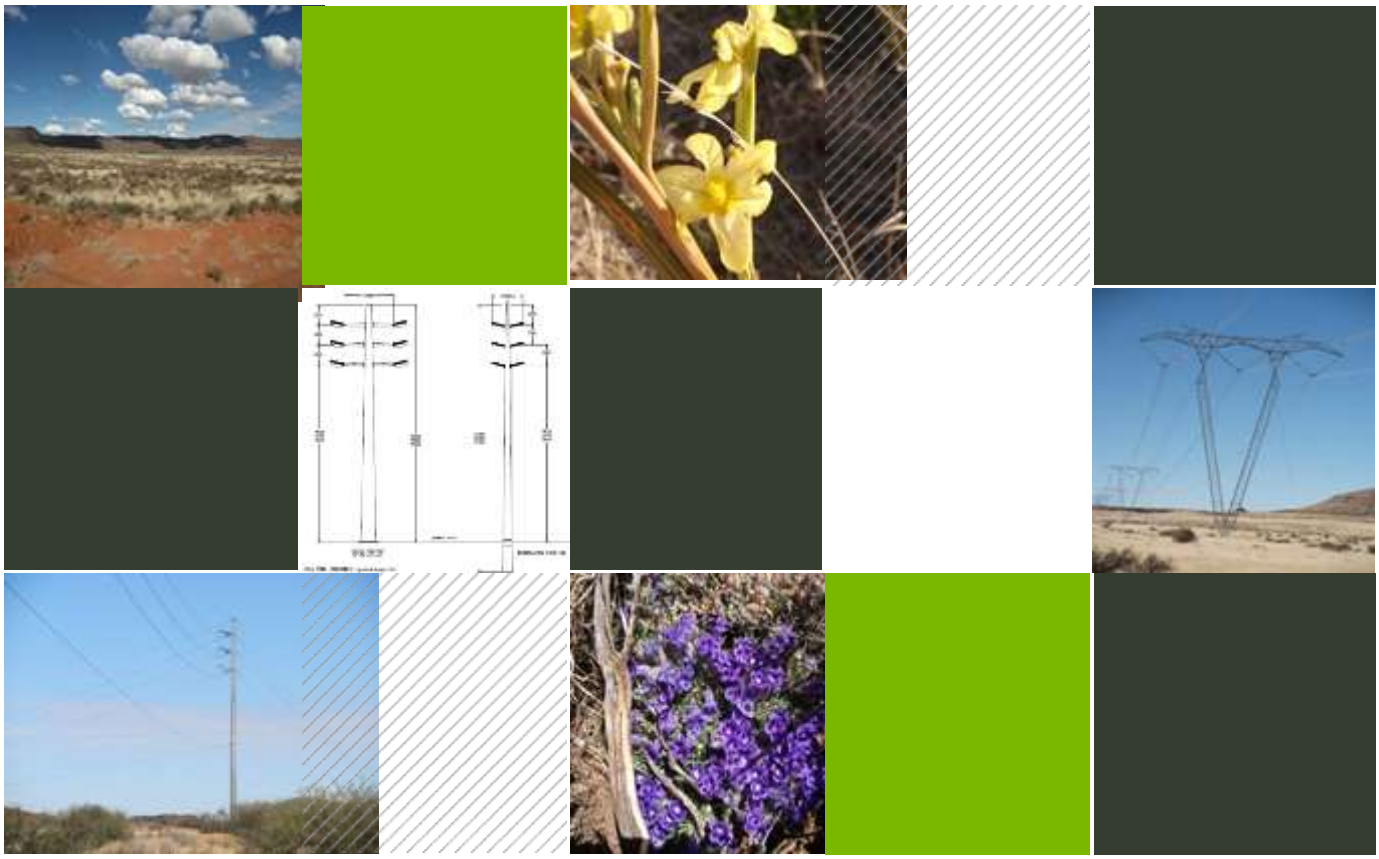

ENVIRONMENTAL IMPACT ASSESSMENT FOR PROPOSED 132 KV TRANSMISSION LINE CORRIDOR ADJACENT TO THE EXISTING ESKOM TRANSMISSION LINE FROM LONGYUAN MULILO DE AAR 2 NORTH WIND ENERGY FACILITY (WEF) TO THE HYDRA SUBSTATION IN DE AAR, NORTHERN CAPE

DEA REF: 14/12/16/3/3/1/1166

DRAFT BASIC ASSESSMENT REPORT

April 2014

Report No: 8993

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- **D3:** Visual Report
- **D4:** Agricultural Report
- **D5:** Avifauna Report
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ABREVIATIONS

BAR	Basic Assessment Report
CEMPr	Construction Environmental Management Programme
CO^2	Carbon Dioxide
DEA	Department of Environmental Affairs (previously Department of Environmental Affairs and Tourism)
DEA&DP	Department of Environmental Affairs and Development Planning
DEANC	Department of Environmental Affairs and Nature Conservations
DoE	Department of Energy
EAP	Environmental Assessment Practitioner
EMPr	Environmental Management Programme
EIA	Environmental Impact Assessment
ERA	Electricity Regulation Act (No. 4 of 2006)
GN	Government Notice
G:S:B-	General: Small: negative water balance
GWh	Gigawatt hours
ha	Hectares
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IEP	Integrated Energy Plan
IPP	Independent Power Producer
IRP	Integrated Resource Plan
kV	Kilovolt
MW	Megawatts
MWh	Megawatt hours
NEMA	National Environmental Management Act (No. 107 of 1998) (as amended)
NHRA	National Heritage Resources Act (No. 25 of 1999)
NWA	National Water Act (No 36 of 1998)
OEMP	Operational phase Environmental Management Programme

PV	Photovoltaic
SAHRA	South African Heritage Resources Agency
SACNASP	South African Council for Natural Scientific Professions
SDF	Spatial Development Framework
SO^2	Sulphur Dioxide
UNCBD	United Nations Convention on Biological Diversity
UNFCC	United Nations Framework Convention on Climate Change
WEF	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.

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.

    Specialist terms of reference for each specialist are included in their respective specialist reports in Appendix D.

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.

    Shape files for maps will be provided in the Final BAR.

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

Longyuan Mulilo De Aar 2 North (Pty) Ltd (hereafter referred to as Mulilo) has recently received preferred bidder status from the Department of Energy (DoE) (Refer to Appendix J1 for Preferred Bidder Appointment Letter) under the third round of the Renewable Energy Independent Power Producers Programme (REIPPPP) for a 138.96 Megawatt (MW) Wind Energy Facility (WEF), Longyuan Mulilo De Aar 2 North Wind Energy Facility (hereafter referred to as North WEF), located within the Emthanjeni Local Municipality near De Aar, in the Northern Cape.

An Environmental Authorisation (EA) was received on 1 March 2013 (refer to **Appendix J2** for the EA) for the construction of the North WEF (DEA Ref No.: 12/12/20/2463/2, NEAS Ref No.: DEAT/EIA/0000578/2011), authorising the connection of the WEF to the Hydra substation via existing transmission lines traversing the site. However subsequent to approval, Eskom indicated that they were planning on the construction of a new substation (Bushbuck substation) and would require the WEF to connect to it instead. A Basic Assessment (BA) was undertaken and the new 132 kV transmission line connecting the WEF to the Bushbuck substation was authorised on 18 June 2013 (DEA Ref No.: 14/12/16/3/3/1/785, NEAS Ref No.: DEA/EIA/0001601/2012).

However, Eskom has subsequently updated their connection planning and indicated that the North WEF would now have to connect directly to the existing Hydra Substation and not via the appointed Bushbuck substation, as the project was put on hold. Aurecon South Africa (Pty) Ltd (Aurecon) has been appointed to undertake the requisite environmental BA process for the new proposed transmission line for purposes of environmental authorisation as required in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA), as amended, on behalf of Mulilo.

Should all the necessary permits and approvals be granted, the WEF will be completed by 2016 and will sell energy to Eskom Holdings (Pty) Ltd (Eskom) as per its commitments under REIPPPP.

PROJECT DESCRIPTION

Mulilo proposes to construct a 132 kV overhead transmission line and associated infrastructure in order to connect the authorised 138.96 MW Longyuan Mulilo De Aar 2 North WEF, to be developed to the east of De Aar, Northern Cape to the national transmission grid via the Hydra Substation. The newly proposed 132 kV transmission line route would run parallel to existing 400 kV lines, which pass through the site on route to the Hydra substation, with small routing adjustments near to Hydra substation in order to take cognisance of other incoming lines for the final connection.

In terms of the NEMA, as amended, the proposed construction of the 132kV transmission line and associated infrastructure triggers a number of listed activities, which require authorisation from the competent environmental authority before they can be undertaken. The proposed project triggers the following activities as listed in terms of Government Notice (GN) Regulation 544 items 10, 11 and 18 and GN R546 items 13, 14 and 16 in terms of NEMA. Since the project is associated with energy generation, and energy projects are dealt with by the national authority, the competent authority is the National Department of Environmental Affairs (DEA).

This Basic Assessment (BA) includes the North switching/metering station as well as the 132 kV transmission line that connects this metering station to the existing Hydra Substation.

PROJECT LOCATION

The North WEF is located on the eastern plateau approximately 20 km east of De Aar, Northern Cape. The North WEF substation and metering station is located within the footprint of the North WEF on the farm Pienaars Kloof (Portion 6 of Farm 136). The 132 kV transmission line connects from the metering station and runs 21.46 km south-west traversing the farms Pienaars Kloof (Farm 136 – Portion 6 and Remainder of Portion 6), Slingershoek (Farm 2 – Remaining Extent and Portion 5), Maatjes Fountain (Farm 1 – Portion 3 and Portion 5 and Remainder of Portion 1 and Remainder of Portion 2), Carolus Poort (Farm 2 - Portion 3 and Portion 4 and Remainder of Portion 2), Wagt en Bittje (Farm 5 – Remaining Extent and Portion 3), Wag ‘n Bietjie Annex B (Farm 139 - Remaining Extent) to the Hydra Substation (Farm 144 - Remaining Extent). Refer to Figure 1 for the locality map. These farms are zoned for Agriculture and are currently used for grazing sheep, goats and cattle.

Switching/metering station

The onsite substation / control building will require a construction footprint of 100 m x 200 m (20 000 m^3) in extent and will include a temporary construction yard and the switching / metering station. The construction yard will be used to house equipment and materials related only to the construction of the onsite substation as well as an adjacent switching/metering station. The construction yard and switching station will each be 100 m x 100 m in extent, making up the total substation footprint area of 20 000 m^3. From this switching / metering station the 132 kV transmission line would be sited in parallel to the existing 400 kV Eskom transmission lines which traverses the site on route to the Hydra substation, located approximately 27 km south-west of the Northern WEF.

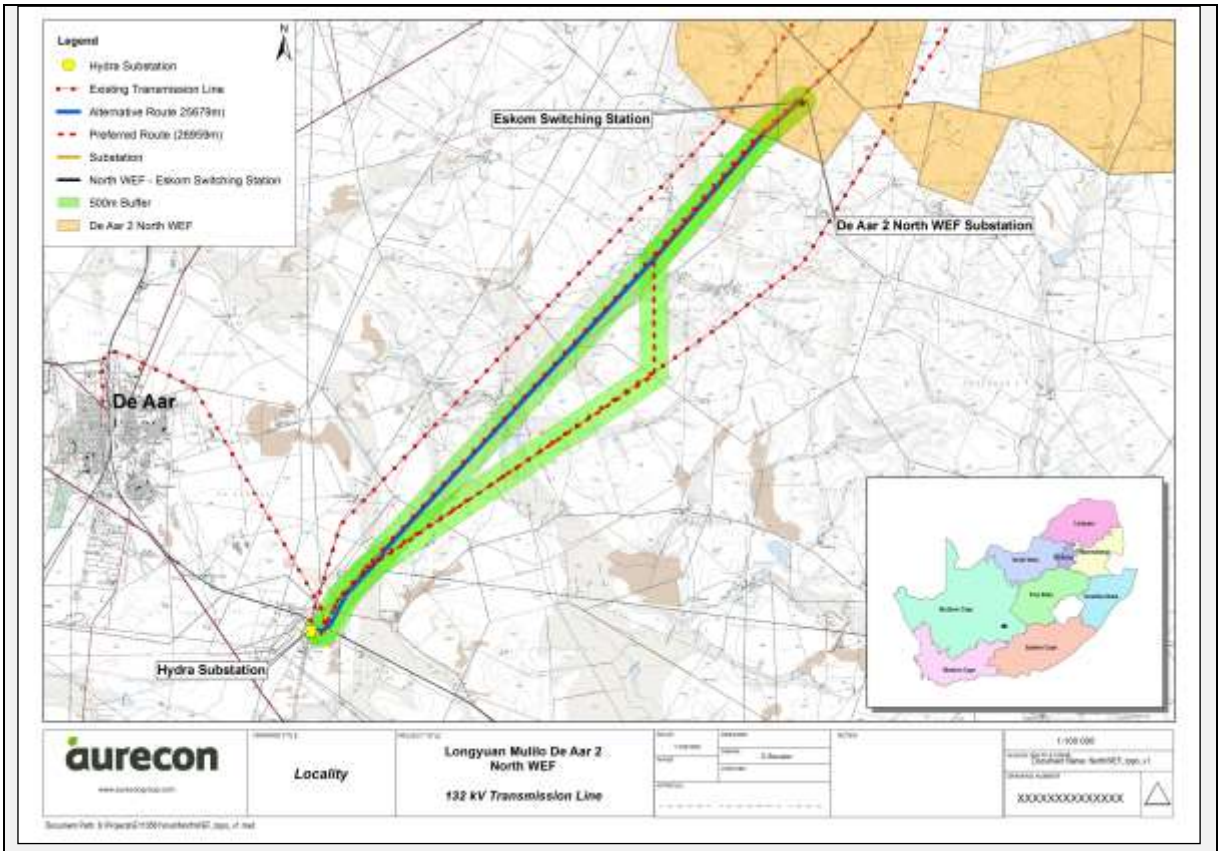

Figure 1: Location of the Longyuan Mulilo De Aar 2 North 132 kV Transmission Line Project

Transmission lines

The proposed 132 kV transmission line to Hydra Substation would be a self-supporting structure or suspension pole along the straight sections of the power line, while a guyed intermediate or guyed suspension and angle strain structure would be used where there is a bend in the power line alignment. These monopoles vary in height from approximately 17.4 m to 21 m and the average span between two towers is 200 m, but can vary between 250 m and 375 m depending on the ground profile (topography) and the terrain to be spanned. The length of the preferred transmission line is approximately 27 km.

Current project scope

Mulilo appointed Aurecon South Africa (Pty) Ltd (Aurecon) to undertake the Basic Assessment process for the proposed switching / metering station and the 132 kV transmission line, which would run adjacent to an existing Eskom 400 kV transmission line from the North WEF to the existing Hydra Substation.

Project alternatives assessment

<u>Switching / metering station</u>

For technical reasons the switching / metering station has to be located adjacent to and within the footprint of the North substation / control building therefore, there is only one alternative location for

the switching / metering station, i.e. the Preferred Alternative.

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 J3** 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 where possible;
   - 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.

Specialists were required to access a corridor of 500 m as the final route of the transmission line would be determined based on the above factors.

Route (length)

Two route alternatives have been accessed:

- Alternative A transmission line (indicated in red on the locality map) is approximately 27 km in length from the North substation to the Hydra substation
- Alternative B transmission line (indicated in blue on the locality map) is approximately 25.5 km in length from the North substation to the Hydra substation and is a deviation from the Alternative A route.

Eskom grid connectivity and capacity

Extensive consultation with Eskom regarding grid connectivity and capacity for the proposed North WEF has been undertaken by Mulilo, and in combination of the project being awarded Preferred Bidder in the DoE's REIPPPP, there is a need to construct the 132 kV power line.

TRANSMISSION LINE INFRASTRUCTURE

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

The self-supporting structure or suspension pole (see **Figure 2**) is typically used along the straight sections of the transmission line, while the guyed intermediate or guyed suspension and angle strain structures (see **Figure 3**) are used where there is a bend in the transmission line alignment. These monopoles weigh approximately 1,200 kg each and vary in height from approximately 17.4 m to 21 m. The size of the footprint depends on the type of pole, i.e. whether it is a self-supporting, guyed

suspension or an angle strain pole structure. The size of the footprint ranges from 0.6 m x 0.6 m to 1.5 m x 1.5 m, 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 200 m, but can vary between 250 m and 375 m 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.

Figure 2: Self-supporting Tower

Figure 3: Guyed suspension Tower

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

- Type 261 monopoles on a single circuit (**Figure 4**).
- Type 277 monopoles on a double circuit line (**Figure 5**).

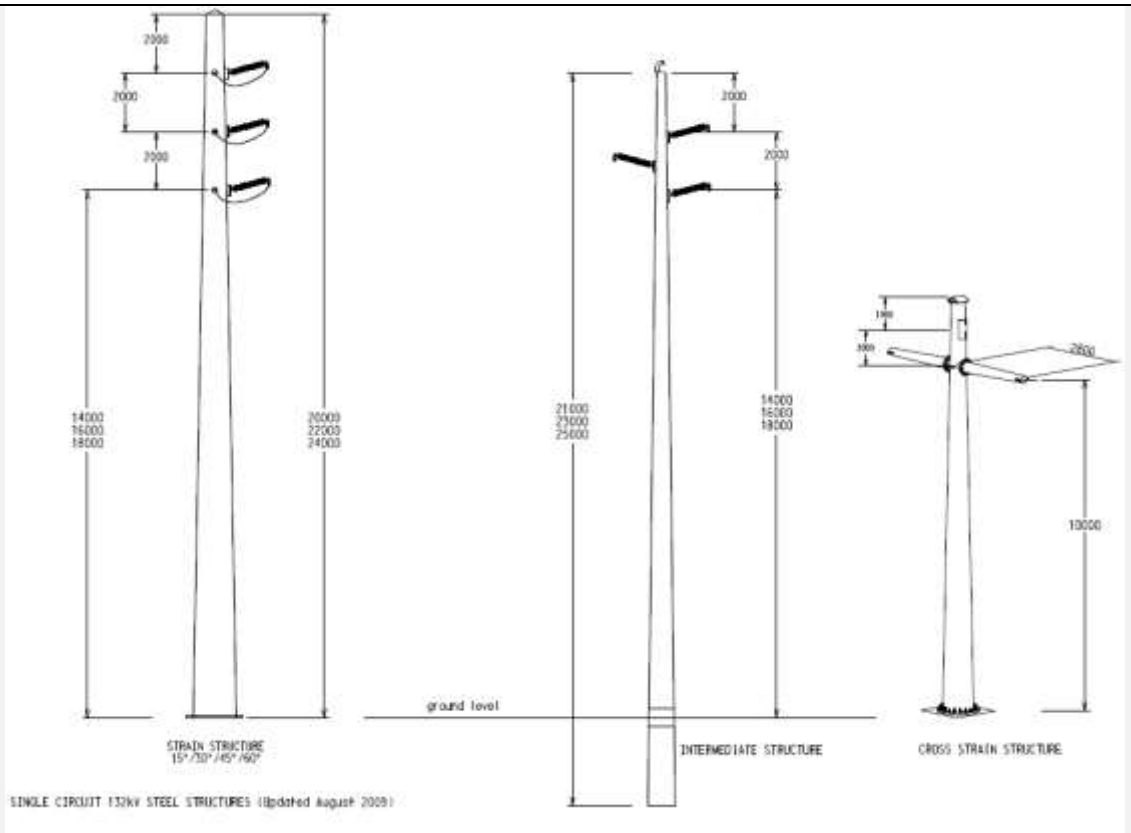

Figure 4: Type 261 monopoles on a single circuit

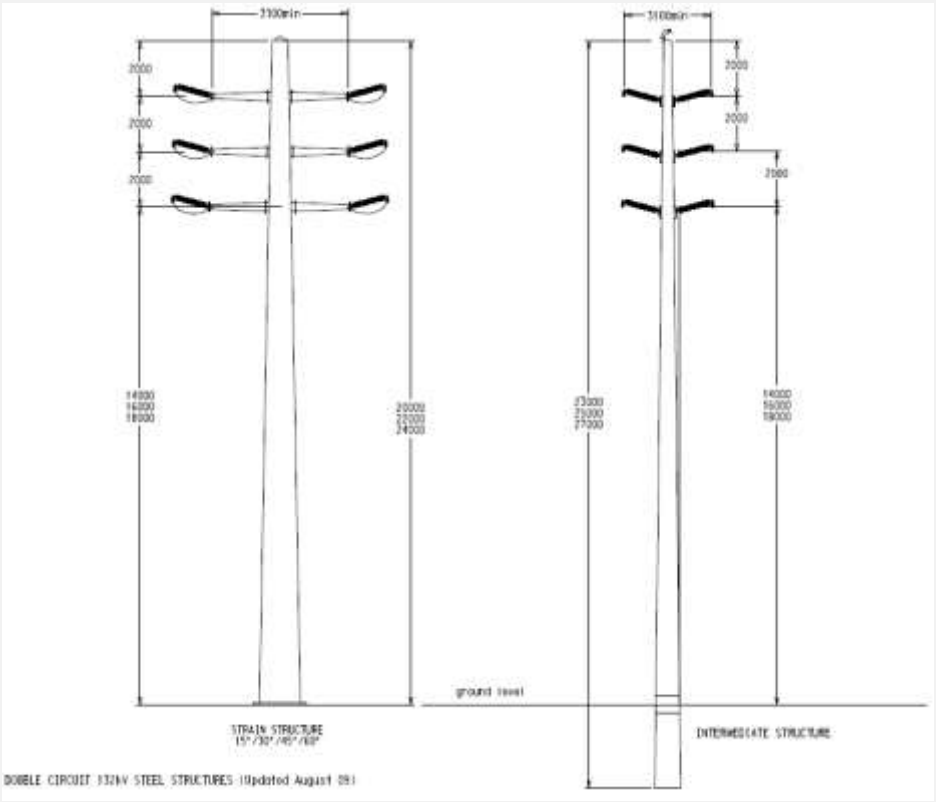

Figure 5: Type 277 monopoles on a double circuit line

Access roads

Access roads would run the length of the proposed servitudes and would be required to access the transmission route only where no roads currently exist. However, given that the majority of the line will run in parallel with the existing 400 kV line, it is envisaged that the 132kV would use the same existing 400kV access roads for construction and maintenance. Those sections requiring new access roads will consist of jeep tracks.

Foundations

The monopoles are anchored to the soil through a suitable foundation system. A soil investigation through a geo-technical assessment 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:

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: 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.

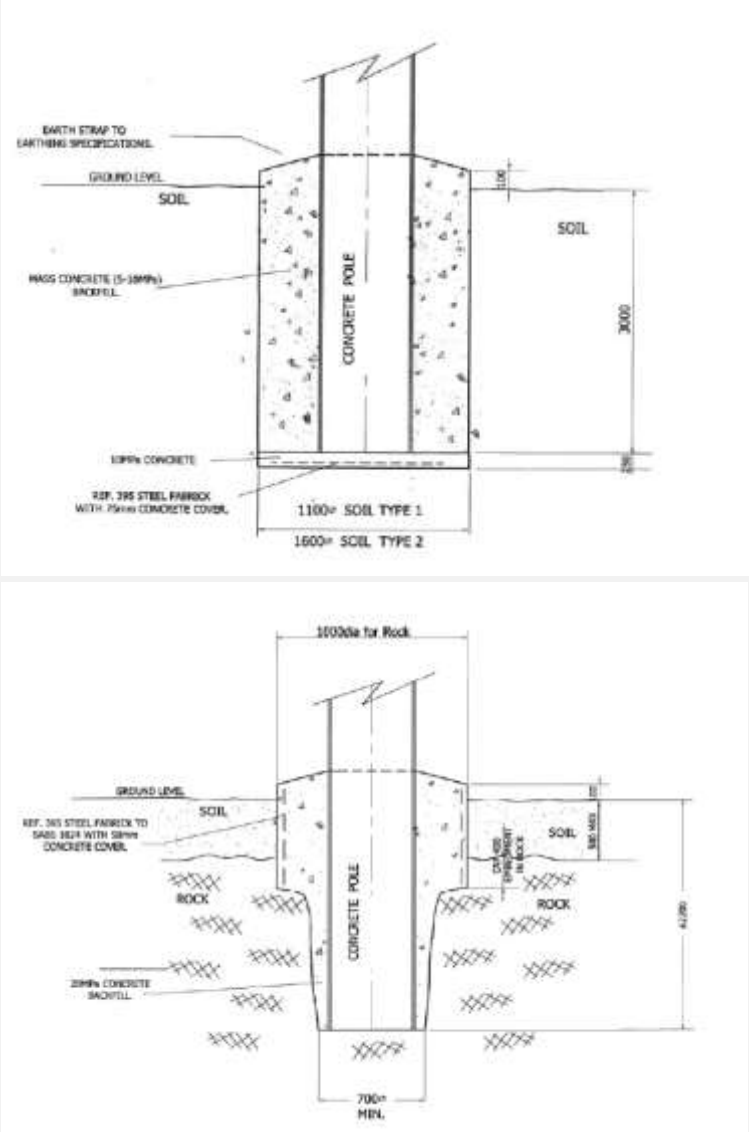

Figure 6 : Planted foundations for Soil and Rock

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 2**) or alternatively guyed structures will be used (**Figure 3**) 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.

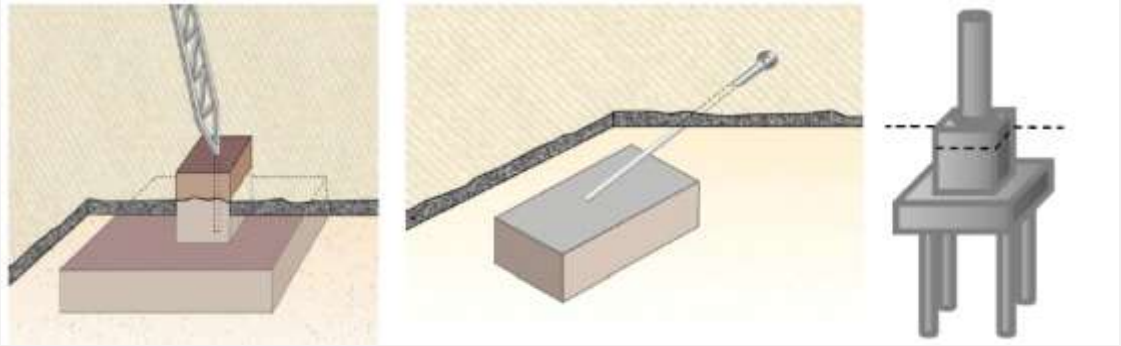

Figure 7: Pad and Plinth, Guyed and Pile foundations respectively

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

Insulation

Insulator options have been determined as per Eskom Standards[1]. 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[2] shall be 31 mm/kV. It is proposed that insulators, with standard ratings for 132 kV, be installed. The proposed insulating material shall be silicon rubber and the dry arcing distance to be a minimum of 1200 mm for 132 kV.

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 line. It has been found in South Africa and internationally that the majority of collisions happen with the transmission line, 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 line more visible thereby reducing the risk of collision.

Specifications: According to the avifaunal specialist report (**Appendix D5**) it is recommended that the all the spans should be marked with Bird Flight Diverters on the earth wire of the line, ten metres apart, alternating black and white. Appendix B of the avifaunal specialist report indicates the preferred Bird Flight Diverters to be used.

These bird flight diverters are typically 900 mm in length and 330 mm in height. For high voltage construction (greater than 40 kV), the diverters are used on the earth wire. Spacing distances are not critical and will depend on the local conditions however, a spacing of 10 m or 15 m is generally recommended.

[1] Eskom Standards 34-510 Rev 0

[2] The leakage of an electrical current across the surface of an insulator.

The Endangered Wildlife Trust recommends bird flight diverters to be installed on transmission lines that:

- Should be on both earth wires 19/2.65 (this represents the conductor thickness of 19 strands 2.65 mm 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 10 m intervals. With typical 132 kV line spans length of 250 m, the 60 % marked section will amount to 150 m.

The figure below illustrates how the black and white spirals (bird flight diverters) should be arranged and where they should be positioned (**Figure 8**).

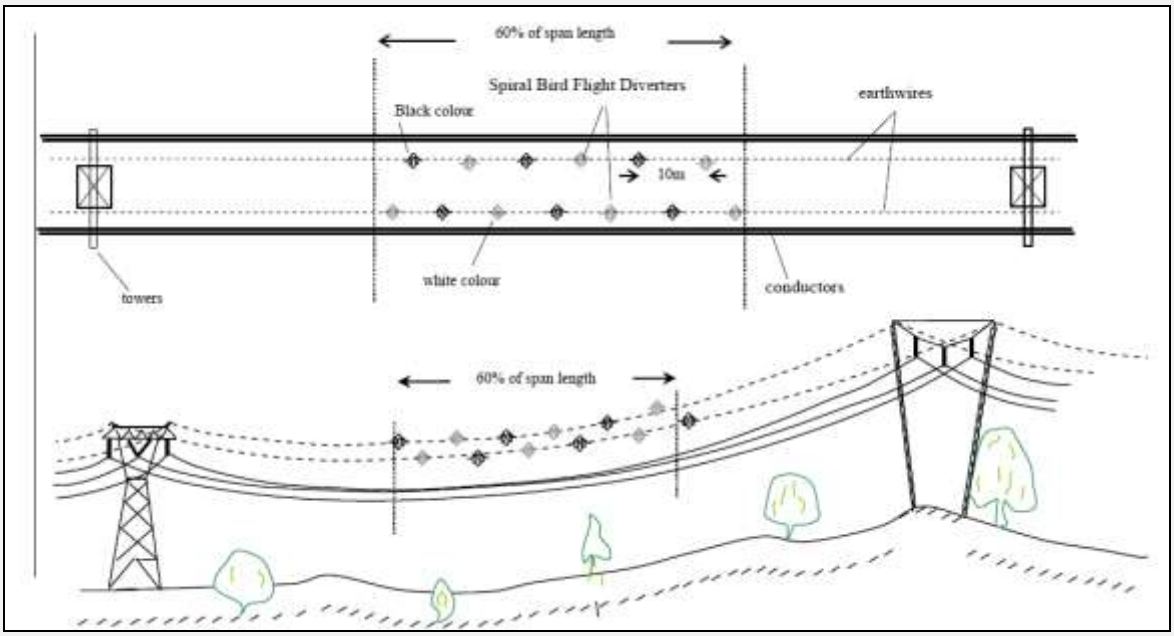

Figure 8: Illustration of Bird Flight Diverters by J Clara (Endangered Wildlife Trust) 19/10/2012

Line clearance

The Occupational Health and Safety Act No. 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 1**. Therefore clearances of the proposed transmission lines will meet the statutory requirements.

Table 1: **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 132 kV transmission line is 31 m, with a distance of 15.5 m on either side of the centre line of the powerline. As the proposed 132 kV lines will run in parallel to the existing 400 kV line, the servitude requirement will be a 21 m line separation with 15,5 m either side. The total servitude width would amount to 52 m for the section between the Maanhaarberg substation and the Hydra substation.

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

Alternative A:

- Servitude widths of 36 m; and
- Servitude length of 27 km.

Alternative B:

- Servitude widths of 36 m; and
- Servitude length of 25.5 km.

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 (**Appendix J4 and J5**). 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 G1**).

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 20 skilled and 10 unskilled staff would be employed for the construction phase. The unskilled labourers are

generally trained by the contractors and sourced from local communities. The transmission line should not be viewed in isolation as it creates the connection of the WEF and provides the combined benefits to the local communities. Refer to the **Table 2** below:

Table 2: **Employment and social opportunities of the proposed transmission line in combination with the WEF**

Anticipated CAPEX value of the project on completion	**Transmission line: R42 800 000 (ex VAT)**
What is the expected annual income to be generated by or as a result of the project?	**Transmission line: 0** ***WEF: R 402'000'000***
New skilled employment opportunities created in the construction phase of the project	**Transmission line: 25** ***WEF: 230***
New skilled employment opportunities created in the operational phase of the project	**Transmission line: 2** ***WEF: 19***
New un-skilled employment opportunities created in the construction phase of the project	**Transmission line: 10** ***WEF: 106***
New un-skilled employment opportunities created in the operational phase of the project	**Transmission line: 2** ***WEF: 40***
What is the expected value of the employment opportunities during the operational and construction phase?	**Transmission line: Construction: R 6'000'000 & Operation: R 7'000'000** ***WEF: Construction: R100'000'000 & Operation: R150'000'000***
What percentage of this value that will accrue to previously disadvantaged individuals?	**Transmission line: 93 %**
The expected current value of the employment opportunities during the first 10 years	**Transmission line: R 9'500'000** ***WEF: R147'000'000***
What percentage of this value that will accrue to previously disadvantaged individuals?	**Transmission line: 93.5 %**

Water supply

Potable water will be required during the construction phase for concrete mixing and drinking water for the construction workers. Approximately 800m³ concrete would be required to construct the line which would require a total of ± 160 m³ water. Potable water will be obtained under the WEF's current water use confirmation letter included in **Annexure J6**. The WEF's water use confirmation letter from the local water service provider contains sufficient capacity for the construction of the WEF and associated infrastructure including that of the transmission line and associated road.

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 20 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.

SPECIALIST STUDIES

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 Table 3**.**

Table 3: Specialist investigations and appointed consultant

Study	Consultant and Organisation
Ecological assessment	Dr David Hoare of David Hoare Consulting cc
Avifauna assessment	Chris van Rooyen of Chris van Rooyen Consulting
Heritage assessment Cultural heritage Palaeontology	Wouter Fourie of PGS Heritage and Grave Relocation Consultants
Visual assessment	Mrs Karen Hansen of Karen Hansen Landscape Architect
Aquatic ecology Assessment	Ms Toni Belcher of Blue Science Consulting
Agricultural and soil assessment	Mr Michael Wright of SiVEST

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

Listed activity as described in GN R.544, 545 and 546	Description of project activity
GN R. 544 No. 10 The **construction of facilities** or infrastructure for the **transmission and distribution of electricity**: (i) **outside urban areas** or industrial complexes with a **capacity of more than 33 but less than 275 kilovolts**	The construction of **132 kV transmission line**, and associated infrastructure, from the authorised WEF to Eskom's Hydra substation, is located in a **rural area**. The 132 kV transmission line will be approximately 27 km in length and run in parallel to the existing 400 kV transmission line to Hydra Substation.
GN R. 544 No. 11 The **construction of**: (ii) **infrastructure or structures covering 50 square metres or more** where such construction **occurs within a watercourse or within 32 metres of a watercourse**, measured from the edge of a	**Wetlands and drainage lines** are scattered across the proposed transmission line route and one or more structures or associated **infrastructure would need to cross these areas**.

watercourse, excluding where such construction will occur behind the development setback line.	
GN R. 544 No. 18 The **infilling or depositing of any material of more than 5 cubic metres into**, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock or more than 5 cubic metres from: (iii) **a watercourse** but excluding where such infilling, depositing, dredging, excavation, removal or moving; (a) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or (b) occurs behind the development setback line.	This activity may only be triggered **if any of the transmission line towers,bases and access roads will be located in a watercourse** therefore, it has been included as a precautionary measure. Details of the location of the transmission line towers and bases will be provided in the BA report.
GN R. 546 No. 13 The **clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation**, except where such removal of vegetation is required for: (2) the undertaking of a linear activity falling below the thresholds mentioned in Listing Notice 1 in terms of GN No. 544 of 2010. **Northern Cape** and Western Cape: ii. **Outside urban areas, the following:** (bb) **National Protected Area Expansion Strategy Focus areas**	Approximately **8 km of the transmission line route will fall within the National Protected Area Expansion Strategy Focus area: Senqu Caledon** and more than **1 ha of natural vegetation would need to be cleared** for the proposed project such as for the pylon footprints and access and maintenance roads. Refer to **Figure 13** for the NPAES Focus area map.
GN R. 546 No. 14 The **clearance of an area of 5 hectares or more of vegetation where 75% or more** of the vegetative cover **constitutes indigenous vegetation**, except where such removal of vegetation is required for: (1) purposes of agriculture or afforestation inside areas identified in spatial instruments adopted by the competent authority for agriculture or afforestation purposes; (2) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the activity is regarded to be	As the project is located outside an urban area and **approximately 8 ha of natural vegetation would need to be cleared for the proposed project** (areas that would be cleared include such as for the pylon footprints and access and maintenance roads), this activity will be triggered.

excluded from this list; (3) the undertaking of a linear activity falling below the thresholds in Notice 544 of 2010.	
GN R. 546 No. 16 The **construction of**: (iv) **infrastructure covering 10 square metres or more** (a) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga and **Northern Cape**: ii. **Outside urban areas, in**: (bb) **National Protected Area Expansion Strategy Focus areas**; where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	This activity **will only be triggered if any of the transmission line towers, bases and access roads within the Senqu Caledon focus area, will be located in a watercourse** therefore, it has been included as a precautionary measure. Details of the location of the transmission line towers and bases will be provided in the BA report.

2 FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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

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

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

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

a) Site alternatives

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 Hydra substation. The process was undertaken in order to select a route based on various biophysical, socio-economic and technical factors. Refer to the servitude specialist report in **Appendix J3** for the detailed process in developing the preferred alternative (Alternative A) and alternative route (Alternative B). In accordance with NEMA EIA regulations, an alternative (Alternative B) was developed to provide another potential and feasible connection to the Hydra substation.

Therefore both Alternatives (A and B) have been considered in this Basic Assessment process and both alternatives have been assessed by all specialists. For both 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.

- **Alternative A** is approximately 27 km from the North substation to the Hydra substation.
- **Alternative B** is approximately 25.5 km from the North substation to the Hydra substation.

In the case of linear activities:

Alternative A:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	-30° 42' 58.12" S	24° 5' 32.22" E
• Middle/Additional point of the activity	-30° 38' 19.83" S	24° 11' 28.86" E
• End point of the activity	-30° 32' 42.19" S	24° 16' 1.57" E

Alternative B:

• Starting point of the activity	-30° 42' 53.60" S	24° 5' 30.57" E
• Middle/Additional point of the activity	-30° 37' 47.35" S	24° 10' 43.07" E
• End point of the activity	-30° 32' 40.45" S	24° 16' 3.62" 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 A1** for the Locality Map and **Appendix A2** 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 500 m route corridor 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 only be finalised during implementation and would be dependent on approval as required by Eskom. Within the route corridor, only one servitude would be required for the transmission line 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 (preferred alternative)
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. 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 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 1 (preferred alternative)
Alternative 2
Alternative 3

e) No-go alternative

The No-Go alternative implies that the *status quo* would be maintained. This option would prevent the approved WEF from being constructed and positive impacts identified during the previous EIA process would not be realised (e.g. job creation, contributing to energy security and generating 138.96 MW of renewable energy). For this process, the No-Go alternative is flawed since the No-Go is considered to be the *status quo* consisting of the authorised WEF. However, the No-Go alternative, the authorised WEF, cannot proceed without

constructing transmission lines and the associated substation/ metering station.

Should the No-Go alternative be authorised, the site is likely to remain available to the farmers as rangeland or retained as a wilderness area. These activities are all largely at a small scale and have a low impact on the receiving environment n the study area.

However, the No-Go Alternative would not be feasible as it would prevent construction of the authorised De Aar 2 North WEF and the socio-economic benefits associated with this development would not be realised. Therefore we propose that the No-Go alternative should not be selected.

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

3 PHYSICAL SIZE OF THE ACTIVITY

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

Alternative: Foot print per Type 261 pylon (0.6 m²) Alternative A1[3]	0.6 m² area x 27 km length / 250m span	**Size of the activity:** max~65 m²
Alternative: Foot print per Type 277 pylon (1.5 m²) Alternative A1[4]	1.5 m² area x 27 km length/ 250m span	**Size of the activity:** max~162 m²

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	~27 m
Alternative A2 (if any)	~25.5 m
Alternative A3 (if any)	m

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

Alternative:		**Size of the site/servitude:**
Alternative A	Length 27 km x servitudes with a total width 52 m	1 404 000 m²
Alternative B	Length 25.5 km x servitudes with a total width 52 m	1 300 000 m²
Alternative A3 (if any)		m²

[3] "Alternative A." refer to activity, process, technology or other alternatives.
[4] "Alternative A." refer to activity, process, technology or other alternatives.

4 SITE ACCESS

Does ready access to the site exist?	YES√	NO√
If NO, what is the distance over which a new access road will be built		km

Describe the type of access road planned:

Access roads would run the length of the proposed servitudes and would be required to access the transmission route only where no roads currently exist. However, given that the majority of the line will run in parallel with the existing 400 kV line it is envisaged that the 132 kV would use the same access roads for construction and maintenance. Those sections requiring new access roads will have jeep tracks and will have an average width of approximately 4 meters. 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.
Existing roads will be used as far as possible however, where such roads don't exist, jeep tracks will be created during construction and operation for maintenance purposes. A transmission line corridor of 500 m has been accessed to allow for minor realignment adjustments and the final design of the route will be determined during implementation, which would also be dependent on approval as required by Eskom. As such, the use of suitable existing access roads and positioning of potential jeep tracks will also be determined at this time.

5 LOCALITY MAP

The A3 Locality Map is included in **Appendix A1.**

6 LAYOUT/ROUTE PLAN

The final route will only be determined during implementation therefore, a final route plan is not available at this time however, the 500 m route corridor is fixed. Minor route adjustments may be done within the 500 m corridor during implementation. Refer to **Appendix A1** for the locality map which also indicates the 500 m route corridor.

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 in 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):

1. Is the activity permitted in terms of the property's existing land use rights?	YES	**NO√**	Please explain
The proposed servitudes would be situated on private property which are 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 line is operational. Furthermore the current agricultural practices will continue once the line has been constructed.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	**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 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 132 kV transmission line will allow electricity, generated through renewable technology, to be evacuated from the WEF to the national grid.			
(b) Urban edge / Edge of Built environment for the area	YES	**NO√**	Please explain
The proposed transmission lines fall outside of the urban edge.			
(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?).	**YES√**	NO	Please explain
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: • Creation of a sustainable environment in Emthanjeni; and • Economic Development (Macroplan, 2007)[5]. The transmission line and WEF will compliment this land use need as these components do not affect the land use once constructed. Furthermore 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. Refer to Mulilo's commitment to skills development which was included in their water use license application to DWA:			

[5] Macroplan. 2007. Spatial development Framework for Emthanjeni Municipality.

Longyuan Mulilo De Aar Maanhaarberg Wind Energy Facility is fully committed to the development and transfer of valuable skills to employees. Skills development is a critical component to the overall economic as well as socio-economic development of the communities surrounding our wind energy facilities.

Our program consists of a two-pronged approach - firstly we are committed to employing already skilled individuals from previously disadvantaged backgrounds. During construction we expect to employ at least 70% Skilled Black People and during operations an average of 94% of permanent employees will be regarded as Black Skilled People.

Secondly we will coordinate skills development processes in conjunction with our various contractors aimed at elevating previously disadvantaged individuals, where possible focusing on women. The core of these programs is to transfer valuable skills that have longevity and can be used in finding jobs beyond the construction period. During operations we endeavour to implement specific skills programs aimed at operational management that will increase the number of management positions awarded to previously disadvantaged individuals.

We are proud to impact communities in a positive and sustainable manner through the transfer of knowledge and skills.

Refer to skill development letter in **Appendix J7**

(d) Approved Structure Plan of the Municipality	**YES**√	NO	Please explain
The proposed project entails transmission infrastructure, which is compatible with the Local Economic Development (LED) objectives of the Emthanjeni Municipality.			
(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?)	YES	**NO**√	Please explain
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 were environmental issues are handled per project requirement (Emthanjeni Local Municipality IDP May 2012).			
(f) Any other Plans (e.g. Guide Plan)	YES	**NO**√	Please explain
No other plans are applicable to this application.			
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)?	YES	**NO**√	Please explain
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.

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.)	**YES√**	NO	Please explain

Strategic level

The construction of the transmission line 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:

1. Utilisation of resources available to South Africa;
2. Meeting nationally appropriate emission targets in line with global climate change commitments; and
3. Enhancing energy security by diversifying generation.
4. Renewable Energy as a driver for economic growth in South Africa.
5. Job opportunities and social upliftment (local level),

Each of the above mentioned reasons for pursuing wind energy generation in South Africa is further discussed below.

1. Utilisation of resources available to South Africa

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.

2. Meeting nationally appropriate emission targets in line with global climate change commitments

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 exploitation of non-renewable, resources, there is increasing international pressure on countries to increase their share of renewable energy generation. The De Aar North WEF project together with the associated transmission line is 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 (SO2) emissions;

- Avoid 1 000 kg of Carbon Dioxide (CO_2) 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.

Secure energy access and energy security is important for any economy to grow sustainably. Apart from security of energy supply, economic growth relies on affordable electricity. The affordable access to energy in the form of electricity is not only important for individual citizens, but also for industries that drive the economy. High energy prices increase costs of production, leading to reduction of labour force, thus unemployment. As the development of renewable energy proceeds in increasing system capacity and efficiently, the costs of energy production will drop. The REIPPP ensured this by creating a competitive bidding process, which has succeeded in bringing the price of renewable electricity down. These trends will increase the availability of clean electricity over time, eventually benefiting the country's manufacturing sector through lowered costs and lowered pollution or energy taxes such as the proposed carbon tax (Sustainable Energy Resources Handbook (2014)).

4. Renewable Energy as a driver for economic growth in South Africa

According to the Organisation for Economic Co-operation and Development (OECD) (2011), there is currently a window of opportunity to undertake transformational change in the energy supply sector to meet economic and environmental objectives, as there is a need to replace aging plants and add new capacity especially in emerging economies, to meet growing electricity demand.

One of the positive spin offs of renewable energy development is that funds are being directed into the sector from governments, institutional investors and individual investors worldwide.

The funds are not only invested in the development of renewable energy projects, but also in manufacturing key equipment required for construction of such projects, and this is where the long term economic growth prospect lies. For South Africa, the main interest lies in manufacturing components such as wind turbine towers and wind turbine blades. The rise in green energy investment has led to the promise of more green jobs and the first two rounds of the REIPPPP committed in excess of 20 000 direct jobs for both the construction and operation of renewable energy projects (Sustainable Energy Resources Handbook (2014)).

According to the Sustainable Energy Resources Handbook (2014) there are six pillars of renewable energy and socioeconomic benefits, namely: Energy Access and Secure Energy Future; Private Sector Participation in Energy Generation; investment inflows; Local Manufacturing Job Creation and Socio-Economic Development. Edkins, et al (2010) states that in the last few years renewable energy has been increasingly seen as an opportunity to foster a more secure, labour intensive and sustainable economy and society.

Economic development is one of the most important requirements of REIPPP. The programme incorporates stringent requirements for investment in local economic development in various ways. Emphasising its importance, the economic development criteria is allocated a weighting of 30% in the bid evaluation scoring system, against 70% for the price. The seven criteria of the economic scorecard are job creation and local content, followed by local ownership and socioeconomic development, management control and enterprise development.

REIPPP Economic Development

Economic Development Elements	Weighting
Job Creation	25%
Local Content	25%
Ownership	15%
Management Control	5%
Preferential Procurement	10%
Enterprise Development	5%
Socio-Economic Development	15%
Total	100%
Total points	30 points

Source: DTI

According to the Sustainable Energy Resources Handbook (2014) renewable energy has great potential to make a meaningful contribution to economic growth. Ensuring a secure and affordable energy access is imperative for growth of any economy. The REIPPPP programme has opened endless possibilities for economic participation by South African entities in different arenas through opening the energy generation business to the private sector and decentralising the generation of energy. R75 billion has been committed to the development of renewable energy financed by both local and foreign investors. As these investments trickle down to the bottom of the pyramid, though job creation and socio-economic development, the standard of living for the average South African could see improvement.

Local level

5. 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 project would uplift the local community through job creation, training and a community trust[6] set up by Mulilo to benefit the community directly from the power being generated. Refer to **Appendix J7** for Mulilo's letter of commitment to skills development.

Should the development of the proposed 132kV transmission line 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 project 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

- Renewable energy is widely viewed as one of the best prospects for business and job growth over the next decade and has also been identified as a catalyst for long term economic growth.
- Reducing the demand on scarce resources, such as water, as the generation of energy from wind facilities uses approximately 264 ℓs water per MW/h where coal-fired facilities on average uses approximately 2 200 ℓs per MWh in closed-loop systems and approximately 125 000 ℓs per MWh in open-loop (Civil Society Institute report, "The Hidden Costs of Electricity: Comparing the Hidden Costs of Power Generation Fuels 2012);
- 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;
- Helping South Africa reach its emission targets and reduce the social costs associated with coal fired facilities;

LOCAL

- Local economic development; and
- Social upliftment through skills training, job opportunities and the establishment of a community trust.

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.)	**YES√**	NO	Please explain

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. Potable water will be obtained under the WEF's current water use confirmation agreement included in

[6] 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 to the 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.

Appendix J6. The WEF's water use confirmation letter from the local water service provider grants sufficient capacity for the construction of the WEF and associated infrastructure including that of the transmission line and associated road.			
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.)	YES	**NO√**	Please explain
No additional services are required once the transmission line is operational – there will thus be no impact on infrastructure planning.			
7. Is this project part of a national programme to address an issue of national concern or importance?	**YES√**	NO	Please explain
Refer to the point 4 above.			
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.)	**YES√**	NO	Please explain
The proposed transmission line provides 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 line. 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. Pylons are intrusive in any landscape but De Aar has been associated with these transmission lines for a long time; this industrialisation of the landscape is part of the existing visual context. Towers of the solid pole design make a somewhat stronger visual statement than lattice or timber pylons. They are also not as effectively backgrounded as lattice poles which increase their impact somewhat, but for some receptors they would be backgrounded by Swartkoppies hills. The visual impact of changes in route direction requiring more guyed suspension towers could be moderated by keeping changes of direction to a minimum and increasing the span between towers to the practical maximum (refer to **Appendix D3** for the Visual Impact Assessment (VIA) specialists report) The North WEF site was 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 would 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.

- 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 and Phillipstown, where high levels of unemployment are experienced; hence the proposed projects would uplift the local community through job creation, training and the establishment of a community trust to benefit the community directly from the power being generated.

9. Is the development the best practicable environmental option for this land/site?	**YES**√	NO	Please explain

The proposed transmission line transverses mostly farmland which is predominantly for grazing. Once the transmission line is 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.

10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	**YES**√	NO	Please explain

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. 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.

The no-go alternative, which represents the status quo, would have a high impact, of national extent and would therefore have a **medium (-)** significance. No mitigation would be possible as the no-go alternative would therefore have a significant impact on the viability of the North WEF site. 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 North WEF site.

11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	**NO**√	Please explain

De Aar has been identified as a renewable hub for both wind and solar energy projects. Numerous renewable projects with their associated transmission lines have already been authorised in the Area. Furthermore the Hydra substation is the largest in South Africa with numerous transmission lines feeding into the National grid.

12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	**NO**√	Please explain

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.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	**NO√**	Please explain
The proposed transmission line will be located within the farmlands and won't compromise the urban edge.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	**YES√**	NO	Please explain
The proposed project, together with the WEF, will contribute to the following SIPS (Reference, April 2012): SIP 8: Green Energy in support of the South African economy • The WEF is seen as a sustainable green energy initiative diversifying the range of clean energy options on a national scale. SIP 9: Electricity generation to support socio-economic development • The WEF is a renewable energy project designed to support socio-economic development through provision of job opportunities and skills development. SIP 10: Electricity transmission and distribution for all • The proposed transmission line will contribute to expanding the transmission network. Construction of the WEF will start in 2014.			
15. What will the benefits be to society in general and to the local communities?			Please explain
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 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 336 direct job opportunities will be created during the pre-construction and construction phase (6 months) of the WEF and approximately 35 for the construction for the proposed transmission line. However many indirect jobs, such as the hispotality, transportation, manufacturing industries, etc. would also be created.Approximately 59 jobs would be created during the operational phase for the proposed WEF and approximately 4 for the proposed transmission line. The proposed projects 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 and Phillipstown depending on the procurement method and the primary contractor.			

A training strategy initiated by the Engineering, Procurement and Construction (EPC)[7] contractor will be implemented to ensure community upliftment. Mulilo is committed to skills development and the transfer of skills within the local communities.

16. Any other need and desirability considerations related to the proposed activity?	Please explain

The WEF site are lies between De Aar and Phillipstown, where high levels of unemployment are experienced; hence the proposed WEF and associated transmission line project 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.

17. How does the project fit into the National Development Plan for 2030?	Please explain

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 371 jobs for the construction phase and 63 for the operational phase.
- 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.
- Many indirect jobs, such as the hospitality industry, transportation industry, manufacturing industry, etc would also be created.

Infrastructure development and expansion:

- Mulilo has recently received preferred bidder status from the Department of Energy (DoE) under the third round of the Renewable Energy Independent Power Producers Programme (REIPPPP) – 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 site and transmission line 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 line will assist in diversifying South Africa's energy portfolio.
- Wind Power is a proven source of renewable energy and does not rely on carbon fuels.

Transformation and unity:

- Employment equity[8].

[7] Common form of contracting arrangement within the construction industry.

[8] 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.

- Economic development[9]
- 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.

Section 23(2) of NEMA: The general objective of integrated environmental management is to:	**Description as to how the proposed development has taken these general objectives into account.**
(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 3**). 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;	**Section D** 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 Lifecycle Environmental Management Program (LEMP) has been drafted to include the recommendations from the respective specialists to guide the construction and operational phases in an environmentally and socially sound manner

[9] Economic development is one of the most important requirements of REIPPP. The programme incorporates stringent requirements for investment in local economic development in various ways. Emphasising its importance, the economic development criteria is allocated a weighting of 30% in the bid evaluation scoring system, against 70% for the price. The seven criteria of the economic scorecard are job creation and local content, followed by local ownership and socioeconomic development, management control and enterprise development.

	(Refer to **Appendix G1**).
(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: • Advertisement • Site notice • Letters to neighbouring property owners • Letters to commenting authorities.
(e) ensure the consideration of environmental attributes in management and decision making which may have a significant effect on the environment.	Mulilo 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 LEMP 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 LEMP, require the clearing of invasive alien vegetation which will assist in improving the biodiversity of the site. The LEMP 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. Error! Reference source not found. below considers each principle listed in Section 1 of NEMA and its consideration within this process.

Table 4: The applicability of NEMA Sustainability Principle to the proposed project

NEMA Sustainability Principle	Consideration for this proposed activity and BA Process
(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 – 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; b. Serve as the general framework within which environmental management and implementation plans must be formulated; c. Serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act; or any statute provision concerning the protection of the environment; d. Serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and e. Guide the interpretation, administration and implementation of this Act, and any other law concerned with the protection of management of the environment.	All principles must be considered in the application and consideration for authorisation. 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.
(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical,	This BA process has considered both the natural and socio-economic environment and mitigation measures provided respond to this principle. The

psychological, developmental, cultural and social interests equitably.	selection of the preferred transmission line route will be based on this assessment.
(3) Development must be socially, environmental and economically sustainable.	The proposed project will assist in securing South Africa's energy future while curbing the impact on greenhouse gas emissions and reducing unemployment. The proposed project would be economically sustainable as it would encourage long term investment in De Aar (minimum of 20 year investment). Social investment would also be encouraged through job creation, skills training and the establishment of the trust.
(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 LEMPr. 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	The project would facilitate the utilisation of a renewable natural resource (i.e. wind).

	responsible and equitable, and takes into account the consequences of the depletion of the resource;	
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;	The project would facilitate the exploitation of a renewable natural resource, wind power, which does not have an exceedance level.
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	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.
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.	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.
(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.		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.
(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.		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 upliftment programmes. The proposed project will address aspects of social upliftment, which will have a positive economic impact at local and regional scales. Social upliftment will be part of the WEF's social development program.
(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.	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, thereby limiting access thereto.
(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.	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 LEMPr and would need to be subject to further investigation via an environmental authorisation process after the operational lifespan.
(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.	Public participation by all I&APs has been promoted and opportunities for engagement provided during the Basic Assessment process.
(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.	The Basic Assessment process has taken cognisance of all interests, needs and values espoused by all I&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.
(h) Community wellbeing and empowerment must be promoted through	Public participation by all I&APs has been promoted during the Basic Assessment process.

environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.	
(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.	This Basic Assessment process has considered both the natural and socio-economic environment and mitigation measures provided respond to impacts fulfil this principle.
(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.	The project area is subject to both the health and safety requirements of the OHS Act.
(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.	The Basic Assessment 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.
(l) There must be intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment.	The relevant authorities have been notified of the project and provided opportunity to comment. This authority process has been documented in the BAR.
(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.	The relevant authorities have been notified of the project and provided opportunity to comment.
(n) Global and international responsibilities relating to the environment must be discharged in the national interest.	The establishment of the proposed WEF and the associated transmission line 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. Should the development of the proposed 132 kV transmission line be acceptable, long term benefits for the community and society in De Aar would be

	realised as highlighted above. The proposed project 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 Environmental Management Act (No. 107 of 1998) (NEMA), as amended	The proposed servitudes will trigger listed activities GN R.544 item 10, 11 & 18 and GN R546 item 13, 14 and 16 thus requiring a Basic Assessment Process.	DEA	1998
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 *powerline exceeds 300 m in length* 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
National Environmental Guidelines	The following Environmental Guidelines were consulted to ensure that the BA process	DEAT, DEA&DP and DEA	2002 –

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	complies with the legislated process: • Integrated Environmental Information Management (IEIM), Information Series 5: Companion to the NEMA EIA Regulations of 2010 (DEA, 2010). • Implementation Guidelines: Sector Guidelines for the EIA Regulations (draft) (DEA, 2010). • IEIM, Information Series 2: Scoping (Department of Environmental Affairs and Tourism (DEAT), 2002). • DEAT. 2002. IEIM, Information Series 3: Stakeholder Engagement (DEAT, 2002). • IEIM, Information Series 4: Specialist Studies (DEAT, 2002). • IEIM, Information Series 11: Criteria for determining Alternatives in EIA (DEAT, 2004). • EIM, Information Series 12: Environmental Management Plans (DEAT, 2004). • Integrated Environmental Management Guideline Series, Guideline 4: Public Participation, in support of the EIA Regulations. Unpublished (DEAT, 2005). • Integrated Environmental Management Guideline Series, Guideline 7: Detailed Guide to Implementation of the Environmental Impact Assessment Regulations. Unpublished (DEAT, 2007). • Guideline for involving biodiversity specialists in EIA process (June 2005). • Guideline for involving heritage specialists in the EIR process (June 2005). • Guideline for involving visual and aesthetic specialists in the EIR process (June 2005). • Guideline for Environmental		2013

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	Management Plans (June 2005). • Guideline for determining the scope of specialist involvement in EIA Processes (June 2005). • Guideline for the review of specialist input into the EIA Process (June 2005). The following guidelines from the Department of Environmental Affairs and Development Planning (Western Cape) (DEA&DP) were also taken into consideration: • DEA&DP. 2013. Generic Terms of Reference for EAPs and Project Schedules (DEA&DP, March 2013). • DEA&DP. 2013. Guideline on Public Participation (DEA&DP, March 2013). • DEA&DP. 2013. Guideline on Alternatives (DEA&DP, March 2013). • DEA&DP. 2013. Guideline on Need and Desirability (DEA&DP, March 2013). • DEA&DP. 2013. Guideline on Exemption Applications (DEA&DP, March 2013). • DEA&DP. 2013. Guideline on Appeals (DEA&DP, March 2013).		
Kyoto Protocol	In Africa, the CO_2 emissions are primarily the result of fossil fuel burning and industrial processes, such as coal fired power stations. The International Energy Agency (2008) "*Renewables in global energy supply: An IEA facts sheet"* estimates that nearly 50% of global electricity supplies will need to come from renewable energy sources in order to 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.	UNFCCC	1997
White Paper on	This project together with the WEF would	Department of	1998

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Energy Policy of the Republic of South Africa	integrate environmental costs into economic analysis which will help promote a sustainable option as part of South Africa's energy policy towards energy diversification.	Energy (DoE)	
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[10].	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 Plan (IRP)	The IRP is a National Electricity Plan which 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 energy mix set out in the balanced revised scenario within the target for total system capacity.	DME	2003
NEMA Environmental	The NEMA Environmental Impact	DEA&DP	2010

[10]http://www.eskom.co.za/c/73/ipp-processes/ (accessed 29/10/11)

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Impact Assessment Regulations Guidelines and Information Document Series	Assessment Regulations Guidelines and Information Document Series were consulted to ensure that the BA process complies with the legislated process.		& 2011
National Environmental Guidelines: • Integrated Environmental Management (IEIM), Information Series (DEAT, 2002, 2005 & 2007).	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?	√ YES	NO
If YES, what estimated quantity will be produced per month?	To be confirmed	

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)?

Construction solid waste will be dealt with in the Life-cycle Environmental Management Programme (LEMP) 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 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[11]. 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 EPC contractor 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**√

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

No waste will be generated.

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

Is the activity that is being applied for a solid waste handling or treatment facility? YES NO
If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

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

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

[11] http://www.sawic.org.za/?menu=88

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

If YES, provide the particulars of the facility:

Facility name:	Temporary composting 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.		
Contact person:	Mr. Willie Lubbe		
Postal address:	Posbus 42 De Aar		
Postal code:	7000		
Telephone:	053 632 9126	**Cell:**	
E-mail:		**Fax:**	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 that 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

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

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

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 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.

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**

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

	NO

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

√ **Municipal**	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?	YES / √ **NO**

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

14 ENERGY EFFICIENCY

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

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** of this report, Alternative A would comprise of a single 132 kV transmission line which would run parallel to an existing Eskom 400kV line, ultimately connecting the North substation to the Hydra substation. Alternative B will consist of a single 132 kV transmission line and will connect the North substation to the Hydra substation.

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

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 WEF is located on the high-lying plateau to the north east of De Aar. The turbines are connected via a 33 kV electrical reticulation lines to the substation which is located on this high-lying plateau. The switching / metering station is located adjacent to the substation. The topography of the site ranges from the steep plateau escarpment, which faces De Aar, to the lower plains which are relatively flat with some gently undulation, terminating at the Hydra substation. Due to the varied environment through which the transmission lines passes, the servitude has been divided into three sections, referred to as A, B, and C. (Refer to **Figure 9** for map indicating **Section A, Section B and Section C)**.

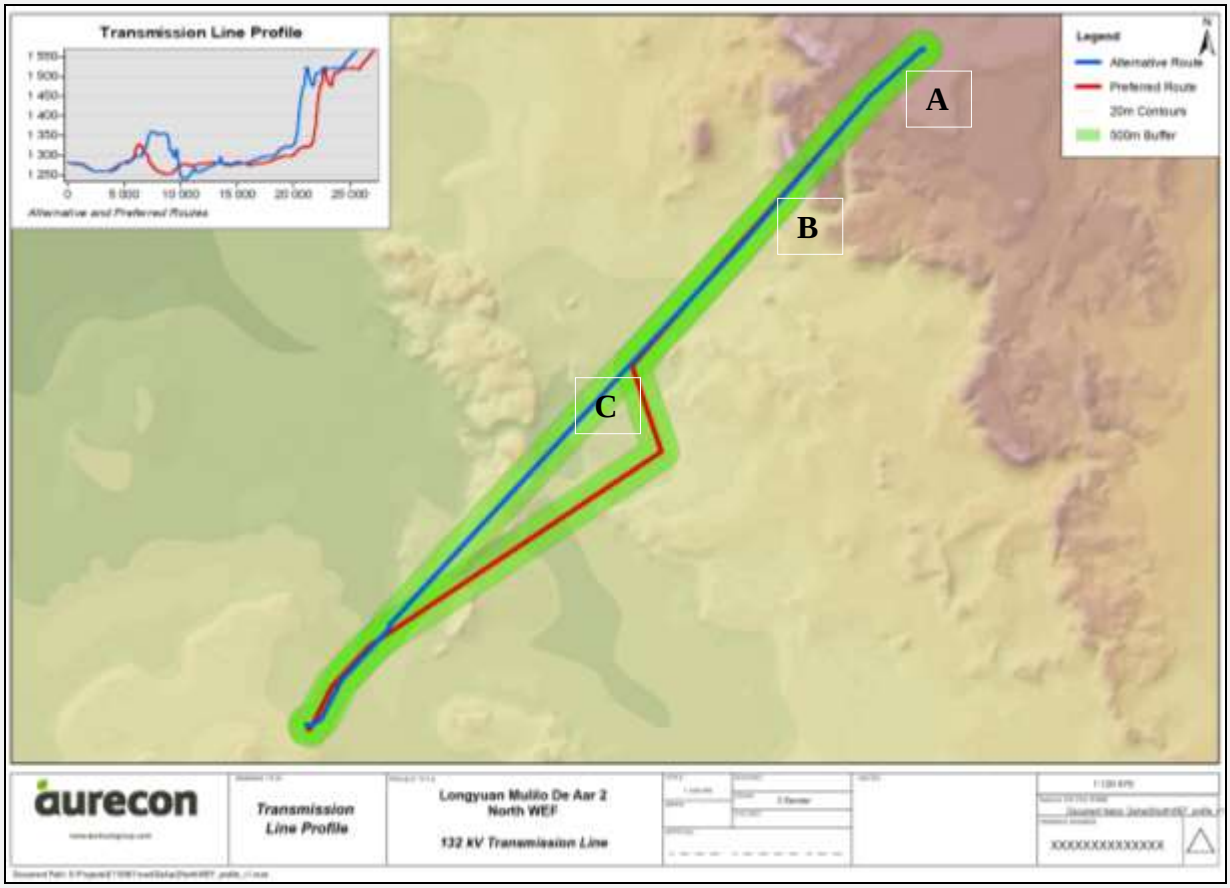

Figure 9: Topographical profile of the proposed transmission lines

A description of each section is provided below:

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 them **(Figure 10)**.

Figure 10: Section A the top of the eastern 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 Eastern Plateau near De Aar

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

Figure 12: A view of the flat low-lying areas in the fore-ground and the eastern plateau in the background (Chris van Rooyen Consulting 2014)

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?

√ YES	NO

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

Property description/physical address:	**Province**	Refer to **Appendix J8**
	District Municipality	
	Local Municipality	
	Ward Number(s)	
	Farm name and number	
	Portion number	
	SG Code	
	Where a large number of properties are involved (e.g. **linear activities**), please attach a full list to this application including the same information as indicated above.	
Current land-use zoning as per local municipality IDP/records:	Current land use zoning is for Agriculture.	

	In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.
Is a change of land-use or a consent use application required?	**YES**√ NO
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 proposed 132 kV power line (alternative A and alternative 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:

Flat (Section C)	**1:50 – 1:20** (Section A)	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5 (Section B)	1:7,5 – 1:5	Steeper than 1:5

Alternative B:

Flat (Section C)	**1:50 – 1:20** (Section A)	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5 (Section B)	1:7,5 – 1:5	Steeper than 1:5

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 **(Section B)**	√	2.4 Closed valley		2.7 Undulating plain / low hills	
2.2 Plateau **(Section A)**	√	2.5 Open valley		2.8 Dune	
2.3 Side slope of hill/mountain **(Section B)**	√	2.6 Plain **(Section C)**	√	2.9 Seafront	

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^{E}√	Natural veld with scattered aliens^{E}	Natural veld with heavy alien infestation^{E}	Veld dominated by alien species^{E}	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 is one major vegetation type that occurs in the study area, namely Northern Upper Karoo. This vegetation type is classified as Least Threatened and also has a wide distribution and extent. The natural vegetation in the study area is therefore not considered, from this perspective, to have high conservation status. There is one protected tree species that occurs in the area, *Boscia albitrunca* (Shepherd's Tree). It has been evaluated as having a low probability of occurring in the study area and was not 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, but neither species was found on site and, based on a field evaluation of the site, neither species is likely to occur there (Hoare, 2014).

5 SURFACE WATER

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

Perennial River	YES	**NO** √	UNSURE
Non-Perennial River	**YES**√	NO	UNSURE
Permanent Wetland	YES	**NO** √	UNSURE
Seasonal Wetland	YES	**NO** √	UNSURE
Artificial Wetland	YES	**NO** √	UNSURE
Estuarine / Lagoonal wetland	YES	**NO** √	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 tributaries of the Brak River, a seasonal tributary within the Orange River System. The Brak River flows in a north westerly direction along the southern boundary of the study area with a number of its tributaries crossing the site as they flow in a southerly direction. The Brak River joins the Orange River east of Prieska, approximately 180 km from the site.

The two larger tributaries of the Brak River that will also be crossed by the proposed transmission line route are the Vet Laagte and the Maatjes Fountain streams. The Vet Laagte River drains the low lying cultivated areas to the west of the Brak River while the Maatjes Fountain River drains the western face of the plateau to the east of De Aar and the Brak River. These larger tributaries of the Brak River have well defined channels and some associated vegetation (Belcher 2014).

6 LAND USE CHARACTER OF SURROUNDING AREA

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

Natural area√	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station [H]
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential[A]	Church	**Agriculture**√
Retail commercial & warehousing	Old age home	**River, stream or wetland**√
Light industrial[12]√	Sewage treatment plant[A]	**Nature conservation area**√[13]
Medium industrial [AN]	Train station or shunting yard [N]	**Mountain, koppie or ridge**√
Heavy industrial [AN]	Railway line [N]	Museum
Power station	Major road (4 lanes or more) [N]	Historical building
Office/consulting room	Airport [N]	Protected Area
Military or police base/station/compound	Harbour	Graveyard

[12] The proposed line would run parallel to an existing Eskom 400kV transmission line.
[13] A portion of the site falls into the National Parks Area Expansion Strategy (NPAES) which has been proposed for inclusion in a protected area (reserve). To date no formal process for inclusion has been initiated.

Spoil heap or slimes dam[A]	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

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 Astronomy Geographic Advantage Act (Act 21 of 2007). On 20 August 2010 the Minister declared the Karoo Core Astronomy Advantage Area for the purposes of radio astronomy.

The Karoo Core Astronomy Advantage 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 Square Kilometre Array (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. The SKA office has been included on the I&AP database.

Planned expansion area of an existing protected area:

The National Parks Area Expansion Strategy (NPAES) has identified a portion of the escarpment of the eastern plateau that is proposed for inclusion in a protected area (reserve). Part of the area identified falls within the site of the proposed north wind energy facility and as such the proposed servitudes would be located within this protected area. However, it should be noted that no engagement with regard to the identification of the land portions, nor with regard to land acquisitions, has taken place with the relevant landowners. Representatives from the South African National Parks, South African National Biodiversity Institute and DEA Chief Directorate: Transfrontier Conservation and Protected Areas as well as the provincial environmental authority, namely DENC were notified of this proposed project and provided with the opportunity to comment during the EIA process for the proposed WEF. No comments were received on the WEF projects, however the respective parties have again been given opportunity to comment on the current process.

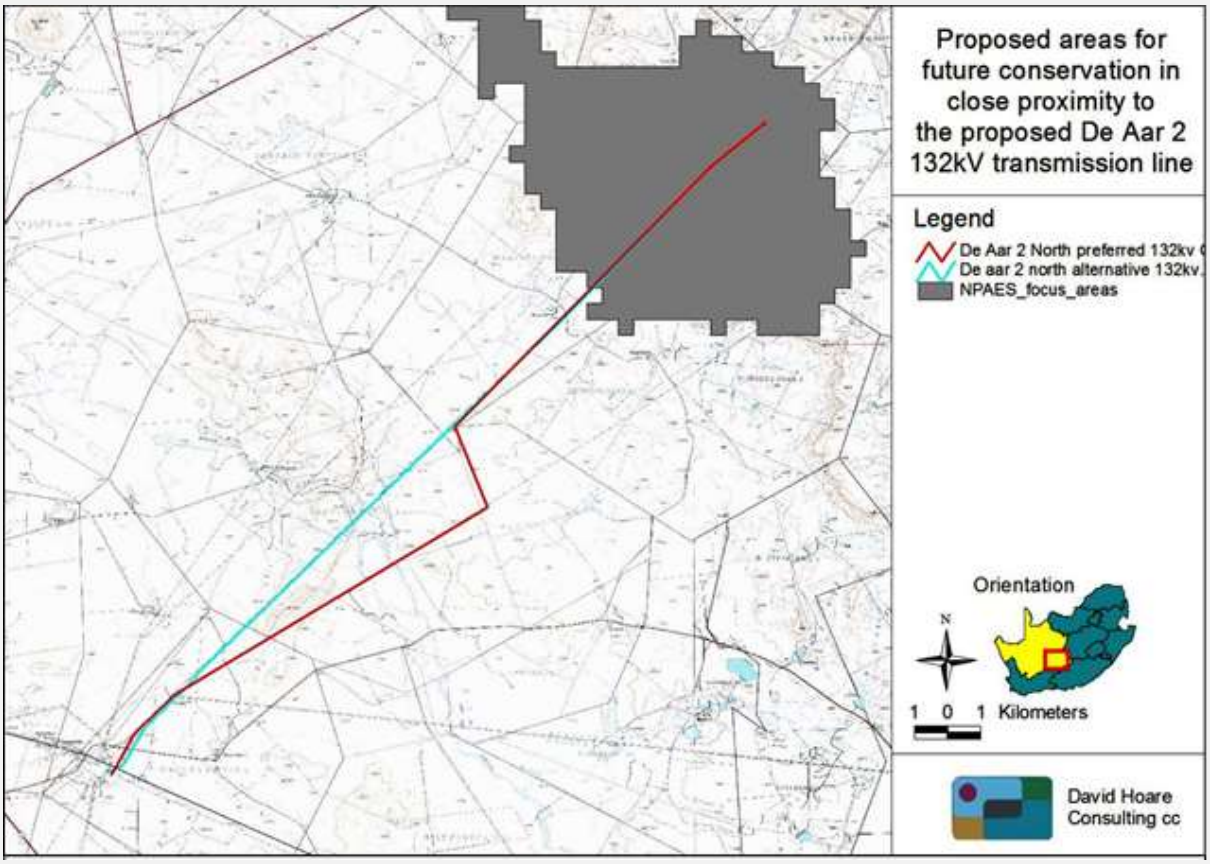

Figure 13: Areas included in the National Parks Area Expansion Strategy (Hoare, 2014)

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√**
	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 D6**.

Archaeological Finds

Utilising the archival study completed for the HIA as a guide,a field work component to the study k identified no archaeological find spots on the alignments assessed.

- The HIA has focused on a 500 meter assessment corridor of the route provided and the archaeological component on the centre alignment of the 500 meter corridor. Because of subsurface and localised nature of archaeological remains, any deviation or changes within the corridor to the initial layout alignment will require an archaeological walkdown of the new alignment after pylons placement positions have been to identify any possible archaeological and heritage structures and sites before construction commence.

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.

Palaeontology

There is a high and moderate possibility that fossils could be encountered during excavation of the Abramskraal and Tierberg 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 negative palaeontological impact. The exposure and subsequent reporting of fossils (that would otherwise have remained undiscovered) to a qualified palaeontologist for excavation will be a beneficial palaeontological impact.

It is therefore recommended that:

- A Palaeontologist should be appointed as part of the Environmental Construction Team for preferably all identified palaeontological sensitive areas but definitely for the identified high sensitive areas.
- If required a palaeontological rescue and/or destruction permit must be obtained by the Palaeontologist.
- The Palaeontologist accompanying the surveyor and foundation teams during the pylon construction phase should advise on pylons positions. If possible, pylons located within potential fossil bearing areas should be moved. If not possible, any fossils found should be rescued from the construction footprint.
- Compile a Phase 2 report to the Heritage Authority responsible after palaeontological construction inputs.

Cultural Landscape
An evaluation of the 500 meter corridor for the proposed 132kV line has shown a low negative impact on the cultural landscape.

Will any building or structure older than 60 years be affected in any way?	YES	**NO√**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	**NO√**

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

8 SOCIO-ECONOMIC CHARACTER

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

a) Local Municipality

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

Level of unemployment:

Lack of employment opportunities has been identified as a challenge within the DM. There is a high rate of unemployment in the LM which is 27.9 %. This is slightly lower than the DM unemployment rate at 28.3 %, the rate in the province 28.1 % and the national rate of 39 % (Census, 2011). The annual average household income is R 88,244 which is slightly higher than the DM at R75,237 and the province at R 86,185, although still lower than the national average at over R 100,000.

Economic profile of local municipality:

According to the Pixley ka Seme DM IDP (2011), the economy of the District is founded on community services, agriculture, transport and tourism. Small towns function primarily as agricultural service centres, and the main economic activities are located in the main urban areas of De Aar, Colesberg, Victoria-West and Carnarvon. De Aar is the main town within the DM serving a total of 24

other towns and is a potential industrial growth point with favourable conditions for industry and its strategic location. The economy of the LM is dominated by agriculture which accounts for the majority of the labour force (Emthanjeni LM, 2012). Other economic sectors on which the LM depends include the services sector (government institutions, Non-Governmental Organisations, Community-based Organisations and Non-profit Organisations as well as banks); manufacturing (stone crushing and abattoirs); retail (Checkers, Shoprite etc); agriculture (game farming and sheep, goat, pig and cattle farming); transport (road and rail infrastructure); and tourism (recognised for its potential) (Emthanjeni LM, 2012).

In terms of agriculture, wheat, maize and lucerne are key crops, and irrigation farming also supports the production of peanuts, grapes, dry beans, soya beans, potatoes, olives, pecan nuts, pistachio nuts and cotton (Pixley ka Seme DM, 2011). Small stock farming is widespread and focusses on sheep and goats, with sheep farming producing mutton and wool. The LM specifically, is increasingly becoming the key centre for supplying the rest of South Africa with "Karoo" mutton and there are several abattoirs in De Aar. The IDP highlights that there are opportunities for benefaction of resources which are currently being lost as products are sent to other areas for processing (Pixley ka Seme DM, 2011 and Emthanjeni LM, 2012).

The District is well connected, with De Aar being the institutional capital of the LM and DM (Emthanjeni website, 2013). The DM is located along some of the major transport routes including:

- The N1 from the Northern Province, Pretoria and Johannesburg to Cape Town;
- The N9 from Colesberg joining the N10 to Port Elizabeth and the Eastern Cape; and
- The N12 from Johannesburg via Kimberley to Cape Town; and the N10 from Namibia via Upington linking Namibia to the Eastern Cape.

Furthermore, the railway network around De Aar is well developed and one of the largest in South Africa (Pixley ka Seme DM, 2011).

According the Emthanjeni Tourist Strategy, there is 'immense untapped potential' for tourism in the LM (Creative Harvest, 2010). De Aar as the principal town in the LM and DM has a number of attractions including war memorials and features such as the Garden Of Remembrance and associated Memorial Cemetery, the De Aar Town Hall and cannon and the St Pauls Anglican Church used during the war. The Olive Schreiner Monument and the House of Oliver Schreiner (24 March 1855 to 11 December 1920), who was a South African feminist and socialist author, is based in the town (Creative Harvest, 2010). The De Aar railway station used to be the second most important railway junction in the Southern hemisphere and the Railway Station and the Steam Trains are a tourist attraction which could be expanded through the development of a Museum. De Aar hosts a weather station which is considered a major but not well known tourist attraction and there is a paragliding school and facility that attract international visitors (Creative Harvest, 2010). In the more rural areas there is Khoisan Rock Art and hunting of game such as Springbok that are an attraction to outsiders.

In terms of the economy, the economic growth of the district was 0.6 % in 2005, which was below the national average of 4 % in 2007 (Pixley ka Seme DM, 2011). Key challenges faced include:

- The lack of diversification of the district economy;
- lack of investment in the region;
- lack of employment;
- opportunities; lack of skills;
- lack of entrepreneurship;
- small number of Small, Medium and Micro Enterprises active in the region;
- underutilization of the regions natural resources and economic opportunities; and
- Lack of water for irrigation farming (Pixley ka Seme DM, 2011).

Specific opportunities identified for growth and development include manufacturing, agro-processing, mining and semi-precious stones. It is also recognised that in order to attract investors to the district, the municipalities should focus on critical development activities that are taking place nationally and internationally (Pixley ka Seme DM, 2011). There is a recognition that sustainable projects, such as this project, must be identified that would enhance economic growth and long term job creation.

Level of education:

A critical factor affecting quality of life is the standard of education within a community. According to Census (2011), the population of the LM has a low level of education. As many as 11% of the population aged 20 and older have no schooling, 17% have some primary schooling, 7% have completed primary schooling and 34% have some secondary schooling. Only 25% have completed matric, with 7% completing some form of higher education as indicated in **Figure 14**.

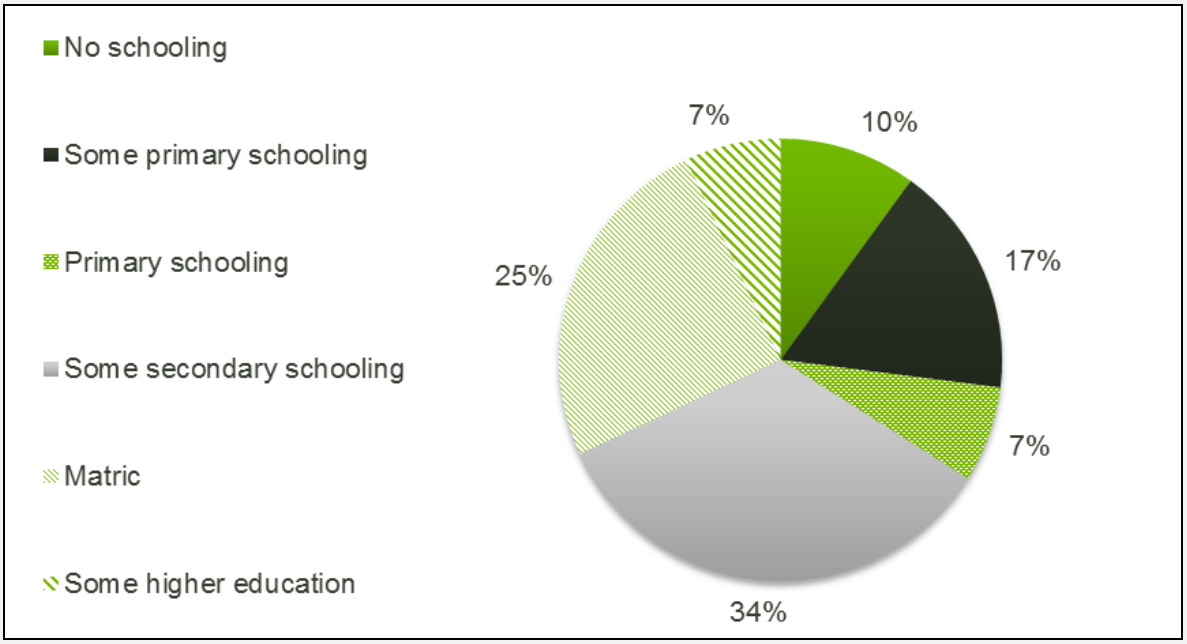

Figure 14: Level of education of De Aar

This is slightly more favourable than the province which has 23 % with a matric and the same portion (7 %) with a higher education, but slightly less favourable than the national average at 28 % with a matric and 12 % with a higher education.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R42 800 000 (ex VAT)	
What is the expected yearly income that will be generated by or as a result of the activity?	Transmission line: 0 WEF: R 402'000'000	
Will the activity contribute to service infrastructure?	**YES**√	
Is the activity a public amenity?	**YES**√	
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Transmission line: 35 WEF: 336	
What is the expected value of the employment opportunities during the development and construction phase?	Transmission line: Construction: R 6'000'000 Operation: R 7'000'000 WEF: Construction: R100'000'000 Operation: R150'000'000	
What percentage of this will accrue to previously disadvantaged individuals?	Transmission line: 93 %	
How many permanent new employment opportunities will be created during the operational phase of the activity?	Zero. Eskom will carry out routine maintenance by current staff complement	
What is the expected current value of the employment opportunities during the first 10 years?	Transmission line: R 9'500'000 WEF: R147'000'000	
What percentage of this will accrue to previously disadvantaged individuals?	Transmission line: 93.5 %	

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. 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 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 **Appendix A** for SANBI maps and **Appendix D1** for the Botony 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√	**80%**	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, dams, urban, plantation, roads, etc)	**20%**	Although the majority of the area is of a natural condition the land constitutes formal grazing and as such consists of farm roads, fences, and associated agricultural infrastructure as well as extensive existing transmission network. Most notably the existing 400kV servitude consisting of both line and its associated access road.

c) Complete the table to indicate:

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

Terrestrial Ecosystems		**Aquatic Ecosystems**		
Ecosystem threat status as per the National	Critical Endangered Vulnerable	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats,	Estuary	Coastline

Terrestrial Ecosystems		Aquatic Ecosystems						
Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Least Threatened√	seeps pans, and artificial wetlands)						
		YES√	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 300 mm per year (**Figure 15**). A MAP of 300 mm is deemed low, as 500 mm 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.

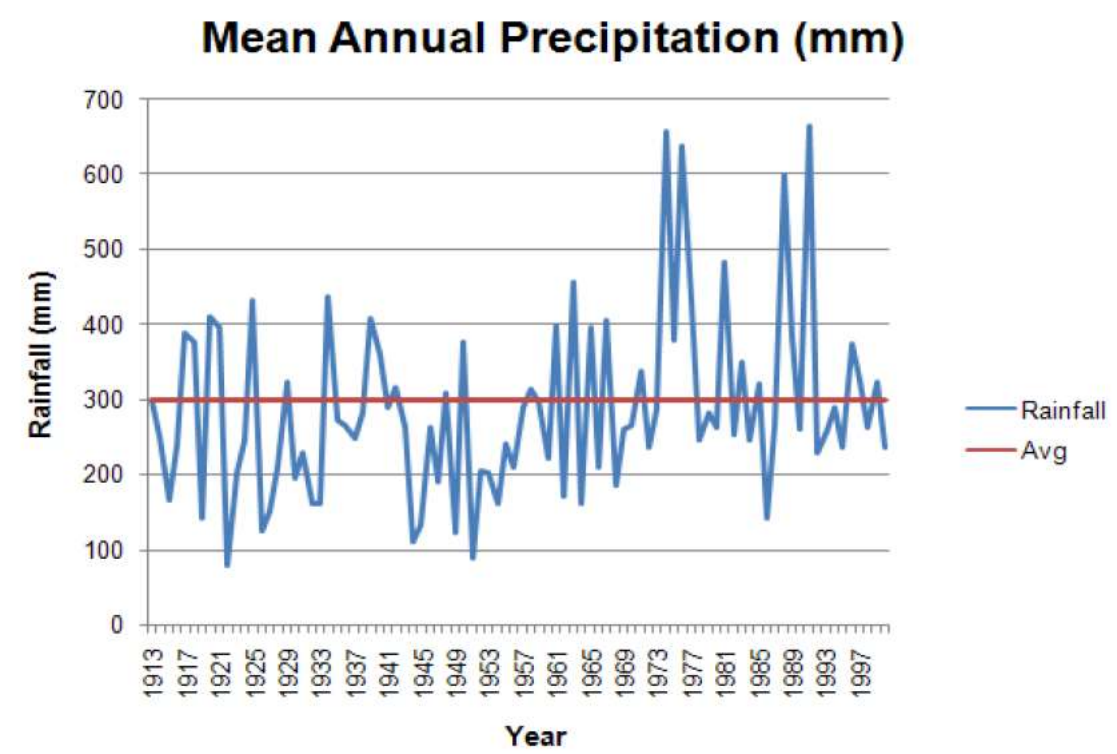

Figure 15: Long term annual rainfall (1913 – 1998) for the study area and long term average (indicated by the red line) (Source: SiVest, 2014)

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, 2014**)

Geology

The study area is underlain by a variety of geological materials including dolerite, mudstone and shale (**Figure 16**). Dolerite, a basic igneous rock dominates the eastern and central-western areas of the power line corridor, which coincides with the top of the plateau and high spots.

Shale and mudstone geologic materials are found on the plains which surround the plateau, and dominate the central and southern study areas. 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.

The alignment associated is predominately underlain by mudstone. Like shale, mudstone is also 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 0.005mm, but unlike shale it is mostly devoid of bedding. (**Sivest, 2014**).

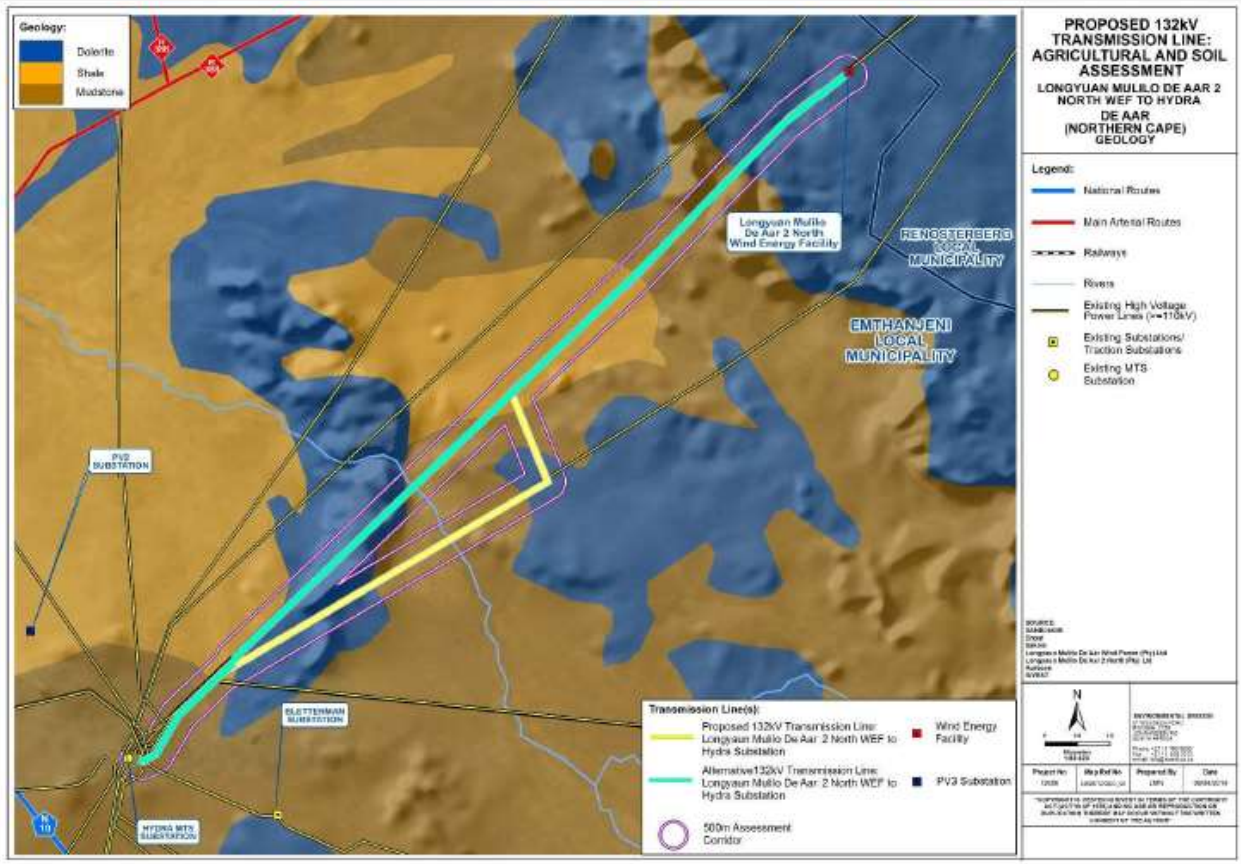

Figure 16: Geological Map (SiVest, 2014)

Slope

Slope or terrain is used to describe the lie of the land. Terrain influences climate and soils 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 run-off and soil erosion (**FAO, 2007**).

The flat plains rise up to meet the Western Plateau, which are the most prominent topographical feature of the study area and are not suitable for agricultural production. 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, 2014**).

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 un-improved 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 alternatives. (**SiVest, 2014**). Refer to **Appendix D4** for the Agricultural report.

Vegetation

The study area (corridor) falls within the Nama-Karoo Biome (Rutherford & Westfall 1986, Mucina & Rutherford 2006). The most recent and detailed description of the vegetation of this region is part of a national map (Mucina, Rutherford & Powrie, 2005; Mucina et al. 2006). This map shows two vegetation types occurring within or close to the corridor, namely Northern Upper Karoo and Besemkaree Koppies Shrubland. The vegetation types occurring in the study area (Table 8) are classified as Least Threatened (Driver et al. 2005; Mucina et al., 2006).

There is one species incorrectly listed on this list, Protea subvestita, which is listed as Vulnerable. This species occurs along the southern and eastern Great Escarpment of the country in montane habitats, particularly highland grassland and fynbos. The record from the adjacent grid is an incorrect database record and this species does not occur anywhere near to the site. There are, therefore, no threatened, near threatened, declining or rare plant species that could occur on site.

One plant species that appears on this list that could potentially occur in the region, although it has not previously been recorded in the grid, is Hoodia gordonii. This species is currently listed in Appendix II to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which includes species not currently considered endangered but are at risk if trade is not controlled. Hoodia gordonii has a wide tolerance of growing habitats and is found in deep Kalahari sands, on dry stony slopes or flats and under the protection of xerophytic bushes. Suitable conditions do occur on site and it is considered possible that this species could occur on site. However, it was not found during the field survey. Another protected species that could potentially occur in the region, although it has not previously been recorded in the grid, is Harpagophytum procumbens (devil's claw). This species is associated mainly with dry sandveld on deep Kalahari sand. It usually occupies plains, dune bases and interdunes. Soils are

usually sandy but can be rocky. They are generally nutrient poor, often with lime. The soil conditions expected on site do not co-incide with the habitat requirements for this species and it is not considered likely that it occurs on site. It was not found during the field survey.

The only one that has a geographical distribution that includes the study area is Boscia albitrunca (Shepherd's Tree / Witgatboom / !Xhi). Boscia albitrunca occurs in semi-desert areas and bushveld, often on termitaria, but is common on sandy to loamy soils and calcrete soils. This species is usually quite common where it is found, but was not recorded on site. In the De Aar area, this species has been recorded a number of times within specific habitats within the mountains, but never on the plains. No individuals were found in the mountain region affected by the proposed project.

According to the National Parks Area Expansion Strategy (NPAES), the escarpment and surrounding areas of the eastern plateau have been identified as priority areas for inclusion in future protected areas but no formal process has been initiated.

A landcover map of the study area (Fairbanks et al. 2000) indicates that the corridor consists primarily of natural vegetation, classified as "shrubland and low fynbos". This is confirmed from 1:50 000 topo-cadastral maps, Google imagery of the study area and site visits.

The farmland across which the proposed transmission line traverses is used as grazing for domestic and wild livestock. It is probable that it has been used for cattle, sheep and/or goats at some stage in the past. (Hoare, 2014).

Fauna

There is one mammal species, Geoffroy's Horseshoe Bat, of low conservation concern that could occur in available habitats in the study area. This species is classified nationally as near threatened (NT), but globally as Least Concern. Based on the proposed distribution of infrastructure and the habitat preferences of this species (ridges), it was assessed as unlikely that this species would be affected by construction or operation of the proposed project. The species may forage over the site (low likelihood), but it will not roost there.

There are two small mammal species that could potentially occur on site that are protected under the National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) and any impacts on a specimen of this species or that may negatively affect the survival of the species would require a permit. These are the Black-footed Cat and the Cape Fox. It was assessed that it was possible that these species may traverse the site while foraging, but that it was unlikely that they would be permanently affected by the proposed project.

The Giant Bullfrog is the only amphibian species with a distribution that includes the study area and which could occur on site. This species is classified as Least Concern globally and Near threatened in South Africa. It is, however, protected under the NEMBA. Communication with a number of farmers in the area did not identify any local knowledge of the species occurring there. It was therefore assessed that there was a

low probability of it occurring on site.

There are no reptile species of conservation concern that have a distribution that includes the study area.

There are therefore no threatened, near threatened or protected species of potential concern that are likely to occur on site and/or to be affected by the proposed project (Hoare, 2012).

Avifauna

The study area is situated within the Platberg – Karoo Conservancy which is classified as an Important Bird Area (IBA) (which is an area 1.2 million hectares in extent), (**Figure 17**). This huge area lies in the plains of the central Great Karoo, forming part of the South African plateau. The conservancy consists primarily of open plain-country, locally interrupted by dolerite hills and small mountain ranges which rise 200–300 m above the surrounding plateau, which varies from 1 100–1 400 m above sea-level. From a botanical perspective, the natural vegetation type in the study area is predominantly Northern Upper Karoo, with a few areas of Upper Karoo Hardeveld which occurs on steep slopes of koppies and mountains. Both vegetation types consist of a mixture of low shrubs and grasses (Mucina & Rutherford 2006). The different vegetation types provide habitat and foraging grounds for different bird species.

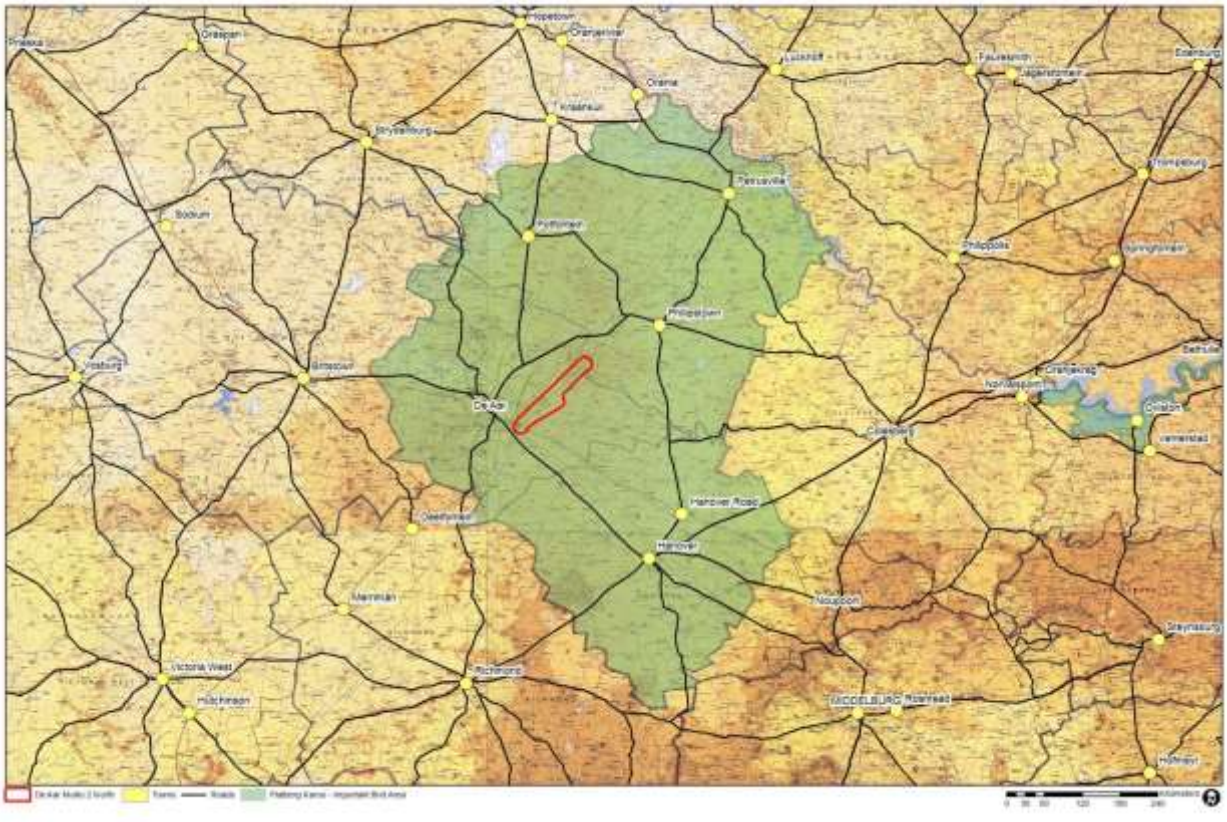

Figure 17: The location of the study area within the Platberg – Karoo Conservancy (Chris van Rooyen Consulting, 2014).

Nama/Grassy Karoo comprises the vast majority of habitat in the study area. Nama Karoo is dominated by low shrubs and grasses; peak rainfall occurs in summer. The Karoo vegetation types support a remarkably

high diversity of bird species endemic to Southern Africa, particularly in the family Alaudidae (Larks). Power line sensitive Red Data species that are associated with Nama and Grassy Karoo habitat in the study area are Ludwig's Bustard, Kori Bustard, Martial Eagle, Tawny Eagle, Secretarybird, Blue Crane, Karoo Korhaan and Lanner Falcon. The major potential impact in this habitat is collisions with the earthwire of the proposed power line, particularly for Ludwig's Bustard, Blue Crane, Kori Bustard and Secretarybird.

The study area contains a number of man-made water bodies and an ephemeral river, the Brakrivier, which are of specific importance to some Red Data power line sensitive species in the semi-arid study area. The major potential impact for the aforementioned power line sensitive Red Data species is collisions, which are attracted by a water masses such as multitudes of water birds, including Greater Flamingo, and could sometimes be used as roosts by Blue Cranes.

The eastern part of the study area contains the Pienaarskloof plateau with boulder strewn slopes and vertical cliffs. This habitat is potentially important roosting, foraging and breeding habitat for a variety of Red Data power line sensitive species, e.g. Black Stork, Lanner Falcon, Verreaux's Eagle and African Rock Pipit. It is not envisaged that the line will pose any threat to the African Rock Pipit, but a potential impact on the larger species is collisions with the proposed power line, and displacement of breeding birds due to disturbance. There are five confirmed Verreaux's Eagle nests along the escarpment, belonging to an estimated two breeding pairs.

Transmission lines are an important roosting and breeding substrate for large raptors in the study area. Existing transmission lines are used extensively by large raptors. Should any new lines be constructed next to existing lines, the construction activities could lead to temporary displacement of breeding eagles, resulting in breeding failure in a particular season, or even permanent abandonment of a breeding territory. No large eagle nests were recorded in the study area on the two 400kV transmission lines which are running parallel to the proposed 132kV line in the study area, but the situation requires ongoing monitoring.

A total of 160 species were recorded in 3024CA by SABAP2, with 11 classified as Red Data species. A map showing the location of birds and nest sites identified during the site visit is provided in **Figure 18**.

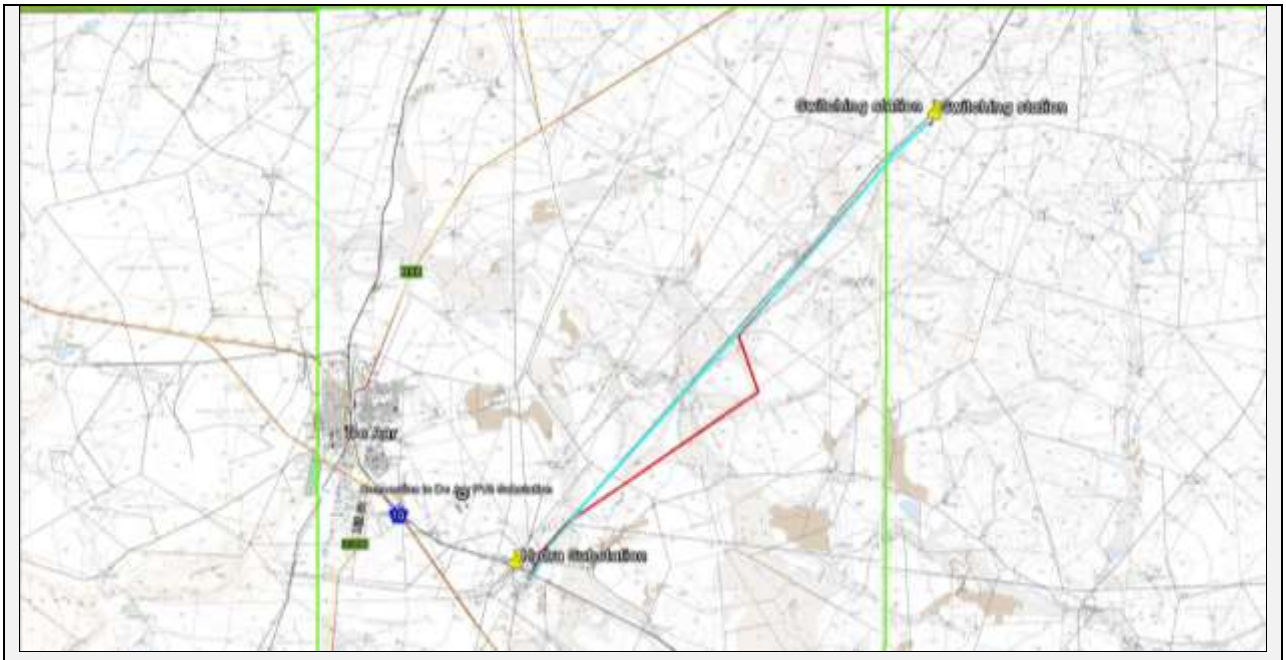

Figure 18: The location of the study area within the 3924CA quarter degree grid cell. (Chris van Rooyen Consulting, 2014).

The potential impacts of the proposed transmission lines on the birdlife of the study area include some habitat destruction and transformation; and disturbance, particularly during breeding activities for both the construction phase operational phases (Chris van Rooyen Consulting, 2014). Refer to **Appendix D5** for the Avifauna report.

Freshwater

The main aquatic features within the study area are the Brak River, a seasonal tributary within the Orange River System and a number of its tributaries. The Brak River flows in a north westerly direction along the southern boundary of the study area with a number of its tributaries crossing the site as they flow in a southerly direction. The Brak River joins the Orange River east of Prieska, approximately 180 km from the site. The two larger tributaries of the Brak River that will also be crossed by the proposed transmission line route are the Vet Laagte and the Maatjes Fountain Rivers. The Vet Laagte River drains the low lying cultivated areas to the west of the Brak River while the Maatjes Fountain River drains the western face of the plateau to the east of De Aar and the Brak River. These 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 slightly shallow depressions with no clear associated vegetation and slightly clayey soils. Small, shallow instream dams have been constructed within many of these drainage channels.

Riparian vegetation

Along the Brak River Tributaries within the study area there is very little to no discernible riparian vegetation. The Brak River consists of a wide braided channel with pockets of wetland areas that are dominated by the common reed Phragmites australis.

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 (**Figure 19**). In upstream catchments it is important that the rivers be managed in such a manner to ensure no degradation occurs in the downstream FEPA river. The Brak River both upstream and downstream of the study area contains wetland areas within its floodplain that have been mapped as wetland clusters. The proposed activities take place outside of these areas.

The Brak River and its two tributaries within the study area, referred to as the Vet Laagte and Maatjes Fountain tributaries, have predominantly sandy substrate in the west (Brak and Vet Laagte) and sand/rock substrate in the east (Maatjes Fountain). The rivers drain shrubland vegetation in an area with a very low rainfall. As a result, the water flowing in these rivers tends to be saline, turbid and seasonally flowing.

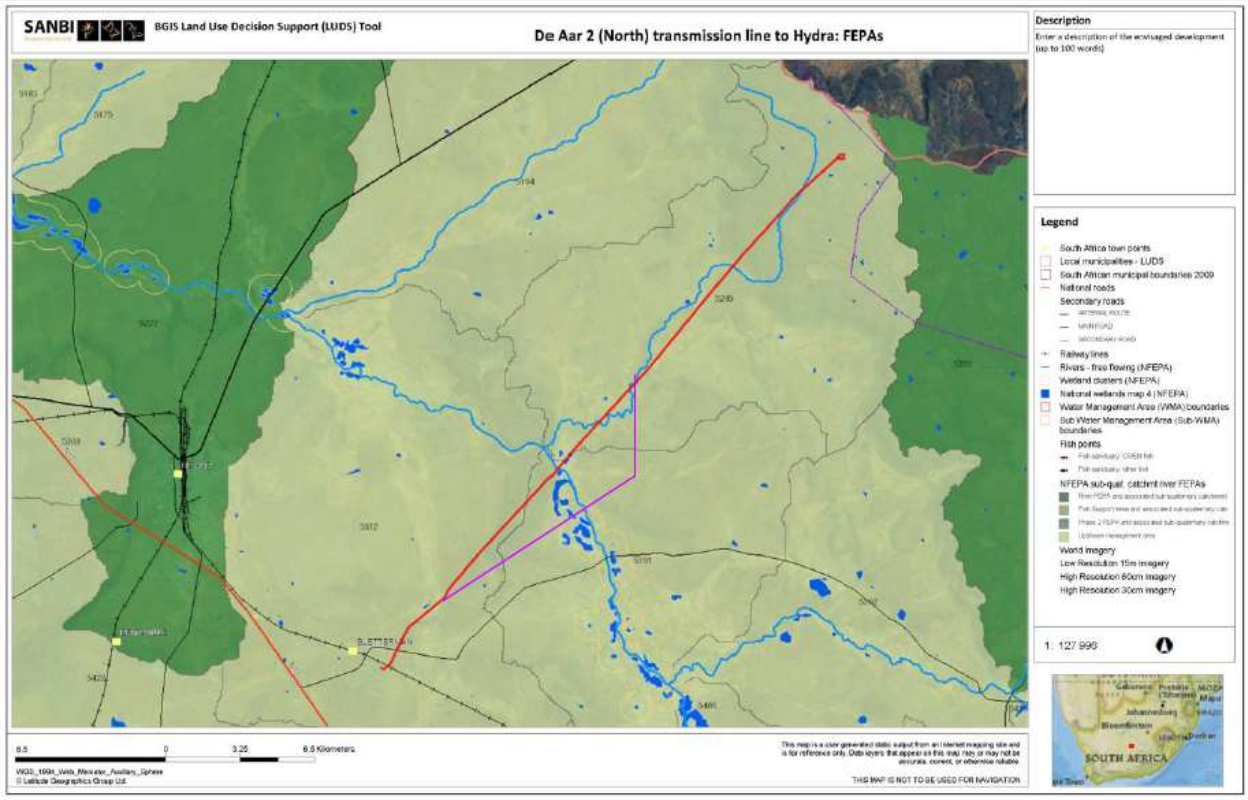

Figure 19: Freshwater Ecosystem Priority Areas for the study area (Belcher, 2014)

The Index for Habitat Integrity (IHI) and a Site Characterisation were used to provide information on the ecological condition of the Brak River and the smaller tributaries the Vet Laagte and Maatjes Fountain within the study area. The IHI assessment is based on an evaluation of the impacts of two components of the rivers, the riparian zone and the instream habitat. The results of the IHI assessment are discussed

below.

Approximately 2.5 km north-east of the Hydra Substation, the proposed power line crosses the Vet Laagte River. The proposed route for the transmission line is located adjacent to a number of existing power lines. The ecological condition of the river is considered to be moderately modified while its ecological importance and sensitivity is low. The Brak River flows through a wide eroded multi-channel approximately 10 km north-east of the Hydra Substation. The river is in a moderately modified ecological condition with a moderate ecological importance and sensitivity. The proposed transmission line route within the Maatjes Fountain River crosses the river at approximately 12 km north-east of the Hydra Substation and one of its tributaries at approximately 14 km and again at about 20 km north-east of the substation. The Maatjes Fountain River is considered to be in a largely natural ecological condition while its ecological importance is moderate.

Protected Areas

The National Parks Area Expansion Strategy (NPAES) has identified a portion of the escarpment of the eastern plateau that is proposed for inclusion in a protected area (reserve). Part of the protected area identified falls within the site of the proposed north and south wind energy facilities and as such the proposed servitudes would be located within this protected area (Hoare, 2014). However, it should be noted that various landowners have confirmed that no engagement with them has taken place with regard to the identification of the land portions, nor with regard to land acquisitions. Representatives from the South African National Parks, South African National Biodiversity Institute and DEA Chief Directorate: Transfrontier Conservation and Protected Areas were notified of the WEF projects and provided with the opportunity to comment during the EIA process for the proposed WEFs. No comments were received on the WEF projects, however the respective parties have again been given opportunity to comment on the current process. Furthermore DENC as the provincial environmental authority has been requested to provide input and confirmation of the applicability of GN546 triggers under NEMA.

SECTION C: PUBLIC PARTICIPATION

1 ADVERTISEMENT AND NOTICE

Publication name	The Echo and Die Volksblad	
Date published	The advertisement will be placed in *Die Volksblad* on Wednesday, 23 April 2014 and in *The Echo* on Friday, 25 April 2014.	
Site notice position Emthanjeni Local Municipality	Site notices will be erected on Wednesday, 23 April 2014	
	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
Date placed	Proof of placement will be provided in the Final BAR.	

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

2 DETERMINATION OF APPROPRIATE MEASURES

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

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

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Suzanne Erasmus	WESSA NC	**wessanc@yahoo.com** 082 849 7655
Mandy Driver	SANBI: NPAES	**M.Driver@sanbi.org.za** 021 799 8838
Sam Ralston	BirdLife South Africa	**energy@birdlife.org.za** 083 673 3948
Dr Mariagrazia Galimberti	SAHRA	021 462 4502
Stephanie Aken	EWT-Wildlife Energy Interaction Group (WEIG)	**stephaniea@ewt.org.za** 082 688 8430/ 011 3723600
Bradley Gibbons	African Crane Conservation Programme, Endangered Wildlife Trust	**bradleyg@ewt.org.za** 082 566 5803
Andrew Timothy	Northern Cape Provincial Heritage (Boswa ya Kapa Bokone)	**Ratha.timothy@gmail.com** 053 831 2537 / 079 036 9294
Mr Rodney Pieterse	Pixley ka Seme District Municipality	**macjack@vodamail.co.za** 053 631 0891
Mr Isak Visser	Emthanjeni Local Municipality	**visser@emthanjeni.co.za** 053 632 9100
John Geeringh Debbie Hardins	Eskom	**John.geeringh@eskom.co.za** 011 5167233 **hardind@eskom.co.za** 053 830 5774
Jan Terblanche Henry Dumont	Transnet Ltd	**Jan.Terblanche@transnet.net** 041 507 4237 **Henry.dumont@transnet.net**
Mr Adrian Tripaldy	Square Kilometre Array	**enquiries@ska.ac.za** (0)11 442 2454
Lizelle Stroh	Civil Aviation Authority (CAA)	**strohl@caa.co.za** 011 545 1232

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.

Proof of notification of key stakeholders will be provided in the Final BAR.

3 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.	

4 COMMENTS AND RESPONSE REPORT

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

5 AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
National Department of Agriculture, Forestry and Fisheries: Directorate: Land Use and Soil Management	Mashubu Marbubini	012 319 7619	012 329 5938	**MashuduMa@daff.gov.za**	Private Bag X120 Pretoria 0001
Department of Environmental Affairs and Nature Conservation (DEANC)	Brian Fisher	053 807 7430	053 807 7430	bfisher@ncpg.gov.za	Private Bag x 6102, Kimberley, 8300 9 Longstreet, Sasko Building, Kimberley, 8300
Northern Cape: Department of Environmental Affairs and Nature Conservation (DEANC)	Thulani Mthombeni	0724092277		**tmthombeni@de.ncape.gov.za**	Private Bag x1014 De Aar 7000

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Department of Agriculture (Northern Cape)	Lucia Manong	053 838 9165 / 082 559 7289		lmanong@agri.ncape.gov.za	Private bag X5018 Kimberley 8300
The Department of Agriculture, Land Reform and Rural Development	Mr NJ Toerien	054 337 8001		ntoerien1@gmail.com	PO Box 52, Upington, 8800/ Water Affairs Building, Louisvale Road, Upington, 8800
The Department of Agriculture Forestry and Fisheries	Francina Mokoma	012 319 7634		Francinamo@daff.gov.za	162 George Street, Kimberlite Building, Kimberely 8301
Department of Transportation	RC Barlow	053 802 5533		ramon@vodamail.co.za; zschmidt@ncpg.gov.za	45 Schmidtsdrift Road, Kimberley 8301
Department of Water Affairs: Deputy Director Lower Orange WMA.	Shaun Cloete	054 338 5800/ 082 888 3764	054 334 0205	CloeteS@dwa.gov.za	Private Bag X5912 Upington 8800
Department of Energy (DoE): Northern Cape	SP Mokuele	053 807 1752	086 562 7065	sebabatso.mokuele@energy.gov.za	Private Bag X6093, Kimberley, 8300

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

Proof of notification of Authorities and Organs of State will be provided in the Final BAR.

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

Proof of notification of Eskom and the SKA will be provided in the Final BAR.

6 CONSULTATION WITH OTHER STAKEHOLDERS

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

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

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

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

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. An assessment corridor of 500m in width was assessed by specialists to assist in avoiding sensitive features identified which will allow for minor alignment deviations within the corridor. 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
Alternative A :Construction Phase				
Impacts on Botany	***Direct impacts:*** • Loss or fragmentation of indigenous natural vegetation, including protected species; and • Establishment and spread of declared weeds and alien invader	**low - medium (-)**	• Unnecessary impacts on surrounding natural vegetation must be avoided. The construction impacts must be contained to the footprint of the tower structures, the servitude of the power line and switching station. • Adjacent areas and service roads in the servitude must be properly maintained to avoid erosion impacts.	**low - very low (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	plants.		• Existing access roads must be used, where possible. • If possible, place infrastructure (tower structures) a minimum of 30 m outside watercourses. • Where possible, use existing roads as service roads. Service roads in the servitude must be properly maintained to avoid erosion impacts. • If not possible to avoid watercourses, 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. • Disturbance of indigenous vegetation outside of the footprint of construction must be kept to a minimum. • Where disturbance is unavoidable, disturbed areas should be rehabilitated as quickly as possible. • 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.	
	Indirect impacts: • No indirect impacts were identified.			
	Cumulative impacts: • Loss of species and suitable habitats in the wider area/ bioregion.	**low (-)**	• Disturbance of indigenous vegetation outside of the footprint of construction must be kept to a minimum. • Where disturbance is unavoidable, disturbed areas should be rehabilitated as quickly as possible.	**very low (-)**
	Cumulative impacts: • Spread of alien plants	**high (-)**	• Any alien plants within the control zone of the applicant must be immediately controlled to avoid establishment of a soil	**low (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			seed bank. Control measures must follow established norms and legal limitations in terms of the method to be used and the chemical substances used. • 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 Applicant 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.	
Impacts on Avifauna	***Direct impacts:*** • Disturbance and displacement due to noise and movement during the construction phase and loss of habitat / habitat destruction through site clearance.	**medium (-)**	• It is important that the construction activities, vehicle and pedestrian movement are restricted a much as possible to the actual servitude of the proposed power line. • Maximum use should be made of existing roads. • Vehicle traffic in and out of the area should be restricted to what is absolutely necessary for the construction process. This is especially important where the line crosses the escarpment, as this area is the most sensitive area as far as potential disturbance of breeding Verreaux's Eagles are concerned. • Immediately prior to construction commencing, an inspection should be conducted by the avifaunal specialist to record any large raptor nests on the existing transmission lines running parallel to the proposed 132 kV line, that could be impacted by the construction of the proposed line. • Should any nests be recorded, it would require management of the potential impacts on the breeding birds once	**low (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			construction commences, which would necessitate the involvement of the avifaunal specialist, and the Environmental Control Officer. An effective communication strategy should be implemented whereby the avifaunal specialist is provided with a construction schedule which will enable him/her to ascertain when and where breeding Red Data raptors could be impacted by the construction activities. This could then be addressed through the timing of construction activities during critical periods of the breeding cycle, once it has been established that a particular nest is active. • All the spans, except those spans that are located adjacent to two or more high voltage lines, should be marked with Bird Flight Diverters on the earth wire of the line, ten metres apart, alternating black and white. Appendix B of the Avifauna report indicates the preferred BFDs to be used.	
	Indirect impacts: No indirect impacts were identified.			
	Cumulative impacts: Cumulative avifauna impacts are discussed in the operational phase.			
Impacts on Freshwater ecology	***Direct impacts:*** • loss of natural vegetation adjacent to and within the freshwater features from the construction	**low (-)**	• The new line should be located as close as possible to the existing lines and the increase in the footprint of these lines within the floodplain should be minimised as far as possible. • Due to the wide and erosive nature of the Brak River, the proposed transmission line should be located as far north of the river channel as possible and specifically downstream of the existing erosion control wall in the river. • The existing road infrastructure should be utilized as far as	**very low (-)**
	Indirect impacts: Flow and water quality modification, erosion and invasive plant growth	**low (-)**		**very low (-)**
	Cumulative impacts:	**low (-)**		**very low (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	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		possible to minimize the overall disturbance created by the proposed project, specifically within the floodplain areas and stream channels. • Where access routes need to be constructed within the stream channels, disturbance of the channels should be limited and all crossings within the 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. • To reduce the risk of erosion, particularly within the Maatjes Fountain tributary on the hill side of the plateau, any new access paths should be contoured along the 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. • It is recommended that there be minimal disturbance specifically within the river channel and that no poles/towers be placed within 30 m of the top of bank of the well-defined Brak and Maatjes Fountain river channels and 3 0m from the centre of the channel for the less defined stream crossings (Vet Laagte River and tributaries of the Maatjes Fountain River). • Any contaminated runoff from the construction sites should be prevented from entering the rivers/streams. • All materials on the construction sites should be properly stored and contained. Disposal of waste from the sites	

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			should also be properly managed. • Construction workers should be given ablution facilities at the construction sites that are located at least 100 m away from the river/stream systems and regularly serviced. All crossings over drainage channels or stream beds after the construction phase should be rehabilitated such that the flow within the drainage channel is not impeded. • 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. • All crossings over drainage channels or stream beds after the construction phase should be rehabilitated such that the flow within the drainage channel is not impeded. • These measures above should be addressed, implemented and monitored in terms of the Environmental Management Plan for the construction phase.	
Impacts on Agriculture	***Direct impacts:*** Direct loss of agricultural land	**low (-)**	Due to the overarching site characteristics, and the nature of the proposed development, viable mitigation measures are limited and will most likely revolve around erosion control: • 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	**low (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			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. • No pole structures are placed within drainage lines and their 10 meter buffer areas.	
	Indirect impacts: No indirect impacts were identified.			
	Cumulative impacts: No cumulative impacts were identified.			
Impacts on Heritage and Paleontological	***Direct impacts:*** • Loss of Archaeological sites • Loss of Palaeontology finds • Loss of Cultural Landscape	**medium (-)** **high (-)** **low (-)**	*Archaeological mitigation measures* • The placement of the pylons must be done in such a way as to stay away from the structure; • The site must be demarcated and a buffer of at least 10 meters kept, during construction. • Because of subsurface and localised nature of archaeological remains, any deviation or changes within the corridor to the initial layout alignment will require an archaeological walkdown of the new alignment after pylons placement positions have been decided on to identify any possible archaeological and heritage structures and sites before construction commence. *Paleontological mitigation measures* • A Palaeontologist should be appointed as part of the Environmental Construction Team for preferably all	**low (-)** **low (-)** **low (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			identified paleontological sensitive areas but definitely for the identified high sensitive areas. • If required, a paleontological rescue and/or destruction permit must be is obtained by the Palaeontologist. • The Palaeontologist accompanying the surveyor and foundation teams during the pylon construction phase should advise on pylon positions. If possible, pylons located within potential fossil bearing areas should be moved. If not possible, any fossils found should be rescued from the construction footprint. • Compile a Phase 2 report for the Heritage Authority responsible after paleontological construction inputs. *Handling of chance finds* • A short induction on possible heritage resources that may be 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.	
	Indirect impacts: No indirect impacts were identified.			
	Cumulative impacts: No cumulative impacts were identified.			
Impacts on Transport	***Direct impacts:*** • Increased traffic	**low (-)**	• Implement traffic control measures where necessary; • Transport components overnight as far as possible; and	**low (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	• Road safety		• Adhere to speed limits.	
	Indirect impacts: No indirect impacts were identified.			
	Cumulative impacts:			
Impacts on Dust	***Direct impacts:*** 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 (-)**	• Implement dust control measures identified in the CEMPr, which includes procedures for dealing with dust pollution events, include watering of roads, etc.	**very low (-)**
	Indirect impacts: No indirect impacts were identified.			
	Cumulative impacts: No cumulative impacts were identified.			
Impacts on Visual	***Direct impacts:*** • Impact on sense of place	**low (-)**	• The contract time should be kept to the minimum. • Road junctions should have good sightlines and traffic control measures, signage and dust control measures should be provided. • Implement measures as provided in the EMPr, 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. • Fires should not be allowed except at the construction camp and lay down areas	**low (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			• No litter and/ or contaminants to be allowed to enter the environment, they should be taken to a licensed waste disposal facility. • Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and disposed regularly at licensed waste facilities. • Utilisation of materials listed above should be controlled on site, especially in close proximity to the aquatic environment (Brak River). • Transmission line layout: where there is a change in direction, a guyed suspension tower is recommended and along a straight route, a self-supporting tower. The visual impact of any of these proposed transmission routes could be moderated by keeping changes of direction to a minimum and increasing the span between towers to the practical maximum.	
	Indirect impacts: No indirect impacts were identified.			
	Cumulative impacts: 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	**medium (-)**	• Adding further transmission lines to existing routes, in parallel, would be preferable to establishing new routes as it would reduce their visual impact.	**low (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	benefit the local landscape.			
Impacts on Socio-economic	***Direct impacts:*** • Job opportunities • Skills development • Community Trust establishment	**medium (+)**	• It is recommended that the local employment policy, as stated by the proponent, be implemented, audited and accompanied by a training programme. The policy must be based on a 'local's first' policy, specifically for low skilled jobs and should aim to recruit at least 20% of the jobs from the local community. This should also apply to all contracting firms. • Implement a policy of "no employment at the gate" to prevent loitering. • The site should be secured. • A comprehensive employee induction programme would cover land access protocols and fire management. This was addressed in the LEMP. • A comprehensive employee induction programme would address issues such as HIV/ AIDS and Tuberculosis, as well as alcohol and substance abuse. The induction should also address a code of behaviour for employees that would align with community values. • The LEMP also addressed noise and dust control. A 24 hour system for receiving and addressing complaints should be established before the commencement of the construction phase. Local farmers and residents should be informed of the contact number. • Housing has to be restricted to the approved laydown areas • Source local businesses resources for supply, where possible. • Compile relevant and clearly defined procurement standards to govern choices of suppliers, products and the methods	**medium (+)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			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.	
	Indirect impacts: Local Business growth	**medium (+)**	-	**medium (+)**
	Cumulative impacts: Investment in local and national economy.	**medium (+)**	-	**medium (+)**
Alternative B: Construction Phase				
	Direct impacts:			
Impacts on Ecology	Refer to direct impacts under Alternative A.	**low - medium (-)**	Refer to mitigation measures under Alternative A.	**very low (-)**
Impacts on Avifauna	Refer to direct impacts under Alternative A	**medium (-)**	Refer to mitigation measures under Alternative A.	**low (-)**
Impacts on Freshwater	Refer to direct impacts under Alternative A	**low(-)**	Refer to mitigation measures under Alternative A.	**very low (-)**
Impacts on Agricultural Potential	Refer to direct impacts under Alternative A	**very low (-)**	Refer to mitigation measures under Alternative A.	**very low (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
Impacts on Heritage resources	Refer to direct impacts under Alternative A	**low-medium (-)**	Refer to mitigation measures under Alternative A.	**low (-)**
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 (-)**
Impacts on Socio-economic	Refer to direct impacts under Alternative A	**medium (+)**	Refer to mitigation measures under Alternative A.	**medium (+)**
Impacts on Economic (Energy Generation)	Refer to direct impacts under Alternative A.	**medium (+)**	Refer to mitigation measures under Alternative A.	**medium (+)**
Impacts on Climate change	Refer to direct impacts under Alternative A.	**low (+)**	Refer to mitigation measures under Alternative A.	**low (+)**
	Indirect impacts: Refer to indirect impacts under Option A.			
	Cumulative impacts: Refer to cumulative impacts under Option A.			
Alternative 3: Only the preferred option has been assessed.				
No-go option				
	Direct impacts:	**medium (-)**	No mitigation is proposed as the authorisation of the no-go	**medium (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	• Loss of job opportunities • Loss of local and national investment opportunities • Impact on the viability of the WEF site		option would entail maintaining the *status quo*, which would impact on the viability of the approved North WEF site.	
	Indirect impacts: • National transmission grid stability • Failure to meet the emission targets	**medium-high (-)**	No mitigation is proposed as the authorisation of the no-go option would entail maintaining the *status quo*, which would impact on the viability of the approved North WEF site.	**medium-high (-)**
	Cumulative impacts: • Lost opportunity to further diversify supply sources for electricity	**medium-high (-)**	No mitigation is proposed as the authorisation of the no-go option would entail maintaining the *status quo*, which would impact on the viability of the approved North WEF site.	**medium-high (-)**

Operational Phase

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
Alternative A: Operational Phase				
Impacts on Botany	***Direct impacts:*** • Alien infestation	**low - medium (-)**	• 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	**very low (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
			used and the chemical substances used.	
	Indirect impacts: No indirect impacts were identified.			
	Cumulative impacts: No cumulative impacts were identified.			
Impacts on Avifauna	***Direct impacts:*** • Collisions risk of new transmission lines • Electrocution risk of new transmission lines	**medium (-)**	• All the spans should be marked with Bird Flight Diverters on the earth wire of the line, ten metres apart, and alternating black and white. Appendix B of the avifaunal study indicates the preferred Bird Flight Diverters to be used.	**low - medium (-)**
	Indirect impacts: No indirect impacts were identified.			
	Cumulative impacts: The cumulative impact of a number of renewable projects in the larger region may result in: • Greater chance of collision and electrocution; • Displacement due to habitat destruction and disturbance	**medium (-)**	• 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.	**low(-)**
Impacts on Freshwater	***Direct impacts:*** • Disturbance to the instream and riparian habitat of the freshwater ecosystems along the designated routes and the associated erosion potential	**Medium (-)**	• Maintenance of transmission lines should only take place via the designated access routes. • 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.	**Low - Medium (-)**
	Indirect impacts: No indirect impacts were identified.			

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	Cumulative impacts: Cumulative impacts are discussed in the construction phase impacts section.			
Impacts on Agriculture	***Direct impacts:*** No impacts are anticipated on agriculture	**very low (-)**	• In the unlikely event that heavy rains are expected, maintenance 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 during maintenance, then storm water control and wind screening should be undertaken to prevent soil erosion.	**very low (-)**
	Indirect impacts: No indirect impacts were identified.			
	Cumulative impacts: No cumulative impacts were identified.			
Impacts on Visual aesthetics	***Direct impacts:*** Impact on sense of place	**low (-)**	It is recommended that existing access roads and jeep tracks be used as far as possible for maintenance purposes.	**low (-)**
	Indirect impacts: No indirect impacts were identified.			
	Cumulative impacts: A number of other renewable energy projects are proposed for the area. Should these be approved, it would mean additional infrastructure (such	**medium (-)**	• Adding further transmission lines to existing routes, in parallel, would be preferable to establishing new routes as it would reduce their visual impact.	**medium (-)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	as roads and powerlines) as well as solar panels and turbines. However pylons are intrusive in any landscape but De Aar has been associated with these transmission lines for a long time; this industrialisation of the landscape is part of the existing visual context.			
Impacts on Socio-economic	***Direct impacts:*** • Job opportunities • Skills development • Community Trust establishment	**medium (+)**	• It is recommended that the local employment policy as stated by the proponent is implemented, audited and accompanied by a training programme. The policy must be based on a 'local's first' policy, specifically for low skilled jobs and should aim to recruit at least 20% of the jobs from the local community. This should also apply to all contracting firms. • It is recommended that the developer adopts a local procurement policy which would maximise the benefit to the local economy and minimise leakage. • It is recommended that the developer forfills commitments under their REIPPPP bid agreement for Economic Development within the local community.	**medium (+)**
	Indirect impacts: Local Business growth	**medium (+)**		**medium (+)**
	Cumulative impacts: Investment in local and national economy.	**medium (+)**		**medium (+)**
Impacts on Economic (Energy	***Direct impacts:*** • Grid stability • Additional generation capacity	**low (+)**	No mitigation measures are recommended.	**low (+)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
Generation)	• Infrastructure expansion			
	Indirect impacts: No indirect impacts were identified.			
	Cumulative impacts: A number of other renewable energy developments are planned for the Northern Cape in addition to the proposed WEF. 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.	**high(+)**		**high (+)**
Impacts on Climate change	***Direct impacts:*** • Emission targets • Reducing social costs by offsetting coal-fired energy generation.	**low (+)**	No mitigation measures are recommended.	**low (+)**
	Indirect impacts: 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 effect on a regional, national and international scale.	**low (+)**		**low (+)**

Activity	Impact summary	Pre – mitigation Significance	Proposed mitigation	Post mitigation - Significance
	Cumulative impacts: 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.	**medium (+)**		**medium (+)**

Alternative B: Operational phase				
	Direct impacts:			
Impacts on Botany	Refer to direct impacts under Alternative A.	**low - medium (-)**	Refer to mitigation measures under Alternative A.	**very low (-)**
Impacts on Avifauna	Refer to direct impacts under Alternative A.	**high (-)**	Refer to mitigation measures under Alternative A.	**medium (-)**
Impacts on Freshwater	Refer to direct impacts under Alternative A.	**low (-)**	Refer to mitigation measures under Alternative A.	**very low (-)**
Impacts on Agricultural Potential	Refer to direct impacts under Alternative A.	**very low (-)**	Refer to mitigation measures under Alternative A.	**very low (-)**
Impacts on Visual aesthetics	Refer to direct impacts under Alternative A.	**low (-)**	Refer to mitigation measures under Alternative A.	**low (-)**
Impacts on Heritage resources	Refer to direct impacts under Alternative A.	**medium (+)**	Refer to mitigation measures under Alternative A.	**medium (+)**
Impacts on Socio-economic	Refer to direct impacts under Alternative A.	**medium (+)**	Refer to mitigation measures under Alternative A.	**medium (+)**
Impacts on Economic (Energy Generation)	Refer to direct impacts under Alternative A.	**medium (+)**	Refer to mitigation measures under Alternative A.	**medium (+)**
Impacts on Climate change	Refer to direct impacts under Alternative A.	**low (+)**	Refer to mitigation measures under Alternative A.	**low (+)**
	Indirect impacts:			

	Refer to indirect impacts under Option A.			
	Cumulative impacts: Refer to cumulative 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 **Appendix F** per phase (construction, operation and decommissioning) of the proposed developments

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 (environmentally and technically preferred) transmission line route and associated infrastructure (including access roads)
- Alternative B 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 **Appendix F** for a summary of the potential construction and operational impacts anticipated by the proposed projects, before and after mitigation measures have been implemented.

Table 5: Summary of discussed construction and operational impacts

IMPACTS	PROJECT ASPECT	Construction		Operation	
		No Mitigation	With Mitigation	No Mitigation	With Mitigation
Impact on flora	Alternatives A and B	low - medium (-)	very low (-)	very low (-)	very low (-)
	No- Go	Neutral	Neutral	Neutral	Neutral
Impact on avifauna	Alternatives A and B (habitat loss and disturbance)	low (-)	low (-)	low (-)	low (-)
	Alternatives A and B (Mortality)			medium (-)	low (-)
Impact on fauna	Alternatives A and B	Low (-)	Very low (-)	Very low (-)	Very low (-)
Impact on Agriculture	Alternatives A and B	Very Low (-)	Very Low (-)	Very low (-)	Very low (-)
Aquatic Ecology	Alternatives A and B	Low (-)	Very Low (-)	Very Low (-)	Very Low (-)
Palaeontology	Alternatives A and B	Medium – High (-)	Low (-)		
Cultural Landscape	Alternatives A and B	Low (-)	Low (-)		
Impact on heritage	Alternatives A	Low (-)	Low (-)		
	Alternatives B	Low (-)	Low (-)		
Visual impacts	Alternatives A and B	Medium(-)	Low - Medium (-)	Low (-)	Low (-)
Social impacts	Alternatives A and B (Direct employment and skills development; Economic Multiplier Effects)	Medium (+)	Medium (+)	Medium (+)	Medium (+)
	Alternatives A and B (Additional workers on site)	Low (-)	Very Low (-)		
	Alternatives A and B (Landowner revenue, Diversification of the local economy)			Low (+)	Low (+)
Impact on energy production	Alternatives A and B			Low (+)	Low (+)
Impact on traffic	Alternatives A and B	Low (-)	Very Low (-)	Very Low (-)	Very Low (-)

Operational phase impacts:

Alternative A and B in **Table 5** above indicates that 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 reduce 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 and B were those on visual and palaeontology which were considered to be of **medium and medium - high (-)** significance without mitigation. With the implementation of mitigation measures the impact would decrease to **low – medium and low (-)**, respectively.

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 **low (-)** significance, without mitigation measures. With the implementation of the recommended LEMP the significance of construction phase impacts is likely to reduce to **very low** significance.

From an overall environmental impact perspective, both Alternatives A and B (with mitigation) are considered to be acceptable to the all of the specialist, given the similarity of the receiving environment and there respective lengths. However from a technical point of view the topography of Alternative A (preferred) is more suited to the transmission line as it allows the line to be rerouted around a steep hill near the Hydra substation. Given that the Alternatives do not differ significantly it is recommended from an environmental perspective that Alternative A is approved, on condition that the mitigation measures as put forward in **Appendix 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)?	**YES**√	NO

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

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

The proposed mitigation measures listed below are recommended to manage the identified impacts associated with the proposed transmission lines during the construction and operation phases:

CONSTRUCTION PHASE:

Botany

- Unnecessary impacts on surrounding natural vegetation must be avoided. The construction impacts must be contained to the footprint of the tower structures, the servitude of the power line and switching station.
- Adjacent areas and service roads in the servitude must be properly maintained to avoid erosion impacts.
- Existing access roads must be used, where possible.
- If possible, place infrastructure (tower structures) a minimum of 30 m outside watercourses.
- Where possible, use existing roads as service roads. Service roads in the servitude must be properly maintained to avoid erosion impacts.
- If not possible to avoid watercourses, 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.
- Disturbance of indigenous vegetation outside of the footprint of construction must be kept to a minimum.
- Where disturbance is unavoidable, disturbed areas should be rehabilitated as quickly as possible.
- 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

- It is important that the construction activities, vehicle and pedestrian movement are restricted a much as possible to the actual servitude of the proposed power line. Maximum use should be made of existing roads.
- Vehicle traffic in and out of the area should be restricted to what is absolutely necessary for the construction process. This is especially important where the line crosses the escarpment, as this area is the most sensitive area as far as potential disturbance of breeding Verreaux's Eagles are concerned. (Refer to Figure 6 of the Avifauna Report)
- Immediately prior to construction commencing, an inspection should be conducted by the avifaunal specialist to record any large raptor nests on the existing transmission lines running parallel to the proposed 132 kV line, that could be impacted by the construction of the proposed line.

- Should any nests be recorded, it would require management of the potential impacts on the breeding birds once construction commences, which would necessitate the involvement of the avifaunal specialist, and the Environmental Control Officer. An effective communication strategy should be implemented whereby the avifaunal specialist is provided with a construction schedule which will enable him/her to ascertain when and where breeding Red Data raptors could be impacted by the construction activities. This could then be addressed through the timing of construction activities during critical periods of the breeding cycle, once it has been established that a particular nest is active.
- All the spans, except those spans that are located adjacent to two or more high voltage lines, should be marked with Bird Flight Diverters on the earth wire of the line, ten metres apart, alternating black and white. Appendix B of the Avifauna report indicates the preferred BFDs to be used.

Freshwater

- The new line should be located as close as possible to the existing lines and the increase in the footprint of these lines within the floodplain should be minimised as far as possible.
- Due to the wide and erosive nature of the Brak River, the proposed transmission line should be located as far north of the river channel as possible and specifically downstream of the existing erosion control wall in the river.
- The existing road infrastructure should be utilized as far as possible to minimize the overall disturbance created by the proposed project, specifically within the floodplain areas and stream channels.
- Where access routes need to be constructed within the stream channels, disturbance of the channels should be limited and all crossings within the 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.
- To reduce the risk of erosion, particularly within the Maatjes Fountain tributary on the hill side of the plateau, any new access paths should be contoured along the 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.
- It is recommended that there be minimal disturbance specifically within the river channel and that no poles/towers be placed within 30 m of the top of bank of the well-defined Brak and Maatjes Fountain river channels and 3 0m from the centre of the channel for the less defined stream crossings (Vet Laagte River and tributaries of the Maatjes Fountain River).
- Any contaminated runoff from the construction sites should be prevented from entering the rivers/streams.
- All materials on the construction sites should be properly stored and contained. Disposal of waste from the sites should also be properly managed.
- Construction workers should be given ablution facilities at the construction sites that are located at least 100 m away from the river/stream systems and regularly serviced. All crossings over drainage channels or stream beds after the construction phase should be rehabilitated such that the flow within the drainage channel is not impeded.
- 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.
- All crossings over drainage channels or stream beds after the construction phase should be

rehabilitated such that the flow within the drainage channel is not impeded.
- These measures above should be addressed, implemented and monitored in terms of the Environmental Management Plan for the construction phase.

Agriculture

Due to the overarching site characteristics, and the nature of the proposed development, viable mitigation measures are limited and will most likely revolve around erosion control:

- 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.
- No pole structures are placed within drainage lines and their 10 meter buffer areas.

Heritage and Palaeontology

Archaeological mitigation measures

- The placement of the pylons must be done in such a way as to stay away from the structure;
- The site must be demarcated and a buffer of at least 10 meters kept, during construction.
- Because of subsurface and localised nature of archaeological remains, any deviation or changes within the corridor to the initial layout alignment will require an archaeological walkdown of the new alignment after pylons placement positions have been decided on to identify any possible archaeological and heritage structures and sites before construction commence.

Paleontological mitigation measures

- A Palaeontologist should be appointed as part of the Environmental Construction Team for preferably all identified paleontological sensitive areas but definitely for the identified high sensitive areas.
- If required, a paleontological rescue and/or destruction permit must be is obtained by the Palaeontologist.
- The Palaeontologist accompanying the surveyor and foundation teams during the pylon construction phase should advise on pylon positions. If possible, pylons located within potential fossil bearing areas should be moved. If not possible, any fossils found should be rescued from the construction footprint.
- Compile a Phase 2 report for the Heritage Authority responsible after paleontological construction inputs.

Handling of chance finds

- A short induction on possible heritage resources that may be 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

- The contract time should be kept to the minimum.
- Road junctions should have good sightlines and traffic control measures, signage and dust control measures should be provided.
- Implement measures as provided in the EMPr, 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.
- Fires should not be allowed except at the construction camp and lay down areas
- No litter and/ or contaminants to be allowed to enter the environment, they should be taken to a licensed waste disposal facility.
- Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and disposed regularly at licensed waste facilities.
- Utilisation of materials listed above should be controlled on site, especially in close proximity to the aquatic environment (Brak River).
- Transmission line layout: where there is a change in direction, a guyed suspension tower is recommended and along a straight route, a self-supporting tower. The visual impact of any of these proposed transmission routes could be moderated by keeping changes of direction to a minimum and increasing the span between towers to the practical maximum.

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 CEMPr, which includes procedures for dealing with dust pollution events, include watering of roads, etc.

Impacts on socio-economic

- It is recommended that the local employment policy, as stated by the proponent, be implemented, audited and accompanied by a training programme. The policy must be based on a 'local's first' policy, specifically for low skilled jobs and should aim to recruit at least 20% of the jobs from the local community. This should also apply to all contracting firms.
- Implement a policy of "no employment at the gate" to prevent loitering.
- The site should be secured.
- A comprehensive employee induction programme would cover land access protocols and fire management. This was addressed in the LEMP.
- A comprehensive employee induction programme would address issues such as HIV/ AIDS and Tuberculosis, as well as alcohol and substance abuse. The induction should also address a code of behaviour for employees that would align with community values.
- The LEMP also addressed noise and dust control. A 24 hour system for receiving and addressing complaints should be established before the commencement of the construction phase. Local farmers and residents should be informed of the contact number.
- Housing has to be restricted to the approved laydown areas
- Source local businesses 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.

OPERATIONAL PHASE:

Botany

- 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.

- All the spans, except those spans that are located adjacent to two or more high voltage lines, should be marked with Bird Flight Diverters on the earth wire of the line, ten metres apart, alternating black and white. Appendix B of the Avifauna report indicates the preferred BFDs to be used.

Freshwater

- Maintenance of powerlines and associated 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.

Visual aesthetics

- It is recommended that existing access roads and jeep tracks be used as far as possible for maintenance purposes.

Agricultural

- In the unlikely event that heavy rains are expected, maintenance 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 during maintenance, then storm water control and wind screening should be undertaken to prevent soil erosion.

Socio-economic

- It is recommended that the local employment policy as stated by the proponent is implemented, audited and accompanied by a training programme. The policy must be based on a 'local's first' policy, specifically for low skilled jobs and should aim to recruit at least 20% of the jobs from the local community. This should also apply to all contracting firms.
- It is recommended that the developer adopts a local procurement policy which would maximise the benefit to the local economy and minimise leakage.
- It is recommended that the developer fulfils commitments under their REIPPPP bid agreement for Economic Development within the local community.

Is an EMPr attached?	**YES**√	NO

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

Refer to Appendix G1 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 I 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 J for other information.

Ms Tamryn Johnson of Aurecon South Africa (Pty) Ltd
NAME OF EAP

SIGNATURE OF EAP

23/04/2014
DATE

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