

## PROJECT DETAILS

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**PROJECT NO.**                    108681

**TITLE**                             Draft Basic Assessment Report

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**CLIENT**                         Mulilo Renewable Energy (Pty) Ltd

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### ABBREVIATIONS

<b>BAR</b>	Basic Assessment Report
<b>CEMPr</b>	Construction Environmental Management Programme
<b>CO<sup>2</sup></b>	Carbon Dioxide
<b>DEA</b>	Department of Environmental Affairs (previously Department of Environmental Affairs and Tourism)
<b>DEA&amp;DP</b>	Department of Environmental Affairs and Development Planning
<b>DEANC</b>	Department of Environmental Affairs and Nature Conservations
<b>DoE</b>	Department of Energy
<b>EAP</b>	Environmental Assessment Practitioner
<b>EMPr</b>	Environmental Management Programme
<b>EIA</b>	Environmental Impact Assessment
<b>ERA</b>	Electricity Regulation Act (No. 4 of 2006)
<b>GN</b>	Government Notice
<b>G:S:B-</b>	General: Small: negative water balance
<b>GWh</b>	Gigawatt hours
<b>ha</b>	Hectares
<b>HIA</b>	Heritage Impact Assessment
<b>I&amp;APs</b>	Interested and Affected Parties
<b>IEP</b>	Integrated Energy Plan
<b>IPP</b>	Independent Power Producer
<b>IRP</b>	Integrated Resource Plan
<b>kV</b>	Kilovolt
<b>MW</b>	Megawatts
<b>MWh</b>	Megawatt hours
<b>NEMA</b>	National Environmental Management Act (No. 107 of 1998) (as amended)
<b>NHRA</b>	National Heritage Resources Act (No. 25 of 1999)
<b>NWA</b>	National Water Act (No 36 of 1998)
<b>OEMP</b>	Operational phase Environmental Management Programme
<b>PV</b>	Photovoltaic
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SACNASP</b>	South African Council for Natural Scientific Professions
<b>SDF</b>	Spatial Development Framework
<b>SO<sup>2</sup></b>	Sulphur Dioxide
<b>UNCBD</b>	United Nations Convention on Biological Diversity
<b>UNFCC</b>	United Nations Framework Convention on Climate Change
<b>WEF</b>	Wind Energy Facility



**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

(For official use only)

**File Reference Number:**

**Application Number:**

**Date Received:**


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

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**Kindly note that:**

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

## SECTION A: ACTIVITY INFORMATION

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

YES  NO

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

**All specialist reports contain the signed form entitled "Details of specialist and declaration of interest" (please see Annexure I).**

### 1 PROJECT DESCRIPTION

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

#### PROJECT DESCRIPTION

Mulilo Renewable Energy (Pty) Ltd (Mulilo) proposes to construct two 132kV overhead power lines in order to connect a two-phased Wind Energy Facility (WEF), to be developed to the west of De Aar in the Northern Cape, to the national transmission grid. The proposed transmission lines would consist of a single servitude approximately 25.6km in length which would feed into Eskom's proposed Eskom/PV3 substation (refer to Figure 1 for a locality map).

In terms of the National Environmental Management Act (NEMA) (Act 107 of 1998) as amended, the proposed construction of 132kV transmission lines triggers a number of listed activities, which require authorisation from the competent environmental authority before they can be undertaken. The proposed activity triggers General Notice (GN) 544 items 10, 11 and GN 546 item 12 in terms of NEMA. Since the project is for the transmission of energy, and energy projects are dealt with by the national authority, the competent authority is the National Department of Environmental Affairs (DEA). DEA's decision will be based on the findings of this Basic Assessment process.

#### PROJECT BACKGROUND

##### De Aar 1 WEF

Mulilo undertook an Environmental Impact Assessment (EIA) process and the development was authorised by DEA on 18 August 2011 (Refer to **Appendix J** for EA), granting Mulilo the rights to develop the two-phased WEF. Mulilo is proposing to develop the WEF in two separate phases and is referred to as De Aar 1. The De Aar 1 WEF (DEA REF. NO. 12/12/20/1651) would consist of approximately 65-75 wind turbines with a generation capacity of 100MW. The WEF sites are to be situated on the western plateau approximately 20 km west of De Aar and fall within the jurisdiction of the Emthanjeni Local Municipalities in the Northern Cape.

Mulilo would bid in the Third Round of the DOE's REIPP Program, and should it be successful, the proposed WEF project would need to be constructed by 2016. The construction period for the WEF projects is anticipated to last approximately 12 months.

In order to evacuate the electricity generated by De Aar 1, transmission lines would need to be

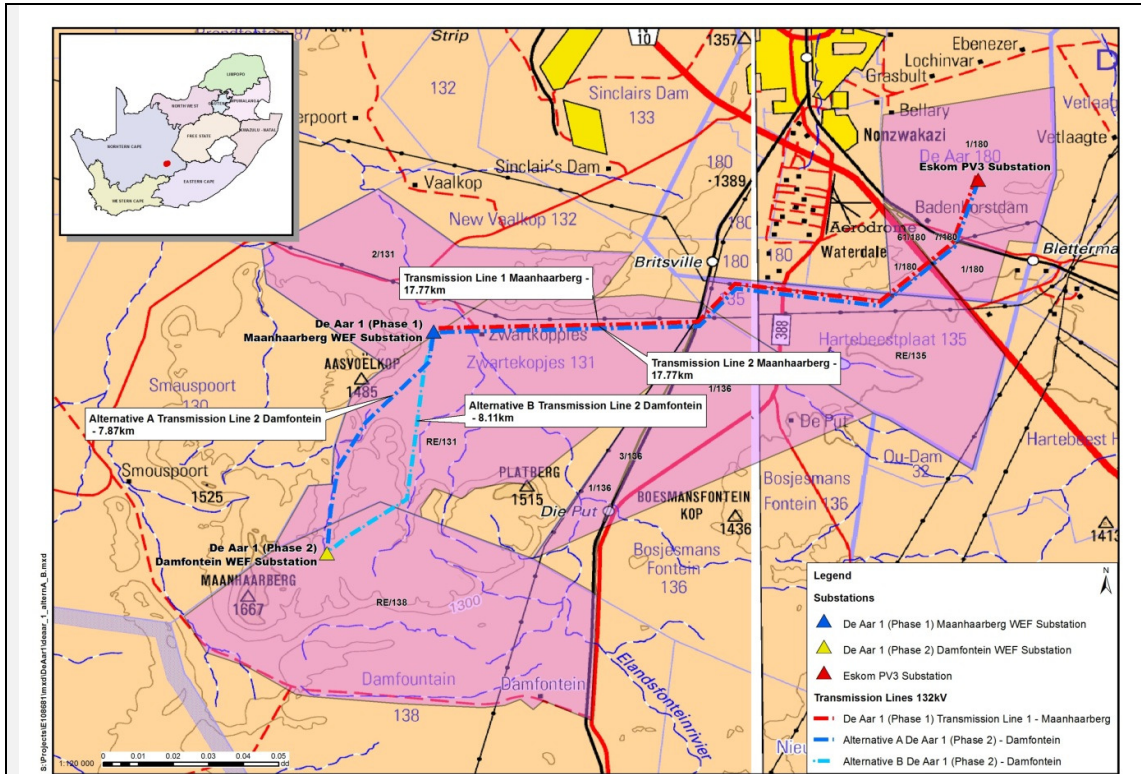
constructed.

**Current project scope**

The proposed transmission lines would form two phases with the first line connecting the Maanhaarberg substation to a new Eskom/PV3 substation and the second phase connection the Damfontein WEF substation to the Eskom/PV3's substation, via the Maanhaarberg Substation. The new Eskom/PV3 substation is part of a new ring network proposed by Eskom to connect all renewable energy projects in the De Aar area to the national transmission grid. The requirement to construct a new substation is in response to the limited capacity of the existing substations, namely Hydra and De Aar, which will not be sufficient to cater for the high demand from the numerous renewable energy projects being proposed for the De Aar area. The transmission lines to the Eskom/PV3 substation would be constructed by an Eskom approved contractor arranged by Mulilo, the asset would then be transferred to Eskom after commissioning.

**LOCATION**

The two proposed transmission line routes would be constructed from the Maanhaarberg 132kV substation in the first phase and the Damfontein 132kV substation in the second phase. The proposed lines would run in parallel from the Maanhaarberg 132kV substation to the Eskom/PV3 substation, which is located approximately 25km north-west of the WEF site. The servitude would traverse the following farm portions to the Eskom/PV3 substation: Damfontein Re/138 (Remaining Extent), Zwartekopjes Re/131 (Remaining Extents), Zwartekopjes 2/131 (Remaining Extents), Bosjesmans Fountain Rem/1/136 (Remainder Extents), Haartebeesplaat Re/135 (Remainder Extents), and De Aar 1/180 (Refer to for **Figure 1** and **Appendix A** for the Locality Map). The landowners of the farms that the servitudes cross have entered into agreements with Mulilo. These farms are zoned for Agriculture and are currently used for grazing sheep, goats and cattle.



**Figure 1: Location Map**

The specialist studies and specialists, who were appointed to provide more detailed information on those environmental impacts which have been identified as potentially being of most concern, and/or where insufficient information is available, are listed in **Figure 1: Location Map**.

**Table 1: Specialist investigations and appointed consultant**

Study	Consultant and Organisation
Ecological assessment	Dr David Hoare of David Hoare Consulting cc
Avifauna assessment	Arnold van der Westhuizen of Arnwatt Enviro Watch and Dr Doug Harebottle of UCT
Heritage Assessment Cultural heritage Palaeontology	Wouter Fourie of PGS Heritage and Grave Relocation Consultants
Visual Assessment	Mrs Karen Hansen
Aquatic ecology Assessment	Ms Toni Belcher
Agricultural Assessment	Mr Kurt Barichievy of SiVEST

### **ROUTE DETERMINATION OF TRANSMISSION LINES**

The following aspects were taken into consideration to determine the route alignment for the two proposed 132kV overhead power lines :

#### Route determination assessment (feasible alternatives):

The route determination process included extensive screening and prefeasibility studies which were undertaken by a servitude specialist (Refer to Appendix J4 for the servitude determination report).

Criteria considered during the route determination process include the following:

- 1 Geographical
  - 1a Topography, avoid steep or inaccessible areas;
  - 1b Avoid freshwater resources such as rivers, dams, flood plains and marshy areas;
  - 1c Follow existing farm boundaries;
  - 1d Avoid existing infrastructure (Buildings, cultivated lands, graveyards, irrigation systems and roads);
- 2 Minimise visual impacts;
- 3 Liaise with property owner's and establish their preferences in alignment;
- 4 Existing transmission lines, access and servitudes; and
- 5 Safety considerations and maintenance.

Alternative A was initially selected for further assessment, as it was the only route able to comply with all the above mentioned criteria. Specifically, pairing with existing lines were possible and running along cadastral boundaries and existing access roads, as well as taking advantage of gradual incremental topography, and avoiding steeper sections.

Alternative B was designed in response to the sensitive areas (Varreaux and Martial eagle nests and farm dams) identified by the avifauna specialist. In order to reduce disturbance and collision risk, the avifauna specialist recommended a buffer area of 1.5km around sensitive areas. Alternative B therefore meets the requirements of the avifauna specialist. However, certain route determination criteria could not be met in the design of a feasible alternative. Most notably, Alternative B would no longer follow the already transformed cadastral boundary and this option would also extend the length of the transmission line by approximately 240 metres. Alternative B has been assessed by all specialists as the preferred alternative.

#### Route (length)

For ease of reference, the two proposed 132kV transmission lines, which run in parallel, have been named as follows:

- **Phase 1**
  - Transmission line 1 (required for both Alternative A and B) Maanhaarberg (indicated in red on the locality map) is approximately 17.8km from the Maanhaarberg substation to the Eskom/PV3 substation.
  
- **Phase 2**
  - Alternative A transmission line 2 (indicated in dark blue on the locality map) is



approximately 25.6km from the Damfontein substation via the Maanhaarberg substation to the Eskom/PV3 substation.

- Alternative B transmission line 2 (indicated in light blue on the locality map) is approximately 25.84km from the Damfontein substation via the Maanhaarberg substation to the Eskom/PV3 substation.

### Eskom grid connectivity and capacity

Extensive consultation with Eskom regarding grid connectivity and capacity for the proposed WEFs has been undertaken by Mulilo. Eskom has confirmed<sup>1</sup> that Mulilo should construct the proposed transmission lines in order to evacuate electricity from the proposed WEF via the Eskom/PV3 substation to the national grid.

### **TRANSMISSION LINE INFRASTRUCTURE**

#### **132kV steel monopole structure:**

The self-supporting structure or suspension pole (see Figure 4) is typically used along the straight sections of the powerline, while the guyed intermediate or guyed suspension and angle strain structures (see Figure 5) are used where there is a bend in the powerline alignment. These monopoles weigh approximately 1,200kg each and vary in height from approximately 17.4m to 21m. The size of the footprint depends on the type of pole, i.e. whether it is a self-supporting, guyed suspension or an angle strain pole structure. The size of the footprint ranges from 0.6m x 0.6m to 1.5m x 1.5m, with the larger footprint associated with the guyed suspension and angle strain pole used as bend/strain structures. The average span between two towers is 200m, but can vary between 250m and 375m depending on the ground profile (topography) and the terrain to be spanned. The final tower sizes and positions will only be determined once the project has received Environmental Authorisation and after negotiations with landowners has been finalised.

Two options of towers are recommended based on transmission requirements, technical factors and site characteristics, namely:

- Type 261 monopoles on a single circuit (**Figure 2**).
- Type 277 monopoles on a double circuit line (**Figure 3**).

<sup>1</sup> Eskom has confirmed connection capacity for the Mulilo De Aar 1 Maanhaarberg WEF with a cost estimate letter dating 5 September 2012 (Ref:45140598).

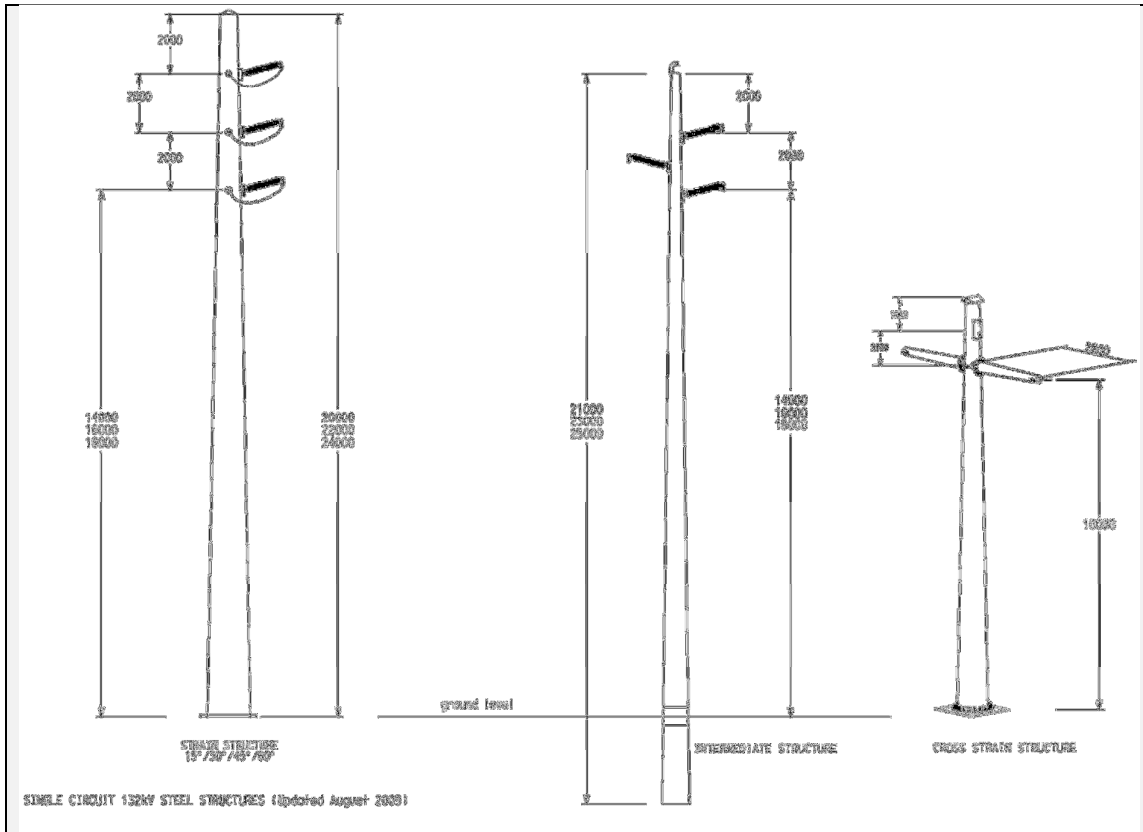


Figure 2: Type 261 monopoles on a single circuit

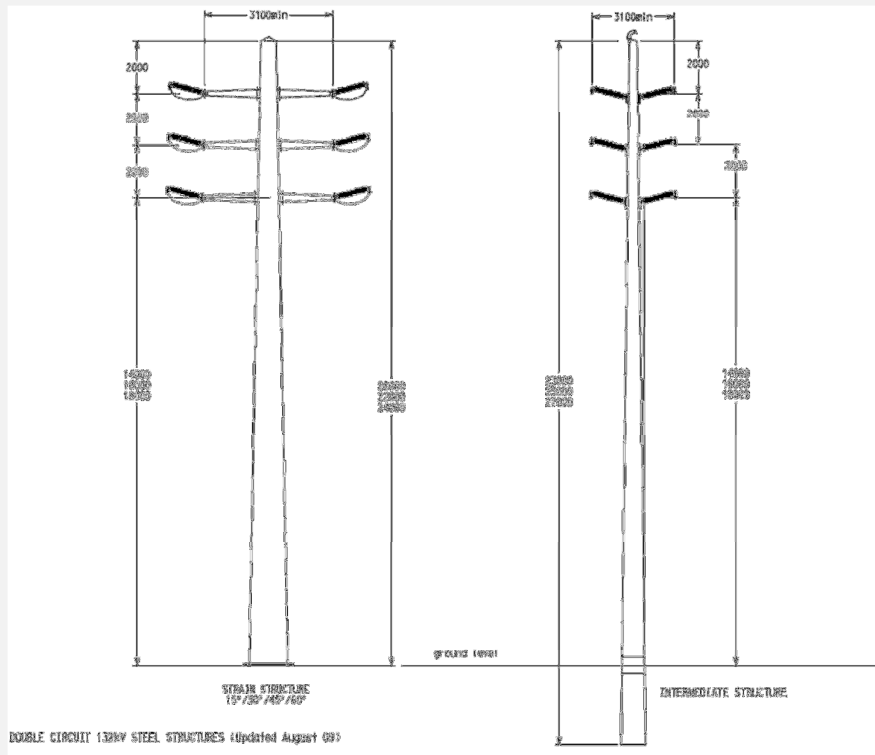


Figure 3: Type 277 monopoles on a double circuit line



**Figure 4: Self-supporting Tower**



**Figure 5: Guyed suspension Tower**

#### Substations

The two transmission lines would connect the WEF via two onsite 132kv substations, namely the Maanhaarberg and Damfontein substations to Eskom's Eskom/PV3 substation. Both the WEF substations have already been assessed in respective EIA processes undertaken for the WEF sites as integral components of the WEFs. The Eskom/PV3 substation will be constructed and commissioned by June 2015 to facilitate the connection of the proposed renewable energy facilities. The Eskom/PV3 substation will have a capacity of 600 MVA<sup>2</sup> and will be constructed to accommodate 132kV and 22kV distribution lines. It has been proposed that the substation not only meet the requirements of current renewable projects, but have sufficient capacity, in order to ensure that future projects can connect onto the substation.

#### Access roads

Access roads would run the length of the proposed servitudes and be required for access to the transmission route only where no roads currently exist. The proposed access roads will have a gravel surface and will have an average width of approximately 4 meters with a maximum width of less than 8 meters.

#### Foundations

The monopoles are anchored to the soil through a suitable foundation system. A soil investigation (soil type nomination) must be performed prior to construction, at which point the prevailing soil or rock type classification is confirmed, and a suitable foundation system is selected for the various types of structure. Foundations are designed according to the following geotechnical classification:

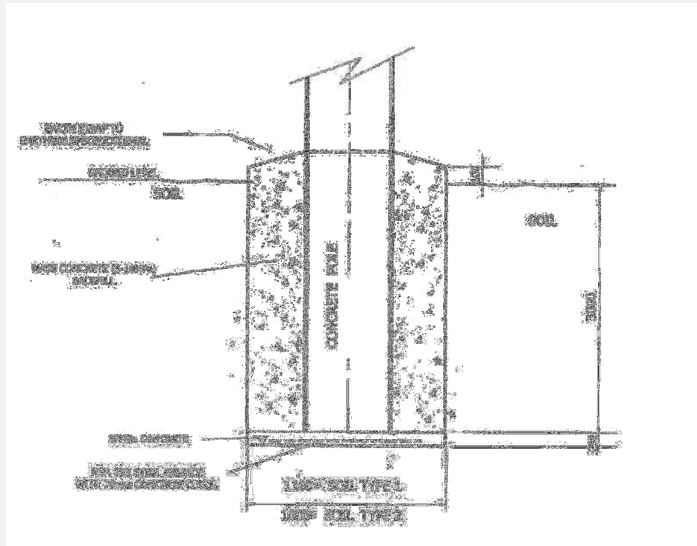
<sup>2</sup> A substations transformers load rating by Voltage(V) and Current(A) respectively.

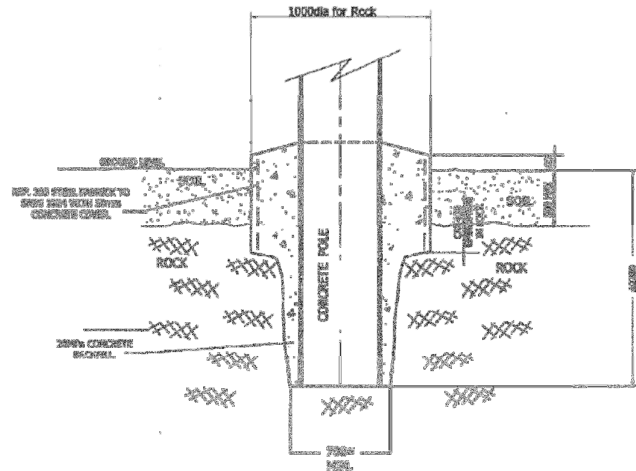
## BASIC ASSESSMENT REPORT

Type 1 – Hard engineering strong granular soil;  
Type 2 – Less competent soil, stiff clay or dense sand;  
Type 3 – Very incompetent soil i.e. loose sand or soft clay;  
Type 4 – Saturated or submerged soft ground below the seasonal water table;  
Hard rock – Solid continuous moderately fractured; and  
Soft rock – Very fractured, weathered or decomposed rock.

Load safety factors are incorporated into the designs allowing for variations in geotechnical conditions, construction inconsistencies and long-term performance. For the Type 266 monopoles on the single circuit line option, planted foundations are to be used.

NOTE: For the preliminary design of the 132kV line, soil types were determined based on soil type nominations made during the preliminary line walkdown. The soil type nomination to be done by the contractor will form the base for subsequent foundation selection, again to be finalised on site during construction. Once the soil type nomination has been conducted, suitable foundations will be determined. Foundations can either be planted foundations, pad and plinth, or pile type foundations. A brief description of these two planted foundation types for Type 261 monopoles are provided below.

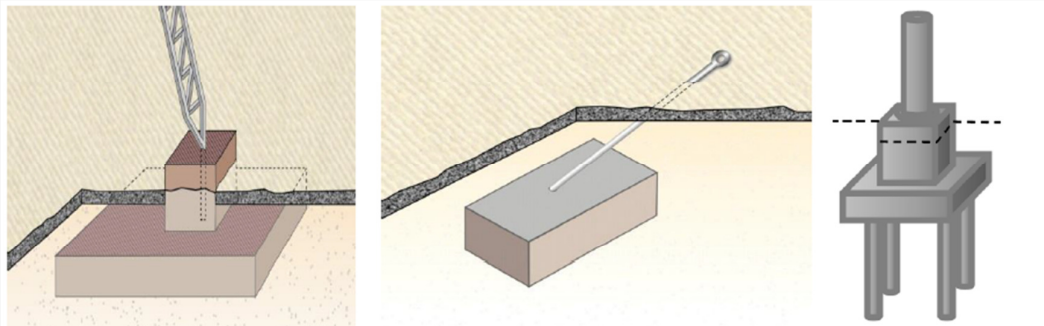




**Figure 6 : Planted foundations for Soil and Rock**

Where possible, planted foundations will be used as these have proved more cost effective than bolted footings. If a light duty line is constructed then planted foundations will be used on intermediates as in **Figure 6** . If the line is heavier (thicker conductor) all structures will be bolted on foundations (**Figure 4**) or alternatively guyed structures will be used (**Figure 5**) on intermediate towers.

For the Type 277 monopoles on the double circuit line option, pad and plinth or pile foundations as well as guyed foundations are to be used.



**Figure 7: Pad and Plinth, Guyed and Pile foundations respectively**

Maximum footprint: Guyed foundations ~ 30m square around the pole position.

### Insulation

Insulator options have been determined as per Eskom Standards<sup>3</sup>. This Standard allows for use of silicon post insulators and silicon long rod insulators. The type of insulator to be used on this line shall be as per IEC 60815 specifications. For this project, the creepage<sup>4</sup> shall be 31mm/kV. It is proposed that insulators, with standard ratings for 132kV, be installed. The proposed insulating material shall be

<sup>3</sup> Eskom Standards 34-510 Rev 0 (Refer to Appendix J3)

<sup>4</sup> The leakage of an electrical current across the surface of an insulator.

silicon rubber and the dry arcing distance to be a minimum of 1200mm for 132kV.

### Specifications for Bird Flight Diverters installation on a power line

Where there is a potential for bird collisions (especially rare or endangered species) with new overhead lines or actual collisions on existing lines have been recorded, it is advisable to install bird flappers or bird flight diverters on overhead transmission lines. It has been found in South Africa and internationally that the majority of collisions happen with the transmission lines, as they are thinner and less visible than the conductors. Typically, birds with large wingspans have less manoeuvrability, will see the conductors and when taking evasive action collide with the overhead transmission lines. The bird flappers or bird flight diverters are installed to make the transmission lines more visible thereby reducing the risk of collision.

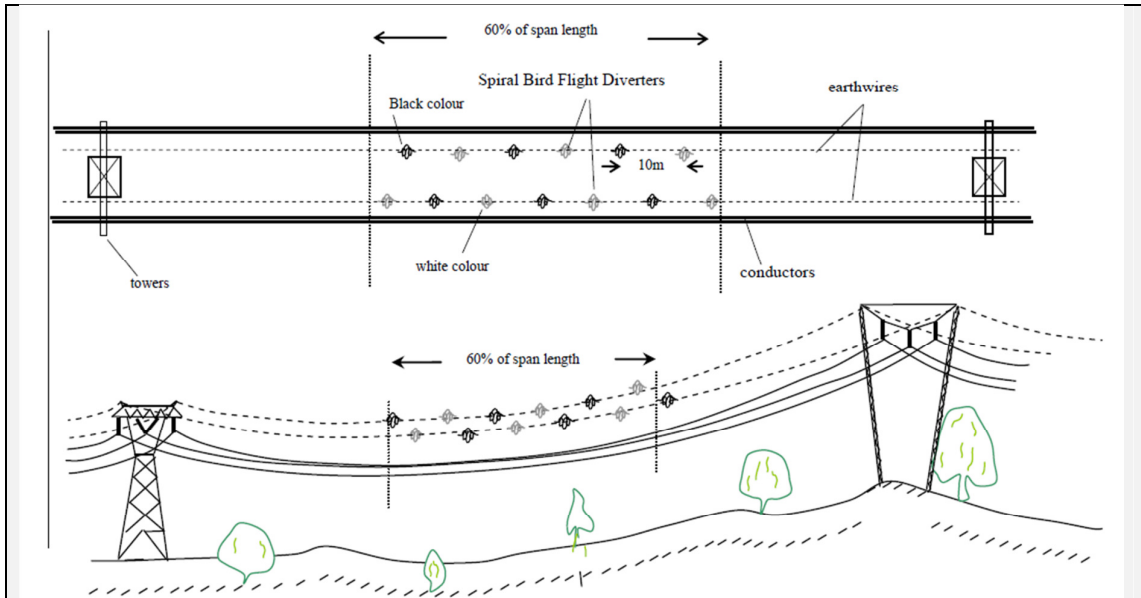
Specifications: According to the avifaunal specialist report (**Appendix D5**) it is recommended that the entire length of the transmission route should be fitted with Bird Flight Diverters. Mulilo has committed to this mitigation measure in order to reduce the potential impact on avifauna.

As per recommendations from Chris van Rooyen of the Endangered Wildlife Trust (EWT), for all Eskom transmission lines should use the spiral type bird diverters, until all flapper types are tested by Eskom. The spirals are either black or white and made from preformed 14mm diameter PVC UV stabilised rod.

The EWT recommends that bird flight diverters to be installed on transmission lines:

- should be on both earth wires 19/2.65 (this represents the conductor thickness of 19 strands 2.65mm diameter, with both conductors on lattice structures) staggered; and
- Should only be installed on the 60% of the earthwire span, in the middle of the span and spaced at 10m intervals. With typical 132kV line spans length of 250m the 60% marked section will amount to 150m.

The figure below illustrates how the black and white spirals (bird flight diverters) should be arranged and where they should be positioned (**Figure 9**).



**Figure 8: Illustration of Bird Flight Diverters by J Clara (Endangered Wildlife Trust) 19/10/2012**

Line clearance

The Occupational Health and Safety Act 85 of 1993 (the OHS Act), provides for statutory clearances to ensure minimum safety standards. In order to comply with these statutory clearances, Eskom and a number of other authorities (Roads Department, Transnet and Telkom, etc.) have laid down minimum clearances to their works. The minimum clearances prescribed by Eskom, which are in excess of those required by the OHS Act, are provided in **Table 2**. Therefore clearances of the proposed transmission lines will meet the statutory requirements.

**Table 2: Building line restrictions, servitude widths, line separations and clearances from power lines (Eskom, March 2011)**

Description of Service	Sub-transmission 132kV
Outdoor earth: Minimum Safety clearance	1.5
Phase to phase	1.7
Ground clearance inside and outside townships	6.7
Building structures not part of power line	3.8

**SERVITUDE DIMENSIONS**

The standard servitude width as specified by Eskom for a 132kV transmission line is 31m, with a distance of 15.5m on either side of the centre line of the powerline. As the proposed two 132kV lines will run in parallel, the servitude requirement will be a 21m line separation with 15,5m either side. The total servitude width would amount to 52m for the section between the Maanhaarberg substation and the Eskom/PV3 substation and 21m between the Damfontein and Maanhaarberg substations.

The Specialists have evaluated the following servitude dimensions within an assessment corridor (500m wide and 25.6km long):

- servitude widths of 36m; and

- servitude length of 25.6km.

The assessment of a servitude within an assessment corridor will allow for minor servitude alignment deviations within the corridor should sensitive features be identified. The final tower positions will therefore take into consideration the sensitive areas and/or no-go areas.

### Servitude Clearances

The minimum standards prescribed by Eskom for bush clearing and invasive alien plant clearance for new powerline construction are referred to in their Standard for bush clearance and maintenance within overhead powerline servitudes, May 2000. These specifications have been incorporated into the Environmental Management Programme (EMP) that will guide the construction and operational and maintenance phases of this project. (Refer to **Appendix J1**).

### **SERVICE REQUIRED DURING CONSTRUCTION PERIOD**

The construction phase would be approximately 6 months. However, the construction period may vary slightly depending on the seasonal and environmental conditions at the time of construction. The self-supporting monopoles, which are preferred, are the easiest form of tower to construct and only require to be positioned by a crane into the respective footprint (foundation). Approximately 30-35 skilled and unskilled staff would be employed for the construction phase. The unskilled labourers are generally trained by the contractors and sourced from local communities.

### Water supply

Potable water will be required during the construction phase for concrete mixing and drinking water for the construction workers. Approximately 1,600m<sup>3</sup> concrete would be required to construct the two lines which would require a total of ± 320m<sup>3</sup> water. Potable water will be obtained from the respective farmers where the transmission lines traverse. Agreements with all the relevant landowners pertaining to their capacity to supply ground water as required is included in Annexure J. Should it not be possible for the farmers to supply water requirements then water would be sourced from the Emthanjeni Municipality, and as such a letter confirming capacity to supply would be obtained and shall be provided in the Final BAR.

### Waste

Solid construction waste and effluent is anticipated to be of minimal quantities and would be disposed of by the responsible contractor into the respective municipal waste streams.

### **MAINTENANCE DURING OPERATIONAL PHASE**

The estimated lifecycle of the transmission lines is approximately 25 years and will require on-going maintenance as and when required. Eskom maintenance staff and contractors will undertake all maintenance work on a routine basis.



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

Listed activity as described in GN R.544 and 546	Description of project activity
GN R. 544 Item 10:	The construction of two 132kV transmission lines from the proposed De Aar 1 WEF site to Eskom's proposed Eskom/PV3 substation. The respective transmission lines will be ~18km and ~26km in length and transmission line 2 will run from the Damfontein to the Maanhaarberg 132kV substation and then both lines would run in parallel to the Eskom/PV3 substation.
GN R. 544 Item 11:	Wetlands and drainage lines are scattered across the proposed transmission line routes and one or more structures or associated infrastructure would need to cross these areas.
GN R. 546 Item 12:	Natural vegetation would need to be cleared for the proposed project in the form of pylon footprint and access and maintenance roads. The vegetation may comprise of 75% or more 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.

## BASIC ASSESSMENT REPORT

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

#### **Selection process of the preferred route:**

An integrated route determination process was undertaken to assess the feasibility of various routes from the WEF sites to the Eskom/PV3 substation. The process was undertaken in order to select a route based on various biophysical, socio-economic and technical factors. Several transmission line routes were initially considered by the servitude specialist; however, using the route selection criteria these routes were discarded. Refer to the servitude specialist report in **Appendix D** for the detailed process in developing Alternative A. As such only Alternative A was initially proposed. However, the avifaunal specialist identified sensitive areas (Varreaux and Martial eagle nests and farm dams) which would be negatively impacted on by Alternative A. The avifauna specialist recommended a realignment taking cognizance of a 1.5km buffer zone around sensitive areas. Alternative B was designed to incorporate the avifaunal sensitivity buffers. From an environmental perspective, Alternative B is the preferred alternative.

Both alternatives have been considered in this Basic Assessment process and both alternatives have been assessed by all specialists.

As mentioned in the project description, the two proposed 132kV transmission lines run in parallel between the Maanhaarberg 132kV substation and the Eskom/PV3 substation and as such they have been assessed together as there will only be one servitude in which both lines would be located. For bother Alternative A and B, specialists have assessed a servitude corridor of 500m in width to allow for minor alignment adjustments to be made should it be necessary.

**As mentioned above, two alternatives (referred to as alternative A and alternative B) have been considered and assessed by all specialists. Details of the two site alternatives are provided below.**

- **Transmission line 1 (Alternative A and B) Maanhaarberg (red)** is approximately 17.8km from the Maanhaarberg substation to the Eskom/PV3 substation.
- **Transmission line 2 (Alternative A) Damfontein (dark blue)** is approximately 25.6km from the Damfontein substation to the Eskom/PV3 substation.
- **Transmission line 2 (Alternative B) Damfontein (light blue)** is approximately 25.84km from the Damfontein substation to the Eskom/PV3 substation.

In the case of linear activities (refer to **Figure 1**):

#### **Alternative A (Phase 2):**

##### **Transmission line 2 Damfontein**

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

#### **Latitude (S):**

#### **Longitude (E):**

30°43'37.37"S	23°54'32.15"E
30°42'52.30"S	23°59'42.31"E
30°41'1.20"S	24° 3'51.33"E

#### **Alternative B (Phase 2):**

##### **Transmission line 2 Damfontein**

- Starting point of the activity

#### **Latitude (S):**

#### **Longitude (E):**

30°43'37.37"S	23°54'32.15"E
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## BASIC ASSESSMENT REPORT

• Middle/Additional point of the activity	30°46'18.37"S	23°54'6.03"E
• End point of the activity	30°41'1.20"S	24° 3'51.33"E

NOTE: Transmission Line 1 (Phase 1) is the same for both Alternative A and B

<b>Alternative A and B (Phase 1):</b> Transmission line 1 Maanhaarberg	<b>Latitude (S):</b>	<b>Longitude (E):</b>
• Starting point of the activity	30°47'25.16"S	23°52'42.66"E
• Middle/Additional point of the activity	30°43'34.96"S	23°57'3.17"E
• End point of the activity	30°41'1.20"S	24° 3'51.33"E

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

Please refer to **Appendix A** for the Map indicating points of route alignment and corresponding co-ordinate table for both Alternative A and Alternative B.

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

**b) Lay-out alternatives:**

Specialists have assessed a 500m route corridor (~500m wide and ~26km long) for both alternatives. This allows for minor realignment adjustments to be made based on sensitive features and areas that were identified. The final design of the route has been determined by incorporating the servitude maps and sensitive areas or features as identified by specialists. Geotechnical considerations for pylon (tower) positions would require a final survey and profiling to be undertaken in collaboration with Eskom. As such, the final location of pylon positions would be only be finalised during implementation and would be dependent on the Independent Power Producer (IPP) bid process approval as required by Eskom. Within the route corridor, only one servitude would be required for either two transmission lines consisting of single circuit lines (requiring Type 266 towers) or one transmission line consisting of one double circuit line (requiring Type 277 towers).

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

**c) Technology alternatives:**

**Alternative A**  
Eskom has proposed that either Type 261 monopoles on a single circuit or Type 277 monopoles on a double circuit line should be used for the two proposed transmission lines. Eskoms planning would be dependent on whether the WEF project is successful on their IPP BID process and as such would only be determined at that point. The poles will be self-supporting or guyed suspension for straight sections and angle strain poles for curves in the alignment. Alternative technologies have already been

## BASIC ASSESSMENT REPORT

considered and the most appropriate technologies specifically designed for the current environmental conditions, which are based on technical and topographical factors and incorporate Eskom's specifications and best international practices, have been presented above. The tower structures proposed also have been selected to reduce visual impacts, impact on agricultural potential and impact on avifauna.

Alternative 2

Alternative 3

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

#### Alternative A

Phasing schedule: Single circuit structures (type 261 monopoles) will only be determined by Eskom after the WEF development has IPP BID approval. It would then be decided by Eskom whether an initial light line would be built for this project to accommodate  $\pm 160$  megawatt maximum for the first phase (transmission line 1) from Eskom/PV3 to the Maanhaarberg substation. The second phase (transmission line 2) would then require a line to be built of the same type and capacity from the Eskom/PV3 substation to the Damfontein substation. However, Eskom may decide to construct a larger double circuit transmission line (type 277 monopoles accommodating up to 800 megawatt), in which case only one transmission line will be constructed to connect to Maanhaarberg substation in the first phase and then would be extended to Damfontein substation in the second phase.

Alternative 2

Alternative 3

### e) No-go alternative

The no-go alternative is the baseline against which all alternatives are assessed. It should be borne in mind that the no-go alternative would have a significant impact on the viability of the WEF sites. Should the transmission lines not be authorised, it would not be possible to evacuate the electricity generated at the WEF to the national grid. The no-go would thus have a negative impact on the viability of the WEF sites.

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):

<p><b>Alternative: Foot print per Type 261 pylon (0.6 m<sup>2</sup>)</b> Alternative A<sup>5</sup></p>	<p>0.6 m<sup>2</sup> area x 17.8km length / 250m span</p>	<p><b>Size of the activity:</b></p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>max~43m<sup>2</sup></td> </tr> </table>	max~43m <sup>2</sup>
max~43m <sup>2</sup>			

<p><b>Alternative: Foot print per Type 277 pylon (1.5 m<sup>2</sup>)</b> Alternative A<sup>6</sup></p>	<p>1.5 m<sup>2</sup> area x 25.6km length/ 250m span</p>	<p><b>Size of the activity:</b></p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>max~153m<sup>2</sup></td> </tr> </table>	max~153m <sup>2</sup>
max~153m <sup>2</sup>			

or, for linear activities:

**Transmission line 2 Damfontein**

<p>Alternative A</p>	<p><b>Length of the activity:</b></p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>25.6km</td> </tr> </table>	25.6km
25.6km		
<p>Alternative B</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>25.84km</td> </tr> </table>	25.84km
25.84km		

**Transmission Line 1 Maanhaarberg**

<p>Alternative A and B</p>	<p><b>Length of the activity:</b></p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>17.8km</td> </tr> </table>	17.8km
17.8km		
<p>Alternative A2 (if any)</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td> </td> </tr> </table>	
<p>Alternative A3 (if any)</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>m</td> </tr> </table>	m
m		

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

<p><b>Alternative:</b> Alternative A</p>	<p>Length 25.6km x Two line servitude width 52 m<sup>2</sup></p>	<p><b>Size of the site/servitude:</b></p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>~1,331,200 m<sup>2</sup></td> </tr> </table>	~1,331,200 m <sup>2</sup>
~1,331,200 m <sup>2</sup>			
<p>Alternative B</p>	<p>Length 25.84km x Two line servitude width 52 m<sup>2</sup></p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>~1,344,720m<sup>2</sup></td> </tr> </table>	~1,344,720m <sup>2</sup>
~1,344,720m <sup>2</sup>			
<p>Alternative A3 (if any)</p>	<p> </p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>m<sup>2</sup></td> </tr> </table>	m <sup>2</sup>
m <sup>2</sup>			

### 4 SITE ACCESS

<p>Does ready access to the site exist?</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">YES</td> <td style="width: 50%;">NO</td> </tr> </table>	YES	NO
YES	NO		
<p>If NO, what is the distance over which a new access road will be built</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>~21.3km</td> </tr> </table>	~21.3km	
~21.3km			

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<sup>5</sup> "Alternative A." refer to activity, process, technology or other alternatives.  
<sup>6</sup> "Alternative A." refer to activity, process, technology or other alternatives.

## BASIC ASSESSMENT REPORT

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Describe the type of access road planned:

A single new access road of approximately 21.3km in length and would be approximately 4m in width but not exceeding 8m and would need to be constructed to allow access along sections of the servitude and would cater for both lines. This access road would allow for both the construction and operation/maintenance phases of the transmission lines life cycle. The access network would be negotiated with all the respective landowners to ensure that servitude agreements are in-place and security measures, such as access gates, are agreed upon. The requirement for access roads will be the same for both alternative transmission line routes.

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.

**Site access layouts will be included on the site plan in Appendix A in the Final BAR.**

### 5 LOCALITY MAP

**The A3 Locality Map is included in Appendix A.**

### 6 LAYOUT/ROUTE PLAN

**A detailed Layout/Route Plan is included in Appendix A.**

### 7 SENSITIVITY MAP

**The Sensitivity Map will be included in Appendix A in the Final BAR**

### 8 SITE PHOTOGRAPHS

**Site Photographs are included in Appendix B.**

### 9 FACILITY ILLUSTRATION

**Structural illustrations (Towers) are included the project description and in 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>	YES	NO ✓	Please explain
The proposed servitudes would be situated on private property which is currently zoned as Agriculture I. A formal agreement will be entered into between the landowner and Mulilo. It is envisaged that the servitudes would then be transferred to Eskom once the transmission lines are operational.			
<b>2. Will the activity be in line with the following?</b>			
<b>(a) Provincial Spatial Development Framework (PSDF)</b>	YES ✓	NO	Please explain
The Provincial Spatial Development Framework (PSDF) promotes the provision of electricity to all and supports economic development through sustainable green energy initiatives on a national scale. This			

BASIC ASSESSMENT REPORT

<p>is to be realised through a diverse range of clean energy options and to accelerate the construction of new electricity generation capacity, in accordance with the IRP2010, to meet the needs of the economy and address historical imbalances (Presidential Infrastructure Coordinating Commission, 2012). The proposed construction of the transmission lines will allow electricity, generated through renewable technology, to be evacuated from the WEF to the national grid.</p>			
<b>(b) Urban edge / Edge of Built environment for the area</b>	YES	<b>NO</b> √	Please explain
<p>The proposed transmission lines fall outside of the urban edge.</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> √	NO	Please explain
<p>The proposed project comprises the provision of infrastructure for the transmission of electricity into the national grid, which is compatible with the IDP and SDF of the Emthanjeni Municipality. Within the Strategies and Priorities of the Emthanjeni SDF the following aspects of land use needs for the residents were identified:</p> <ul style="list-style-type: none"> <li>• Creation of a sustainable environment in Emthanjeni; and</li> <li>• Economic Development (Macroplan, 2007)<sup>7</sup>.</li> </ul> <p>The construction of the transmission line will result in both direct and indirect employment opportunities. The establishment of the WEFs are a longer-term (minimum of 20 years) investment into the community of De Aar and from this project there will be further direct and indirect employment opportunities and opportunities for new local industries to become established.</p>			
<b>(d) Approved Structure Plan of the Municipality</b>	<b>YES</b> √	NO	Please explain
<p>The proposed project entails transmission infrastructure, which is compatible with the Local Economic Development (LED) objectives of the Emthanjeni Municipality.</p>			
<b>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</b>	YES	<b>NO</b> √	Please explain
<p>There is no approved EMF for the study area. An Integrated Environmental Management Plan (IEMP) has been adopted but the Municipality does not have an environmental specialist and relies on the District Municipality where environmental issues are handled per project requirement (Emthanjeni Local Municipality IDP May 2012).</p>			
<b>(f) Any other Plans (e.g. Guide Plan)</b>	YES	<b>NO</b> √	Please explain
<p>No other plans are applicable to this application.</p>			

<sup>7</sup> Macroplan. 2007. Spatial development Framework for Emthanjeni Municipality.

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<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>	YES	NO✓	Please explain
<p>The SDF does not provide a timeframe associated with the activity being applied for. However the National Development Plan identifies access to electricity to all South Africans as the tenth Strategic Integrated Project, specifically to expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. The IDP makes provision for infrastructure reticulation and bulk infrastructure for electricity, (Presidential Infrastructure Coordinating Commission, Strategic Integrated Planning Projects, 2012). The Emthanjeni Local Municipality IDP of May 2012 refers to the Municipality requiring an Electricity Master Plan for future developments to be developed in collaboration with DoE.</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>	YES✓	NO	Please explain
<p><b>Strategic level</b></p> <p>The construction of the transmission lines would facilitate the connection of the WEF to the national grid. The need for renewable energy is well documented and reasons for the desirability of wind energy include:</p> <ol style="list-style-type: none"> <li>1. Utilisation of resources available to South Africa;</li> <li>2. Meeting nationally appropriate emission targets in line with global climate change commitments; and</li> <li>3. Enhancing energy security by diversifying generation.</li> </ol> <p>Each of the above mentioned reasons for pursuing wind energy generation in South Africa is further discussed below.</p> <p><b>1. Utilisation of resources available to South Africa</b></p> <p>South Africa has considerable wind resource potential which can be harnessed, particularly that of the Northern Cape. South Africa currently generates most of its required electricity from coal of which there is a ready supply at the local level. However, national government is on the verge of augmenting the existing generation capacity of thermal and nuclear power plants with renewable energy power generation, thus creating the framework that will lead to an increase in the supply of clean energy for the nation.</p> <p><b>2. Meeting nationally appropriate emission targets in line with global climate change commitments</b></p> <p>As can be seen by the numerous policies and legislation described in Section 10 the need for renewable energy is well documented. Due to concerns such as climate change, and the on-going</p>			



exploitation of non-renewable, resources, there is increasing international pressure on countries to increase their share of renewable energy generation. The De Aar WEF projects together with the associated transmission lines are expected to contribute positively towards climate change mitigation.

Wind energy is a source of “green” electricity as for every 1 MWh of “green” electricity generated instead of traditional coal powered stations, one can:

- Save 1 290 liters of water;
- Avoid 8.22 kg of Sulphur Dioxide (SO<sub>2</sub>) emissions;
- Avoid 1 000 kg of Carbon Dioxide (CO<sub>2</sub>) emissions including transmission losses;
- Avoid 142 kg of ash production; and
- Contribute to social upliftment.

### **3. *Enhancing energy security by diversifying generation***

The establishment of the proposed WEF would strengthen the existing electricity grid for the area. Moreover, the project will contribute positively towards meeting the national energy target as set by the DoE, of a 30 % share of all new power generation being derived from independent power producers (IPPs). Renewable energy is recognized internationally as a major contributor in protecting the climate, nature and the environment, as well as providing a wide range of environmental, economic and social benefits that can contribute towards long-term global sustainability.

#### **Local level**

### **4. *Job opportunities and contribution to social upliftment***

Local investment would take the form of social upliftment opportunities. The sites are relatively near De Aar, where high levels of unemployment are experienced; hence the proposed WEF and associated transmission line projects would uplift the local community through job creation, training and a community trust<sup>8</sup> set up by Mulilo to benefit the community directly from the power being generated. Should the development of the proposed 132kV transmission lines be acceptable, it is considered viable that long term benefits for the community in De Aar and society at large would be realised as highlighted above. The proposed projects would also have international significance as it contributes to South Africa being able to meet some of its international obligations by aligning domestic policy with internationally agreed strategies and standards as set by the United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, and United Nations Convention on Biological Diversity (UNCBD), all of which South Africa is a signatory to.

Additional potential benefits include:

#### **STRATEGIC**

- Reducing the demand on scarce resources, such as water, as the generation of energy from wind facilities uses approximately 264l ℓs water per MW/h where coal-fired facilities on average uses approximately 2200 ℓs per MWh in closed-loop systems and approximately 125 000 ℓs

<sup>8</sup> The Community Trust structure forms the basis of the economic and social upliftment structure for the project. All proceeds the trust receives from the project will flow within close proximity of the project site and local community. The WEF community trust will meet all social and economic upliftment requirements as set out by the Department of Energy REIPP Bid Tender Process.

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<p>per MWh in open-loop (Civil Society Institute report, "The Hidden Costs of Electricity: Comparing the Hidden Costs of Power Generation Fuels 2012);</p> <ul style="list-style-type: none"> <li>Reducing pollution as the generation of electricity from the operation of the WEF produces no pollution per MW/h compared with coal-fired facilities which generate vast quantities of climate changing and toxic chemicals;</li> <li>Helping South Africa reach its emission targets and reduce the social costs associated with coal fired facilities;</li> </ul>			
<p><b>LOCAL</b></p> <ul style="list-style-type: none"> <li>Local economic development; and</li> <li>Social upliftment through skills training, job opportunities and a community trust.</li> </ul>			
<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><b>YES</b>√</p>	<p><b>NO</b></p>	<p>Please explain</p>
<p>Minimal municipal services are required. Both solid waste and effluent generated during construction would be disposed of by an appointed contractor into the respective licenced municipal streams. Confirmation on capacity to provide municipal services form the Emthanjeni Local Municipality shall be provided in the Final BAR.</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><b>YES</b></p>	<p><b>NO</b>√</p>	<p>Please explain</p>
<p>No additional services are required once the transmission lines are operational – there will thus be no impact on infrastructure planning.</p>			
<p><b>7. Is this project part of a national programme to address an issue of national concern or importance?</b></p>	<p><b>YES</b>√</p>	<p><b>NO</b></p>	<p>Please explain</p>
<p>Refer to the point 4 above.</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><b>YES</b>√</p>	<p><b>NO</b></p>	<p>Please explain</p>
<p>The proposed transmission lines provide the critical link from the WEF to the national grid. The location factors apply to the WEF and as such dictate the location of the transmission lines. The De Aar region has a favourable wind resource, large areas of unutilised (little intensive agricultural, industrial or urban development) land is available and good access to the national electricity grid due to its central location and established transmission network.</p>			

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The visual intensity of the proposed transmission lines as they traverse the agricultural lands would be experienced within a landscape already carrying many transmission lines. The Western Plateau is currently rural land, however once the WEF is constructed, the character of this area would be industrial. Transmission lines tend to be associated with this type of development. The compatibility of the proposed transmission lines with the surrounding landscape is deemed to be appropriate (refer to Appendix D for the Visual Impact Assessment (VIA) specialists report)

The WEF site is considered to be favourable for wind energy based on a number of characteristics, namely:

- Power yield: The site could generate a high volume of energy annually;
- Existing land use: No existing intensive agriculture, only grazing which could continue below turbines;
- Grid connectivity: The centralised location of the WEF in the De Aar region within the context of South Africa, coupled with the well-established transmission network already in place provide an optimum platform to feed into the national grid. The Eskom/PV3 substation is being constructed in order to facilitate this connection through the proposed transmission lines.
- Accessibility: De Aar has good road access from ports at Port Elizabeth and Cape Town via the national roads. The sites are accessible from the east for vehicles carrying large components, such as turbines blades; and
- Social upliftment opportunities: The sites are relatively near De Aar, where high levels of unemployment are experienced; hence the proposed projects would uplift the local community through job creation, training and a community trust to benefit the community directly from the power being generated.

<b>9. Is the development the best practicable environmental option for this land/site?</b>	YES ✓	NO	Please explain
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The proposed transmission lines transverse mostly farmland which is predominantly for grazing. Once the transmission lines are constructed, the land can be returned to grazing and, due to the relatively small footprint of the towers, the grazing capacity of the land will not be reduced significantly. Given that De Aar has a well-established and extensive transmission network already in place, the current proposal would not be out of place in the existing landscape.

<b>10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?</b>	YES ✓	NO	Please explain
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The negative impacts for the proposed development are of very low to medium magnitude, local extent and long term and **very low to medium (-)** significance with mitigation and therefore the impacts are considered acceptable. Therefore, the proposed developments impacts with mitigation measures are reduced and are considered to an acceptable. Furthermore it should be noted that three potential positive impacts associated with the facilitation on energy production and local economy (employment), climate change and social conditions would result and these would be of **low-medium (+) significance**, with and without mitigation measures.

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<p>The no-go alternative, which represents the status quo, would have a high impact, of national extent and would therefore have a <b>medium (-)</b> significance. No mitigation would be possible as the no-go alternative would therefore have a significant impact on the viability of the WEF sites. Should the transmission lines not be authorised, it would not be possible to evacuate the electricity generated at the wind energy facility to the national grid. The no-go would thus have a negative impact on the viability of the WEF sites.</p>			
<p><b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b></p>	YES	NO√	Please explain
<p>De Aar has been identified as a renewable hub for both wind and solar energy projects – in recognition of this, Eskom is developing a new substation, namely Eskom/PV3, to cater for the increased requirement to have access to the National grid.</p>			
<p><b>12. Will any person's rights be negatively affected by the proposed activity/ies?</b></p>	YES	NO√	Please explain
<p>No juristic or natural person's right will be adversely affected as landuse agreements have been negotiated with the relevant landowners. Furthermore, the location of the poles, access roads, and security measures will all be negotiated with the farmer and agreed upon before construction commences.</p>			
<p><b>13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?</b></p>	YES	NO√	Please explain
<p>The proposed transmission lines will be located within the farmlands and won't compromise the urban edge.</p>			
<p><b>14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?</b></p>	YES√	NO	Please explain
<p>The proposed project, together with the WEF, will contribute to the following SIPS (Reference, April 2012):</p> <p>SIP 8: Green Energy in support of the South African economy</p> <ul style="list-style-type: none"> <li>• The WEF is seen as a sustainable green energy initiative diversifying the range of clean energy options on a national scale.</li> </ul> <p>SIP 9: Electricity generation to support socio-economic development</p> <ul style="list-style-type: none"> <li>• The WEF is a renewable energy project designed to support socio-economic development through provision of job opportunities and skills development.</li> </ul> <p>SIP 10: Electricity transmission and distribution for all</p> <ul style="list-style-type: none"> <li>• The proposed transmission line and the Eskom/PV3 substation will contribute to expanding the transmission network. The implementation date of this project is set for 2013.</li> </ul>			
<p><b>15. What will the benefits be to society in general and to the local communities?</b></p>	Please explain		
<p>The Northern Cape, and particularly the De Aar area, is an arid area where farmers do their best to earn a living from the land. The towns are generally small and many residents operate on a survival socio-economic level. The need to improve the quality of life for all, and especially for the poor, is critical in these towns. It is expected that the proposed project together with the WEF site will contribute</p>			

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directly to the upliftment of individuals through direct and indirect employment opportunities and the societies in which they live.

The De Aar region has a high unemployment rate of 26%. The proposed WEF in De Aar would not only be a source of income to the landowners, but it would also create job opportunities for the local community as the construction and operation of the WEF requires a wide range of skill levels which De Aar can, to a degree, supply. Approximately 180 job opportunities (amounting to a total of 2160 person months employment) will be created during the construction phase of the WEF depending on the procurement method and the primary contractor. The proposed project would make use of local labour as much as possible, and a minimum of 50 % of the jobs would be filled by people local to De Aar. The transmission lines would create 20-30 job opportunities for the 6 month construction period.

A training strategy initiated by the Engineering, Procurement and Construction (EPC)<sup>9</sup> contractor will be implemented to ensure community upliftment. Mulilo is committed to skills development and the transfer of skills within the local communities.

<b>16. Any other need and desirability considerations related to the proposed activity?</b>	Please explain
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The WEF site is approximately 20kms west of De Aar, where high levels of unemployment are experienced; hence the proposed WEF and associated transmission line projects would provide an opportunity to uplift the local community through job creation and skills development. Mulilo is also committed to social development and will establish a community trust to benefit the community.

<b>17. How does the project fit into the National Development Plan for 2030?</b>	Please explain
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The National Development Plan for 2030 aims to create jobs, develop and expand infrastructure, transition to a low-carbon economy and unify South Africa. This project, along with the construction of the WEF, will fit into the National Development Plan as follows:

Create jobs:

- The project, together with the WEF, will result in approximately 180 jobs created.
- Indirect opportunities for small businesses would be generated such as accommodation, food and service industries through the increased number of people travelling to De Aar.

Infrastructure development and expansion:

- Mulilo is applying for an IPP (independent power producer) contract – the approval of this project will be in-line with the move from Eskom as the main operator to the independent system and market operator. The proposed WEF sites and transmission lines will assist in increasing the supply of electricity and thereby facilitate further expansion of the electrical network through additional capacity to help meet South Africa's current and future electricity demands.

Transition to a low-carbon economy:

- This project, together with the WEF, is a renewable energy project and will result in the expansion of South Africa's renewable generation capacity.
- The construction of the WEF together with the associated transmission lines will assist in

<sup>9</sup> Common form of contracting arrangement within the construction industry.

diversifying South Africa's energy portfolio.

- Wind Power is a proven source of renewable energy and does not rely on carbon.

Transformation and unity:

- Employment equity<sup>10</sup>.
- Helping facilitate access to electricity for all through creating additional generation capacity as well as further diversifying generation and helping stabilise the grid.

**18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.**

The purpose of section 23 of NEMA is to promote the application of appropriate management tools in order to ensure the integrated environmental management of activities. The table below lists the general objectives of integrated management and provides a motivation as to how the proposed development has taken then objectives into account.

<b>Section 23(2) of NEMA: The general objective of integrated environmental management is to:</b>	<b>Description as to how the proposed development has taken these general objectives into account.</b>
(a) promote the integration of the principles of environmental management set out in section 2 of NEMA into the making of all decisions which may have a significant effect on the environment	The underlying principle of this Basic Assessment process is to ensure that the development is socially, environmentally, and economically sustainable. This has guided the assessment of impacts of the project by Specialists to ensure that the project will be undertaken in an environmentally responsible manner (Refer to Table 1). In recognition that social responsibility is something which needs to be actively developed, a public participation programme will be undertaken. This process will be undertaken in such a manner to promote active participation and foster a clear understanding of the project and transparent sharing of information.
(b) identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2;	<b>Section D</b> of this Basic Assessment Report (BAR) includes the list of potential impacts associated with this project. Each impact was evaluated to determine the significance of the impact and mitigation measures have been proposed to reduce negative impacts and to enhance positive impacts.  The impact assessment includes mitigation measures to minimise negative impacts and maximise benefits. A Life-cycle Environmental Management Program (LEMP <sub>r</sub> ) has been drafted to include the recommendations from

<sup>10</sup> Employment equity will be met through the Operation and Maintenance Project Company and the contractors responsible for the construction of the transmission lines, as set out in the requirements of the DOE REIPP Tender Process.

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	the respective specialists to guide the construction phase in an environmentally and socially sound manner (Refer to <b>Appendix G</b> ).
(c) ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them.	Specialist studies were commissioned to ensure that specific impacts are adequately assessed and appropriate mitigation measures are proposed.
(d) ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment.	The public participation process is described in section C. In accordance with regulation 54(2)(e) and 54(7) of GN R.543., the following activities will be undertaken: <ul style="list-style-type: none"> <li>• Advertisement</li> <li>• Site notice</li> <li>• Letters to neighbouring property owners</li> <li>• Letters to commenting authorities</li> </ul>
(e) ensure the consideration of environmental attributes in management and decision making which may have a significant effect on the environment.	Mullilo have committed to the selection of the preferred route based on the outcome of this environmental assessment.
(f) identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2.	Recommendations and mitigations presented in the LEMPr will minimise the disturbance to both the biophysical and socio-economic environments. Where negative impacts are unavoidable, strict management and rehabilitation is recommended to minimise the potential negative impacts.  Eskom standards, which are included in the LEMPr, require the clearing of invasive alien vegetation which will assist in improving the biodiversity of the site. The LEMPr will hold the developer responsible for any unnecessary negative impacts of the development on the environment.

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

The philosophy of Sustainable Development underpins the requirements of NEMA and the consideration of environmental impact. To achieve Sustainable Development it is important to find the balance between the competing demands for resources from the Economic system, the Social system, and the Ecological system.

Chapter 1 of NEMA outlines principles of Sustainable Development which it states are applicable to the “actions of all organs of states that may significantly affect the environment”. These principles are seen as governing the intent and underlying philosophy of the Act and therefore must be considered in the decision regarding whether or not to authorisation an activity which has triggered an EIA process. Table

1 below considers each principle listed in Section 1 of NEMA and its consideration within this process.

**Table 1: The applicability of NEMA Sustainability Principles to the proposed project**

NEMA Sustainability Principle	Consideration for this proposed activity and BA Process
<p>(1) The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and –</p> <ul style="list-style-type: none"> <li>a. Shall apply alongside all other appropriate and relevant considerations, including the State's responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discriminations;</li> <li>b. Serve as the general framework within which environmental management and implementation plans must be formulated;</li> <li>c. Serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act; or any statute provision concerning the protection of the environment;</li> <li>d. Serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and</li> <li>e. Guide the interpretation, administration and implementation of this Act, and any other law concerned with the protection of management of the environment.</li> </ul>	<p>All principles must be considered in the application and consideration for authorisation.</p> <p>The underlying principle of this Basic Assessment process is to ensure that the development is socially, environmentally, and economically sustainable. This has guided the assessment of impacts of the project to ensure that the project will be undertaken in an environmentally responsible manner. In recognition that social responsibility is something that needs to be actively developed, a public participation programme will be undertaken. This process will be undertaken in such a manner to promote active participation and foster a clear understanding of the project and transparent sharing of information.</p>
<p>(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and</p>	<p>This BA process has considered both the natural and socio-economic environment and mitigation measures provided respond to this principle. The selection of the preferred transmission line route will</p>



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social interests equitably.	be based on this assessment.
(3) Development must be socially, environmental and economically sustainable.	<p>The proposed project would facilitate environmental sustainability through the employment of renewable technologies which in turn would assist Government in reaching its emissions target.</p> <p>The proposed project would be economically sustainable as it would encourage long term investment in De Aar (minimum of 20 year investment).</p> <p>Social investment would also be encouraged through job creation and skills training.</p>
(4) (a) Sustainable development requires the consideration of all relevant factors including the following:	
i. That the disturbance of ecosystems and loss of biological diversity are avoided, or where they cannot be altogether avoided, are minimised and remedied;	Disturbance of the ecosystem and loss of biological diversity has been minimised through design measures, route determination, and proposed mitigation.
ii. That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;	Pollution associated with the construction phase will be limited by strict adherence to the EMP. The operational phase will include limited maintenance to the transmission lines and will be managed by the Eskom Standard Practices and their Health and Safety policy.
iii. That the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where is cannot be altogether avoided, is minimised and remedied;	The impact on the heritage resources was investigated and not considered to be unreasonable. Impacts on the 'sense of place' in particular have been highlighted in the Basic Assessment process as being of concern and efforts to minimise and remedy this has been recommended.
iv. That waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;	A minimal amount of construction waste would be generated during the construction phase. Waste would be disposed of by the contractor in to a licenced municipal waste stream.
v. That the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the	The project would facilitate the utilisation of a renewable natural resource.

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<p>consequences of the depletion of the resource;</p>	
<p>vi. That the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised. and equitable, and takes into account the consequences of the depletion of the resource;</p>	<p>Wind energy is a renewable resource and the use of wind power does not have an exceedance level. The project would facilitate the exploitation of a renewable natural resource.</p>
<p>vii. That a risk-averse and cautious approach is applied which takes into account the limits of current knowledge about the consequences of decisions and actions; and</p>	<p>Limitations and gaps in knowledge have been highlighted and taken into account in the Basic Assessment process. The information provided in the BAR is considered to be sufficient for decision-making purposes, and where there is uncertainty with predictions, monitoring has been recommended.</p>
<p>viii. That negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.</p>	<p>The Basic Assessment process has assessed impacts associated with this proposed project. Appropriate mitigation measures have been proposed for impacts which are deemed to have negative impacts.</p>
<p>(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.</p>	<p>The Basic Assessment process has been undertaken in accordance with the legal requirements as a fundamental guiding principle. The selection of the preferred transmission line routes will be determined by this impact assessment process to ensure that the preferred alternative is indeed the best environmental option.</p>
<p>(c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.</p>	<p>The Basic Assessment process, including the public participation process, has been undertaken in a manner to ensure that impacts are assessed fairly using scientifically acceptable methodology. This project, together with the WEF, is a long-term investment in the community of De Aar, as such there is a commitment from Mulilo to create opportunities for the local community. These opportunities include employment, either direct or indirect employment opportunities, and social</p>

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	<p>upliftment programmes. The proposed project will address aspects of social upliftment since it will support the development a wind energy facility, which will have a positive economic impact at local and regional scales. Social upliftment will be part of the WEF social development program.</p>
<p>(d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.</p>	<p>Environmental resources such as air, water, soil and vegetation have been considered and avoidance or mitigation measures provided to ensure that none of these resources are compromised and thereby limiting access thereto.</p>
<p>(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.</p>	<p>The Basic Assessment process has considered the environmental, health and safety consequences of the development through the construction and operational life of the project. Aspects of the decommissioning of the proposed transmission line have been touched on in the EMP and would need to be subject to further investigation via an environmental authorisation process after the operational lifespan.</p>
<p>(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation by vulnerable and disadvantaged persons must be ensured.</p>	<p>Public participation by all I&amp;APs has been promoted and opportunities for engagement provided during the Basic Assessment process.</p>
<p>(g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.</p>	<p>The Basic Assessment process has taken cognisance of all interests, needs and values espoused by all I&amp;APs. Specialist studies have included field work where the specialists would have the opportunity to engage with landowners and locals to gain a better insight of the land and concerns which people may have.</p>
<p>(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of</p>	<p>Public participation by all I&amp;APs has been promoted during the Basic Assessment process.</p>

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<p>environmental awareness, the sharing of knowledge and experience and other appropriate means.</p>	
<p>(i) The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.</p>	<p>This Basic Assessment process has considered both the natural and socio-economic environment and mitigation measures provided respond to impacts fulfil this principle.</p>
<p>(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.</p>	<p>The project area is subject to both the health and safety requirements of the OHS Act.</p>
<p>(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.</p>	<p>The Basic Assessment process has been thoroughly documented and all relevant information known to the Environmental Assessment Practitioner (EAP), as well as written comments received, are included in the reporting for consideration by the authorities.</p>
<p>(l) There must be intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment.</p>	<p>The relevant authorities have been notified of the project and provided opportunity to comment. This authority process has been documented in the BAR.</p>
<p>(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.</p>	<p>The relevant authorities have been notified of the project and provided opportunity to comment.</p>
<p>(n) Global and international responsibilities relating to the environment must be discharged in the national interest.</p>	<p>The establishment of the proposed WEF and the associated transmission lines will contribute positively towards meeting the national energy target as set by the DoE, of a 30 % share of all new power generation being derived from IPPs. Renewable energy is recognized internationally as a major contributor in protecting the climate, nature and the environment, as well as providing a wide range of environmental, economic and social benefits that can contribute towards long-term global sustainability.</p> <p>Should the development of the proposed 132kV transmission lines be acceptable long term benefits for the community and society in De Aar would be realised as highlighted above. The proposed project</p>

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	would also have international significance as it contributes to South Africa being able to meet some of its international obligations by aligning domestic policy with internationally agreed strategies and standards as set by the United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, and United Nations Convention on Biological Diversity (UNCBD), all of which South Africa is a signatory to.
(o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.	The impacts are documented in the Basic Assessment process to inform decision-makers regarding the potential ramifications of the proposed project, so that an informed decision can be taken in this regard.
(p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage, or adverse health effects must be paid for those responsible for harming the environment.	The mitigation measures recommended to minimise negative impacts and enhance positive ones are for implementation and therefore for the cost of the proponent.
(q) The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.	Public participation by all I&APs has been promoted and provided opportunities for engagement during the Basic Assessment process.
(r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems required specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.	The proposed activity does not occur within a sensitive, vulnerable, highly dynamic or stressed ecosystem. Furthermore specialists have provided a sensitivity map to help identify and avoid various sensitive features and areas in order to minimise all the anticipated impacts.

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

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

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National	The proposed servitudes will trigger listed	DEA	1998

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Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Environmental Management Act (No. 107 of 1998) (NEMA), as amended	activities GN R.544 item 10, 11 & GN R546 item 12, thus requiring a Basic Assessment Process.		
National Environmental: Biodiversity Act (No. 10 of 2004) (NEMBA)	The objective of the NEMBA is to manage and conserve biological diversity and resources in a sustainable manner. The vegetation type found within the proposed servitudes has been determined through an ecological impact assessment.	DEA	2004
National Water Act (No. 36 of 1998)	The proposed transmission lines may trigger a section 21(C and/or i) water use, as the pylons may be within 32m of a water resource. In order to minimise the impact of towers and to avoid sensitive environments, tower positions would be planned where possible to avoid water resources.	Department of Water Affairs (DWA)	1998
National Heritage Resources Act (No. 25 of 1999)	As the <i>powerline exceeds 300 m in length</i> a full Heritage Impact Assessment (HIA) has been undertaken and submitted to the South African Heritage Resources Agency (SAHRA).	South African Heritage Resources Agency (SAHRA)	1999
Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA)	The EMP describes mitigation measures to ensure the control of any undesired aliens, declared weeds, and plant invaders listed in the regulation that may pose as a problem as a result of the proposed transmission line and access road. An agricultural potential impact assessment has been undertaken to determine the impact of the proposed transmission lines on the agricultural potential of the affected farms.	Department of Agriculture	1983
Kyoto Protocol	In Africa, the CO <sub>2</sub> emissions are primarily the result of fossil fuel burning and industrial processes, such as coal fired power stations. The International Energy Agency (2008) " <i>Renewables in global energy supply: An IEA facts sheet</i> " estimates that nearly 50% of global electricity supplies will need to come from renewable energy sources in order to	UNFCCC	1997

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Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	halve carbon dioxide emissions by 2050 and minimise significant, irreversible climate change impacts. The servitudes would facilitate the evacuation of renewable energy generated at wind energy facilities to the national grid thus helping to reach these targets.		
White Paper on Energy Policy of the Republic of South Africa	This project together with the WEF would integrate environmental costs into economic analysis which will help promote a sustainable option as part of South Africa's energy policy towards energy diversification.	Department of Energy (DoE)	1998
White Paper on Renewable Energy	Addressing environmental impacts and the overarching threats and commitments to climate change, the White Paper provides the platform for further policy and strategy development in terms of renewable energy in the South African energy environment.	Department of Minerals and Energy (DME)	2003
National Energy Act (No. 34 of 2008)	This project together with the WEF will facilitate new generation capacity through renewable technologies, namely wind, as listed in the IRP and all IPP procurement programmes which will be undertaken in accordance with the specified capacities and technologies as listed in the IRP <sup>11</sup> .	Department of Energy (DoE)	2008
Electricity Regulation Act (No. 4 of 2006) (ERA)		Department of Energy (DoE)	2006
IPP Procurement Process	The projects will assist in facilitating South Africa's aim to procure 3,725 MW capacity of renewable energy by 2016. This 3,725 MW is broadly in accordance with the capacity allocated to renewable energy generation in IRP2010.	Department of Energy (DoE)	2011
Integrated Energy Plan (IEP) for the Republic of South Africa	This project together with the WEF would assist in facilitating in the provision of low cost electricity for social and economic developments, ensuring security of supply, and minimising the associated environmental impacts.	DME	2003
Integrated Resource	The IRP is a National Electricity Plan which	DME	2003

<sup>11</sup><http://www.eskom.co.za/c/73/ipp-processes/> (accessed 29/10/11)

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Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Plan (IRP)	determines the long-term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing, and cost. As such the proposed projects would form part of South Africa's <i>energy mix set out in the balanced revised scenario within the target for total system capacity.</i> "		
NEMA Environmental Impact Assessment Regulations Guidelines and Information Document Series	The NEMA Environmental Impact Assessment Regulations Guidelines and Information Document Series were consulted to ensure that the BA process complies with the legislated process.	DEA&DP	2010 & 2011
National Environmental Guidelines: <ul style="list-style-type: none"> <li>• Integrated Environmental Management (IEM), Information Series (DEAT, 2002, 2005 &amp; 2007).</li> </ul>	The National Environmental Guidelines were consulted to ensure that the BA process complies with the legislated process.	DEAT	2002 – 2007

**12 WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT**

**a) Solid waste management**

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

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

√	NO
<b>YES</b>	
20m <sup>3</sup>	

Low quantities of solid waste would be created during the construction period. Excavated soil will be used mostly as backfill and as such minimal waste would be produced. Any excess would be disposed of, by the appointed contractor, at a licensed facility at least once a week. There are no components that would require continuous recycling and there are no processes that would generate a significant amount of waste.

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



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Construction solid waste will be dealt with in the Construction Environmental Management Programme (CEMP<sub>r</sub>) which will incorporate waste minimisation strategies including reduction, recycling, and re-use principles where viable. As mentioned above, there are no components that would require continuous recycling and there are no processes that would generate a significant amount of waste.

It is envisaged that the construction waste will be transported to and disposed of at a local licensed landfill by the EPC contractor, as stated in the EPC contract. The contractor shall ensure that waste generated at working areas are collected and disposed at a licensed facility at least once a week.

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

The Emthanjeni Municipality has three licensed landfill sites with a G:S:B- (General: Small: Negative water balance) classification<sup>12</sup>. It is envisaged that construction waste will be disposed of at one of the three landfill sites. Confirmation of the availability of landfill space will be obtained from the municipality by the client prior to commencing with construction. No confirmation is available at present. It is noted that the EPC contractor will be responsible for waste management during the construction phase.

Will the activity produce solid waste during its operational phase?

YES	✓ NO
No waste will be generated.	

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?

YES	NO
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If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

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

YES	NO
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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.

<sup>12</sup> <http://www.sawic.org.za/?menu=88>

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**b) Liquid effluent**

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	NO ✓
If YES, what estimated quantity will be produced per month?	m <sup>3</sup>	
Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	NO
<i>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.</i>		

Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES ✓	NO
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If YES, provide the particulars of the facility:

<b>Facility name:</b>	Temporary chemical toilets will be installed during the construction phase. These toilets will be serviced regularly and waste will be disposed of at the De Aar Wastewater Treatment Works. Confirmation from Emthanjeni Municipality will be obtained prior to the commencement of the construction phase.		
<b>Contact person:</b>	Mr. Willie Lubbe		
<b>Postal address:</b>	Posbus 42 De Aar		
<b>Postal code:</b>	7000		
<b>Telephone:</b>	053 632 9126	<b>Cell:</b>	
<b>E-mail:</b>		<b>Fax:</b>	053 631 1683

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

Minimal water would be required for only the construction phase. The re-use and recycling thereof would not be financially viable based on the small quantities of water required.
--

**c) Emissions into the atmosphere**

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?	YES	NO ✓
If YES, is it controlled by any legislation of any sphere of government?	YES	NO
<i>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.</i>		

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

No emissions would be generated during the operational phase. The proposed transmission lines, which provide the link between a WEF site and the national grid, would in fact facilitate in reducing South Africa's carbon emissions in the long term by contributing positively to the Government's renewable energy target through creation of the connection to route renewable energy to the national grid.
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**d) Waste permit**

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	YES	NO ✓
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If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

### e) Generation of noise

Will the activity generate noise?

YES ✓	NO
YES	NO ✓

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

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

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

Noise generation by construction vehicles, operation of machinery and site staff would be limited to the construction phase (approximately 6 months). The construction period is highly dependent on Eskom, in terms of their grid connection activities and substation completion as well as lead times of the key components (transformers and inverters). Thus the construction period can only be estimated at this stage. It is however considered to be a short-term impact. Mitigation measures will be discussed in the CEMPr and in **Section D** below to limit the noise generated during the construction phase.

### 13 WATER USE

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

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

± 320 m <sup>3</sup> litres
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Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?

YES	✓ <b>NO</b>
-----	----------------

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

### 14 ENERGY EFFICIENCY

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

Not applicable due to the nature of the project, which is facilitating the evacuation of electricity generated at a renewable energy site.

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

Not applicable due to the nature of the project.

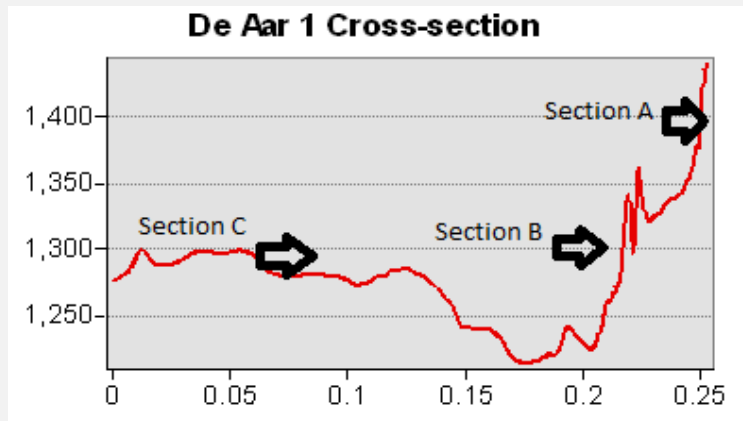
**SECTION B: SITE/AREA/PROPERTY DESCRIPTION**

As mentioned in **SECTION A: ACTIVITY INFORMATION** of this report the two proposed transmission lines run parallel to each other to the Maanhaarberg substation as Phase 1 and are thus assessed together. Alternative A and Alternative B reflect two routing options for Phase 2 where a single transmission line will connect the Maanhaarberg substation to the Damfontein substation. The site description provided below is relevant to both alternative A and alternative B of Phase 2, unless specified. The only difference between the alternatives of phase 2 is a realignment around sensitive areas located within section B. The environments through which both alternative lines traverse are therefore the same.

**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.

The wind energy facilities are located on the high-lying plateau to the south west of De Aar. The topography of the site ranges from the steep plateau escarpment, to the lower plains which are relatively flat with some gently undulation, terminating at the Eskom/PV3 substation. (Refer to **Appendix A** for map indicating Sections A, B & C). Due to the varied environment through which the transmission line passes, the servitude has been divided into three sections, referred to as A, B, and C. A description of each section is provided below.



**Figure 9 :Topographical profile of the propose servitude for the transmission lines**

Section A: This section comprises of a Plateau which generally constitutes a high plain consisting of relatively flat terrain with a number of drainage lines scattered over it (Figure 11).



**Figure 10: Western Plateau near De Aar**

Section B: This section consists of side slope of the hill/mountain having a steep inclination from the plateau to the plain, with much of it comprising of rocky ridges and cliffs (**Figure 11**).



**Figure 11: Side slope of the Western Plateau near De Aar (Arnowalt, 2012)**

Section C: This section consists of a Plain which has a relatively flat or gently rolling topography (**Figure 12**).



**Figure 12: Plain of the Western Plateau near De Aar (Sivest 2012)**

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

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

The information provided below is relevant to both alternative A and alternative B.

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

√ <b>YES</b>	<b>NO</b>
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If YES, please complete the form entitled “Details of specialist and declaration of interest” for each specialist thus appointed and attach it in **Appendix I**. All specialist reports must be contained in **Appendix D**.

<b>Property description/physical address:</b>	<b>Province</b>	Refer to <b>Appendix J</b> .
	<b>District Municipality</b>	
	<b>Local Municipality</b>	
	<b>Ward Number(s)</b>	
	<b>Farm name and number</b>	
	<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.		

## BASIC ASSESSMENT REPORT

<b>Current land-use zoning as per local municipality IDP/records:</b>	Current land use zoning is Agriculture I.
	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? <span style="float: right;"><b>YES</b>√ <b>NO</b></span>	
A Subdivision of Agricultural Land Act (SALA) application in terms of the Act No. 70 of 1970: Consent to register a servitude over agricultural land, will be submitted to the Department of Agriculture, Forestry and Fisheries.	

### 1 GRADIENT OF THE SITE

Indicate the general gradient of the site.

The gradient of the servitude for the two proposed 132kV power lines (Phase 1 and Phase 2 (alternative A and B)) changes from the plateau section (referred to as **Section A**), which is relatively flat, descending steeply down the ridge line (this section is referred to as **Section B**) down to the relatively flat plains (referred to as **Section C**). Refer to **Appendix A: Figure 10, Figure 11 and Figure 12** which indicate the relevant sections.

#### Alternative A:

<b>Flat</b> (Section C)	<b>1:50 – 1:20</b> (Section A)	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	<b>Steeper than 1:5</b> (Section B)
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#### Alternative B :

<b>Flat</b> (Section C)	<b>1:50 – 1:20</b> (Section A)	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	<b>Steeper than 1:5</b> (Section B)
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#### Alternative S3 (if any):

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

### 2 LOCATION IN LANDSCAPE

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

2.1 Ridgeline ( <b>Section B</b> )	√	2.4 Closed valley	<input type="checkbox"/>	2.7 Undulating plain / low hills	<input type="checkbox"/>
2.2 Plateau ( <b>Section A</b> )	√	2.5 Open valley	<input type="checkbox"/>	2.8 Dune	<input type="checkbox"/>
2.3 Side slope of hill/mountain ( <b>Section B</b> )	√	2.6 Plain ( <b>Section C</b> )	√	2.9 Seafront	<input type="checkbox"/>

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

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

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

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

### 4 GROUNDCOVER

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

Natural veld - good condition <sup>E</sup> ✓	Natural veld with scattered aliens <sup>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.

There are three major vegetation types that occur in the study area, namely Northern Upper Karoo, Eastern Upper Karoo and Upper Karoo Hardeveld. All three vegetation types are classified as Least Threatened and also have a wide distribution and extent. The natural vegetation in the study area is therefore not considered, from this perspective, to have high conservation status. Critical Biodiversity Areas have been identified for all municipal areas of the Northern Cape Province and are published on the SANBI website (bgis.sanbi.org). These maps identify no areas of concern in the current study area. This is consistent with patterns identified from other sources within the current scoping document (Hoare, 2012).



## 5 SURFACE WATER

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

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

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

The main aquatic features within the study area are associated with the Elandsfontein tributary of the Brak River, a seasonal tributary within the Orange River System that joins the Orange River east of Prieska. The larger tributaries of the Brak River have well defined channels and some associated vegetation.

Most of the smaller tributaries within the study area are ephemeral and are discernible only as shallow depressions with little clear associated vegetation. Small to moderate sized, shallow instream dams have been constructed within many of the Elandsfontein River drainage channels (Belcher 2012).

## 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> <sup>√</sup>	Dam or reservoir <sup>√</sup>	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> <sup>√</sup>
Retail commercial & warehousing	Old age home	<b>River, stream or wetland</b> <sup>√</sup>
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> <sup>√</sup>
Heavy industrial <sup>AN</sup>	Railway line <sup>N</sup>	Museum
Power station	Major road (4 lanes or more) <sup>N</sup>	Historical building
Office/consulting room	Airport <sup>N</sup>	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam <sup>A</sup>	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

## BASIC ASSESSMENT REPORT

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

N/A

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

N/A

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

N/A

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

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

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

**Buffer area of the SKA (Astronomy Geographic Advantage Act, No. 21 of 2007):**

On 19 February 2010, the Minister of Science and Technology (the Minister) declared the whole of the territory of the Northern Cape province, excluding Sol Plaatje Municipality, as an astronomy advantage area for radio astronomy purposes in terms of Section 5 of the Square Kilometre Array (SKA) Act and on 20 August 2010 declared the Karoo Core Astronomy Advantage Area for the purposes of radio astronomy.

The area consists of three pieces of farming land of 13,407 hectares in the Kareeberg and Karoo Hoogland Municipalities purchased by the National Research Foundation. The Karoo Core Astronomy Advantage Area will contain the MeerKAT radio telescope and the core planned SKA radio telescope that will be used for the purposes of radio astronomy and related scientific endeavours. The proposed wind energy facilities and associated transmission lines fall outside of the Karoo Core Astronomy Advantage Area.

The Minister may still declare that activities prescribed in Section 23(1) of the Act may be prohibited within the area, such as the construction, expansion or operation of any fixed radio frequency interference sources and the operation, construction or expansion of facilities for the generation, transmission or distribution of electricity. It should be noted that wind energy facilities and associated transmission lines are known to cause radio frequency interference. However, it is unlikely that the proposed projects would affect the SKA project due to the distant location of SKA (approximately

270km). While the Minister has not yet prohibited these activities it is important that the relevant astronomical bodies are notified of the proposed projects and provided with the opportunity to comment on the proposed projects.

## 7 CULTURAL/HISTORICAL FEATURES

The information provided below is relevant to both alternative A and alternative B, unless specified.

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:	YES	NO✓
<div style="border: 1px solid black; height: 20px; width: 100%;"></div>	Uncertain	

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:

An integrated Heritage assessment was undertaken by PGS Heritage & Grave Relocation Consultants. Their findings have been summarised below and the detailed Heritage report is attached as **Appendix D**.

*Archaeological Finds*

Utilising the archival study completed for the HIA as a guide, the field work identified a total of two archaeological find spots on the alignment. None of these spot finds were deemed to be of significance and no mitigation is required.

*Walkdown of the proposed route*

- Alternative A: Any deviation or changes to the initial layout will require an archaeological walkdown of the new alignment to identify any possible archaeological and heritage structures and sites before construction commence.
- Alternative B: An archaeological walkdown of the alignment before commencing with construction is required to identify any possible archaeological and heritage structures and sites.

*Heritage Structures*

The field work has identified two associated structures associated with early farming activities which are most probably older than 60 years along the route proposed for Alternative A. These structures are protected under Section 34 of the national Heritage Resources Act and will require a permit from the Provincial Heritage Authority in the Northern Cape, Ngwao-Boswa Jwa Kapa Bokone, for any alterations to the structures.

It is recommended that (applicable to alternative A):

- The placement of the pylons must be done in such a way as to stay away from the dam walls;
- The site must be demarcated, with a buffer of at least 10 meters, during construction.

*Palaeontology*

There is a high and moderate possibility that fossils could be encountered during excavation of the Abramskraal (high palaeontology sensitivity) and Tierberg (moderate palaeontology sensitivity) Formations respectively. These fossil finds would be of international significance. The damage and/or loss of these fossils due to inadequate mitigation would be a highly significant negative paleontological impact.

It is recommended that:

- A Palaeontologist be appointed as part of the Environmental Construction Team for preferably all identified paleontological sensitive areas, but definitely for the identified highly sensitive areas.
- A paleontological rescue and/or destruction permit is obtained by the Palaeontologist.
- The Palaeontologist accompany the surveyor and foundation teams during the pylon construction phase to move pylons where possible from potential fossil bearing areas or rescue any fossils from the construction footprint.
- Compile a Phase 2 report for the responsible Heritage Authority after paleontological construction inputs.

*Cultural Landscape*

An evaluation of the 500m corridor for the proposed 132kV line has shown a negative impact on the cultural landscape around the Zwartkoppies farmstead on the farm Zwartekopjes 131. Although the farmstead is well shielded by trees and the visual impact was assessed as moderate (Hanses, 2012), the heritage specialist has recommended that the alignment be re-evaluated and be moved further away from the farmstead. This recommendation can be accommodated within the assessment corridor and therefore a realignment is not required.

It is recommended that:

- The final layout of towers is negotiated with landowners.

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

YES	NO ✓
YES	NO ✓

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

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

**8 SOCIO-ECONOMIC CHARACTER**

The information provided below is relevant to both phase 1 and phase 2 (alternative A and alternative B), unless specified.

**a) Local Municipality**

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

## BASIC ASSESSMENT REPORT

### Level of unemployment:

De Aar is located within the Emthanjeni Local Municipality (LM) of the Pixley ka Seme District of the Northern Cape. The Emthanjeni LM had a total population of 38,612 in 2010 and an average annual population growth rate of -0.7 % (1996-2008) (Urban-Econ, 2010 in DJ Environmental Consultants, 2010). Although the unemployment rate is only 26 %, the economically inactive population amounts to 46.9 %.

### Economic profile of local municipality:

According to a Socio-economic Impact Assessment (Urban-Econ, 2010 in DJEC, 2010), the local area has a diverse economy, while the main sectors contributing to the Gross Geographic Product (GGP) in 2008 included the financial and business services sector(21.6 %), the general government sector (21.1 %) and the trade sector (15.5 %). The general government sector employs more than 24 % of the share of total labour, while the agricultural sector employs 21.5 % of the labour and a total of 19 % of the labour is employed in the trade sector.

De Aar has the largest abattoir in the southern hemisphere and supplies all the major centres throughout the country with the famous "Karoo" lamb and mutton. Sheep farms around De Aar are also major suppliers of wool (Emthanjeni Local Municipality, 2009).

### Level of education:

The skills levels in the municipality is generally low (32 % of labour force are unskilled workers) as is annual household income (79.8 % of households earn low-income annual salaries).

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

What is the expected capital value of the activity on completion?	R 25 000 000
What is the expected yearly income that will be generated by or as a result of the activity?	Nil
Will the activity contribute to service infrastructure?	YES <input checked="" type="checkbox"/>
Is the activity a public amenity?	YES <input checked="" type="checkbox"/>
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	20 - 30
What is the expected value of the employment opportunities during the development and construction phase?	R 7 000 000
What percentage of this will accrue to previously disadvantaged individuals?	30%
How many permanent new employment opportunities will be created during the operational phase of the activity?	Zero. Eskom will maintain from current staff complement
What is the expected current value of the employment opportunities during the first 10 years?	N/A
What percentage of this will accrue to previously disadvantaged individuals?	N/A

## 9 BIODIVERSITY

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

The information provided below is relevant to both phase 1 and phase 2 (alternative A and alternative B), unless specified.

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

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	No CBA's or ESA's in the immediate vicinity of the project area. Refer to <b>Appendix A</b> for SANBI maps and <b>Appendix D</b> for the Ecology Report.

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

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural√	99%	The site is currently in a good natural state and is currently used for grazing of domestic livestock, cattle, sheep and/or goats were found in various parts of the study area.
Near Natural (includes areas with low to moderate level of alien invasive plants)	%	
Degraded (includes areas heavily invaded by alien plants)	%	
Transformed (includes cultivation,	1%	Although the majority of the area is of a natural condition the land constitutes formal grazing and as such consists of

BASIC ASSESSMENT REPORT

dams, urban, plantation, roads, etc) √		farm roads, fences, and associated agricultural infrastructure as well as extensive existing transmission network.
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c) **Complete the table to indicate:**

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

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

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)

The information provided below is relevant to both alternative A and alternative B, unless specified.

#### **Climate**

The study area has a semi-arid to arid continental climate with a summer rainfall regime i.e. most of the rainfall is confined to summer and early autumn. Mean Annual Precipitation (MAP) is approximately 300mm per year. A MAP of 300mm is deemed low, as 500mm is considered the minimum amount of rain required for sustainable dry land farming. Thus, without some form of supplementary irrigation natural rainfall for the study area is insufficient to produce sustainable harvests. This is reflected in the lack of dry land crop production within the study area. De Aar typically experiences hot days and cold nights with the highest maximum temperature of approximately 40°C and the lowest minimum temperature of approximately - 8°C. Evaporation is estimated to be in the region of 2000 mm per annum and thus the area is subjected to very severe moisture availability restrictions.

In summary the climate for the study area is severely restrictive to arable agriculture which is primarily due to low, unpredictable and seasonal rainfall along with severe moisture availability restrictions. (Sivest, 2012)

#### **Geology**

The study area is underlain by a variety of geological materials including dolerite, mudstone, shale and tillite (**Figure 13**). The newly proposed Eskom/PV3 substation and the most easterly portion of the study area are underlain by shale. Shale, a clastic sedimentary rock, is formed by the settling and accumulation of clay rich minerals and other sediments. Due to the settling process this parent material usually takes the form of parallel rock layers which lithifies over time. Tillite, consisting of consolidated masses of un-weathered blocks and unsorted glacial till, dominates the central portions of the study area. Both the Maanhaarberg and Damfontein Substations are likely to be developed on Tillite geological materials.

Mudstone is predominantly found on the flat plains below the proposed WEF. Like shale, mudstone is a clastic sedimentary rock which is formed from the lithification of deposited mud and clay. Mudstone consists of a very fine grain size of less than 0.005 mm, but unlike shale it is mostly devoid of bedding.

Dolerite, a basic igneous rock dominates the westerns areas of the power line corridor, which coincides with the top of the Western Plateau (Sivest, 2012).



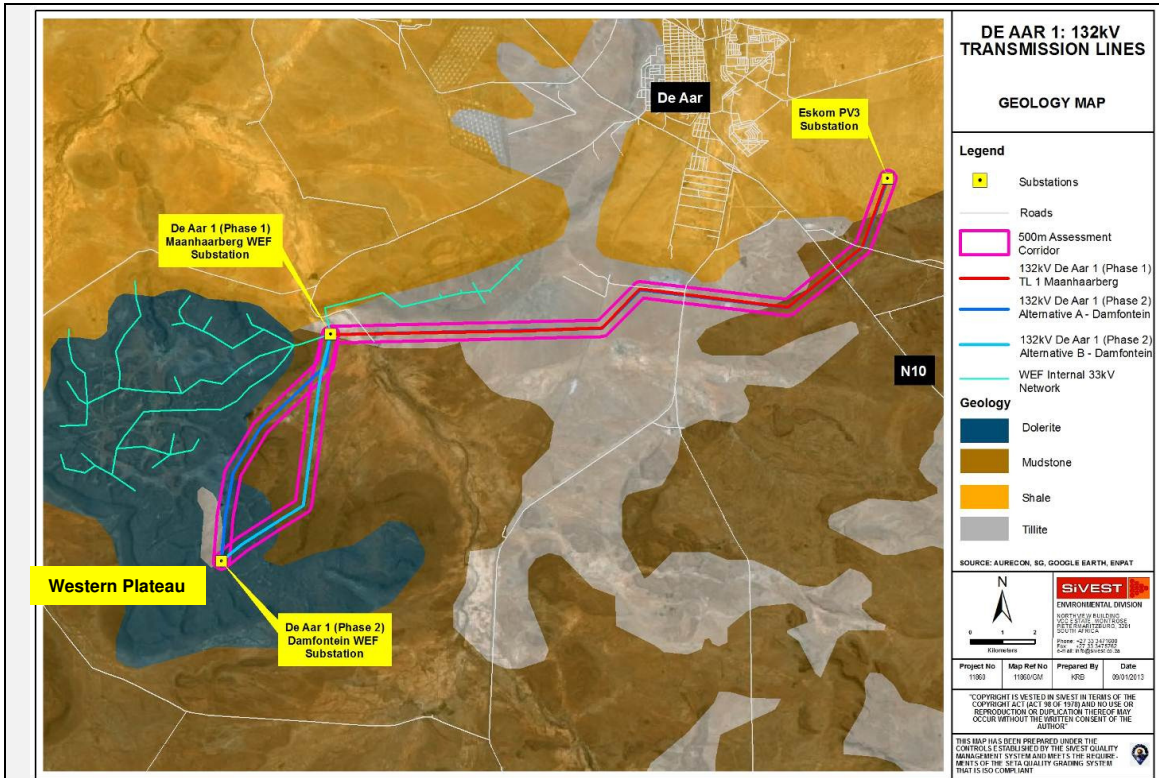


Figure 13: Geological Map (Sivest, 2012)

**Slope**

Slope or terrain is used to describe the lie of the land. Terrain influences climate and soil characteristics, and thus plays a dominant role in determining whether land is suitable for agriculture. In most cases sloping land is more difficult to cultivate, and usually less productive, than flatland, and is subject to higher rates of water runoff and soil erosion (FAO, 2007).

The steep cliffs, which divide the flat lower plains with the more undulating Western Plateau, are the most prominent topographical feature of the assessment corridor and are not suitable for agricultural production. This area can be described as a Mesa landform, which is an elevated area of land with a flat top and steep sides. Away from these cliffs the study area is generally flat with an average gradient of less than 10% making these areas ideal for intensive agriculture with high potential for large scale mechanisation (Sivest, 2012).

**Land Use**

The study area consists of a mix of natural veld and vacant land which is used as general grazing land for livestock.

According to the ENPAT Database and 2010 land cover data the study area consists of a mix of natural veld and unimproved shrubland, which is used as grazing land for sheep, goats and cattle. Vast unimproved grazing land is interspersed by non-perennial stream beds and seasonal pans dot the landscape. According to the spatial databases there are no cultivated fields or irrigated lands which could be detrimentally impacted upon by the proposed development corridor (Sivest, 2012).

### **Vegetation**

Local factors that may lead to parts of the study area having elevated ecological sensitivity are the presence of watercourses / drainage areas and the presence of a single individual of a protected tree species.

There is one protected tree species that occurs in the area, *Boscia albitrunca* (Shepherd's Tree). A single individual was found on site.

There are no threatened, near threatened, declining or rare plant species that occur in the area. There are two protected plant species that have a geographical distribution that includes the area, *Hoodia gordonii* and *Harpagophytum procumbens*, but neither species was found on site and, based on a field evaluation of the site, neither species is likely to occur there.

The study area is in a natural condition and there is little degradation of habitat (Hoare, 2012).

### **Fauna**

There are two animal species of low conservation concern that may occur in habitats within the broad study area, Geoffroy's Horseshoe Bat and the Giant Bullfrog, but neither species is likely to be found on site. The bat species is listed as Near Threatened in South Africa and Least Concern globally. It is therefore not of major conservation concern. The site contains no habitat for roosting for this species and Geoffroy's Horseshoe Bat is therefore only likely to occur there if it happens to be foraging in the area. The protected Giant Bullfrog could also occur in the area, but, based on a field evaluation of the site and surrounding areas, is not likely to be found on site (Hoare, 2012).

### **Avifauna**

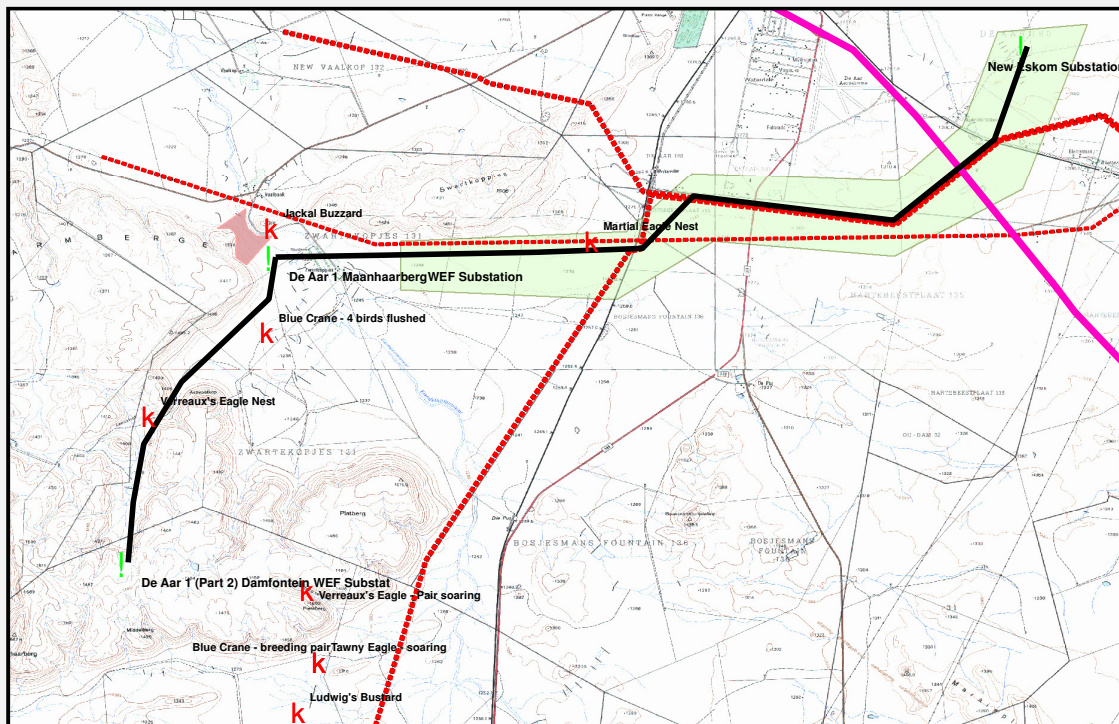
The study falls within the Nama-Karoo biome and forms part of the Platberg-Karoo Conservancy Important Bird Area (IBA) (which is an area 1.2 million hectares in extent). The natural vegetation type varies from Northern Karoo Hardeveld in the mountainous area towards the south-west (Maanhaarberg and surrounding areas) and the northern border formed by the Swartkoppies, Eastern Upper Karoo in the basin formed by the mountains (Kasarmberg, Aasvoëlkop and Platberg – from the west towards the south), and Northern Upper Karoo in the flatter plains of the site (Mucina and Rutherford, 2006). The different vegetation types provide habitat and foraging grounds for different bird species.

The landscape is flat with dolerite koppies and broken mountain ranges scattered over the flat plains. The Elandsfontein River runs from the south-eastern side in a north-westerly direction on the western perimeter of the study site. It is a non-perennial river with some weirs and after good rains a few deeper pools may hold water for a longer period. Wetland birds were found along the drainage areas and around water impoundments in the veld – even the artificial habitats of cement reservoirs were favoured by waterfowl. Raptors were found along the cliffs and koppies as well as soaring out over the plains. Nesting sites of various raptors and corvids were found in the kloofs (on cliffs) and on artificial sites such as windmills and utility pylons. The pylons are utilised by Lesser Kestrels as perches and up

to 70 of these birds had been counted on one pylon while they were resting between foraging flights.

Currently three transmission lines (2 x 440kV and 220kV) are running through the study site from the Hydra Substation. Regional gravel roads link farm tracks to the main roads and the N10 national road runs through the eastern part of the study site. A railway track runs from north to south through the centre of the study site. The proposed new lines will run parallel with the existing lines for long distances where the natural habitat is already altered. Considering that the natural habitat has already been altered, the selection of this option is preferable as it prevents larger tracts of land from disturbance and it lessens the impact of the proposed new lines as corridors for power lines are already established.

During the site visit a list of 108 bird species was compiled within the study site and in the immediate surrounding area. A map showing the location of birds and nest sites identified during the site visit is provided in **Figure 14**.

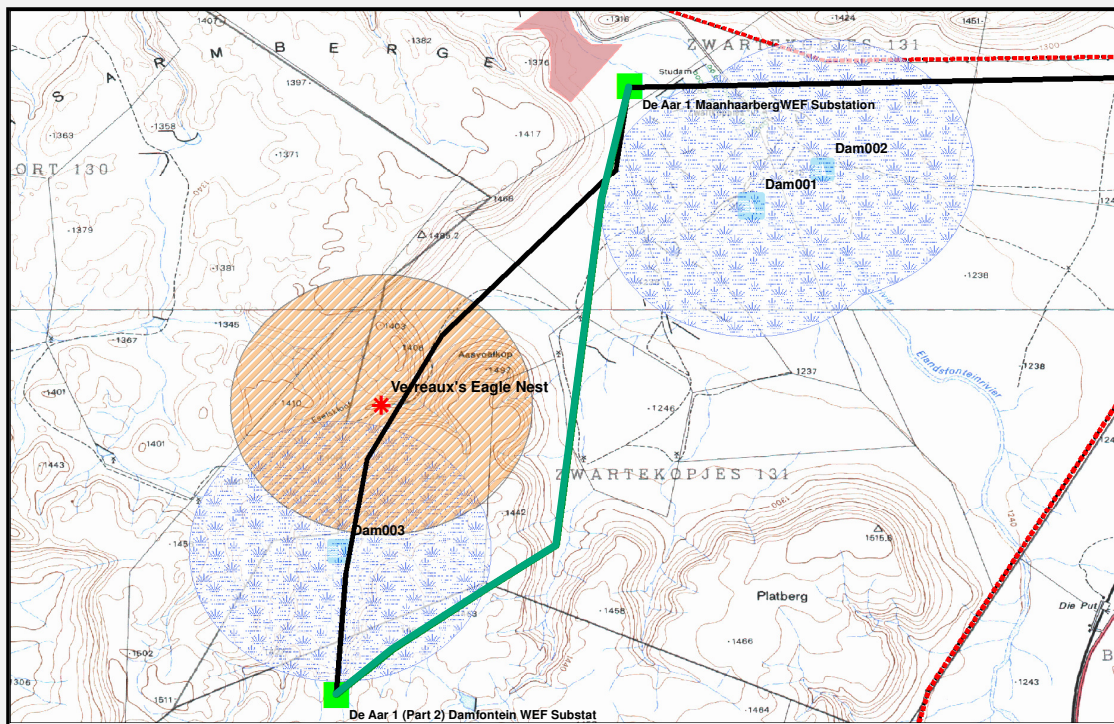


**Figure 14: The study site with the proposed 132kV transmission lines (black). Sightings of birds and nest sites of species of conservation concern (red asterisks), area surrounding proposed development utilised by Lesser Kestrel (light green), and the flight corridor (plum) are indicated (Arnwalt Enviro Watch, 2012).**

Only one significant flight corridor could be identified – indicated in **Figure 14**. This area had frequently been used by waterfowl (Egyptian Goose and South African Shelduck) flying in both a south-easterly and north-westerly direction. This corridor is formed by the natural features of dolerite koppies on both sides of the Elandsfontein River which form a gully through which birds commute. A Jackal Buzzard had been observed perching on boulders and soaring along the slopes on the northern side of this

gully. Speckled Pigeons, Cape Turtle Dove, Pale-winged Starlings and Pied Starlings were observed in the gully as well.

The following raptors were identified during the site visit: Verreaux's Eagle (a nesting site was found in Eselskloof but no birds were observed in the immediate vicinity of the site), Tawny Eagle, Martial Eagle, Lesser Kestrel, Jackal Buzzard, Pale Chanting Goshawk, Rock Kestrel, and Booted Eagle. The following raptors were not identified during the site visit, but have been recorded at the site (SABAP1 and SABAP2): Black-shouldered Kite, Black Harrier, Gabar Goshawk, Steppe Buzzard, Greater Kestrel, and Secretarybird. Sensitive areas, specifically a Verreaux's Eagle nesting site and farm dams, were identified within the study area. To reduce the disturbance and collision risk a buffer zone of 1.5km was recommended around sensitive areas. Alternative B (Figure 15) is routed away from sensitive areas and therefore meets the required buffer zones.



**Figure 15: Alternative A (black line) and Alternative B (green line) of the 132 kV transmission lines between Maanhaarberg and Damfontein substations for De Aar 1. The buffer zones around sensitive areas are highlighted (Arnwall Enviro Watch, 2012)**

The potential impacts of the proposed transmission lines on the birdlife of the study area include disturbance and displacement due to noise and movement during the construction phase and loss of habitat / habitat destruction through site clearance (Arnwall Enviro Watch, 2012). Refer to **Appendix D** for the Avifauna report.

**Freshwater**

The main aquatic features within the study area are associated with the Elandsfontein tributary of the

Brak River, a seasonal tributary within the Orange River System that joins the Orange River east of Prieska. The larger tributaries of the Brak River have well defined channels and some associated vegetation.

Most of the smaller tributaries within the study area are ephemeral and are discernible only as shallow depressions with little clear associated vegetation. Small to moderate sized, shallow instream dams have been constructed within many of the Elandsfontein River drainage channels.

### Riparian vegetation

The study area lies near the eastern edge of the Nama Karoo biome, and is mapped according to the national vegetation types (2006) as being predominantly of the vegetation type Northern Upper Karoo (Pink areas in Figure 6) which is considered to be least threatened. The vegetation cover is generally dominated by sparse dwarf karroid scrub and tufted grass with bare patches of sand in between. The higher lying areas of the Swartkoppies are covered by Upper Karoo Hardeveld (Darker brown areas in Figure 6) which is also considered to be least threatened. At the foot of the Swartkoppies, Eastern Upper Karoo vegetation occurs (Least Threatened). Portions of the low lying areas are in a disturbed condition, mostly as a result of livestock grazing. There is however little presence of invasive alien plants.

Along the Elandsfontein River tributaries on the lower lying portions of the study area there is very little to no discernible riparian vegetation. In the Eselskloof Tributary to the west of Aasvoëlkop, the vegetation along the river is still in a largely natural condition and contains reeds and sedges typical of a river system that is seasonally to perennially flowing.

### Freshwater Biodiversity and Conservation

The Freshwater Ecosystem Protected Areas (FEPAs) are strategic spatial priorities for conserving freshwater ecosystems and associated biodiversity. FEPAs were determined through a process of systematic biodiversity planning and were identified using a range of criteria for serving ecosystems and associated biodiversity of rivers, wetlands and estuaries.

Both tributaries of the Brak River within the study area have been identified as upstream catchments to the downstream reach of the Brak River, which is a FEPA river. In upstream catchments it is important that the rivers be managed to ensure no degradation occurs in the downstream FEPA river. The proposed power line between the Damfontein and New Eskom substations near De Aar will potentially impact on the following freshwater features:

- Elandsfontein River, a tributary of the Brak River which is considered to be in a largely modified condition and of a low ecological importance and sensitivity;
- Eselskloof River, a tributary of the Elandsfontein River near Aasvoëlkop which is considered to be in a largely natural condition and of a moderate to low ecological importance and sensitivity; and
- Minor ephemeral tributaries of the Brak River System which are generally considered to be in a largely natural condition and of a low ecological importance and sensitivity.

## BASIC ASSESSMENT REPORT

Overall, the expected impacts of the proposed activities without mitigation are likely to be of a low significance and mostly limited to the proposed monopole placings and access roads. The expected impacts on the identified freshwater features are likely to mostly occur while construction activities are taking place. The primary negative impacts are the result of direct and indirect factors. Direct impacts include loss of natural vegetation adjacent to and within the freshwater features from the construction activities. Indirect factors include flow and water quality modification, erosion and invasive plant growth. All of these impact can however be mitigated (Belcher 2012).

### SECTION C: PUBLIC PARTICIPATION

#### 10 ADVERTISEMENT AND NOTICE

<b>Publication name</b>	<i>The Echo and Die Volksblad</i>	
<b>Date published</b>	15 January 2013 ( <i>Die Volksblad</i> ); 18 January 2013 ( <i>The Echo</i> )	
<b>Site notice position</b>		
Emthanjeni Local Municipality	Latitude 30°39'1.47"S	Longitude 24° 0'37.39"E
De Aar Public Library	Latitude 30°39'12.64"S	Longitude 24° 0'42.43"E
<b>Date placed</b>	15 January 2013 ( <i>Die Volksblad</i> ); 18 January 2013 ( <i>The Echo</i> )	

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

#### 11 DETERMINATION OF APPROPRIATE MEASURES

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

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

<b>Title, Name and Surname</b>	<b>Affiliation/ key stakeholder status</b>	<b>Contact details (tel number or e-mail address)</b>
Suzanne Erasmus	WESSA NC	<a href="mailto:Wessanc.conservation@yahoo.com">Wessanc.conservation@yahoo.com</a> 082 849 7655
NPAES	SANBI	<a href="mailto:info@sanbi.org.za">info@sanbi.org.za</a> 012 843 5000
Dr Mariagrazia Galimberti	SAHRA	021 462 4509
Luke Strugnell	EWT-Wildlife Energy Interaction Group (WEIG)	<a href="http://www.ewt.org.za">www.ewt.org.za</a> 079 878 3741
Bradley Gibbons	African Crane Conservation Programme, Endangered Wildlife Trust	<a href="mailto:bradleyg@ewt.org.za">bradleyg@ewt.org.za</a> 082 566 5803/ 049 842 1116
Andrew Timothy	Heritage Northern Cape	<a href="mailto:Ratha.timothy@gmail.co.za">Ratha.timothy@gmail.co.za</a> 079 036 9294
Ms L. Jordan	Pixley ka Seme District Municipality	<a href="mailto:pixley@telkomsa.net">pixley@telkomsa.net</a> 053 631 0891
Mev C. Kloppers	Emthanjeni Local Municipality	<a href="mailto:cklopper@emthanjeni.co.za">cklopper@emthanjeni.co.za</a> <a href="mailto:visser@emthanjeni.co.za">visser@emthanjeni.co.za</a> 053 632 9100
John Geeringh	Eskom	<a href="mailto:John.geeringh@eskom.co.za">John.geeringh@eskom.co.za</a> 086 661 4064
Roelof Erasmus Venter	Bloemhof Plaas, RE 138/ Damfontein	<a href="mailto:reventer@adsactive.com">reventer@adsactive.com</a> 053 631 1201/ 082 415 2321
Andre Theron	De Aar Agri	<a href="mailto:andret@mjvn.co.za">andret@mjvn.co.za</a>

## BASIC ASSESSMENT REPORT

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Johannes Wilhelm van Zyl	Zwartekopjes RE/131 and 2/131	053 631 0471
Gabriel van Heerden	Bosjesmans Fountain Rem/1/136	
Jannie Lambrechts	De Aar Stone Crushers BK	082 259 6096

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.

### 12 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
No comments have been received to date. All comments on the Draft BAR will be included and responded to in the Final BAR.	

### 13 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.

### 14 AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Department of Environmental Affairs (DEA)	Vincent Chauke	012 395 3859	012 320 7539	vchauke@environment.gov.za	Private Bag x447 Pretoria 0001
National Department of Agriculture, Forestry and Fisheries: Directorate: Land Use and Soil Management	Ms Thoko Buthelezi	021 319 7508	012 329 5938	thokob@daff.gov.za; hettieb@daff.gov.za	Private Bag X120 Pretoria 0001
Emthanjeni Local Municipality	Mev. C. Kloppers	053 632 9100	053 631 0105	cklopper@emthanjeni.co.za jrm@emthanjeni.co.za	45 Voortrekker Street De Aar 7000
Pixley ka Seme District Municipality	Ms L. Jordan	053 631 0891	053 631 2529	pixley@telkomsa.net	Private Bag 1012, De Aar 7000

## BASIC ASSESSMENT REPORT

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Department of Environmental Affairs and Nature Conservation (DEANC)	Thato Molese	053 831 3530	053 807 7468/ 411 6609	tmolese@nctg.gov.za	9 Longstreet, Sasko Building Kimberley 8300
Eskom Holdings Limited;	Mr John Geeringh	011 516 7233	086 661 4064	<a href="mailto:John.geeringh@eskom.co.za">John.geeringh@eskom.co.za</a>	P. O. Box 1091 Johannesburg 2000
South African Heritage Resources Agency (SAHRA)	The provincial Manager	053 831 2537	053 833 1435	ksofeleng@nc.sahra.org.za	P. O. Box 1930 Kimberley 8300
Department of Heritage Northern Cape	Mr Andrew Timothy	0790369294		ratha.timothy@gmail.co.za	P. O. Box 1930 Kimberley 8300
Department of Agriculture (Northern Cape)	Ntombi Yende	0825597289	053 631 0564		P. O. Box 28 De Aar 7000
Department of Water Affairs: Deputy Director Lower Orange WMA.	Shaun Cloete	054 338 5800/ 888 3764	054 334 0205	witc@dwa.gov.za; CloeteS@dwa.gov.za	Private Bag X6101 Upington 8800
Department of Energy (DOE)	The Director: Northern Cape	053 807 1752 / 1721 / 1765	086 562 7065	MediaDesk@energy.gov.za	65- Phakamile Mabija Street, Perm Building, 3rd floor, Kimberley 8301
SKA South Africa Project Office	Project co-ordinator	(0)11 442 2434	(0)11 442 2454	enquiries@ska.ac.za	17 Baker St, Rosebank, Johannesburg, South Africa

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

Refer to **Appendix E** for proof of notification to Authorities and Organs of State

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

Both Eskom and the SKA projects office have been included in the list of Organs of State (Refer to **Appendix E**)

### 15 CONSULTATION WITH OTHER STAKEHOLDERS

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

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

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

Refer to **Appendix E5** for the I&AP database.



## BASIC ASSESSMENT REPORT

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

Based on previous experience with I&AP meetings in the area which have had zero attendance, it was decided that no meetings will be scheduled. However, should I&APs request a meeting one will be scheduled.

## SECTION D: IMPACT ASSESSMENT

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

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

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

The following provides a summary of the assessment of potential impacts contained in Annexure F per phase (construction, operation and decommissioning) of the proposed developments. To assess the “worst case” scenario, the assessment is for a corridor of 26km in length and 500m in width. This will allow for minor alignment deviations within the corridor to assist in avoiding sensitive features identified. The assessment methodology used in the assessment of the potential impacts is included in Annexure F.

#### Construction Phase

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
<b>Alternative A :Construction Phase</b>				
Impacts on Ecology	<b>Direct impacts:</b> <ul style="list-style-type: none"> <li>impacts on populations of individual species of concern (flora and fauna), including protected species</li> <li>loss of sensitive or protected habitats, including indigenous</li> </ul>	low - medium (-)	<ul style="list-style-type: none"> <li>Unnecessary impacts on surrounding natural vegetation must be avoided. The construction impacts must be contained to the footprint of the tower structures and/or the servitude of the power line.</li> <li>Existing access roads must be used, where possible.</li> <li>Service roads in the servitude must be properly maintained to avoid erosion impacts.</li> </ul>	Very low (-)

BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	<p>forest, fynbos and wetland vegetation.</p> <ul style="list-style-type: none"> <li>• Introduction of aliens</li> </ul>		<ul style="list-style-type: none"> <li>• If possible, place infrastructure (tower structures) a minimum of 30 m outside watercourses.</li> <li>• Where possible, use existing roads as service roads. Service roads in the servitude must be properly maintained to avoid erosion impacts.</li> <li>• If not possible to avoid these areas, there is a legal obligation to apply for a Water Use Licence for any watercourses that may be affected, since they are classified in the National Water Act as a water resource.</li> <li>• Ensure that any construction or maintenance work on the access road does not affect the protected tree. Mark the individual or fence it off to minimise potential impacts. If not possible to avoid these areas, there is a legal obligation to apply for a permit for any protected tree that may be affected.</li> <li>• Disturbance of indigenous vegetation outside of the footprint of construction must be kept to a minimum.</li> <li>• Where disturbance is unavoidable, disturbed areas should be rehabilitated as quickly as possible.</li> <li>• Any alien plants within the control zone of the company must be immediately controlled to avoid establishment of a soil seed bank. Control measures must follow established norms and legal limitations in terms of the method to be used and the chemical substances used.</li> <li>• Ensure that any construction or maintenance work on the access road does not affect the protected tree. Mark the individual or fence it off to minimise potential impacts.</li> <li>• If not possible to avoid these areas, there is a legal obligation to apply for a permit for any protected tree that may be</li> </ul>	

BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	<p><b>Indirect impacts:</b></p> <ul style="list-style-type: none"> <li>• Impacts on any processes or factors that maintain ecosystem health and character.</li> </ul> <p><b>Cumulative impacts:</b></p> <ul style="list-style-type: none"> <li>• Loss of species and suitable habitats in the wider area/ bioregion.</li> </ul>		affected.	
Impacts on Avifauna	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>• Disturbance and displacement due to noise and movement during the construction phase and loss of habitat / habitat destruction through site clearance.</li> </ul>	<b>medium-high (-)</b>	<ul style="list-style-type: none"> <li>• Mark out and maintain "no-go" areas to minimise the impacts of disturbance during construction.</li> <li>• Keep the footprint of construction activities (movement) to the absolute minimum and maintain the noise disturbance to a minimum.</li> </ul> <p>Verreau's Eagle nest site:</p> <ul style="list-style-type: none"> <li>• A buffer zone of 1.5 km around the nesting site of Verreaux's Eagles in Eselskloof.</li> </ul> <p>Martial Eagle Nest Site:</p> <ul style="list-style-type: none"> <li>• should the nest site be re-used in future seasons all construction activities in the demarcated buffer zone of 1.5 km should be halted and postponed until the breeding attempt has been successfully completed or failed of its own accord;</li> <li>• the new transmission line should be marked with bird flight diverters along its entire length and that all new power line infrastructure is adequately insulated and of a configuration that is bird friendly.</li> </ul>	<b>medium-high (-)</b>
	<p><b>Indirect impacts:</b></p> <p>No indirect impacts were identified.</p>			

BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	<p><b>Cumulative impacts:</b> Cumulative avifauna impacts are discussed in the operational phase.</p>			
Impacts on Freshwater	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>• loss of natural vegetation adjacent to and within the freshwater features from the construction</li> </ul>	low (-)	<ul style="list-style-type: none"> <li>• The route of the proposed transmission line should be located outside of the Eselkloof River channel and the floodplain of the Elandskloof River as far as possible.</li> <li>• Construction activities should be limited to the identified sites for the proposed monopole placings.</li> <li>• A buffer of 30m adjacent to the identified rivers, streams of drainage features should be maintained.</li> <li>• To reduce the risk of erosion, all service/ access roads should be contoured along any steep slope or erosion protection walls constructed.</li> <li>• Any contaminated runoff from the construction sites should be prevented from entering the rivers/streams.</li> <li>• All materials on the construction sites should be properly stored and contained.</li> <li>• Disposal of waste from the sites should also be properly managed.</li> <li>• Construction workers should be given ablution facilities at the construction sites that are located at least 100m away from the river/stream systems and regularly serviced.</li> <li>• The existing road infrastructure should be utilized as far as possible to minimize the overall disturbance created by the proposed project.</li> <li>• For new access roads to the monopole structures, these should not be routed along or within the drainage/stream beds.</li> </ul>	very low (-)
	<p><b>Indirect impacts:</b> Flow and water quality modification, erosion and invasive plant growth</p>	low (-)		very low (-)
	<p><b>Cumulative impacts:</b> Erosion and sedimentation from the project activities, together with a potential for invasive alien plant growth and the possible modification of surface water runoff and water quality may lead to additional impacts on the freshwater habitats within the study area</p>	low (-)		very low (-)

BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			<ul style="list-style-type: none"> <li>Where access routes need to be constructed over the channels, disturbance of the channel should be limited and all crossings over drainage channels or stream beds should be such that the flow within the drainage channel is not impeded.</li> <li>Any disturbed areas should be rehabilitated to ensure that these areas do not become subject to erosion or invasive alien plant growth, the flow within the drainage channel is not impeded or the likelihood for erosion to take place increased.</li> </ul>	
Impacts on Agricultural Potential	<p><b>Direct impacts:</b> Direct loss of agricultural land</p>	Very low (-)	<ul style="list-style-type: none"> <li>Clearing activities should be kept to a minimum.</li> <li>In the unlikely event that heavy rains are expected, activities should be put on hold to reduce the risk of erosion.</li> <li>If additional earthworks are required, any steep or large embankments that are expected to be exposed during the 'rainy' months should be armoured with fascine like structures. A fascine structure usually consists of a natural wood material and is used for the strengthening of earthen structures or embankments.</li> <li>If earth works are required then storm water control and wind screening should be undertaken to prevent soil erosion.</li> <li>Interact with landowners to discuss where they would ideally like to see the power lines situated on their property.</li> <li>Ensure adequate compensation is paid to land owners where necessary.</li> </ul>	Very low (-)
	<p><b>Indirect impacts:</b> No indirect impacts were identified.</p>			
	<p><b>Cumulative impacts:</b> No cumulative impacts were identified.</p>			
Impacts on	<b>Direct impacts:</b>	medium (-)	<i>Archaeological mitigation measures</i>	Low (-)

BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
Heritage resources	<ul style="list-style-type: none"> <li>• Loss of Archaeological sites</li> <li>• Loss of Palaeontology finds</li> </ul>		<ul style="list-style-type: none"> <li>• The placement of the pylons must be done in such a way as to stay away from the dam wall sites (site DAM 3 and site DAM 4).</li> <li>• The site must be demarcated, with a buffer of at least 10 meters, during construction.</li> </ul> <p><i>Paleontological mitigation measures</i></p> <ul style="list-style-type: none"> <li>• A Palaeontologist be appointed as part of the Environmental Construction Team for preferably all identified paleontological sensitive areas but definitely for the identified high sensitive areas.</li> <li>• A paleontological rescue and/or destruction permit is obtained by the Palaeontologist.</li> <li>• The Palaeontologist accompany the surveyor and foundation teams during the pylon construction phase to move pylons where possible from potential fossil bearing areas or rescue any fossils from construction footprint.</li> <li>• Compile a Phase 2 report for the responsible Heritage Authority after paleontological construction inputs.</li> </ul> <p><i>Handling of chance finds</i></p> <ul style="list-style-type: none"> <li>• A short induction on possible heritage resources that maybe found in the area should be included in the induction program for construction employees.</li> <li>• If a possible heritage site is discovered during construction activity, all operations in the vicinity of the discovery should stop and a qualified specialist contracted to evaluate and recommend appropriate actions. Depending on the type of site this can include initiating a grave relocation process, documentation of structures or archaeological excavations.</li> </ul> <p><i>Mitigation measure applicable only if there are any changes to</i></p>	

BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			<i>the initial layout</i> <ul style="list-style-type: none"> <li>Any deviation or changes to the initial layout will require an archaeological walkdown of the new alignment to identify any possible archaeological and heritage structures and sites before construction commence.</li> </ul>	
	<b>Indirect impacts:</b> No indirect impacts were identified.			
	<b>Cumulative impacts:</b> No cumulative impacts were identified.			
Impacts on Transport	<b>Direct impacts:</b> <ul style="list-style-type: none"> <li>Increased traffic</li> <li>Road safety</li> </ul>	low (-)	<ul style="list-style-type: none"> <li>Implement traffic control measures where necessary;</li> <li>Transport components overnight as far as possible; and</li> <li>Adhere to speed limits.</li> </ul>	low (-)
	<b>Indirect impacts:</b> No indirect impacts were identified.			
	<b>Cumulative impacts:</b>			
Impacts on Dust	<b>Direct impacts:</b> Construction vehicles, which are likely to make use of the existing farm roads to transport equipment and material to the construction site, and associated earthworks	low (-)	<ul style="list-style-type: none"> <li>Implement dust control measures identified in the EMPr, which includes procedures for dealing with dust pollution events, include watering of roads, etc.</li> </ul>	very low (-)
	<b>Indirect impacts:</b> No indirect impacts were identified.			
	<b>Cumulative impacts:</b> No cumulative impacts were identified.			
Impacts on Visual	<b>Direct impacts:</b> <ul style="list-style-type: none"> <li>Impact on sense of place</li> </ul>	low (-)	<ul style="list-style-type: none"> <li>Reduce the construction period through careful logistical planning and productive implementation of resources.</li> </ul>	low (-)



BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			<ul style="list-style-type: none"> <li>• Implement measures as provided in the EMP, which includes procedures for dealing with dust pollution events including watering of roads, etc.</li> <li>• Lay down areas and construction camp should have temporary screen fencing if necessary.</li> <li>• Site offices, if required, should be limited to single storey and sited carefully using temporary screen fencing to screen from the wider landscape.</li> <li>• Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and disposed regularly at licensed waste facilities.</li> </ul>	
	<p><b>Indirect impacts:</b> No indirect impacts were identified.</p>			
	<p><b>Cumulative impacts:</b> The local landscape character would be made more industrial. In the context of the De Aar area, with its long views, exposed sites and roads with little traffic, the cumulative impact is considered to be of moderate significance. Adding further transmission lines to existing routes, in parallel, could be preferable to establishing new routes; it could benefit the local landscape.</p>	<p><b>medium (-)</b></p>	<ul style="list-style-type: none"> <li>• Establish new transmission line routes in parallel with existing routes.</li> </ul>	<p><b>low (-)</b></p>
<b>Alternative B:</b>				
	<p><b>Direct impacts:</b></p>			

BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
Impacts on Ecology	Refer to direct impacts under Alternative A.		Refer to mitigation measures under Alternative A.  Walkdown <ul style="list-style-type: none"> <li>• It is recommended that, prior to construction, a walkthrough survey be undertaken to search for individuals of protected trees.</li> </ul>	
Impacts on Avifauna	Refer to direct impacts under Alternative A	medium-high (-)	<ul style="list-style-type: none"> <li>• Mark out and maintain "no-go" areas to minimise the impacts of disturbance during construction.</li> <li>• Keep the footprint of construction activities (movement) to the absolute minimum and maintain the noise disturbance to a minimum.</li> </ul> Martial Eagle Nest Site: <ul style="list-style-type: none"> <li>• should the nest site be re-used in future seasons all construction activities in the demarcated buffer zone of 1.5 km should be halted and postponed until the breeding attempt has been successfully completed or failed of its own accord;</li> <li>• the new transmission line should be marked with bird flight diverters along its entire length and that all new power line infrastructure is adequately insulated and of a configuration that is bird friendly.</li> </ul>	medium (-)
Impacts on Freshwater	Refer to direct impacts under Alternative A	Low(-)	<ul style="list-style-type: none"> <li>• Construction activities should be limited to the identified sites for the proposed monopole placings.</li> <li>• A buffer of 30m adjacent to the identified rivers, streams of drainage features should be maintained.</li> <li>• To reduce the risk of erosion, all service/ access roads should be contoured along any steep slope or erosion protection walls constructed.</li> </ul>	Very low (-)

BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			<ul style="list-style-type: none"> <li>• Any contaminated runoff from the construction sites should be prevented from entering the rivers/streams.</li> <li>• All materials on the construction sites should be properly stored and contained.</li> <li>• Disposal of waste from the sites should also be properly managed.</li> <li>• Construction workers should be given ablution facilities at the construction sites that are located at least 100m away from the river/stream systems and regularly serviced.</li> <li>• The existing road infrastructure should be utilized as far as possible to minimize the overall disturbance created by the proposed project.</li> <li>• For new access roads to the monopole structures, these should not be routed along or within the drainage/stream beds.</li> <li>• Where access routes need to be constructed over the channels, disturbance of the channel should be limited and all crossings over drainage channels or stream beds should be such that the flow within the drainage channel is not impeded.</li> <li>• Any disturbed areas should be rehabilitated to ensure that these areas do not become subject to erosion or invasive alien plant growth, the flow within the drainage channel is not impeded or the likelihood for erosion to take place increased</li> </ul>	
Impacts on Agricultural Potential	Refer to direct impacts under Alternative A	Very low (-)	Refer to mitigation measures under Alternative A.	Very low (-)
Impacts on Heritage	Refer to direct impacts under Alternative A	Low-medium (-)	<i>Paleontological mitigation measures</i>	Low (-)

BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
resources			<ul style="list-style-type: none"> <li>• A Palaeontologist must be appointed as part of the Environmental Construction Team for preferably all identified paleontological sensitive areas but definitely for the identified high sensitivity areas.</li> <li>• A paleontological rescue and/or destruction permit is obtained by the Palaeontologist.</li> <li>• The Palaeontologist must accompany the surveyor and foundation teams during the pylon construction phase to move pylons where possible from potential fossil bearing areas or rescue any fossils from the construction footprint.</li> <li>• Compile a Phase 2 report to the responsible Heritage Authority after paleontological construction inputs.</li> </ul> <p><i>Handling of chance finds</i></p> <ul style="list-style-type: none"> <li>• A short induction on possible heritage resources that may be found in the area should be included in the induction program for construction employees.</li> <li>• If a possible heritage site is discovered during construction activity, all operations in the vicinity of the discovery should stop and a qualified specialist contracted to evaluate and recommend appropriate actions. Depending on the type of site this can include initiating a grave relocation process, documentation of structures or archaeological excavations.</li> </ul>	

BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			<i>Walkdown of the proposed route</i> <ul style="list-style-type: none"> <li>An archaeological walkdown of the alignment before commencing with construction is required to identify any possible archaeological and heritage structures and sites.</li> </ul>	
Impacts on Transport	Refer to direct impacts under Alternative A	Low (-)	Refer to mitigation measures under Alternative A.	Low (-)
Impacts on Dust	Refer to direct impacts under Alternative A	Low (-)	Refer to mitigation measures under Alternative A.	Very low (-)
Impacts on Visual	Refer to direct impacts under Alternative A	Low (-)	Refer to mitigation measures under Alternative A.	Low (-)
	<b>Indirect impacts:</b> Refer to indirect impacts under Option A.			
	<b>Cumulative impacts:</b> Refer to cumulative impacts under Option A.			
<i>Alternative 3: Only the preferred option has been assessed.</i>				
<b>No-go option</b>				
	<b>Direct impacts:</b> <ul style="list-style-type: none"> <li>Loss of job opportunities</li> <li>Loss of local and national investment opportunities</li> <li>Impact on the viability of the WEF site</li> </ul>	medium (-)	No mitigation is proposed as the authorisation of the no-go option would entail maintaining the <i>status quo</i> , which would impact on the viability of the approved De Aar 1 WEF site.	medium (-)
	<b>Indirect impacts:</b>	Medium-high (-)		Medium-

BASIC ASSESSMENT REPORT

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	<ul style="list-style-type: none"> <li>National transmission grid stability</li> <li>Failure to meet the emission targets</li> </ul>			high (-)
	<p><b>Cumulative impacts:</b></p> <ul style="list-style-type: none"> <li>Lost opportunity to further diversify supply sources for electricity</li> </ul>	Medium-high (-)		Medium-high (-)

**Operational Phase**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
<b>Alternative A Operational Phase</b>				
Impacts on Ecology	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>Alien infestation</li> </ul>	medium (-)	<ul style="list-style-type: none"> <li>An on-going monitoring programme should be implemented to detect and quantify any aliens that may become established and provide information for the management of aliens.</li> <li>Any alien plants within the control zone of the company must be immediately controlled to avoid establishment of a soil seed bank. Control measures must follow established norms and legal limitations in terms of the method to be used and the chemical substances used.</li> </ul>	very low (-)
	<p><b>Indirect impacts:</b></p> <p>No indirect impacts were identified.</p>			
	<p><b>Cumulative impacts:</b></p> <p>No cumulative impacts were identified.</p>			
Impacts on Avifauna	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>Mortality due to collisions with new transmission lines</li> </ul>	medium-high (-)	<ul style="list-style-type: none"> <li>Maintenance should be carried out in less sensitive time frames – e.g. outside of breeding seasons for the species sensitive to disturbance listed in the Avifauna Specialist Report (Annexure D).</li> </ul>	medium (-)

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Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	<ul style="list-style-type: none"> <li>Mortality due to electrocutions on new transmission lines</li> </ul>		<ul style="list-style-type: none"> <li>The new transmission lines should be marked over the entire length with bird flight diverters.</li> </ul>	
	<p><b>Indirect impacts:</b> No indirect impacts were identified.</p>			
	<p><b>Cumulative impacts:</b> The cumulative impact of a number of renewable projects in the larger region may result in:</p> <ul style="list-style-type: none"> <li>significant movement barriers being formed over the landscape</li> <li>significant areas of habitat loss and disturbance with the added hazards of power infrastructure.</li> </ul>			
Impacts on Freshwater	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>Disturbance to the instream and riparian habitat of the freshwater ecosystems along the designated routes and the associated erosion potential</li> </ul>	low (-)	<ul style="list-style-type: none"> <li>Maintenance of infrastructure related to the project should only take place via the designated access routes.</li> <li>Disturbed areas along the access routes should be monitored to ensure that these areas do not become subject to erosion or invasive alien plant growth.</li> </ul>	very low (-)
	<p><b>Indirect impacts:</b> No indirect impacts were identified.</p>			
	<p><b>Cumulative impacts:</b> Cumulative impacts are discussed in the construction phase impacts section.</p>			
Impacts on Agricultural Potential	<p><b>Direct impacts:</b> No impacts are anticipated on agriculture</p>	very low (-)	No mitigation measures were proposed.	very low (-)
	<p><b>Indirect impacts:</b></p>			

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Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	No indirect impacts were identified.			
	<b>Cumulative impacts:</b> No cumulative impacts were identified.			
Impacts on Visual aesthetics	<b>Direct impacts:</b> Impact on sense of place	low (-)	No mitigation measures relating to the operational phase were identified.	low (-)
	<b>Indirect impacts:</b> No indirect impacts were identified.			
	<b>Cumulative impacts:</b> A number of other renewable energy projects are proposed for the area. Should these be approved, it would mean additional infrastructure (such as roads and powerlines) as well as solar panels and turbines. The local landscape character would be made more industrial. In the context of the De Aar area, with its long views, exposed sites and roads with little traffic.	medium (-)		medium (-)
Impacts on Socio-economic	<b>Direct impacts:</b> <ul style="list-style-type: none"> <li>• Job opportunities</li> <li>• Skills development</li> <li>• Community Trust establishment</li> </ul>	medium (+)	No mitigation measures are recommended.	medium (+)
	<b>Indirect impacts:</b> Local Business growth	medium (+)		medium (+)
	<b>Cumulative impacts:</b> Investment in local and national economy.	medium (+)		medium (+)
Impacts on	<b>Direct impacts:</b>	low (+)	No mitigation measures are recommended.	low (+)



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Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
Economic (Energy Generation)	<ul style="list-style-type: none"> <li>• Grid stability</li> <li>• Additional generation capacity</li> <li>• Infrastructure expansion</li> </ul>			
	<p><b>Indirect impacts:</b> No indirect impacts were identified.</p>			
	<p><b>Cumulative impacts:</b> A number of other renewable energy developments are planned for the Northern Cape in addition to these proposed WEFs. The cumulative impacts of these would be positive on both local and regional societies and economies. Cumulatively the impacts of renewable energy would be greatest on employment, and regional development, in the form of new business sales and regional GDP.</p>	<b>high(+)</b>		<b>high (+)</b>
Impacts on Climate change	<p><b>Direct impacts:</b></p> <ul style="list-style-type: none"> <li>• Emission targets</li> <li>• Reducing social costs by offsetting coal-fired energy generation.</li> </ul>	<b>low (+)</b>	No mitigation measures are recommended.	<b>low (+)</b>
	<p><b>Indirect impacts:</b> The establishment of renewable energy facilities would reduce South Africa’s future reliance on energy from coal-fired power stations which could in turn reduce the future volume of greenhouse gases emitted to the atmosphere, reducing the greenhouse</p>	<b>low (+)</b>		<b>low (+)</b>

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Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	<p>effect on a regional, national and international scale.</p> <p><b>Cumulative impacts:</b>                      Many renewable energy facilities are proposed throughout the Northern Cape and South Africa. Although not all those proposed would be constructed, a large number would be operating in the next few years. Given the number of renewable energy facilities proposed across the country, the potential cumulative impacts of the proposed projects on the potential reduction in future greenhouse gas emissions is considered to be significant.</p>	<p>medium (+)</p>		<p>medium (+)</p>

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<b>Alternative B:</b>					
	<b>Direct impacts:</b>				
Impacts on Ecology	Refer to direct impacts under Alternative A.	<b>medium (-)</b>	Refer to mitigation measures under Alternative A.		<b>very low (-)</b>
Impacts on Avifauna	Refer to direct impacts under Alternative A.	<b>medium-high (-)</b>	Refer to mitigation measures under Alternative A.		<b>medium (-)</b>
Impacts on Freshwater	Refer to direct impacts under Alternative A.	<b>low (-)</b>	Refer to mitigation measures under Alternative A.		<b>very low (-)</b>
Impacts on Agricultural Potential	Refer to direct impacts under Alternative A.	<b>very low (-)</b>	Refer to mitigation measures under Alternative A.		<b>very low (-)</b>
Impacts on Visual aesthetics	Refer to direct impacts under Alternative A.	<b>low (-)</b>	Refer to mitigation measures under Alternative A.		<b>low (-)</b>
Impacts on Heritage resources	Refer to direct impacts under Alternative A.	<b>medium (+)</b>	Refer to mitigation measures under Alternative A.		<b>medium (+)</b>
Impacts on Socio-economic	Refer to direct impacts under Alternative A.	<b>medium (+)</b>	Refer to mitigation measures under Alternative A.		<b>medium (+)</b>
Impacts on Economic (Energy Generation)	Refer to direct impacts under Alternative A.	<b>medium (+)</b>	Refer to mitigation measures under Alternative A.		<b>medium (+)</b>
Impacts on Climate change	Refer to direct impacts under Alternative A.	<b>low (+)</b>	Refer to mitigation measures under Alternative A.		<b>low (+)</b>
	<b>Indirect impacts:</b> Refer to indirect impacts under Option				

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	A.			
	<b>Cumulative impacts:</b> Refer to cummulative impacts under Option A.			

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

Please refer to **Appendix F** for a complete Impact Assessment.

## 1 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.

The following provides a summary of the assessment of potential impacts contained in **Annexure F** per phase (construction, operation and decommissioning) of the proposed developments

It should be noted that Transmission lines 1 and 2 would be constructed simultaneously unless one of the proposed WEF projects is not approved (either through this NEMA process or through the IPP procurement process), in which case only the approved project and associated line would be constructed.

The significance of the potential impacts, without and with mitigation, are summarised below. Note that the assessment is the same for all alternatives, except where specified otherwise. The Alternatives considered were as follows:

Site alternatives:

- Alternative A transmission line route and associated infrastructure (including access roads)
- Alternative B (preferred) transmission line route and associated infrastructure (including access roads)

Layout alternatives:

- None were considered as the layout alternatives (i.e. pylon positions) will only be determined during implementation phase and would be dependent on the IPP bid process approval as required by Eskom.

Activity alternatives:

- Transmission of Wind Energy;
- "No-go" alternative to Wind Energy transmission;

Technology alternatives:

- Single circuit Monopole 266; and
- Double circuit Monopole 277.

Please refer to **Annexure F** for a summary of the potential construction and operational impacts anticipated by the proposed projects, before and after mitigation measures have been implemented.

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**Table 2: Summary of discussed construction and operational impacts**

IMPACT		Alternative A Layout		Alternative B Layout	
		No Mit	With Mit	No Mit	With Mit
<b>OPERATIONAL PHASE IMPACTS</b>					
1	Impact on Ecology:	L-M	VL	L-M	VL
2	Impact on birds	M-H	M	M	L-M
3	Impact on climate change	L+	L+	L+	L+
4	Visual aesthetics	L	L	L	L
5	Impact on Fresh Water	L	VL	L	VL
6	Impact on energy production	M+	M+	M+	M+
7	Impact on local economy (employment) and social conditions	M+	M+	M+	M+
8	Impact on agricultural land	VL	VL	VL	VL
9	No-Go	M	M	M	M
<b>CONSTRUCTION PHASE IMPACTS</b>					
10	Impacts on flora, fauna	M	VL	M	VL
11	Impacts on birds	M-H	M-H	M-H	M
11	Sedimentation and erosion	L	VL	L	VL
12.1	Impact on heritage resources: Archaeology	L	L	L	L
12.2	Palaeontology	H	L	H	L
12.3	Cultural heritage	M	L	M	L
13	Visual aesthetics	L	L	L	L
14	Impact on local economy (employment) and social conditions	M+	M+	M+	M+
15	Impact on transport	L	L	L	L
16	Noise pollution	VL	VL	VL	VL
17	Storage of hazardous substances on site	L	L	L	L
18	Impact of dust	L	VL	L	VL

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KEY	H	High Significance
	M-H	Medium to High Significance
	M	Medium Significance
	L-M	Low to Medium Significance
	VL-M	Very Low to Medium Significance
	L	Low Significance
	VL-L	Very Low to Low Significance
	VL	Very Low Significance
	N	Neutral Significance
	H+	High positive significance
	M+	Medium positive significance
	L+	Low positive significance

### Operational phase impacts:

Alternative A in Table 6 above indicates that the most significant (**medium-high (-)**) operational phase impacts on the biophysical and socio-economic environment, without mitigation, are on avifauna. With the implementation of mitigation measures the impact avifauna would reduce to **medium (-)**.

For Alternative B the most significant (**medium (-)**) operational phase impacts on the biophysical and socio-economic environment, without mitigation, are on avifauna. With the implementation of mitigation measures the impact avifauna would decrease to **low-medium (-)**.

It should be noted that four potential positive impacts apply to both Alternatives A and B namely, on energy production, local economy (employment), climate change and social conditions would result and these would be of **low-medium (+)** significance, with and without mitigation measures.

### Construction phase impacts:

The most significant construction phase impacts for Alternative A were those on palaeontology and avifauna which were considered to be of **high (-)** and **medium-high (-)** significance without mitigation, respectively. With the implementation of mitigation measures the impact on palaeontology would decrease to **low (-)** and avifauna would remain to **medium-high (-)**.

For Alternative B the most significant construction phase impacts were also for those on palaeontology and avifauna and were considered to be of **high (-)** and **medium-high (-)** significance without mitigation, respectively. With the implementation of mitigation measures the impact on palaeontology would decrease to **low (-)**, however avifauna would be reduce to **medium (-)**.

The remaining negative construction phase impacts, such as transport, noise, and storage of hazardous substance, for both A and B were not deemed to be significant, given their duration (approximately 6 months) and localised extent. The remaining construction impacts were assessed to be of **very low** to **medium (-)** significance, without mitigation measures. With the implementation of the recommended EMP the significance of construction phase impacts is likely to reduce to **very low** to **low (-)** significance.

From an overall environmental impact perspective, the Alternative B (with mitigation) was considered to be more acceptable to a number of specialists than Alternative A (with mitigation). Most notably, Alternative B would reduce the impact on avifauna. The aquatic and heritage specialists have also confirmed their preference for Alternative B, while the other specialist (agricultural and ecology) have indicated the no significant difference in impacts will result if either Alternative A or B are chosen. It is recommended from an environmental perspective that Alternative B is approved, on condition that the mitigation measures as put forward in **Annexure F** are implemented.

**No-go alternative (compulsory)**

No potential impacts would result from the No-go alternative as this would be a continuation of the current state. However, the potential for positive impacts (such as the provision of electricity for South Africa and upliftment of the De Aar community) would not be realised.



**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)?

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

N/A
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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.

<p>The proposed mitigation measures listed below are recommended to manage the identified impacts associated with the proposed transmission lines during the construction and operation phases:</p> <p><b>CONSTRUCTION PHASE:</b></p> <p><b><i>Ecology</i></b></p> <ul style="list-style-type: none"> <li>• Unnecessary impacts on surrounding natural vegetation must be avoided. The construction impacts must be contained to the footprint of the tower structures and/or the servitude of the power line.</li> <li>• Existing access roads must be used, where possible.</li> <li>• Service roads in the servitude must be properly maintained to avoid erosion impacts.</li> <li>• If possible, place infrastructure (tower structures) a minimum of 30 m outside watercourses.</li> <li>• Where possible, use existing roads as service roads. Service roads in the servitude must be properly maintained to avoid erosion impacts.</li> <li>• If not possible to avoid these areas, there is a legal obligation to apply for a Water Use Licence for any watercourses that may be affected, since they are classified in the National Water Act as a water resource.</li> <li>• Ensure that any construction or maintenance work on the access road does not affect the protected tree. Mark the individual or fence it off to minimise potential impacts. If not possible to avoid these areas, there is a legal obligation to apply for a permit for any protected tree that may be affected.</li> <li>• Disturbance of indigenous vegetation outside of the footprint of construction must be kept to a minimum.</li> <li>• Where disturbance is unavoidable, disturbed areas should be rehabilitated as quickly as possible.</li> <li>• Any alien plants within the control zone of the company must be immediately controlled to avoid establishment of a soil seed bank. Control measures must follow established norms and legal limitations in terms of the method to be used and the chemical substances used.</li> <li>• Ensure that any construction or maintenance work on the access road does not affect the protected tree. Mark the individual or fence it off to minimise potential impacts.</li> <li>• If not possible to avoid these areas, there is a legal obligation to apply for a permit for any protected tree that may be affected.</li> <li>• It is recommended that, prior to construction, a walkthrough survey be undertaken to search for individuals of protected trees.</li> </ul> <p><b><i>Avifauna</i></b></p> <ul style="list-style-type: none"> <li>• Mark out and maintain "no-go" areas to minimise the impacts of disturbance during</li> </ul>
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construction.

- Keep the footprint of construction activities (movement) to the absolute minimum and maintain the noise disturbance to a minimum.

Verreau's Eagle nest site:

- A buffer zone of 1.5 km around the nesting site of Verreaux's Eagles in Eselskloof.

Martial Eagle Nest Site:

- should the nest site be re-used in future seasons all construction activities in the demarcated buffer zone of 1.5 km should be halted and postponed until the breeding attempt has been successfully completed or failed of its own accord;
- the new transmission line should be marked with bird flight diverters along its entire length and that all new power line infrastructure is adequately insulated and of a configuration that is bird friendly.

### ***Freshwater***

- The route of the proposed transmission line should be located outside of the Eselskloof River channel and the floodplain of the Elands-kloof River as far as possible.
- Construction activities should be limited to the identified sites for the proposed monopole placement.
- A buffer of 30m adjacent to the identified rivers, streams or drainage features should be maintained.
- Any cleared areas, which are not hardened surfaces, are rehabilitated after construction.
- All service/ access roads should be contoured along any steep slope or erosion protection walls constructed. Run-off over the exposed areas should be mitigated to reduce the rate and volume of run-off and prevent erosion occurring within the freshwater features and drainage lines.
- Any contaminated runoff from the construction sites should be prevented from entering the rivers/streams.
- All materials on the construction site should be appropriately stored and contained.
- Disposal of waste should be properly managed.
- Construction workers should be provided with ablution facilities at the construction site which are located away from the river systems and are regularly serviced.
- The existing road infrastructure should be utilized as far as possible to minimize the overall disturbance created by the proposed project. For new access roads to the monopole structures, these should not be routed along or within the drainage/stream beds.
- Where access routes need to be constructed over the channels, disturbance of the channel should be limited and all crossings over drainage channels or stream beds should be such that the flow within the drainage channel is not impeded.
- Any disturbed areas should be rehabilitated to ensure that these areas do not become subject to erosion or invasive alien plant growth.

### ***Heritage and Palaeontology***

*Archaeological mitigation measures*

- The placement of the pylons must be done in such a way as to stay away from the dam wall sites (site DAM 3 and site DAM 4).

- The site must be demarcated, with a buffer of at least 10 meters, during construction.

*Paleontological mitigation measures*

- A Palaeontologist be appointed as part of the Environmental Construction Team for preferably all identified paleontological sensitive areas but definitely for the identified high sensitive areas.
- A paleontological rescue and/or destruction permit is obtained by the Palaeontologist.
- The Palaeontologist accompany the surveyor and foundation teams during the pylon construction phase to move pylons where possible from potential fossil bearing areas or rescue any fossils from construction footprint.
- Compile a Phase 2 report for the responsible Heritage Authority after paleontological construction inputs.

*Handling of chance finds*

- A short induction on possible heritage resources that maybe found in the area should be included in the induction program for construction employees.
- If a possible heritage site is discovered during construction activity, all operations in the vicinity of the discovery should stop and a qualified specialist contracted to evaluate and recommend appropriate actions. Depending on the type of site this can include initiating a grave relocation process, documentation of structures or archaeological excavations.

*Mitigation measure applicable only if there are any changes to the initial layout*

- Any deviation or changes to the initial layout will require an archaeological walkdown of the new alignment to identify any possible archaeological and heritage structures and sites before construction commence.

**Visual**

- Reduce the construction period through careful logistical planning and productive implementation of resources.
- Implement measures as provided in the EMP, which includes procedures for dealing with dust pollution events including watering of roads, etc.
- Lay down areas and construction camp should have temporary screen fencing if necessary.
- Site offices, if required, should be limited to single storey and sited carefully using temporary screen fencing to screen from the wider landscape.
- Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and disposed regularly at licensed waste facilities.

**Agriculture**

- Clearing activities should be kept to a minimum.
- In the unlikely event that heavy rains are expected, activities should be put on hold to reduce the risk of erosion.
- If additional earthworks are required, any steep or large embankments that are expected to be exposed during the 'rainy' months should be armoured with fascine like structures. A fascine structure usually consists of a natural wood material and is used for the strengthening of earthen structures or embankments.
- If earth works are required then storm water control and wind screening should be undertaken to prevent soil erosion.

- Interact with landowners to discuss where they would ideally like to see the power lines situated on their property.
- Ensure adequate compensation is paid to land owners where necessary.

***Impacts on socio-economic***

- Source local labour, businesses and resources for supply, where possible.
- Compile relevant and clearly defined procurement standards to govern choices of suppliers, products and the methods and procedures that are to be used to communicate with pertinent suppliers. These standards need to be carefully defined and analysed by the applicant, for quality and sustainability purposes, as well as for monitoring and evaluation of the suppliers and service providers.
- Provide appropriate training, which would enable individuals to apply their skills to other construction and development projects in the region once construction is complete.
- Base recruitment on sound labour practices and keeping gender equality in mind.

***Transportation***

- Implement traffic control measures where necessary;
- Transport components overnight as far as possible; and
- Adhere to speed limits.

***Dust***

- Implement dust control measures identified in the LEMP, which includes procedures for dealing with dust pollution events, include watering of roads, etc.

***OPERATION PHASE:***

***Ecology***

- An on-going monitoring programme should be implemented to detect and quantify any aliens that may become established and provide information for the management of aliens.
- Any alien plants within the control zone of the company must be immediately controlled to avoid establishment of a soil seed bank. Control measures must follow established norms and legal limitations in terms of the method to be used and the chemical substances used.

***Avifauna***

- In the operation phase of the project, maintenance should be carried out in less sensitive time frames – e.g. outside of breeding seasons for the species sensitive to disturbance listed in Table 1 of Appendix D5.
- The new transmission line should be marked with bird flight diverters along its entire length and that all new power line infrastructure is adequately insulated and of a configuration that is bird friendly.

## BASIC ASSESSMENT REPORT

### **Freshwater**

- Maintenance of infrastructure related to the project should only take place via the designated access routes. Disturbed areas along the access routes should be monitored to ensure that these areas do not become subject to erosion or invasive alien plant growth.

Is an EMPr attached?

YES

NO

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

**Refer to Appendix G for the EMPr.**

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**.

**Refer to Appendix H for details of the EAP.**

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

**Refer to Appendix G for the specialist's declaration of interest.**

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

**Refer to Appendix G for other information.**

Ms Karen Versfeld of Aurecon South Africa (Pty) Ltd  
NAME OF EAP

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

\_\_\_\_\_  
DATE

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