicles, machinery, personnel, construction material, cement, fuel, oil or waste should be allowed outside of the demarcated working areas;</li> <li>No fuel storage, refuelling, vehicle maintenance or vehicle depots should be allowed within 30m of the edge of any wetlands or drainage lines;</li> <li>Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, should be located</li> </ul>

## BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<p>on impervious bases and should have bunds around them. Bunds should be sufficiently high to ensure that all the fuel kept in the area will be captured in the event of a major spillage;</p> <ul style="list-style-type: none"> <li>• Vehicles and machinery should not be washed within 30m of the edge of any wetland or drainage line;</li> <li>• No effluents or polluted water should be allowed to discharge into any drainage lines or wetland areas;</li> <li>• If construction areas are to be pumped of water (e.g. after rains), this water should be pumped into an appropriate settlement area, and not allowed to flow straight into any drainage lines or wetland areas;</li> <li>• Freshwater ecosystems located in close proximity to construction areas (i.e. within ~30 m) should be inspected on a regular basis by the ECO for signs of disturbance from construction activities, and for signs of sedimentation or pollution. If signs of disturbance, sedimentation or pollution are noted, immediate action should be taken to remedy the situation and, if necessary, a freshwater ecologist should be consulted for advice on the most suitable remediation measures;</li> <li>• The construction footprint along the watercourse must be limited to as small a footprint as possible; and</li> <li>• If a hydrocarbon spillage occurs, clean it up immediately and dispose of at an appropriate registered landfill site.</li> </ul>
<p><i>Degradation of watercourses due to the construction of the proposed powerline and associated infrastructure</i></p>	<p><b>Direct Impact</b> <i>Degradation of the watercourse due to the erection of the pylons and 132kV cable</i></p>	<p>Very Low</p>	<ul style="list-style-type: none"> <li>• Ensure that pylon structures are kept a minimum of 50m outside of the outer edge of any watercourse or drainage lines;</li> <li>• Use existing access roads as far as possible;</li> <li>• Construction impacts must be contained within the servitude of the powerline;</li> <li>• No mixing of cement/concrete should take place within 30m of aquatic features;</li> <li>• All wetlands and drainage lines should generally be treated as “no-go” areas and appropriately demarcated as such. No vehicles, machinery, personnel, construction materials, cement, fuel, oil or waste should be allowed into these areas without the express permission of and supervision by the ECO;</li> <li>• Construction activities associated with the establishment access roads through wetlands or drainage lines (if unavoidable)</li> </ul>

## BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<p>should be restricted to a working area 10m in width either side of the road, and these working areas should be clearly demarcated. No vehicles, machinery, personnel, construction material, cement, fuel, oil or waste should be allowed outside of the demarcated working areas;</p> <ul style="list-style-type: none"> <li>• Construction camps, toilets and temporary laydown areas should be located at least 30m from the edge of any wetlands and drainage lines;</li> <li>• No fuel storage, refuelling, vehicle maintenance or vehicle depots should be allowed within 30m of the edge of any wetlands or drainage lines;</li> <li>• Vehicles and machinery should not be washed within 30m of the edge of any wetland or drainage line;</li> <li>• No effluents or polluted water should be allowed to discharge into any drainage lines or wetland areas;</li> <li>• If construction areas are to be pumped of water (e.g. after rains), this water should be pumped into an appropriate settlement area, and not allowed to flow straight into any drainage lines or wetland areas;</li> <li>• Freshwater ecosystems located in close proximity to construction areas (i.e. within ~30 m) should be inspected on a regular basis by the ECO for signs of disturbance from construction activities, and for signs of sedimentation or pollution. If signs of disturbance, sedimentation or pollution are noted, immediate action should be taken to remedy the situation and, if necessary, a freshwater ecologist should be consulted for advice on the most suitable remediation measures;</li> <li>• Workers should be made aware of the importance of not destroying or damaging the vegetation along drainage lines and in wetland areas, of not undertaking activities that could result in the pollution of drainage lines or wetlands, and of not killing or harming any animals that they encounter. This awareness should be promoted throughout the construction phase (and decommissioning phase, if this takes place);</li> <li>• Ensure that unnecessary impacts on watercourse do not occur; and</li> <li>• Proper erosion control structures must be constructed.</li> </ul>
<p><i>Floral destruction and faunal displacement due to vegetation</i></p>	<p><b>Direct impact</b> <i>Loss of flora and fauna due to</i></p>	<p>Very low</p>	<ul style="list-style-type: none"> <li>• Construction impacts must be contained within the footprint of the pylon structures</li> </ul>

## BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
<p><i>clearance activities taking place along the proposed powerline alignments and servitude routes</i></p>	<p><i>construction activities</i></p>		<p>and / or the servitude routes of the powerline;</p> <ul style="list-style-type: none"> <li>• Use existing access roads as far as possible;</li> <li>• Vegetation clearance should be conducted systematically from the start to the end of the route to allow fauna to move away;</li> <li>• Avoid strip clearing;</li> <li>• Vegetation should be removed only where construction is to take place;</li> <li>• Sequential construction should occur in order to allow faunal species to move away from the area of disturbance;</li> <li>• Construction activities should be restricted to daylight hours when the majority of faunal species are inactive;</li> <li>• No animals may be snared, captured or wilfully damaged or killed;</li> <li>• Species such as tortoises and porcupines should be removed to surrounding areas if encountered on site and not collected as this is illegal;</li> <li>• During construction phase, existing access roads should be used where possible especially in the wooded habitats where a lot of vegetation will have to be removed if there is no access;</li> <li>• Clearing of the servitude should be as narrow as possible to prevent major destruction of habitats;</li> <li>• No trees may be affected in the grassland habitats where sufficient space is available for the tweaking of pylon positions;</li> <li>• A road management plan should be compiled, showing allocated access points and roads, to prevent tracks all over the landscape; and</li> <li>• The removal of large sections of woodland in densely wooded areas should be avoided.</li> </ul>
<p><i>Increased noise generation due to construction activities and the movement of construction vehicles</i></p>	<p><b>Direct impact</b> <i>The construction activities will cause an increase in the ambient noise levels</i></p>	<p>Very Low</p>	<ul style="list-style-type: none"> <li>• Construction time must be restricted to working hours (07:00-18:00) Monday to Friday excluding public holidays (unless prior permission is obtained from the landowners);</li> <li>• All noise and sounds generated during the proposed activity must comply with the relevant SANS codes and standards;</li> <li>• All construction equipment or machinery should be switched off when not in use;</li> <li>• Construction equipment must be kept in good working condition;</li> <li>• Plant and vehicles must be in good working order and inspected daily; and</li> </ul>

## BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> <li>Use silencers on all equipment, where appropriate.</li> </ul>
Increased dust generation due to the clearing of vegetation, construction activities and earthworks	<b>Direct impact</b> Construction activities will cause an increase in ambient dust levels for a short period of time	Very Low	<ul style="list-style-type: none"> <li>No potable water may be used for dust suppression (as far as is practically possible). Alternative dust suppression methods (such as shade cloths or dusticide) must be used instead;</li> <li>Water to be used sparingly and only where no water restrictions are in effect;</li> <li>Water to be sourced from an approved supplier;</li> <li>The option to use grey water should be investigated prior to construction;</li> <li>The soil must be dampened with water during/ after vegetation removal (where practical);</li> <li>The clearing of vegetation must be kept to the minimal; and</li> <li>Avoid unnecessary movement of construction vehicles on site.</li> </ul>
Increased occurrence of fires due to unmanaged fires and its increased severity due to human interference	<b>Direct impact</b> Increased risk of damage due to unmanaged fires	Very Low	<ul style="list-style-type: none"> <li>The safety officer should control on-site fires;</li> <li>Firefighting equipment to be kept on site and serviced regularly; and</li> <li>No fires to be lit on site and smoking to occur in designated areas only.</li> </ul>
Increased damage to farm roads due to the continued travelling of vehicles on minor and gravel roads during the construction phase	<b>Direct impact</b> Increased damage to local roads due to increased traffic volumes	Very Low	<ul style="list-style-type: none"> <li>Limit construction vehicles to 20km/h on access roads and keep to the speed limit on public roads; and</li> <li>Regular monitoring of roads for damage must be undertaken, followed by immediate repair of any damage resulting from use of heavy machinery.</li> </ul>
Increase in traffic volumes and associated congestion due to the transportation and construction vehicles travelling to and from the construction site	<b>Direct impact</b> Increase in traffic congestion due to the construction vehicles	Very Low	<ul style="list-style-type: none"> <li>Limit construction vehicle movement during peak periods.</li> </ul>
Change in visual aesthetics due to construction activities, placement of construction equipment and disposal of construction waste material	<b>Direct impact</b> Adjacent residents may be visually impacted on the unsightliness of the construction camp (depending on the location of the camp).	Very Low	<ul style="list-style-type: none"> <li>Construction vehicles should be kept in demarcated areas only so as to reduce the visual intrusion of the construction activities;</li> <li>During construction, all materials and stockpiles will be covered with tarps to prevent erosion, as well as dust arising from it, and to mitigate the visibility thereof (where required and as directed by the ECO);</li> <li>Construction workers must ensure and implement good housekeeping practises to minimise the visual impact of waste and discarded materials; and</li> </ul>



## BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> <li>Construction activities to be kept to normal daytime working hours as far as possible to prevent the impact of floodlights and other sights during resting hours.</li> </ul>
<p><i>Soil contamination due to spillage of hazardous substances, oil and fuel leaks at the construction site from the transportation and construction vehicles as well as accidental spillages</i></p>	<p><b>Direct impact</b> <i>Degradation of the soil due to spillages</i></p>	Very Low	<ul style="list-style-type: none"> <li>Store fuels and chemicals in an impermeable bunded area;</li> <li>Provide staff with hazardous materials training;</li> <li>Chemical toilets to be used on site, grey water should be disposed of off-site at a licensed waste treatment works;</li> <li>No storage of fuel on site, vehicles to be fuelled off-site;</li> <li>No mixing of cement/concrete should take place within 30m of aquatic features or in natural vegetation;</li> <li>No servicing or repair of vehicles on site (unless absolutely necessary);</li> <li>No concrete mixing on site unless on a mortar board;</li> <li>Water used to clean concrete off of machinery should be treated as grey water and disposed of at a licensed water treatment works;</li> <li>Construction vehicles should be maintained on a regular basis so as to prevent oil spills/leaks;</li> <li>Drip trays should be placed under vehicles when not in use; and</li> <li>If a hydrocarbon spillage occurs, it must be cleaned up immediately and disposed of at an appropriate registered landfill site.</li> </ul>
<p><i>Increased domestic waste generation (solid waste) and left unmanaged on site to attract vermin</i></p>	<p><b>Direct impact</b> <i>Unightly litter on site</i></p>	Very Low	<ul style="list-style-type: none"> <li>Keep waste in vermin proof bins with lids (as needed); and</li> <li>Waste to be removed from site on a regular basis.</li> </ul>
<p><i>Loss of Riparian vegetation along watercourse crossings and drainage lines due to the construction of the powerline</i></p>	<p><b>Direct impact</b> <i>Loss of riparian vegetation due to construction vehicles</i></p>	Very Low	<ul style="list-style-type: none"> <li>No access roads should be constructed within 32m of a hill slope seepage wetland and/or seasonal pan, unless no alternative is possible; and</li> <li>If access roads/ tracks must pass through drainage lines, the footprint should be as small as possible.</li> </ul>
<p><i>Increased risk of alien invasion for vegetation species due to unmanaged vegetation clearing activities taking place on site</i></p>	<p><b>Direct impact</b> <i>Increase in alien invasive species due to vegetation clearing activities</i></p>	Very Low	<ul style="list-style-type: none"> <li>An alien management plan must be implemented as directed by the ECO. The plan should limit vegetation clearing to the servitude of the powerline and no more. This plan must be developed prior to construction.</li> </ul>
<p><i>Loss of avifauna and roosting sites due to the clearance of vegetation for the</i></p>	<p><b>Direct impact</b> <i>Loss of avifaunal species and roosting sites</i></p>	Very Low	<ul style="list-style-type: none"> <li>The construction corridor of the selected alignment should be closely inspected before the start of construction in order to</li> </ul>

## BASIC ASSESSMENT REPORT

<b>Activity</b>	<b>Impact summary</b>	<b>Significance</b>	<b>Proposed mitigation</b>
<i>powerline servitude</i>			locate any active nests; <ul style="list-style-type: none"> <li>• Reduce the construction time where possible and schedule construction activities around avian breeding schedules where practical;</li> <li>• Lower the levels of associated noise; and</li> <li>• Restrict the construction activities to the footprint area. Do not allow any access to the remainder of the properties. Make maximum use of existing roads.</li> </ul>
<i>Destruction of heritage sites (grave sites and farmstead ruins) identified along various sections of the proposed powerline alignment due to construction of the servitude routes</i>	<b>Direct impact</b> <i>Loss of heritage resources constituting a high local significance</i>	Very Low	<ul style="list-style-type: none"> <li>• If any palaeontological materials (such as dense bone accumulations) are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an appropriate specialist. Such heritage is the property of the state and may require excavation and curation in an approved institution.</li> </ul>
<i>Increase in crime due to the creation of additional access roads and or thoroughfares to surrounding areas during the construction phase</i>	<b>Direct impact</b> <i>Increase in crime due to increase in workers within the town</i>	Very Low	<ul style="list-style-type: none"> <li>• Workers will not be allowed to stay overnight at the crew camps unless authorised by the ECO (as applicable).</li> </ul>
<i>Temporary job creation during the construction of the proposed powerline and associated infrastructure</i>	<b>Direct impact</b> <i>Unskilled labour force may be required for construction activities</i>	Low Positive	<ul style="list-style-type: none"> <li>• The development should proceed and should employ local labour as far as possible.</li> </ul>
<i>Impacts on Class 2 Ridge areas and associated sensitive species during the construction of the proposed powerline and associated infrastructure</i>	<b>Direct Impact</b> <i>Loss of sensitive fauna and flora species</i>	Very Low	<ul style="list-style-type: none"> <li>• Limit construction activities to the footprint of the powerline servitude; and</li> <li>• Ensure that pylon structures are located outside the immediate reaches of the Class 2 ridge area.</li> </ul>
<i>Potential increase in HIV/ AIDS in the area due to construction workers (migrant labour) associated with the proposed development</i>	<b>Indirect impact</b> <i>Due to the increase in workforce within the town, there may potentially be an increase in sexually transmitted diseases</i>	Very Low	<ul style="list-style-type: none"> <li>• HIV &amp; AIDS awareness talks should be given to the workers on a regular basis by the relevant personnel.</li> </ul>
<i>Impacts on agriculture potential and expansion due to the placement of the pylon structures in existing potential farm lands resulting in the minor loss of arable land or potential</i>	<b>Indirect impact</b> <i>Due to the location of pylon structures and the servitude restrictions, farming activities may be compromised</i>	Very Low	<ul style="list-style-type: none"> <li>• Locate pylon structures within natural fire breaks within the currently farmed areas (where possible).</li> <li>• Compensate farmers for the loss of arable land / servitude restrictions.</li> </ul>

## BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
expansion of farming activities			
<b>Operational Phase</b>			
<i>Economic growth and development in the surrounding area due to the strengthening of the existing electricity network to a point where it is stable and reliable and allowing future development and expansion of operations in the area</i>	<b>Direct impact</b> <i>Due to the powerline stabling the electricity grid and allowing for future development-economic benefits will be realised</i>	Medium Positive	<ul style="list-style-type: none"> <li>Continue with the proposed development and ensure that the line is maintained.</li> </ul>
<i>Increased theft and vandalism of the distribution line and associated infrastructure resulting in the occurrence of potential deaths, interruption in electricity supply and the increased maintenance intervals</i>	<b>Direct impact</b> <i>Increase in theft of electrical cables</i>	Very low	<ul style="list-style-type: none"> <li>Install anti-climb pylons; and</li> <li>Access control at the substation needs to be implemented.</li> </ul>
<i>Increased risk of alien invasion for vegetation species due to the disturbance in the landscape during operational and maintenance activities</i>	<b>Direct impact</b> <i>Increase in alien invasive species</i>	Very low	<ul style="list-style-type: none"> <li>Areas disturbed due to maintenance activities should be rehabilitated as quickly as possible;</li> <li>Soil stockpiles should not be trans-located from areas with alien plants into the site;</li> <li>Within the site, alien plants on stockpiles must be controlled so as to avoid the development of a solid seed bank of alien plants within the stock-piled soil;</li> <li>Any alien plants must be immediately controlled to avoid establishment of a soil seed bank; and</li> <li>Create an integrated alien invasive management programme to be implemented during maintenance activities.</li> </ul>
<i>Increased collision and electrocution of avifauna and resulting mortality of these large terrestrial bird species due to building nests on pylon structures</i>	<b>Direct impact</b> <i>Loss of avifauna due to electrocution and collisions</i>	Very low	<ul style="list-style-type: none"> <li>Informed selection of low impact alignments for new powerlines relative to movements and concentrations of high risk species;</li> <li>Use of either static or dynamic marking devices to make the lines and the earthwires more conspicuous;</li> <li>Ensure that all new lines are marked with bird flight diverters along their entire length using industry standard markers and marker fitting protocols;</li> <li>Identified high risk sections of the powerline needs to be installed with a suitable anti-bird collision marking device approved by</li> </ul>

## BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<p>Eskom, and as per the Eskom standards;</p> <ul style="list-style-type: none"> <li>Fit bird perching bracket to the top of the pole;</li> <li>Due to the potential for nocturnal collisions, it is recommended that the experimental LED bird flapper is used.</li> </ul>
<p>Increased alteration of hydrology of drainage lines and wetlands due to the establishment of distribution line pylons within or immediately adjacent to freshwater ecosystems</p>	<p><b>Direct impact</b> Alteration of watercourses due to the establishment of the pylons within the watercourse due to maintenance activities</p>	Very low	<ul style="list-style-type: none"> <li>Use existing access roads where possible;</li> <li>Do not establish new access roads within drainage lines; and</li> <li>Limit maintenance footprint within drainage lines.</li> </ul>
<p>Floral destruction and faunal displacement due to clearing or trimming of natural vegetation located within the servitude of the powerline as part of routine maintenance operations</p>	<p><b>Direct impact</b> Maintenance activities resulting in the loss of flora and fauna</p>	Very low	<ul style="list-style-type: none"> <li>Maintenance impacts must be contained within the footprint of the pylon structures and / or the servitude routes of the powerline;</li> <li>Ensure that unnecessary impacts on natural vegetation do not occur;</li> <li>Vegetation clearance should be conducted systematically from the start to the end of the route to allow fauna to move away;</li> <li>Avoid strip clearing;</li> <li>• Maintenance activities should be restricted to daylight hours when the majority of faunal species are inactive; and</li> <li>• No animals may be snared, captured or wilfully damaged or killed.</li> </ul>
<p>Degradation of the cultural landscape and scenic qualities of the environment due to the proposed powerline extending across such landscape</p>	<p><b>Direct impact</b> Visual intrusion of the powerline</p>	Very low	<ul style="list-style-type: none"> <li>Align the power line as close as possible to existing powerlines so as to keep visual impacts clustered.</li> </ul>
<p>Increased soil erosion due to the deterioration of access roads to the powerline servitude for operation and routine maintenance activities</p>	<p><b>Indirect impact</b> Soil erosion due to maintenance activities</p>	Very low	<ul style="list-style-type: none"> <li>Apply the appropriate erosion protection measures where erosion is identified;</li> <li>Regular maintenance of the identified access roads as and when required;</li> <li>Improve the access of the identified access roads to ensure suitable passage for equipment, erosion control and maintenance of proper drainage; and</li> <li>Maintenance staff to stay on the designated access roads at all times.</li> </ul>
<p>Stimulation and growth of the local economy due to the provision of a stable electricity supply which will lead to the steady growth and economic</p>	<p><b>Cumulative impact</b> Taking into consideration the future infrastructural upgrades that will occur, the local economy will increase</p>	High Positive	<ul style="list-style-type: none"> <li>Infrastructure maintenance should be prioritised to ensure that the provision of stable electricity is not interrupted and future upgrades along this corridor should be encouraged.</li> </ul>

## BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
<i>development of the surrounding regions</i>			
			•
<b>Decommissioning Phase</b>			
<b>Please note that due to the nature of the project and the fact that the project is an infrastructural project, decommissioning is not envisaged. However should decommissioning occur, the following impacts may be applicable:</b>			
<i>Waste generation in the forms of generating metal and concrete waste during decommissioning activities</i>	<b>Direct impact</b> <i>Solid waste generation due to decommissioning activities.</i>	Very low	<ul style="list-style-type: none"> <li>• Waste generation must be managed according to Eskom's guidelines and standards; and</li> <li>• All materials that can be recycled must be recycled where possible. The rest of the rubble must be disposed of at an appropriate landfill site.</li> </ul>
<i>Watercourse and Soil contamination due to hydrocarbon spills which may occur from vehicles to be used to carry out various decommissioning activities</i>	<b>Direct impact</b> <i>Soil and watercourse degradation due to decommissioning activities</i>	Very low	<ul style="list-style-type: none"> <li>• Contaminated soil must be removed and disposed of at an appropriate registered landfill site;</li> <li>• Heavy vehicles must be service and maintained regularly;</li> <li>• No fuel storage, refuelling, vehicle maintenance or vehicle depots should be allowed within 30m of the edge of any wetlands or drainage lines;</li> <li>• No effluents or polluted water should be allowed to discharge into any drainage lines or wetland areas; and</li> <li>• The construction footprint along the watercourse must be limited to as small a footprint as possible.</li> </ul>
<b>Alternative 2</b>			
THE PROPOSED IMPACTS WILL BE THE SAME AS THAT FOR ALTERNATIVE 1 WITH THE EXCEPTION OF THE FOLLOWING:			
<b>Construction Phase</b>			
<i>Floral destruction and faunal displacement due to vegetation clearance activities taking place along the proposed powerline alignments and servitude routes</i>	<b>Direct impact</b> <i>Loss of flora and fauna due to construction activities</i>	Very low	<ul style="list-style-type: none"> <li>• Construction impacts must be contained within the footprint of the pylon structures and / or the servitude routes of the powerline;</li> <li>• Use existing access roads as far as possible;</li> <li>• Vegetation clearance should be conducted systematically from the start to the end of the route to allow fauna to move away;</li> <li>• Avoid strip clearing;</li> <li>• Vegetation should be removed only where construction is to take place;</li> <li>• Sequential construction should occur in order to allow faunal species to move away from the area of disturbance;</li> <li>• Construction activities should be restricted</li> </ul>

BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<p>to daylight hours when the majority of faunal species are inactive;</p> <ul style="list-style-type: none"> <li>• No animals may be snared, captured or wilfully damaged or killed;</li> <li>• Species such as tortoises and porcupines should be removed to surrounding areas if encountered on site and not collected as this is illegal;</li> <li>• During construction phase, existing access roads should be used where possible especially in the wooded habitats where a lot of vegetation will have to be removed if there is no access;</li> <li>• Clearing of the servitude should be as narrow as possible to prevent major destruction of habitats;</li> <li>• No trees may be affected in the grassland habitats where sufficient space is available for the tweaking of pylon positions;</li> <li>• A road management plan should be compiled, showing allocated access points and roads, to prevent tracks all over the landscape; and</li> </ul> <p>The removal of large sections of woodland in densely wooded areas should be avoided.</p>
<b>Operational Phase</b>			
THE PROPOSED IMPACTS WILL BE THE SAME AS THAT FOR ALTERNATIVE 1			
<b>Decommissioning Phase</b>			
THE PROPOSED IMPACTS WILL BE THE SAME AS THAT FOR ALTERNATIVE 1			
<b>Alternative 3</b>			
<p><i>Floral destruction and faunal displacement due to vegetation clearance activities taking place along the proposed powerline alignments and servitude routes</i></p>	<p><b>Direct impact</b> <i>Loss of flora and fauna due to construction activities</i></p>	<p>Very low</p>	<ul style="list-style-type: none"> <li>• Construction impacts must be contained within the footprint of the pylon structures and / or the servitude routes of the powerline;</li> <li>• Use existing access roads as far as possible;</li> <li>• Vegetation clearance should be conducted systematically from the start to the end of the route to allow fauna to move away;</li> <li>• Avoid strip clearing;</li> <li>• Vegetation should be removed only where construction is to take place;</li> <li>• Sequential construction should occur in order to allow faunal species to move away from the area of disturbance;</li> <li>• Construction activities should be restricted</li> </ul>

## BASIC ASSESSMENT REPORT

Activity	Impact summary	Significance	Proposed mitigation
			<p>to daylight hours when the majority of faunal species are inactive;</p> <ul style="list-style-type: none"> <li>No animals may be snared, captured or wilfully damaged or killed;</li> <li>Species such as tortoises and porcupines should be removed to surrounding areas if encountered on site and not collected as this is illegal;</li> <li>During construction phase, existing access roads should be used where possible especially in the wooded habitats where a lot of vegetation will have to be removed if there is no access;</li> <li>Clearing of the servitude should be as narrow as possible to prevent major destruction of habitats;</li> <li>No trees may be affected in the grassland habitats where sufficient space is available for the tweaking of pylon positions;</li> <li>A road management plan should be compiled, showing allocated access points and roads, to prevent tracks all over the landscape; and</li> </ul> <p>The removal of large sections of woodland in densely wooded areas should be avoided.</p>
<i>Impacts on Class 2 Ridge areas and associated sensitive species during the construction of the proposed powerline and associated infrastructure</i>	<b>Direct Impact</b> <i>Loss of sensitive fauna and flora species</i>	Very Low	<ul style="list-style-type: none"> <li>Limit construction activities to the footprint of the powerline servitude; and</li> <li>Ensure that pylon structures are located outside the immediate reaches of the Class 2 ridge area.</li> </ul>
<b>No-go option</b>			
No additional job creation	<b>Direct impacts:</b> No additional jobs will be created if the construction of the powerline does not commence	High negative	<ul style="list-style-type: none"> <li>Commence with the proposed powerline construction</li> </ul>
Inhibition of economic growth and development	<b>Direct impacts:</b> If the powerline is not constructed, inhibition of the economic growth and development of the surrounding regions will occur.	High negative	<ul style="list-style-type: none"> <li>Commence with the proposed powerline construction</li> </ul>

A complete impact assessment in terms of Regulation 22(2) (i) of GN R.543 must be included as **Appendix F**.

BASIC ASSESSMENT REPORT

**COMPARATIVE SUMMARY OF THE FINDINGS FOR ALTERNATIVES 1, 2 AND 3 REFILE SUBSTATION SITES:**

Factors influencing the preferred Alternative	Refilwe Substation Alternative 1 (preferred)	Refilwe Substation Alternative 2	Refilwe Substation Alternative 3
Ecological Impact	Substation Alternative 1 is located in natural grassland and in close proximity to a Class 2 ridge (on the other side of the road)	Substation Alternative 2 is located in disturbed land and away from any sensitive vegetation.	Substation Alternative 3 is located in altered vegetation in close proximity to a sensitive Class 2 ridge area.
Summary	<p>Even though substation Alternative 1 is located in close proximity to a Class 2 ridge area, it is the opinion of the EAP that limited to no impacts will be experienced on this sensitive area. This is due to an existing road serving as a geographical barrier in terms of preventing impacts from occurring within the Class 2 ridge area.</p> <p><i>As such, substation Alternative 1 is still acceptable from the EAPs point of view and the preferred option therein depends on the preference of the associated route Alternative.</i></p>	<p>Substation Alternative 2 is located the furthest away from the Class 2 ridge and associated sensitive vegetation.</p> <p><i>Based on the reasons provided above, substation Alternative 2 is <u>acceptable</u> from the EAPs point of view and the preferred option therein depends on the preference of the associated route Alternative.</i></p>	<p>Substation Alternative 3 is located the closest to a sensitive Class 2 ridge area. This implies that the potential for most severe impacts exists with this alternative.</p> <p><i>Based on the reasons provided above, substation Alternative 3 is <u>not</u> considered to be the preferred option.</i></p>



## BASIC ASSESSMENT REPORT

### **COMPARATIVE SUMMARY OF THE FINDINGS FOR THE ALTERNATIVE 1 AND 2 ROUTING OPTIONS:**

Factors influencing the preferred Alternative	Route Alternative 1 (preferred)	Route Alternative 2	Route Alternative 3
<i>Financial Feasibility</i>	This alternative will be less expensive to construct compared to route Alternative 2 and 3 based on the construction cost per km as well as this alternative having fewer bends throughout the alignment.	This alternative will be the most expensive to construct compared to route Alternative 1 and 3 based on the construction cost per km as well as the amount of bends found throughout the alignment option.	This alternative will be more expensive to construct compared to route Alternative 1, however less expensive to construct compared to route Alternative 2. This is due to the overall route being longer and constituting more bends throughout the alignment compared to Alternative 1. However, the route is shorter than Alternative 2 and constitutes fewer bends throughout the alignment in comparison.
<i>Length of Powerline</i>	Route Alternative 1 constitutes an approximate distance of 38km.	Route Alternative 2 constitutes an approximate distance of 40.1km	Route Alternative 3 constitutes an approximate distance of 39.3km.
<i>Avifauna Impact</i>	It is anticipated that route Alternative 1 will have the smallest impact on avifauna in terms of collisions and electrocutions compared to Alternative 2 & 3 due to this alternative constituting the shortest distance.	This route alternative will have the greatest impact on avifauna compared to route Alternative 1 & 3 due to this alternative constituting the longest overall distance.	This alternative will have a greater impact on avifauna compared to route Alternative 1 due to its longer distance. However, will have a smaller impact on avifauna compared to route Alternative 2 given that the distance for this alternative is shorter than the distance for route Alternative 2.

## BASIC ASSESSMENT REPORT

<p><i>Ecological Impact</i></p>	<p>Route Alternative 1 &amp; 2 are similar in terms of their impacts on the ecological conditions of the receiving environment. Route Alternative 1 will not impact on the Class 2 Ridge as compared to route Alternative 3.</p>	<p>Route Alternative 1 &amp; 2 are similar in terms of their impacts on the ecological conditions of the receiving environment. Route Alternative 2 will not impact on the Class 2 Ridge as compared to route Alternative 3.</p>	<p>All three route alternatives extend over similar areas of high environmental sensitivity. Route Alternative 3 will however have a greater footprint and subsequent impact on the sensitive vegetation as it intersects a sensitive hill close to Refilwe which supports Seringveld and rocky grassland. Further to this, route Alternative 3 will also impact on the undeveloped and sensitive Class 2 Ridge found throughout the study area.</p>
<p><i>Overall Impact Summary</i></p>	<p>The preferred option is the least expensive to construct and is anticipated to have the least amount of impacts on the surrounding environment compared to Alternative 2 &amp; 3.</p> <p>Due to the smaller footprint of the route; fewer impacts on avifauna, vegetation and on watercourse features will occur.</p> <p><b>Route Alternative 1 is therefore supported as being the preferred option.</b></p>	<p>Route Alternative 2 is the most expensive to construct compared to route Alternative 1 and 3. This option also constitutes the longest overall distance and will therefore have the greatest development footprint and subsequent impact on avifauna.</p> <p><i>Based on the reasons provided above, route Alternative 2 is <u>not</u> considered to be the preferred option.</i></p>	<p>Route Alternative 3 is more expensive to construct compared to route Alternative 1, but less expensive compared to route Alternative 2. This route option also extends over a greater area constituting a high environmental sensitivity (hill close to Refilwe and Class 2 ridge). This implies that the potential for most severe impacts exists with this alternative.</p> <p><i>Based on the reasons provided above, route Alternative 3 is <u>not</u> considered to be the preferred option.</i></p>

### 2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

**A composite environmental sensitivity map has been compiled to outline all the environmental sensitivities from the respective specialists on this project, overlain on one another. Please refer to Figure 29 below for the composite sensitivity map.**

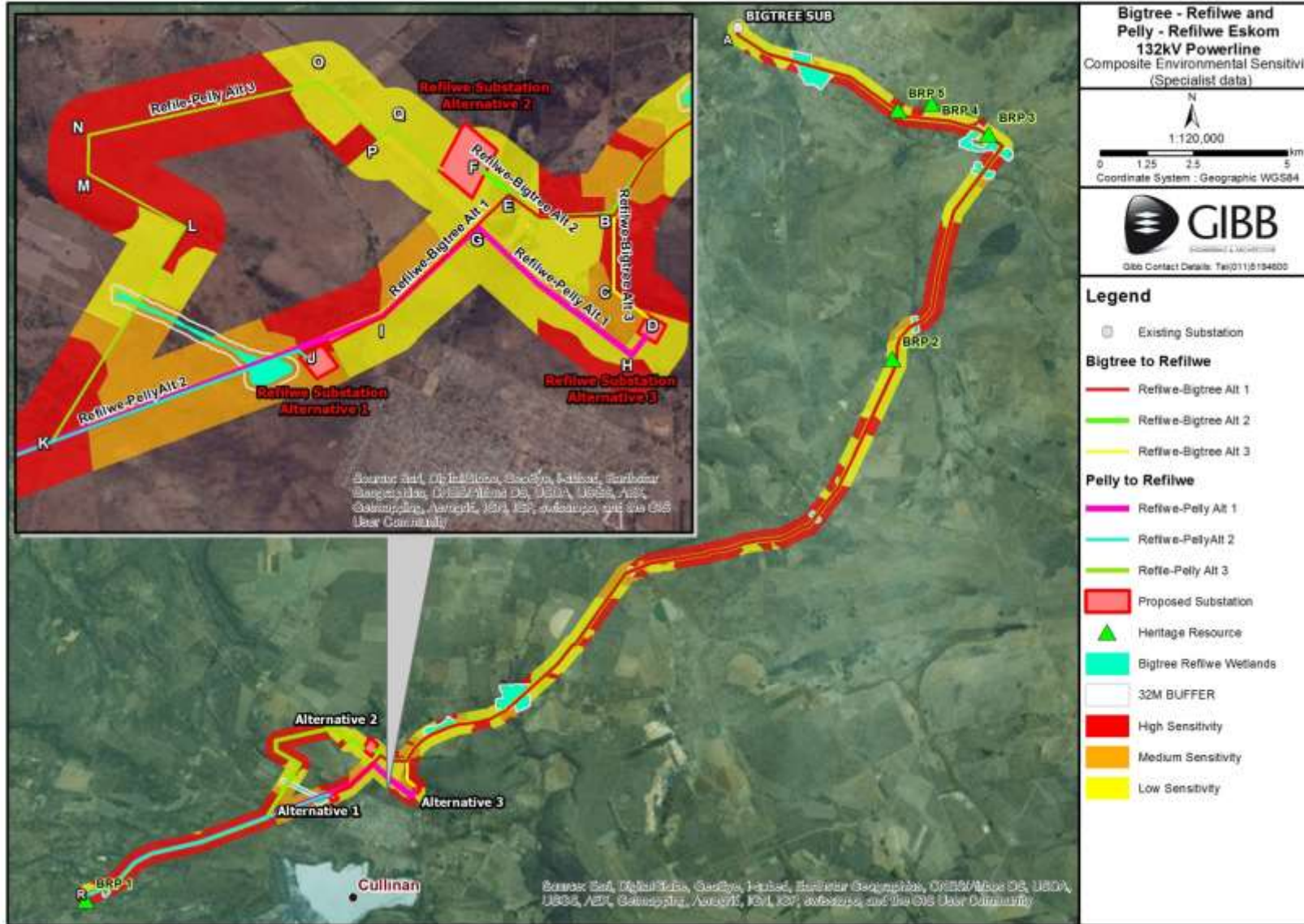


Figure 29: Composite environmental sensitivity map of the study area and proposed powerline

**SUBSTATION ALTERNATIVES**

**\*\*Please note that the Substation Alternatives 1 to 3 are directly associated with Route Alternative 1 to 3. With this being said, should Substation Alternatives 1 be approved by the Competent Authority for construction, then Route Alternative 1 will be the associated powerline route to be constructed and subsequently approved.**

**Substation Site Alternative 1 (preferred alternative)**

It has been illustrated that with the implementation of the above mitigation measures and Environmental Management Programme, all the identified impacts can be mitigated to acceptable levels, thus allowing the proposed development to proceed. Impacts associated with all three (3) substation sites are very similar with minor differences between them. It has been identified that substation alternative 1 is located in close proximity to a sensitive ridge area, however it is the EAPs opinion that with the implementation of appropriate mitigation measures the overall significance of any impacts can be reduced to be low to very low.

It should be noted that Substation Alternative 1 is directly associated with Route Alternative 1. Given that Route Alternative 1 is preferred by the EAP and the fact that there are no fatal flaws with the selection of this substation, **Substation site Alternative 1 is preferred from the EAPs point of view.**

**Substation Site Alternative 2**

It has been illustrated that with the implementation of the above mitigation measures and Environmental Management Programme, all the identified impacts can be mitigated to acceptable levels, thus allowing the proposed development to proceed. Impacts associated with all three (3) substation sites are very similar with minor differences between them. With the implementation of appropriate mitigation measures it is envisaged that the overall significance of any impacts can be reduced to be low to very low.

It should be noted that Substation Alternative 2 is directly associated with Route Alternative 2. Given that Route Alternative 2 is not preferred by the EAP, it relates directly to the fact that **Substation site Alternative 2 is then also not supported.**

**Substation Site Alternative 3**

It has been illustrated that with the implementation of the above mitigation measures and Environmental Management Programme, all the identified impacts can be mitigated to acceptable levels, thus allowing the proposed development to proceed. Impacts associated with all three (3) substation sites are very similar with minor differences between them. With the implementation of appropriate mitigation measures it is envisaged that the overall significance of any impacts can be reduced to be low to very low.

**It should however be noted that Substation Alternative 3 is located in close proximity to a very sensitive ridge with no buffer between them such as the case with a road being located between the ridge and Substation Alternative 1. This therefore implies that the potential for most severe impacts exists with this alternative.**

Further to this, Substation Alternative 3 is directly associated with Route Alternative 3. Given that Route Alternative 3 is not preferred by the EAP, it relates directly to the fact that **Substation site Alternative 3 is then also not supported.**

## ROUTE ALTERNATIVES

### Route Alternative 1 (preferred alternative)

It has been illustrated that with the implementation of the above mitigation measures and Environmental Management Programme, all the identified impacts can be mitigated to acceptable levels, thus allowing the proposed development to proceed. Impacts along all three (3) alternative routes are very similar with only a few differences in significance for some identified impacts. Route Alternative 1 is the shortest route compared to the other alternatives and as such will have a smaller overall footprint and subsequent environmental impact on the receiving environment. All impacts associated with Route Alternative 1 are mainly of a short – medium term, with a significance of low – very low (with the implementation of mitigation measures).

It should be noted that all environmental impacts associated with Alternative 1 can be successfully mitigated to acceptable levels if the recommended mitigation measures in the EMP are adhered to. Based on the information above, **Route Alternative 1 is preferred from the EAPs point of view.**

### Route Alternative 2

It has been illustrated that with the implementation of the above mitigation measures and Environmental Management Programme, all the identified impacts can be mitigated to acceptable levels, thus allowing the proposed development to proceed. Impacts along both alternative routes are very similar with only a few differences in significance for some identified impacts. All impacts associated with alternative 2 are mainly of a short – medium term, with a significance of medium to low (with the implementation of mitigation measures). The higher impact significance rating allocated to this alternative is due to this alternative being longer in distance and the subsequent greater impact on the receiving environment.

Based on the reasons provided above, **route Alternative 2 is not supported.**

### Route Alternative 3

It has been illustrated that with the implementation of the above mitigation measures and Environmental Management Programme, all the identified impacts can be mitigated to acceptable levels, thus allowing the proposed development to proceed. Impacts along both alternative routes are very similar with only a few differences in significance for some identified impacts. All impacts associated with alternative 3 are mainly of a short – medium term, with a significance of medium to low (with the implementation of mitigation measures). The higher impact significance rating allocated to this alternative is due to this alternative being **longer in distance as well as due to this alternative extending through high environmental sensitivity area located east of Refilwe. This therefore implies that the potential for most severe impacts exists with this alternative.**

Based on the reasons provided above, **route Alternative 3 is not supported.**

### No-go alternative (compulsory)

This option in the context of this project implies that the powerline and associated substation is not to be constructed and therefore assumes that a conservative approach is followed. This would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the authorities decline the application, the 'No-Go' option will be followed and the status quo of the site will remain. With the No-Go alternative being followed, no additional jobs will be created during the construction and possibly during the operational phase. The current unstable supply of electricity throughout the study area is likely to inhibit or slow down the economic growth and development of

## BASIC ASSESSMENT REPORT

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the surrounding regions in the Medium - Long term. The need for stable and reliable power supply to meet current and future demand will outweigh the potential impacts to the surrounding environment. The Impacts to the surrounding environment is expected to be of low to medium significance, at best, and can be proactively mitigated to acceptable levels. Therefore the no-go alternative is not preferred.

## BASIC ASSESSMENT REPORT

### SECTION E. RECOMMENDATION OF PRACTITIONER

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

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

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

- The EMPr is a legally bounding document and must be implemented;
  - No pylon structures should be erected within a drainage line;
  - Bird diverters should be installed along the proposed powerline route;
  - An independent ECO must be appointed to ensure compliance with the EMPr; and
  - A Water Use License must be obtained prior to construction.

Is an EMPr attached?

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

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

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

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

Umeshree Naicker  
NAME OF EAP



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

10/03/2015  
DATE



**SECTION F: APPENDIXES**

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information