

**ENVIRONMENTAL IMPACT ASSESSMENT PROCESS  
FINAL BASIC ASSESSMENT REPORT**

**PROPOSED BOSJESMANSBERG SOLAR ENERGY FACILITY TO  
CUPRUM SUBSTATION 132kV POWER LINE, NEAR  
COPPERTON IN THE NORTHERN CAPE PROVINCE**

**DEA REF No: 14/12/16/3/3/1/1150**

**FINAL REPORT**

**May 2014**

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## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

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**File Reference Number:**

**Application Number:**

**Date Received:**


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

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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.
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15. Shape files (.shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

## PROJECT DETAILS

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- Title** : Environmental Basic Assessment Process  
Final Basic Assessment Report: Proposed  
Bosjesmansberg Solar Energy Facility to Cuprum  
Substation 132kv Power Line, near Copperton in  
the Northern Cape Province
- Authors** : Savannah Environmental  
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Dr John Almond (Palaeontologist)
- Client** : Networx Renewables (Pty) Ltd
- Report Status** : Final Report

**When used as a reference this report should be cited as:** Savannah Environmental (2014)  
Final Basic Assessment Report: Proposed Bosjesmansberg Solar Energy Facility to Cuprum  
Substation 132kv Power Line, near Copperton in the Northern Cape Province.

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## **SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT**

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Networkx Renewables (Pty) Ltd, an Independent Power Producer (IPP), is proposing the establishment of a commercial solar electricity generating facility and associated infrastructure on portion 1 of the farm Bosjesmansberg 67 located approximately 16 km east of Copperton in the Siyathemba Local Municipality under the jurisdiction of the Pixley ka Seme District Municipality, Northern Cape Province. Environmental Impact Assessments for the following proposed 75 megawatt (MW) Photovoltaic (PV) facilities situated on Portion 1 of the farm Bosjesmansberg 67 are in the process of being conducted and the following reference numbers have been issued by the Department of Environmental Affairs:

- » Proposed Bosjesmansberg Center PV Plant – DEA Reference No 14/12/16/3/3/2/579
- » Proposed Bosjesmansberg East PV Plant– DEA Reference No 14/12/16/3/3/2/579/1
- » Proposed Bosjesmansberg West PV Plant – DEA Reference No 14/12/16/3/3/2/579/2
- » Proposed Bosjesmansberg South PV Plant – DEA Reference No 14/12/16/3/3/2/579/3

In order to evacuate the generated power of the abovementioned 75MW PV facilities into the Eskom grid, the construction of overhead distribution power lines is required. Two potential points of connection to the Eskom grid are Kronos Substation and Cuprum Substation both of which are situated near Copperton. The two existing Eskom Substations are located within a 20km distance from the proposed substations associated with the four proposed PV Facilities situated on Portion 1 of the Farm Bosjesmansberg 67. Each of the above PV facilities will have a separate substation (i.e. four individual substations) proposed to be located within a consolidated area of the Bosjesmansberg PV project area – referred to as a “substation complex”.

The existing Cuprum-Burchell 132kV power line traverses the Bosjesmansberg farm and is situated within 100m from the boundaries of the Bosjesmansberg PV Center, Bosjesmansberg PV East and Bosjesmansberg PV West project sites. Only one or two of the four PV projects will be able to connect to the Cuprum-Burchell 132kV power line via a loop in – loop out configuration, however this will only achieve partial evacuation of the generated electricity for the whole envisaged project capacity. Consequently the need to evacuate the entire generated capacity of all four 75MW PV projects was identified following an analysis undertaken by Networkx Renewables in conjunction with Eskom.

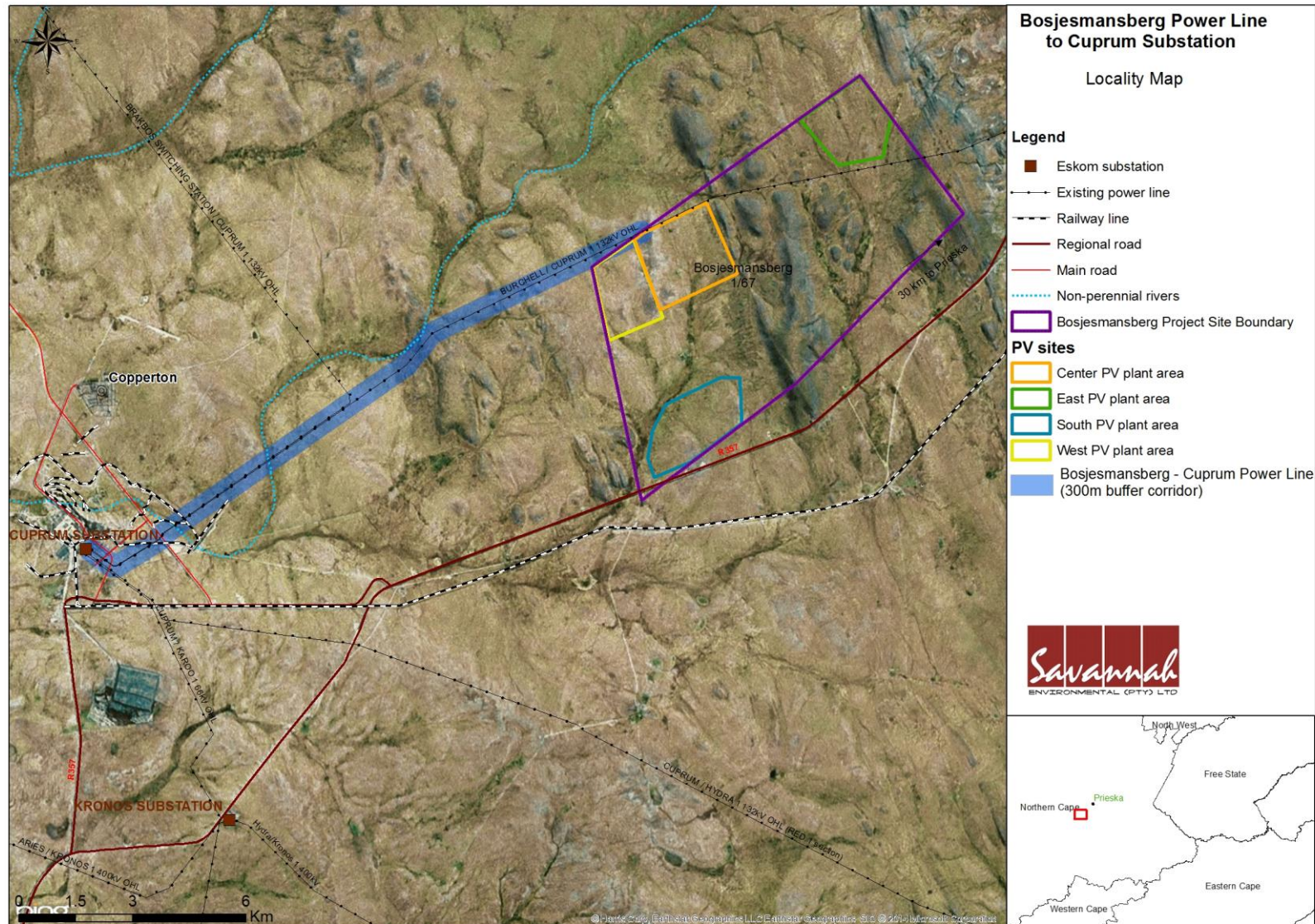
Two existing Eskom Substations exist within a 20km distance from the proposed “substation complex” associated with the four proposed PV Facilities situated on Portion 1 of the Farm Bosjesmansberg 67, including the Cuprum Substation situated in Copperton and the Kronos Substation situated just to the south of Copperton.

Two 132kV power lines are therefore proposed in order to connect the proposed Bosjesmansberg 75MW PV projects to the existing Eskom distribution network as follows:

- » A new 132kV power line from the Bosjesmansberg PV projects substations to the existing Cuprum Substation (refer to Figure 1), and
- » A new 132kV power line from the Bosjesmansberg PV projects substations to the existing Kronos Substation.

**This Basic Assessment Report describes and assesses the impacts associated with the construction of the Bosjesmansberg - Cuprum 132kV power line (DEA Ref: 14/12/16/3/3/1/1150).** The Bosjesmansberg – Kronos 132kV power line has been described and assessed in a separate Basic Assessment Report under DEA Reference: 14/12/16/3/3/1/1151.





**Figure 1:** Locality map showing the Bosjesmansberg Substation to Cuprum Substation power line corridor in relation to the 4 X 75MW Solar Energy Facilities proposed on Portion 1 of the Farm Bosjesmansberg 67

## 1.1 NEED FOR THE PROPOSED DEVELOPMENT

**Direct need:** The purpose of the proposed Bosjesmansberg Solar Energy Facility development is to supply renewable energy to the national grid (which is short of generation capacity to meet current and expected demand) and to aid in achieving the goal of a 30% share of all new power generation being derived from Independent Power Producers (IPPs), as targeted by the Department of Energy (DoE).

Globally there is increasing pressure on countries to increase their share of renewable energy generation due to concerns such as climate change and exploitation of non-renewable resources. In order to meet the long-term goal of a sustainable renewable energy industry, a goal of 17,8GW of renewables by 2030 has been set by the Department of Energy (DoE) within the Integrated Resource Plan (IRP) 2010. This energy will be produced mainly from wind, solar, biomass, and small-scale hydro (with wind and solar comprising the bulk of the power generation capacity). This amounts to ~42% of all new build power generation being derived from renewable energy forms by 2030. This is, however, dependent on the assumed learning rates and associated cost reductions for renewable options.

The need and justification for the proposed power line is linked to that put forward in the EIA report for the respective Bosjesmansberg 75MW PV facilities. This is due to the fact that the power lines constitute essential infrastructure, without which the proposed PV facilities would be rendered unfeasible.

Only a portion of the total potential generated capacity associated with the proposed Bosjesmansberg Solar Energy Facility development can be evacuated to the Eskom grid (via the loop in – loop out feed) should the power line not be developed. The proposed power line is therefore considered to be essential infrastructure required to evacuate a portion of the total 300MW capacity proposed to be generated by the 4 phases of the Bosjesmansberg projects. The construction of the Bosjesmansberg Solar Energy Facility to Kronos Substation power line will further serve to strengthen the overall Eskom distribution network within the region. This is a unique situation for a project to have a number of grid connection options, maintaining the viability of the authorised project even if other projects are constructed and connected ahead of the other 75MW projects proposed to occur on the Farm Bosjesmansberg 67.

Other authorised energy distribution infrastructure in the region include the Garob Wind Energy Facility to Kronos Substation 132kV power line (authorised in August 2013).

## 1.2 REQUIREMENT FOR AN ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

In terms of the EIA Regulations published in terms of Section 24(5) of the National Environmental Management Act (NEMA, Act No. 107 of 1998), authorisation is required from the National Department of Environmental Affairs (DEA) as the competent

authority, in consultation with the Northern Cape Department of Environmental and Nature Conservation (DENC) for the construction of the proposed power line. In terms of sections 24 and 24D of NEMA, as read with the EIA Regulations of GN R544 and GN R546 (as amended), a Basic Assessment process is required to be undertaken for the proposed project. An application has been submitted to the DEA.

An environmental impact assessment is an effective planning and decision-making tool for the project developer as it provides the opportunity for the developer to be forewarned of potential environmental issues and to assess if potential environmental impacts can be avoided, minimised or mitigated to acceptable levels. The Basic Assessment process forms part of the feasibility studies for a proposed project and will inform the final design process in order to ensure that environmentally sensitive areas are avoided as far as possible. Comprehensive, independent environmental studies are required in accordance with the EIA Regulations to provide the competent authority with sufficient information in order to make an informed decision.

### **1.3 DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER AND EXPERTISE TO CONDUCT THE BASIC ASSESSMENT PROCESS**

Savannah Environmental was contracted by Networx Renewables as the independent environmental consultant to undertake the Basic Assessment process for the proposed power line. Neither Savannah Environmental, nor any of its specialist sub-consultants on this project are subsidiaries of, or are affiliated to Networx Renewables. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the proposed project.

Savannah Environmental is a specialist environmental consultancy which provides a holistic environmental management service, including environmental assessment and planning to ensure compliance with relevant environmental legislation. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team that has been actively involved in undertaking environmental studies for a wide variety of projects throughout South Africa and neighbouring countries. Strong competencies have been developed in project management of environmental processes, as well as strategic environmental assessment and compliance advice, and the assessment of environmental impacts, the identification of environmental management solutions and mitigation/risk minimising measures.

The Savannah Environmental team has considerable experience in environmental impact assessments and environmental management, and have been actively involved in undertaking environmental studies for a wide variety of projects throughout South Africa, including those associated with electricity generation, specifically from renewable sources.

The EAPs from Savannah Environmental who are responsible for this project are:

- » Steven Ingle, the principle author of this report, holds a Bachelors degree in Environmental Management and has 8 years of experience in environmental management and has undertaken numerous EIAs for a number of proposed large-scale infrastructure project and renewable energy facilities across South Africa.
- » Karen Jodas - the principle Environmental Assessment Practitioner (EAP) for this project, is a registered Professional Natural Scientist and holds a Master of Science degree. She has 16 years of experience consulting in the environmental field. Her key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development. She is currently responsible for the project management of EIAs for several renewable energy projects across the country.

In order to adequately identify and assess potential environmental impacts, several specialists have been appointed to conduct specialist studies, as required:

<b>Specialist Studies Undertaken</b>	<b>Specialists</b>
Ecology Impact Assessment	Simon Todd of Simon Todd Consulting (Ecologist)
Avifaunal Impact Assessment	Dr Doug Harebottle (Avifaunal specialist)
Soil and Agricultural Potential Impact Assessment	Johann Lanz (Soil Scientist)
Heritage Impact Assessment	Jaco van der Walt of Heritage Contracts and Archaeological Consulting (Archaeologist)
Palaeontology Desktop Study	Dr John Almond (Palaeontologist)
Visual Impact Assessment	MetroGIS (Visual specialist)

Curricula vitae for the Savannah Environmental and specialist project team are included in **Appendix J**.

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## **REVIEW OF THE BASIC ASSESSMENT REPORT**

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The Draft Basic Assessment Report was prepared by Savannah Environmental in order to assess the potential environmental impacts associated with the Bosjesmansberg – Cuprum Substation 132kV Power Line. The report was made available for public review from 8 April to 14 May 2014 at the following places:

- » Siyathemba Municipal Library
- » [www.savannahSA.com](http://www.savannahSA.com)

Notification of I&APs of the Final BAR has been provided to I&APs and the report has been posted on the Savannah Environmental website.

## SECTION A: ACTIVITY INFORMATION

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

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

Networx Renewables (Pty) Ltd, an Independent Power Producer (IPP), is proposing the establishment of a commercial solar electricity generating facility and associated infrastructure on portion 1 of the farm Bosjesmansberg 67 located approximately 16 km east of Copperton in the Siyathemba Local Municipality under the jurisdiction of the Pixley ka Seme District Municipality, Northern Cape Province. Environmental Impact Assessments for the following proposed 75 megawatt (MW) Photovoltaic (PV) facilities situated on Portion 1 of the farm Bosjesmansberg 67 are in the process of being conducted and the following reference numbers have been issued by the Department of Environmental Affairs:

- » Proposed Bosjesmansberg Center PV Plant – DEA Ref No 14/12/16/3/3/2/579
- » Proposed Bosjesmansberg East PV Plant– DEA Ref No 14/12/16/3/3/2/579/1
- » Proposed Bosjesmansberg West PV Plant – DEA Ref No 14/12/16/3/3/2/579/2
- » Proposed Bosjesmansberg South PV Plant – DEA Ref No 14/12/16/3/3/2/579/3

The existing Cuprum-Burchell 132kV power line traverses the Bosjesmansberg farm and is situated within 100m from the boundaries of the Bosjesmansberg PV Center, Bosjesmansberg PV East and Bosjesmansberg PV West project sites. Only one of the four PV projects will be able to connect to the existing Cuprum-Burchell 132kV power line via a loop in – loop out configuration, however this will only achieve partial evacuation of the generated electricity for that specific project. Therefore, the remaining available capacity in this power line will be exhausted should any one of the above four 75MW projects be developed. Consequently the need to evacuate the entire generated capacity of all four 75MW PV projects was identified following an analysis undertaken by Networx Renewables in conjunction with Eskom.

Two power lines are therefore proposed in order to connect to the Eskom distribution network as follows:

- » A new 132kV power line from the Bosjesmansberg PV projects substations to the existing Cuprum Substation (DEA Ref 14/12/16/3/3/1/1150) and;
- » A new 132kV power line from the Bosjesmansberg PV projects substations to the existing Kronos Substation (DEA Ref 14/12/16/3/3/1/1151).

Both power lines need to be considered by the applicant should there be any technical reasons why a connection to either the Cuprum or Kronos Substations will not be possible.

This Basic Assessment Report describes and assesses the impacts associated with the construction of the **Bosjesmansberg - Cuprum 132kV power line**.

The proposed Bosjesmansberg to Cuprum 132kV power line is located within the Siyathemba Local Municipality (within the Pixley ka Seme District Municipality) of the Northern Cape Province. The power line will be approximately **17.6km in length** originating on the Farm Bosjesmansberg situated approximately 15km east of the town of Copperton and connecting to the Cuprum Substation approximately 3.5km to the south of the town of Copperton.

#### **Description of the route:**

The entire route of the proposed Bosjesmansberg to Cuprum 132kV power line is situated adjacent (within 20m) from the existing Burchel – Cuprum 132kV power line which traverses portion 1 of the Farm Bosjesmansberg 67 in an east to west direction. From the point of origin at the northern boundary of the Bosjesmansberg PV Substation, the proposed line moves in a south westerly direction for 16.5km before changing course in a north westerly direction to connect at the Cuprum Substation. The proposed power line traverses three farm portions, before crossing the main road into Copperton.

**Alternatives:** No route alternatives have been considered in this Basic Assessment process as the route is already considered to be optimised in terms of aligning the proposed power line with existing linear disturbances, thereby minimising and mitigating additional environmental impacts. Furthermore the power line needs to be situated such that it does not interfere with solar energy facilities proposed to be constructed on neighbouring properties. It also has the benefit of being the most direct and therefore the most economically feasible option.

In order to construct the proposed Bosjesmansberg to Cuprum power line, a series of activities will need to be undertaken during the design, pre-construction construction, operation and decommissioning phases.

#### **Construction phase:**

Power lines are constructed in the following simplified sequence:

- Step 1: Survey the area
- Step 2: Final design of the substation and placement of the infrastructure
- Step 3: Vegetation clearance and construction of access roads (where required)



- Step 4: Construction of foundations
- Step 5: Assembly and erection of infrastructure on site
- Step 6: Connect conductors
- Step 7: Rehabilitation of disturbed area and protection of erosion sensitive areas
- Step 8: Continued maintenance

Power line towers (or pylons) are an average distance of 200m apart but can vary between 250m and 375m depending on the topography and terrain to be spanned. The self-supporting structure (suspension pole) is typically used along the straight sections of the power line, while the guyed intermediate or guyed suspension and angle strain structures are used where there is a bend in the power line alignment. Construction of access roads to the tower positions and construction of tower foundations will be the most significant construction phase environmental impact requiring mitigation. The footprint of each tower will be approximately 10mx10m (100m<sup>2</sup>) depending on the final structure to be used (suspension pole or bend structure). The transformation of land due to the construction of access roads to the tower positions along power line Alternative 1 will be limited in extent due to the relatively short distance of the proposed power line from existing access roads. The transformation of land due to the construction of access roads to the tower positions along power line will be limited in extent as such access roads to the existing Cuprum – Burchel power line have already been established.

The servitude width for a 132kV power line is 36m. The minimum vertical clearance to buildings, poles and structures not forming part of the power line must be 3,8m, while the minimum vertical clearance between the conductors and the ground is 6,7m. The minimum distance between trees or shrubs and any bare phase conductor of a 132 kV Sub-transmission line must be 4m, allowing for the possible sideways movement and swing of both the sub-transmission line and the tree or shrub. On receipt of an approval of the final corridor by the environmental Authorities 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).

#### **Operation Phase:**

The proposed power line will require routine maintenance work throughout the operation period. The power line servitude will be accessed using the R357 provincial road and existing farm roads in the area and any access roads established during the construction phase. A servitude of 36m will be required along the length of the power line. During this phase vegetation within the servitude will require management only if it impacts on the maintenance objectives of the power line.



**Decommissioning Phase:**

The power line is expected to have a lifespan of more than 40 years (with maintenance) and the infrastructure would only be decommissioned once it has reached the end of its economic life, or if no longer required. If economically feasible/desirable the decommissioning activities would comprise the disassembly of the individual components and removal from site. This phase would include the following decommissioning activities.

**Site Preparation:** Site preparation activities will include confirming the integrity of the access to the site to accommodate the required equipment and the mobilisation of decommissioning equipment.

**Disassemble Components:** The components would be disassembled, and reused and recycled (where possible), or disposed of in accordance with regulatory requirements.

**Rehabilitation:** Disturbed area (where infrastructure has been removed) will be rehabilitated, if required, depending on the future land-use of the facility.

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

The following listed activities are relevant to the proposed development:

Notice Number	Activity	Description	Relevance of Regulation to Project
GN 544, 18 June 2010	10 (i)	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 33kv but less than 275kv.	The proposed 132kV power line will be located outside of an urban area between the proposed Bosjesmansberg Solar Energy Facility on-site substations and the existing Cuprum substation near Copperton.
GN 544, 18 June 2010	11 (xi)	The construction of (xi) infrastructure or structures covering 50 square metres or more 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.	This activity may be triggered where the construction of towers along the power line route are proposed to be situated within 32m from a watercourse.

GN 544, 18 June 2010	18(i)	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from  (i) a watercourse	Potential activities such as construction of an access road may be required to traverse a watercourse.
GN 546, 18 June 2010	14 (a) (i)	The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetation cover constitutes indigenous vegetation.  i. all areas outside urban areas (Northern Cape).	Construction of the proposed 132kV power line could result in the alteration of vegetation of which up to 75% within the 36m power line servitude could constitute indigenous vegetation.

## 2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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

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

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives

must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

**a) Site alternatives**

The proposed Bosjesmansberg to Cuprum Substation Power Line passes parallel to four 75MW PV sites identified as suitable for development based on the results of a land capability assessment undertaken as part of the EIAs for each respective PV site. The purpose of the power line is to connect the four 75MW PV sites to the Eskom grid. No site alternatives are considered for the power line application due to the linear nature of the infrastructure. Only route alternatives are considered below.

<b>Alternative 1</b>		
<b>Alternative 2</b>		
<b>Alternative 3</b>		

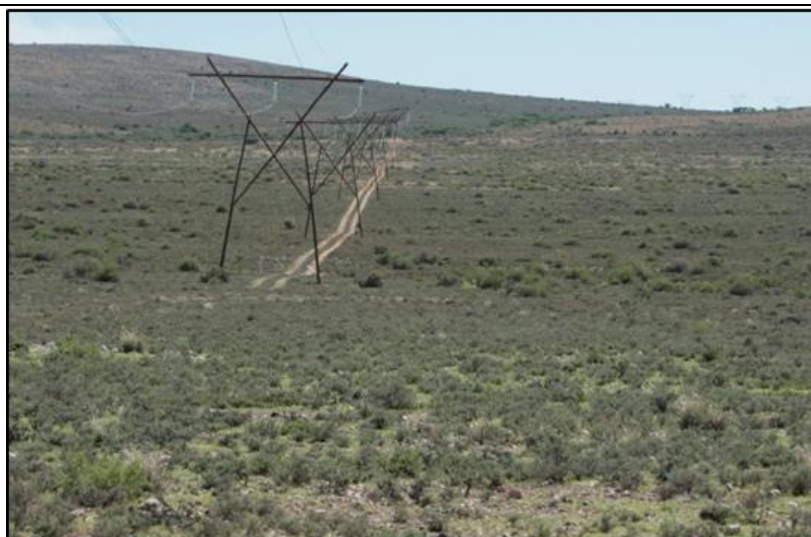
In the case of linear activities:

**Bosjesmansberg to Cuprum Substation 132kV power line route  
(17.6km corridor)**

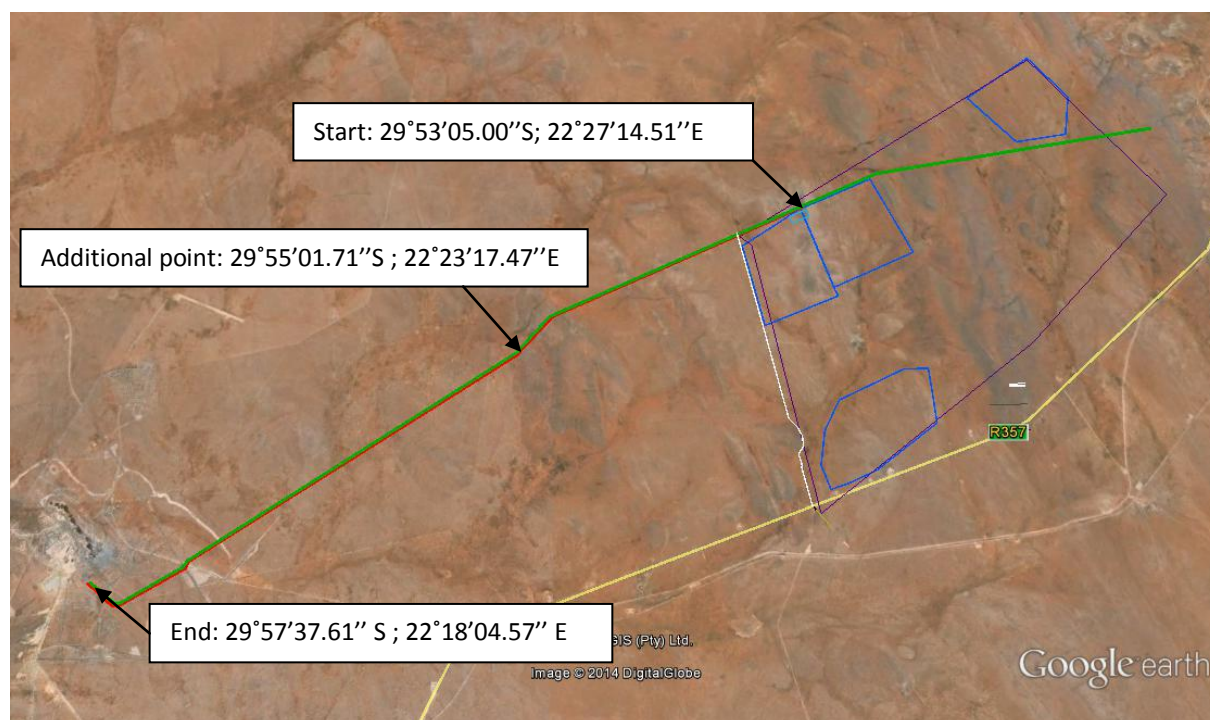
	<b>Latitude (S):</b>			<b>Longitude (E):</b>		
• Starting point of the activity	29°	53'	05.00"	22°	27'	14.51"
• Middle/ <b>Additional point</b> of the activity	29°	55'	01.71"	22°	23'	17.47"
• End point of the activity	29°	57'	37.61"	22°	18'	04.57"

The proposed Bosjesmansberg Substation to Cuprum Substation 132kV power line is approximately 17.6km in length and situated exclusively parallel to existing linear infrastructure, namely the Cuprum to Burchel 132kV power line.

From the point of origin at the northern boundary of the Bosjesmansberg PV Substation, the proposed power line runs in a south westerly direction for 16.5km before veering north west to connect at the Cuprum Substation. The proposed power line traverses three farm portions, before crossing the main road into Copperton.



**Figure 2:** A section of the existing Cuprum-Burchell 132kV power line directly south of which the Bosjesmansberg to Cuprum 132kV power line is proposed to be constructed.



**Figure 3:** Proposed Bosjesmansberg to Cuprum power line (red line) relative to the existing Cuprum to Burchel 132kV power line (green), the four 75MW project sites (blue) on Portion 1 of the Farm Bosjesmansberg 67 (purple) as well as the R357 (yellow)

**Alternative 2**

	Latitude (S):			Longitude (E):		
• Starting point of the activity						
• Middle/Additional point of the activity						
• End point of the activity						

**Alternative 3**

	Latitude (S):			Longitude (E):		
• Starting point of the activity						
• Middle/Additional point of the activity						
• End point of the activity						

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.

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.

Power line coordinates for at 250m intervals have been attached in **Appendix A.**

**b) Layout alternatives**

There are no alternatives proposed for the power line corridor since:

- » A corridor of 300m wide around the proposed power line servitude has been assessed and any deviations deemed necessary for environmental and/or technical reasons from the centre point of the power line, for 150m in either direction, are therefore possible.
- » The power line route has been strategically placed in order to avoid other proposed renewable energy facilities in the area.
- » Outside the footprint of the proposed Garob Wind Energy Facility the power line route follows the Cuprum – Burchel power line for its entire length so as to reduce environmental impacts and reduce edge effects.
- » Site access - the servitude is easily accessible via existing access roads from the R357, therefore reducing the need to construct new access roads.
- » It has the benefit of being the most direct and therefore the most economically feasible option.

<b>Alternative 1 (preferred alternative)</b>		
Description:	Lat (DDMMSS)	Long (DDMMSS)
<b>Alternative 2</b>		
Description	Lat (DDMMSS)	Long (DDMMSS)

Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

**c) Technology alternatives**

Alternative 1
Alternative 2
Alternative 3

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

Alternative 1 (preferred alternative)
<p>Use will be made of monopole structures for the proposed power line. The line must be constructed according to the authorised standards for such a power line approved by Eskom. The design of a power line is relatively standard, since it is required to conform to Eskom’s technical standards as it forms part of the national electricity supply network and must fit in with the existing network systems, technology and infrastructure.</p> <p>In terms of the choice of structure to be used, previous assessments conducted with Eskom indicate that alternative structure heights of between 12m and 18m are available. The Square Kilometer Array (SKA) would prefer use of the 12m structure as the preferred alternative in order to reduce any potential risk on the SKA. The use of the lower 12m high support structure is therefore preferred along the proposed power line route.</p>
Alternative 2
Alternative 3

**e) No-go alternative**

This is the option of not constructing the Bosjesmansberg to Cuprum Substation power line. This option is assessed as the “no go alternative” in this Basic Assessment Report (Appendix F).

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

### 3. PHYSICAL SIZE OF THE ACTIVITY

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

**Alternative:**

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

Alternative A2 (if any)

Alternative A3 (if any)

**Size of the activity:**

N/A – This is a linear activity
m <sup>2</sup>
m <sup>2</sup>

or, for linear activities:

**Alternative: Power lines**

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

**Length of the activity:**

Approximately 17.6km
m
m

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

A corridor of 300m has been assessed through the BA process.

**Alternative:**

Alternative 1 (preferred route)

Alternative 2

Alternative A3 (if any)

**Size of the site/servitude:**

Servitude of 36m will be required along the 17.6km length of the power line.
m <sup>2</sup>
m <sup>2</sup>

### 4. SITE ACCESS

Does ready access to the site exist?

<b>YES</b>	
------------	--

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

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

N/A

Describe the type of access road planned:

The R357 is the primary access road providing access to farm roads which in turn provide access to the existing Cuprum – Burchel power line. For almost the entire extent of its length approaching Copperton, jeep tracks run within the existing Cuprum to Burchel power line servitude. These jeep tracks will be used to access the proposed Bosjesmansberg to Cuprum power line servitude.



**Figure 4:** Photograph of access gate from the R357 and gravel farm road in the direction of the existing Cuprum – Burchel 132 kV power line

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. See Appendix A.

A site plan showing the position of the access road, as well as an indication of the road in relation to the site is included within **Appendix A**.

## 5. LOCALITY MAP

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



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

An A3 Locality Map is attached within **Appendix A**.

## 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.

A detailed site plan(s) is attached within **Appendix A**

## 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**.

A sensitivity map covering areas within the 300m corridor of the proposed power line is attached within **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.

Colour photographs have been taken at major points along the power line alignment. Annotated photographs are included in **Appendix B**.

## 9. FACILITY ILLUSTRATION



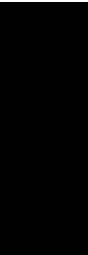
A detailed illustration of the activity must be provided at a scale of at least 1:200 as **Appendix C** for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

A preliminary facility illustration which represents a realistic image of the planned towers associated with a typical 132kV overhead power line is attached within **Appendix C**.

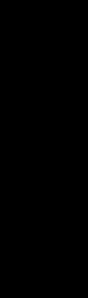
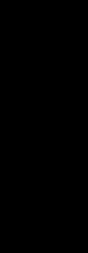
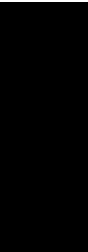

## 10. ACTIVITY MOTIVATION

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>	NO ✓	Please explain
Environmental authorisation is required to construct the proposed 132 kV overhead power line. The activity is a linear infrastructure that will cross various properties. A servitude (right of way) will be required to be registered across these properties.		

<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	<b>YES</b> ✓		Please explain
<p>The Northern Cape Province Spatial Development Framework (NCPSDF) makes reference to the need to ensure the availability of inexpensive energy. The section notes that in order to promote economic growth in the Northern Cape the availability of electricity to key industrial users at critical localities at rates that enhance the competitiveness of their industries must be ensured. At the same time, the development of new sources of energy through the promotion of the adoption of energy applications that display a synergy with the province's natural resource endowments must be encouraged. In this regard the NCPSDF notes "the development of energy sources such as solar energy, the natural gas fields, bio-fuels, etc., could be some of the means by which new economic opportunity and activity is generated in the Northern Cape". The NCPSDF also highlights the importance of close co-operation between the public and private sectors in order for the economic development potential of the Northern Cape to be realised. The proposed project will facilitate the connection of the proposed Bosjesmansberg Solar Energy Facility to the electricity grid, which will contribute towards this objective.</p>			
<b>(b) Urban edge / Edge of Built environment for the area</b>	<b>YES</b> ✓		Please explain
<p>The proposed power line is located a minimum distance of 8 km from the town of Copperton. The power line corridor is located outside of the Copperton urban 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>	<b>Yes</b> ✓		Please explain
<p>The primary IDP and SDP objective of the Pixley ka Seme District Municipality is to provide access to electricity to all households in the district by 2014. To achieve this, the District aims at fast-tracking the delivery of free basic electricity and co-ordinate the maintenance and upgrading of existing electricity infrastructure. The project will not compromise any IDP objectives as it will assist it in reaching its objectives as it will assist in supporting the local electricity supply through strengthening of power to the Cuprum Substation.</p>			
<p>It is expected that construction would start by 2016/2017. The success of the project will create upliftment of the community through the required Economic Development initiatives as stated in the RfP (Request for proposal) of the REIPPP Programme (Renewable Energy Independent Power Producer Procurement Programme) which currently are:</p> <ul style="list-style-type: none"> <li>» Local community ownership in the project</li> <li>» Sustainable Economic Development initiatives</li> </ul>			

<p>These initiatives are with respect to the proposed Bosjesmansberg Solar Energy Facility and the benefits are in relation to the solar facilities. However, the power line will have an indirect benefit to the community as the proposed power line will connect from the Bosjesmansberg project site/s to the Cuprum Substation.</p>			
<p><b>(d) Approved Structure Plan of the Municipality</b></p>	<p><b>YES</b> ✓</p>	<p><b>NO</b></p>	<p>Please explain</p>
<p>The primary IDP and SDP objective of the Pixley ka Seme District Municipality is to provide access to electricity to all households in the district by 2014. To achieve this, the district aims at fast-tracking the delivery of free basic electricity and co-ordinate the maintenance and upgrading of existing electricity infrastructure. The project will be in line with the approved structure of the municipality.</p>			
<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></p>	<p><b>YES</b></p>	<p><b>NO</b> ✓</p>	<p>Please explain</p>
<p>An Integrated Environmental Management Programme was compiled by the Pixley ka Seme District Municipality to ensure that land use decision making must be taken with adequate environmental resource information in other to ensure sustainable and appropriate environmental management to the benefit of its residents. One of the set goals for the Plan is to ensure that all environmental issues are appropriately addressed. This is achieved through this Basic Assessment process being undertaken in terms of the requirements of NEMA.</p> <p>The power line will be supporting the renewable energy project and will indirectly contribute to clean energy generation as a sustainable resource and holds significant benefits for the local region and the country as a whole. Renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future. The project aims at achieving the set goals for the Plan through addressing all possible environmental issues associated with the development and addressing measures to mitigate environmental issues.</p>			
<p><b>(f) Any other Plans (e.g. Guide Plan)</b></p>	<p><b>YES</b></p>	<p><b>NO</b></p>	<p>Please explain</p>
<p>N/A</p>			

<p><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></p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The primary IDP and SDF objective of the Pixley ka Seme District Municipality is to provide access to electricity to all households in the district in the short to medium term. The proposed power line project is therefore considered to be in line with this objective as the district will benefit from the strengthening of the power supply.</p>			
<p><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></p>	<p>YES ✓</p>		<p>Please explain</p>
<p>The power line forms part of the associated infrastructure associated with the Bosjesmansberg Solar Energy Facility, which has already been identified to be a societal priority due to its socio-economic contribution to the area.</p>			
<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></p>	<p>YES ✓</p>		<p>Please explain</p>
<p>It is anticipated that the required services including water and electricity will be sourced from the municipality or a farmer during the construction phase. The relevant person/organisation will be approached. No additional capacity will need to be created to cater for the development.</p>			
<p><b>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)</b></p>		<p>NO ✓</p>	<p>Please explain</p>
<p>The proposed project is to be developed by a private developer (i.e. Networkx Renewables or alternatively Eskom) and not the municipality. It therefore does not fall within the infrastructure planning of the municipality. The project will not have any implications concerning infrastructure planning of the municipality.</p>			

<p><b>7. Is this project part of a national programme to address an issue of national concern or importance?</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>The current electricity imbalances in South Africa highlight the significant role that renewable energy can play in terms of power supplementation. Given that renewables can generally be deployed in a decentralised manner close to consumers, they offer the opportunity for improving grid strength and supply quality, while reducing expensive transmission and distribution losses. At present, South Africa is some way off from exploiting the diverse gains from renewable energy and from achieving a considerable market share in the industry. In order to meet the long-term goal of a sustainable renewable energy industry, a target of 17.8 GW of renewables by 2030 has been set by the Department of Energy (DoE) within the Integrated Resource Plan (IRP) 2010 and incorporated in the REIPPP Programme. This energy will be produced from various renewable energy technologies including solar energy facilities. The proposed project will facilitate the connection of the Bosjesmansberg Solar Energy Facility to the electricity grid.</p>		
<p><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></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>In terms of Eskom's requirements, the power line is required to connect partial capacity of the proposed Bosjesmansberg Solar Energy Facility to the existing Eskom Cuprum Substation. The proposed power line corridor is considered to be the most appropriate routing of this infrastructure, taking technical and environmental (social and biophysical) issues into consideration. The proposed land use is contextualised through the existing linear disturbances along the alignment, as well as the Bosjesmansberg and other existing renewable energy facilities proposed and authorised around Copperton.</p>		
<p><b>9. Is the development the best practicable environmental option for this land/site?</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>The power line will be connecting the Bosjesmansberg Solar Energy Facility to the national electricity grid. In terms of Eskom's requirements, the solar energy facility is required to connect to the existing Eskom Cuprum Substation. The proposed power line corridor is considered to be the most appropriate routing of this infrastructure, taking technical (nearest suitable grid connection point) and environmental (social and biophysical) issues into consideration. The specialist studies undertaken as part of this Basic Assessment conclude that the development of the 132kV power line within the corridor investigated will have environmental impacts of low overall significance.</p>		
<p><b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b></p>	<p>YES ✓</p>	<p>Please explain</p>
<p>The specialist studies undertaken as part of this Basic Assessment conclude that the development of the 132kV power line within the corridor investigated will have</p>		

<p>environmental impacts of overall low significance. The benefit of having the power line outweighs and negative aspects relating to the construction and associated loss of land. The proposed project will facilitate the connection of the Bosjesmansberg Solar Energy Facility to the national grid thereby facilitating the transmission of renewable energy and the upliftment of the local community through social economic development initiatives. This will have a positive impact at a local, regional and national level.</p>			
<p><b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b></p>		<p><b>NO</b> ✓</p>	<p>Please explain</p>
<p>A precedent for renewable energy facilities, substations, and power line infrastructure has been set for the area. There are similar developments proposed in the area which have received environmental authorisations. This includes the Garob Wind Energy Facility to Kronos Substation power line (14/12/16/3/3/1/769. Within this municipality, the following electricity and power-related infrastructure is in place, or proposed:</p> <ul style="list-style-type: none"> <li>» Nelspoortje Wind Energy Facility (developer - Plan 8),</li> <li>» Klipgats pan Solar Energy facility (developer - Mulilo)</li> <li>» Plat Sjambok Solar Energy Facility and</li> <li>» Wind Energy Facility (developer - Mainstream).</li> </ul>			
<p><b>12. Will any person's rights be negatively affected by the proposed activity/ies?</b></p>		<p><b>NO</b> ✓</p>	<p>Please explain</p>
<p>Private landowners will be affected by the proposed project. These landowners have been consulted by the developer and the EAP and are aware of the proposed project. It is anticipated that the land owners will provide their consent to construct the power line over their land.</p>			
<p><b>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</b></p>		<p><b>NO</b> ✓</p>	<p>Please explain</p>
<p>The proposed power line is located a minimum distance of 8 km from the town of Copperton. The power line corridor is located outside of the Copperton urban area. The project will not undermine the urban edge in any way.</p>			
<p><b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b></p>	<p><b>YES</b> ✓</p>		<p>Please explain</p>
<p>While the distribution network infrastructure is not specifically seen to be a SIP, the proposed Bosjesmansberg Substation to Cuprum Substation 132kV power line will form essential infrastructure for a renewable energy project which is deemed to be a potential SIP (SIP 8) under the National Development Plan. The proposed 132kV power line from a construction perspective will give people living in the area opportunities to gain employments which would address the socio economic needs of individuals. The power line in operation will provide a strengthened electricity supply in the Northern cape which could contribute to the distribution of power to rural areas.</p>			
<p><b>15. What will the benefits be to society in general and to the local communities?</b></p>	<p>Please explain</p>		
<p>Job opportunities, albeit limited, will be created during the construction and operation</p>			

<p>of the proposed facility. In addition, local and regional economic benefits would be realised through the additional revenue generated as a result of the proposed project (through direct and indirect job opportunities, local spend, local procurement, etc.). The local Eskom grid will be strengthened as a result of the proposed power line.</p>	
<p><b>16. Any other need and desirability considerations related to the proposed activity?</b></p>	<p>Please explain</p>
<p>As indicated in the IDP, the area is in need of infrastructure which will benefit the municipal economy. This project will assist in addressing this need.</p>	
<p><b>17. How does the project fit into the National Development Plan for 2030?</b></p>	<p>Please explain</p>
<p>By 2030 South Africa aims to reduce carbon emissions, promote economic development and increase the GDP. To achieve this, the Province has aimed to improve Infrastructure and Basic Services; Socio-economic Development; Institutional Transformation; Good Governance and Public Participation; Financial viability and Management. This power line will assist in reducing the carbon footprint, as it will be transporting energy gathered from a renewable energy project and it will be facilitating the infrastructure growth in the area, through employment and increasing infrastructure.</p>	
<p><b>18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.</b></p>	
<p>The general objectives of Integrated Environmental Management have been taken into account for this Basic Assessment Report by means of identifying, predicting and evaluating the actual and potential impacts on the environment, socio-economic conditions and cultural heritage component. The risks, consequences, alternatives as well as options for mitigation of activities have also been considered with a view to minimise negative impacts, maximise benefits, and promote compliance with the principles of environmental management.</p>	
<p><b>19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.</b></p>	
<p>Section 2 of NEMA states that environmental management must place people and their needs at the forefront, and serve their physical, psychological, developmental, cultural and social interests equitably. These principles of NEMA include the following:</p> <ul style="list-style-type: none"> <li>» Development must be sustainable;</li> <li>» Pollution must be avoided or minimised and remedied;</li> <li>» Waste must be avoided or minimised, reused or recycled;</li> <li>» Negative impacts must be minimised; and</li> <li>» Responsibility for the environmental health and safety consequences of a policy, project, product or service exists throughout its life cycle.</li> </ul> <p>The principles of NEMA have been considered in this assessment through compliance with the requirements of the relevant legislation in undertaking the assessment of</p>	



potential impacts, as well as through the implementation of the principle of sustainable development where appropriate mitigation measures have been recommended for impacts which cannot be avoided. In addition, the successful implementation and appropriate management of this proposed project will aid in achieving the principle of minimisation of pollution and environmental degradation.

This process has been undertaken in a transparent manner and all effort has been made to involve interested and affected parties, stakeholders and relevant Organs of State such that an informed decision regarding the project can be made by the Competent Authority.

## **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:

Table 1: List all legislation, policies and/or guidelines for the Bosjesmansberg Substation to Cuprum Substation power line

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<b>National Legislation</b>			
<p>National Environmental Management Act (Act No 107 of 1998)</p>	<p>The EIA Regulations have been promulgated in terms of Chapter 5 of the Act. Listed activities which may not commence without an environmental authorisation are identified within these Regulations.</p> <p>In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation.</p> <p>In terms of GNR 544 and 546 of June 2010 a Basic Assessment Process is required to be undertaken for the proposed project.</p>	<p>Department of Environmental Affairs – competent authority</p> <p>Department of Environment and Nature Conservation – commenting authority</p>	<p>The listed activities triggered by the proposed power line have been identified and assessed in the EIA process being undertaken (i.e. Basic Assessment).</p> <p>This Basic Assessment Report will be submitted to the competent and commenting authority in support of the application for authorisation.</p>
<p>National Environmental Management Act (Act No 107 of 1998)</p>	<p>In terms of the Duty of Care Provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimised.</p> <p>In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.</p>	<p>Department of Environmental Affairs</p>	<p>While no permitting or licensing requirements arise directly by virtue of the proposed project, this section has found application during the Basic Assessment process through the consideration of potential impacts (cumulative, direct, and indirect). It will continue to apply throughout the life cycle of the project.</p>
<p>Environment Conservation</p>	<p>National Noise Control Regulations (GN R154</p>	<p>Department of Environmental</p>	<p>Noise impacts are expected to be</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
Act (Act No 73 of 1989)	dated 10 January 1992)	Affairs  Department of Environment and Nature Conservation  Local Authorities	associated with the construction phase of the project and are not likely to present a significant intrusion to the local community. Therefore is no requirement for a noise permit in terms of the legislation.  On-site activities should be limited to 6:00am - 6:00pm, Monday - Saturday (excluding public holidays).  Should activities need to be undertaken outside of these times, the surrounding communities will need to be notified and appropriate approval will be obtained from DEA and the Local Municipality.
National Water Act (Act No 36 of 1998)	Water uses under S21 of the Act must be licensed unless such water use falls into one of the categories listed in S22 of the Act or falls under the general authorisation.	Department of Water Affairs  Provincial Department of Water Affairs	A water use license (WUL) is required to be obtained if drainage lines are impacted on in terms of Section 21 c and i of the Act. Furthermore construction of towers within 500m from a wetland must be authorised by the Department of Water Affairs.
National Water Act (Act No 36 of 1998)	In terms of S19, the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to prevent and remedy the effects of pollution to water resources from occurring, continuing, or recurring.	Department of Water Affairs  Provincial Department of Water Affairs	This section of the Act will apply with respect to the potential impact on drainage lines, primarily during the construction phase (i.e. pollution from construction vehicles).

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
Minerals and Petroleum Resources Development Act (Act No 28 of 2002)	A mining permit or mining right may be required where a mineral in question is to be mined (e.g. materials from a borrow pit) in accordance with the provisions of the Act. Requirements for Environmental Management Programmes and Environmental Management Plans are set out in S39 of the Act.	Department of Mineral Resources	As no borrow pits are expected to be required for the construction of the facility, no mining permit or right is required to be obtained.
National Environmental Management: Air Quality Act (Act No 39 of 2004)	S18, S19, and S20 of the Act allow certain areas to be declared and managed as "priority areas."  Declaration of controlled emitters (Part 3 of Act) and controlled fuels (Part 4 of Act) with relevant emission standards.	Department of Environmental Affairs	No permitting or licensing requirements arise from this legislation.  The Act provides that an air quality officer may require any person to submit an atmospheric impact report if there is reasonable suspicion that the person has failed to comply with the Act.
	GN R 827 – National Dust Control Regulations prescribes general measures for the control of dust in all areas	Department of Environmental Affairs	Describes the measures for control and monitoring of dust, including penalties.
National Heritage Resources Act (Act No 25 of 1999)	» S38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including » The construction of a road, power line, pipeline, canal or other similar linear development or barrier exceeding 300 m in length; » Any development or other activity which will change the character of a site exceeding 5 000 m <sup>2</sup> in extent	South African Heritage Resources Agency	A permit may be required should identified cultural/heritage sites on site be required to be disturbed or destroyed as a result of the proposed development.  A HIA has been undertaken as part of the Basic Assessment Process to identify potential heritage sites.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<ul style="list-style-type: none"> <li>» The relevant Heritage Authority must be notified of developments such as linear developments (i.e. roads and power lines), bridges exceeding 50 m, or any development or other activity which will change the character of a site exceeding 5 000 m<sup>2</sup>; or the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent. This notification must be provided in the early stages of initiating that development, and details regarding the location, nature and extent of the proposed development must be provided.</li> <li>» Stand alone HIAs are not required where an EIA is carried out as long as the EIA contains an adequate HIA component that fulfils the provisions of S38. In such cases only those components not addressed by the EIA should be covered by the heritage component.</li> </ul>		
<p>National Environmental Management: Biodiversity Act (Act No 10 of 2004)</p>	<p>In terms of S57, the Minister of Environmental Affairs has published a list of critically endangered, endangered, vulnerable, and protected species in GNR 151 in Government Gazette 29657 of 23 February 2007 and the regulations associated therewith in GNR 152 in GG29657 of 23 February 2007, which came into effect on 1 June 2007.</p> <p>In terms of GNR 152 of 23 February 2007: Regulations relating to listed threatened and</p>	<p>Department of Environmental Affairs</p>	<p>As the applicant will not carry out any restricted activity, as is defined in S1 of the Act, no permit is required to be obtained in this regard.</p> <p>Specialist flora and fauna studies have been undertaken as part of the basic Assessment process. As such the potential occurrence of critically endangered, endangered, vulnerable, and protected species, as well as</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>protected species, the relevant specialists must be employed during the EIA Phase of the project to incorporate the legal provisions as well as the regulations associated with listed threatened and protected species (GNR 152) into specialist reports in order to identify permitting requirements at an early stage of the EIA Phase.</p> <p>The Act provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (GG 34809, GN 1002), 9 December 2011).</p>		<p>critically endangered (CR), endangered (EN), vulnerable (VU) or protected ecosystems and the potential for them to be affected has been considered.</p>
<p>Conservation of Agricultural Resources Act (Act No 43 of 1983)</p>	<p>Regulation 15 of GNR1048 provides for the declaration of weeds and invader plants, and these are set out in Table 3 of GNR1048. Weeds are described as Category 1 plants, while invader plants are described as Category</p>	<p>Department of Agriculture</p>	<p>This Act will find application throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies must be developed and</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>2 and Category 3 plants. These regulations provide that Category 1, 2 and 3 plants must not occur on land and that such plants must be controlled by the methods set out in Regulation 15E.</p>		<p>implemented. In addition, a weed control and management plan must be implemented.</p>
<p>National Forests Act (Act No. 84 of 1998)</p>	<ul style="list-style-type: none"> <li>» In terms of S5(1) no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a license granted by the Minister to an (applicant and subject to such period and conditions as may be stipulated”.</li> <li>» GN 1042 provides a list of protected tree species.</li> </ul>	<p>National Department of Forestry</p>	<p>A permit would need to be obtained for any protected trees that are affected by the development.</p>
<p>National Veld and Forest Fire Act (Act 101 of 1998)</p>	<p>In terms of S21 the applicant would be obliged to burn firebreaks to ensure that should a veldfire occur on the property, that it does not spread to adjoining land.</p> <p>In terms of S12 the applicant must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable material.</p> <p>In terms of S17, the applicant must have such equipment, protective clothing, and trained personnel for extinguishing fires.</p>	<p>Department of Water Affairs</p>	<p>While no permitting or licensing requirements arise from this legislation, and this Act will find application during the construction and operational phase of the project.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<p>Hazardous Substances Act (Act No 15 of 1973)</p>	<p>This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products.</p> <p>Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc, nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared as Group I or Group II substance Group IV: any electronic product; and Group V: any radioactive material.</p> <p>The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.</p>	<p>Department of Health</p>	<p>It is necessary to identify and list all the Group I, II, III, and IV hazardous substances that may be on the site and in what operational context they are used, stored or handled. If applicable, a license is required to be obtained from the Department of Health.</p>
<p>National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)</p>	<p>The Minister may by notice in the <i>Gazette</i> publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment.</p>	<p>National Department of Water and Environmental Affairs  Provincial Department of Environmental Affairs (general</p>	<p>As no waste disposal site is to be associated with the proposed project, no permit is required in this regard.  Waste handling, storage and disposal</p>



Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>The Minister may amend the list by –</p> <ul style="list-style-type: none"> <li>» Adding other waste management activities to the list.</li> <li>» Removing waste management activities from the list.</li> <li>» Making other changes to the particulars on the list.</li> </ul> <p>In terms of the Regulations published in terms of this Act (GN 921), A Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities (Category A and B) while Category C Activities must be undertaken in accordance with the necessary norms and standards.</p> <p>Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that:</p> <ul style="list-style-type: none"> <li>» The containers in which any waste is stored, are intact and not corroded or in</li> <li>» any other way rendered unfit for the safe storage of waste.</li> <li>» Adequate measures are taken to prevent accidental spillage or leaking.</li> <li>» The waste cannot be blown away.</li> <li>» Nuisances such as odour, visual impacts and breeding of vectors do not arise; and</li> <li>» Pollution of the environment and harm to</li> </ul>	<p>waste)</p>	<p>during construction and operation is required to be undertaken in accordance with the requirements of the Act, as detailed in the EMP (refer to Appendix G).</p> <p>The volumes of waste to be generated and stored on the site during construction and operation of the facility will not require a waste license.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<p>National Road Traffic Act (Act No 93 of 1996)</p>	<p>health are prevented.</p> <ul style="list-style-type: none"> <li>» The technical recommendations for highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads" outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed.</li> <li>» Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts.</li> <li>» The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations.</li> </ul>	<ul style="list-style-type: none"> <li>» South African National Roads Agency Limited (national roads)</li> <li>» Provincial Department of Transport</li> </ul>	<ul style="list-style-type: none"> <li>» An abnormal load/vehicle permit may be required to transport the various components to site for construction. These include route clearances and permits will be required for vehicles carrying abnormally heavy or abnormally dimensioned loads.</li> <li>» Transport vehicles exceeding the dimensional limitations (length) of 22m.</li> <li>» Depending on the trailer configuration and height when loaded, some of the substation components may not meet specified dimensional limitations (height and width).</li> </ul>
<b>Provincial Legislation</b>			

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<p>Northern Cape Nature Conservation Act, Act No. 9 of 2009</p>	<p>This Act provides for the sustainable utilisation of wild animals, aquatic biota and plants; provides for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; provides for offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; and provides for the issuing of permits and other authorisations. Amongst other regulations, the following may apply to the current project:</p> <ul style="list-style-type: none"> <li>» Boundary fences may not be altered in such a way as to prevent wild animals from freely moving onto or off of a property;</li> <li>» Aquatic habitats may not be destroyed or damaged;</li> <li>» The owner of land upon which an invasive species is found (plant or animal) must take the necessary steps to eradicate or destroy such species.</li> </ul> <p>The Act provides lists of protected species for the Province</p>	<p>Provincial Department of Environmental Affairs</p>	<p>Permitting or licensing requirements may arise from this legislation for the proposed activities to be undertaken for the proposed project.</p>

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

### a) Solid waste management

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

<b>YES</b> ✓	<input checked="" type="checkbox"/>
Minimal waste to be generated by the activity	

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

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

It is anticipated that construction waste will be comprised mainly of spoil material from clearing activities as well as metal and cabling off-cuts. Immediately non-biodegradable waste will be trucked to the nearest registered waste disposal facility for appropriate disposal or recycling.

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

In order to comply with legal requirements should there be excess solid construction waste after recycling options have been exhausted, the waste will be transported to a licenced waste disposal facility for appropriate disposal.

Will the activity produce solid waste during its operational phase?

<input checked="" type="checkbox"/>	<b>NO</b> ✓
n/a	

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

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

--

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

--

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

--

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

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?  **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?  **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?  **NO** ✓

If YES, what estimated quantity will be produced per month? m<sup>3</sup>

Will the activity produce any effluent that will be treated and/or disposed of on site?  **NO** ✓

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?  **NO** ✓

If YES, provide the particulars of the facility:

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

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

N/A

**c) Emissions into the atmosphere**

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

	<b>NO</b> ✓

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:

During the construction phase, it is expected that there will be dust generation and emissions from vehicles and machinery. However the dust and emissions will have a short term duration (limited to construction activities) and have limited impact in terms of extent and severity. The extent of the impact will be largely restricted to the power line servitude. Appropriate dust suppression measures (as recommended in the Environmental Management Programme) will be implemented to reduce the impacts. It is recommended that construction vehicles will be serviced and kept in good mechanical condition to minimise possible exhaust emissions.

**d) Waste permit**

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

	<b>NO</b> ✓

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

**e) Generation of noise**

Will the activity generate noise?

	<b>NO</b> ✓

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:

A limited amount of noise will be generated during the construction phase of the facility due to movement of heavy machinery on site. The operation phase will not generate any noise.

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

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

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

<b>NO</b> ✓

#### 14. ENERGY EFFICIENCY

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

N/A
-----

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

N/A
-----

## 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 ✓

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 Province
<b>District Municipality</b>	Pixley ka Seme
<b>Local Municipality</b>	Siyathemba Local Municipality
<b>Ward Number(s)</b>	Ward 4
<b>Farm name and number</b>	<ul style="list-style-type: none"> <li>» Power line Originates on Portion 1 of the Farm Bosjesmansberg 67</li> <li>• Traverses Portion 5 and Portion 7 of the Farm Nelspoortje 103</li> <li>• Traverses Portion 1 of the Farm Vogelstruisbult 104 before connecting to the Cuprum Substation</li> </ul>
<b>Portion number</b>	
<b>SG Code</b>	

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.

Refer to **Appendix A** for the SG codes of all the properties along the route



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

The proposed site is currently zoned as Agricultural land (Livestock farming).

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** ✓

**1. GRADIENT OF THE SITE**

Indicate the general gradient of the site.

**Alternative S1:**

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

**Alternative S2 (if any):**

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

**Alternative S3 (if any):**

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

**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 type="checkbox"/>
2.2 Plateau	<input type="checkbox"/>	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain	<input type="checkbox"/>	<b>2.6 Plain</b>	<input checked="" 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?

<b>Alternative S1:</b>	<b>Alternative S2 (if any):</b>	<b>Alternative S3 (if any):</b>
<hr style="width: 100%;"/>	<hr style="width: 100%;"/>	<hr style="width: 100%;"/>

	<b>Alternative S1:</b>	<b>Alternative S2 (if any):</b>		<b>Alternative S3 (if any):</b>	
Shallow water table (less than 1.5m deep)	<b>NO</b> ✓	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	<b>NO</b> ✓	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	<b>NO</b> ✓	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	<b>NO</b> ✓	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	<b>NO</b> ✓	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	<b>NO</b> ✓	YES	NO	YES	NO
Any other unstable soil or geological feature	<b>NO</b> ✓	YES	NO	YES	NO
An area sensitive to erosion	<b>NO</b> ✓	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).

##### Power line Alternative 1

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

##### Power line Alternative 2

Natural veld - good condition <sup>E</sup>	Natural veld with scattered aliens <sup>E</sup>	Natural veld with heavy alien infestation <sup>E</sup>	Veld dominated by alien species <sup>E</sup>	Gardens
--	---	--	--	---------

Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil
-------------	-----------------	---------------	-----------------------------	-----------

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.

**An Ecological assessment has been completed for the proposed facility - refer to Appendix D1.**

## 5. SURFACE WATER

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

Perennial River		NO✓	
Non-Perennial River (Drainage lines)	YES✓		
Permanent Wetland		NO✓	
Seasonal Wetland	YES✓		
Artificial Wetland		NO✓	
Estuarine / Lagoonal wetland		NO✓	

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

On two occasions along its route on Portion 5 of the Farm Nelspoortje 103 and nearer to the Cuprum Substation the proposed power line traverses a drainage line feature. These drainage lines are ephemeral in nature channelling water for short periods after rainfall events. On the farm Vogelstruisbult 104, a pan is situated within 100m to the north of the proposed power line but separated from the proposed line by the existing Cuprum to Burchel power line.

## 6. LAND USE CHARACTER OF SURROUNDING AREA

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

<b>Natural area</b> ✓	Dam or reservoir	Polo fields
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	<b>Agriculture</b> ✓
Retail commercial & warehousing	Old age home	<b>River, stream or wetland (Drainage Line)</b> ✓
Light industrial	Sewage treatment plant <sup>A</sup>	Nature conservation area
Medium industrial <sup>AN</sup>	Train station or shunting yard <sup>N</sup>	<b>Mountain, koppie or ridge</b> ✓
Heavy industrial <sup>AN</sup>	<b>Railway line</b> <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	<b>Archaeological site</b> ✓
<b>Quarry, sand or borrow pit</b> ✓	Golf course	<b>Other land uses: R357 provincial road</b>

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

There will be no impact on the railway line provided that sufficient clearance of the railway by the overhead power line is provided.

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

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:

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

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

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

## 7. CULTURAL/HISTORICAL FEATURES

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

**NO** ✓

The proposed Bosjesmansberg to Cuprum power line alignment will not impact on any heritage sites or no-go areas. The following is however recommended:

- » All pans which may occur along the route must be avoided with at least a hundred meter buffer zone.
- » On the farm Vogelstruisbult the following sites have been identified as no go areas however these are not located along the alignment - VGSTR4, NPRT4 & VGSTR12 (refer to Heritage report).
- » Should anything of heritage significance be uncovered, all work on site should stop and a specialist should be contacted to investigate the find.

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:

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

**NO** ✓

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

**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:

According to the Census 2011 data the unemployment rate in the Pixley ka Seme District Municipality (PKSDM) was 21% and the rate for the Siyathemba Local Municipality (SLM) was 14%. The unemployment rates in each of the 8 Local Municipalities in the PKSDM. In terms of employment the agricultural sector was the most important economic sector in the PKSDM accounting for ~ 39% of the total working population. The commercial services sector accounted for ~ 23% of the employment opportunities. These two sectors combined therefore accounted for ~ 62% of all the employment opportunities in the area.

Although the PKSDM only had an official unemployment rate of ~ 21%, household income levels in the region are low. In this regard ~ 64% of households had an income of R1 000 or less per month compared to the Northern Cape average of 54% of households below this level. The figure for the SLM is ~ 64%. The PKSDM also has the highest percentage of households (48%) in the Northern Cape Province that earn less than R800 per month, which is regarded as the poverty breadline in South Africa.

#### Economic profile of local municipality:

As in the Pixley ka Seme District Municipality (PKSDM), key activities in the SLM are related to primary sector activities, mainly agriculture and mining. Little local beneficiation takes place. Tourism and game farming (mainly for hunting) are significant emerging land uses.

Agricultural activity is by far the spatially most dominant land use in the SLM. While extensive stock farming accounts for ~98.7% of agricultural land use, it accounts for ~75% of the SLM' agricultural GDP. At least 12 major crop types are extensively cultivated in the Gariep valley (mainly east of Prieska), the most important of which are maize and wheat, peanuts, lucerne (alfalfa) and table grapes. Stock farming operations are mainly based on small stock (sheep, goats) on spatially extensive commercial farms. Both wool and carcasses are produced. Game farming (hunting) is emerging as a key diversification strategy (UOFS; 2007 and SLM IDP 2010/ 2011 Revision).

The mining sector historically played a major role in the local economy, with asbestos and copper/ silver (Copperton) mining the key activities. Currently, mining activities are mainly related to alluvial diamond mining activities along the Gariep River. The closure of asbestos mines (mainly to the north of Prieska) as well as the Copperton mine (~10 km west of the site) around the early 1990's has had a major lasting negative impact on the SLM economy. Former mining towns (like Copperton, which came into full operation in the early 1970's) have dwindled to virtual ghost towns. With regard to the former NCDMA 07, the bulk of whose population is concentrated in Copperton, an estimated 2166 people remained by 2007 (down from 3126 in 2007, a decrease of ~34%). The Copperton community is very isolated from employment

opportunities, amenities, etc. The lack of water poses a significant constraint to development of the Copperton area.

The SLM tourism industry is in a fledgling stage, and largely based around the Gariep valley, and specifically the town of Prieska. A number of guest accommodation facilities are located in or near (<20 km) Prieska – 13 according to the 2010/ 2010 SLM IDP. Tourism development (mainly focusing on Die Bos resort in Prieska, agro-tourism and game farming) is currently promoted as a key diversification strategy. Other established attractions in the SLM include its succulent/ xerophytic vegetation, interesting geology and semi-precious gemstones, sites of historical interest, and the “Karoo experience” – the sense of wilderness and desolation cherished by many South Africans and visitors alike. The R357 (Van Wyksvlei – Prieska, via Copperton and within 4.3km from the proposed PV East site) has been proposed as a scenic drive with touristic potential in the 2006 Pixley ka Seme Spatial Development Framework.

Level of education:

Based on Census 2011 data, ~ 25 % of the PKSDM population had no education, while 35% only had primary level of qualifications. Of the total population only 5.0 % had gained a matric qualification and 2.6% had a degree. The figures are essential the same for the SLM, namely 26% and 35% respectively. The education levels in the region are low and can be attributed to the rural nature of the area together with the substantial number of previously disadvantaged population groups who did not have equal access to education in the past era.

According to the Municipal Profiles of 2002, the primary school population represented 46.3 % of the total population of the district. There are 49 primary schools and 18 secondary schools and combined schools in the district. While the actual number of schools is generally satisfactory there is an acute shortage of schools in the remote areas of the district. As a result children often have to walk long distances to reach schools.

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

What is the expected capital value of the activity on completion?	R30 million
What is the expected yearly income that will be generated by or as a result of the activity?	This is confidential information
Will the activity contribute to service infrastructure?	<b>YES</b> ✓
Is the activity a public amenity?	<b>NO</b> ✓
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	This will be according to the DoE’s ED requirements submitted for BID compliance

What is the expected value of the employment opportunities during the development and construction phase?	This will be according to the DoE's ED requirements submitted for BID compliance
What percentage of this will accrue to previously disadvantaged individuals?	Approximately 95%
How many permanent new employment opportunities will be created during the operational phase of the activity?	This will be according to the DoE's ED requirements submitted for BID compliance
What is the expected current value of the employment opportunities during the first 10 years?	Not known at this stage
What percentage of this will accrue to previously disadvantaged individuals?	Approximately 98%

## 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)	<b>Other Natural Area (ONA)</b> ✓	No Natural Area Remaining (NNR)	

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



<b>Habitat Condition</b>	<b>Percentage of habitat condition class (adding up to 100%)</b>	<b>Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).</b>
Natural	0%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	80%	For the first 14km of its route the proposed power line traverses land which is largely in a natural state albeit within close proximity to the existing power line. The route is intermittently crossed by farm roads.
Degraded (includes areas heavily invaded by alien plants)	0%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	20%	For approximately 3km of its length as the power line approaches the Copperton Mine and the Cuprum Substation, the landscape is defined by roads and other surface disturbances such as old borrow sites, hard surfaces, roads and railway lines.

**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.

<b>Terrestrial Ecosystems</b>		<b>Aquatic Ecosystems</b>			
<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				
	Vulnerable				
	<b>Least Threatened</b> ✓	<b>YES</b> ✓	<b>NO</b> ✓	<b>NO</b> ✓	

**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)**

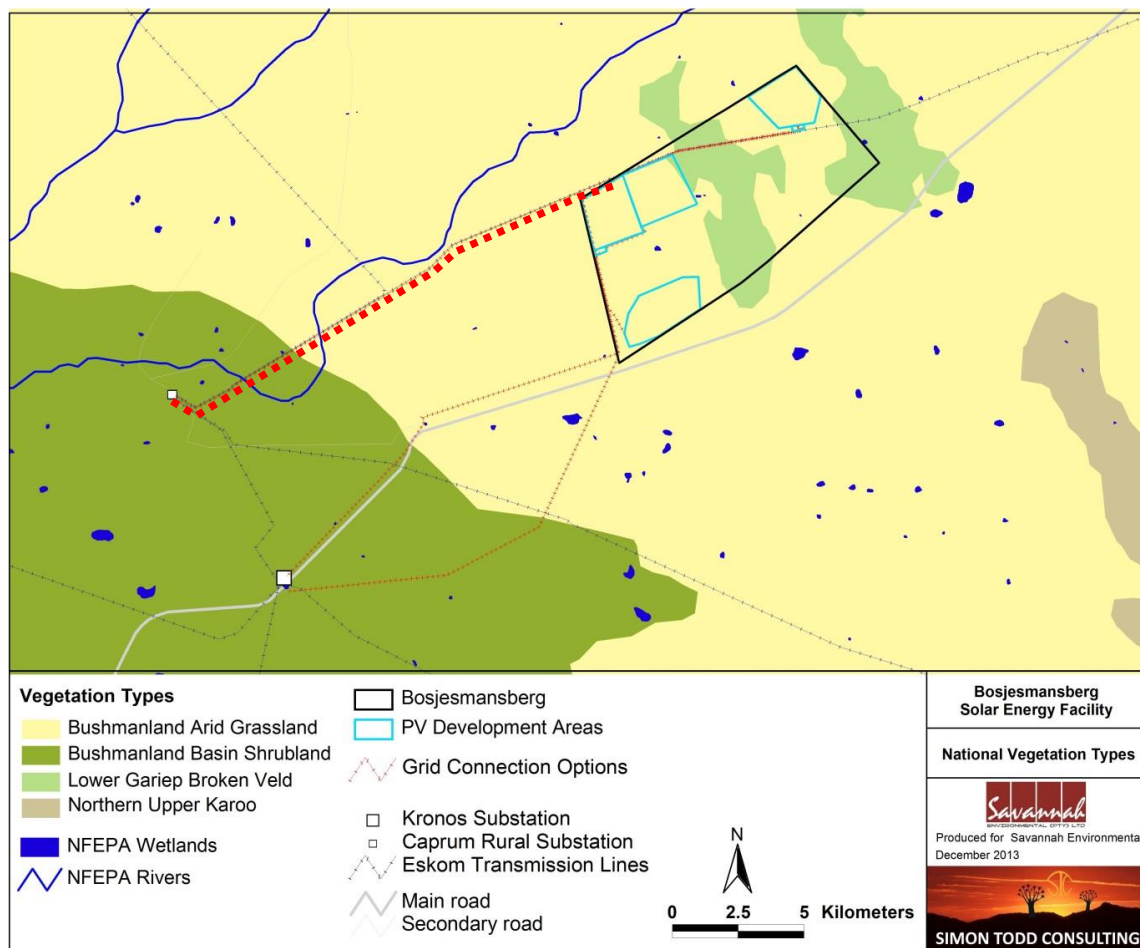
**Regional overview:** The national vegetation map has been mapped at a fairly coarse scale and at the scale of the site a much finer differentiation of the vegetation units present is possible. Even at a broad level, Mucina & Rutherford (2006), recognize that along the eastern border of Bushmanland Arid Grassland this vegetation type often intermingles with Lower Gariep Broken Veld, Kalahari Karroid Shrubland and Gordonia Duneveld. Such fine-scale patterning is not usually captured in the national vegetation map, but is clearly apparent at the site as detailed below.

**Local overview:**

**Rocky hills:** Within the study site the rocky hills are typically dominated by *Acacia mellifera* with a diverse understorey of shrubs and grasses. Dry north-facing slopes have a lower abundance of large woody species and are dominated by grasses, while wetter slopes have a higher density of woody species. Common grasses include *Themeda triandra*, *Heteropogon contortus*, *Digitaria eriantha* and *Aristida diffusa*, while shrubs include *Lycium cinereum*, *Monechma spartioides*, *Eriocephalus microphyllus* var. *pubescens*, *Asparagus africanus* and *Felicia muricata* subsp. *cinerascens*. The abundance of protected species within this habitat is relatively high and includes species such as *Boscia albitrunca*, *Pachypodium succulentum* and *Aloe claviflora*.

**Watercourses located along the alignment:** The drainage lines at the site are generally poorly developed on account of the low rainfall and flat topography. There are no major drainage lines within the power line corridor. As the drainage courses along the power line route are not very wide, it is likely that the power line can span the sensitive area and it is unlikely that significant impact on the drainage line would be required.

**Red data species:** Only two red data-listed plant species are known from the area, *Hoodia gordonii* which is listed as DDD (data deficient, insufficient information) and *Salsola apiciflora* which is listed DDT (Data Deficient – Taxonomically Problematic). There are however a variety of nationally or provincially protected species which can be confirmed present at the site. This includes the nationally protected tree species *Boscia albitrunca* which is common in the rocky hills of the site and occurs occasionally on the plains as well. Other protected species observed at the site include *Hoodia gordonii*, *Hoodia flava* and *Titanopsis calcarea*, *Pachypodium succulentum*, *Mestoklema tuberosum*, *Aloe claviflora* and *Avonia ustulata*. No protected species were particularly abundant within the proposed development areas and it is highly unlikely that the development of the site would significantly impact the local populations of the any of the listed species.



**Figure 5:** Broad-scale overview of the vegetation in and around the Bosjesmansberg Solar Energy Facility and power line options (Bosjesmansberg to Cuprum Substation power line is indicated by red-dotted line). The vegetation map is an extract of the national vegetation map as produced by Mucina & Rutherford (2006), and also includes rivers and wetlands delineated by the National Freshwater Ecosystem Priority Areas assessment (Nel et al. 2011).

## SECTION C: PUBLIC PARTICIPATION

### 1. ADVERTISEMENT AND NOTICES

<b>Publication name</b>	<ul style="list-style-type: none"> <li>» Announcement of Scoping and EIA Process: Volksblad &amp; Gembok (power lines were initially considered at the Scoping Stage of the proposed Bosjesmansberg Solar Energy Facility)</li> <li>» Release of draft Scoping Report (powerlines were initially included as part of Bosjesmansberg Solar Energy Facility): Volksblad &amp; Gembok</li> <li>» Announcement of Basic Assessment Split and comment period on draft BAR: Volksblad &amp; Gembok</li> </ul>	
<b>Date published</b>	<ul style="list-style-type: none"> <li>» Announcement of Scoping and EIA Process (as part of PV facility): Volksblad &amp; Gembok - 16 August 2013 and 23 August 2013</li> <li>» Release of draft Scoping Report (as part of PV facility): Volksblad (25 October 2013) and Gembok (30 October 2013)</li> <li>» Basic Assessment Split and announcement of draft BAR comment period: Volksblad (April 2014)</li> </ul>	
<b>Site notice position</b>	<b>Latitude</b>	<b>Longitude</b>
	29° 56' 48.82" S	22° 27' 07.25" E
<b>Date placed</b>	15 August 2013	

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:

- |   |
|---|
| <ul style="list-style-type: none"> <li>» Site notices were placed at the farm entrance gate as part of the Scoping process for the proposed Bosjesmansberg 75MW PV projects.</li> <li>» Advertisements were placed in the Volksblad (Regional newspaper) and Snuffelblad (local newspapers) to notify the public of the proposed Bosjesmansberg Solar Energy Facility project.</li> <li>» Advertisements were placed in the Volksblad and Snuffelblad newspapers informing the public of the power line application split from the PV facility as well as inviting</li> </ul> |
|---|

I&APs to comment on the draft Basic Assessment Report.

- » Notification letters were sent to I&APs inviting I&APs to comment on the draft Basic Assessment Report.

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

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

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

Summary of main issues raised by I&APs	Summary of response from EAP
<p><b>Adrian Tiplady - South African SKA Site Bid Manager - SKA South Africa</b></p> <p>A high level risk assessment has been conducted at the South African SKA Project Office to determine the potential impact of such facilities on the Square Kilometre Array. The proposed route poses a low to medium risk of detrimental impact on the SKA.</p> <p>In order to reduce any potential risk on the SKA, we advise that the lowest (in terms of height) transmission line support structure possible is used. Previous assessments conducted with Eskom indicates that structure heights of between 12m and 18m are available. The SKA would prefer use of the 12m structure.</p> <p>Any transmitters that are to be established, or have been established, at the site for the purposes of voice and data communication will be required to comply with the relevant AGA regulations concerning the restriction of use of the radio frequency spectrum that applies in the area concerned.</p>	<p>The outcome of the SKA Project Office risk assessment is acknowledged. The response has been submitted to the project developer to be considered during final facility design. No action is required at this time.</p> <p>The comment was noted and the recommendation to use 12m high towers specified in the recommended conditions of authorisation.</p> <p>The comment was noted and the correspondence supplied to the developer.</p>

#### 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**.

All comments received during the public review period will be included within a Comments and Responses Report within the Final BAR.

#### 5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

- BirdLife South Africa
- Department of Agriculture, Forestry & Fisheries
- Department of Water Affairs
- Department of Energy
- Department of Mineral Resources
- Department of Rural Development and Land Reform
- Department of Science and Technology
- Northern Cape Department of Agriculture, Land Reform and Rural Development
- Northern Cape Department of Environment and Nature Conservation
- Northern Cape Department of Roads and Public Works
- Northern Cape Provincial Heritage Resources Agency
- Pixely Ka Seme District Municipality
- Siyathemba Local Municipality
- South African Civil Aviation Authority
- South African Heritage Resources Agency (SAHRA)
- Square Kilometre Array (SKA): South Africa
- Transnet
- Wildlife and Environment Society of South Africa (WESSA)

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. Refer to **Appendix E4**.

#### 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 is 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.

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 and decommissioning phases of the proposed Bosjesmansberg Substation to Cuprum Substation is provided in the table overleaf.



Activity	Impact summary	Significance	Proposed mitigation
<b><u>BOSJESMANSBERG SUBSTATION TO CUPRUM SUBSTATION POWER LINE</u></b>			
<b>CONSTRUCTION PHASE</b>			
<b><u>ECOLOGICAL IMPACTS</u></b>			
Impacts on vegetation and protected plant species due to construction of the overhead power line	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Impacts on vegetation and protected plant species would occur due to vegetation clearing associated with the construction of the facility.</li> </ul> <p><b>Indirect impacts:</b> Some loss of vegetation and probably some listed and protected species is inevitable and it is unlikely that this can be avoided</p> <p><b>Cumulative impacts:</b> Due to the relatively low footprint of the power line, the potential for cumulative impacts on flora are low and this is not considered a significant contributor to cumulative impacts.</p>	Low (with mitigation)	<ul style="list-style-type: none"> <li>» There should be a preconstruction walk-through of the final power line route.</li> <li>» Pylon locations should avoid sensitive areas such as drainage lines.</li> <li>» Where the power line runs adjacent to an existing line, the existing access road should be used and a new road should not be constructed.</li> <li>» Temporary lay-down areas should be located within previously transformed areas or areas that have been identified as being of low sensitivity. These areas should be rehabilitated after use.</li> </ul>
Faunal impacts due to construction activities	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Disturbance, transformation and loss of habitat will have a negative effect on resident fauna during construction.</li> </ul>	Low (with mitigation)	<ul style="list-style-type: none"> <li>» Preconstruction walk-through of the final power line route should take place to identify any active burrows or other specialised faunal habitat present that should be avoided.</li> <li>» All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
			<p>appropriate manner as related to the nature of the spill.</p> <ul style="list-style-type: none"> <li>» All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises.</li> <li>» Faunal sweeps within habitats such as bush clumps should take place before clearing and any fauna located should form part of a search and rescue and relocated to safety.</li> </ul> <p><b>Indirect impacts:</b> Noise and disturbance are typical of construction activities and cannot be avoided to a significant degree. The impact is however transient and confined to the construction period.</p> <p><b>Cumulative impacts:</b> During the construction phase the activity would contribute to cumulative fauna disturbance and disruption in the area.</p>
<b>AVIFAUNAL IMPACTS</b>			
Habitat loss due to construction activities	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» construction activities would result in the loss of avifaunal habitats</li> </ul> <p><b>Indirect impacts:</b> For those habitats that will be lost/impacted the associated avifauna will need to find alternative habitats which will most likely be along the length of the power line route.</p> <p><b>Cumulative impacts:</b> Cumulative impacts are expected to be low or negligible.</p>	Low (with mitigation)	<ul style="list-style-type: none"> <li>» Restricting the construction footprint of pylons to a bare minimum, including keeping power line access roads to a minimum.</li> </ul>
Disturbance due to construction activities	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» construction activities would result in the disturbance to bird communities in the area</li> </ul> <p><b>Indirect impacts:</b> No indirect impacts are envisaged.</p> <p><b>Cumulative impacts:</b> No major cumulative impacts are envisaged.</p>	Medium (with mitigation)	<ul style="list-style-type: none"> <li>» Reducing and maintaining noise disturbance to a minimum particularly with regards to any drilling for foundations. Drilling should, wherever possible, be limited to periods outside of the breeding seasons of the resident avifaunal community and in particular for priority species.</li> <li>» Excluding development or disturbance from sensitive areas.</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
<b><u>HERITAGE IMPACTS</u></b>			
Construction and operation of the PV array, access roads and associated infrastructure.	<b><i>Direct impacts:</i></b> » During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects.	Low	» All pans must be avoided with at least a hundred meter buffer zone. » On the farm Vogelstruisbult the following sites have been identified as no go areas. VGSTR4, NPRT4 & VGSTR12 (refer to Wiltshire 2011). » When the route alignment have been finalised the pylon positions must be subjected to a "walk down".
	<b><i>Indirect impacts:</i></b> None		
	<b><i>Cumulative impacts:</i></b> Archaeological sites are non-renewable and impact on any archaeological context or material will be permanent and destructive.		
<b><u>PALAEONTOLOGY IMPACTS</u></b>			
Construction and operation of the power line	<b><i>Direct impacts:</i></b> » During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may impact on fossil resources	Very Low	» Any substantial fossil remains (e.g. fossil shells, petrified wood or plant remains, vertebrate bones, teeth) encountered during excavation should be reported to SAHRA.
	<b><i>Indirect impacts:</i></b> None		
	<b><i>Cumulative impacts:</i></b> None		
<b><u>SOIL &amp; AGRICULTURAL IMPACTS</u></b>			
Construction and operation of the power line	<b><i>Direct impacts:</i></b> » Loss of agricultural land	Very Low	» None
	<b><i>Indirect impacts:</i></b> Soil erosion		
	<b><i>Cumulative impacts:</i></b> None		
<b><u>VISUAL IMPACTS</u></b>			
No significant construction phase impacts have been identified. Mitigation measures have been included in the EMPr.			

Activity	Impact summary	Significance	Proposed mitigation
<b><u>BOSJESMANSBERG SUBSTATION TO CUPRUM SUBSTATION POWER LINE</u></b>			
<b>OPERATIONAL PHASE</b>			
<b><u>ECOLOGICAL IMPACTS</u></b>			
Only Avifaunal operation phase impacts identified by the specialist – refer below			
<b><u>AVIFAUNAL IMPACTS</u></b>			
Avifaunal impacts due to the presence of the overhead power line	<b><i>Direct impacts:</i></b> » The presence of a new power line may generate negative impacts on avifauna due to collisions or electrocution of susceptible species.	Moderate (with mitigation)	» Minimising the length of any new power lines installed, and ensuring that all new lines are marked with bird flight diverters along their entire length; it is imperative that all new power line infrastructure is adequately insulated and bird friendly when configured. This is particularly true for waterfowl and large terrestrial birds which may undertake large-scale diurnal and/or seasonal movements. At a local and regional scale these movements are poorly understood which makes it difficult to make informed decisions regarding placement and marking of power line infrastructure. » All new power line infrastructure should be bird-friendly in configuration and adequately insulated. These activities should be supervised by someone with experience in this field.

Activity	Impact summary	Significance	Proposed mitigation
	<p><b>Indirect impacts:</b> The only major residual impact envisaged here would be related to the possible loss of breeding individuals to the local population for those birds that are killed. For the raptors and large terrestrial birds this could have dire consequences for potential breeding productivity.</p> <p><b>Cumulative impacts:</b> In combination with the proposed nearby wind energy facility (which would include construction of turbines and power line infrastructure), an additional barrier would be created for birds resulting in possible further displacement and or adjustment of flight paths for species that use the area as a flight corridor.</p>		<p>» Any electrocution and collision events that occur should be recorded, including the species affected and the date. If repeated collisions occur within the same area, then further mitigation and avoidance measures may need to be implemented.</p>
<b><u>VISUAL IMPACTS</u></b>			
<p>Visual impact of the overhead power line on sensitive visual receptors in close proximity thereto.</p>	<p><b>Direct impacts:</b></p> <p>» Visual impact of the overhead power line on users of roads and residents of homesteads and settlements in close proximity thereto</p> <p><b>Indirect impacts:</b> The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.</p> <p><b>Cumulative impacts:</b> The construction of the overhead power lines will increase the cumulative visual impact of industrial type infrastructure within the region. This is relevant in light of the power line infrastructure and mining already present in the area as well as other alternative energy facilities proposed within the region.</p>	<p>Moderate</p>	<p>Operation:</p> <p>» Maintenance of servitude.</p>
<p>Visual impact of the overhead power line on the visual quality of the landscape and sense of place of the region.</p>	<p><b>Direct impacts:</b></p> <p>» Visual impact of the proposed infrastructure on the visual quality of the landscape and sense of place of the region</p> <p><b>Indirect impacts:</b> The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.</p> <p><b>Cumulative impacts:</b> The construction of the overhead power lines will increase the cumulative visual impact of industrial type infrastructure within the region. This is relevant in light of the power line infrastructure and mining already present in the</p>	<p>Low</p>	<p>Operation:</p> <p>» Maintenance of servitude.</p>

Activity	Impact summary	Significance	Proposed mitigation
	area as well as other alternative energy facilities proposed within the region.		
Cumulative visual impact of the overhead power line on the visual quality of the landscape and sense of place of the region.	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Cumulative visual impact of the proposed infrastructure on the visual quality of the landscape and sense of place of the region</li> </ul>	Low	<p>Operation:</p> <ul style="list-style-type: none"> <li>» Maintenance of servitude.</li> </ul>
	<p><b>Indirect impacts:</b> The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.</p>		
	<p><b>Cumulative impacts:</b> The construction of the overhead power lines will increase the cumulative visual impact of industrial type infrastructure within the region. This is relevant in light of the power line infrastructure and mining already present in the area as well as other alternative energy facilities proposed within the region.</p>		

Activity	Impact summary	Significance	Proposed mitigation
<b><u>BOSJESMANSBERG SUBSTATION TO CUPRUM SUBSTATION POWER LINE</u></b>			
<b>DECOMMISSIONING PHASE</b>			
<b><u>ECOLOGICAL AND AVIFAUNAL IMPACTS</u></b>			
Faunal Impacts During Decommissioning.	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Disturbance or persecution of fauna during the decommissioning phase may occur.</li> </ul>	Low (with mitigation)	<ul style="list-style-type: none"> <li>» Site access to be controlled and no unauthorized persons should be allowed onto the site.</li> <li>» The collection, hunting or harvesting of any plants or animals at the site should be strictly forbidden.</li> <li>» No fires to be allowed on site.</li> <li>» No fuelwood collection should be allowed on-site.</li> <li>» No dogs should be allowed on site.</li> <li>» Any accidental chemical, fuel and oil spills that occur</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
			<p>at the site during decommissioning should be cleaned up in the appropriate manner as related to the nature of the spill.</p> <ul style="list-style-type: none"> <li>» No open excavations, holes or pits should be left at the site as fauna can fall in and become trapped.</li> <li>» All disturbed areas should be rehabilitated with a cover of indigenous grass.</li> </ul>
<b>Indirect impacts:</b> With avoidance measures there should be no residual impact on fauna.			
<b>Cumulative impacts:</b> Cumulative impacts at the decommissioning phase are likely to be low.			
<b>VISUAL IMPACTS</b>			
Visual impact of the decommissioning phase on sensitive receptors	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>» Visual impact of the overhead power line on users of roads and residents of homesteads and settlements in close proximity thereto</li> </ul>	Low	<ul style="list-style-type: none"> <li>» Removal of infrastructure not required for post decommissioning use and rehabilitation of the servitude areas.</li> <li>» Monitor rehabilitated areas post-decommissioning and implement remedial actions.</li> </ul>
<b>Indirect impacts:</b> The visual impact will be removed after decommissioning, provided the facility and ancillary infrastructure is removed. Failing this, the visual impact will remain.			
<b>Cumulative impacts:</b> None identified			

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



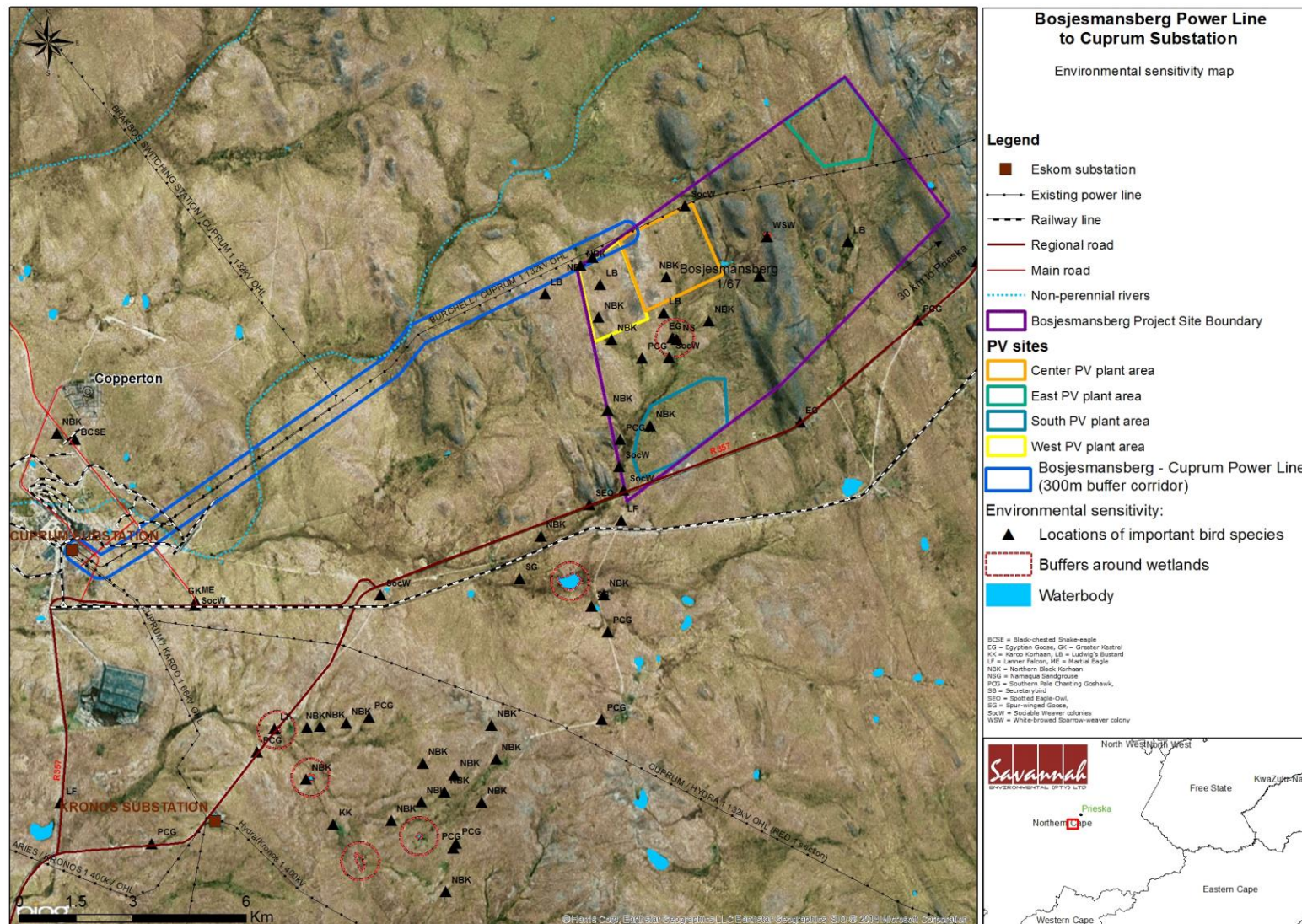


Figure 6: Environmental Sensitivity Map



## 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.

### Alternative 1 (preferred alternative)

This section provides a summary of the environmental assessment and conclusions drawn for the proposed Bosjesmansberg to Cuprum Power Line. In doing so, it draws on the information gathered as part of the Basic Assessment process and the knowledge gained by the environmental consultants during the course of the process and presents an informed opinion of the environmental impacts associated with the proposed project. The following conclusions can be drawn from the specialist studies undertaken within this Basic Assessment:

**Ecology:** The overall impact on ecological processes and functioning as a result of the construction and operation of the proposed power line is likely to be of low significance for due to its alignment with the existing Cuprum to Burchel power line.

**Avifauna:** The construction proposed construction of the Bosjesmansberg to Cuprum power line may impose collision and electrocution threats to raptors and large terrestrial birds (i.e. relative slow, heavy flying species). Based on the length of the power line and the fact that it would be situated parallel to the existing Burchell-Cuprum 132 kV power line (and through application of mitigation measures specified by the specialist), the impact on avifauna is likely to have fewer impacts on the local avifauna, thereby reducing this impact to acceptable levels.

**Agriculture:** The proposed activity will have a negligible impact on agriculture due to the arid conditions and the alignment with existing linear infrastructure. The duration, probability and significance of agricultural impacts for all phases are regarded to be very low.

**Heritage:** The impacts to heritage resources by the proposed power line are considered to be of low significance due to the proposed alignment with the existing Cuprum to Burchel power line.

**Visual:** The visual impact assessment study concluded that the significance of the visual impact of the proposed power line would be of low significance.

**Cumulative Impacts:** Based on the findings of the studies undertaken, in terms of environmental constraints and opportunities identified through the Environmental Basic

Assessment process, no environmental fatal flaws were identified to be associated Bosjesmansberg to Cuprum Substation 132kV power line.

The significance levels of the majority of identified negative impacts can generally be reduced to acceptable levels by implementing the recommended mitigation measures. With reference to the information available at this planning approval stage in the project cycle, the confidence in the environmental assessment undertaken is regarded as acceptable.

Therefore, it is recommended that the project should be authorised. However, a number of issues requiring mitigation have been highlighted in the impact assessment (Appendix F). In response to these potential environmental impacts, environmental specifications for the management of these issues / impacts are detailed within the draft Environmental Management Programme (EMPr) included within Appendix G.

### **No Go Alternative (Compulsory)**

Also referred to as the 'Do nothing' option, this refers to Networx Renewables not constructing the proposed power line. In this scenario the potential positive and negative environmental and social impacts as described in this Basic Assessment Report will not occur and the status quo will be maintained.

Should the project not proceed, the land use of the alignment will not be changed. It is noted that the use of this land which the proposed power line will cross is limited from an agricultural and land-use perspective, as it is situated directly adjacent to existing linear disturbances (power line).

Should the project not proceed, the capacity of the grid to receive renewable energy proposed to be generated by the proposed Bosjesmansberg 75MW PV projects will be constrained. The proposed power line is integrated into the feasibility of these projects. This could potentially result in a situation whereby one or two of the proposed PV projects cannot be developed due to a restriction in the connection to the Eskom grid. As a result the potential local and regional socio-economic and environmental benefits expected to be associated with the proposed project would not be realised. These include:

- » **Increased energy security:** The current electricity crisis in South Africa highlights the significant role that renewable energy can play in terms of power supplementation. In addition, given that renewables can often be deployed in a decentralised manner close to consumers, they offer the opportunity for improving grid strength and supply quality, while reducing expensive transmission and distribution losses.
- » **Exploitation of South Africa's significant renewable energy resource:** At present, valuable national resources including biomass by-products, solar radiation

and wind power remain largely unexploited. The use of these energy flows will strengthen energy security through the development of a diverse energy portfolio.

The no-development option also represents a lost opportunity in terms of the employment and business opportunities (construction and operational phase) associated with the proposed Bosjesmansberg solar energy facilities and the benefits associated with the establishment of a Community Trust. This also represents a negative social cost. On a local level, should the development proceed, the landowner will benefit from the proposed development financially. The study area is not suitable for cultivation and therefore the landowner will not be able to benefit agriculturally. The no-development option will therefore not be beneficial to the landowner or the broader community.

**The 'Do nothing' alternative is, therefore, not a preferred alternative.**

## 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 ✓

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

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

There are no insurmountable environmental or social constraints that prevent the establishment of the proposed Bosjesmansberg Substation to Cuprum Substation 132kV power line.

The construction of the proposed power line should be implemented according to the EMPr to adequately mitigate and manage potential impacts associated with construction activities. The construction activities and relevant rehabilitation of disturbed areas should be monitored against the approved EMPr, the Environmental Authorisation and all other relevant environmental legislation. Relevant conditions to be adhered to include:

### **Mitigation - Design, Construction, and Decommissioning Phases:**

- » It is recommended that the 12m support structure be utilised (as opposed to the 18m support structure) in order to mitigate the potential impact on the SKA.
- » An independent Environmental Control Officer (ECO) should be appointed to monitor compliance with the specifications of the EMPr for the duration of the construction period.
- » Once a power line route has been negotiated and surveyed within the identified corridor, walk-through surveys should be undertaken by a suitably qualified ecologist, heritage specialist and ornithologist.
- » The final alignment should be surveyed by way of a pre-construction walk-through to identify sensitive floral species to be avoided by the proposed infrastructure.
- » Permits must be obtained to remove/relocate species of special concern which cannot be avoided.
- » During construction, unnecessary disturbance to habitats should be strictly controlled and the footprint of the impact should be kept to a minimum.
- » An on-going monitoring programme should be established to detect and quantify any alien species.

- » Identification of areas of high erosion risk (drainage lines, existing problem areas) should be undertaken for the final siting of power line towers. Only special works to be undertaken in these areas to be authorised by ECO and Engineer's representative (ER).
- » Existing tracks/roads should be used as far as possible, and construction activities should be limited to the authorised site. Any new access roads required to be carefully planned and constructed to minimise the impacted area and prevent unnecessary degradation of soil.
- » Before development can continue the alignment is to be checked for the presence of bird nesting sites, particularly those of ground nesting species.
- » If concentrations of archaeological heritage material, human remains or fossil material is uncovered, all work must cease immediately and be reported to SAHRA so that systematic and professional investigation/ excavation can be undertaken.
- » Plan the placement of lay-down areas and any potential temporary construction camps in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever possible.
- » Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.
- » Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).
- » Rehabilitate all disturbed areas, construction areas, roads, slopes etc. immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.
- » Abbreviating maintenance times, scheduling activities in relation to avian breeding and/or movement schedules and lowering levels of associated noise.
- » Eskom has guidelines and standards for the construction of bird friendly pole and pylon structures. These should be adhered to. Only a bird friendly pole structure should be used. It is recommended that a monopole structure be used with the standard Eskom Bird Perch installed on all pole tops in order to provide safe perching substrate for bird well clear of the dangerous hardware below.
- » If large areas are cleared for the storage of equipment, these should be rehabilitated using arid site rehabilitation techniques such as planting cover crops reseeding with local grasses and shrubs.
- » Local community members should be provided an opportunity to be included in a list of possible local suppliers and service providers.
- » Social benefits in terms of training, skills development and the use of local labour should thus be aspired to. These skills can be transferable to other employment sectors and would result in further sustainable benefits.
- » The Siyathemba Local Municipality and community representatives and neighbouring property owners should be kept informed of the progress, decisions taken with regards to the development and construction schedules.
- » Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust pollution becomes apparent).
- » Rehabilitate all adjacent or peripheral disturbed areas, laydown areas, access

roads, etc. immediately after the completion of construction works not lost to the final development footprint in terms of the re-vegetation and habitat rehabilitation plan included in the EMPr.

- » Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required.

**Mitigation - Operation Phase:**

The mitigation and management measures previously listed in this Basic Assessment Report should be implemented in order to minimise potential environmental impacts. The following mitigation measures should also be implemented:

- » Maintain the general appearance of the power line servitude as a whole, including the PV structures, the internal roads, servitudes and the ancillary buildings.
- » Maintain roads to forego erosion and to suppress dust.
- » Monitor rehabilitated areas, and implement remedial action as and when required.

Is an EMPr attached?

**YES** ✓

The EMPr must be attached as **Appendix G**.

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

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

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

\_\_\_\_\_ Karen Jodas \_\_\_\_\_  
NAME OF EAP



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

\_\_22 May 2014\_\_  
DATE

## **SECTION F: APPENDICES**

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

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:CVs