



## Basic Assessment Report for the proposed Mooidraai-Smitskloof 132kV Powerline and substation - Final

Eskom Holdings SOC Ltd

*DEA Ref Number: 14/12/16/3/3/1/651*

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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.

**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.

**SECTION A: ACTIVITY INFORMATION**

Has a specialist been consulted to assist with the completion of this section?  YES  NO ✓  
If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

**1. PROJECT DESCRIPTION**

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

The study area is situated between the towns of Prieska (40km to the south-west) and Douglas (80km to the north-east); and falls within the jurisdiction of the Siya Themba Local Municipality, Northern Cape Province. The site is situated between the R357, a tar road, which connects Prieska to Douglas and the Orange River, which runs to the north of the site. Land uses surrounding the proposed powerline and substation are primarily stock-farming, intermittent mining activities and large-scale agricultural farming along the banks of the Orange River.

The proposed project entails the construction of a new 132/22kV powerline and substation (Smitskloof Substation 132/22kV with 2 x 20 MVA transformers) to the existing Moidraai Substation. The existing Moidraai 132/22kV 2 x 10MVA substation gets its supply from the Ulco-Hydra 132kV network which is operated interconnected with the Garona 132kV network. The load is mostly agricultural which includes big centre pivot irrigation points and some mining activities along the Orange River. The 2 x 10MVA transformers are expected to reach their rated capacity by 2013.

The Moidraai substation supplies 3 x 22 kV feeders, namely Remhoogte, Muishoek and Uitdraai. These distribution feeders are expected to experience thermal loading and low voltages in the near future.

A long term strengthening solution is required to sustain load growth in the area and therefore the proposed construction of the Smitskloof substation between Moidraai and Greefspan and the new 132/22kV powerline.

Two alignment alternatives are being considered by Eskom and both will be evaluated through the environmental assessment process to determine the preferred alternative from an environmental, socio-economic and feasibility perspective. Please see Figure 1 below for locality map, two alternative alignment options and the three substation position alternatives.

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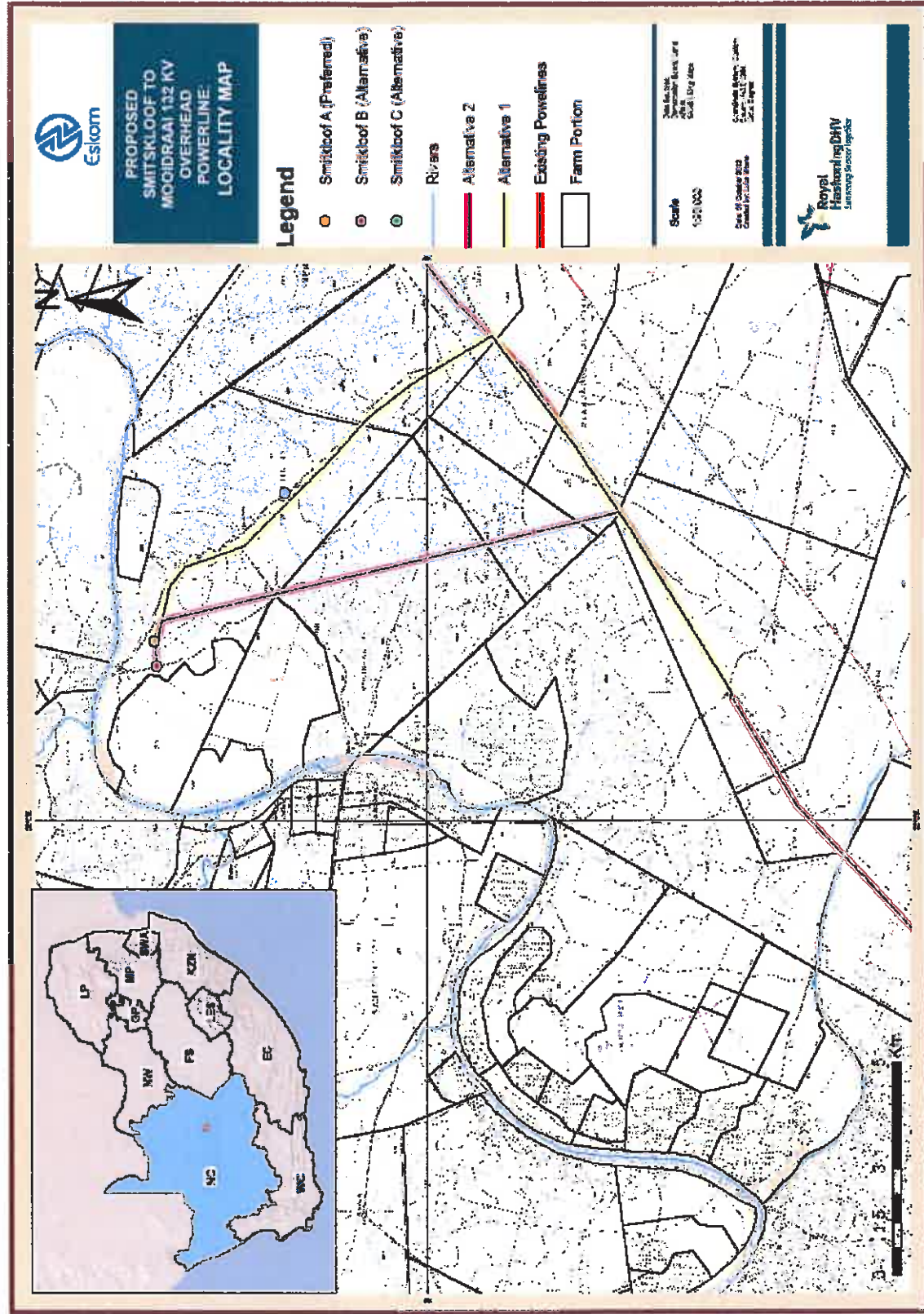


Figure 1: Locality Map showing the two alternative alignments and alternative substation positions

### **Alternative 1:**

This involves the construction of approximately 24km of powerline from the existing Mooidraai Substation to the proposed Smitkloof Substation. It runs in a north-easterly direction from Mooidraai Substation for approximately 10km, before making a sharp 90° bend to run in a north-westerly direction. This alternative was chosen as it follows an existing servitude for approximately 46% of the route.

### **Alternative 2:**

Alternative 2 splits from Alternative 1 approximately 5km from the Mooidraai Substation and runs in a north-westerly direction for approximately 14km to the proposed Smitkloof Substation. This alternative does not follow any existing servitudes and would require a 31m servitude for the powerline.

### **Substation Alternatives:**

Three alternative positions for the substation have been identified. These positions were chosen because of the current location of the existing minor voltage powerlines which need to be integrated with the new substation.

### **Sub-transmission lines:**

In South Africa, thousands of kilometres of high voltage transmission lines (i.e. 765kV, 400kV or 275kV transmission lines) transmit electricity generated at power stations to Eskom's major substations. At these major substations, the voltage is reduced, and the electricity is distributed to smaller substations all over the country through sub-transmission lines and distribution lines (i.e. 132kV, 88kV or 66kV lines). At the smaller substations the voltage is further reduced and the power is distributed to local users via numerous small powerlines (i.e. 22kV and 11kV lines) referred to as reticulation lines. The power generated by Eskom can only be utilised from those points of supply, which transform the power into a usable voltage.

### **Technical Details for the 132kV Sub-transmission line:**

#### **132kV towers:**

Sub-transmission line conductors are strung on in-line (suspension) towers and bend (strain) towers. The structures proposed to be used for the proposed 132kV Sub-transmission line for this project are either the 132kV steel monopole, lattice structures or wooden structures will be considered, based on engineering design requirements, the topography and geotechnical survey results.

These poles weigh approximately 1,200kg each and vary in height from approximately 17.4m to 21m. The size of the footprint depends on the type of pole, i.e. whether it is a self supporting, guyed suspension or an angle strain pole structure. The size of the footprint ranges from 0.6 m x 0.6m to 1.5m x 1.5m, with the larger footprint associated with the guyed suspension and angle strain pole used as bend/strain structures. The average span between two towers is 200m, but can vary between 250m and 375m depending on the ground profile (topography) and the terrain to be spanned.

The self-supporting structure (suspension pole) is typically used along the straight sections of the powerline, while the guyed intermediate or guyed suspension and angle strain structures are used where there is a bend in the powerline alignment.

### **Servitude Requirements and Clearances:**

The servitude width for a 132kV Sub-transmission 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 3,8 m, while the minimum vertical clearance between the conductors and the ground is 6.7m.

The minimum distance of a 132kV Sub-transmission line running parallel to proclaimed public roads is 95m from the centre of the Sub-transmission line servitude to the centre of the road servitude. The minimum distance

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between trees or shrubs and any bare phase conductor is 4m, allowing for the possible sideways movement and swing of both the sub-transmission line and the tree/shrub.

On receipt of an approval of the final 31m servitude by the Department of Environmental Affairs (DEA) and after negotiations with landowners, the final definition of the centre line for the Sub-transmission line and co-ordinates of each bend in the line will be determined. Optimal tower sizes and positions will be identified and verified using a ground survey (in terms of the Environmental Management Programme (EMPr) requirements).

A minimum 8m (4m either side of the centre line of the powerline) wide strip is to be cleared of all trees and for stringing purposes only. If any tree or shrub in other areas will interfere with the operation and/or reliability of the Sub-transmission line it is recommended that it is trimmed or completely cleared. The clearing of vegetation will take place, with the aid of a surveyor, along approved profiles and in accordance with the approved EMPr, and in accordance with the minimum standards to be used for vegetation clearing for the construction of the proposed new Sub-transmission lines as listed in Table 1 (Eskom, 2000).

**Table 1:** Minimum Standards to be used for vegetation clearing for the construction of a new Sub-Transmission line

Item	Standard	Follow up
Centre line of the proposed Sub-transmission line	Clear to a maximum (depending on tower type and voltage) of an 8m wide strip of all vegetation along the centre line. Vegetation to be cut within 100 mm of the ground. Treat stumps with herbicide.	Re-growth shall be cut within 100mm of the ground and treated with herbicide, as necessary.
Inaccessible valleys (trace line)	Clear a 1 m strip for access by foot only, for the pulling of a pilot wire by hand.	Vegetation not to be disturbed after initial clearing – vegetation to be allowed to re-grow.
Access/service roads	Clear a maximum (depending on tower type) 5m wide strip for vehicle access within the maximum 8m width, including de-stumping/cutting stumps to ground level, treating with a herbicide and re-compaction of soil.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Proposed tower position and proposed support/stay wire position	Clear all vegetation within proposed tower position and within a maximum (depending on tower type) radius of 5m around the position, including de-stumping/cutting stumps to ground level, treating with a herbicide and re-compaction of soil. Allow controlled agricultural practices, where feasible.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Indigenous vegetation within servitude area (outside of maximum 8m strip)	Area outside of the maximum 8m strip and within the servitude area, selective trimming or cutting down of those identified plants posing a threat to the integrity of the proposed Sub-transmission line.	Selective trimming
Alien species within servitude area (outside of maximum 8m strip)	Area outside of the maximum 8 m strip and within the servitude area, remove all alien vegetation within servitude area and treat with appropriate herbicide.	Cut and treat with appropriate herbicide.



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Once the centre line has been cleared, the surveyor pegs every tower position and marks the crossing point with existing fences for new gate installation. Once the tower positions have been marked, the vegetation clearing team will return to every tower position and clear vegetation (in accordance with the EMPr) for assembling and erection purposes.

### **Foundations:**

The type of terrain encountered, as well as the underlying geotechnical conditions determine 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 structures require more extensive foundations for support than in-line suspension structures, which contribute to the cost of the construction of the line. The minimum working area required around a structure position is 20m × 20m.

Foundations will be mechanically excavated where access to the pole position is readily available. The same applies to the pouring of concrete required for the setting of the foundations. Prior to erecting the poles and filling of the foundations, the excavated foundations will be covered in order to safeguard unsuspecting animals and people from injury. All foundations are back-filled, stabilised through compaction, and capped with concrete at ground level.

### **Insulators:**

Composite insulators are used to connect the conductors to the towers.

Glass and porcelain have previously been used to connect the conductors for many years, and are the most common. They are, however, heavy and susceptible to breakage by vandals, as well as contamination by pollution. Composite insulators have a glass-fibre core with silicon sheds for insulation. Composite insulators are lightweight and resistant to both vandalism and pollution.

Composite (Long rod type) insulators with silicone based weathershed material will be used for strain assemblies. Composite horizontal line post insulators will be used for the intermediate structures and on the jumper supports.

### **Access:**

Access to the project site is primarily along the Zwemkuil Farm access road, along which Alternative 1 runs for much of its length. This road will also provide access to the proposed substation site. Most of Alternative 2 does not follow existing roads / tracks and thus access to the line if this alternative is developed would need to be negotiated with the landowners, with the potential need to construct new road accesses. For the sections of Alternative 1 that run along the existing 132kV power lines, access is along an existing track which follows the lines. This access can either be from the Herbou or Roosloot Farms.

### **Project Timing:**

Construction of the Substation is anticipated to be approximately 18 months, while construction of the powerline will be approximately 12 months.

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

The powerline has a life-span of approximately 50 (fifty) years and will require ongoing maintenance. This maintenance work is undertaken by contractors employed by Eskom, and in compliance with the Environmental Management Programme (EMPr).

### **Construction process for Sub-Transmission lines:**

Sub-transmission lines are constructed in the following simplified sequence:

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- Step 1:** Determination of technically feasible alternatives.
- Step 2:** Basic Assessment input into route selection and obtaining of relevant environmental permits and Authorisations.
- 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 sub-transmission line and placement of towers.
- Step 7:** Issuing of tenders and award of contract to construction companies.
- Step 8:** Vegetation clearance and construction of access roads (where required).
- Step 9:** Pegging of structures.
- 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.
- Step 15:** Continued maintenance.

### **Socio-Economic Context:**

The Siyathemba Local Municipality (SLM) is located in the Pixley Ka Seme District Municipality of the Northern Cape Province and is located quite centrally within the largely arid Northern Cape. It is bordered solely by other Northern Cape Municipalities, namely Siyancuma Local Municipality in the North, Thembelihle Local Municipality in the East, Emthanjeni Local Municipality in the South-East, Kareeberg Local Municipality in the South-West, and IKheis Local Municipality in the West.

The main settlements within the in SLM are Prieska, Marydale, and Niekerkshoop with Prieska being the primary urban centre.

There are several main roads in the SLM and one National Route – the N10, which runs right past Prieska on its way to Port Elizabeth. In addition, several large railways exist within SLM's borders, mostly to serve freight moving purposes.

The LM is a sparsely populated with few settlements, large open spaces, and minimal infrastructure. It is also one which suffers from several socio-economic issues, pitfalls, and threats.

As per the SLM Integrated Development Plan (IDP) (2010), stock farming takes place throughout the region, mainly consisting of small stock (sheep and goats) that produce mutton and wool. Irrigated farming also takes place with irrigation from the Orange and Vaal Rivers, but is mostly confined to areas surrounding these rivers.

Despite the confined areas, irrigated farming forms a large part of the agricultural activities in the region and in include maize, peanuts, lucerne, grapes, dry beans, soya beans, potatoes, olives, popcorn, pecan nuts, pistachio nuts, and cotton farming. Industries are mostly confined to light industries, but the IDP states that the constant supply of water (from the Orange and Vaal Rivers) offers the potential of using the products produced in the area as a basis for benefaction.

- 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
<p><b>Example:</b>  <b>GN R.544 Item 11(3): The construction of a bridge where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</b></p>	<p><b>A bridge measuring 5 m in height and 10m in length, no wider than 8 m will be built over the Orange river</b></p>
<p>GN R.544 Activity 10:                      The construction of facilities or infrastructure for the transmission and distribution of electricity –                      Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts                      Inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.</p>	<p>The construction of a new 132/22kV powerline and substation.</p>

## 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.

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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.

**a) Site alternatives (Substations)**

<b>Alternative 1 (preferred alternative)</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
Substation Alternative A	29° 25' 51.7" S	23° 02' 25" E
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
Substation Alternative B	29° 25' 54.8" S	23° 02' 20.9" E
<b>Alternative 3</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)
Substation Alternative C	29° 27' 50.4" S	23° 05' 00" E

In the case of linear activities:

**Alternative:**

**Latitude (S):**

**Longitude (E):**

**Alternative 1 (preferred)**

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

29° 34' 37" S	23° 01' 51" E
29° 30' 48" S	23° 07' 16" E
29° 25' 50" S	23° 02' 46" E

**Alternative 2 (if any)**

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

29° 32' 54" S	23° 04' 41" E
29° 29' 14" S	23° 03' 49" E
29° 25' 52" S	23° 02' 17" E

**Alternative S3 (if any)**

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity


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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. **(Co-ordinates of Alternative 1 and 2 are attached in Appendix J)**

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 (The two powerline alternative routes are the two lay-out alternatives)**

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

**c) Technology alternatives (No technology alternatives can be considered for the design of the powerline and substation as the infrastructure used will be the standard Eskom infrastructure for such projects)**

Alternative 1 (preferred alternative)
Alternative 2
Alternative 3

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

Alternative 1 (preferred alternative)
Three possible design alternatives have been considered within the context of this Report. Three (3) pylon structures have been considered for the powerline, these are the monopole pylon, the lattice mast structure and possibly wooden structure pylons. The final structure will be decided upon based on the engineering design requirements, the topography and the geotechnical survey results.

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<b>Alternative 2</b>
<b>Alternative 3</b>

**e) No-go alternative**

The no-go alternative means that the proposed powerline and substation would not be constructed and that the power supply to the area would be limited. This will impact on the socio-economics of the people and livelihoods in the area as well as potential economic growth and agricultural activities in the surrounding proximity.

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: (Smitskloof substation)**

**Size of the activity:**

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

1 hectare (80x90m)
1 hectare (80x90m)
1 hectare (80x90m)

Alternative A2 (if any)

Alternative A3 (if any)

or, for linear activities:

**Alternative: (Powerline)**

**Length of the activity:**

Alternative A1 (preferred activity alternative)

~24 000m
~20 000m

Alternative A2 (if any)

Alternative A3 (if any)

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

**Alternative:**

**Size of the site/servitude:**

Alternative A1 (preferred activity alternative)

31m wide
31m wide

Alternative A2 (if any)

Alternative A3 (if any)

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

**4. SITE ACCESS**

Does ready access to the site exist?

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

Describe the type of access road planned:

A vehicle access road is usually required to be constructed to allow access along the entire length of the servitude. Such an access road is usually run from an accessible point to the nearest existing road to the servitude and then usually runs along the servitude itself. Note that such a "road" is in many cases merely using the cleared servitude area to drive down during operation with no formal road construction.

Access is required during both the construction and operation / maintenance phases of the Sub-transmission line life cycle. The access points and roads will be negotiated with landowners, and are to be established during the construction phase.

There is an existing access road along most of the length of the servitude for alternative 1. A new access road will be required for alternative 2.

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;
- 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.



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### 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>	YES ✓	NO	Please explain
<p>The project will run parallel to an existing powerline for the majority of Alternative 1.</p> <p>Where construction is required outside of an existing servitude it is noted to be within the properties land use rights for the area. As required a wayleave will be obtained to allow temporary access to any such areas during the construction phase.</p>			
<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	YES ✓	NO	Please explain
<p>The Provincial SDF indicates that electrification is speeding up in the Northern Cape and that progress has been made in bringing services to the citizens of the province in South Africa with the most remote communities.</p>			
<b>(b) Urban edge / Edge of Built environment for the area</b>	YES ✓	NO	Please explain
<p>Alternative will run within the servitude of an existing powerline for the majority of the route and is in line with the urban edge for the area.</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>	YES ✓	NO	Please explain
<p>The IDP and SDF for the SiyaThemba Local Municipality both identify the need for maintenance and upgrades to electrical infrastructure in the Prieska area. The SDF states that they aim to have all customers connected to the grid by 2014.</p>			
<b>(d) Approved Structure Plan of the Municipality</b>	YES ✓	NO	Please explain
<p>As detailed above.</p>			
<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>	YES ✓	NO	Please explain
<p>The project is not inconsistent with the Pixley ka Seme EMF, which identifies that equitable access to environmental resources, benefits and services to meet human needs and ensure human well-being must be pursued.</p>			
<b>(f) Any other Plans (e.g. Guide Plan)</b>	YES ✓	NO	Please explain
<p>The proposed project aims to provide power to areas which do not have an adequate power supply, with the aim</p>			

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of benefiting local residents and driving economic growth.		
<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>	YES ✓	NO Please explain
The IDP and SDF for the SiyaThemba Local Municipality both identify the need for maintenance and upgrades to electrical infrastructure in the Prieska area. The SDF states that they aim to have all customers connected to the grid by 2014.		
<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>	YES ✓	NO Please explain
<p>The existing Moodraai 132/22kV 2 x 10MVA substation gets its supply from the Ulco-Hydra 132kV network, which is operated interconnected with the Garona 132kV network. The load is mostly agricultural, which includes big centre pivot irrigation points and some limited mining activities along the Orange River. The 2 x 10MVA transformers are expected to reach their rated capacity by 2013.</p> <p>The Moodraai substation supplies 3 x 22 kV feeders, namely Remhoogte, Muishoek and Uitdraai. These distribution feeders are expected to experience thermal loading and low voltages in the near future.</p> <p>A long term strengthening solution is required to sustain load growth in the area and therefore the proposed construction of the Smitkloof substation between Moodraai and Greefspan and the new 132/22kV powerline.</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>	YES	NO ✓ Please explain
The powerline and substation are proposed to provide adequate power supply for surrounding economic activities in the area.		
<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>	YES ✓	NO Please explain
The IDP and SDF for the SiyaThemba Local Municipality both identify the need for maintenance and upgrades to		

## BASIC ASSESSMENT REPORT

electrical infrastructure in the Prieska area. The SDF states that they aim to have all customers connected to the grid by 2014.		
<b>7. Is this project part of a national programme to address an issue of national concern or importance?</b>	YES ✓	NO <input checked="" type="checkbox"/> Please explain
The provision of electricity to all communities within South Africa is a priority of national concern. Economic growth is also a priority of national concern. The proposed powerline aims to assist with <b>both</b> of these priority areas.		
<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 ✓	NO <input checked="" type="checkbox"/> Please explain
Alternative 1 follows an existing powerline for approximately 50% of the route. The surrounding land uses are primarily agricultural and large scale farming. The proposed powerline is therefore not inconsistent with the surrounding land uses provided that mitigation measures are implemented for potential negative impacts associated with a powerline.		
<b>9. Is the development the best practicable environmental option for this land/site?</b>	YES ✓	NO <input checked="" type="checkbox"/> Please explain
As detailed above.		
<b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b>	YES ✓	NO <input checked="" type="checkbox"/> Please explain
Provided that mitigation measures are implemented to minimise potential negative impacts associated with the proposed project, the benefits will outweigh the negative impacts.		
<b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b>	YES ✓	NO <input checked="" type="checkbox"/> Please explain
Only one powerline and substation are required to provide the required power supply to the area in question. The development will therefore not set a precedent for similar activities in the area.		
<b>12. Will any person's rights be negatively affected by the proposed activity/ies?</b>	YES <input checked="" type="checkbox"/>	NO ✓ Please explain
Landowner consultation and compensation will be completed before the powerline is constructed on any private land. No person's right will be negatively affected as they would need to agree to an Eskom owned servitude on their land before construction commences.		
<b>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</b>	YES <input checked="" type="checkbox"/>	NO ✓ Please explain
The proposed activity is a powerline and associated servitude for the provision of electricity. It will not impact on the urban edge.		

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<b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b>	YES ✓	<b>NO</b>	Please explain
The proposed project is in line with SIP 9 which provides for electricity generation to support socio-economic development.			
<b>15. What will the benefits be to society in general and to the local communities?</b>	Please explain		
The powerline will provide a reliable power supply to the surrounding community and economic activities such as agriculture and potential mining.			
<b>16. Any other need and desirability considerations related to the proposed activity?</b>	Please explain		
As detailed above, the powerline is required to provide a reliable power supply within the area.			
<b>17. How does the project fit into the National Development Plan for 2030?</b>	Please explain		
The project is consistent with the National Development Plan and electricity generation.			
<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>			
The following table describes how the objectives of IEM have been taken into account:			
The general objectives of IEM is to:			
(a) Promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment;	Alignment with NEMA principles described below (See Section 19 assessment below).		
(b) Identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage. The risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts, maximising benefits and promoting compliance with the principles of environmental management set out in section 2;	Implicit in the current Basic Environmental Assessment process. Environmental and Socio-economic impacts have been identified in Section D: Impact Assessment. Mitigation measures for minimising negative impacts and enhancing positive impacts are detailed in the Environmental Management Programme (EMPr)		
(c) Ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;	Implicit in the current Basic Environmental Assessment process. The effect of the proposed project on the environment is detailed in the Impact Assessment section, which identifies potential impacts and ranks their significance before and after mitigation measures are implemented.		
(d) Ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;	The Basic Assessment Process has included a Public Participation process, including: <ul style="list-style-type: none"> <li>• Posters at strategic places;</li> <li>• Newspaper adverts;</li> <li>• Background Information Documents;</li> </ul>		

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	<ul style="list-style-type: none"> <li>• Engagement with stakeholders;</li> <li>• Public meeting; and</li> <li>• Comments and response report as part of final BAR.</li> </ul>
(e) Ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and	Comprehensive Impact Assessment undertaken as part of BAR.
(f) Identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2.	Refer to Section 19 below which details how the principles of environmental management have been taken into account.

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

The following table describes how the principles of environmental management have been taken into account.

NEMA Principle as per Section 2	Alignment of project with Principle
2(1) The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and-	Accepted.
(a) Shall apply alongside all other appropriate and relevant considerations, including the State's responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination. (b) Serve as the general framework within which environmental management and implementation plans must be formulated. (c) Serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provision concerning the protection of the environment. (d) Serve as principles by reference to which a conciliator appointed under this Act must make recommendations; (e) Guide the interpretation, administration and implementation of this Act, and any other law concerned with the protection of the environment.	The principles of NEMA have been taken into account during the undertaking of the Basic Assessment Process. The environmental reporting process has been undertaken in order to provide the relevant decision-makers with the required information for them to make an informed decision regarding the project.
(2) Environmental management must place people and	The proposed project will not result in any

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<p>their needs at the forefront of it's concern and serve their physical, psychological, developmental, cultural and social interests equitably</p>	<p>undue or unacceptable impacts to the local socio-economic environment. Mitigation and management measures in the EMP must be adopted.</p>
<p>(3) Development must be socially, environmentally and economically sustainable.</p>	<p>The project is a powerline and substation for the provision of electricity and will not result in unacceptable social, environmental or economic impacts.</p>
<p>(4)(a) Sustainable development requires the consideration of all relevant factors including the following:</p> <ul style="list-style-type: none"> <li>(i) That the disturbance of ecosystems and loss of biological diversity are avoided or, where they cannot be altogether avoided, are minimised and remedied;</li> <li>(ii) that pollution and degradation of the environment are avoided or, where they cannot be altogether avoided, are minimised and remedied;</li> <li>(iii) that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;</li> <li>(iv) that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;</li> <li>(v) that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;</li> <li>(vi) that the development use and exploitation of renewable resources and the ecosystems of which they are a part do not exceed the level beyond which their integrity is jeopardised;</li> <li>(vii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and</li> <li>(viii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented are minimised and remedied</li> </ul>	<p>Disturbance to local ecosystems will be avoided where possible and impacts must be mitigated. Ecological Assessment has been undertaken and recommendations must be adopted.</p> <p>Pollution and degradation impacts are included in the Environmental Management Programme. Impacts are temporary and occur during the construction phase of the project.</p> <p>Heritage Impact Assessment has been undertaken. Recommendations made in the report must be adopted.</p> <p>Waste impacts are included in the Environmental Management Programme. Impacts are temporary and only during the construction phase of the project.</p> <p>Not applicable. No non-renewable resources will be exploited as a direct result of this project.</p> <p>The project will not exploit renewable resources.</p> <p>The precautionary principle and assessment of environmental risks are inherent in the Basic Assessment process. Impacts will be assessed as part of the impact assessment process.</p> <p>The Basic Assessment process assesses impacts and provides recommendations to prevent or remedy such impacts.</p>
<p>(b) Environmental management must be integrated,</p>	<p>These issues are addressed as part of the</p>

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<p>acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.</p>	<p>Basic Assessment process and relevant mitigation measures must be effectively implemented.</p>
<p>(c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.</p>	<p>The proposed project is aligned with the local municipality IDP and will not result in the unfair distribution of impacts.</p>
<p>(d) Equitable access to environmental resources, benefits and services to meet the basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.</p>	<p>The proposed project will not result in the unfair distribution of resources, benefits or services. Rather it will enhance access to resources.</p>
<p>(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.</p>	<p>The Environmental Management Programme will take these into account during all phases of the project.</p>
<p>(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.</p>	<p>The Basic Assessment report includes a public consultation process.</p>
<p>(g) Decisions must take into account the interests, needs and values of all interested and affected parties and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.</p>	<p>As above.</p>
<p>(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.</p>	<p>This will be done where possible and where required during the construction phase of the proposed project.</p>
<p>(i) The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated and decisions must be appropriate in the light of such consideration and assessment.</p>	<p>The Basic Assessment report includes these requirements in order to provide the relevant decision makers with the required information.</p>

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(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.	The project proponent is committed to respecting the rights of workers in terms of both labour laws and environmental rights.
(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.	The Basic Assessment Report will be available for public review in accordance with the law.
(l) There must be intergovernmental co-operation and harmonisation of policies, legislation and actions relating to the environment.	Not applicable
(m) Actual or potential co-ordination and harmonisation of policies, legislation and actions relating to the environment.	Not applicable
(n) Global and international responsibilities relating to the environment must be discharged in the national interest.	Not applicable
(o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.	These principles are taken into consideration and the proposed project aims to benefit the public without undue environmental impacts.
(p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.	The project proponent accepts that it will be held responsible for any impacts that result from negligent actions. This is generally provided as a legally binding condition of the environmental authorisation.
(q) The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.	Women and youth are not excluded from the process in any way.
(r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure	Any sensitive environments will be assessed and management measures included in the Environmental Management Programme.

### 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:



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Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act (No. 107 of 1998)	The activity triggers activities listed in NEMA GN R544 and 546	Department of Environmental Affairs (DEA)	1998
National Environmental Management. Biodiversity Act (No. 10 of 2004)	The developer must be mindful of the principles, broad liability and implications of causing damage to the environment	Department of Environmental Affairs (DEA)	2004
National Water Act (No. 36 of 1998)	Extension of some culverts along the route	Department of Water Affairs (DWA)	1998
Eastern Cape Biodiversity Conservation Plan	Certain sections of the route are located in CBAs	Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)	
National Heritage Resources Act (No. 25 of 1999)	SAHRA and ECPHRA need to be informed of the project and EIA process. A Heritage impact assessment must be undertaken.	South African National Heritage Resources Agency	1999
Constitution Act (No. 108 of 1996)	Obligation to ensure that the proposed development will not result in pollution and ecological degradation; and Obligation to ensure that the proposed development is ecologically sustainable while demonstrating economic and social development	Constitutional Assembly	1996
Occupational Health and Safety Act (No. 85 of 1993)	To provide for the health and safety of persons in connection with the use of plant and machinery; The protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work.	Department of Labour	1993

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

#### a) Solid waste management

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

YES ✓	NO
3m <sup>3</sup>	

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

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

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Solid waste will be collected and removed to the Prieska landfill site by a contractor.

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

It will be disposed of at the Prieska landfill site

Will the activity produce solid waste during its operational phase?

YES NO✓

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

N/A

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

Negligible solid waste will be generated during the operational phase. Any waste generated will be disposed of at the Prieska landfill site.

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

Negligible solid waste will be generated during the operational phase. Any waste generated will be disposed of at the Prieska landfill site.

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

N/A

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

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

YES NO✓

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the 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 NO✓

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the 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 NO✓

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

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

YES NO✓

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

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

YES	NO ✓
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If YES, provide the particulars of the facility:

Facility name:

Contact person:

Postal address:

Postal code:

Telephone:

Cell:

E-mail:

Fax:

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

Little water is used during the construction of a powerline and substation. No measures for the recycling or reuse of wastewater have been assessed.

### c) Emissions into the atmosphere

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

YES	NO ✓
YES	NO

If YES, is it controlled by any legislation of any sphere of government?

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:

The force of wheels of vehicles travelling on unpaved roadways causes the pulverisation of the surface material. Particles are lifted and dropped from the rotating wheels and the road surface is exposed to strong air currents in turbulent shear with the surface. The turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed. The quantity of dust emissions from unpaved roads varies linearly with the volume of traffic as well as the speed of the vehicles.

The movement of construction vehicles and the transportation of materials will result in unusually heavy loads being placed on the roads, which is likely to result in additional damage to the road surface. The primary source of emissions therefore will be due to vehicle entrained dust from access roads and vehicle exhaust emissions during the construction phase as well as when maintenance is undertaken.

Management measures to minimise vehicle entrained dust and exhaust emissions will be addressed in the EMP.

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### d) Waste permit

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

YES	NO ✓
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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?

YES ✓	NO
YES ✓	NO

If YES, is it controlled by any legislation of any sphere of government?

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

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

Noise will be generated during the construction phase, but will be limited to day-time working hours and for a limited duration. Mitigation and management of noise will be addressed in the EMP. In this regard, compliance with SANS 10103 will be required

## 13. WATER USE

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

Municipal ✓	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water		
If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:					N/A		
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?					<table border="1"> <tr> <td style="background-color: #333; color: white;">YES</td> <td style="background-color: #ccc;">NO ✓</td> </tr> </table>	YES	NO ✓
YES	NO ✓						

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:

None

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

None

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

**Important notes:**

1. 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):

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

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

YES ✓	NO
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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.

**Property description/physical address:**

<b>Province</b>	Northern Cape
<b>District Municipality</b>	Pixley ka Seme District Municipality
<b>Local Municipality</b>	Siya Themba Local Municipality
<b>Ward Number(s)</b>	1,2 and 3
<b>Farm name and number</b>	Refer to Appendix G for a list of farm names
<b>Portion number</b>	Refer to Appendix G for a list of farm names
<b>SG Code</b>	Refer to Appendix G for a list of farm names

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

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

Agricultural

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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	NO ✓
-----	------

### 1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

#### Alternative S1:

Flat ✓	1:50 – 1:20 ✓	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7.5	1:7.5 – 1:5	Steeper than 1:5
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#### Alternative S2 (if any):

Flat ✓	1:50 – 1:20 ✓	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7.5	1:7.5 – 1:5	Steeper than 1:5
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#### Alternative S3 (if any):

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 1: Substation A

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 2: Substation B

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 3: Substation C

Flat ✓	1:50 – 1:20 ✓	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7.5	1:7.5 – 1:5	Steeper than 1:5
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### 2. LOCATION IN LANDSCAPE

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

2.1 Ridgeline <input type="checkbox"/>	2.4 Closed valley <input type="checkbox"/>	2.7 Undulating plain / low hills <input checked="" type="checkbox"/>
2.2 Plateau <input checked="" type="checkbox"/>	2.5 Open valley <input checked="" type="checkbox"/>	2.8 Dune <input type="checkbox"/>
2.3 Side slope of hill/mountain <input type="checkbox"/>	2.6 Plain <input type="checkbox"/>	2.9 Seafront <input type="checkbox"/>

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

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

Alternative S1: (Powerline alternative 1)	Alternative S2 (Powerline alternative 2):	Alternative S3 (Substations):
_____	_____	_____

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

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

### 4. GROUNDCOVER

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

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

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

### 5. SURFACE WATER

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

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

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Artificial Wetland	YES	NO <input checked="" type="checkbox"/>	UNSURE
Estuarine / Lagoonal wetland	YES	NO <input checked="" type="checkbox"/>	UNSURE

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

Tributaries of the Orange River and Non-perennial watercourses which flow after rainfall events are located within the surrounding area. The powerline pylons will traverse these perennial watercourses and will not be located within 32m from any of these watercourses.

### 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:

Natural area <input checked="" type="checkbox"/>	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station <sup>H</sup>
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential <sup>A</sup>	Church	Agriculture <input checked="" type="checkbox"/>
Retail commercial & warehousing	Old age home	River, stream or wetland <input checked="" type="checkbox"/>
Light industrial	Sewage treatment plant <sup>A</sup>	Nature conservation area
Medium industrial <sup>AN</sup>	Train station or shunting yard <sup>N</sup>	Mountain, koppie or ridge <input checked="" type="checkbox"/>
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 <input checked="" type="checkbox"/>	Golf course	Other land uses (describe)

The landuse on the site is largely grazing of livestock (sheep and cattle) in the southern and central parts of the study area, and intensive cultivation closer to the Orange River. The use of the study area for livestock rearing will not be affected by the proposed power line development. The proposed power lines and substation will not be located within the area of intensive cultivation, thus this agricultural activity will not be affected by the proposed development.

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

N/A



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If any of the boxes marked with an "A" 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)	YES	NO ✓
Core area of a protected area?	YES	NO ✓
Buffer area of a protected area?	YES	NO ✓
Planned expansion area of an existing protected area?	YES	NO ✓
Existing offset area associated with a previous Environmental Authorisation?	YES	NO ✓
Buffer area of the SKA?	YES	NO ✓

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

**7. CULTURAL/HISTORICAL FEATURES**

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

YES

NO ✓

Uncertain

N/A

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:

## BASIC ASSESSMENT REPORT

The findings of the Heritage Specialist Study include the following:

- No graves or stone cairns were found within the study area;
- Some early and middle stone age tools and late stone age elements were found although the majority of the tools found occur widely in the region;
- The archaeological findings are lacking in context and most of the tools are of mixed age on eroded surfaces;
- Overall the fairly small numbers, isolated and disturbed context in which they are found mean that the archaeological remains have been rated as having low significance.
- The findings of the palaeontological study concluded that the sensitivity of the sedimentary rocks in the Moidraai-Smitskloof area is Low and that the project is unlikely to have a significant impact on local fossil heritage.

Please find attached Heritage Specialist Study and Paleontological Specialist Study in Appendix D.

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

YES

NO ✓

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

YES

NO ✓

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

### 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:

The unemployment rate for the Siyathemba Local Municipality was approximately 34% in 2009. This rate has steadily increased in the last decade.

Economic profile of local municipality:

The Siyathemba Local Municipality (SLM) is located in the Pixley Ka Seme District Municipality of the Northern Cape Province and is located quite centrally within the largely arid Northern Cape.

It is bordered solely by other Northern Cape Municipalities, namely Siyancuma Local Municipality in the North, Thembelihle Local Municipality in the East, Emthanjeni Local Municipality in the South-East, Kareeberg Local Municipality in the South-West, and !Kheis Local Municipality in the West.

The main settlements within the SLM are Prieska, Marydale, and Niekerkshoop with Prieska being the primary urban centre.

There are several main roads in the SLM and one National Route – the N10, which runs right past Prieska on its way to Port Elizabeth. In addition, several large railways exist within SLM's borders, mostly to serve freight moving purposes.

The LM is a sparsely populated with few settlements, large open spaces, and minimal infrastructure. It is also

## BASIC ASSESSMENT REPORT

one which suffers from several socio-economic issues, pitfalls, and threats.

As per the SLM Integrated Development Plan (IDP) (2010), stock farming takes place throughout the region, mainly consisting of small stock (sheep and goats) that produce mutton and wool. Irrigated farming also takes place with irrigation from the Orange and Vaal Rivers, but is mostly confined to areas surrounding these rivers.

Despite the confined areas, irrigated farming forms a large part of the agricultural activities in the region and in include maize, peanuts, lucerne, grapes, dry beans, soya beans, potatoes, olives, popcorn, pecan nuts, pistachio nuts, and cotton farming.

Industries are mostly confined to light industries, but the IDP states that the constant supply of water (from the Orange and Vaal Rivers) offers the potential of using the products produced in the area as a basis for benefaction.

### Level of education:

The education profile in Siyathemba Municipality as per the IDP, indicates that a total of 14% of the population had no schooling, while 34% had primary school education and just 4% of the population has a degree or diploma.

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

What is the expected capital value of the activity on completion?

R 63 000 000

What is the expected yearly income that will be generated by or as a result of the activity?

Currently unknown

Will the activity contribute to service infrastructure?

YES ✓

NO

Is the activity a public amenity?

YES ✓

NO

How many new employment opportunities will be created in the development and construction phase of the activity/ies?

Currently unknown

What is the expected value of the employment opportunities during the development and construction phase?

Currently unknown

What percentage of this will accrue to previously disadvantaged individuals?

Currently unknown

How many permanent new employment opportunities will be created during the operational phase of the activity?

Few permanent employment opportunities will be created directly during the operational phase. Cascade job creation will be caused.

What is the expected current value of the employment opportunities during the first 10 years?

Currently unknown

What percentage of this will accrue to previously disadvantaged individuals?

Currently unknown

**9. BIODIVERSITY**

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

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

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	N/A

- 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	0%	N/A
<b>Near Natural</b> (includes areas with low to moderate level of alien invasive plants)	<b>50%</b>	A large percentage of the area is used as stock farming, where vegetation is in a natural state, some alien vegetation occurs and overgrazing sometimes occurs.
<b>Degraded</b> (includes areas heavily invaded by alien plants)	<b>10%</b>	A small percentage of the area is degraded and has many alien species.
<b>Transformed</b> (includes cultivation, dams, urban, plantation, roads, etc)	<b>40%</b>	Approximately 40% of the area has been transformed by cultivation activities (crop farming), previous mining and/or prospecting activities, roads and existing powerlines.

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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 unchannelled wetlands, flats, seeps pans, and artificial wetlands)				Estuary		Coastline	
	Endangered					YES ✓	NO	UNSURE	YES
	Vulnerable ✓								
	Least Threatened ✓								

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 study area is located within two vegetation types as defined by Mucina & Rutherford (2006) namely the Northern Upper Karoo (NKu3) and the Upper Gariep Alluvial vegetation (AZa4).

The vegetation of the Northern Upper Karoo (NKu3) vegetation type is located on the Upper Karoo Plateau and comprises shrublands dominated by dwarf shrubs on flat to gently undulating terrain. In some areas pans and rocky hills occur.

The vegetation is mainly impacted on by grazing, with both wool and meat production occurring. While mining is important in certain areas.

The soil is mostly shallow (although deeper soil is encountered) and rocky and varies from red yellow apedal to freely drained soil mainly from the Ae, Ag and Fc land types. The conservation status is "least concerned".

The vegetation of the Upper Gariep Alluvial vegetation (AZa4) type comprises riparian thickets mostly dominated by the medium tall shrubs *Acacia karroo* and *Diospyros lycioides* with areas that are seasonally flooded and dominated by grasses and forbs with open patches in-between (see picture right). Due to the unpredictable flooding events the riparian areas have a high disturbance regime and soil movement. Grass cover varies both spatially and temporally. A number of alien plants occur along these riparian embankments. Highly erosive duplex alluvial duplex soil and a Mispah-rock complex are underlain by Karoo Supergroup sediments. These soils (mainly from the Ia land type) are very fertile resulting in various grain crops being planted along the Orange River.

The conservation status is vulnerable.

**Aquatic Ecosystems:**

A number of ephemeral drainage lines are present across the study area, especially in the more incised terrain in the northern parts of the study area where the land drops down into the Orange River valley. These watercourses are vegetatively well-defined, with a different vegetation composition and structure than the

## BASIC ASSESSMENT REPORT

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surrounding shrubveld. Medium-sized trees typically occur along these watercourses, being mainly *Rhus lancea* and *Ziziphus mucronata* (two species which do not occur in the non-riparian habitats on the site), with some occurrence of *Boscia albitrunca*.

The larger size of the woody vegetation is due to the greater availability of moisture in the ground, as groundwater, like surface water (when it occurs) is likely to mimic the topography and flow into these valley bottoms.

Information provided by the local inhabitants suggest that flow within these drainage lines only occurs during and for a very short period immediately after periods of good rainfall.

The substrate within and immediately adjacent to these watercourses is highly sandy, with this sandy material having been transported into and deposited within these watercourses during large rainfall events. Due to this greater availability of moisture that has resulted in a different vegetation composition and larger size of woody vegetation, these habitats are likely to offer improved food and shelter / nesting opportunities for birds than compared to the surrounding Karoo shrubveld.

See Ecological Specialist Report in Appendix D.

## SECTION C: PUBLIC PARTICIPATION

### 1. ADVERTISEMENT AND NOTICE

<b>Publication name</b>	Die Volksblad	
<b>Date published</b>	18 October 2012	
<b>Site notice position</b>	<b>Latitude</b>	<b>Longitude</b>
	Various	Various
<b>Date placed</b>	August 2013	

**Site Notices were placed at the following locations:**

- At the entrance to the Rooisloot Farm (at the intersection of the R357 and R369 roads);
- At the entrance to the Swemkuil and Vlieglandspuit Farms off the R357 road;
- Along the alignment on the Swemkuil access road at a farm Gate;
- Spar community notice board in Prieska;
- Ok Grocer community notice board in Prieska;
- Siyatemba Municipality Offices (Notice area);
- Prieska Library; and
- GWK Filling Station

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:

<b>Title, Name and Surname</b>	<b>Affiliation/ key stakeholder status</b>	<b>Contact details (tel number or e-mail address)</b>
Jacoba Maria Van Niekerk	Farm Owner - Farm 36 Rem, 36 Portion 2	<a href="mailto:Jvna3@yahoo.com">Jvna3@yahoo.com</a> 053 353 1539
Dirk Loots Family Trust	Farm Owner - Farm 37 Rem	<a href="mailto:jbstrust@vodamail.co.za">jbstrust@vodamail.co.za</a> 082 413 8758
Guilluam Van Niekerk	Farm owner – • Farms 37 Portion 1, 141 • Portion 1, 38 Rem	053 353 1948
Dupdrie Boerdery Pty Ltd Gerrie Du Plessis	Farm owner - Farm 37 Portion 8	<a href="mailto:dupdrie@gmail.com">dupdrie@gmail.com</a> 082 413 8758

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Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Christa Millicent Muller	Farm Owner - Farm 47 Portion 3, Farm 141 Rem	<a href="mailto:Coeniemlr11@gmail.com">Coeniemlr11@gmail.com</a>
Anna Jacoba De Villiers	Farm owner - Farm 152 Rem	<a href="mailto:remhoogte@gmail.com">remhoogte@gmail.com</a>
CJ De Villiers Trust	Farm owner - Farm 152 Rem	<a href="mailto:remhoogte@gmail.com">remhoogte@gmail.com</a> 082 906 7201
Schalk Jacobus Liebenberg	Farm owner - Farms 45 Portion 4, 47 Portion 2, 43 Portion 2	<a href="mailto:silieb@gwk.co.za">silieb@gwk.co.za</a> 053 353 1393
Tanya Grobbelaar	Farm Green Valley Nuts Farm 34 Portion 22	<a href="mailto:maheza@greenvalleynuts.co.za">maheza@greenvalleynuts.co.za</a>
Temdale Eiendomme Pty Ltd: Andries Gouws	Farm 374 Portion 4, Farm 373 Rem, Farm 590 Rem	<a href="mailto:lovedale.prieska@gmail.com">lovedale.prieska@gmail.com</a> 053 353 3541
Deon Human	Holsloot Farming Farm 47 Rem	<a href="mailto:sfdutoit@agrizone.co.za">sfdutoit@agrizone.co.za</a> 072 280 9869
Willem Adriaan Kuhn	Farm 44 Rem	<a href="mailto:wikkels@xsinet.co.za">wikkels@xsinet.co.za</a> 082 822 7799
Johannes Hendrik Coetzee	Hencon Boerdery Farm 371 Portion 2	<a href="mailto:wercon.prieska@gmail.com">wercon.prieska@gmail.com</a> 082 948 2355
Hendrik Jacobus Burger	HJ and EJ Burger Boerdery	073 020 9095

**Interested and Affected Parties database and stakeholder notification attached as Appendix E.**

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
The primary issue raised by I&APs related to dust on their crops, particularly during harvesting times.	Strict dust control measures will be implemented during the construction period to address the concerns from farmers during harvesting periods



**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/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
SAHRA: Northern Cape	Kathryn Smuts	0214624502	0214624509	<a href="mailto:ksmuts@sahra.org.za">ksmuts@sahra.org.za</a>	PO Box 4637 Cape Town 8000
Department of Environment and Nature Conservation: MEC	Sylvia Lucas	0538077416	0538321026	<a href="mailto:pphiri@ncpg.gov.za">pphiri@ncpg.gov.za</a>	Private Bag X6010 Kimberly 8300
Department of Environment and Nature Conservation	Mr L.C Abrahams	0538077493	0538313530	<a href="mailto:labrahams@ncpg.gov.za">labrahams@ncpg.gov.za</a>	Private Bag X6102 Kimberly 8300
Department of Water Affairs: Acting Chief Director	Mr A Abrahams	0538308803	0538314534	<a href="mailto:AbrahamsA@dwa.gov.za">AbrahamsA@dwa.gov.za</a>	Private Bag X6101 KIMBERLEY 8300
Siyathemba Local Municipality	Lillian Valacia – Mayor and ward councillor			<a href="mailto:psk.muni@prieska.co.za">psk.muni@prieska.co.za</a>	P.O Box 16, Prieska 8940
WESSA: Regional Chairperson	Suzanne Erasmus	0538392717		<a href="mailto:se@museumsnc.co.za">se@museumsnc.co.za</a>	

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.

## 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.

**The following parameters are used to describe the impact/issues in this assessment:**

- (i) The risk or likelihood of the impact/issue occurring; and
- (ii) The degree of confidence placed in the assessment of the impact/issue

*Please note that the rating number is provided in brackets next to the scale interval. Negative impacts are minus (-) values and positive impacts are plus (+) values. Higher negative valued impacts are more detrimental than lower negative valued impacts.*

#### 1. Temporal Scale

The temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.

- **Short Term (1)** – less than 5 years.
- **Medium Term (2)** – between 5 and 15 years.
- **Long Term (3)** – between 15 and 30 years.
- **Permanent (4)** – over 30 years and resulting in a permanent and lasting change that will always be there.

#### 2. Spatial Scale

The spatial scale defines physical extent of the impact.

- **Individual (0)** – this scale applies to person/s in the area.
- **Household (1)** – this scale applies to households in the area.
- **Localised (2)** – small scale impacts from a few hectares in extent e.g. local district area.
- **Regional (3)** – the scale applies to impacts on a provincial level.
- **National (4)** – the scale applies to impacts that will affect the whole South Africa.
- **International (5)** – the scale of the impact will extend beyond the borders of South Africa.

**3. Significance Scale**

- **Very High (4)**

The impacts would be considered by society as constituting a major and usually permanent change to the environment, and usually result in severe or very severe effects, or beneficial or very beneficial effects.

- **High (3)**

These impacts will usually result in long-term effects on social and/or natural environment. Impacts rated as *High* will need to be considered by society as constituting an important and usually long term change to the environment. Society would probably view these impacts in a serious light.

- **Moderate (2)**

These impacts will usually result in medium to long-term effects on the social and/or natural environment. Impacts rated as *Moderate* will need to be considered by society as constituting a fairly important and usually medium-term change to the environment, These impacts are real but not substantial.

- **Low (1)**

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as *Low* will need to be considered by the public and/or the specialist as constituting a fairly unimportant and usually short term change to the environment. These impacts are not substantial and are likely to have little real effect.

- **Non Significant (0)**

There are no primary or secondary effects at all that are important to scientists or the public.

**4. Risk or likelihood**

The risk or likelihood of all impacts taking place as a result of project actions differs. Although these impacts may be severe, the likelihood of them occurring may affect their overall significance and will be taken into account.

- **Very unlikely to occur (1)** – the chance of these impacts occurring is extremely slim.
- **Unlikely to occur (2)** – the risk of these impacts occurring is slight.
- **May occur (3)** – the risk of these impacts is more likely, although not definite.
- **Will definitely occur (4)** – this impact will occur.

**5. Degree of confidence or certainty**

It is also necessary to state the degree of certainty or confidence with which one has predicted the significance of an impact. For this reason, a 'degree of certainty' scale has been provided to enable the reader to ascertain how certain we are of our assessment of significance:

- **Definite** – More than 90% sure of a particular fact. The use this one will need to have substantial supportive data.
- **Probable** – Over 70% sure of a particular fact, or of the likelihood of that impact occurring.
- **Possible** – Only over 40% sure of a particular fact or of the likelihood of an impact occurring.
- **Unsure** – Less than 40% sure of a particular fact or the likelihood of an impact occurring.

## BASIC ASSESSMENT REPORT

**Impact rating significance:**

<b>Low impact (4 - 6 points)</b>	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
<b>Medium impact (7 - 9 points)</b>	Mitigation is possible with additional design and construction inputs.
<b>High impact (10 - 12 points)</b>	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
<b>Very High impact (13 - 16 points)</b>	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a 'very high impact' is likely to be a fatal flaw.
<b>Status</b>	Denotes the perceived effect of the impact on the affected area.
<b>Positive (+)</b>	Beneficial impact.
<b>Negative (-)</b>	Deleterious or adverse impact.
<b>Neutral (/)</b>	Impact is neither beneficial nor adverse.

## BASIC ASSESSMENT REPORT

### Impact Assessment:

#### Alternative 1: Powerline route

Potential Impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation
<b>Direct impacts</b>			
<p><b>1. Topography and Soils:</b> The direct impact on landforms with the establishment of sub-transmission lines is mainly one of disruption of surface soils. Potential erosion impacts are anticipated to be limited to the Construction Phase during site clearing activities.</p>	<p>Temporal: Medium (-2)                      Spatial: Localised (-2)                      Significance: High (-3)                      Risk/Likelihood: May occur (-3)                      Degree of confidence / Certainty: Possible                      Significance Rating: -1.0</p>	<ul style="list-style-type: none"> <li>Disturbed areas of natural vegetation, as well as cut and fill areas, must be rehabilitated immediately to prevent soil erosion.</li> <li>Limit construction, maintenance and inspection activities to dry periods in order to curb occurrence / augmentation of erosion in areas of existing erosion.</li> <li>Remove and store topsoil separately in areas where excavation / degradation takes place.</li> <li>Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area.</li> </ul>	<p>Temporal: Medium (-2)                      Spatial: Localised (-2)                      Significance: Low (-1)                      Risk/Likelihood: Unlikely (-2)                      Degree of confidence / Certainty: Unsure                      Significance Rating: -7</p>
<p><b>2. Wetlands:</b> Loss of wetland habitat bed/bank and flow modification.</p>	<p>Temporal: Short term (-1)                      Spatial: Localised (-2)                      Significance: Low (-1)                      Risk/Likelihood: Very unlikely to occur (-1)                      Degree of confidence / Certainty: Definite                      Significance Rating: -3</p>	<ul style="list-style-type: none"> <li>Ensure there are no significant impacts to wetland habitats, bed/bank and flow modification, should the development take place outside of demarcated wetland (river and wetland) areas as planned.</li> <li>No work may take place in such areas without the ECO's approval.</li> <li>A walk-through of the preferred alignment as well as tower positions / footprints should be undertaken by a suitably qualified wetland specialist.</li> <li>All tower positions must be located outside of any wetland area</li> </ul>	<p>Temporal: Short-term (-1)                      Spatial: Localised (-2)                      Significance: Low (-1)                      Risk/Likelihood: Very unlikely to occur (-1)                      Degree of confidence / Certainty: Definite                      Significance Rating: -4</p>
<p><b>3. Water Quality:</b> Impacts on current water</p>	<p>Temporal: Short term (-1)</p>	<ul style="list-style-type: none"> <li>There will be no significant impact on water quality, should</li> </ul>	<p>Temporal: Short-term (-1)</p>

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<p>quality in watercourses</p>	<p>Spatial: Localised (-2) Significance: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence / Certainty Definite <b>Significance Rating: -4</b></p>	<p>the development take place outside of demarcated wetland (river and wetland) areas as planned.</p> <ul style="list-style-type: none"> <li>Implementation of stormwater management during the construction phase should take place so as to prevent any construction material (sedimentation) from entering downstream water resources. As a result, construction of pylons/poles/towers should take place within the dry season.</li> </ul>	<p>Spatial: Localised (-2) Significance: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence / Certainty Definite <b>Significance Rating: -4</b></p>
<p>4. Loss of aquatic biodiversity</p>	<p>Temporal: Short term (-1) Spatial: Localised (-2) Significance: Low (-1) Risk/Likelihood: Very unlikely to occur (-1) Degree of confidence/Certainty: Definite <b>Significance Rating: -4</b></p>	<ul style="list-style-type: none"> <li>A loss of biodiversity may occur on a very insignificant scale during the construction phase, due to indirect impacts such as noise and/or dust, but should recover in the short-term whether impacted directly or indirectly</li> </ul>	<p>Temporal: Short Term (-1) Spatial: Localised (-2) Significance: Low (-1) Risk/Likelihood: Very unlikely to occur (-1) Degree of confidence/Certainty: Definite <b>Significance Rating: -4</b></p>
<p>5. Water Resources: Pollution of groundwater and surface water resources.</p>	<p>Temporal: Medium (-1) Spatial: Regional (-3) Significance: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence / Certainty: Possible <b>Significance Rating: -9</b></p>	<ul style="list-style-type: none"> <li>Waste water should be directed into septic / municipal or conservancy tanks.</li> <li>Sewage water should not be channelled through surface water bodies or be allowed to flow freely or stagnate on the soil surface.</li> <li>Adequate sanitary facilities and ablutions must be provided for construction workers.</li> <li>Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled</li> </ul>	<p>Temporal: Short Term (-1) Spatial: Localised (-2) Significance: Low (-1) Risk/Likelihood: Unlikely (-2) Degree of confidence / Certainty: Unsure <b>Significance Rating: -4</b></p>
<p>6. Flora and Fauna: Potential loss of red data animal and plant species as well as vegetation around substation footprint.</p>	<p>Temporal: Permanent (-4) Spatial: Localised (-2) Significance: Moderate (-2)</p>	<ul style="list-style-type: none"> <li>A walk-through of the preferred alignment as well as lower positions / footprints should be undertaken by a suitably qualified zoologist.</li> </ul>	<p>Temporal: Permanent (-4) Spatial: Localised (-2) Significance: Moderate (-2)</p>

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<p><b>Risk/Likelihood:</b> Unlikely to occur (-2) <b>Degree of confidence / Certainty:</b> Possible <b>Significance Rating: -10</b></p>	<ul style="list-style-type: none"> <li>• Site specific mitigatory measures can be implemented regarding the proximity of tower positions to any large mammal burrows, termite mounds and dolerite outcrops.</li> <li>• The vegetation of the area is not threatened. However, in order to prevent erosion and to ensure that no endemic / red data plants are destroyed it is recommended that a specialist vegetation ecologist inspect the preferred substation site and powerline alignment prior to the commencement of construction activities.</li> <li>• A walkthrough of the proposed tower pylon positions is recommended during the wet summer months to provide a site specific rescue and recovery programme for any protected or red listed plant or animal species occurring along the alignment as well as a management plan for the vegetation within the construction servitude.</li> <li>• Remaining indigenous bulbous geophytes should be retained or replanted wherever possible. Where herbicides are used to clear vegetation, specimen-specific chemicals should be applied to individual plants only. General spraying should be prohibited.</li> <li>• Removal of vegetation / plants shall be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible.</li> <li>• The establishment and re-growth of alien vegetation must be controlled after the removal of grass. All declared aliens must be identified and managed in accordance with the National Environmental Management Biodiversity Act (No. 10 of 2004) Conservation of Agricultural Resources</li> </ul>	<p><b>Risk/Likelihood:</b> Very unlikely to occur (-1) <b>Degree of confidence / Certainty:</b> Possible <b>Significance Rating: -9</b></p>
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<p><b>7. Avifauna:</b> Potential collisions of large, immobile (in flight) bird species with overhead wires, leading to mortalities. For threatened species, loss of individuals may be important at a population level due to low densities and low breeding rates.</p> <ul style="list-style-type: none"> <li>• Potential general disturbance and habitat disturbance that may lead to birds moving away from the area, especially during construction</li> <li>• Increase in nesting sites for certain raptor species (positive impact)</li> </ul>	<p><b>Temporal:</b> Long-term (-3)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>                  Unlikely to occur (-3)  <b>Degree of confidence/Certainty:</b>                  Possible  <b>Significance Rating: -10</b></p>	<p>Act, 1983 (Act No.43 of 1983).</p> <ul style="list-style-type: none"> <li>• Marking of lines with flappers and bird diverters to make lines more visible and to avoid the risk of collisions. Spans in habitats where bustard species are likely to occur must be marked, as well as spans close to the irrigated centre pivots.</li> <li>• An avifaunal specialist walk down should be undertaken before construction commences to identify exact spans of line to be marked.</li> <li>• Chose lines that follow human disturbance, thus strong preference for Alternative 1 over Alternative 2.</li> </ul>	<p><b>Temporal:</b> Long-term (-3)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>                  Unlikely to occur (-2)  <b>Degree of confidence/Certainty:</b>                  Possible  <b>Significance Rating: -9</b></p>
<p><b>8. Heritage:</b> No sites of archaeological importance were identified during the specialist study.                  Impact on sites of cultural significance, e.g. graves. Archaeological material, by its very nature, occurs below ground.                  The Applicant and Contractors should therefore keep in mind that archaeological sites might be exposed during the construction work.</p>	<p><b>No impact</b></p>	<ul style="list-style-type: none"> <li>• No further archaeological mitigation is required.</li> <li>• If anything resembling archaeological material is uncovered, work in that area should be stopped and the occurrence should immediately be reported to a museum, preferably one at which an archaeologist is available. The archaeologist should then investigate and evaluate the find.</li> </ul>	<p><b>No impact</b></p>
<p><b>9. Waste:</b> Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes: general construction rubble, hazardous waste (used oil, cement and concrete etc.).</p>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>                  May occur (-3)  <b>Degree of confidence/Certainty:</b>                  Possible</p>	<ul style="list-style-type: none"> <li>• Where possible, construction waste on site must be reused or recycled.</li> <li>• Disposal of waste must be in accordance with relevant legislative requirements.</li> <li>• The Contractor must familiarise themselves with the definitions of waste and the handling, storage and</li> </ul>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b> Unlikely (-2)  <b>Degree of confidence/Certainty:</b>                  Possible  <b>Significance Rating: -6</b></p>

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	<p><b>Significance Rating: -8</b></p>	<p>transport of it as prescribed in the applicable environmental legislation.</p> <ul style="list-style-type: none"> <li>Burning of waste material will not be permitted.</li> </ul>	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Significance: Low (-1) Risk/Likelihood: Unlikely (-2) Degree of confidence/Certainty: Possible <b>Significance Rating: -8</b></p>
<p>10. <b>Dust:</b> Dust emissions will vary from day to day depending on the phase of construction, the level of activity, and the prevailing meteorological conditions. The following possible sources of fugitive dust have been identified as activities which could potentially generate dust during construction operations at the site: vehicle activities associated with the transport of equipment to the site; preparation of the surface areas which may be required prior to the set up of new infrastructure; and the removal of construction equipment from site after the set up of new equipment.</p>	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Significance: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>Frequent and effective dust-suppression is advised, particularly along dirt roads.</li> <li>Dust must be suppressed at the construction site during dry periods by the regular application of water.</li> <li>Water used for this purpose must be used in quantities that will not result in the generation of run-off.</li> </ul>	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Significance: Low (-1) Risk/Likelihood: Unlikely (-2) Degree of confidence / Certainty: Possible <b>Significance Rating: -8</b></p>
<p>11. <b>Noise:</b> During the construction phase there is likely to be an increase in noise pollution. The following possible sources of noise could potentially generate noise pollution during construction: construction activities (excavating and site clearing); construction vehicles; and construction staff.</p>	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Significance: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence / Certainty: Possible <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>Adjacent landowners are to be notified upfront of noisy construction activities.</li> <li>Provide all equipment with standard silencers. Maintain silencer units on vehicles and equipment in good working order.</li> <li>Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment</li> <li>Compliance with the provisions of SANS 10103 is required</li> </ul>	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Significance: Low (-1) Risk/Likelihood: Unlikely (-2) Degree of confidence / Certainty: Possible <b>Significance Rating: -8</b></p>
<p>Indirect Impacts</p>			
<p>All impacts listed in the wetland assessment are indirect as a result of development taking place outside of wetland areas (surface drainage lines)</p>			
<p>Cumulative Impacts</p>			

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<p><b>1. Avifaunal:</b></p>	<p><b>Temporal:</b> Medium term (-2)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Medium (-2)  <b>Risk/Likelihood:</b>                      May occur (-3)  <b>Degree of confidence / Certainty:</b>                      Probable  <b>Significance Rating: -9</b></p>	<ul style="list-style-type: none"> <li>The impact of the proposed lines is likely to be localised, but along with other existing power line-related impacts in the context of the Nama Karoo and the Northern Cape, the cumulative impact on powerline related mortalities of endangered (large) bird species vulnerable to power line collisions is likely to be significant.</li> <li>Marking of lines with flappers and bird diverters as detailed in the direct impact section must be implemented.</li> </ul>	<p><b>Temporal:</b> Medium term (-2)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Medium (-2)  <b>Risk/Likelihood:</b>                      May occur (-3)  <b>Degree of confidence/Certainty:</b>                      Probable  <b>Significance Rating: -9</b></p>
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### Alternative 2: Powerline Route

Potential Impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation
<b>Direct impacts</b>			
<p><b>1. Topography and Soils:</b> The direct impact on landforms with the establishment of sub-transmission lines is mainly one of disruption of surface soils. Potential erosion impacts are anticipated to be limited to the Construction Phase during site clearing activities.</p>	<p><b>Temporal:</b> Medium (-2)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> High (-3)  <b>Risk/Likelihood:</b>                      May occur (-3)  <b>Degree of confidence/Certainty:</b>                      Possible  <b>Significance Rating: -10</b></p>	<ul style="list-style-type: none"> <li>Disturbed areas of natural vegetation as well as cut and fill areas must be rehabilitated immediately to prevent soil erosion.</li> <li>Limit construction, maintenance and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas of existing erosion.</li> <li>Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area.</li> </ul>	<p><b>Temporal:</b> Medium (-2)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b> Unlikely (-2)  <b>Degree of confidence/Certainty:</b>                      Unsure  <b>Significance Rating: -7</b></p>
<p><b>2. Wetlands:</b> Loss of wetland habitat bed/bank and flow modification.</p>	<p><b>Temporal:</b> Short term (+1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b>                      Very unlikely to occur (-1)</p>	<ul style="list-style-type: none"> <li>There are no significant impacts to wetland habitats, bed/bank and flow modification, should the development take place outside of demarcated wetland (river and wetland) areas as planned.</li> <li>A walk-through of the preferred alignment as well as tower</li> </ul>	<p><b>Temporal:</b> Short-term (+1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b>                      Very unlikely to occur (-1)</p>

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	Degree of confidence/Certainty: Definite <b>Significance Rating: -3</b>	positions/footprints should be undertaken by a suitably qualified wetland specialist. All tower positions must be located outside of any wetland area	Degree of confidence/Certainty: Definite <b>Significance Rating: -6</b>
<b>3. Water Quality:</b> Impacts on current water quality in watercourses	<b>Temporal:</b> Short term (-1) <b>Spatial:</b> Localised (-2) <b>Significance:</b> Low (-1) <b>Risk/Likelihood:</b> May occur (-3) <b>Degree of confidence/Certainty:</b> Definite <b>Significance Rating: -7</b>	<ul style="list-style-type: none"> <li>There will be no significant impact on water quality, should the development take place outside of demarcated wetland (river and wetland) areas as planned.</li> <li>Implementation of stormwater management during the construction phase will be more difficult for this route as a result of the receiving environment being a watershed with numerous drainage lines crossing the proposed development. As a result, prevention of construction material (sedimentation) from entering downstream water resources will be difficult.</li> </ul>	<b>Temporal:</b> Short-term (-1) <b>Spatial:</b> Localised (-2) <b>Significance:</b> Low (-1) <b>Risk/Likelihood:</b> Very unlikely to occur (-1) <b>Degree of confidence/Certainty:</b> Definite <b>Significance Rating: -7</b>
<b>4. Loss of aquatic biodiversity</b>	<b>Temporal:</b> Short term (-1) <b>Spatial:</b> Localised (-2) <b>Significance:</b> Low (-3) <b>Risk/Likelihood:</b> Very unlikely to occur (-1) <b>Degree of confidence/Certainty:</b> Definite <b>Significance Rating: -3</b>	<ul style="list-style-type: none"> <li>A loss of biodiversity may occur on a very insignificant scale during the construction phase, due to indirect impacts such as noise and/or dust, but should recover in the short-term whether impacted directly or indirectly.</li> </ul>	<b>Temporal:</b> Short-term (-1) <b>Spatial:</b> Localised (-2) <b>Significance:</b> Low (-1) <b>Risk/Likelihood:</b> Very unlikely to occur (-1) <b>Degree of confidence/Certainty:</b> Definite <b>Significance Rating: -3</b>
<b>5. Water Resources:</b> Pollution of groundwater and surface water resources.	<b>Temporal:</b> Medium (-1) <b>Spatial:</b> Regional (-3) <b>Significance:</b> Moderate (-2) <b>Risk/Likelihood:</b> May occur (-3) <b>Degree of confidence /Certainty:</b> Possible	<ul style="list-style-type: none"> <li>Waste water should be directed into municipal/septic or conservancy tanks.</li> <li>Sewage water should not be channelled through surface water bodies or be allowed to flow freely or stagnate on the soil surface.</li> <li>Adequate sanitary facilities and ablutions must be provided for construction workers.</li> </ul>	<b>Temporal:</b> Short-term (-1) <b>Spatial:</b> Localised (-2) <b>Significance:</b> Low (-1) <b>Risk/Likelihood:</b> Unlikely (-2) <b>Degree of confidence/Certainty:</b> Measure <b>Significance Rating: -6</b>

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	<p><b>Significance Rating: -9</b></p>	
<p>6. <b>Flora and Fauna:</b> Potential loss of red data animal and plant species as well as vegetation around substation footprint.</p>	<p><b>Temporal:</b> Permanent (-4)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>          Unlikely to occur (-2)  <b>Degree of confidence/Certainty:</b>          Possible  <b>Significance Rating: -10</b></p>	<p><b>Temporal:</b> Permanent (-4)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>          Very unlikely to occur (-1)  <b>Degree of confidence/Certainty:</b>          Possible  <b>Significance Rating: -9</b></p>
<ul style="list-style-type: none"> <li>• Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled</li> <li>• A walk-through of the preferred alignment as well as tower positions/footprints should be undertaken by a suitably qualified zoologist.</li> <li>• Site specific mitigatory measures can be implemented regarding the proximity of tower positions to any large mammal burrows, termite mounds and dolerite outcrops.</li> <li>• The vegetation of the area is not threatened. However, in order to prevent erosion and to ensure that no endemic/red data plants are destroyed it is recommended that a specialist vegetation ecologist inspect the preferred substation site and powerline alignment prior to the commencement of construction activities.</li> <li>• A walkthrough of the proposed tower pylon positions is recommended during the wet summer months to provide a site specific rescue and recovery programme for any protected or red listed plant or animal species occurring along the alignment as well as a management plan for the vegetation within the construction servitude.</li> <li>• Remaining indigenous bulbous geophytes should be retained or replanted wherever possible. Where herbicides are used to clear vegetation, specimen-specific chemicals should be applied to individual plants only. General spraying should be prohibited.</li> <li>• Removal of vegetation / plants shall be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is</li> </ul>		

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		<p>practically possible.</p> <ul style="list-style-type: none"> <li>The establishment and re-growth of alien vegetation must be controlled after the removal of grass. All declared aliens must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No.43 of 1983).</li> <li>Marking of lines with flappers and bird diverters to make lines more visible and to avoid the risk of collisions.</li> <li>Spans in habitats where bustard species are likely to occur must be marked, as well as spans close to the irrigated centre pivots.</li> <li>An avifaunal specialist walk down should be undertaken before construction commences to identify exact spans of line to be marked.</li> <li>Chose lines that follow human disturbance, thus strong preference for Alternative 1 over Alternative 2.</li> </ul>	
<p>6. <b>Avifauna:</b> Potential collisions of large, immobile (in flight) bird species with overhead wires, leading to mortalities. For threatened species, loss of individuals may be important at a population level due to low densities and low breeding rates.</p> <ul style="list-style-type: none"> <li>Potential general disturbance and habitat disturbance that may lead to birds moving away from the area, especially during construction</li> <li>Increase in nesting sites for certain raptor species (positive impact)</li> </ul>	<p><b>Temporal:</b> Long-term (-3)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b> Definite (-4)  <b>Degree of confidence/Certainty:</b> Possible  <b>Significance Rating: +11</b></p>	<p><b>Temporal:</b> Long-term (-3)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b> May occur (-3)  <b>Degree of confidence/Certainty:</b> Possible  <b>Significance Rating: -10</b></p>	
<p>7. <b>Heritage:</b> No sites of archaeological importance were identified during the specialist study.</p> <p>Impact on sites of cultural significance, e.g. graves. Archaeological material, by its very nature, occurs below ground. The Applicant and Contractors should therefore keep in mind that archaeological sites might be exposed during the construction work.</p>	<p>No impact</p>	<p>No further archaeological mitigation is required.</p> <ul style="list-style-type: none"> <li>If anything resembling archaeological material is uncovered, work in that area should be stopped and the occurrence should immediately be reported to a museum, preferably one at which an archaeologist is available. The archaeologist should then investigate and evaluate the find.</li> </ul>	<p>No impact</p>
<p>8. <b>Waste:</b> Waste generation during the</p>	<p><b>Temporal:</b> Short-term (-1)</p>	<p>Where possible, construction waste on site must be</p>	<p><b>Temporal:</b> Short-term (-1)</p>

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<p>construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes: general construction rubble, hazardous waste (used oil, cement and concrete etc.).</p>	<p><b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b> May occur (-3)  <b>Degree of confidence/Certainty:</b> Possible  <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>reused or recycled.</li> <li>Disposal of waste must be in accordance with relevant legislative requirements.</li> <li>The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of it as prescribed in the applicable environmental legislation.</li> <li>Burning of waste material will not be permitted.</li> </ul>	<p><b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b> Unlikely (-2)  <b>Degree of confidence/Certainty:</b> Possible  <b>Significance Rating: 8</b></p>
<p>9. <b>Dust:</b> Dust emissions will vary from day to day depending on the phase of construction, the level of activity, and the prevailing meteorological conditions. The following possible sources of fugitive dust have been identified as activities which could potentially generate dust during construction operations at the site: vehicle activities associated with the transport of equipment to the site; preparation of the surface areas which may be required prior to the set up of new infrastructure; and the removal of construction equipment from site after the set up of new equipment.</p>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b> May occur (-3)  <b>Degree of confidence/Certainty:</b> Possible  <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>Frequent and effective dust-suppression is advised, particularly along dirt roads. Dust must be suppressed at the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.</li> </ul>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b> Unlikely (-2)  <b>Degree of confidence/Certainty:</b> Possible  <b>Significance Rating: 8</b></p>
<p>10. <b>Noise:</b> During the construction phase there is likely to be an increase in noise pollution. The following possible sources of noise could potentially generate noise pollution during construction: construction activities (excavating and site clearing); construction vehicles; and construction</p>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b> May occur (-3)  <b>Degree of confidence/Certainty:</b> Possible</p>	<ul style="list-style-type: none"> <li>Adjacent landowners are to be notified upfront of noisy construction activities.</li> <li>Provide all equipment with standard silencers. Maintain silencer units on vehicles and equipment in good working order.</li> <li>Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear</li> </ul>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b> Unlikely (-2)  <b>Degree of confidence/Certainty:</b> Possible  <b>Significance Rating: 8</b></p>

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staff.	<p style="text-align: center;"><b>Significance Rating: -8</b></p>	<p>protection equipment</p> <ul style="list-style-type: none"> <li>Compliance with the provisions of SANS 10103 is required.</li> </ul>	
<b>Indirect Impacts</b>			
<p><b>All impacts listed in the wetland assessment are indirect as a result of development taking place outside of wetland areas (surface drainage lines)</b></p>			
<b>Cumulative Impacts</b>			
<p><b>1. Avifaunal:</b></p>	<p>Temporal: Medium term (-2)                      Spatial: Localised (-2)                      Significance: Moderate(-2)                      Risk/Likelihood: May occur (-3)                      Degree of confidence/Certainty: Probable  <b>Significance Rating: -9</b></p>	<ul style="list-style-type: none"> <li>The impact of the proposed powerline is likely to be localised, but along with other existing powerline related impacts in the context of the Nama Karoo and the Northern Cape, the cumulative on power line-related mortalities of endangered (large) bird species vulnerable to power line collisions is likely to be significant.</li> <li>Marking of lines with flappers and bird diverters as detailed in the direct impact section must be implemented.</li> </ul>	<p>Temporal: Medium term (-2)                      Spatial: Localised (-2)                      Significance: Medium (-2)                      Risk/Likelihood: May occur (-3)                      Degree of confidence/Certainty: Probable  <b>Significance Rating: -9</b></p>

### Alternative S 1: Substation A

<b>Potential Impacts</b>	<b>Significance rating of impacts</b>	<b>Proposed mitigation</b>	<b>Significance rating of impacts after mitigation</b>
<b>Direct Impacts</b>			
<p><b>1. Topography and Soils:</b> The direct impact on landforms with the establishment of a substation is mainly one of disruption of surface soils. Potential erosion impacts are anticipated to be limited to the Construction Phase during site clearing activities.</p>	<p>Temporal: Medium term (-2)                      Spatial: Household (-1)                      Significance: Moderate (-2)                      Risk/Likelihood: May occur (-3)                      Degree of confidence/Certainty: Possible  <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>Disturbed areas of natural vegetation as well as cut and fill areas must be rehabilitated immediately to prevent soil erosion.</li> <li>Limit construction, maintenance and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas of existing erosion.</li> <li>Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-</li> </ul>	<p>Temporal: Medium Term (-2)                      Spatial: Household (-1)                      Significance: Low (-1)                      Risk/Likelihood: Unlikely (-2)                      Degree of confidence/Certainty: Unsure  <b>Significance Rating: 0</b></p>



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<p><b>2. Wetlands:</b> Loss of wetland habitat bed/bank and flow modification.</p>	<p>No impact</p>	<p>growth of species that occur naturally in the area.</p> <ul style="list-style-type: none"> <li>No wetlands or watercourses are located in close proximity to the proposed substation position.</li> </ul>	<p>No impact</p>
<p><b>3. Water Quality:</b> Impacts on current water quality in watercourses</p>	<p>No impact</p>	<ul style="list-style-type: none"> <li>No wetlands or watercourses are located in close proximity to the proposed substation position.</li> </ul>	<p>No impact</p>
<p><b>4. Loss of aquatic biodiversity</b></p>	<p>No impact</p>	<ul style="list-style-type: none"> <li>No wetlands or watercourses are located in close proximity to the proposed substation position.</li> </ul>	<p>No impact</p>
<p><b>5. Water Resources:</b> Pollution of groundwater and surface water resources.</p>	<p>Temporal: Short term (-1) Spatial: Household (-1) Significance: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Probable <b>Significance Rating: 4</b></p>	<ul style="list-style-type: none"> <li>No wetlands or watercourses are located in close proximity to the proposed substation position.</li> <li>Waste water should be directed into municipal/septic or conservancy tanks.</li> <li>Sewage water should not be channelled through surface water bodies or be allowed to flow freely or stagnate on the soil surface.</li> <li>Adequate sanitary facilities and ablutions must be provided for construction workers.</li> <li>Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled.</li> <li>Spill kits to be kept on site during construction to prevent groundwater pollution from any spills.</li> </ul>	<p>Temporal: Short term (-1) Spatial: Household (-1) Significance: Low (-1) Risk/Likelihood: Very unlikely to occur (-1) Degree of confidence/Certainty: Probable <b>Significance Rating: 4</b></p>
<p><b>6. Flora and Fauna:</b> Potential loss of red data animal and plant species as well as vegetation around substation footprint.</p>	<p>Temporal: Permanent (-4) Spatial: Household (-1) Significance: Low (-1) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty:</p>	<ul style="list-style-type: none"> <li>A suitably qualified zoologist and botanist should assess the preferred substation site before construction commences to identify and relocate any protected flora species and to relocate any fauna species found within the construction footprint.</li> <li>Remaining indigenous bulbous geophytes should be</li> </ul>	<p>Temporal: Permanent (-4) Spatial: household (-1) Significance: Low (-1) Risk/Likelihood: Very unlikely to occur (-1) Degree of confidence/Certainty:</p>

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	<p>Possible <b>Significance Rating: -8</b></p>	<p>retained or replanted wherever possible. Where herbicides are used to clear vegetation, specimen-specific chemicals should be applied to individual plants only.</p> <ul style="list-style-type: none"> <li>General spraying should be prohibited.</li> <li>Removal of vegetation / plants shall be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible.</li> <li>The establishment and re-growth of alien vegetation must be controlled after the removal of grass. All declared aliens must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No.43 of 1983).</li> </ul>	<p>Possible <b>Significance Rating: -7</b></p>
<p>7. <b>Avifauna:</b> Potential collisions of large, immobile (in flight) bird species with substation lines. For threatened species, loss of individuals may be important at a population level due to low densities and low breeding rates.</p> <ul style="list-style-type: none"> <li>Potential general disturbance and habitat disturbance that may lead to birds moving away from the area, especially during construction</li> </ul>	<p>Temporal: Long-term (-3) Spatial: Localised (-2) Significance: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible <b>Significance Rating: -10</b></p>	<ul style="list-style-type: none"> <li>Avifaunal specialist to assess substation site when undertaking the final walkdown for the powerline to give input on whether flappers and bird diverters are required.</li> <li>Alternative A is the preferred site from an avifaunal perspective.</li> </ul>	<p>Temporal: Long-term (-3) Spatial: Localised (-2) Significance: Moderate (-2) Risk/Likelihood: Unlikely to occur (-2) Degree of confidence/Certainty: Possible <b>Significance Rating: -9</b></p>
<p>8. <b>Heritage:</b> No sites of archaeological importance were identified during the specialist study. Impact on sites of cultural significance, e.g. graves. Archaeological material, by its very nature, occurs below ground. The</p>	<p>No Impact</p>	<ul style="list-style-type: none"> <li>No further archaeological mitigation is required.</li> <li>If anything resembling archaeological material is uncovered, work in that area should be stopped and the occurrence should immediately be reported to a museum, preferably one at which an archaeologist is available. The archaeologist should then investigate and evaluate the</li> </ul>	<p>No Impact</p>

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<p>Applicant and Contractors should therefore keep in mind that archaeological sites might be exposed during the construction work.</p>		<p>find.</p>	
<p><b>9. Waste:</b> Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes: general construction rubble, hazardous waste (used oil, cement and concrete etc.).</p>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>                  May occur (-3)  <b>Degree of confidence/Certainty:</b>                  Possible  <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>• Where possible, construction waste on site must be reused or recycled.</li> <li>• Disposal of waste must be in accordance with relevant legislative requirements.</li> <li>• The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of it as prescribed in the applicable environmental legislation.</li> <li>• Burning of waste material will not be permitted.</li> </ul>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b> Unlikely (-2)  <b>Degree of confidence/Certainty:</b>                  Possible  <b>Significance Rating: 4</b></p>
<p><b>10. Dust:</b> Dust emissions will vary from day to day depending on the phase of construction, the level of activity, and the prevailing meteorological conditions. The following possible sources of fugitive dust have been identified as activities which could potentially generate dust during construction operations at the site: vehicle activities associated with the transport of equipment to the site; preparation of the surface areas which may be required prior to the set up of new infrastructure; and the removal of construction equipment from site after the set up of new equipment.</p>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>                  May occur (-3)  <b>Degree of confidence/Certainty:</b>                  Possible  <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>• Frequent and effective dust-suppression is advised. Dust must be suppressed at the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.</li> </ul>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b> Unlikely (-2)  <b>Degree of confidence/Certainty:</b>                  Possible  <b>Significance Rating: 4</b></p>
<p><b>11. Noise:</b> During the construction phase there is likely to be an increase in noise</p>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)</p>	<ul style="list-style-type: none"> <li>• Adjacent landowners are to be notified upfront of noisy construction activities.</li> </ul>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)</p>

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<p>pollution. The following possible sources of noise could potentially generate noise pollution during construction: construction activities (excavating and site clearing); construction vehicles; and construction staff.</p>	<p><b>Significance: Moderate (-2)</b>  <b>Risk/Likelihood:</b>                  May occur (-3)  <b>Degree of confidence/Certainty:</b>                  Possible  <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>• Provide all equipment with standard silencers. Maintain silencer units on vehicles and equipment in good working order.</li> <li>• Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment</li> <li>• Compliance with the provisions of SANS 10103 is required.</li> </ul>	<p>Significance Low (-1)                  Risk/Likelihood: Unlikely (-2)                  Degree of confidence/Certainty:                  Possible  <b>Significance Rating: -6</b></p>
<p><b>Indirect Impacts</b></p>			
<p>None</p>			
<p><b>Cumulative impacts</b></p>			
<p>1. <b>Avifaunal:</b></p>	<p><b>Temporal: Medium term (-2)</b>  <b>Spatial: Localised (-2)</b>  <b>Significance: Moderate (-2)</b>  <b>Risk/Likelihood:</b>                  May occur (-3)  <b>Degree of confidence/Certainty:</b>                  Possible  <b>Significance Rating: -9</b></p>	<ul style="list-style-type: none"> <li>• The impact of the substation is expected to be localised, but along with other existing power related infrastructure in the area, the cumulative impact is likely to be of significance.</li> </ul>	<p><b>Temporal: Medium term (-2)</b>  <b>Spatial: Localised (-2)</b>  <b>Significance: Moderate (-2)</b>  <b>Risk/Likelihood:</b>                  May occur (-3)  <b>Degree of confidence/Certainty:</b>                  Possible  <b>Significance Rating: -9</b></p>

### Alternative S 2: Substation B

<p><b>Potential Impacts</b></p>	<p><b>Significance rating of impacts</b></p>	<p><b>Proposed mitigation</b></p>	<p><b>Significance rating of impacts after mitigation</b></p>
<p><b>Direct Impacts</b></p>			
<p>1. <b>Topography and Soils:</b> The direct impact on landforms with the establishment of a substation is mainly one of disruption of surface soils. Potential erosion impacts</p>	<p><b>Temporal: Medium term (-2)</b>  <b>Spatial: Household (-1)</b>  <b>Significance: Moderate (-2)</b>  <b>Risk/Likelihood:</b></p>	<ul style="list-style-type: none"> <li>• Disturbed areas of natural vegetation as well as cut and fill areas must be rehabilitated immediately to prevent soil erosion.</li> <li>• Limit construction, maintenance- and inspection activities</li> </ul>	<p><b>Temporal: Medium term (-2)</b>  <b>Spatial: Household (-1)</b>  <b>Significance: Low (-1)</b>  <b>Risk/Likelihood: Unlikely (-2)</b></p>

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<p>are anticipated to be limited to the Construction Phase during site clearing activities.</p>	<p>May occur (-3) Degree of confidence/Certainty: Possible <b>Significance Rating: -8</b></p>	<p>to dry periods in order to curb occurrence/ augmentation of erosion in areas of existing erosion.</p> <ul style="list-style-type: none"> <li>Remove and store topsoil separately in areas where excavation / degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area.</li> </ul>	<p>Degree of confidence/Certainty: Insure <b>Significance Rating: 4</b></p>
<p><b>2. Wetlands:</b> Loss of wetland habitat bed/bank and flow modification.</p>	<p>No impact</p>	<ul style="list-style-type: none"> <li>No wetlands or water courses are located in close proximity to the proposed substation position.</li> </ul>	<p>No impact</p>
<p><b>3. Water Quality:</b> Impacts on current water quality in watercourses</p>	<p>No impact</p>	<ul style="list-style-type: none"> <li>No wetlands or watercourses are located in close proximity to the proposed substation position.</li> </ul>	<p>No impact</p>
<p><b>4. Loss of aquatic biodiversity</b></p>	<p>No impact</p>	<ul style="list-style-type: none"> <li>No wetlands or watercourses are located in close proximity to the proposed substation position.</li> </ul>	<p>No impact</p>
<p><b>5. Water Resources:</b> Pollution of groundwater and surface water resources.</p>	<p>Temporal: Short term (+1) Spatial: Household (-1) Significance: Low (-1) Risk/Likelihood: Unlikely to occur (+2) Degree of confidence/Certainty: Probable <b>Significance Rating: 4</b></p>	<ul style="list-style-type: none"> <li>No wetlands or watercourses are located in close proximity to the proposed substation position.</li> <li>Waste water should be directed into municipal/septic or conservancy tanks.</li> <li>Sewage water should not be channelled through surface water bodies or be allowed to flow freely or stagnate on the soil surface.</li> <li>Adequate sanitary facilities and ablutions must be provided for construction workers.</li> <li>Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled.</li> <li>Spill kits to be kept on site during construction to prevent groundwater pollution from any spills</li> </ul>	<p>Temporal: Short term (+1) Spatial: Household (-1) Significance: Low (-1) Risk/Likelihood: Very unlikely to occur (+1) Degree of confidence/Certainty: Probable <b>Significance Rating: 4</b></p>
<p><b>6. Flora and Fauna:</b> Potential loss of red data animal and plant species as well as</p>	<p>Temporal: Permanent (-4) Spatial: Household (-1)</p>	<ul style="list-style-type: none"> <li>A suitably qualified zoologist and botanist should assess the preferred substation site before construction</li> </ul>	<p>Temporal: Permanent (-4) Spatial: Household (-1)</p>

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<p>vegetation around substation footprint.</p>	<p><b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b>          Unlikely to occur (-2)  <b>Degree of confidence/Certainty:</b>          Possible  <b>Significance Rating: -8</b></p>	<p>commences to identify and relocate any protected flora species and to relocate any fauna species found within the construction footprint</p> <ul style="list-style-type: none"> <li>• Remaining indigenous bulbous geophytes should be retained or replanted wherever possible. Where herbicides are used to clear vegetation, specimen-specific chemicals should be applied to individual plants only. General spraying should be prohibited.</li> <li>• Removal of vegetation / plants shall be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible.</li> <li>• The establishment and re-growth of alien vegetation must be controlled after the removal of grass. All declared aliens must be identified and managed in accordance with the National Environmental Management Biodiversity Act (No. 10 of 2004) Conservation of Agricultural Resources Act, 1983 (Act No.43 of 1983).</li> </ul>	<p><b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b>          Very unlikely to occur (-1)  <b>Degree of confidence/Certainty:</b>          Possible  <b>Significance Rating: -7</b></p>
<ul style="list-style-type: none"> <li>• <b>Avifauna:</b> Potential collisions of large, immobile (in flight) bird species with substation lines. For threatened species, loss of individuals may be important at a population level due to low densities and low breeding rates.              Potential general disturbance and habitat disturbance that may lead to birds moving away from the area, especially during construction.</li> </ul>	<p><b>Temporal:</b> Long-term (-3)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>          May occur (-3)  <b>Degree of confidence/Certainty:</b>          Possible  <b>Significance Rating: -10</b></p>	<ul style="list-style-type: none"> <li>• Avifaunal specialist to assess substation site when undertaking the final walkdown for the powerline to give input on whether flappers and bird diverters are required.</li> </ul>	<p><b>Temporal:</b> Long-term (-3)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>          Unlikely to occur (-2)  <b>Degree of confidence/Certainty:</b>          Possible  <b>Significance Rating: -9</b></p>
<p><b>7. Heritage:</b> No sites of archaeological</p>	<p>No impact</p>	<ul style="list-style-type: none"> <li>• No further archaeological mitigation is required.</li> </ul>	<p>No impact</p>

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<p>importance were identified during the specialist study.</p> <p>Impact on sites of cultural significance, e.g. graves. Archaeological material, by its very nature, occurs below ground. The Applicant and Contractors should therefore keep in mind that archaeological sites might be exposed during the construction work.</p>		<ul style="list-style-type: none"> <li>if anything resembling archaeological material is uncovered, work in that area should be stopped and the occurrence should immediately be reported to a museum, preferably one at which an archaeologist is available. The archaeologist should then investigate and evaluate the find.</li> </ul>	
<p>8. <b>Waste:</b> Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes: general construction rubble, hazardous waste (used oil, cement and concrete etc.).</p>	<p>Temporal: Short-term (-1)                  Spatial: Localised (-2)                  Significance: Moderate (-2)                  Risk/Likelihood:                  May occur (-3)                  Degree of confidence/Certainty:                  Possible  <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>Where possible, construction waste on site must be reused or recycled.</li> <li>Disposal of waste must be in accordance with relevant legislative requirements.</li> <li>The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of it as prescribed in the applicable environmental legislation.</li> <li>Burning of waste material will not be permitted.</li> </ul>	<p>Temporal: Short-term (-1)                  Spatial: Localised (-2)                  Significance: Low (-1)                  Risk/Likelihood: Unlikely (-2)                  Degree of confidence/Certainty:                  Possible  <b>Significance Rating: -6</b></p>
<p>9. <b>Dust:</b> Dust emissions will vary from day to day depending on the phase of construction, the level of activity, and the prevailing meteorological conditions. The following possible sources of fugitive dust have been identified as activities which could potentially generate dust during construction operations at the site: vehicle activities associated with the transport of equipment to the site; preparation of the surface areas which may be required prior</p>	<p>Temporal: Short-term (-1)                  Spatial: Localised (-2)                  Significance: Moderate (-2)                  Risk/Likelihood:                  May occur (-3)                  Degree of confidence/Certainty:                  Possible  <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>Frequent and effective dust-suppression is advised. Dust must be suppressed at the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.</li> </ul>	<p>Temporal: Short-term (-1)                  Spatial: Localised (-2)                  Significance: Low (-1)                  Risk/Likelihood: Unlikely (-2)                  Degree of confidence/Certainty:                  Possible  <b>Significance Rating: -6</b></p>

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<p>to the set up of new infrastructure; and the removal of construction equipment from site after the set up of new equipment.</p>		<ul style="list-style-type: none"> <li>• Adjacent landowners are to be notified upfront of noisy construction activities.</li> <li>• Provide all equipment with standard silencers. Maintain silencer units on vehicles and equipment in good working order.</li> <li>• Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment</li> <li>• Compliance with the provisions of SANS 10103 is required.</li> </ul>	<p>Temporal: Short-term (-1) Spatial: Localised (-2) Significance: Low (-1) Risk/Likelihood: Unlikely (-2) Degree of confidence/Certainty: Possible <b>Significance Rating: -4</b></p>
<b>Indirect Impacts</b>			
None			
<b>Cumulative Impacts</b>			
<p>1. <b>Avifaunal:</b></p>	<p>Temporal: Medium term (-2) Spatial: Localised (-2) Significance: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible <b>Significance Rating: -9</b></p>	<p>The impact of the substation is expected to be localised, but along with other existing power related infrastructure in the area, the cumulative impact is likely to be of significance.</p>	<p>Temporal: Medium term (-2) Spatial: Localised (-2) Significance: Moderate (-2) Risk/Likelihood: May occur (-3) Degree of confidence/Certainty: Possible <b>Significance Rating: -9</b></p>

### Alternative S 3: Substation C

Potential Impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation
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Direct impacts		
<p>1. <b>Topography and Soils:</b> The direct impact on landforms with the establishment of a substation is mainly one of disruption of surface soils. Potential erosion impacts are anticipated to be limited to the Construction Phase during site clearing activities.</p>	<p>Temporal: Medium (-2)                      Spatial: Household (-1)                      Significance: Moderate (-2)                      Risk/Likelihood: Possible                      Degree of confidence/Certainty: Possible  <b>Significance Rating: -8</b></p>	<p>Disturbed areas of natural vegetation as well as cut and fill areas must be rehabilitated immediately to prevent soil erosion.</p> <ul style="list-style-type: none"> <li>Limit construction-, maintenance- and inspection activities to dry periods in order to curb occurrence/ augmentation of erosion in areas of existing erosion.</li> <li>Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area.</li> </ul> <p>Temporal: Medium (-2)                      Spatial: Household (-1)                      Significance: Low (-1)                      Risk/Likelihood: Unlikely (-2)                      Degree of confidence/Certainty: Probable  <b>Significance Rating: -4</b></p>
<p>2. <b>Wetlands:</b> Loss of wetland habitat bed/bank and flow modification.</p>	<p>No impact</p>	<p>No impact</p>
<p>3. <b>Water Quality:</b> Impacts on current water quality in watercourses</p>	<p>No impact</p>	<p>No impact</p>
<p>4. <b>Loss of aquatic biodiversity</b></p>	<p>No impact</p>	<p>No impact</p>
<p>5. <b>Water Resources:</b> Pollution of groundwater and surface water resources.</p>	<p>Temporal: Short term (-1)                      Spatial: Household (-1)                      Significance: Low (-1)                      Risk/Likelihood: Unlikely to occur (-2)                      Degree of confidence/Certainty: Probable  <b>Significance Rating: -3</b></p>	<p>Temporal: Short term (-1)                      Spatial: Household (-1)                      Significance: Low (-1)                      Risk/Likelihood: Very unlikely to occur (-1)                      Degree of confidence/Certainty: Probable  <b>Significance Rating: -4</b></p>

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		<ul style="list-style-type: none"> <li>• Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled.</li> <li>• Spill kits to be kept on site during construction to prevent groundwater pollution from any spills</li> </ul>	
<p><b>6. Flora and Fauna: Potential loss of red data animal and plant species as well as vegetation around substation footprint.</b></p>	<p><b>Temporal:</b> Permanent (-4)  <b>Spatial:</b> Household (-1)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b>          Unlikely to occur (-2)  <b>Degree of confidence/Certainty:</b>          Possible  <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>• A walk-through of the preferred alignment as well as tower positions/footprints should be undertaken by a suitably qualified zoologist.</li> <li>• Site specific mitigatory measures can be implemented regarding the proximity of tower positions to any large mammal burrows, termite mounds, dolomite outcrops as well as seasonal wetlands.</li> <li>• The vegetation of the area is not threatened. However, in order to prevent erosion and to ensure that no endemic/red data plants are destroyed it is recommended that a specialist vegetation ecologist inspect the preferred substation site and powerline alignment prior to the commencement of construction activities.</li> <li>• Surveys must be conducted during the wet summer months to provide a site specific rescue and recovery programme for any protected or red listed plant species occurring within the substation site.</li> <li>• Remaining indigenous bulbous geophytes should be retained or replanted wherever possible. Where herbicides are used to clear vegetation, specimen-specific chemicals should be applied to individual plants only. General spraying should be prohibited.</li> <li>• Removal of vegetation / plants shall be avoided until such</li> </ul>	<p><b>Temporal:</b> Permanent (-4)  <b>Spatial:</b> Household (-1)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b>          Very unlikely to occur (-1)  <b>Degree of confidence/Certainty:</b>          Possible  <b>Significance Rating: - 7</b></p>

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		<p>time as soil stripping is required and similiary exposed surfaces must be re-vegetated or stabilised as soon as is practically possible.</p> <ul style="list-style-type: none"> <li>The establishment and re-growth of alien vegetation must be controlled after the removal of grass. All declared aliens must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No.43 of 1983).</li> </ul>	
<p>7. Avifauna: Potential collisions of large, immobile (in flight) bird species with substation lines. For threatened species, loss of individuals may be important at a population level due to low densities and low breeding rates.</p> <ul style="list-style-type: none"> <li>Potential general disturbance and habitat disturbance that may lead to birds moving away from the area, especially during construction.</li> </ul>	<p><b>Temporal:</b> Long-term (-3)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>          Definite (-4)  <b>Degree of confidence/Certainty:</b>          Possible  <b>Significance Rating: -11</b></p>	<ul style="list-style-type: none"> <li>Avifaunal specialist to assess substation site when undertaking the final walkdown for the powerline to give input on whether flappers and bird diverters are required.</li> <li>Strong preference not to choose substation alternative C due to location, natural habitat and avifaunal species found in the area.</li> </ul>	<p><b>Temporal:</b> Long-term (-3)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>          May occur (-3)  <b>Degree of confidence/Certainty:</b>          Possible  <b>Significance Rating: -10</b></p>
<p>8. Heritage: No sites of archaeological importance were identified during the specialist study.          Impact on sites of cultural significance, e.g. graves. Archaeological material, by its very nature, occurs below ground. The Applicant and Contractors should therefore keep in mind that archaeological sites might be exposed during the construction work.</p>	<p><b>No impact</b></p>	<ul style="list-style-type: none"> <li>No further archaeological mitigation is required.</li> <li>If anything resembling archaeological material is uncovered, work in that area should be stopped and the occurrence should immediately be reported to a museum, preferably one at which an archaeologist is available. The archaeologist should then investigate and evaluate the find.</li> </ul>	<p><b>No impact</b></p>

## BASIC ASSESSMENT REPORT

<p><b>9. Waste:</b> Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes: general construction rubble, hazardous waste (used oil, cement and concrete etc.).</p>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>            May occur (-3)  <b>Degree of confidence/Certainty:</b>            Possible  <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>• Where possible, construction waste on site must be reused or recycled.</li> <li>• Disposal of waste must be in accordance with relevant legislative requirements.</li> <li>• The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of it as prescribed in the applicable environmental legislation.</li> <li>• Burning of waste material will not be permitted.</li> </ul>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b> Unlikely (-2)  <b>Degree of confidence/Certainty:</b>            Possibly  <b>Significance Rating: 4</b></p>
<p><b>10. Dust:</b> Dust emissions will vary from day to day depending on the phase of construction, the level of activity, and the prevailing meteorological conditions. The following possible sources of fugitive dust have been identified as activities which could potentially generate dust during construction operations at the site: vehicle activities associated with the transport of equipment to the site; preparation of the surface areas which may be required prior to the set up of new infrastructure; and the removal of construction equipment from site after the set up of new equipment.</p>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>            May occur (-3)  <b>Degree of confidence/Certainty:</b>            Possible  <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>• Frequent and effective dust-suppression is advised. Dust must be suppressed at the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.</li> </ul>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b> Unlikely (-2)  <b>Degree of confidence/Certainty:</b>            Possible  <b>Significance Rating: 4</b></p>
<p><b>11. Noise:</b> During the construction phase there is likely to be an increase in noise pollution. The following possible sources of noise could potentially generate noise pollution during construction: construction</p>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Moderate (-2)  <b>Risk/Likelihood:</b>            May occur (-3)</p>	<ul style="list-style-type: none"> <li>• Adjacent landowners are to be notified upfront of noisy construction activities.</li> <li>• Provide all equipment with standard silencers.</li> <li>• Maintain silencer units on vehicles and equipment in good working order.</li> </ul>	<p><b>Temporal:</b> Short-term (-1)  <b>Spatial:</b> Localised (-2)  <b>Significance:</b> Low (-1)  <b>Risk/Likelihood:</b> Unlikely (-2)  <b>Degree of confidence/Certainty:</b></p>

## BASIC ASSESSMENT REPORT

<p>activities (excavating and site clearing); construction vehicles; and construction staff.</p>	<p><b>Degree of confidence/Certainty:</b> Possible <b>Significance Rating: -8</b></p>	<ul style="list-style-type: none"> <li>Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA should wear ear protection equipment</li> <li>Compliance with the provisions of SANS 10103 is required</li> </ul>	<p>Possible <b>Significance Rating: -8</b></p>
<b>Indirect Impacts</b>			
None			
<b>Cumulative Impacts</b>			
<p>1. <b>Avifaunal:</b></p>	<p><b>Temporal:</b> Medium term (-2) <b>Spatial:</b> Localised (-2) <b>Significance:</b> Moderate (-2) <b>Risk/Likelihood:</b> May occur (-3) <b>Degree of confidence/Certainty:</b> Possible <b>Significance Rating: -9</b></p>	<ul style="list-style-type: none"> <li>The impact of the proposed substation is expected to be localised, but along with other existing power related infrastructure in the area, the cumulative impact is likely to be of significance.</li> </ul>	<p><b>Temporal:</b> Medium term (-2) <b>Spatial:</b> Localised (-2) <b>Significance:</b> Moderate (-2) <b>Risk/Likelihood:</b> May occur (-3) <b>Degree of confidence/Certainty:</b> Possible <b>Significance Rating: -9</b></p>

## BASIC ASSESSMENT REPORT

### Summary of Impacts and Average Points allocated to each Powerline Alternative during the Construction Phase

IMPACTS	Alternative 1 - Without		Alternative 1 - With Mitigation		Alternative 2 - Without		Alternative 2 - With Mitigation	
	Mitigation		Mitigation		Mitigation		Mitigation	
Topography and Soils	-10		-7		-10		-7	
Wetlands	-5		-5		-5		-5	
Water quality	-6		-6		-7		-6	
Loss of Aquatic Biodiversity	-5		-5		-7		-7	
Water Resources	-9		-6		-9		-6	
Flora and Fauna	-10		-9		-10		-9	
Avifauna	-10		-9		-11		-10	
Heritage	/		/		/		/	
Waste	-8		-6		-8		-6	
Dust	-8		-6		-8		-6	
Noise	-8		-6		-8		-6	
<b>Average Total</b>	<b>-7.2</b>		<b>-5.91</b>		<b>-7.54</b>		<b>-6.18</b>	
			INDIRECT					
Avifauna	-9		-9		-9		-9	
<b>Average Total</b>	<b>-9.00</b>		<b>-9.00</b>		<b>-9.00</b>		<b>-9.00</b>	
			CUMULATIVE					
None.								

**BASIC ASSESSMENT REPORT**

**Summary of Impacts and Average Points allocated to each Substation Alternative during the Construction Phase**

IMPACTS	Alternative 1	Alternative 2	Alternative 3	Alternative 3
	-Substation A Without Mitigation	-Substation B Without Mitigation	-Substation B With Mitigation	-Substation C Without Mitigation
	With Mitigation	Without Mitigation	With Mitigation	With Mitigation
Topography and Soils	-8	-8	-6	-6
Wetlands	/	/	/	/
Water quality	/	/	/	/
Loss of Aquatic Biodiversity	/	/	/	/
Water Resources	-5	-5	-4	-4
Flora and Fauna	-8	-8	-7	-7
Avifauna	-10	-10	-9	-10
Heritage	/	/	/	/
Waste	-8	-8	-6	-6
Dust	-8	-8	-6	-6
Noise	-8	-8	-6	-6
<b>Average Total</b>	<b>-5</b>	<b>-5</b>	<b>-4</b>	<b>-4.1</b>
INDIRECT				
Avifauna	-9	-9	-9	-9
<b>Average Total</b>	<b>-9.00</b>	<b>-9.00</b>	<b>-9.00</b>	<b>-9.00</b>
CUMULATIVE				
None.				

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

## 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.

### Environmental Impact Statement

Based on the impact identification and proposed mitigation measures, including the proposed rehabilitation measures in the EMPr, the environmental assessment practitioner is of the view that the **Powerline Alternative 1** should be developed as it is already a disturbed area and the powerline will run parallel to an existing 132kV line and access road for the majority of the route.

From a Biodiversity perspective, no clear preferred route exists. A walkthrough investigation by a qualified Zoologist and/or Ecologist should be conducted before construction commences regardless of the preferred alternative powerline route.

From a Heritage and Avifaunal point of view, alternative 1 of the powerline route is the preferred route as it follows existing infrastructure and is in an already disturbed area. In addition, no additional access roads are required for this route.

Powerline Alternative 1 is preferred from a visual perspective, as there is already existing infrastructure and therefore the area is disturbed. It is planned that the pylons and towers will be located outside of any watercourses or wetland areas, and the impact from an aquatic perspective is negligible.

**Substation Alternative A** is strongly preferred from an avifaunal perspective due to the existing disturbance and infrastructure in the area, as well as being located further away from cultivated fields than alternative B.

Impacts relating to the construction of the powerline and substation are short-term impacts and can be effectively mitigated by the measures and recommendations contained in the Environmental Management Programme (EMPr).

The greatest impact is the potential collisions and electrocutions to birds and measures contained within the specialist report and EMPr must be implemented and adhered to.

### No-go alternative (compulsory)

The area is currently experiencing power supply problems in terms of capacity and load required to sustain existing economic activities. Should the proposed powerline and substation not be constructed, this will impact on economic activities such as farming, agriculture and potential future mining projects.

This will have a negative impact on economic growth and job creation for the people and surrounding towns.



**SECTION E. RECOMMENDATION OF PRACTITIONER**

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

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

N/A

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.

Mitigation measures contained within the Basic Assessment Report, Specialist studies and Environmental Management Programme must be implemented in order to mitigate negative impacts to the bio-physical environment, particularly during the construction phase of the project.

**Assumptions, Uncertainties and Gaps:**

The following assumptions have been made and should be implemented, where required:

- That the applicant will act in a responsible manner and take appropriate and prompt action should incidents occur at the site, in order to (1) determine the cause of the incident and, (2) rectify the cause of the problem.
- That the information provided by the applicant, engineers and specialists are deemed accurate and unbiased.
- That the applicant will adhere to the mitigation measures presented in the BAR Report and draft EMP/specialist reports.
- That the full recommendations of the specialist studies are implemented.
- That the monitoring and auditing programmes suggested are implemented.
- That construction activity will be conducted by experienced person/s (contractors and principle agents).
- That an experienced independent environmental control officer (ECO) will be appointed for the construction phase of this project and that regular ECO site visits will occur to ensure that the EMP is complied with and that every effort is made to minimise environmental impacts.
- That the available data, including Topocadastral maps, Orthophotographs, geological maps and DWA national ground water database information, are reasonably accurate.

Is an EMPr attached?

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

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

## BASIC ASSESSMENT REPORT

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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.

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NAME OF EAP

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SIGNATURE OF EAP

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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