PROPOSED KOMSBERG WEST GRID CONNECTION (POWER LINE AND SWITCHING STATION), WESTERN AND NORTHERN CAPE PROVINCES.

DRAFT BASIC ASSESSMENT REPORT

On behalf of

KOMSBERG WIND FARMS (PTY) LTD

APRIL 2016

DEA Reference No.: To be allocated upon submission of application.

Prepared For:
Komsberg Wind Farms (Pty) Ltd
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For reference purposes, this report should be cited as: Arcus Consultancy Services (2016) Draft Basic Assessment Report: Proposed Komsberg West Grid Connection (power line and switching station) for the Proposed Komsberg West Wind Energy Facility, Western and Northern Cape Provinces.

PROJECT CONTEXT

Related to, yet independent of this proposal's application (Basic Assessment Process), are three additional proposals for two Environmental Impact Assessments Processes and one additional Basic Assessment Process which will be conducted and for which applications will be submitted to the Department of Environmental Affairs (DEA). These include the:

- Proposed Komsberg West Wind Energy Facility, Northern and Western Cape Provinces (full Scoping and EIA Process) (Reference Number 14/12/16/3/3/2/856);
- Proposed Komsberg East Wind Energy Facility, Western Cape Province (full Scoping and EIA Process) (Reference Number 14/12/16/3/3/2/857); and
- Proposed Komsberg East Grid Connection, Northern and Western Cape Provinces (Basic Assessment Process).

Final Scoping Reports have been completed for the two proposed wind energy facilities, and a shared public participation process is being conducted for all four proposals. Each proposed project can be authorised independently. This Draft Basic Assessment Report should be read in conjunction with the above.

PROJECT DETAILS

DEA Reference No.:	To be allocated upon submission of application.
Arcus Reference No.:	2023
Title:	Volumes 1, 2 and 3: Draft Basic Assessment Report for the Proposed Komsberg West Grid Connection (Powerline and Switching Station) for the Proposed Komsberg West Wind Energy Facility, Western & Northern Cape Provinces.
Authors:	Ashlin Bodasing and Emily Herschell - Arcus Consulting (Pty) Ltd
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	Dr Brian Colloty - Scherman Colloty and Associates
	Tony Barbour - Tony Barbour Environmental Consultant and Researcher
	Dr Garry Paterson - ARC Institute for Soils Climate and Water
	Simon Todd - Simon Todd Consulting
	Tim Hart and John Almond - ACO & Associates
	Andrew Pearson and Anja Terörde - Arcus Consulting
	Jonathan Aronson - Arcus Consulting
	Morné de Jager- Enviro Acoustic Research
Project Applicant:	Komsberg Wind Farms (Pty) Ltd
Report Status:	Draft Basic Assessment Report
Review Period:	February/March 2016

EXECUTIVE SUMMARY

1 INTRODUCTION

Arcus Consultancy Services Ltd. has been appointed by Komsberg Wind Farms (Pty) Ltd. to conduct the Basic Assessment (BA) process as required by the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended, for the proposed establishment of an overhead power line which will form the grid connection for the proposed Komsberg West Wind Energy Facility (WEF). The overall aim of the project is to generate electricity, which is likely to be sold through the Department of Energy's (DOE) Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). The grid connection will deliver electricity from the proposed Komsberg West WEF into the existing Eskom electricity grid.

By way of context, it should be noted that there are four components to this proposed development, comprising of two WEFs and their associated grid connections. These include:

Scoping and EIA Process:

1. Komsberg East Wind Energy Facility, Western Cape Province; and
2. Komsberg West Wind Energy Facility, Western and Northern Cape Provinces.

Basic Assessment Process:

3. Komsberg East Grid Connection, Western and Northern Cape Provinces; and
4. Komsberg West Grid Connection, Western and Northern Cape Provinces.

The information regarding the baseline environments for the above-listed projects is the same. Each aspect of the development has been separately assessed. Note that as agreed with the DEA at the pre-application meeting on the 25th June 2015 (**Appendix D**), a combined PPP will be conducted for all four applications.

The proposed Komsberg West WEF is subject to a separate application to the Department of Environmental Affairs (DEA).

2 SITE LOCATION AND PROJECT DESCRIPTION

The majority of the study area is located in the Western Cape Province and a smaller portion of the study area, is located on the border of the Northern Cape Province, approximately 60km north of Laingsburg and 40km south east of Sutherland. The proposed sites lie adjacent to each other in the Moordenaars Karoo.

Most of the proposed site is located in the Laingsburg Local Municipal area, which forms part of the Central Karoo District Municipality in the Western Cape Province. A small portion of the site falls within the Northern Cape Province, within the Karoo Hoogland Local Municipality, which forms part of the Namakwa District Municipality.

The main access route to the proposed site is via the R354 and the Komsberg and Moordenaars Karoo District Roads, approaching the study area from the west.

The main land uses in the area are linked to livestock farming. The proposed site is made up of a number of farms, and are zoned for Agricultural Use.

The proposed project comprises two WEFs and their associated grid connections. Each WEF will have a maximum generation capacity of up to 275 megawatts (MW).

The proposed grid connection would consist of the following infrastructural components:

- A approximately 35km 132kV overhead power line from the on-site 132kV substation complex (on the proposed WEF site – Komsberg West) running along an approximate

west south west trajectory to the national grid at the Eskom Komsberg Main Transmission Substation.

- An on-site switching station is to be located adjacent to the proposed WEF's substation complex (on the proposed Komsberg West WEF site) with a maximum footprint of 100m x 150m. The switch gear within this station enables energy to be transferred to the existing national grid.
- A metering station located adjacent to the Eskom Komsberg Main Transmission Substation which will quantify net electrical output before being transferred to the national grid. The metering station area (approximately 30m x 40m) would be fenced off.
- The type of structures which will support the overhead lines may include:
  - Concrete, steel or wood monopoles;
  - Guy line supported steel structures;
  - Free standing metal lattice towers; or
  - Multi-pole structures such as H-towers or K-towers.

3 ENVIRONMENTAL REQUIREMENTS

On 4 December 2014, the Minister of Environmental Affairs promulgated new regulations in terms of Chapter 5 of the NEMA, viz, the EIA Regulations 2014 (Government Notices (GN) No. R. 982, R. 983, R. 984 and R. 985 in Government Gazette No. 38282 of 4 December 2014). These regulations came into effect on 8 December 2014.

The EIA Regulations 2014 published in Government Notice (GN) No. R982, provide for the control of certain Listed Activities. These activities are listed in GN No. R983 (Listing Notice 1 – Basic Assessment), R984 (Listing Notice 2 – Scoping & EIA Process) and R985 (Listing Notice 3 – Basic Assessment) of 4 December, and are prohibited to proceed until environmental authorisation has been obtained from the competent authority, in this case, the Department of Environmental Affairs (DEA).

The Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) as well as the Northern Cape Department of Environment and Nature Conservation (DENC) will be Commenting Authorities, amongst others.

The Listed Activities applicable to this proposed project are presented in **Table 1** below. All potential impacts associated with these Listed Activities will be considered and assessed in this BA.

As this proposal triggers Listed Activities in Listing Notices 1 and 3, the Basic Assessment process is to be followed for this application.

Table 1: Applicable Listed Activities in terms of the NEMA.

LISTING NOTICE	ACTIVITIES
LN1 GN R983	11 (i); 12 (iii, x, xi, xii); 14; 19 (i); 48 (iii); 56 (i, ii).
LN3 GN R985	4 (a)(ii) & (f)(i); 10(g)(i); 12(a)(ii) & (d)(ii); 14 (a)(ii) & (f)(i); 18 (a)(ii) & (f)(i); 23(a)(ii) & (g)(i).

4 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations are applicable to this study:

- It is assumed that the corridor investigated and assessed for the proposed powerline and switching station is technically suitable for such development.
- It is assumed that the connection to the national grid via Eskom's substation is technically adequate, feasible and viable.

- Power generation alternatives were not investigated due to the fact that this application is project specific i.e electricity distribution.
- The assumption is made that the information on which this report is based (specialist studies and project information, as well as existing information) is accurate and correct at the time of writing this report.
- It is assumed that the recommendations derived from this study would be included in all tender documentation and the EMP for implementation.
- This study does not analyse the impact of borrow pits. Contractors would be expected to provide services with all necessary approvals in place.

5 AREAS OF INITIAL INVESTIGATION

A number of specialist investigations have been completed for this Basic Assessment Report (BAR). Refer to **Volume 2** which includes the full individual reports. **Table 2** indicates the specialist team and their fields of investigation.

Table 2: Specialist Team and Fields of Investigation.

Specialist Team	Fields of Investigation
Bernie Oberholzer and Quinton Lawson *Bernard Oberholzer Landscape Architects and MLB Architects*	Visual Impact Assessment
Dr. Brian Colloty *Scherman Colloty and Associates Environmental and Aquatic Management Consulting*	Freshwater Ecology Assessment
Tony Barbour *Tony Barbour Environmental Consultant and Researcher*	Social Impact Assessment
Dr. Garry Paterson *ARC Institute for Soils Climate and Water*	Agricultural Potential
Simon Todd *Simon Todd Consulting*	Ecosystems - Fauna
Tim Hart and John Almond *ACO & Associates*	Heritage, Archaeology and Palaeontology
Andrew Pearson and Anja Terörde *Arcus Consulting*	Avifauna Assessment
Jonathan Aronson *Arcus Consulting*	Bat Assessment
Morné de Jager *Enviro Acoustic Research*	Noise Assessment
Hermanus Steyn Aurecon	Traffic and Transport Assessment
Liam Whitlow and Nobuhle Hughes *Environmental Impact Management Services (Pty) Ltd*	Public Participation Facilitators

6 PLANNING CONTEXT

Certain spatial framework and strategic planning/policy documents that are the most relevant to this proposal on a provincial, metropolitan and local level were reviewed. The following planning policies are discussed in the Social Impact Assessment, which is included in **Volume 2** of this report.

It is established that policy supports the development of renewable energy at all levels of governance. The intent of local, provincial and national policies aim to address energy supply issues, and aim to promote economic growth in South Africa.

The following national level legislation, policy and planning documents were assessed, namely:

- National Energy Act, 2008 (Act No. 34 of 2008);
- White Paper on the Energy Policy of the Republic of South Africa (December 1998);
- White Paper on Renewable Energy (November 2003);
- Integrated Resource Plan (IRP) for South Africa (2010-2030);
- The National Development Plan (2011);
- New Growth Path Framework (2010);
- National Infrastructure Plan (2012);
- Astronomy Geographic Advantage (AGA) Act, 2007 (Act 21 of 2007).

The following provincial and local policy and planning documents were reviewed, namely:

- White Paper on Sustainable Energy for the Western Cape Province (2010);
- The Western Cape Provincial Strategic Plan 2014-2019 (2014);
- The Western Cape Land Use Planning Act, 2014 (Act No. 3 of 2014);
- The Western Cape Provincial Spatial Development Framework (2014 Revision);
- The Western Cape Climate Change Response Strategy (2014);
- The Western Cape Infrastructure Framework (2013);
- The Western Cape Green Economy Strategy Framework (2013);
- The One Cape 2040 Strategy (2012);
- The Western Cape Amended Zoning Scheme Regulations for Commercial Renewable Energy Facilities (2011);
- The Western Cape Draft Strategic Plan (2010);
- The Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape – Towards a Regional Methodology (2006); and
- The Guidelines for the Management of Development on Mountains, Hills and Ridges in the Western Cape (2002).
- Central Karoo District Municipality Integrated Development Plan (2012-2017);
- Laingsburg Local Municipality Integrated Development Plan (2012-2017).
- Laingsburg Local Municipality Local Economic Development Strategy (2006).

A small section of the Komsberg West Grid Connection is located in the Karoo Hoogland Municipality (KHLM) within the Northern Cape Province. The following provincial level policy and planning documents were also reviewed:

- Northern Cape Provincial Growth and Development Strategy (2004-2014);
- Northern Cape Climate Change Response Strategy; and
- Northern Cape Spatial Development Framework.

7 NEED & DESIRABILITY

The Western Cape Department of Environmental Affairs and Development Planning's 2010 Guideline on Need and Desirability states that while the "*concept of need and desirability relates to the type of development being proposed, essentially, the concept of need and desirability can be explained in terms of the general meaning of its two components in which need refers to time and desirability to place – i.e. is this the right time and is it the right place for locating the type of land-use/activity being proposed? Need and desirability can be equated to wise use of land – i.e. the question of what is the most sustainable use of land.*"

Section A Part 10.2 of this report describes need and desirability for this type of grid connection development in detail, and provides an explanation as to why wind energy can be considered as an alternative to meeting the need for increased electricity demand over other sources of generation such as fossil fuels. The proposed grid connection is required

in support of the above, to transfer the power produced from the Komsberg West WEF to the national grid for distribution. Summarily, these reasons include:

- Positive impact on climate change;
- Overcoming the country's energy constraints;
- Diversification and decentralisation of supply;
- Reduced costs of energy; and
- Positive economic development including job creation.

The purpose of the proposed power line is to enable the distribution of electricity to the national grid. A constant supply of electricity (via the proposed Komsberg West WEF) would have a positive societal and economic impact in terms of a continuous and reliable electricity supply and distribution to the local area, and region. The proposed project will also create employment opportunities and opportunities for the transfer of skills during the construction and operation of grid connection.

8 ALTERNATIVES

Alternatives are different means of meeting the general purpose and need of a proposed development and may include alternative sites, alternative layouts or designs, alternative technologies and the "no development" or "no go" alternative.

This report (Section A Part 2.2) provides an outline of the site selection process that was undertaken in relation to the proposed Grid Connections. A number of alternative sites for the proposed Komsberg West and East WEFs were considered by the applicant. Grid connection options assisted in the selection of the WEF sites. The site alternatives for the grid connections were therefore dependent on the selection of these sites.

No site alternatives were applicable to the investigation as the grid connection is related directly to the best practicable environmental option and layout of the proposed Komsberg East WEF (the subject of a separate investigation and assessment). The site of the switching station would be located on the site for the proposed Komsberg West WEF and a section of the overhead power line would traverse this site.

The siting of the proposed grid connection is therefore based on the following:

- Optimisation of the route between the switching station and the Eskom Komsberg Main Transmission Sub-station;
- Discussions with landowners and Eskom; and
- Avoidance of environmentally sensitive areas such as waterbodies and ridges.

9 EIA PROCESS

An EIA process is a planning and decision making tool used to describe and assess the physical, biological, social, and economic impacts that a proposed development may have. In order to inform the decision-making process, it is important that public comments are timeously collated. The EIA process allows for the environmental consequences of a proposed project to be identified up-front, investigated through an impact assessment process, and taken into consideration through the design of the development.

An independent Environmental Assessment Practitioner (EAP) and specific specialists identify potential negative and positive impacts that could arise as a result of the proposed project and mitigation measures are recommended which would allow for the avoidance or reduction of negative impacts or which may enhance positive impacts.

Arcus has appointed Environmental Impact Management Services (Pty) Ltd (EIMS) to undertake the Public Participation Process (PPP) component for this EIA process.

The key phases that are be part of this EIA process are described below:

- **Initial Notification and Call to Register** as I&APs through the following: Advertisements, site notices, posters, letters to landowners and pre-identified I&APs. The aim of this step is to inform people of the proposed activity and to encourage initial comment and feedback.
- **Basic Assessment Process:** Collation of initial comments and specialist investigations into a concise report (this document) which provides feedback on the following:
  - Nature of the activity;
  - Description of the receiving environment;
  - Identification of potential feasible alternatives;
  - Identification of potential positive and negative impacts; and
  - Identification of knowledge gaps.

  The process has involved an investigation and comparative assessment of the identified alternatives in order to determine a preferred alternative. The identified impacts have been assessed and relevant management and mitigation measures have been included in an Environmental Management Programme (EMPr). The findings are included in this Report.
- **Ongoing Public Consultation:** Throughout the process, registered I&APs have been consulted. This involvement was initiated through the dissemination of information by means of advertisements, notification letters, and , opportunities were provided for Interested and Affected Parties (I&APs) to review and comment on the following reports:
  - Draft Scoping Report for the Proposed Komsberg East and Komsberg West WEFs
  - Final Scoping Report for Proposed Komsberg East WEF
  - Final Scoping Report for Proposed Komsberg West WEF
  - Draft Basic Assessment Report for the Proposed Komsberg West grid connection
  - Draft Basic Assessment Report for proposed Komsberg East grid connection

Following the completion of the relevant processes described above and the submission of documentation to the competent authority (DEA), the DEA will review the application and issue a decision (called an Environmental Authorisation). I&APs will be informed of the decision and their rights to appeal.

Overall, four independent applications will be submitted for the proposed projects:

Scoping and EIA Process:

1. Komsberg East Wind Energy Facility, Western Cape Province; and
2. Komsberg West Wind Energy Facility, Western and Northern Cape Provinces.

Basic Assessment Process:

3. Komsberg East Grid Connection, Western and Northern Cape Provinces; and
4. Komsberg West Grid Connection, Western and Northern Cape Provinces.

As agreed with the DEA at the pre-application meeting on the 25th June 2015 (**Appendix D**), a combined PPP will be conducted for all four applications.

Each proposed project is subject to a separate application for Environmental Authorisation to the DEA. Should authorisations for the grid connection infrastructure be granted, this will be entirely or partially transferred from the applicant to Eskom Holdings SOC Limited (Eskom) as applicable or if necessary.

In terms of Public Participation for the four proposed projects, the following tasks have thus far been completed:

- Interested and Affected Parties (I&APs) have been identified throughout the process. Initial identification of I&APs was done by identifying all landowners adjacent to the site boundary. Ward councillors, Authorities and NGO's have also been informed;

- Advertisements were placed in local and regional newspapers (*Die Noordwester, Die Burger*) on Friday 28th August 2015 to notify the public of the proposal;
- Notification letters, and Background Information Documents were distributed on 31st August 2014;
- Five site notices were placed on the boundaries of the WEF and grid connection sites on 31st August 2015;
- The registration and comment period on the Draft Scoping Report for the WEFs closed on 1st October 2015. A total of twenty-five comments were received from twenty-one I&APs and incorporated into an Issues Trail (Refer to **Appendix D**).
- The Final Scoping Reports for the proposed Komsberg East and Komsberg West WEFs were submitted to the DEA in November 2015, and the reports were accepted by the DEA on the 4th February 2016.

After the initiation of the public participation process, correspondence for the remainder of the EIA process has been directed to I&APs who were registered and placed on the project database. Correspondence with I&APs has been via post, fax, telephone and email.

This Draft BAR will be made available for public review during April/May 2016 alongside the Draft EIRs for the Komsberg West and Komsberg East WEFs.

10 SUMMARY OF FINDINGS

This BAR aims to capture the key issues for this proposal through a public participation process and through the findings of the specialists' studies.

The specialist reports document the assessment of preliminary environmental impacts that may occur within both the biophysical and social environments. All specialist reports are included in **Volume 2** of this report.

The remaining specialists conducted site visits where necessary, and investigated and assessed the proposed development in more detail.

The following observations can be made from the findings of the specialists' investigations and assessments:

- The majority of potential impacts seem to be mitigatable from High or Medium significance to a Low or lower significance (Refer to Section D – Impact Assessment).
- The SIA has found that the establishment of the grid connections in this area is supported by national, provincial and local policies and planning documents.
- The area in which the site is found has been deemed a Renewable Energy Development Zone (REDZ) by the Council of Scientific Research (CSIR), earmarked through the developing Strategic Environmental Assessments (SEAs) for the Department of Environmental Affairs.
- The public participation process conducted thus far has resulted in the collation of a number of issues, which have been investigated and have been addressed during the process.
- Three potential impacts have been identified as being of importance when considering the proposed grid connection for the Komsberg West WEF. These are as follows:
  - The proposed grid connection would have a medium positive significance during the construction phase through the creation of employment and business opportunities for the local economy, as identified by the social specialist. This positive impact could be enhanced though mitigation to a high positive significance through the implementation of an effective training and skills development programme, prior to the commencement of the construction phase and though a commitment from Komsberg Wind Farms (Pty) Ltd to achieve local employment targets for low and semi-skilled jobs.

  - The visual impact of the proposed grid connection powerlines would have a medium to low negative significance of during the Construction Phase, and medium negative during the operational phase, both before and after mitigation is applied. The impact could be minimised by means of careful alignment to avoid skyline ridges, and through the implementation of the mitigation measures included in the report.
- The area in which the proposed grid connection site would be located has been noted as a scenic area. As a result of the nature of this particular type of development, the impacts to intangible heritage aspects resulting from the proposed grid connection would be small.
  - The Soils and Agricultural Study noted that the prevailing potential of the soils on the sites for rain-fed cultivation throughout most of the area is low. There are no high potential soils in the study area and very few medium potential soils. Every land type is dominated by rock and shallow lithosols (Mispah soil form), which have low to very low arable potential. The low rainfall in the area means that there is little potential for rain-fed arable agriculture in the area. Arable production would therefore be possible only by irrigation. In general, the soils are suited for extensive grazing at best and the grazing capacity of the area is very low. The prevailing potential of the soils for rain-fed cultivation throughout most of the area is low. Thus, the impact of the proposed power lines on agricultural potential, considering the farms are used for mainly pastoral agriculture, would be of low negative or negligible significance. The existence of powerlines across the agricultural areas would not impede current farming activities.

The majority of specialists have not recorded significant concerns with respect to the assessment of cumulative impacts resulting from the development of the proposed grid connection. The visual specialist does note the possibility of high negative cumulative impacts associated with visual impact and sense of place should multiple power lines be constructed in the area (as a result of the possible implementation of the additional WEFs proposed for the area).

The social specialist found that the establishment of the grid infrastructure alongside the infrastructure required for other renewable energy projects in the area has the potential to create socio-economic opportunities for the local communities, which, in turn, will result in a positive social benefit. The positive cumulative impacts of this include the creation of employment, skills development and training opportunities, creation of downstream business opportunities. This benefit is rated as medium positive should all the recommended mitigation measures be implemented.

11 CONCLUSION

The specialist studies have indicated that either of the alternatives proposed for the development of the 132kV power lines from the proposed Komsberg WEF to the Eskom Main Transmission Sub-station would be acceptable from an environmental perspective.

The location of the project site lies within the Renewable Energy Development Zone (REDZ), which are areas which the Council of Scientific and Industrial Research (CSIR) has identified as geographical areas best suited for the roll-out of wind (and solar) energy projects in South Africa. The identified areas are part of the strategic environmental assessment (SEA) that the CSIR is conducting for wind and solar energy, on behalf of the national DEA.

No environmental fatal flaws have been identified, and should all the recommended mitigation measures be implemented by the applicant, it is anticipated that, overall, impacts would be of **low negative significance** (biophysical impacts) or of **medium positive**

significance (social impacts such as fossil finds and social upliftment). With reference to the information provided at this stage of the project cycle, the confidence in the assessment is regarded as acceptable.

Consideration should be given to the fact that this proposal is dependent on the approval and construction of the proposed Komsberg West Wind Farm (separate EIA application), and should the latter not be approved, there is the likelihood that this proposal for the Komsberg West Grid Connection may no longer be necessary. The reason for the separation of the project components in terms of the EIA Process rests with the fact that the Environmental Authorisation for the proposed grid connection may become the property of Eskom, and would not be controlled by the applicant. Thus the DEA requests that the separation of applications occurs.

Overall it is recommended that the Komsberg West grid connection be supported, subject to the implementation of all recommended mitigation measures and management actions contained in all the specialist reports.

PLEASE SUBMIT ANY COMMENTS THAT YOU MAY HAVE BY 15 MAY 2016 TO:

Environmental Impact Management Services (Pty) Ltd
Postal Address: P. O. Box 2083, Pinegowrie, 2123
Telephone: 011 789 7170
Fax: 011 787 3059
Email: komsberg@eims.co.za
Contact Person: Ms Nobuhle Hughes

1 LEGAL REQUIREMENTS FOR THE CONTENTS OF BASIC ASSESSMENT REPORTS

Table 3-1: Legal requirements for the Contents of Basic Assessment Reports in terms of Section 19 of R. 982 Environmental Impact Assessment Regulations, 2014 Gazette Number 38282 (Appendix 1 of the Regulations; not this report).

3. (1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include -	**Section of this Report**
(a) details of- (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a *curriculum vitae*;	Appendix F
(b) the location of the activity, including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Appendix A/Sections A and B
(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Appendix A/Section A
(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure;	Section A
(e) a description of the policy and legislative context within which the development is proposed including- (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section 2 of the Social Impact Assessment contained in Volume 2. Section A Part 11
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section A Part 10
(g) a motivation for the preferred site, activity and technology alternative;	Section A
(h) a full description of the process followed to reach the proposed preferred alternative within the site, including: (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section A Section C and Appendix D Appendix E Section D

(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (viii) the possible mitigation measures that could be applied and level of residual risk; (ix) the outcome of the site selection matrix; (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including- (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Appendix E
(j) an assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated;	Appendix E
(k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;	Section D Section E
(l) an environmental impact statement which contains - (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section D Part 2 Section E Appendix A

(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr;	Appendix E
(n) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Section E
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Executive Summary
(p) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section E
(q) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	Section G
(r) an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and	Appendix G
(s) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	Section A Part 1(a)
(t) any specific information that may be required by the competent authority; and	Not applicable.
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	Not applicable

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONERS

This Basic Assessment Report has been commissioned by Komsberg Wind Farms (Pty) Ltd to undertake an Environmental Impact Assessment in terms of the 2014 EIA Regulations (R.982, Section 13) under the National Environmental Management Act, 1998 (Act No. 107 of 1998, as amended).

In compiling this report, the authors comply with the General Requirements for Environmental Assessment Practitioners (EAPs) as set out below:

"General requirements for EAPs and specialists

13. (1) An EAP and a specialist, appointed in terms of regulation 12(1) or 12(2), must-

(a) be independent;

(b) have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity;

(c) ensure compliance with these Regulations;

(d) perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application;

(e) take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application and any report, plan or document relating to the application; and

(d) disclose to the proponent or applicant, registered interested and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing

(i) any decision to be taken with respect to the application by the competent authority in terms of these Regulations; or

(ii) the objectivity of any report, plan or document to be prepared by the EAP or specialist, in terms of these Regulations for submission to the competent authority; unless access to that information is protected by law, in which case it must be indicated that such protected information exists and is only provided to the competent authority."

ENVIRONMENTAL ASSESSMENT PRACTITIONERS

Ashlin Bodasing	
Qualifications	BA (Social Science)
Experience in Years	11 years
Experience	Ashlin Bodasing is the Team Leader at Arcus Consulting, located in Cape Town. Having obtained her Bachelor of Social Science Degree from the University of Kwa-Zulu Natal; she has over 9 years of experience in the environmental consulting industry in southern Africa. She has gained extensive experience in the field of Integrated Environmental Management, environmental impact assessments and public participation through her former employment at Parsons Brinckerhoff and WSP Consulting in South Africa. She has also been actively involved in a number of industrial and infrastructural projects, including electricity power lines and substations; road and water infrastructure upgrades and the installation of telecommunication equipment and as well green field coal mines, as well as renewable energy facilities, both wind and solar. Ashlin has major project experience in the development of Environmental Impact Assessments,

	Environmental Management Plans and the monitoring of construction activities. Her areas of expertise include project management, environmental scoping and impact assessments, environmental management plans, environmental compliance monitoring and environmental feasibility studies. Experience also includes International Finance Corporation Performance Standards and World Bank Environmental Guidelines environmental reviews. She has worked in Mozambique, Namibia, Botswana, Lesotho and Zimbabwe.
Emily Herschell	
Qualifications	MPhil (Architecture and Planning) BSc (Honours) (Environmental and Geographical Science) BSc (Environmental and Geographical Science and Zoology) Pr. Sci. Nat. – Environmental Scientist
Experience in Years	14 years
Experience	Emily Herschell is a Senior Environmental Consultant with extensive experience in applying the principles of Integrated Environmental Management (IEM), and in applying the EIA Regulations to a number of development projects and initiatives in Southern Africa. Emily has co-ordinated and managed environmental processes within both the public and private sectors and for national, multi-national and international companies. As a project manager, she has conducted a variety of environmental investigations and evaluations, directing projects through tendering, design, construction and operational phases. She has led teams of varying sizes, responsible for undertaking assignments including *inter alia* Environmental Impact Assessments, Strategic Environmental Assessments, Environmental Management Plans and Programmes, Waste Management Licensing, site selection and screening exercises.

Appendices F and G include the signed Declarations of Independence and the *Curricula Vitae* of the EAPs.

ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations are applicable to this study:

- It is assumed that the corridor investigated and assessed for the proposed powerline and switching station is technically suitable for such development.
- It is assumed that the connection to the national grid via Eskom's substation is technically adequate, feasible and viable.
- Power generation alternatives were not investigated due to the fact that this application is project specific i.e electricity distribution.
- The assumption is made that the information on which this report is based (specialist studies and project information, as well as existing information) is accurate and correct at the time of writing this report.
- It is assumed that the recommendations derived from this study would be included in all tender documentation and the EMP for implementation.
- This study does not analyse the impact of borrow pits. Contractors would be expected to provide services with all necessary approvals in place.

DRAFT BASIC ASSESSMENT REPORT FOR PUBLIC REVIEW

This Draft Basic Assessment Report has been prepared by Arcus Consultancy Services Ltd in order to assess the potential environmental impacts associated with the construction of a grid connection (powerline and switching station) for a proposed wind energy facility located in the Northern and Western Cape Provinces). The Department of Environmental Affairs (DEA) is the Competent Authority to consider this application. **The 30 day review period is from 15 April 2016 – 15 May 2016**, and the report will be made available for public review at the following locations:

- Laingsburg Public Library;
- Sutherland Public Library; and
- www.eims.co.za.

PLEASE SUBMIT ANY COMMENTS THAT YOU MAY HAVE BY 15 MAY 2016 TO:
Environmental Impact Management Services (Pty) Ltd
Postal Address: P. O. Box 2083, Pinegowrie, 2123
Telephone: 011 789 7170
Fax: 011 787 3059
Email: komsberg@eims.co.za
Contact Person: Ms Nobuhle Hughes

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PLATES

TABLES

ABBREVIATIONS, ACRONYMS AND UNITS

AGA	Astronomy Geographic Advantage Act, 2007 (Act No 27 of 2007)
ATNS	Air Traffic and Navigation Services SOC Limited
BGIS	Biodiversity Geographic Information System
BID	Background Information Document
CARA	Conservation of Agricultural Resources, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
CCRS	Climate Change Response Strategy
CSP	Concentrated solar power
D:EA&DP	Department of Environmental Affairs and Development Planning (Western Cape)
DAFF	Department of Agriculture, Forestry and Fisheries
dB	Decibel
DEA	Department of Environmental Affairs (National)
DENC	Department of Environment and Nature Conservation (Northern Cape)
DoE	Department of Energy
DBAR	Draft Basic Assessment Report
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act, 1989 No. 73 of 1989)
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
ESA	Early Stone Age
Eskom	Eskom Holdings SOC Limited
EWT	Endangered Wildlife Trust
FEPA	Freshwater Ecosystem Priority Area
FBAR	Final Basic Assessment Report
GHG	Greenhouse Gas
GIS	Geographical Information Systems
GNR	Government Notice Regulation
GPS	Global Positioning System
GWh	Gigawatt hour
HDI	Historically Disadvantaged Individuals
HIA	Heritage Impact Assessment
HV	High Voltage
HWC	Heritage Western Cape
Hz	Hertz
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IPP	Independent Power Producer
IRP	Integrated Resource Plan
KHLM	Karoo Hoogland Municipality
kV	Kilovolt
kWh	Kilowatt Hours
LSA	Late Stone Age
LUPA	Western Cape Land Use Planning Act, 2014 (Act. No. 3 of 2014)
mamsl	Meters above mean sea level
MSA	Middle Stone Age
MW	Megawatt
NCR	Noise Control Regulations
NDP	National Development Plan
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NFEPA	National Freshwater Ecosystem Priority Area
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NSD	Noise-sensitive Developments
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PES	Present Ecological State
PGDS	Provincial Growth and Development Strategy
PGWC	Provincial Government of the Western Cape
PICC	Presidential Infrastructure Coordinating Committee

PPA	Power Purchase Agreement
PPP	Public Participation Process
PSDF	Provincial Spatial Development Framework
PSDF	Provincial Spatial Development Framework
PSEIA	Plan of Study for EIA
PV	Solar photovoltaic
RBS	Revised Balanced Scenario
RE	Renewable Energy
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
RSH	Rotor Swept Height
SABAAP	South African Bat Assessment Advisory Panel
SABIF	South African Biodiversity Information Facility
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SALT	Southern African Large Telescope
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency Limited
SANS	South African National Standards
SCADA	Supervisory Control and Data Acquisition
SDF	Spatial Development Framework
SDIP	Sustainable Development Implementation Plan
SEA	Strategic Environmental Assessment
SES	Sustainable Energy Strategy
SHEQ	Safety Health Environment and Quality
SIA	Social Impact Assessment
SIPS	Strategic Integrated Projects
SKA	Square Kilometre Array Project
SODAR	Sonic Detection and Ranging
SPV	Special Project Vehicle
TWI	Total Wetness Index
WCAQMP	Western Cape Air Quality Management Plan
WCCCRS	Western Cape Climate Change Response Strategy
WCIF	Western Cape Infrastructure Framework
WCP	Western Cape Province
WCPSP	Western Cape Provincial Strategic Plan
WEF	Wind Energy Facility
WHO	World Health Organisation
WTG	Wind Turbine Generator
WULA	Water Use License Application

GLOSSARY OF TERMS

'Do nothing' alternative or 'no-go option'	The 'do nothing' alternative, or 'no go' option is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.
Ambient noise	The all-encompassing sound at a point being composed of sounds from many sources both near and far. It includes the noise from the noise source under investigation.
Ambient sound level	The level of the ambient sound indicated on a sound level meter in the absence of the sound under investigation (e.g. sound from a particular noise source or sound generated for test purposes). Ambient sound level as per Noise Control Regulations.
Amplitude modulated sound	A sound that noticeably fluctuates in loudness over time.
Archaeology	Remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.
Attenuation	Term used to indicate reduction of noise or vibration, by whatever method necessary, usually expressed in decibels.
Broadband noise	Spectrum consisting of a large number of frequency components, none of which is individually dominant.
Calcrete	A soft sandy calcium carbonate rock related to limestone which often forms in arid areas.
Cultural landscape	The combined works of people and natural processes as manifested in the form of a landscape
Cumulative impacts	Impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities
Cut-in speed	The minimum wind speed at which the wind turbine will generate usable power.
Cut-out speed	The wind speed at which shut down occurs.
Early Stone Age	The archaeology of the Stone Age between 700 000 and 2500 000 years ago.
Environmental management programme (EMPr)	An operational programme that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its ongoing maintenance after implementation.
Fossil:	Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.
Generator	The generator is what converts the turning motion of a wind turbine's blades into electricity
Heritage:	That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999.
Holocene:	The most recent geological time period which commenced 10 000 years ago.
Late Stone Age	The archaeology of the last 20 000 years associated with fully modern people.
Midden	A pile of debris, normally shellfish and bone that have accumulated as a result of human activity.
Middle Stone Age:	The archaeology of the Stone Age between 20-300 000 years ago associated with early modern humans.
Miocene	A geological time period (of 23 million - 5 million years ago).
Nacelle	The nacelle contains the generator, control equipment, gearbox and anemometer for monitoring the wind speed and direction.
Palaeontology	Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Palaeosole	An ancient land surface.
Pleistocene	A geological time period (of 3 million – 20 000 years ago).
Pliocene	A geological time period (of 5 million – 3 million years ago).
Rotor	The portion of the wind turbine that collects energy from the wind is called the rotor. The rotor converts the energy in the wind into rotational energy to turn the generator. The rotor has three blades that rotate at a constant speed of about 15 to 28 revolutions per minute (rpm).
Structure (historic)	Any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith. Protected structures are those which are over 60 years old.
Tower	The tower supports the rotor, and is constructed from tubular steel and/or concrete. The nacelle and the rotor are attached to the top of the tower. The tower raises the wind turbine so that its blades safely clear the ground in order to reach the stronger winds at higher elevations. Large modern wind turbines are usually mounted on towers ranging from 80 to 130 m tall. The tower must be strong enough to support the wind turbine and to sustain vibration, wind loading and the overall weather elements for the lifetime of the wind turbine.
Wind rose	The diagrammatic representation of joint wind speed and direction distribution at a particular location. The length of time that the wind comes from a particular sector is shown by the length of the spoke, and the speed is shown by the thickness of the spoke.

STRUCTURE OF THIS REPORT

This report is structured as follows:

Volume 1: Basic Assessment Report and Appendices

Volume 2: Specialists' Studies

Volume 3: Environmental Management Programme (EMPr)

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, 2014, 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, 2014 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 **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

2 SECTION A: ACTIVITY INFORMATION

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

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

2.1 PROJECT DESCRIPTION

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

Proposed Komsberg West Grid Connection, Western Cape Province.

Komsberg Wind Farms (Pty) Ltd is proposing to construct approximately 35km 132kV overhead power line, a 100m x 150m switching station which together will form the grid connection for the proposed Komsberg West Wind Energy Facility (WEF). The overhead power line would traverse the Western Cape Province and a small portion of the Northern Cape Province (Refer to **Appendix A** for a Locality Map), and as such, would fall within the jurisdiction of the Laingsburg Local Municipality (Western Cape) and the Karoo Hoogland Local Municipality (Northern Cape).

Note that the proposed Komsberg West WEF is subject to a separate application to the Department of Environmental Affairs (DEA) (full Scoping and EIA) (Reference Number 14/12/16/3/3/2/856).

The project area for the power line corridor is located approximately 60km north east of Laingsburg and 40km south east of Sutherland in the foothills of the Komsberg mountain range. The main access route to the area is via the R354 and then the Komsberg and Moordenaars Karoo District Road, approaching the project area from the west.

The proposed grid connection would consist of the following infrastructural components:

- An approximately 35km 132kV overhead power line from the on-site 132kV substation complex (on the proposed WEF site – Komsberg West) running along an approximate west south west trajectory to the national grid at the Eskom Komsberg Main Transmission Substation.
- An on-site switching station is to be located adjacent to the proposed WEF's substation complex (on the proposed Komsberg West WEF site) with a maximum footprint of 100m x 150m. The switch gear within this station enables energy to be transferred to the existing national grid.
- A metering station located adjacent to the Eskom Komsberg Main Transmission Substation which will quantify net electrical output before being transferred to the national grid. The metering station area (approximately 30m x 40m) would be fenced off.
- The type of structures which will support the overhead lines may include:
  - Concrete, steel or wood monopoles;
  - Guy line supported steel structures;
  - Free standing metal lattice towers; or
  - Multi-pole structures such as H-towers or K-towers.

The route for the 132 kV lines would include a servitude corridor of up to 34 m in width although a 1km wide corridor was investigated for the siting of the power line and for any alternative routes. This corridor would accommodate any service tracks required. Service tracks would be approximately 3 - 4m wide. As such, the Komsberg West Grid Connection corridor will cover an area of approximately 119 hectares. The access tracks and any other required infrastructure will be placed within the corridor which is assessed in this Basic Assessment, the final placement of which will depend, *inter*

alia, on the local geotechnical and topographical conditions, as well as environmentally sensitive areas.

Power line towers are an average of 200m apart, however this can exceed 500m in places depending on topography and terrain to be spanned. Construction of minor access roads to the tower positions and construction of tower foundations will be the most significant construction phase activities. The footprint of each tower foundation will be a maximum of 10m x 10m (100m^2) depending on the final structure to be used. The actual size and type of the foundation will be determined by the underlying geotechnical conditions and the type of structure to be used for the towers.

Minimum clearances will adhere to Eskom requirements and best practice guidelines.
It is proposed that the final centre line for the powerline and the co-ordinates of each bend in the line (if applicable) be determined in line with the requirements of the specialist studies conducted and the sensitive areas determined by these specialists. Prior to construction commencing, the relevant specialists will conduct a "walkthrough" of the powerline, and based on their recommendations, the final layout will be determined and submitted to the DEA for approval.

Following completion of construction and commissioning, it is envisaged that the infrastructure will be transferred to Eskom for operation should this be necessary.

Refer to **Appendix A** for a map of the proposed route (showing the alternative alignment, which is discussed in Section 2 below).

Route Description
The following properties will be affected by the construction of the proposed grid connection:

Table 4-1: Properties through which the proposed grid connection would traverse.

	Property Name	Erf number	Portion	SG number
1	Welgemoed	268	2	C04300000000026800004
2	Kentucky	206		C07200000000020600000
3	Rheebokke Fontein	209	1	C07200000000020900001
4	Rheebokke Fontein	209	2	C07200000000020900002
5	Rheebokke Fontein	209	3	C072000000000209000023
6	Standvastigheid	210	RE	C07200000000021000000

The proposed transmission line would cross farms which are serving as operational bases for larger farming operations.

A description of the approximately 35km route is provided below, starting at the Eskom transmission substation.

From east to west, the initial approximately 3km of line would be located across Welgemoed. The proposed alignment is near-parallel to the existing Eskom 400 kV line located approximately 7.5 km to the south. As indicated, the properties are currently used for seasonal grazing only and are not inhabited.

Approximately 13 km of the proposed alignment would traverse Kentucky 206 (De Plaat) (**Plate 3-1**). The proposed line would be located <1.5km north of the De Plaat farmstead. The farmstead is inhabited and is used for extensive grazing. A dam and a small fodder cropping area are located near the proposed alignment, but are not affected by it. No power lines are currently located on the property. Kentucky 206 forms part of the approved Great Karoo WEF. The power line corridor closely follows the same corridor for the adjacent proposed wind farm, the Great Karoo WEF.

Plate 2-1: De Plaat farmstead viewed from the farm access road off the Komsberg gravel road.

Rheebokkefontein (Damslaagte) (**Plate 3-2**) would be affected over a distance of approximately 5km. Damslaagte is inhabited by the owner, and labourers live and work on the farm. Damslaagte forms part of a multi-farm sheep farming operation. Fodder crops for own use are cultivated. The proposed alignment roughly follows that of the Komsberg gravel road across Damslaagte, and the proposed transmission line would be located approximately 600m to the east of the farmstead. A 400 kV line is currently located across Damslaagte, approximately 2.5 km south of the farmstead.

The final 9km towards the Eskom Komsberg substation would be located across Saaiplaas, which is the basis of a multi-farm sheep-based operation, which also includes Gemsbokfontein (**Plate 3-3**). Fodder is grown on Saaiplaas for own use, and the property is inhabited by the landowner and labourer households. A farm house on Saaiplaas has been converted into a guest facility. Komsberg substation is located adjacent to Saaiplaas. Two transmission corridors currently traverse Saaiplaas. The proposed new power line would be aligned parallel to, and approximately 200 m west of one of the existing power line corridors. The new line would be located approximately 900m from the Saaiplaas farmstead.

Plate 2-2: Damslaagte farm yard viewed from the Komsberg gravel road.

Plate 2-3: Labourers houses on Saaiplaas. The proposed transmission line would be located approximately 900m to the east.

Description of Construction Phase

It is estimated that construction will take approximately 12 - 18 months subject to the final design, weather and ground conditions, including time for testing and commissioning. The construction process will consist of the following principal activities:

- Site survey;

- Final design and micro-siting;
- Vegetation clearance, site preparation and construction access tracks;
- Construction of foundations;
- Assembly and erection of power lines and stringing of conductors;
- Construction of the temporary contractors' compound;
- Construction of switching and metering station – platforms and equipment; and
- Rehabilitation of disturbed areas and including erosion protection measures.

It is possible for certain operations to be carried out concurrently, although predominantly in the order mentioned above. This would minimise the overall length of the construction programme. Site rehabilitation will be programmed and carried out in order to allow the rehabilitation of disturbed areas as early as possible and in a progressive manner.

The construction phase is likely to create approximately 50 employment opportunities. Of this total, approximately 25% will be available to skilled personnel (engineers, technicians, management and supervisory), 15% to semi-skilled personnel (drivers, equipment operators) and 60% to low skilled personnel (construction labourers, security staff). The number and nature of employment opportunities will be refined as the development process progresses.

During the construction phase, water will be supplied from a number of boreholes on different land portions of the proposed project sites as listed above. Early estimations are that 2500 - 3500 kilo litres will be needed *per annum* during construction. Water for construction purposes (e.g. foundations, mass earthworks) will be transferred from the source to the point of use on the site via tanker. All storage of water will be below Water Use Licence Application (WULA) authorisation limits, i.e. 10 000m^3.

Description of Operational Phase

The operational related activities on-site will be routine servicing and unscheduled maintenance associated with unforeseen events throughout operation, which is expected to be for lifespan of the proposed Komsberg West WEF, that is, up to 25 years. The operational phase will likely be managed by Eskom according to their standard operating procedures. Access tracks will be maintained in good order and safe access will be maintained. The proposed grid connection would be accessed via existing gravel roads and any access roads established during construction. Vegetation within the proposed grid connection corridor would only require maintenance if it begins to impact on any safety and/or operational objectives.

The operational phase is likely to create approximately 5-7 permanent employment opportunities. Of this total, approximately 30% will be low and medium-skilled and 70% (11) will be medium to high skilled positions. The number and nature of employment opportunities will be refined as the development process progresses.

Description of Decommissioning Phase

The proposed project would only be decommissioned once it reached the end of its economic lifespan or if it is no longer required. Decommissioning activities would include:

- Site preparation to confirm the integrity of the access to the site to accommodate the mobilisation of equipment;
- Components would be disassembled, re-used and re-cycled where possible, or disposed of in line with the relevant regulatory provisions; and

- Disturbed areas would be rehabilitated to their original condition or as agreed with the landowner.

Decommissioning would take account of the environmental legislation and technology at the time of decommissioning.

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

Table 4-2: Listed activities associated with the proposed project.

Listed activity as described in GN R 983 and 985	Description of project activity that triggers listed activity
Listing Notice 1 **GN 983 4 December 2014** **Activity 11** *The development 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 grid connection would consist of a 132kV power line which would connect to the national grid.
Listing Notice 1 **GN 983 4 December 2014** **Activity 12** *The development of-* *(iii) bridges exceeding 100 square metres in size;* *(x) buildings exceeding 100 square metres in size;* *(xi) boardwalks exceeding 100 square metres in size; or* *(xii) infrastructure or structures with a physical footprint of 100 square metres or more;* *where such development occurs-* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; -* *Excluding* *(ee) where such development occurs within existing roads or road reserves.*	The proposed project may include the construction of infrastructure within 32 m of a watercourse(s). Bridges may be required to cross watercourses for access tracks. The location and extent of any water crossings will be determined during the BA process. The footprint of the proposed switching station would exceed 100m^2 (100m x 150m), and may be locates within 32m of a watercourse.
Listing Notice 1 **GN 983 4 December 2014** **Activity 14** *The development of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, Fuel where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.*	Fuel storage during construction may exceed 80m^3, but will not be more than 500m^3.
Listing Notice 1 **GN 983 4 December 2014** **Activity 19** *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 of more than 5 cubic metres from-* *(i) a watercourse;* *but excluding where such infilling, depositing , dredging, excavation, removal or moving -* *(a) will occur behind a development setback;* *(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or* *(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.*	The construction of the power line may include the excavation of soil in a watercourse/drainage line area, and this may exceed 5 cubic metres. The construction of associated infrastructure, such as access tracks crossing watercourses may require excavation and/or infilling of watercourse areas. Note that if necessary, borrow pits and fill would be provided by contractors in line with all relevant regulations.
Listing Notice 1 **GN 983 4 December 2014** **Activity 48**	Existing bridges over water courses may need to be expanded or widened.

The expansion of- *(iii) bridges where the bridge is expanded by 100 square metres or more in size;* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;* *excluding-* *(ee) where such expansion occurs within existing roads or road reserves.*	
Listing Notice 1 **GN 983 4 December 2014** **Activity 56** *The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre-* *I (i) where the existing reserve is wider than 13,5 meters; or* *(ii) where no reserve exists, where the existing road is wider than 8 metres;* *excluding where widening or lengthening occur inside urban areas.*	Existing farm access roads may need to be widened or lengthened. These roads would currently have no road reserve and may be wider than 8 metres in some areas.
Listing Notice 3 **GN 985 4 December 2014** **Activity 4** *The development of a road wider than 4 metres with a reserve less than 13,5 metres.* *(a) In Free State, Limpopo, Mpumalanga and Northern Cape Provinces.* *(ii) Outside urban areas, in:* *(aa) A protected area identified in terms of NEMPAA, excluding disturbed areas;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(dd) Sites or areas identified in terms of an International Convention;* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(ff) Core areas in biosphere reserves;* *(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.;* *(f) In Western Cape:* *i. Areas outside urban areas;* *(aa) Areas containing indigenous vegetation;* *(bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined.*	Service track roads could be constructed that may be wider than 4m in places. The site falls outside of an urban area and parts of the site fall within a Critical Biodiversity Area (CBA) area.
Listing Notice 3 **GN 985 4 December 2014** **Activity 10** *The development of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.* *(g) In Western Cape:* *i. All areas outside urban areas.*	Fuel storage during construction is likely to exceed 30 cubic meters. The proposed on-site switching station and/or metering station is likely to require the use of transformer oils/other hazardous substances during the operational phase. The site falls outside of an urban area and parts of the site fall within a CBA area.
Listing Notice 3 **GN 985 4 December 2014**	The proposed development would likely require the clearance of natural vegetation in excess of

Activity 12 *The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.* *(a) In Eastern Cape, Free State, Gauteng, Limpopo, North West and Western Cape provinces:* *i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;* *ii. Within critical biodiversity areas identified in bioregional plans;* *iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.* *(d) In Northern Cape:* *i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;* *ii. Within critical biodiversity areas identified in bioregional plans; or* *iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.*	300m^2 in areas of natural vegetation. Parts of the site fall within CBA areas.
Listing Notice 3 **GN 985 4 December 2014** **Activity 14** *The development of-* *(iii) bridges exceeding 10 square metres in size;* *(x) buildings exceeding 10 square metres in size;* *(xii) infrastructure or structures with a physical footprint of 10 square metres or more;* *where such development occurs -* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;* *(a) In Free State, Limpopo, Mpumalanga and Northern Cape:* *(ii) Outside urban areas in:* *(aa) A protected area identified in terms of NEMPAA, excluding conservancies;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) World Heritage Sites;* *(dd) Sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority;* *(ee) Sites or areas listed in terms of an International Convention;* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(gg) Core areas in biosphere reserves;* *(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other*	Bridges/infrastructure may be constructed within 32m of a watercourse. The site lies outside of an urban area, and parts of are classified as CBAs.

protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; *(f) In Western Cape:* *i. Outside urban areas, in:* *(aa) A protected area identified in terms of NEMPAA, excluding conservancies;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) World Heritage Sites;* *(dd) Sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority;* *(ee) Sites or areas listed in terms of an International Convention;* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(gg) Core areas in biosphere reserves; or* *(hh) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined.*	
Listing Notice 3 **GN 985 4 December 2014** **Activity 18** *The widening of a road by more than 4 metres; or the lengthening of a road by more than 1 kilometre.* *(a) In Free State, Limpopo, Mpumalanga and Northern Cape provinces* *ii. Outside urban areas, in:* *(aa) A protected area identified in terms of NEMPAA, excluding conservancies;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(dd) Sites or areas identified in terms of an International Convention;* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(ff) Core areas in biosphere reserves;* *(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;* *(ii) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined;* *(f) In Western Cape:* *i. All areas outside urban areas:* *(aa) Areas containing indigenous vegetation;* *(bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined.; or* *ii. In urban areas:* *(aa) Areas zoned for conservation use; or* *(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.*	Existing farm roads may need to be widened or lengthened. The site lies outside urban areas, and contains indigenous vegetation.
Listing Notice 3 **GN 985 4 December 2014** **Activity 23** *The expansion of-* *(iii) bridges where the bridge is expanded by 10 square metres or more in size;*	The construction of the grid connection may include the expansion of existing bridges. The site lies outside of urban areas, and CBAs are present on site.

(x) buildings where the building is expanded by 10 square metres or more in size; *(xii) infrastructure or structures where the physical footprint is expanded by* *10 square metres or more; where such development occurs-* *(a) within a watercourse;* *(b) in front of a development setback adopted in the prescribed manner; or* *(c) If no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;* *(a) Free State, Limpopo, Mpumalanga and Northern Cape:* *ii. Outside urban areas, in:* *(aa) A protected area identified in terms of NEMPAA, excluding conservancies;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(dd) Sites or areas identified in terms of an International Convention;* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(ff) Core areas in biosphere reserves;* *(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve.* *(g) In Western Cape:* *i. Outside urban areas, in:* *(aa) A protected area identified in terms of NEMPAA, excluding conservancies;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) World Heritage Sites;* *(dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(ee) Sites or areas listed in terms of an International Convention;* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(gg) Core areas in biosphere reserves; or* *(hh) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined.*	

2.2 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 Appendix 1 (3)(h), Regulation 2014. 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

A number of alternative sites for the proposed Komsberg West and East WEFs were considered by the applicant. Grid connection options assisted in the selection of the WEF sites. The site alternatives for the grid connections were therefore dependent on the selection of these sites.

No site alternatives were applicable to the investigation as the grid connection is related directly to the best practicable environmental option and layout of the proposed Komsberg East WEF (the subject of a separate investigation and assessment). Various micro-routing alternatives were investigated and discussed with specialists albeit that the options for macro or general routing (i.e the properties crossed) were limited. The site of the switching station would be located on the site for the proposed Komsberg West WEF and a section of the overhead power line would traverse this site.

The siting of the proposed grid connection is therefore based on the following:

- Optimisation of the route between the switching station and the Eskom Komsberg Main Transmission Sub-station.
- Discussions with landowners and Eskom; and
- Avoidance of environmentally sensitive areas such as waterbodies and ecologically sensitive areas.

This process was informed by detailed specialist studies and an iterative layout design process.

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

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
Alternative 1 (preferred) N/A		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		
Alternative 2 N/A		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		

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

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** of this form. N/A.

b) Lay-out alternatives

The design of the proposed Komsberg West grid connection for the power line is designed to conform to industry and Eskom's standards and must comply with the existing network systems, technology and infrastructure. As can be seen in **Appendix A**, there are two switching stations and associated line routings for Komsberg West. The preferred route for the proposed power line deviates to the north (west of the alternative) along an alignment to meet the preferred switching station on the proposed Komsberg West WEF site. The location of the proposed infrastructure on the northern route (west of the alternative) would be more acceptable from a visual perspective.

A second alternative is to run the line slightly south of this, to meet an alternative proposed substation location site on the proposed Komsberg West WEF site. The latter is not the preferred route, although the alignment remains feasible.

Alternative 1 (preferred)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Starting point of the activity(Komsberg Main Transmission Substation)	32°55'54.91"S	20°35'36.92"E
Middle/Additional point of the activity	32°50'53.01"S	20°41'50.06"E
End point of the activity	32°46'14.77"S	20°49'48.41"E
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Starting point of the activity(Komsberg Main Transmission Substation)	32°55'54.91"S	20°35'36.92"E
Middle/Additional point of the activity	32°50'53.01"S	20°41'50.06"E
End point of the activity	32°46'46.60"S	20°51'48.67"E
Alternative 3 N/A		
Description	Lat (DDMMSS)	Long (DDMMSS)

Refer also to **Appendix A** for the site development plan and co-ordinates of both alternatives.

Note that the final layout or site development plan, with the resultant final preferred route (in the south) has been determined as a result of the compilation of constraints from a wide variety of disciplines – visual, heritage and the various ecological disciplines as well as I&AP input. These constraints have been

considered as part of an iterative exercise by the EAP, together with the applicant, to develop a final proposed layout/site development (**Appendix A**).

c) Technology alternatives

The main purpose of the proposed substations and overhead powerlines is to connect the proposed WEF to the national grid. Note that technologies change on a regular basis and the most reliable, safest and cost effective technology that is available and that meets industry standards will be used. Alternatives are proposed for the type of structures which will support the overhead lines. These may include:

- Concrete, steel or wood monopoles;
- Guy line supported steel structures (small footprint);
- Free standing metal lattice towers; or
- Multi-pole structures such as H-towers or K-towers.

Refer to **Plates 2-1 to 2-4** for typical examples of these tower types. All aspects of the grid connection, including powerline and supporting structures would need to adhere to industry standards.

Plate 2-4: Concrete, steel or wood monopoles.

Plate 2-5: Guy line supported steel structures.

Plate 2-6: Free standing metal lattice towers.

Plate 2-7: Multi-pole structures such as H-towers or K-towers.

Alternative 1 (preferred alternative)
The preferred supporting structure would be a concrete or steel monopole as these are the Eskom standard and are cost effective. The preferred structure would be subject to line design and engagement with Eskom.
Alternative 2
Free standing metal lattice towers or guy-line supported steel structures would be beyond the need of the conductor in this case. In addition, these structures are expensive [1]

[1] Note that the visual and heritage specialists have recommended that lattice structures are also acceptable for use as they are visually more permeable and almost invisible at a distance. Should the proposed power line be parallel with any existing power lines then the same pylons should be used.

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

No additional alternatives.

e) No-go alternative

The no-go alternative denotes the option of not constructing this particular grid connection including substation, metering station and power line. Should neither proposed grid connection be approved (neither east nor west), implementing the no-go alternative would result in no negative impacts occurring on the biophysical environment, such as the negative impact of vegetation clearing and habitat fragmentation. It would also mean that the commissioning of the proposed Komsberg West WEF (if authorized) would not be possible, as the WEF would not be able to connect to the national grid, rendering it redundant. The no-go option for the proposed west grid connection could also be the impacts that would be associated with it regardless, should the proposed East grid connection be approved, i.e. the impacts documented here would occur. Negative socio-economic impacts would result which would include:

- a loss of 275 MW of power contribution to the national grid (national scale);
- no creation of job opportunities and skills transfer (regional and local scale); and
- lost opportunity for contributing to the country's renewable energy commitments (national scale).

The option has been investigated and assessed by the specialists.

The no-go option could reduce the overall cumulative impacts of grid connections and WEFs in the region. A number of WEFs and their associated grid connections are proposed for this particular area, and the cumulative impacts of the possible effects of this are assessed in this report. Implementing the proposed project would allow for connection optimization opportunities amongst a number of different wind farm projects in the area.

Note: The proposed Komsberg West WEF grid connection will traverse the same alignment as that for the proposed Komsberg East grid connection.

The no-go alternative is feasible, but not a preferred option.

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

2.3 PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:		**Size of the activity:**
Alternative A1[2] (preferred activity alternative)	Switching station size (the same for all alternatives)	15 000 m^2
Alternative A1 (preferred activity alternative)	Metering station (the same for all alternatives)	1 200m^2
Alternative A2 (if any)	N/A	
Alternative A3 (if any)	N/A	

or, for linear activities:

[2] "Alternative A.." refer to activity, process, technology or other alternatives.35

Alternative:			Length of the activity:
Alternative A1 (preferred activity alternative)	(northern alternative)	alignment	35km
Alternative A2 (if any)	(southern alternative)	alignment	35km
Alternative A3 (if any)	N/A		

The footprints of the concrete or steel monopoles - the preferred supporting structure - will be up to 100m^2 at most, although 60m^2 on average.

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

Alternative:			Size of the site/servitude:
Alternative A1 (preferred activity alternative)	Powerline Preferred	servitude	1190000m^2
Alternative A2 (if any)	Powerline alternative	servitude	1190000m^2
Alternative A3 (if any)	N/A		m^2

2.4 SITE ACCESS

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

Describe the type of access road planned:

The main access route to the site is via the R354 from the south, and then the Komsberg/Kareedoringkraal Road (Provincial Roads Trunk Road 20/1). Additional access roads would include Divisional Roads 1481, 1484 and 2247, and Minor Roads 8406, 8051, and 8049.

The Komsberg/Kareedoringkraal Road would be the same road which would provide access to the proposed Komsberg West WEF.

The service road within the power line servitude would be used for the construction of the powerline and maintenance thereafter. It would be unsealed and would follow the same alignment as the power line itself as far as possible. Its alignment would be micro-sited within the assessed 1km corridor, allowing it to avoid any sensitive areas. Where possible, existing roads will be used. The service road would be approximately 3 - 4m wide, and it would be maintained so as to remain in good and safe order.

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. Refer to **Appendix A**.

2.5 LOCALITY MAP

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

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

2.6 LAYOUT/ROUTE PLAN

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

The site or route plans must indicate the following:

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

2.7 SENSITIVITY MAP

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

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

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

2.8 SITE PHOTOGRAPHS

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

2.9 FACILITY ILLUSTRATION

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

2.10 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?		**NO**	Please explain
The properties that are affected are currently zoned for agricultural use. The proponent has notified the landowners of the proposal and agreements will be drawn up between the relevant parties as required by Eskom and the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP). A servitude would need to be registered across the site in terms of the applicable planning legislation. The site for the substation would fall within the property that would be zoned for the proposed Komsberg WEF.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	**YES**		Please explain
The following provincial spatial development frameworks are analysed in the context of the proposed grid connection's implementation being a result of the proposed development of a renewable energy wind farm. This section has been completed with the assistance of the social specialist, Tony Barbour. **1. Western Cape Provincial Spatial Development Framework (WCPSDF) (2014)** Key spatial challenges are outlined in Chapter 2 of the WCPSDF. Energy security and climate change response are identified as key high-level future risk factors. The PSDF notes that the WCP is subject to global environmental risks such as climate change, depletion of material resources, anticipated changes to the global carbon regulatory environment, and food and water insecurity. The challenge would be to open up opportunities for inclusive economic growth, and decouple economic growth from resource consumptive activities. **The WCP Spatial Agenda** The spatial agenda for the WCP may be summarized as three linked sub-agendas, all addressed in the PSDF: (1) Growing the WCP economy in partnership with the private sector, non-governmental and community based organisations; (2) Using infrastructure investment as primary lever to bring about the required urban and rural spatial transitions, including transitioning to sustainable technologies, as set out in the 2013 Western Cape Infrastructure Framework (WCIF), while also maintaining existing infrastructure; and (3) Improving oversight of the sustainable use of the Western Cape's spatial assets. This sub-agendum is of specific relevance to climate change response and renewable energy. Its key objective is safeguarding the biodiversity networks, ecosystem services, agricultural resources, soils and water, as well as the WCP's unique cultural, scenic and coastal resources on which the tourism economy depends. In addition, it seeks to understand the spatial implications of known risks (e.g. climate change) and to introduce risk mitigation and/or adaptation measures. Chapter 3.1 deals with the sustainable use of the WCP's assets. These are identified as Biodiversity and Ecosystem services; Water resources; Soils and Mineral resources; Resource consumption and			

disposal; and Landscape and scenic assets. Policies are outlined for each of these themed assets. The last two themed assets are of specific relevance with regard to renewable energy.

Resource Consumption and Disposal

Key challenges facing the WCP are identified as matters pertaining to waste disposal, air quality, energy, and climate change.

Energy

With regard to energy use, the PSDF notes that the Cape Metro (albeit the province's most efficient user) and West Coast regions are the WCP's main energy users. It further notes that the WCP's electricity is primarily drawn from the national grid, which is dominated by coal-based power stations, and that the WCP currently has a small emergent renewable energy sector in the form of wind and solar generation facilities located in its more rural, sparsely populated areas. The PSDF also reiterates PGWC's commitment to shifting the economy towards gas as transitional fuel.

With regard to renewable energy, the following policy provisions are of relevance:

- R.4.6: Pursue energy diversification and energy efficiency in order for the Western Cape to transition to a low carbon, sustainable energy future, and delink economic growth from energy use;
- R.4.7: Support emergent Independent Power Producers (IPPs) and sustainable energy producers (wind, solar, biomass and waste conversion initiatives) in suitable rural locations (as per recommendations of the Strategic Environmental Assessments for wind energy (DEA&DP) and renewable energy (DEA).

Climate Change

Water scarcity is identified as probably the key risk associated with climate change. Primary response objectives are identified. These are energy efficiency, demand management and renewable energy. Policy provisions are made with regard to climate change adaptation and mitigation. Concerning renewable energy, the following is of relevance:

- R.4.16: Encourage and support renewable energy generation at scale.

Landscape and Scenic Assets

The WCP's cultural and scenic landscapes are significant assets underpinning the tourism economy and these resources are being incrementally eroded and fragmented. Agriculture is being reduced to 'islands', visual cluttering of the landscape by non-agricultural development is prevalent, and rural authenticity, character and scenic value are being eroded. The mountain ranges belonging to the Cape Fold Belt together with the coastline are identified as the most significant in scenic terms, and noted to underpin the WCP's tourism economy. A number of scenic landscapes of high significance are under threat, mainly from low density urban sprawl, and require strategies to ensure their long-term protection. These include landscapes under pressure for large scale infrastructural developments such as wind farms, solar energy facilities, transmission lines and shale gas development in the Central Karoo. With regard to renewable energy, the following policy provisions are of relevance:

- R.5.6: Priority focus areas proposed for conservation or protection include -
    - Rural landscapes of scenic and cultural significance situated on major urban edges and under increasing development pressure, e.g. Cape Winelands;
    - Undeveloped coastal landscapes under major development pressure;
    - Landscapes under pressure for large scale infrastructural developments such as wind farms, solar energy facilities, transmission lines and fracking, e.g. Central Karoo; and
    - Vulnerable historic mountain passes and 'poorts'.

Renewable Energy within the Spatial Economy

Chapter 3.2 deals with opportunities in the WCP spatial economy, including with regard to regional infrastructure development. Objectives identified include the promotion of a renewable energy sector. General project-based (EIA and specialist assessment) provisions are made for evaluating the suitability of sites proposed for bulk infrastructure.

2. Northern Cape Provincial Spatial Development Framework (NCSDF) (2012)

The NCSDF lists a number of sectoral strategies and plans that are key components of the PSDF. Section C8.2.3, Energy Objectives, sets out the energy objectives. The section makes specific reference to renewable energy. The objectives are listed below:

- Promote the development of renewable energy supply schemes.
- In order to reinforce the existing transmission network and to ensure a reliable electricity supply in the Northern Cape, construct a 400 kV transmission power line from Ferrum Substation (near Kathu/Sishen) to Garona Substation (near Groblershoop). There is a national electricity supply shortage and the country is now in a position where it needs to commission additional plants urgently. Consequently, renewable energy projects are a high priority.
- Develop and institute innovative new energy technologies to improve access to reliable, sustainable and affordable energy services with the objective to realize sustainable economic growth and development. The goals of securing supply, providing energy services, tackling climate change, avoiding air pollution and reaching sustainable development in the province offer both opportunities and synergies which require joint planning between local and provincial government as well as the private sector.
- Develop and institute energy supply schemes with the aim to contribute to the achievement of the targets set by the White Paper on Renewable Energy (2003). This target relates to the delivery of 10 000 GWh of energy from renewable energy sources (mainly biomass, wind, solar, and small-scale hydro) by 2013.

Section C8.3.3, Energy Policy, sets out the policy guidelines for the development of the energy sector, with specific reference to the renewable energy sector.

- The construction of telecommunication infrastructure must be strictly regulated in terms of the spatial plans and guidelines put forward in the PSDF. They must be carefully placed to avoid visual impacts on landscapes of significant symbolic, aesthetic, cultural or historic value and should blend in with the surrounding environment to the extent possible.
- EIAs undertaken for such construction must assess the impacts of such activities against the directives listed.
- Renewable energy sources such as wind, solar thermal, biomass and domestic hydroelectricity are to constitute 25% of the province's energy generation capacity by 2020.
- The following key policy principles for renewable energy apply:
  - Full cost accounting: Pricing policies will be based on an assessment of the full economic, social and environmental costs and benefits of energy production and utilisation.
  - Equity: There should be equitable access to basic services to meet human needs and ensure human well-being. Each generation has a duty to avoid impairing the ability of future generations to ensure their own well-being.
  - Global and international cooperation and responsibilities: Government recognises its shared responsibility for global and regional issues and act with due regard to the principles contained in relevant policies and applicable regional and international agreements.

- The implementation of sustainable renewable energy is to be promoted through appropriate financial and fiscal instruments.
- An effective legislative system to promote the implementation of renewable energy is to be developed, implemented, and continuously improved.
- Public awareness of the benefits and opportunities of renewable energy must be promoted.
- The development of renewable energy systems is to be harnessed as a mechanism for economic development throughout the province in accordance with the Sustainable Development Initiative (SDI) approach.
- Renewable energy must, first, and foremost, be used to address the needs of the province before being exported.

3. Summary

The establishment of renewable energy facilities, including wind energy facilities and the required associated infrastructure are supported at provincial level by policy and planning documents. This is mainly due to the possible positive social benefits such developments can bring such as increased electricity generation to support development, electricity generation from clean and sustainable renewable sources. If implemented in line with the mitigation measures documented in this report, such developments can result in increased employment, skills transfer and business opportunities.

(b) Urban edge / Edge of Built environment for the area		**NO**	Please explain

The proposed grid connection is located outside of any urban edge and there would not impact on the edge of any built environments.

(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?).		**NO**	Please explain

The majority of the site through which the grid connection passes, is located in the Western Cape Province, within the Laingsburg Local Municipality, which forms part of the Central Karoo District Municipality. A small section of the site falls within the Northern Cape Province, within the Karoo Hoogland Local Municipality, which forms part of the Namakwa District Municipality. This section of the BAR has been completed in collaboration with the social specialist Tony Barbour.

The following district and local municipal policies are deemed relevant:

1. Central Karoo District Municipality Integrated Development Plan (Western Cape: Laingsburg, Prince Albert, Beaufort West and Central Karoo District).

The IDP identifies eight Strategic Objectives which are aligned with the national key performance areas and the core functions of the municipality. The objective relevant to this proposed project is to pursue economic growth opportunities that will create descent work. The IDP goes onto note that the municipality place a high priority upon ensuring that future growth improves the quality of life in the region.

The municipality seeks to be financial sustainable, to maintain the rural character and create healthy communities by facilitating economic growth, improving infrastructure and the green energy opportunities, providing and supporting alternative modes of delivery.

The Strategic Objectives that are relevant to this proposal include:

- Strategic Objective 5: To establish an inclusive tourism industry through sustainable development and marketing. Projects should not impact negatively on the areas of current and future tourism potential;
- Strategic Objective 6: To ensure a united integrated development path in a safe and sustainable environment. Under Strategic Objective 6: To ensure a united integrated development path in a safe and sustainable environment, the key strategic priority listed in the IDP is Green Energy;
- Strategic Objective 7: To pursue economic growth opportunities that will create descent work. The following activities listed under Strategic Objective 7 are relevant:
  - increase SMME activities
  - promote integrated youth, elderly, disabled and gender development
  - Facilitate the establishment and functioning of the Economic Development Agency (EDA)

A Strength, Weakness, Opportunities and Threats (SWOT) analysis was undertaken as part of the IDP process. Of relevance to this proposed project is the Green Energy and Regional Local Economic Development which were identified as key opportunities. Tourism was also identified as a key opportunity.

2. The Central Karoo SDF

The SDF notes that in terms of the agricultural sector:

- Agricultural areas have been affected by urban development and have placed pressure on agricultural resources;
- Care should be taken to maintain the rural character of non-urban areas;
- The formation of small rural towns should be avoided;
- Areas should provide for the development of alternative agricultural use, to make a positive contribution to sustainable economic growth. This includes tourism-orientated developments, packing and processing developments, housing for farm labourers and provisions for small-scale farming and intensive agriculture.

3. Laingsburg Local Municipality Integrated Development Plan

Key challenges facing the LLM include:

- Lack of employment opportunities;
- Low skills levels;
- Insufficient self-employment within the town; and
- Lack of investment.

While crime rates are generally low, there are high levels of domestic violence in Laingsburg. This is linked to the high levels of unemployment, combined with alcohol and drug abuse. The majority of women in the town are unemployed which results in a high dependence on working male partners. In addition, prostitution is rampant amongst young girls. This is linked to the role of truckers and the limited employment opportunities for young girls in the area.

The IDP lists a number of strategies. The following strategies are relevant to the proposed development:

- **Cross cutting strategies**

The objective is to create a stable social environment conducive to empowerment, social development and community care by investing in human capital through skills development

- **Economic development**

The objective is to create opportunities to increase household income. The strategies identified include:

- Investing in human capital through skills development strategies;
- Promotion of SMME's; and
- Resource mobilisation and investment through the support of private public partnerships.

- **Social development**

The objective is to ensure a stable social environment and reduce poverty by 80%. The strategies include:

- Promotion of functional literacy; and
- Moral regeneration strategy and sports development.

- **Environmental and spatial development**

The objective is the improvement / maintenance of environmental status of the Municipal area and eradication of the spatial legacy. The key relevant strategy is the development of alternative sources of energy.

4. Northern Cape Spatial Development Framework (NCSDF) (2012)

The NCSDF lists a number of sectoral strategies and plans that are to be read and treated as key components of the PSDF. Of these there are a number that are relevant to the proposed project. These include:

- Sectoral Strategy 1: Provincial Growth and Development Strategy of the Provincial Government.
- Sectoral Strategy 2: Comprehensive Growth and Development Programme of the Department of Agriculture, Land Reform and Rural Development.
- Sectoral Strategy 5: Local Economic Development (LED) Strategy of the Department of Economic Development and Tourism.
- Sectoral Strategy 11: Small Micro Medium Enterprises (SMME) Development Strategy of the Department of Economic Development and Tourism.
- Sectoral Strategy 12: Tourism Strategy of the Department of Economic Development and Tourism.
- Sectoral Strategy 19: Provincial renewable energy strategy (to be facilitated by the Department of Economic Development and Tourism).

Section C8.2.3, Energy Objectives, sets out the energy objectives for the Northern Cape Province. The section makes specific reference to renewable energy. The relevant objectives are listed below:

- Promote the development of renewable energy supply schemes. Large-scale renewable energy supply schemes are strategically important for increasing the diversity of domestic energy supplies and avoiding energy imports while minimizing detrimental environmental impacts.
- In order to reinforce the existing transmission network and to ensure a reliable electricity supply in the Northern Cape, construct a 400 kV transmission power line from Ferrum Substation (near Kathu/Sishen) to Garona Substation (near Groblershoop). There is a national electricity supply shortage and the country is now in a position where it needs to commission additional plants urgently. Consequently, renewable energy projects are a high priority.
- Develop and institute innovative new energy technologies to improve access to reliable, sustainable and affordable energy services with the objective to realize sustainable economic growth and development. The goals of securing supply, providing energy services, tackling climate change, avoiding air pollution and reaching sustainable development in the province offer both opportunities and synergies which require joint planning between local and provincial government as well as the private sector.

- Develop and institute energy supply schemes with the aim to contribute to the achievement of the targets set by the White Paper on Renewable Energy (2003). This target relates to the delivery of 10 000 GWh of energy from renewable energy sources (mainly biomass, wind, solar, and small-scale hydro) by 2013.

Section C8.3.3, Energy Policy, sets out the policy guidelines for the development of the energy sector, with specific reference to the renewable energy sector.

- The construction of telecommunication infrastructure must be strictly regulated in terms of the spatial plans and guidelines put forward in the PSDF. They must be carefully placed to avoid visual impacts on landscapes of significant symbolic, aesthetic, cultural or historic value and should blend in with the surrounding environment to the extent possible.
- EIAs undertaken for such construction must assess the impacts of such activities against the directives listed in (a) above.
- Renewable energy sources such as wind, solar thermal, biomass and domestic hydroelectricity are to constitute 25% of the province's energy generation capacity by 2020.

The following key policy principles for renewable energy apply:

- Full cost accounting: Pricing policies will be based on an assessment of the full economic, social and environmental costs and benefits of energy production and utilisation.
- Equity: There should be equitable access to basic services to meet human needs and ensure human well-being. Each generation has a duty to avoid impairing the ability of future generations to ensure their own well-being.
- Global and international cooperation and responsibilities: Government recognises its shared responsibility for global and regional issues and act with due regard to the principles contained in relevant policies and applicable regional and international agreements.
- Allocation of functions: Government will allocate functions within the framework of the Constitution to competent institutions and spheres of government that can most effectively achieve the objectives of the energy policy.
- The implementation of sustainable renewable energy is to be promoted through appropriate financial and fiscal instruments.
- An effective legislative system to promote the implementation of renewable energy is to be developed, implemented, and continuously improved.
- Public awareness of the benefits and opportunities of renewable energy must be promoted.
- The development of renewable energy systems is to be harnessed as a mechanism for economic development throughout the province in accordance with the Sustainable Development Initiative approach or any comparable approach.
- Renewable energy must, first, and foremost, be used to address the needs of the province before being exported.

(d) Approved Structure Plan of the Municipality		**NO**	Please explain
Structure Plans have been replaced by Spatial Development Frameworks (SDFs) which are discussed above. Refer to sections 2 (a) and (c) above.			
(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?)		**NO**	Please explain
No Environmental Management Frameworks have yet to be compiled for these municipalities.			

(f) Any other Plans (e.g. Guide Plan)		**NO**	Please explain
The proposed development is not in contravention of any other plans, frameworks or guidelines.			
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**		Please explain
The proposed development of the grid connection is in line with the municipal SDFs. Refer to sections 2 (a) and (c) above. The development of renewable energy projects has been denoted as a priority in terms of the 2012 Northern Cape Spatial Development Framework. A key strategic priority listed in the Western Cape's Central Karoo District Municipality Integrated Development Plan is Green Energy.			
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
The purpose of the proposed power line is to enable the distribution of electricity to the national grid. A constant supply of electricity (via the proposed Komsberg West WEF) would have a positive societal and economic impact in terms of a continuous and reliable electricity supply and distribution to the local area, and region. The proposed project will also create employment opportunities and opportunities for the transfer of skills during the construction and operation of grid connection.			
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 D8.)	**YES**		Please explain
Water, sewage, electricity for construction would be available on site or will be provided on-site by the contractor, if not available. The services required for the operational phase will be provided by the contractor and owner. It is not anticipated that the services of the municipality for the construction and operational phase will be required, except for waste management at the local registered waste landfill ($30m^3$ per month for the duration of the construction phase).			
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 D8)		**NO**	Please explain
The proposed development is not included in the infrastructure planning of the municipalities involved. It is anticipated that there will be no negative implications on the municipalities' infrastructure planning, as limited/no services would be required from the municipality. There may be an impact on road surfaces through increased usage, however, the contractor and owner would upgrade and maintain any roads that are required for use during the construction phase. The proposed development would assist the relevant municipalities in achieving their IDP and SDF objectives, should the project be implemented in a sustainable manner.			

7. Is this project part of a national programme to address an issue of national concern or importance?	**YES**		Please explain
The Integrated Resource Plan 2010-30 (March 2011, Department of Energy (DoE)) incorporates a carbon emissions cap and includes renewable energy options, with 17.8 GW of solar and wind energy capacity planned by 2030. The DoE has already committed to 6 236 MW of renewable energy generation by 2019.[3] The Renewable Energy Independent Power Producer Procurement Programme (REIPPP) has been implemented by the DoE, so as to contribute towards its target and towards socio-economic and environmentally sustainable growth, and to start and stimulate the renewable industry in South Africa. The proposed grid connection is required in support of the above, to transfer the power produced from the Komsberg West WEF to the national grid for distribution.			
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**		Please explain
The proposed land use is a powerline connecting the proposed WEF to the national grid. The two land uses are interconnected and the main reason for their location in this place is the feasible wind resource. The presence of the Komsberg Eskom Transmission Station close to this wind resource is also a positive location factor in relation to the land use of the proposed grid connection. The implementation of the proposed project will not affect the current land use.			
9. Is the development the best practicable environmental option for this land/site?	**YES**		Please explain
The proposed connection from the Komsberg West substation to the existing Komsberg Eskom Substation is the best practicable environmental option. The location of the proposed preferred grid connection alternative is considered to be the most feasible location option taking technical and environmental aspects into account. The power line has a small footprint and will not interrupt current pastoral farming activities. The site and surrounds has a low agricultural potential.			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	**YES**		Please explain
It is anticipated that the main positive impact of increasing security of electricity supply (from renewable resources) at a local, regional and national level, will outweigh any negative biophysical impacts. Additional positive social impacts will include job creation and direct and indirect economic benefits.			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	**YES**		Please explain
This would depend on the wind resource of the region. If wind resources are used to their full potential in terms of renewable energy, a number of WEFs could be developed in the area, all of which would require powerlines to connect them to the national grid. A number of WEFs are currently approved and/or under construction in the region, and the good wind resource dictates that more may be constructed. Hence, these projects will have already set the precedent for WEFs and their associated grid connections. However, grid connections can align themselves with existing grid connections therefore the footprint impacts would generally be less than that of WEF impacts. In addition, this area is has also been identified by the DEA and the CSIR as a Renewable Energy Development Zone.			

[3] http://www.energy.gov.za/files/media/pr/2015/PressRelease-SA-becomes-global-renewable-energy-leader-06102015.pdf - Accessed 03/03/2016.

12. Will any person's rights be negatively affected by the proposed activity/ies?	**NO**		Please explain
The route of the proposed construction traffic has been be investigated in detail with all the landowners and the most practical route, which does not affect landowners, has been included in the Traffic and Transport Management Plan, which is included in **Volume 3.** .			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?		**NO**	Please explain
The proposed activity lies outside of the urban edge in a rural area.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	**YES**		Please explain
The development of this powerline is based on the proposed development of a WEF, which is in line with "SIP 8: Green energy in support of the South African economy". This SIP, and thus this proposal, aims to support sustainable green energy initiatives on a national scale through a diverse range of clean energy options. SIP 10 relates to electricity transmission and distribution for all. The proposed powerline would allow for the expansion of the electricity transmission and distribution network which will assist in addressing historical imbalances, and which will assist in providing access to electricity for all, which in turn, supports economic development.			
15. What will the benefits be to society in general and to the local communities?			Please explain
Benefits would accrue to current (and future) society in general as electricity supply from a renewable resource would feed into the national grid. An increased security of supply would be able to stimulate the economy in general. The local communities of Laingsburg and Sutherland would also benefit from job creation and business opportunities during the construction and operation phases. A percentage of the proposed WEFs turnover (and hence this grid connection proposal) would need to be spent on Enterprise Development and Socio-Economic development contributions to communities within a 50km radius of the site (Social responsibility a requirement of the IPP in terms of the REIPPPP). The local areas would benefit from ownership in the project through the establishment of a community trust or non-profit company that would use its dividends on local development initiatives (a current requirement of the IPP in terms on the REIPPPP).			
16. Any other need and desirability considerations related to the proposed activity?			Please explain
Additional need (time) and desirability (space) considerations include: • Skills transfer; • Social upliftment; and • Contribution to reduced carbon emissions and climate change.			
17. How does the project fit into the National Development Plan for 2030?			Please explain
The National Development Plan (NDP) contains a plan aimed at eliminating poverty and reducing inequality by 2030. The NDP identifies 9 key challenges and associated remedial plans. Managing the transition towards a low carbon national economy is identified as one of the 9 key national challenges which is relevant to this proposal. Expansion and acceleration of commercial renewable energy is identified as a key intervention strategy, which is also relevant to this proposal.			
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 general objectives of integrated environmental management are to: "(a) promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment; (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;
(c) ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;
(d) ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;
(e) ensure the consideration of environmental attributes in management and decision making which may have a significant effect on the environment; and
(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".

The general objectives of Integrated Environmental Management have thus been taken into account though the following aspects:

- The proponent appointed a qualified Environmental Practitioner (EAP) to ensure that the requirements of NEMA have been met.
- A comprehensive public participation process (PPP) has been conducted.
- The Basic Assessment Report will also be subjected to PPP which will be supported by newspaper adverts, notification letters and emails. This effectively allows the public with the appropriate opportunity to raise any issues relating to this activity.
- Visual, heritage, ecological, social, freshwater, avifauna, bat and agricultural potential assessments have been conducted to assess the impacts of the activity on the biophysical and social environments.
- The objectives of NEMA have also been taken into consideration by means of assessing various alternatives; assessing direct as well as indirect impacts and by prescribing various mitigation measures to minimise these impacts.
- Decision-making is to be based on the findings of this BAR process.

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

The principles of environmental management as set out in Section 2 of NEMA have been taken into account. The principles pertinent to this activity include:

- People and their needs have been placed at the forefront while serving their physical, psychological, developmental, cultural and social interests. This has been done so that the need to construct the proposed grid connection does not detrimentally impact on the needs of the surrounding neighbours or society in general.
- Impacts have been identified and mitigation proposed to ensure that the proposed development is socially, environmentally and economically sustainable.
- The use of non-renewable natural resources is responsible and equitable.
- The negative impacts on the environment and on people's environmental rights have been anticipated and prevented, and where they cannot be prevented, they have been minimised and remedied.
- The interests, needs and values of all interested and affected parties have been taken into account through the Public Participation Process.
- The social, economic and environmental impacts of the activity have been considered, assessed and evaluated, including the disadvantages and the benefits.
- The effects of decisions on all aspects of the environment and all people in the environment have been taken into account, by pursuing what is considered to be the best practicable environmental option.

2.11 APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Table 4-3: Applicable legislation, policies and/or guidelines.

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Constitution of the Republic of South Africa, 1966 (Act No. 108 of 1966)	Chapter 2 Section 24 includes the obligation to ensure that the proposed development will not result in pollution and ecological degradation, and that the proposed development is ecologically sustainable.	National, provincial and local government.	-
National Environmental Management Act, 1998 (Act No. 107 of 1998) – NEMA EIA Regulations 2014.	Environmental Authorisation	Department of Environmental Affairs (DEA)	The Basic Assessment process is currently underway.
National Water Act, 1998 (Act 36 of 1998)	General Authorisation or Water Use Licenses would be required as per Section 21 of the Act, in terms of the conditions for impeding or diverting flow, or altering bed, banks, course or characteristics of a watercourse (DWA GA29 of December 2009, Section 7).	Department of Water and Sanitation (DWS)	This would be submitted should the bid be won as part of the REIPPPP.
National Heritage Resources Act, 1999 (Act No 25 of 1999)	Comment in the form of a Record of Decision (Note receipt of Response to Notification of Intent to Develop - **Appendix D6**). A permit may be required should identified cultural/heritage sites be disturbed as result of the proposed development.	Comment - Heritage Western Cape	04/08/2015
Environment Conservation Act, 1989 (Act No. 73 of 1989) and the National Noise Control Regulations (GN 154, 10 January 1992).	Noise impacts are anticipated during the construction phase of the proposed project.	Department of Environmental Affairs	There is no requirement for a noise permit in terms of the legislation.
National Environmental Air Quality Act, 2004 (Act No. 39 of 2004) – GN R827 National Dust Control Regulations.	Applicable during the construction phase of the project.	Department of Environmental Affairs.	Penalties will be applicable during the construction phase. No permit required.
National Environmental Management: Biodiversity Act, 2004, (Act No. 10 of 2004)	List of critically endangered, endangered, vulnerable and protected species (GNR 151 and the Regulations associated therewith – GNR 152) and the list of threatened terrestrial	Department of Environmental Affairs/Department of Agriculture,	Permits required if a Species of Special Concern is identified on the site.

	ecosystems (GNR 1002, 2011). Also GNR 598 Alien and Invasive Species Regulations.	Forestry and Fisheries	Soil erosion and soil conservation strategies must be developed.
National Forests Act., 1998 (Act No. 84 of 1998)	Applicable as no person may disturb protected tree species. GNR 1042 provides a list of protected tree species.	National Department of Agriculture, Forestry and Fisheries	No permit required as yet.
National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998)	Firebreaks might be required to prevent fires from spreading to adjacent land. Applicable during construction and operation phases.	Department of Agriculture, Forestry and Fisheries	No permit required.
Conservation of Agricultural Resources Act, 1983 (Act No. 43, 1983)	This Act provides for the control and management of invading alien plants.	Department of Agriculture, Forestry and Fisheries	Alien invasive clearing required.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	Waste handling, storage and disposal will be required to be undertaken in accordance with the requirements of this Act.	Department of Environmental Affairs.	No waste disposal site is to be associated with the proposed project, therefore no license would be required.
National Road Traffic Act, 1996 (Act No. 93 of 1996)	The technical recommendations for highways (TRH 11)" "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads" may be applicable.	Provincial Department of Transport	Exemption permits required.
Aviation Act, 1962 (Act No. 74, 1962)	Any communications structure, building or other structure, whether temporary or permanent, which has the potential to endanger aviation in navigable airspace, or has the potential to interfere with the operation of navigation or surveillance systems or Instrument Landing Systems, including meteorological systems for aeronautical purposes, is considered an obstacle. Power lines, overhead wires and cables are considered as obstacles. The Commissioner may require that supporting towers be marked and lighted.	Department of Transport	Information to be submitted to the Commissioner for Civil Aviation for evaluation.

2.12 WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase? **YES** [redacted]

If YES, what estimated quantity will be produced per month?	30 m^3 (estimate)

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

Solid waste produced during the construction phase of the proposed development will primarily consist of building rubble and litter (e.g. plastic, glass, etc.). Waste skips/bins will be provided with separate bins made available for any road construction debris and solid waste. All construction waste will be disposed of at a registered and licensed waste disposal site. The waste will be removed with trucks at regular intervals. Where possible, construction waste will be re-used and/or recycled.

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

The waste will consist of mostly soil material from excavation activities as well as cabling and metal offcuts. Non-recyclable waste will be transferred to a registered waste disposal site. Both Williston (Karoo Hoogland Municipality) and the Laingsburg waste landfill sites are situated in relatively close proximity to the site.

Will the activity produce solid waste during its operational phase?	NO
If YES, what estimated quantity will be produced per month?	N/A

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

N/A

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

N/A

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

N/A

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

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

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

• Is the activity that is being applied for a solid waste handling or treatment facility?	NO

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

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	NO

If YES, what estimated quantity will be produced per month?	N/A
Will the activity produce any effluent that will be treated and/or disposed of on site?	NO

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

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

If YES, provide the particulars of the facility:

Facility name:	**N/A**		
Contact person:			
Postal address:			
Postal code:			
Telephone:		**Cell:**	
E-mail:		**Fax:**	

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

N/A

Note that any domestic waste water (sewage) that is generated during the construction phase (portable toilets) will be professionally serviced and waste will be transported to a licensed waste water treatment works (eg. Laingsburg).

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities?	NO
If YES, is it controlled by any legislation of any sphere of government?	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. **N/A**

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

During the construction phase, it is expected that there will be dust generation and emissions from vehicles and machinery. The dust and emissions expected would be of a short term duration and would have a limited negligible impact on the areas immediately surrounding the substation/metering station and the tower structure sites. Where appropriate, dust suppression measures will be implemented to reduce the impacts. Construction vehicles should be regularly serviced and kept in good mechanical condition to minimise possible exhaust emissions.

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	NO

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

e) Generation of noise

Will the activity generate noise?	YES
If YES, is it controlled by any legislation of any sphere of government?	YES

Any potential source of noise falls under the Air Quality Act, 2004 (Act No. 39 of 2004) and is managed by provincial and local spheres of government. Currently, all noise related matters are still

managed under the Environmental Conservation Act, 1989 (Act No. 73 of 1989) and the Noise Control Regulations (GN 154 – PN 200 of 2013 in the Western Cape), which state "*A local authority may –*

(c): if a noise emanating from a building, premises, vehicle, recreational vehicle or street is a disturbing noise or noise nuisance, or may in the opinion of the local authority concerned be a disturbing noise or noise nuisance, instruct in writing the person causing such noise or who is responsible therefore, or the owner or occupant of such building or premises from which or from where such noise emanates or may emanate, or all such persons, to discontinue or cause to be discontinued such noise, or to take steps to lower the level of the noise to a level conforming to the requirements of these Regulations within the period stipulated in the instruction: Provided that the provisions of this paragraph shall not apply in respect of a disturbing noise or noise nuisance caused by rail vehicles or aircraft which are not used as recreational vehicles;

(d): before changes are made to existing facilities or existing uses of land or buildings, or before new buildings are erected, in writing require that noise impact assessments or tests are conducted to the satisfaction of that local authority by the owner, developer, tenant or occupant of the facilities, land or buildings or that, for the purposes of regulation 3(b) or (c), reports or certificates in relation to the noise impact to the satisfaction of that local authority are submitted by the owner, developer, tenant or occupant to the local authority on written demand".

Describe the noise in terms of type and level:

Short term noise impacts are anticipated during the construction phase of the project. It is however anticipated that the noise will be localised and contained within the construction areas and their immediate surroundings. During operation, sources of noise from overhead lines include that of Aeolian harp (singing of lines in wind – all lines including telephone) and Corona effects (discharges due to atmospheric effects during very high or low humidity). The Corona effect increases as line voltage increases. Powerlines would be audible at about 500m at night from a 400 kVA line, about 200m for a 132kVA line. The noise specialist does not consider this to be a significant noise source of noise as long as the lines are further than 100m from any noise sensitive receptor.

2.13 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 during operation.**

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	**N/A**
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs? Construction phase storage of water will be below the level of WULA authorisation limits i.e 10 000m^3.	[redacted] **NO**

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

2.14 ENERGY EFFICIENCY

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

The application is for the transmission of energy from a renewable wind energy facility and can therefore meet its own electricity demand requirements.

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

The application is for the transmission of energy from a renewable wind energy facility and can therefore meet its own electricity demand requirements.

3 SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

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

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

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

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in **Appendix G**. All specialist reports must be contained in **Volume 2.**

Property description/physical address:

Province	Western Cape Province
District Municipality	Central Karoo District Municipality
Local Municipality	Laingsburg Local Municipality (LLM) (Western Cape Province) Karoo Hoogland Local Municipality (Northern Cape Province)
Ward Number(s)	2 (LLM)
Farm name and number	Refer to **Appendix A**.
Portion number	Refer to **Appendix A.**
SG Code	Refer to **Appendix A**.

- 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:

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.

N/A

- Is a change of land-use or a consent use application required? **NO**

3.1 GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative 1 and Preferred Alternative:

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

3.2 LOCATION IN LANDSCAPE

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

2.1 Ridgeline	x	2.4 Closed valley		2.7 Undulating plain / low hills	x
2.2 Plateau	x	2.5 Open valley	x	2.8 Dune	
2.3 Side slope of hill/mountain	x	2.6 Plain	x	2.9 Seafront	
2.10 At sea					

3.3 GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1: No go option	Alternative S2: (Alignment with northern line) (preferred):	Alternative S3 (Alignment with northern line) (preferred):
Shallow water table (less than 1.5m deep)			
Dolomite, sinkhole or doline areas			
Seasonally wet soils (often close to water bodies)	YES	YES	YES
Unstable rocky slopes or steep slopes with loose soil			
Dispersive soils (soils that dissolve in water)			
Soils with high clay content (clay fraction more than 40%)			
Any other unstable soil or geological feature			
An area sensitive to erosion	YES	YES	YES

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.

3.4 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	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens

Sport field	**Cultivated land** (there are small number of fields of irrigated land on site for example, onions and lucerne are grown)	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. Refer to the Fauna and Flora Assessment Report in **Volume 2**.

3.5 SURFACE WATER

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

Perennial River	**YES**
Non-Perennial River	
Permanent Wetland	
Seasonal Wetland	
Artificial Wetland	**YES**
Estuarine / Lagoonal wetland	

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

The alignment of the proposed grid connection is located within the following catchments within the Nama Karoo Ecoregion located within the Gouritz Water Management Area:

- J11A – Komsberg / Venter rivers catchment
- J11B – Bierfontein se Laagte / Koringplaas / Swaerkraal se /Dwars rivers catchment.

The proposed grid connection will extend into the Meintjiesplaas/Rooival J11D catchments to the west prior to joining the Komsberg Main Transmission Substation.

These catchments are characterised by several perennial water courses and drainage lines associated with these mainstem systems listed above. With the larger systems containing alluvial riverbeds / washes.

In terms of the National Freshwater Ecosystems Priority Areas (NFEPA) assessment, all of watercourses within the site have been assigned a condition score of AB, indicating that they largely intact and are of biological significance. This is largely due to this catchments falling with the headwaters of the Buffels River that flows towards Laingsburg, and forming part of an upstream Fish Freshwater Ecosystem Priority Area (Fish FEPA).

The only exception being the Komsberg River in the western portion of the development area was rated as C (Moderately Modified). The proposed transmission lines within the J11D catchment will cross the observed rivers within reaches that were classed as C (Moderately Modified) and it is anticipated that all towers will span these systems including their respective riparian zones or the 1:100 year floodline whichever is greater.

According to the National Freshwater Ecosystems Priority Area (NFEPA) wetland data, several natural wetlands could occur within the study area. The remaining waterbodies are artificial or man-made systems. No natural wetlands were observed within the study area as the potential wetlands

observed were either farm dams / borrow-pits or agricultural fields misidentified by the National Wetland Inventory (Ver 4) as wetland areas.

Significant watercourses are observed within the site. All of the proposed transmission lines for both projects will adequately span water courses, thus no direct impacts on these ephemeral systems are anticipated.

3.6 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	Sewage treatment plant[A]	Nature conservation area
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
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? Specify and explain:

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**	
Core area of a protected area?		**NO**
Buffer area of a protected area?		**NO**
Planned expansion area of an existing protected area?		**NO**
Existing offset area associated with a previous Environmental Authorisation?		**NO**
Buffer area of the SKA?	**YES**	

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

3.7 CULTURAL/HISTORICAL FEATURES

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

Refer to **Volume 2** for the Heritage Impact Assessment conducted on the site and surrounding areas. The overall findings of this report are summarized below.

- Archaeology. The physical remnants of human activity were identified and assessed through physical site inspection, mapped and assigned field grades. The main sensitivities of the area lie within the valley bottoms, where there is much evidence of 19th century historic Trekboer farming, which includes stone kraals, stock posts and occasional historic farmsteads, two of which in the study area have been assigned field grades of IIIA. The precolonial archaeology of the study area is almost non-existent. This is attributable to the complete lack of raw material (rock) in the project areas that can be used for making stone artefacts.
- Palaeontology. An examination of the shales and mudrocks of the Abrahamskraal formation which characterises the project area has produced minimal evidence of surface palaeontological material.
- Landscape and setting. The site lies in an isolated locality. Farming activities have been scaled down. The sense of isolation and nature impart a distinct sense of place. Overall a Grade IIIb is recommended.

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:

N/A

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

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

3.8 SOCIO-ECONOMIC CHARACTER

a) Local Municipality

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

The study area is located approximately 45 km north of Laingsburg in the Laingsburg Local Municipal (LLM) area in the Western Cape Province. A small section of the site falls within the Northern Cape Province, within the Karoo Hoogland Local Municipality (KHLM), which forms part of the Namakwa District Municipality (DM). The town of Sutherland is located approximately 50 km to the north west of the site.

Level of unemployment:

Laingsburg Local Municipality (Central Karoo District Municipality (CKDM))

In 2008, the Central Karoo had the lowest percentage of the Western Cape's labour force (0.8%). At the same time, the CKDM also had the highest unemployment rate (30.8%). Based on the 2011 Census figures, the unemployment rate in the CKDM was 23.1% compared to 21.6% for the Western Cape Province. The unemployment rate for Laingsburg Local Municipality was 19.4% in 2011 (Census 2011).

In terms of unemployment by population group, the unemployment rate for Black Africans (45.0%) was greater than any other population group. The figure for Coloureds was 33.4% while for Whites it was only 2.6%. Disparities are also found within different age groups, with younger age groups experiencing higher levels of unemployment. The unemployment rate for those in younger age groups is significantly higher than the older age groups. The differences in unemployment rates between age groups may in part be accounted for in the higher education, skill and experience levels of relatively older workers – these characteristics make work-seekers more attractive to prospective employers and improve their chances of finding employment.

In terms of gender, males make up 52.9% of the CKDM's labour force. Although males represent more than half of the labour force, they represent only 41.3 % of the district's total unemployed population. The high representation of females within the unemployed translates into a significantly higher unemployment rate for females (38.3%) compared with males (24.0%) (CKDM IDP 2012-2017).

The CKDM has the third lowest proportion of skilled labour force (38.6%) and the second highest of low skilled (26.6 %) people in the Western Cape. The low skill levels in the CKDM places a strain on the region's economy and poses a challenge to the areas future development (CKDM IDP, 2012-2017). The IDP notes that a large proportion of occupations in the area are classified as either skilled (39%) or high skilled (21%). The concentration of employment opportunities in the skilled sector therefore means that there are relatively few opportunities available to those with low skill levels. The current proportion of low skilled occupations available is 27% (CKDM IDP 2012-2017). This mismatch in terms of skills levels and employment opportunities highlights the need for individuals to up-skill in order to improve their chances of finding employment within the district (CKDM IDP 2012-2017).

The official unemployment rate in both the CKDM and LLM also decreased for the ten year period between 2001 and 2011. In the CKDM the rate fell from 36.2% to 23.1%, a decrease of 13.1%. In the LLM the unemployment rate decreased from 26.3% to 17.9 %, a decrease of 8.4%. Youth unemployment in both the CKDM and LLM also dropped over the same period. However, the youth unemployment rate in the both the CKDM (30.9%) and LLM (22%) remain high. This is likely to be due to the decline in the role of the agricultural sector and the subsequent loss of employment opportunities in this sector.

Karoo Hoogland Local Municipality (KHLM)

Karoo Hoogland LM's unemployment rate (23.1%) is higher than that of the Namakwa District Municipality (19.3%). More than half (55.5%) of employed individuals in Karoo Hoogland are classified as semi- and unskilled, showing that skills training is a high priority. Around 9.2% of the Karoo Hoogland LM's population is highly skilled, while 35.2% are skilled. The most significant portion (55.5%) of Karoo Hoogland's population is semi- and unskilled, which is higher than both the District and Provincial average. The population that are semi- and unskilled would either need job employment in low-skilled sectors, or better education opportunities in order to improve the skills level of the area, and therefore their income levels.

Economic profile of local municipality:

Laingsburg Local Municipality

Economic development remains a developmental challenge for the area. This is due to the low population density, distance from large markets and the arid climate. In addition, there are high levels of unemployment and poverty and a lack of skilled persons. In Laingsburg, construction (11.8%) and manufacturing (9.7%) recorded strong growth.

Karoo Hoogland Local Municipality

The Karoo Hoogland population can be regarded as having a high dependency ratio, with 10.6% of the population over the age of 65 and 24.5% are under 15 years. The latter youth group will be demanding education, housing and jobs in the near future.

Karoo Hoogland is a relatively large municipality in geographic terms, but has a corresponding low population density of 2.8 people per square kilometre. The municipality has experienced a steady decline in population and number of households over the ten-year period from 1996-2007, with the population declining by 14% over that period and households decreasing by 8.8%. This has largely been attributed to the lack of economic opportunities in the region and the drift of the population to areas, where they have better prospects of finding a job.

The larger extent of Karoo Hoogland consists of agricultural land with low potential grazing mainly used for sheep and game farming. There is an increasing interest in commercial game farming, hunting safaris and holiday farms in the municipal area.

Level of education:

Laingsburg Local Municipality

The education levels in both the CKDM and LLM also improved, with the percentage of the population over 20 years of age with no schooling dropping in the CKDM decreasing from 17.31% to 10.1%. For the LLM the decrease was from 20.0% to 11.7%. The percentage of the population over the age of 20 with matric also increased in both the CKDM and LLM, from 14.9% to 21.5% in the CKDM and 12.4% to 16.7% in the LLM. The levels in both the CKDM and LLM are however lower than the national (28.4%) provincial (28.1%) averages.

The IDP (CKDM 2012-2017) also notes that the population in the CKDM have limited options when it comes to higher education and further education facilities. Only one institution in Beaufort West serves the District and people are compelled to further their studies outside of the District.

Karoo Hoogland Local Municipality

Karoo Hoogland has a higher portion of adults with no schooling (20.6%) than both the District (5.8%) and the Province (12.2%), indicating a need for skills development and training. Karoo Hoogland has seen a decrease in the number of people with no schooling (17.2%).

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	Approximately R 150 000 000
What is the expected yearly income that will be generated by or as a result of the activity?	No income will be generated directly by the proposed development. The proposed WEF would generate income Estimates for wind farm income would be approximately R250 million per annum.
Will the activity contribute to service infrastructure?	**YES**

Is the activity a public amenity?	NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Construction – approximately 50 Operation – approximately 5 -7.
What is the expected value of the employment opportunities during the development and construction phase?	Approximately R7 million
What percentage of this will accrue to previously disadvantaged individuals?	Estimate 50%
How many permanent new employment opportunities will be created during the operational phase of the activity?	Approximately 5 -7
What is the expected current value of the employment opportunities during the first 10 years?	Approximately R15 million
What percentage of this will accrue to previously disadvantaged individuals?	Estimate 50%

3.9 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 **Volume 2** to this report (Refer specifically to Fauna and Flora specialist report).

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

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	Within the study area, a large proportion of the CBA is related to the fact that is has been identified as a priority area within the National Protected Area Expansion Strategy for South Africa (NPAES). This area was identified as priority area on the grounds that apart from being an extensive tract of unfragmented natural vegetation, it is also an area of high climate and landscape variation which is likely to be resilient to climate change. Such areas are likely to be more climatically stable over time, providing refugia where plants and animals can persist.

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition	Description and additional Comments and Observations

	class (adding up to 100%)	**(including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).**
Natural	75%	Two vegetation types occur within the study area; and the majority of the site falls within the Central Mountain Shale Renosterveld vegetation type, followed with a much smaller extent by Koedoesberge-Moordenaars Karoo vegetation type. The study area comprises mostly of natural habitat which has been disturbed to some extent by grazing, but is not severely degraded.
Near Natural (includes areas with low to moderate level of alien invasive plants)	10%	Minimal alien invasive plants found within the study area.
Degraded (includes areas heavily invaded by alien plants)	10%	As above.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	5%	Mostly pastoral agricultural practices have transformed part of the study site.

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 Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
	Endangered							
	Vulnerable							
	Least Threatened	**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)

Flora

Central Mountain Shale Renosterveld occurs in the Western and Northern Cape Provinces on the southern and southeastern slopes of the Klein Roggeveldberge and Komsberg below the Komsberg section of the Great Escarpment, as well as farther east below Besemgoedberg and Suurkop and in the west in the Karookop area. It is associated with clayey soils overlying the Adelaide Subgroup mudstones and subordinate sandstones. Although this vegetation type is classified as Least Threatened, it has a very limited extent of 1236km^2 and is not formally conserved anywhere. Levels of transformation are low and it is considered to be 99% intact. No endemic species are known to occur within this vegetation type, which has been poorly sampled. Based on the specialist's experience from this and other projects in the area, it is indicated that this vegetation type should be considered to be a relatively sensitive vegetation type with a relatively high abundance of species of conservation concern and in the context of the site should be considered to have a higher sensitivity than those areas of Koedoesberge-Moordenaars Karoo. The Komsberg area is also a recognized centre of plant diversity and endemism and the majority of this diversity is associated with the high elevation areas of Central Mountain Shale Renosterveld.

The Koedoesberge-Moordenaars Karoo vegetation type has an extent of 4714km2. This unit occurs in the Western and Northern Cape Provinces on the Koedesberge and Pienaar se Berg low mountain ranges bordering on the southern Tanqua Karoo and separated by the Klein Roggeveld Mountains from the Moordenaars Karoo in the broad area of Laingsburg and Merweville. Koedoesberge-Moordenaars Karoo is associated with slightly undulating to hilly landscape covered by low succulent scrub with scattered tall shrubs. It occurs on mudstones, shale and sandstone of various origins including Adelaide Subgroup, Ecca Group and Dwyka Group diamictites, which give rise to shallow skeletal soils. This vegetation type is classified as Least Threatened and has not been significantly impacted by transformation. Conservation status is poor and of the target of 19% only a very small proportion is conserved within the Gamkapoort Nature Reserve. At least 14 endemic species are known from this vegetation type, which is high number considering that this vegetation unit occupies less than 5000km2. In addition, the majority of listed species known from the broader area are associated with this vegetation type. It is however very poorly known and little research has been conducted within this unit.

According to the SANBI SIBIS database, 514 indigenous species have been recorded from the four quarter degree squares around the site. This includes 22 species of moderate to high conservation concern. It is anticipated that this number could be larger. A large proportion of species of concern would be geophytes.

Aquatic Systems

It is evident that the aquatic systems found within the study area are largely functional and have limited impacts as a result of current land use practices. This was confirmed for each of the affected reaches located within the development footprint. In other words, the systems observed are largely natural, with small or narrow riparian zones, dominated by *Searsia lancea* and *Vachellia karroo*. The only obligate species observed include small areas of *Juncus rigidus* and *Phragmites australis* associated with small pools created by road culverts found throughout the study area.

4 SECTION C: PUBLIC PARTICIPATION

A combined Public Participation Process is being conducted for the following related proposals:

- Komsberg East Wind Energy Facility, Western Cape Province;
- Komsberg West Wind Energy Facility, Western and Northern Cape Provinces;
- Komsberg East Grid Connection, Northern and Western Cape Provinces; and
- Komsberg West Grid Connection, Western and Northern Cape Provinces.

As such, an Issues Trail has been initiated as the Scoping Report for the proposed WEFs was released for comment in October 2015.

4.1 ADVERTISEMENT AND NOTICE

Publication name	*Die Noordwester* and *Die Burger* (English and Afrikaans)	
Date published	28th August 2015	
Site notice position	**Latitude (S)**	**Longitude (E)**
	-32.707633°	20.775551°
	-32.855639°	20.694381°
	-32.837576°	20.820497°
	-32.797889°	20.962042°
	-32.553461°	20.353119°
Date placed	31st August 2015	

Include proof of the placement of the relevant advertisements and notices in **Appendix D1**.

4.2 DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

1. Placing notification advertisements of the proposed project in one local (*Die Noordwester*) and one regional (*Die Burger*) newspapers on the 28th August 2015 – in English and Afrikaans. Refer to **Appendix D1** for copies of the advertisements.

2. Placement of five A3 posters (in English and Afrikaans) in public areas in the towns of Laingsburg and Sutherland on the 1st September 2015. Refer to **Appendix D1** for photographs of these posters, and a map indicating the location of where the posters were placed.

3. Placement of five A1 posters (in Afrikaans and English) on the boundaries of the proposed grid connection sites. Refer to **Appendix D1** for photographs of these posters.

4. Distribution of the initial notification letters, the Background Information Document (BID) (in English and Afrikaans) and comment sheets to surrounding landowners, occupiers of the site and surrounds, the relevant municipal councillors and organs of state on 28th August 2015. Refer to **Appendix D2** for copies of the notification letters and the BIDs and to **Appendix D9** for proof of these notifications. To ensure successful delivery of notification to (Interested and Affected Parties (I&APs), all possible forms of written communication, where possible, were utilised. As such, written notification to I&APs was sent via the following methods where this information was available:
    - Registered letters;
    - Faxes; and

- Email[4].

5. Ongoing telephonic correspondence with affected and adjacent landowners to ascertain that any occupiers of their properties have been informed, and obtaining their contact details where possible. Refer to **Appendix D3** which documents this ongoing process.

6. On submission of the Draft Basic Assessment Report (DBAR) and Application Form to the DEA, a public review period will be held during March 2016. The DBAR will be made available in the Sutherland and Laingsburg Public Libraries, and on the project website. Copies will also be made available to relevant organs of state. Refer to **Appendix D4** for proof of delivery of the reports and comment sheets to the libraries and organs of state

7. Due to issues raised, a Focus Group Meeting was held with Falcon Oil & Gas Limited on 30th October 2015. Refer to **Appendix D5** for the minutes of this meeting.

8. Distribution of hard and electronic copies of the DBAR to relevant organs of state. Refer to **Appendix D5** for Proof of Delivery to these state departments.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733. Refer to **Appendix D** for a list of all I&APs.

Table 4-1: List of Key Stakeholders.

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Ms. Rhundzani Rashikinya	Sender Technology Park (STP) SENTECH	RashikinyaR@sentech.co.za
Mr. Mabule Mokhine	Earthlife Africa	mabule@ghouse.org.za/ juliette@ghouse.org.za
Ms. Mona Lakhani	Earthlife Africa	muna@iafrica.com
Ms. Makoma Lekalakala	Sustainable Energy & Climate Change Project of Earthlife Africa	makoma@earthlife.org.za
Mr. Rudzani Nemukula	Wildlife and Environment Society of South Africa	rudzani.memukula@wessa.co.za
Ms. Philippa Huntly	Wildlife and Environment Society of South Africa	philippa@wessa.co.za
Ms. Suzanne Erasmus	Wildlife and Environment Society of South Africa- Northern Cape Region	wessanc.conservation@yahoo.com
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Ms. Sam Ralston	Birdlife South Africa - Western Cape Region	energy@birdlife.org.za
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[4] Failed notifications are included in the documentation (**Appendix D9**) to demonstrate that all reasonable efforts were made to notify I&APs and for the purpose of showing that the documentation of the process is fully inclusive of all communication. In the event that any failed notifications were received, further investigation was undertaken to ensure successful notification of these I&APs. By way of example, in instances where both faxes and emails were not successful, an attempt was made to contact the I&AP by telephone to obtain the correct details and so notifications were re-sent.

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Mr. Lourens Leeuwner	Endangered Wildlife Trust	lourensl@ewt.org.za
Mr. Johan van den Berg	South African Wind Energy Association	johan@sawea.org.za
Mr. Henning Holm	Sustainable Energy Society of Southern Africa	ambassador@sessa.org
Ms. Adriana Chickesh	Sustainable Energy Society of Southern Africa	office@sessa.org.za
Ms. Mandy Barnett	Cape Action for People and the Environment	alwyn@saaea.org
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Ms. Becy Scott	Komsberg Wilderness Nature Reserve - Sutherland District	wildlifeforall@hotmail.com
Mr. Ramotholo Sefaku	The Southern African Large Telescope - Sutherland and Cape Town	rrs@saao.ac.za
Ms. Joy Fish	Cape Bird Club	joyfishza@iafrica.com
Mr. Leon Leach	Diamantveld Voelklub	lleach@shisas.co.za
Ms. Kate McEwan	South African Bat Assessment Association	madaboutbats@gmail.com / kate@iws-sa.co.za
Mr. Johan Bothma	Agri Western Cape	info@awk.co.za
Mr. Adrian Tiplady	Square Kilometre Array Project	atiplady@ska.ac.za
Mr. Henning Myburgh	Agri Northern Cape	henning@agrink.co.za

Include proof that the key stakeholder received written notification of the proposed activities as **Appendix D2**. 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.

4.3 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

As noted, an Issues Trail has been initiated as the Scoping Report for the proposed WEFs was released for comment in October 2015. The table below indicates the issues raised for the proposed Komsberg East and West WEFs, and the proposed Komsberg East and West grid connections. Issues and responses pertaining to the proposed Komsberg West Grid Connection are highlighted where relevant.

Copies of original comments will be included in the Final BAR.

Table 4-2: Summary of main issues raised.

Summary of main issues raised by I&APs	Summary of response from EAP
Concern regarding visual impacts.	A full visual impact assessment has been conducted for this proposal, and no particular visual issues were raised with respect to the proposed Komsberg West grid connection. Overall, the proposed powerline would have a visual impact significance of medium which could be marginally reduced through careful alignment to avoid skyline ridges. The towers used are difficult to mitigate, although they are not very tall. Minor mitigation is possible through micro-siting.
Further studies addressing archaeology and palaeontology required.	A Heritage Impact Assessment, which addresses archaeology and palaeontology aspects has been conducted for this process. Refer to **Volume 2** for this study. No particular archaeological or paleontological issues were raised with respect to the proposed Komsberg West grid connection.
Interest in obtaining work from the construction phase of the proposed development.	This information has been provided to the applicant.
No impact on roads within the SANRAL's jurisdiction.	Acknowledged.
Eskom's rights and services to be acknowledged and all of Eskom's procedures to be adhered to at all times.	The design engineers on this project have been made aware of these guidelines and will take all requirements into account in the design of the alignment for the proposed Komsberg West grid connection.
The height of the tallest structure on the site has relevance to the South African Civil Aviation Authority.	The height of the tallest structures on site, the wind turbines, will be reported to the South African Civil Aviation Authority. The height of the pylons for the grid connections will be 30m.
The total area to be cleared, affected vegetation types and protected trees and plants are relevant to the Department of Agriculture, Forestry and Fisheries to determine whether or not permits are required.	The development of the facility would result in an expected maximum direct habitat loss of approximately 50 ha. This information has been provided to the Department, and is included in the Fauna and Flora Assessment report in **Volume 2.**
Concern regarding transport and traffic related impacts on neighbouring property Koornplaats 41. Specific concerns include noise, dust and safety[5] and the need for a detailed transport management plan.	The BA Report describes the transport management plan. An alternative route has been investigated with the landowner. A traffic and transport management plan is included in the EMPr.
Concern regarding whether existing roads will be upgraded or not.	Where existing public and private roads are used, these would be upgraded or altered to meet the required specification for equipment transportation

[5] No fencing around the farm dwellings (A. Terörde, pers comm.).

	or operations. This would be carried out in consultation with the relevant roads authorities.
Uncertainty regarding the possible impacts on the Riverine Rabbit and the Bat-eared fox.	The flora and fauna specialist has assessed this potential impact. The Riverine Rabbit *Bunolagus monticularis* is listed as Critically Endangered and is known to occur in the area. This species is usually associated with alluvial terraces and floodplains of ephemeral rivers of the Karoo. In context of the site, it is likely to be largely restricted to the Komsberg area and to the areas on top of the plateau, which would not be impacted by the development. As such, it is likely to be present within the Komsberg West development area but is not likely to be present within the Komsberg East wind farm as there is no typically suitable habitat present within the affected areas. In terms of impact, the drainage lines where Riverine Rabbits are likely to occur are not likely to be significantly affected by the development, however, the large amount of traffic present in the area during construction is likely to pose a threat to this species. It appears to be vulnerable to collisions with vehicles in the vicinity of drainage lines and it is likely that some individuals may be lost to collisions with vehicles during the course of construction at the site. This impact would be of medium significance after mitigation. Refer to **Volume 2** for detailed mitigation.
Concern regarding impacts on sense of place.	The social, heritage and visual specialists have investigated and assessed this impact, and the findings are documented in Section D of this report. Social assessment findings: No high impacts on sense of place with respect to the proposed Komsberg West transmission line. Heritage assessment findings: The impact of the grid connection would be small in comparison to the proposed WTGs. In many instances, there will be backdrop scenery which will help absorb the lines and substation. Visual assessment findings: The visual impact of the grid connection would be of medium significance post mitigation. Minor mitigation is possible through micro-siting and the surrounding ridges would provide some visual absorption. Sense of place could be adversely affected. This impact would remain for the life of the project, and would be reinstated post decommissioning, should the latter. Refer to the detailed findings and mitigation measures in **Volume 2**.

Concern regarding the potential impacts of this development on rare bird species that only occur in the Moordenaars Karoo area.	The I&AP was contacted to specify which rare bird species were of concern. In the absence of this information forthcoming, the avifaunal specialist identified all possible rare bird species potentially occurring in the project area. This was done by conducting a detailed data search as well as utilizing information gathered over twelve months of pre-construction bird surveys. These surveys were conducted in line with applicable guidelines and the results of this survey have been included in **Volume 2**. The risk exists that collisions may occur with power lines and that electrocutions may occur, however, mitigation is possible that will mean that the significance of these impacts can be reduced from a high significance to a low significance impact. Mitigation includes, *inter alia*, utilizing a 'bird friendly' tower design that prevents electrocutions, reducing the total distance of overhead power lines where possible and increasing their visibility by fitting bird flight diverters (BFD's) in order to reduce the number of collisions.
The impact on shale gas exploration due to the proposed development potentially impacting seismic surveys in terms of ground vibration and surface noise generated near seismic lines, and in terms of separation of the areas that may be surveyed, should exploration rights be granted.	The possibility of these impacts has been investigated. A focus group meeting was held with Falcon Oil & Gas Ltd. on 30th October 2015 to discuss potential impacts. The outcome of the meeting indicated that a co-operation agreement is possible between the relevant parties should the grid connection be implemented. Refer to **Appendix D6.** Engagement with this I&AP shall continue.
Concern regarding night lighting and construction dust within the Central Astronomy Advantage Area.	The proposed grid connection/pylons should not affect the Central Astronomy Advantage Area. The construction of the pylons will be done in accordance with an Environmental Management Programme (EMP) and any possible dust impacts would be monitored by an Environmental Control Officer (ECO).

4.4 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 D7**.

Refer to **Appendix D7** for the Issues Trail and the original comments. Comments pertaining to the proposed grid connection issues in particular have been highlighted.

4.5 AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Note that this table also includes parastatals.

Table 4-3: Authorities and organs of state.

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Northern Cape Department of Transport, Roads and Public Works	Ms. Natasha Corns	053 839 2109	053 839 2117	ncorns@ncpg.gov.za	P. O. Box 3132 Kimberley 8300
Northern Cape Department of Cooperative Governance, Human Settlements and Traditional Affairs	Mr. Gamiem Abrahams	053 830 9492	053 831 4832	gabrahams.@ncpg.gov.za	Private Bag X5005 Kimberley 8300
Northern Cape Department of Cooperative Governance, Human Settlements and Traditional Affairs	Mr. G Botha	053 830 9422/ 053 830 0427	053 831 8718	jpetersen@ncpg.gov.za	Private Bag X5005 Kimberley 8300
Department of Agriculture, Forestries and Fisheries (Upington)	Ms. Jacoline Mans	054 338 5860	054 334 0030	jacolineM@daff.gov.za	P. O. Box 2782 Upington 8800
SALGA Northern Cape	Mr. Itumeleng Thatelo	053 836 7900	053 833 3828	ithatelo@salga.org.za	P. O. Box 3183 Kimberley 8300
Northern Cape Department of Water and Sanitation	Mr. A. Abrahams	053 836 7600/ 053 830 8800	053 842 0392/0393	frankl@dws.gov.za	Private Bag X6101 Kimberley 8300
Northern Cape Department of Water and Sanitation	Ms. Lindiwe Franks	053 836 7600/ 053 830 8800	053 842 0392 / 0393	franksl@dws.gov.za	Private Bag X6101 Kimberley 8300
Northern Cape Department of Agriculture, Land Reform and Rural Development	Mr. Viljoen Mothibi	053 838 9118	053 831 4685 / 3635	fortunec@ncpg.gov.za/ gmothibi@ncpg.gov.za or vmothibi@ncpg.gov.za	Private Bag X5018 Kimberley 8300
Northern Cape Department of Agriculture, Land Reform and Rural Development	Mr. Ali Diteme	053 838 9158	053 832 4328	alliditeme@ncpg.gov.za	Private Bag X5018 Kimberley 8300
Northern Cape Department of Water and Sanitation	Ms. Colleen Smuts	053 830 8800 /31	053 842 0392	SmutsC@dws.gov.za	Private Bag X6101 Kimberley 8300
Northern Cape Department of Communications	Mr. Marius Nagel	053 832 1378 /9/083 778 9179	053 832 1377	mariusn@gcis.gov.za	Private Bag X5038 Kimberley 8300
Northern Cape Department of Environment and Nature Conservation	Ms. Elizabeth Botes	053 8749 100 / 807 7300	053 871 1062	ebotes@ncpg.gov.za,pbendow@ncpg.gov.za	Private Bag X6010 Kimberley 8300
Northern Cape Department of	Mr. Brian Fisher	053 807 7431	538313530	bfisher@ncpg.gov.za	Private Bag X6010 Kimberley

Environment and Nature Conservation					8300
Northern Cape Department of Environment and Nature Conservation	Mr. O Ndzumao	027 718 8800	053 831 3530		Private Bag X6102 Kimberley 8300

Include proof that the Authorities and Organs of State received written notification of the proposed activities. Refer to **Appendix D2**.

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

4.6 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 D6**. Refer to **Appendix D6**.

Copies of any correspondence and minutes of any meetings are included in **Appendix D5**.

Refer to the minutes of the Focus Group Meeting held with Falcon Oil and Gas Limited on the 30th October 2015 in **Appendix D5**.

5 SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 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.

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

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

A number of specialist investigations have been completed. Refer to **Volume 2** which includes the full individual reports. **Table 6-1** indicates the specialist team and their fields of investigation.

Table 5-1: Specialist Team and Fields of Investigation.

Specialist Team	Fields of Investigation
Bernie Oberholzer and Quinton Lawson Bernard Oberholzer Landscape Architects and MLB Architects	Visual Impact Assessment
Dr. Brian Colloty Scherman Colloty and Associates Environmental and Aquatic Management Consulting	Freshwater Ecology Assessment
Tony Barbour Tony Barbour Environmental Consultant and Researcher	Social Impact Assessment
Dr. Garry Paterson ARC Institute for Soils Climate and Water	Agricultural Potential
Simon Todd Simon Todd Consulting	Ecosystems - Fauna
Tim Hart and John Almond ACO & Associates	Heritage, Archaeology and Palaeontology
Andrew Pearson and Anja Terörde Arcus Consulting	Avifauna Assessment
Jonathan Aronson Arcus Consulting	Bat Assessment
Morné de Jager Enviro Acoustic Research	Noise Assessment
Hermanus Steyn Aurecon	Transport and Traffic

Note that although alternative alignments were presented and assessed, the findings of the specialist studies did not reveal a preference for the preferred alternative or for the proposed alternative 2. This is due to the fact that the significance of the impacts of the preferred alignment over the alternative 2 alignment are negligible or non-existent, hence only the preferred alternative and the no-go option are assessed below.

The section below lists a summary of impacts and mitigation from all specialist studies according to the development phases, that is, the planning and design phase, construction phase, operational phase and the decommissioning and closure phases.

5.1.1 Planning, Design and Pre-Construction Phase

No.	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
Activity: Design of Power Line			
AQUATIC SYSTEMS			
1	**Direct impacts:** Aquatic Systems – no direct impacts during design phase.	N/A	-
	Indirect impacts: Aquatic Ecosystems – possibility of erosion caused by surface water run-off.	Low negative	• Should any of the grid towers be located on steep slopes, adequate erosion protection should be designed and installed to prevent any surface water run-off from eroding these areas. • Any transmission line towers located within watercourses should be placed outside of the watercourses (including the 32m buffer).
	Cumulative impacts: None are anticipated.		
VISUAL			
2	**Direct impacts:** Visual impacts of the proposes power line	Low negative	• Avoid visually sensitive skylines, such as peaks, scarp edges, ridges and other prominent elevations, as well as drainage courses, in the siting of powerlines. • Preferably locate the proposed powerline along the northern route alternative, which connects with the Komsberg East WEF, rather than the southern branch route alternative. • Avoid slopes steeper than 1:5 gradient, where possible, these being highly sensitive. • Apply setbacks for pylons, similar but smaller than those for wind turbines as indicated in Table 2. • Locate internal connecting powerlines below ground, where possible, particularly on visually exposed ridges

No.	Impact summary	Significance	Proposed mitigation
			(in areas of shallow bedrock, powerlines could be covered with overburden). • Locate powerline trenches ideally on the same alignment as access roads to minimise disturbance. • Rehabilitate disturbed areas with indigenous vegetation after construction.
	Indirect impacts: None are anticipated.		
	Cumulative impacts: None are anticipated.		
NO-GO OPTION			
3	**Direct impacts:** • The land-use remains agricultural, with no further societal benefits derived from the implementation of this proposed land use such as additional electricity supplied to the national grid. • There is no change to the current landscape or environmental baseline.	Low negative as none of the anticipated positive impacts associated with the development would occur.	Other than implementing the proposal, or distributing electricity in another manner, there is no suggested mitigation for this impact.
	Indirect impacts: Not implementing this proposal would contribute to South Africa not being able to meet carbon reduction renewable energy targets, through the distribution of renewable energy from the WEF.	Low negative	No mitigation proposed.
	Cumulative impacts: None are anticipated.		

5.1.2 Construction Phase

No	Impact summary	Significance after Mitigation	Proposed mitigation
Alternative 1 (preferred alternative)			
Activity: Construction of Power Line			
SOILS AND AGRICULTURE			
1	**Direct impacts:** **Soils and Agricultural Potential** - Loss of agricultural land.	Low negative	• Avoid any areas under cultivation (if any); • Minimize vegetation removal to smallest possible footprint; • Control possible runoff by using soil conservation and soil retention measures, especially on steep slopes; • Store any removed topsoil for later use (contains indigenous seeds etc) and re-vegetate as soon as possible; and • Once specific infrastructure sites are known, site-specific measures can be devised for implementation and any potentially high risk sites can be identified.
	Indirect impacts: Loss of income for landowners. The proposed development will occur within an area of low agricultural potential.	Low negative.	As above.
	Cumulative impacts: The likelihood of cumulative impacts is small. Only if other developments (whether wind farms or not) were to occur, using the same access roads and thereby increasing potential soil erosion aspects, would cumulative impacts need to be considered. The prevailing potential of the soils for rain-fed cultivation throughout most of the area is low.	Low negative	As above.
2	**Direct impacts:** Soils and Agricultural Potential - Increased soil erosion hazard.	Low negative	• Avoid any areas under cultivation (if any); • Minimize vegetation removal to smallest possible footprint;

			• Control possible runoff by using soil conservation and soil retention measures, especially on steep slopes; • Store any removed topsoil for later use (contains indigenous seeds etc) and re-vegetate as soon as possible; and • Once specific infrastructure sites are known, site-specific measures can be devised for implementation and any potentially high risk sites can be identified.
	Indirect impacts: Impact on habitat quality.	Low negative	As above.
	Cumulative impacts: The likelihood of cumulative impacts is small. Only if other developments (whether wind farms or not) were to occur, using the same access roads and thereby increasing potential soil erosion aspects, would cumulative impacts need to be considered. The prevailing potential of the soils for rain-fed cultivation throughout most of the area is low.	Low negative	As above.
HERITAGE			
3	**Direct impacts:** Heritage - Excavation of cable trenches and clearing for access roads. Loss of palaeontological sites - physical disturbance/destruction of fossil material and its context.	Low negative	• Safeguarding of chance fossil finds (preferably *in situ*) during the construction phase by the responsible ECO, followed by reporting of finds to Heritage Western Cape / SAHRA. • Recording and judicious sampling of significant chance fossil finds by a qualified palaeontologist, together with pertinent contextual data (stratigraphy, sedimentology, taphonomy) within the final footprint. • Curation of fossil material within an approved repository (museum/university fossil collection) by a qualified palaeontologist.
	Indirect impacts: This could result in an un-redeemable loss to science and knowledge.	Low positive	• Safeguarding of chance fossil finds (preferably in situ) during the construction phase by the responsible ECO, followed by reporting of finds to Heritage Western Cape / SAHRA.

			• Recording and judicious sampling of significant chance fossil finds by a qualified palaeontologist, together with pertinent contextual data (stratigraphy, sedimentology, taphonomy) within the final footprint. • Curation of fossil material within an approved repository (museum / university fossil collection) by a qualified palaeontologist.
	Cumulative impacts: Albeit low-level, local fossil heritage resources are anticipated as a result of construction of the considerable number of wind energy facilities that have been proposed for the Sutherland area.	Low positive	As above.
4	**Direct impacts:** Heritage - Displacement or destruction of archaeological material, structures or kraals.	Low neutral	• Do not disturb and old stone kraals or ruins, do not remove stone from walls, or artefacts from the earth or earth surface. • Avoid farm yards and buildings (none were observed in either of the alternative alignments). • Report any chance discoveries of human remains to an archaeologist or a heritage authority.
	Indirect impacts: None anticipated.	-	N/A
	Cumulative impacts: No. The site is not considered archaeologically sensitive and has few unique qualities.	-	N/A
5	**Direct impacts:** Heritage - Impacts to landscape quality.	Very Low Negative	• Avoid farmsteads and structures (at least 400 m buffer). • Consider using a lattice tower form, as these are visually more permeable and at a distance are almost invisible against a backdrop.
	Indirect impacts: Possible negative impacts on tourism and sense of place.	Very Low negative	• Implement the mitigation measures in the Visual Impact Assessment
	Cumulative impacts:	Low negative	• Implement the mitigation measures in the Visual Impact Assessment.

	This will make a minor negative contribution to the aesthetic quality of the Great Escarpment area, a remote scenic region of the Western Cape Karoo. It has been deemed an ideal locality in terms of it wind resources. The high number of proposals for the area will result in a change of character to a natural place of good aesthetic value.		
NOISE			
6	**Direct impacts:** Construction phase noise impacts.	Low negative	• Keep activities further than approximately 500 m from the closest receptors. • No construction activities to take place at night. • Machinery that generates noise should be regularly maintained in order to ensure that no unnecessary additional noise is produced. • Equipment with lower sound levels should be selected where possible.
	Indirect impacts: None anticipated.		
	Cumulative impacts: None anticipated.		
SOCIAL			
7	**Direct impacts: Social** - Creation of local employment, training, and business opportunities.	High Positive	• The need to implement an accredited training and skills development programme aimed at maximising to opportunity for local workers to be employed for the low and semi-skilled positions should be assessed by the proponent. Such a programme is needed should be initiated prior to the initiation of the construction phase but only once the project has been formally finalised or financially closed with the DoE or appropriate government agency. The aim of the potential programme should be to maximise employment opportunities for members of the local community. In this regard the programme could be aimed at community

			members from Laingsburg and Sutherland. If required, the programme should be developed in consultation with the Department of Labour and the LLM. The recommended targets are 50% and 30% of low and semi-skilled positions respectively should be taken up by local community members. Due to the low skills levels in the area, the majority of semi-skilled and skilled posts are likely to be filled by people from outside the area; • The recruitment selection process for the training and skills development programme should seek to promote gender equality and the employment of women wherever possible; • Before the construction phase commences, the proponent should meet with representatives from the local municipalities to establish the existence of a skills database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase; • The local authorities and relevant community representatives should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project. • Where reasonable and practical the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria; • The proponent should liaise with the local municipalities with regards the establishment of a database of local

			companies, specifically BBBEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies should be notified of the tender process and invited to bid for project-related work; • Where possible, the proponent should assist local BBBEE companies to complete and submit the required tender forms and associated information. • The local municipalities, in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project. • Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.
	Indirect impacts: Social upliftment of the KHLM and LLM areas.	High Positive	• Implement the SIA mitigation measures.
	Cumulative impacts: Social upliftment of the KHLM and LLM areas.	High Positive	• Implement the SIA mitigation measures.
8	**Direct impacts: Social** - Impact of construction workers on local communities and influx of construction workers.	Low Negative	• If necessary, the proponent should consider the implementation of an accredited training and skills development programme aimed at maximising to opportunity for local workers to be employed for the low and semi-skilled positions prior to the initiation of the construction phase but only once the project has been formally finalised or Financially Closed with the Department of Energy or appropriate government agency. The aim of the programme should be to

			maximise employment opportunities for members of the local community. In this regard the programme could be aimed at community members from Laingsburg and Sutherland. The programme could be developed in consultation with the Department of Labour and the LLM. The recommended targets are 50% and 30% of low and semi-skilled positions respectively should be taken up by local community members. Due to the current low skills levels in the area, the majority of semi-skilled and skilled posts are likely to be filled by people from outside the area; • The recruitment selection process for the training and skills development programme should seek to promote gender equality and the employment of women wherever possible; • The proponent should establish a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should be established before the construction phase commences, and should include key stakeholders, including representatives from the LLM, farmers and the contractor(s). The MF should also be briefed on the potential risks to the local community and farm workers associated with construction workers; • The proponent and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation;

			• The proponent and contractor (s) should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase; • The contractor should provide transport to and from the site on a daily basis for low and semi-skilled construction workers. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site; • The contractors should make the necessary arrangements to transport workers from other local towns in the area, such as Worcester and Paarl, home over weekends. This will reduce the risk posed to local family structures and social networks in Laingsburg and Sutherland; • No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site. • The proponent should implement a "locals first" policy, specifically with regard to unskilled and low skilled opportunities; • The proponent should implement a policy that no employment will be available at the gate and or in Laingsburg and Sutherland (except for local residents)..
	Indirect impacts: • Families accompany the individual jobs seekers and stay on in the area and place pressure on existing services (eg housing). • Competition for scarce employment opportunities • Increase in crime levels • Increased tensions and conflicts between local residents and jobs seekers from outside the area.	Low negative	As above.

	Cumulative impacts: • Families accompany the individual jobs seekers and stay on in the area and place pressure on existing services (eg housing). • Competition for scarce employment opportunities • Increase in crime levels • Increased tensions and conflicts between local residents and jobs seekers from outside the area.	Low negative	As above.
9	**Direct impacts: Social** - Risk to safety, livestock and farm infrastructure	Very Low negative	• The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase proven to be associated with the construction activities for the WEF will be compensated for. The agreement should be signed before the construction phase commences; • The contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties; • The proponent should establish a Monitoring Forum that includes local farmers and develop a Code of Conduct for construction workers. This committee should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before the contractors move onto site; • The proponent should hold contractors liable for compensating farmers in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent,

			the contractors and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities; • The Environmental Management Programme (EMP) should outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested; • The contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms. • The contractors appointed by the proponent must ensure that construction workers who are found guilty of trespassing, stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation; • The housing of construction workers on the site should be strictly limited to security personnel.
	Indirect impacts: • Damage to gates and fences • Organised Stock theft and masking local theft • Stock losses due to fences being left open.		
	Cumulative impacts: These impacts would be the same as the direct impacts, but with a higher probability/chance of occurrence as there are a number of proposed projects in the area.	Low negative	• Implement mitigation measures listed above from the SIA.
10	**Direct impacts:** Social – Increased risk of grass fires.	Negative Low	• The proponent should enter into an agreement with the local farmers in the area whereby damages to farm

			property etc. during the construction phase proven to be associated with the construction activities for the WEF will be compensated for. The agreement should be signed before the construction phase commences; • Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas; • The contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter months; • The contractor should provide adequate firefighting equipment on-site; • The contractor should provide fire-fighting training to selected construction staff; • No construction staff, with the exception of security staff, to be accommodated on site over night; • As per the conditions of the Code of Conduct, in the event of a fire proven to be caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the firefighting costs borne by farmers and local authorities.
	Indirect impacts: • Threat to livestock, crops and farmsteads, and farm infrastructure.	Negative Low	As above.

	• Impact on grazing quality and resource as arid area takes a long time to recover from disturbance/fire.		
	Cumulative impacts: These impacts would be the same as the direct impacts, but with a higher probability/chance of occurrence as there are a number of proposed projects in the area.	Negative Low	As above.
11	**Direct impacts:** Social - Impacts associated with construction vehicles – dust, safety, impact on farming activities, traffic.	Negative Low	• The final selection of access roads should be discussed with the affected landowners. • The contractor must ensure that damage caused by construction related traffic to local public and internal farm roads is repaired on a regular basis throughout the construction phase. The costs associated with the repair must be borne by the contractor. The maintenance for roads is the responsibility of the local district roads authority. In many instances, the local district roads authority lack the resources to maintain the local road network. In addition, due to legal restrictions, it is not possible for the contractor to repair damage to public roads. This can result in damage to roads not being repaired before the construction phase is completed. This is an issue that should be addressed with the local district roads authority prior to the commencement of the construction phase; • As far as possible, the transport of any large components to the site along the N1 should be planned to avoid weekends and holiday periods; • Laydown and construction areas should be clearly defined. No vehicles or activities should be permitted outside of these areas; • Movement of vehicles on the site must be confined to access roads. No vehicles should be allowed to drive into the veld;

			• The contractor must ensure that all construction vehicles adhere to speed limits and vehicles used to transport sand and building materials must be fitted with tarpaulins or covers; • All workers should receive training/ briefing on the reasons for and importance of closing farm gates and driving slowly; • All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits; • The Contractor should ensure that workers are informed that no waste can be thrown out of the windows while being transported to and from the site. Workers who throw waste out windows should be fined; • The Contractor should be required to collect waste along the road reserve on a weekly basis; • Waste generated during the construction phase should be transported to the local landfill site; • EMP measures (and penalties) should be implemented to ensure farm gates are closed at all times; • EMP measures (and penalties) should be implemented to ensure speed limits are adhered to at all times.
	Indirect impacts: Impact on road users of the N1.	Negative Low	As above.
	Cumulative impacts: These impacts would be the same as the direct impacts, but with a higher probability/chance of occurrence as there are a number of proposed projects in the area.	Low negative	• Implement mitigation measures listed above from the SIA.
12	**Direct impacts:** Social - Impacts associated with loss of farmland and productive land via movement of heavy vehicles, establishment of	Low negative	• The location of access roads, laydown areas etc. should be informed by the findings of key specialist studies, including the soil and botanical studies;

	laydown areas, construction access roads and trenching in cultivated areas.		• The location of access roads, laydown areas etc. should be discussed with the locally affected landowners in the finalisation process and inputs provided should be implemented in the layout as best as possible; • The footprint areas for the pylons should be clearly demarcated prior to commencement of construction activities. All construction related activities should be confined to the demarcated area and minimised where possible. No vehicles or activities should be permitted outside of these areas; • Movement of vehicles on the site must be confined to access road. No vehicles should be allowed to drive into the veld; • An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase; • All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop areas etc., should be rehabilitated at the end of the construction phase. The rehabilitation plan should be informed by input from a botanist with experience in arid regions; • The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed; • The implementation of the Rehabilitation Programme should be monitored by the ECO; • All workers should receive training/ briefing on the reasons for and importance of not driving in undesignated areas;

			• EMP measures (and penalties) should be implemented to strictly limit all vehicle traffic to designated roads and construction areas. Under no circumstances should vehicles be allowed to drive into the veld; • Disturbance footprints should be reduced to the minimum.
	Indirect impacts: Loss of income for farmers.	Low negative	As above.
	Cumulative impacts: These impacts would be the same as the direct impacts, but with a higher probability/chance of occurrence as there are a number of proposed projects in the area.	Low negative	• Implement mitigation measures listed above from the SIA.
VISUAL			
13	**Direct impacts:** Visual impact of power line construction.	Medium-Low negative	• Rehabilitate disturbed areas with indigenous vegetation after construction.
	Indirect impacts: None anticipated.		
	Cumulative impacts: None anticipated.		
SOLID WASTE GENERATION			
14	**Direct impacts:** Solid waste generation - it is anticipated that the proposed development will produce a certain amount of solid waste in the form of building rubble such as excavated soil and vegetation and excess concrete, etc. and general waste such as litter during the construction phase.	Low negative	• Rubble and other construction waste should be re-used if possible and where it is not possible must be disposed of at the nearest registered waste disposal facility. • If rubble is stored on site, it should be stored on designated portions of land, preferably land that will be developed at some future stage or is deemed to be ecologically degraded already. • Litter must be controlled during construction – adequate bins must be made available on site at all times. These must be made scavenger proof and must be emptied on a regular basis.

			• Construction materials stored at the camp site must be secured – i.e. plastics must be covered to prevent being blown off site. Skips must be regularly emptied and must be covered. • Any hazardous materials that need to be stored on site must be secured.
	Indirect impacts: Litter could create health impacts on the fauna of the area, including farmer's stock animals.	Low negative.	As above.
	Cumulative impacts: These impacts would be the same as the direct impacts, but with a higher probability/chance of occurrence as there are a number of proposed projects in the area.	Low negative	• Implement mitigation measures listed above.
SOIL COMPACTION			
15	**Direct impacts:** Soil compaction - There is a possibility that soil may be compacted by the operation and parking of large construction vehicles. Compacted soil results in the reduced ability for plant growth and water absorption. The clearing of vegetation will result in the exposure of soils.	Low negative	• Disturbance and clearing of natural vegetation should be kept to the minimum required for construction. • Newly cleared and exposed areas must be promptly rehabilitated with indigenous vegetation to avoid soil erosion. • Where necessary, temporary stabilization measures must be used until vegetation establishes. • Appropriate erosion control measures must be implemented and a monitoring programme established to ensure that no erosion is taking place. At the first sign of erosion, the necessary remedial action must be taken. • Care must be taken to ensure that runoff is well dispersed so as to limit erosion.
	Indirect impacts: Exposed soils are easily susceptible to erosion by wind and water (i.e. run-off) during high wind or rainfall conditions.	Low negative	As above.
	Cumulative impacts:	Low negative	• Implement mitigation measures listed above.

	These impacts would be the same as the direct impacts, but with a higher probability/chance of occurrence as there are a number of proposed projects in the area.		
SURFACE AND GROUNDWATER CONTAMINATION			
16	**Direct impacts:** Surface and groundwater contamination - There are a number of drainage lines traversing the site. Various activities such as poor vehicle maintenance (e.g. oil leaks), improper storage of hazardous materials (i.e. paint and fuel) and washing down practices may result in the pollution of surface and groundwater sources.	Low negative	• Establish a site office with a dedicated area for construction vehicles to refuel and where cement can be mixed. • Vehicle re-fuelling and cement mixing must only take place on impervious surfaces. • Ensure all construction machinery is in sound working order to prevent oil leaks and excessive exhaust fume emissions. • Temporary chemical toilets must be provided for the duration of the construction period, if no waterborne sewerage system is available. These toilets must be made available for all site staff during the construction phase and should be no closer than 50m from any natural water-body. The developers should also appoint and enter into a contract with qualified third party service provider for the maintenance of the sanitation system. • Adequate waste disposal (litter) bins must be available on site. These must be properly secured and covered to prevent scavengers from tipping them. • Any hazardous materials that need to be stored on site must be secured.
	Indirect impacts: Impacts to the ecological habitats and communities which depend on the surface water and groundwater sources.	Low negative	As above.
	Cumulative impacts: Pollution of surface and groundwater over a wider area due to the number of proposed wind farms and grid connections in the area.	Low negative.	As above.

TRAFFIC IMPACTS			
17	**Direct impacts: Traffic impacts** - large construction vehicles will utilize the existing road network which may result in impeding existing traffic and causing damage to existing roads.	Low negative	• Large construction vehicles must not be permitted to utilize public roads during peak hours. • Damage to public roads caused by large construction vehicles must be immediately repaired by the applicant.
	Indirect impacts: Impacts on the resources of the LLM or the KHLM to maintain and upgrade roads.	Low negative	As above.
	Cumulative impacts: These impacts would be the same as the direct impacts, but with a higher probability/chance of occurrence as there are a number of proposed projects in the area.	Low negative	• Implement mitigation measures listed above.
FAUNA AND FLORA			
18	**Direct Impacts:** Fauna and Flora – Impact on vegetation and listed plant species.	Low negative	• Preconstruction walk-through of the power line route to ensure that sensitive habitats and species can be avoided. • Ensure that lay-down and other temporary infrastructure is within low sensitivity areas, preferably previously transformed areas if possible. • Minimise the development footprint as far as possible and rehabilitate disturbed areas that are no longer required by the operational phase of the development. • If possible a permanent access road beneath the line should not be constructed. A veld track for construction and maintenance is however likely to be necessary. • Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to. This includes awareness as to no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards,

			minimizing wildlife interactions, remaining within demarcated construction areas etc. • Demarcate all areas to be cleared with construction tape or similar material. However caution should be exercised to avoid using material that might entangle fauna.
	Indirect Impacts: Alien plant invasions, habitat loss, erosion.	Low negative	As above.
	Cumulative Impacts: Some transformation will occur and will contribute to cumulative transformation and habitat loss in the area, but with mitigation this can be reduced to a low level.	Low negative.	As above.
19	**Direct Impacts:** Fauna and Flora – Direct faunal impacts due to construction phase noise and physical disturbance, including potential impact on Critically Endangered Riverine Rabbit.	Low negative	• Preconstruction walk-through of the power line route to identify areas of faunal sensitivity. • During construction any fauna directly threatened by the construction activities should be removed to a safe location by the ECO or other suitably qualified person. • No fires should be allowed within the site as there is a risk of runaway veld fires. • No fuelwood collection should be allowed on-site. • No dogs should be allowed on site. • If any parts of site such as construction camps must be lit at night, this should be done with low-UV type lights (such as most LEDs), which do not attract insects and which should be directed downwards. • All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill. • All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises as well as the Riverine Rabbit.

			Speed limits should apply within the facility as well as on the public gravel access roads to the site. • All personnel should undergo environmental induction with regards to fauna and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition.
	Indirect Impacts: Changes to ecosystem function. Provided that impacts to sensitive habitats such as drainage lines are minimized, then no irreplaceable loss of resources is likely to occur.	Low negative	• All mortalities of fauna on access roads within or to the site should be recorded with a view towards intervention and additional mitigation. If any Riverine Rabbits are killed this should be reported to the EWT Riverine Rabbit programme and additional mitigation implemented.
	Cumulative Impacts: Construction phase disturbance will contribute towards faunal impacts in the area and the overall contribution would be moderate but transient.	Low negative	As above.
20	**Direct Impacts:** Fauna and Flora - During construction, disturbed areas along the power line route will be highly vulnerable to soil erosion.	Low negative	• Runoff management and erosion control should be integrated into the project design. • Some parts of the power line route are on steep slopes and specific avoidance and mitigation should be implemented in such areas to prevent erosion. • Disturbance near to drainage lines should be avoided and sensitive drainage areas near to the construction activities should demarcated as no-go areas. • Regular monitoring for erosion problems along the access roads and other cleared areas. • Erosion problems should be rectified on a regular basis. • A low cover of vegetation should be left wherever possible within the construction footprint to bind the soil, prevent erosion and promote post-disturbance recovery of an indigenous ground cover.
	Indirect Impacts: Habitat loss for fauna and loss of vegetation. .	Low negative.	As above.

	Cumulative Impacts: Erosion will contribute towards cumulative habitat loss and degradation in the area. However, if erosion is effectively controlled, then this contribution would be low.	Low negative.	As above.
BATS			
21	**Direct impacts:** Bats - Roost disturbance or destruction**:** The grid connection infrastructure may impact bats directly through the disturbance of roosts during construction. Excessive noise and dust during the construction phase could result in bats abandoning their roosts, depending on the proximity of construction activities to roosts. This impact will vary depending on the species involved; species that may roost in trees are likely to be impacted more (e.g. Cape serotine and Egyptian free-tailed bats).	Low negative	• It may be possible to limit roost disturbance and abandonment by avoiding construction activities near roosts. These include trees, rocky crevices and buildings along the grid connection route. • It is recommended that a bat specialist survey the confirmed grid connection route during the design phase for the presence of roosts before any construction activities commence. • A no-go buffer zone of 200 m, in which no construction activities may take place or no infrastructure is to come within must be applied around any roosts or potential roosts identified (limited to rocky crevices and buildings). • A no-go buffer zone of 500 m, in which no construction activities may take place or no infrastructure is to come within must be applied around any roosts or potential roosts identified (limited to specific tree species and caves) to specifically protect fruit bats. The following trees species should be buffered: species of fig, Cape ash, saffronwood, yellowwood, *Diospyros L.*, and *Syzygium R.Br. ex Gaertn*, if found within the grid connection route. • No construction activities with the potential to physically affect any bat roosts will be permitted without the express permission of a suitably qualified bat specialist following appropriate investigation and mitigation. • A site-specific EMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted to reduce unnecessary

			destruction of habitat. All contractors are to adhere to the EMPr and should apply good environmental practice during construction. • During construction, laydown areas and temporary access roads should be kept to a minimum in order to limit direct vegetation loss and habitat fragmentation, while designated no-go areas must be enforced i.e. no off-road driving. • Following construction, rehabilitation of all areas disturbed (e.g. temporary access tracks and laydown areas) must be undertaken and a habitat restoration plan must be developed by a specialist and included within the EMPr.
	Indirect impacts: Habitat modification - Bats can be impacted indirectly through the modification or removal of habitats. The removal of vegetation during the construction phase will impact bats by removing cover and linear features that some bats use for foraging and commuting. The footprint of the grid connection route is small relative to the remaining habitat available in the surrounding area and as such the removal of vegetation is not likely to result in a significant impact. This impact can be reduced even further by limiting the removal of vegetation as far as possible.	Very Low negative	• This impact must be reduced by limiting the removal of vegetation as far as possible. An EMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted to reduce unnecessary destruction of habitat. All contractors are to adhere to the EMPr and should apply good environmental practice during construction. • During the design phase, the bat specialist should conduct a site walkthrough, covering the final road and power line routes, to identify any roosts/activity of sensitive species, as well as any additional sensitive habitats. • During construction, laydown areas and temporary access roads should be kept to a minimum in order to limit direct vegetation loss and habitat fragmentation, while designated no-go areas must be enforced i.e. no off-road driving. • Following construction, rehabilitation of all areas disturbed (e.g. temporary access tracks and laydown

			areas) must be undertaken and a habitat restoration plan must be developed by a specialist and included within the EMPr.
	Cumulative impacts: The cumulative impact of bats abandoning their roosts is dependent on the number of roosts affected, the species involved and extent of the impact across the assessed region. The cumulative impact of destroying multiple roosts across a region will be negative. Bats reproduce slowly and their populations can take long periods of time to recover from disturbances so the cumulative impacts can be high if appropriate management and mitigation is not implemented. In terms of habitat modification, cumulative impacts should be low because of the limited amount of vegetation that would be removed relative to the large area in the region that would not be developed. This will depend on the types of vegetation that are removed because the cumulative impact of removing endangered habitat will be greater than removing habitat that is not threatened.	Low negative	With effective management of the construction process across the cumulative developments and limiting roost disturbance, the cumulative impacts can be reduced to low. Mitigation includes effective design of the grids and preventing roost destruction.
AVIFAUNA			
22	**Direct Impacts:** Avifauna - Loss of habitat – loss and alteration of habitat will be limited to the grid connection area. This happens with the construction of access roads, the clearing of servitudes and areas for pylon placements etc. This habitat loss is both temporary and permanent, although minimal, in the case of pylon foundations. Typically, actual habitat loss amounts to 2–5% of the total development area of a WEF and its associated grid infrastructure.	Low negative	• A site specific EMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted to reduce unnecessary destruction of habitat. All contractors are to adhere to the EMPr and should apply good environmental practice during construction. • High traffic areas and buildings such as offices, batching plants, storage areas etc. should where possible be situated in areas that are already disturbed; • Existing roads and farm tracks should be used where possible; • The minimum footprint areas of infrastructure should be used wherever possible, including servitude widths and lengths;

			• Where possible, grid infrastructure (within the WEF site) should not be constructed in High Sensitivity Zones. • Construction of grid infrastructure (within the WEF site) must consider avifaunal sensitivity zones and avoid areas of higher sensitivities where possible; • Environmental Control Officers to oversee activities and ensure that the site specific EMPr is implemented and enforced; • Any clearing of stands of alien trees on site should be approved first by an avifaunal specialist. • Following construction, rehabilitation of all areas disturbed (e.g. temporary access tracks and laydown areas) must be undertaken and to this end a habitat restoration plan is to be developed by a specialist and included within EMPr. • Beyond the WEF site, the grid connection route should, where possible, follow existing linear infrastructure such as roads and power lines, and should be constructed as close as practically possible to the existing infrastructure. • Where possible the grid connection route must avoid sensitive areas such as wetlands, dams, rivers and cultivated lands.
23	**Direct Impacts:** Avifauna - Disturbance and displacement: Disturbances and noise from staff and construction activities can impact on certain sensitive species particularly whilst feeding and breeding, resulting in effective habitat loss through a perceived increase in predation risk. There are various such potentially sensitive species occurring on the site including African Rock Pipit, Karoo Korhaan, Verreaux's Eagle and Martial Eagle. This can cause these species to be displaced, either temporarily (i.e. for some period during the construction activity) or permanently (i.e. they do not return), into less suitable habitat which may reduce their ability to survive and	Low negative	• Prior to construction, the avifaunal specialist should conduct a site walkthrough, covering the final grid connection route and pylon locations, to identify any nests/breeding activity of sensitive species, as well as any additional sensitive habitats. The results of which may inform the final construction schedule, in close proximity to that specific area, including abbreviating construction time, scheduling activities around avian

	reproduce. The duration of disturbance is expected to last for the duration of the construction phase and will be restricted to the grid connection area. Disturbance during the breeding season and close to nesting sites can potentially impact the breeding success of various sensitive species.		breeding and/or movement schedules, and lowering levels of associated noise. • A site specific EMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted to reduce unnecessary destruction of habitat. All contractors are to adhere to the EMPr and should apply good environmental practice during construction.
	Indirect Impacts: The removal of vegetation which provides habitat for avifauna and food sources may have an impact on birds breeding, foraging and roosting. These factors can all lead to birds avoiding the area for feeding or breeding, and effectively leading to habitat loss and a potential reduction in breeding success.	Low negative	As above.
	Cumulative Impacts: Grid connections which are related to WEF developments typically result in approximately 0.5 – 2% of the land being disturbed/lost. The habitats that are likely to be lost occur in relative abundance elsewhere within the broader region. The majority of priority species potentially occurring at the project site all have relatively large distribution ranges and as such, the cumulative impacts of disturbance and displacement are likely to be medium and regionally significant, rather than national. Furthermore, the majority of the species likely to be displaced have suitable habitat beyond the WEF site and its grid connection (even if 5 or more of the 7 projects are constructed), the cumulative impact is likely to be of medium significance.	Medium negative.	This would be assuming that all new power line infrastructure associated with all the proposed WEFs within the 50 km radius is constructed using a safe, 'bird friendly design'.
NO-GO OPTION			
24	**Direct impacts:** None of the impacts as listed above would occur during the construction phase of this proposal. This would include the positive impacts of job creation, training and business opportunities as well as the potential (albeit low) for discovering heritage artefacts.	Low to Medium negative	Other than implementing the proposal, or finding another manner in which to transfer electricity from a renewable energy resource, there are no mitigation measures possible for this impact.
	Indirect impacts: Social upliftment of the LLM and KHLM areas would not occur.	Medium negative	As above.

	Cumulative impacts: These would relate to the impacts of not implementing non-renewable energy projects, such as non-renewable energy contribution to the national grid.	Medium negative	As above.

5.1.3 Operational Phase

	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative and alternative 2)			
Activity: Operation of Power Line			
HERITAGE			
1	**Direct impacts:** Heritage - Impacts to landscape quality.	Very Low Negative	• Avoid farmsteads and structures (at least 400 m buffer). • Consider using a lattice tower form, as these are visually more permeable and at a distance are almost invisible against a backdrop.
	Indirect impacts: Possible negative impacts on tourism and sense of place.	Very Low negative	Implement the mitigation measures in the Visual Impact Assessment
	Cumulative impacts: This will make a minor negative contribution to the aesthetic quality of the Great Escarpment area, a remote scenic region of the Western Cape Karoo. It has been deemed an ideal locality in terms of it wind resources. The high number of proposals for the area will result in a change of character to a natural place of good aesthetic value.	Low negative	Implement the mitigation measures in the Visual Impact Assessment.
NOISE			
2	**Direct impacts: Noise** – the powerlines may create and be a source of noise to receptors.	Low	• The lines should be further than 100m from any receptor.
	Indirect impacts: None anticipated.		
	Cumulative impacts: None anticipated.		

	Impact summary	Significance	Proposed mitigation
SOCIAL			
3	**Direct impacts: Social** – Potential visual impact and impact on sense of place.	Low	• The alignment of the transmission power line should be designed so as to ensure that the any concerns from landowners are addressed. • The recommendations of the VIA should be addressed.
	Indirect impacts: Possible impacts on tourism.	Very Low negative	As above.
	Cumulative impacts: There would be a low negative impact to the aesthetic quality of the area. The high number of proposals, and their grid connections in the area would result in a change in landscape character.	Very Low negative	As above.
4	**Direct impacts:** Social - Improved cell phone reception in the area.	Low positive	• The proponent in consultation with the contractor should investigate option of establishing a cell phone booster mast on the site.
	Indirect impacts: Improved safety and security for landowners.	Low positive.	As above.
	Cumulative impacts: None anticipated.	Low positive.	As above.
VISUAL			
5	**Direct impacts:** Visual impact of powerline structure.	Medium negative	No mitigation possible for visual impacts during operation. Mitigation for reducing the visual impacts of the power line should be included during the design phase, and during the micro-siting process.
	Indirect impacts: Impacts to tourism and visitors to the area.	Low negative.	
	Cumulative impacts: This will make a low negative contribution to the aesthetic quality of the Great Escarpment area, a remote scenic region of the Western Cape	Low negative	• Implement the mitigation measures in the Visual Impact Assessment.

	Impact summary	Significance	Proposed mitigation
	Karoo. The implementation of all the proposals for the area would result in a change of character to a natural place.		
FAUNA AND FLORA			
6	**Direct impacts:** Fauna and Flora - Following construction, disturbed areas along the power line route will be vulnerable to soil erosion.	Low negative	• Erosion management at the site should take place according to the Erosion and Rehabilitation Plan. • All roads should have runoff control features which redirect water flow and dissipate any energy in the water which may pose an erosion risk. • Regular monitoring for erosion during operation to ensure that no erosion problems have developed as result of the disturbance. • All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.
	Indirect impacts: Habitat loss and loss of vegetation.	Low negative	As above.
	Cumulative impacts: Erosion will contribute towards cumulative habitat loss and degradation in the area. If erosion is effectively controlled, then this contribution would be low.	Low negative	As above.
7	**Direct impacts:** Fauna and Flora - Following construction, the site will be highly vulnerable to alien plant invasion.	Low negative	• Alien plant species are likely to be a long-term problem within disturbed areas and a long-term control plan will need to be implemented. • Regular monitoring for alien plants within the development footprint as well as adjacent areas which receive runoff from the facility as there are also likely to be prone to invasion problems. • Regular alien clearing should be conducted using the best-practice methods for the species concerned. The use of herbicides should be avoided as far as possible.
	Indirect impacts: Habitat loss and changes to ecosystem function.	Low negative	As above.

	Impact summary	Significance	Proposed mitigation
	Cumulative impacts: Alien plant invasion would contribute towards cumulative habitat loss and degradation in the area. If aliens are effectively controlled, then this contribution would be low.	Low negative	As above.
BATS			
8	**Direct impacts:** Bats - Mortality due to collisions with powerlines. Insectivorous bats are unlikely to collide with transmission lines due to their ability to echolocate. They are therefore able to detect and avoid obstacles in their path, such as electrical cabling. Fruit bats do not echolocate in the same manner and can collide and become electrocuted by transmission lines. There is no published evidence of this in South Africa but these events do occur globally. The geographic distribution of at least one species of fruit bat, the Egyptian rousette, may overlap with the proposed grid connection route.	Low negative – Very Low negative	• It is recommended that a bat specialist survey the confirmed switching station and grid connection route during the design phase for the presence of cave roosts, orchards and fruit trees before any construction activities commence. The Egyptian rousette utilises the fruit of the following trees species: various species of fig, Cape ash, saffronwood, yellowwood, *Diospyros L.*, and *Syzygium R.Br. ex Gaertn*. The grid connection must be surveyed for the presence of these species. • A no-go buffer zone of 500m, in which no construction activities may take place or no infrastructure is to come within (including overhead power cables) must be applied around any cave roosts, orchards or fruit trees identified to protect fruit bats.
	Indirect impacts:	N/A	N/A
	Cumulative impacts: The cumulative impacts will depend on the number of WEFs in the region, the species involved and the levels of bat mortality. Bats reproduce slowly (Barclay and Harder 2003) and their populations can take long periods of time to recover from disturbances so the cumulative impacts can be high if appropriate management and mitigation is not implemented.	Low negative	With effective management of the construction process across the cumulative developments and limiting roost disturbance, the cumulative impacts can be reduced to low. Mitigation includes effective design of the grids and preventing roost destruction.
AVIFAUNA			
9	**Direct Impacts:** Avifauna – Electrocution risk. Overhead power line infrastructure with a capacity of 132 kV or more do not generally pose a risk of electrocution due to the large size of the clearances between the electrical infrastructure components. Electrocutions are therefore more likely for larger species whose wingspan is able to bridge the gap such	Low negative	• Any grid connection power line/s must be of a design that minimizes electrocution risk by using adequately insulated 'bird friendly' monopole structures, with clearances between live components of 1.8 m or greater and which provide a safe bird perch.

	Impact summary	Significance	Proposed mitigation
	as eagles or storks. Various large raptors (such as Martial Eagle, Verreaux's Eagle and Ludwig's Bustard) susceptible to electrocution (particularly in the absence of safe and mitigated structures) occur in the area. While the impact occurs locally and is restricted to the grid connection area, it could have an effect on regional populations. The result of this impact is mortality, and this could affect the breeding success of species and their populations. As electrocution is known to affect many species in South Africa the impact is likely to occur.		• The operational monitoring programme for the associated WEF site must be in line with the South African monitoring guidelines and must include regular monitoring of the grid connection power line and all new associated substations for electrocution (and collision) mortalities. Any mortalities should be reported to the Endangered Wildlife Trust (EWT).
	Indirect Impacts: Electrocution could affected regional bird populations and breeding success.	Low negative	As above.
	Cumulative Impacts: Approximately seven WEFs and their grid connections are in various stages of the EIA application process fall within this 50 km radius of the project site. Should most of these be constructed, a negative impact on birds could occur by potentially affecting the viability of regional populations, particularly those of the Verreaux's Eagle, Karoo Korhaan, Martial Eagle and Ludwig's Bustard.	Medium – High negative	If all proposed projects implement appropriate mitigation measures as well as post-construction monitoring programmes and share the information gained from these, then the overall significance of the discussed impacts may be reduced.
10	**Direct Impact:** Avifauna – Collisions with powerlines resulting in mortality, which may affect the viability of a population. Servitudes for the power lines will have to be cleared of excess vegetation at regular intervals. This is done to allow access to the power line for maintenance, to prevent vegetation from intruding into the prescribed clearance gap between the ground and the conductors, and to minimize the risk of fire under the line which can result in electrical flashovers. These and other maintenance activities can disturb sensitive species occurring on site.	Medium negative	• Where possible, grid infrastructure (within the WEF site) should not be constructed in High Sensitivity Zones. • Construction of grid infrastructure (within the WEF site) must consider avifaunal sensitivity zones and avoid areas of higher sensitivities where possible; • Construct new power lines close to existing power lines where possible. • An avifaunal specialist must conduct a site walk through of final Grid Connection route and pylon positions prior to construction to determine if, and where, bird flight diverters (BFDs) are required. • Install bird flight diverters as per the instructions of the specialist following the site walkthrough, which may

	Impact summary	Significance	Proposed mitigation
			include the need for modified BFDs fitted with solar powered LED lights on certain spans. • The operational monitoring programme for the associated WEF site must be in line with the South African monitoring guidelines and must include regular monitoring of the grid connection power line for collision (and electrocution) mortalities. Any mortalities should be reported to the Endangered Wildlife Trust (EWT).
	Indirect Impact: A negative impact could result in population viability should many birds of one species be affected.	Medium negative	As above.
	Cumulative Impacts: Approximately seven WEFs and their grid connections are in various stages of the EIA application process fall within this 50 km radius of the project site. Should most of these be constructed, a negative impact on birds could occur by potentially affecting the viability of regional populations, particularly those of the Verreaux's Eagle, Karoo Korhaan, Martial Eagle and Ludwig's Bustard.	Medium – High negative	If all proposed projects implement appropriate mitigation measures as well as post-construction monitoring programmes and share the information gained from these, then the overall significance of the discussed impacts may be reduced. Conducting a detailed cumulative impact assessment of all of these facilities together on a regional scale (which should include a population analysis of the regional Verreaux's Eagle population, as well as some level of collision risk modelling or predictions for this population) is beyond the scope of this particular specialist study. The specialist shall outside of the scope of this EIA, engage with the appropriate regional or national agency/ies in the context of strategic planning regarding the commissioning of such a report by these bodies. Confidence in the cumulative impact assessment is low (in the absence of such a regional study), the specialist notes that the project may proceed (should all recommendations and mitigation measures be implemented) prior to such a study being initiated. This is primarily due to the generally low numbers of priority species encountered on site and due to the

	Impact summary	Significance	Proposed mitigation
			low levels of flight activity, when compared with other regions worked in by the specialist.
11	**NO GO OPTION**		
	Direct impacts: No electricity would be supplied through means of renewable energy resources, rendering the proposed Komsberg West WEF unviable.	High negative	Other than implementing the proposal, or finding another means to transfer electricity, no other mitigation is proposed for these impacts.
	Indirect impacts: • This would have negative implications for the South African government in achieving its proposed renewable energy target, given the need for increased electricity generation; • No opportunity for additional employment and economic upliftment (permanent or temporary) in the local area where job creation is identified as a key priority; and • The national and local economic benefits associated with the proposed project's REIPPPP commitments and broader benefits to society (such as assisting in reducing carbon emissions and climate change) would not be realised.	High negative	As above.
	Cumulative impacts: Should a number of proposals not be implemented, none of the above listed positive impacts would occur, and these impacts would combine to increase in intensity.	High negative	As above.

5.1.4 Decommissioning and Closure Phase

No.	Impact summary	Significance after Mitigation	Proposed mitigation
Alternative 1 (preferred alternative)			
Activity: Decommissioning power line and associated infrastructure			
SOCIAL			
1	**Direct impacts:** Social - Loss of operational phase jobs and worker income.	Very Low negative.	• The proponent should ensure that retrenchment packages are provided for all staff retrenched;

			• All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning; • All disturbed areas should be rehabilitated on decommissioning. • The proponent should investigate the option of establishing an Environmental Rehabilitation Trust Fund to cover the costs of decommissioning and rehabilitation of disturbed areas. The Trust Fund should be funded by a percentage of the revenue generated from the sale of energy to the national grid over the 20 to 25 year operational life of the facility. The rationale for the establishment of a Rehabilitation Trust Fund is linked to the experiences in the mining sector in South Africa and their failure to allocate sufficient funds during operational phase to cover the costs of rehabilitation and closure. Alternatively, the funds from the sale of the transmission lines or towers as scrap metal should be allocated to the rehabilitation of the site
	Indirect impacts: Temporary creation of jobs in terms of workers required to decommission the infrastructure.	Low positive	None recommended.
	Cumulative impacts: None anticipated as the number of operational jobs would be low.		
VISUAL			
2	**Direct impacts:** Visual impacts of decommissioning the grid connection.	Low neutral	No mitigation recommended.
	Indirect impacts:	Medium – High positive	No mitigation recommended.

	Restoration of the visual character of the area. This would be a medium to high positive impact, considering that after 20-25 years of the infrastructure being in place, receptors are usually accustomed to it.		
	Cumulative impacts: Should a number of power lines be decommissioned, the above impact would be relevant, except on a larger scale.	Medium – High positive.	No mitigation recommended.
FAUNA AND FLORA			
3	**Direct impacts:** Fauna and Flora - Faunal impacts due to decommissioning-phase activities along the power line.	Low negative	• Any potentially dangerous fauna such snakes or fauna threatened by the decommissioning activities should be removed to a safe location. • All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill. • All vehicles accessing the site should adhere to a low speed limit (30km/h max) to avoid collisions with susceptible species such as snakes and tortoises. • All above-ground infrastructure should be removed from the site and disturbed areas rehabilitated.
	Indirect impacts: None anticipated.	Low negative	As above.
	Cumulative impacts: Construction phase disturbance will contribute towards faunal impacts in the area and the overall contribution would be moderate but transient.	Low negative	As above.
4	**Direct impacts:** Fauna and Flora - Following decommissioning, the site will be highly vulnerable to soil erosion	Low negative	• Any roads that will not be rehabilitated should have runoff control features which redirect water flow and dissipate any energy in the water which may pose an erosion risk. • There should be regular monitoring for erosion for at least 2 years after decommissioning to ensure that no erosion problems develop as result of the disturbance.

			• All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques. • All disturbed and cleared areas should be revegetated with indigenous perennial shrubs and grasses from the local area.
	Indirect impacts: Habitat loss and loss of vegetation.	Low negative	As above.
	Cumulative impacts: Erosion will contribute towards cumulative habitat loss and degradation in the area. If erosion is effectively controlled, then this contribution would be low.	Low negative	As above.
5	**Indirect impacts:** Fauna and Flora - Following decommissioning, disturbed areas along the power line route will be highly vulnerable to alien plant invasion.	Low negative	• Wherever excavation is necessary for decommissioning, topsoil should be set aside and replaced after construction to encourage natural regeneration of the local indigenous species. • Due to the disturbance at the site alien plant species are likely to be a long-term problem at the site following decommissioning and regular control will need to be implemented until a cover of indigenous species has returned. • Regular monitoring for alien plants within the disturbed areas. • Regular alien clearing should be conducted using the best-practice methods for the species concerned. The use of herbicides should be avoided as far as possible.
	Direct impacts: Habitat transformation, loss.	Low negative	As above.
	Cumulative impacts: Some transformation will occur and will contribute to cumulative transformation and habitat loss in the area. With mitigation this can be reduced to a low level.	Low negative	As above.
NO-GO OPTION			

5	**Direct impacts:** The impacts as listed above would not occur, including the possibility of job creation during decommissioning.	Low negative.	Other than implementing the proposal, or finding a different manner in which to transfer electricity from a renewable energy resource, there are no mitigation measures possible for this impact.
	Indirect impacts: Should the power lines not be decommissioned along with the proposed WEF, there would be a negative impact of the powerlines not being maintained as they are no longer in use and causing additional visual and waste impacts.	High negative	The no-go option is not a preferred option and the power lines must be decommissioned when they are no longer in use.
	Cumulative impacts: Should a number of power lines not be decommissioned, the above impact would be relevant, except on a larger scale.	High negative	As above.

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as **Appendix E.** Refer to **Appendix E.**

5.2 ENVIRONMENTAL IMPACT STATEMENT

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

This section provides a summary of the environmental assessment and conclusions drawn for the proposed construction of a 132kV overhead powerline which would connect the proposed Komsberg WEF to the national grid. The information presented here is based on the information gathered as part of the Basic assessment process and the knowledge gained by the environmental consultants during the course of the process.

Note that with the exception of visual impacts, the impacts are expected to be identical for both the alternative alignments.

Biophysical Environment

Fauna and Flora:

The area affected by the proposed Komsberg West Grid Connection is similar to the habitat found within the site for the proposed Komsberg West WEF and traverses rugged terrain on the way to the Komsberg Substation. There are no significant differences between the two alternatives and the differences are considered non-substantive, as they share the majority of their route. As such, there is no preferred alternative from an ecological perspective and both are considered to have a similar impact.

Although the footprint of the power line can be kept to a low level, it would generate some erosion risk after construction on the steep slopes it traverses. In addition, the power line traverses an area with a known population of Riverine Rabbits and construction-phase impacts on Riverine Rabbits will need to be monitored and mitigation implemented if necessary. The risks associated with the power line construction and operation can be mitigated to a low level and there are no impacts likely to be associated with the power line that cannot be mitigated to a low level.

Bats: The impact assessment concludes that, with the application of mitigation and best practice measures, the predicted levels of impact for most potential effects to bats would be **low**.

Avifauna:

Generally the proposed project is situated in an area with a moderate species richness, and the grid connection site does not appear to be overly sensitive in terms of avifauna. In the specialist's opinion, the Komsberg/Sutherland area appears to be a relatively good area for the placement of a WEF and its grid connection, as the abundance and activity of priority species is generally low.

Red Data species are present, and these species require protection. The species of most concern were identified as Verreaux's Eagle, Martial Eagle, Ludwig's Bustard and Karroo Korhaan. The developer must take into consideration the recommendations made regarding the sensitivity zones, no-go areas and all the mitigation measures described when designing the layout of the grid connection. Should these be implemented, the potential impacts are likely to be brought to a moderately significant level, and these would be acceptable.

Freshwater Ecology:
The proposed transmission lines have a limited impact on the aquatic environment as the proposed structures can avoid the delineated watercourses. The findings of this study noted no objection to the authorisation of any of the proposed activities.

No aquatic protected or species of special concern (flora) were observed during the site visit. Therefore, based on the site visit, the significance of the impacts assessed for the aquatic systems after mitigation would be **low negative**.

Social Environment

Agricultural Potential:
There are no high potential soils in the study area and very few medium potential soils. Every land type is dominated by rock and shallow lithosols (Mispah soil form), which have low to very low arable potential. The low rainfall in the area means that there is little potential for rain-fed arable agriculture in the area. Arable production would therefore be possible only by irrigation. In general, the soils are suited for extensive grazing at best and the grazing capacity of the area is very low. The prevailing potential of the soils for rain-fed cultivation throughout most of the area is low. Thus, the impact of the proposed power lines on agricultural potential, considering the farms are used for mainly pastoral agriculture, would be of **low negative or negligible** significance.

Noise:
The specialist noted that the increase in noise levels would be of **minor or low negative** significance.

Social:
Positive and negative social impacts are expected during all phases of the development. Impacts are generally expected be of low significance, and with mitigation positive impacts can be enhanced. The findings of the SIA indicate that the development of the proposed powerline would have a **positive** impact creating employment and business opportunities for the local economy, specifically during the construction phase.

The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the challenges created by climate change, represents a **positive** social benefit for society as a whole.

Visual: The 132kV grid connection powerlines for Komsberg West would have a visual impact **significance of medium**.

- Minor adjustments to the route alignment, avoiding peaks and other prominent topographic features, as indicated in the mitigations, could help to reduce the visual significance marginally. The preferred (southern) option for the switching station and line should be used as opposed to the northern alternative, as mentioned above.
- The construction phase of the grid connection would be short-term (<2 years) and would therefore have a potentially lower visual significance rating.

Heritage, Archaeology and Palaeontology:
Given that the grid connection will involve fairly light weight structures not requiring deep foundation conditions, the impacts to heritage will be surface only, and in all likelihood very few. This would apply to all alternatives. In terms of the information that has been collected, indications are that impacts to palaeontology may occur in mudstone areas. Impacts are not expected in the high dolerite areas. The impacts on palaeontology have the potential to be of **high to medium negative significance**, however

proper mitigation may result in a **low positive impact** which will derive knowledge from any finds in the area.

The impact of the grid connection on landscape quality will be **very low negative** or **neutral** impact. In many instances, there will be backdrop scenery which will help absorb the lines and substation. If lattice towers are used, the impact to the landscape will be tolerable.

No-go Alternative:
The no-go alternative is the option of not constructing this particular grid connection including substation, metering station and power line. Implementing the no-go alternative would result in no negative impacts occurring on the biophysical environment, such as the negative impact of vegetation clearing and habitat fragmentation. It would also mean that the commissioning of the proposed Komsberg West WEF (if authorized) would not be possible, as the WEF would not be able to connect to the national grid, rendering it redundant. Negative socio-economic impacts would result which would include:

- a loss of up to 275MW of power contribution to the national grid (national scale);
- no creation of job opportunities and skills transfer (regional and local scale);
- lost opportunity for contributing to the country's renewable energy commitments (national scale); and
- lost opportunities for the potential to create infrastructure synergy between grid connections and WEFs in the immediate area.

The option has been investigated and assessed by the specialists and could reduce the overall cumulative impacts of grid connections and WEFs in the region. A number of WEFs and their associated grid connections are proposed for this area.

The no-go alternative is not a preferred option.

Cumulative Impacts:
Should multiple power lines be constructed in the area (as a result of the implementation of additional WEFs), **medium -high negative** cumulative impacts associated with visual impact and sense of place would occur.

The establishment of this infrastructure alongside the infrastructure required for other renewable energy projects in the area also has the potential to create socio-economic opportunities for the LLM and KHLM, which, in turn, will result in a **positive** social benefit. The positive cumulative impacts include the creation of employment, skills development and training opportunities, creation of downstream business opportunities. This benefit is rated as **high positive** should all the recommended mitigation measures be implemented.

In terms of avifauna, there is a concern that the potential cumulative impacts of a number of WEFs and their associated grid connections could be of a medium to high negative significance overall.

Table 5-2 indicates a summary table of predicted impacts and significances before and after mitigation.

Table 5-2: Summary Table of Impacts and Significance.

No.	Impact	Significance Before Mitigation	Significance After Mitigation
1	**Agriculture:** Loss of agricultural land	L-	L-
2	**Agriculture:** Increased soil erosion hazard	M-	L-
3	**Fauna and Flora:** Impact on vegetation and listed plant species due to transformation within the development footprint.	M-	L-
4	**Fauna and Flora:** Direct faunal impacts due to construction phase noise and physical disturbance, including potential impact on Critically Endangered Riverine Rabbit.	M-	L-
5	**Fauna and Flora:** During construction, disturbed areas along the power line route will be highly vulnerable to soil erosion.	M-	L-
6	**Fauna and Flora:** Following construction, the site will be highly vulnerable to alien plant invasion.	M-	L-
7	**Fauna and Flora:** Faunal impacts due to decommissioning-phase activities along the power line.	M-	L-
8	**Fauna and Flora:** Following decommissioning, the site will be highly vulnerable to soil erosion	M-	L-
9	**Fauna and Flora:** Following decommissioning, disturbed areas along the power line route will be highly vulnerable to alien plant invasion.	M-	L-
10	**Bats:** Roost disturbance and/or destruction.	M-	(very) L-
11	**Bats:** Habitat modification.	L-	(very) L-
12	**Bats:** Mortality through collision with power lines.	L-	(very) L-
13	**Avifauna:** Construction Phase – loss of habitat	M-	L-
14	**Avifauna:** Construction Phase – disturbance and displacement.	M-	L-
15	**Avifauna:** Operation Phase – disturbance and displacement.	M-	L-
16	**Avifauna:** Operation Phase – electrocution	M-	L-
17	**Avifauna:** Operation Phase – collisions with powerlines	H-	L-
18	**Heritage:** Possibility of encountering unique fossils during excavation for turbine footings.	M-	M neutral/M+
19	**Heritage:** Displacement or destruction of archaeological material, structures or kraals.	L-	L neutral
20	**Heritage:** Alteration of sense of place, destruction of landscape quality	L-	Very L-
21	**Noise:** Noise levels associated with the construction of the overhead power line	L-	L-
22	**Noise:** Sound from the overhead powerlines.	L-	L-
23	**Social:** Creation of employment and business opportunities during the construction phase.	M+	H+

24	**Social:** Potential benefit for local farmers in terms of improving security on the farms in the area and also enabling local farmers to contact doctors etc. in the event of emergencies.	Neutral	L+
25	**Social:** Potential impacts on family structures and social networks associated with the presence of construction workers.	L-	L-
26	**Social:** Potential impacts on family structures, social networks and community services associated with the influx of job seekers.	L-	L-
27	**Social:** Potential risk to safety of farmers and farm workers, livestock and damage to farm infrastructure associated with the movement of construction workers on and to the site	M-	L-
28	**Social:** Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires.	M-	L-
29	**Social:** Potential dust and safety impacts and damage to road surfaces associated with movement of construction related traffic to and from the site.	M-	L-
30	**Social:** The activities associated with the construction phase, such as establishment of access roads and the construction camp, movement of heavy vehicles and preparation of foundations for the WEFs and power lines will damage farmlands and result in a loss of farmlands for grazing.	L-	L-
31	**Social:** Potential visual impact and impact on sense of place associated with power lines.	M-	L-
32	**Social:** Social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income.	M-	L-
33	**Visual:** Construction Phase	M to L-	M to L-
34	**Visual:** Operation Phase	M-	M-
35	**Visual:** Decommissioning Phase	L-	L-
36	**Aquatic Systems:** Indirect impact of possibility of erosion caused by surface water run-off.	L-	L-
37	**Solid Waste Generation**	L-	L-
38	**Soil Compaction**	L-	L-
39	**Surface and Groundwater Contamination**	L-	L-
40	**Traffic Impacts**	L-	L-

Conclusion:

The specialist studies have indicated that either of the alternatives proposed for the development of the 132kV power lines from the proposed Komsberg West WEF to the Eskom Main Transmission Sub-station would be acceptable from an environmental perspective. The location of the project site lies within the Renewable Energy Development Zone (REDZ), which are areas which the Council of Scientific and Industrial Research (CSIR) has identified as geographical areas best suited for the roll-out of wind (and solar) energy projects in South Africa. Cabinet approved the gazetting of eight REDZ

on the 17th February 2016.The identified areas are part of the strategic environmental assessment (SEA) that the CSIR is conducting for wind and solar energy, on behalf of the national DEA. No environmental fatal flaws have been identified, and should all the recommended mitigation measures be implemented by the applicant, it is anticipated that, overall, impacts would be of **low negative significance** (biophysical impacts) or of **medium positive significance** (social impacts such as fossil finds and social upliftment). With reference to the information provided at this stage of the project cycle, the confidence in the assessment is regarded as acceptable.

Consideration must be given to the fact that this proposal is dependent on the approval and construction of the proposed Komsberg West Wind Farm (separate EIA application), and should the latter not be approved, the likelihood of the need for this proposal for the Komsberg West Grid Connection may no longer be feasible nor necessary. The reason for the separation of the project components in terms of the EIA Process rests with the fact that the Environmental Authorisation for the proposed grid connection may become the property of Eskom, and would not be controlled by the applicant.

There are a number of applications for WEFs and grid connections in this region, and not all of these applications will be awarded preferred bidder status, nor will all be constructed. It is recommended that the Komsberg West grid connection be supported, subject to the implementation of the recommended mitigation measures and management actions contained in all the specialist reports.

6 SECTION E. RECOMMENDATION OF PRACTITIONER

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

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

N/A

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

Biophysical Environment

Fauna and Flora:

- Preconstruction walk-through of the power line route to ensure that sensitive habitats and species can be avoided.
- Ensure that lay-down and other temporary infrastructure is located within low sensitivity areas preferably previously transformed areas if possible.
- Minimise the development footprint as far as possible and rehabilitate disturbed areas that are no longer required by the operational phase of the development.
- If possible a permanent access road beneath the line should not be constructed. A veld track for construction and maintenance is however likely to be necessary.
- Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to. This includes awareness as to no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimizing wildlife interactions, remaining within demarcated construction areas etc.
- Demarcate all areas to be cleared with construction tape or similar material. However caution should be exercised to avoid using material that might entangle fauna.
- During construction any fauna directly threatened by the construction activities should be removed to a safe location by the ECO or other suitably qualified person.
- No fires should be allowed within the site as there is a risk of runaway veld fires.
- No fuelwood collection should be allowed on-site.
- No dogs should be allowed on site, apart from those of the landowners.
- If any parts of site such as construction camps must be lit at night, this should be done with low-UV type lights (such as most LEDs), which do not attract insects and which should be directed downwards.
- All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.
- All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises as well as the Riverine Rabbit. Speed limits should apply within the facility as well as on the public gravel access roads to the site.
- All personnel should undergo environmental induction with regards to fauna and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition.
- Runoff management and erosion control should be integrated into the project design.

- Some parts of the power line route are on steep slopes and specific avoidance and mitigation should be implemented in such areas to prevent erosion.
- Disturbance near to drainage lines should be avoided and sensitive drainage areas near to the construction activities should demarcated as no-go areas.
- Regular monitoring must occur for erosion problems along the access roads and other cleared areas.
- Erosion problems should be rectified on a regular basis.
- A low cover of vegetation should be left wherever possible within the construction footprint to bind the soil, prevent erosion and promote post-disturbance recovery of an indigenous ground cover.
- Erosion management at the site should take place according to the Erosion and Rehabilitation Plan.
- All roads should have runoff control features which redirect water flow and dissipate any energy in the water which may pose an erosion risk.
- Regular monitoring for erosion during operation to ensure that no erosion problems have developed as result of the disturbance.
- All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.
- Regular monitoring for alien plants within the development footprint as well as adjacent areas which receive runoff from the facility as there are also likely to be prone to invasion problems.
- Regular alien clearing should be conducted using the best-practice methods for the species concerned. The use of herbicides should be avoided as far as possible.
- Any potentially dangerous fauna such snakes or fauna threatened by the decommissioning activities should be removed to a safe location.
- There should be regular monitoring for erosion for at least 2 years after decommissioning to ensure that no erosion problems develop as result of the disturbance.
- All disturbed and cleared areas should be revegetated with indigenous perennial shrubs and grasses from the local area.
- Wherever excavation is necessary for decommissioning, topsoil should be set aside and replaced after construction to encourage natural regeneration of the local indigenous species.
- Due to the disturbance at the site alien plant species are likely to be a long-term problem at the site following decommissioning and regular control will need to be implemented until a cover of indigenous species has returned.

Bats:

- It may be possible to limit roost disturbance and abandonment by avoiding construction activities near roosts. These include trees, rocky crevices and buildings along the grid connection route.
- It is recommended that a bat specialist survey the confirmed grid connection route during the detailed design phase for the presence of roosts and fruit trees before any construction activities commence. This site walkthrough, covering the final road and power line routes, must identify any roosts/activity of sensitive species, as well as any additional sensitive habitats. The Egyptian rousette utilises the fruit of the following trees species: various species of fig, Cape ash, saffronwood, yellowwood, *Diospyros L.*, and *Syzygium R.Br. ex Gaertn*. The grid connection must be surveyed for the presence of these species.No construction activities with the potential to physically affect any bat roosts will be permitted without the express permission of a suitably qualified bat specialist following appropriate investigation and mitigation.

- A site-specific EMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted to reduce unnecessary destruction of habitat. All contractors are to adhere to the EMPr and should apply good environmental practice during construction.
- During construction, laydown areas and temporary access roads should be kept to a minimum in order to limit direct vegetation loss and habitat fragmentation, while designated no-go areas must be enforced i.e. no off-road driving.
- Following construction, rehabilitation of all areas disturbed (e.g. temporary access tracks and laydown areas) must be undertaken and a habitat restoration plan must be developed by a specialist and included within the EMPr.
-
- A no-go buffer zone of 500m, in which no construction activities may take place or no infrastructure is to be located within, must be applied around any cave roosts, potential roosts or fruit trees identified.
- The removal of vegetation must be limited as far as possible. A site-specific EMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted to reduce unnecessary destruction of habitat. All contractors are to adhere to the EMPr and should apply good environmental practice during construction.

Avifauna:

- A site specific EMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted to reduce unnecessary destruction of habitat. All contractors are to adhere to the EMPr and should apply good environmental practice during construction
- High traffic areas and buildings such as offices, batching plants, storage areas etc. should where possible be situated in areas that are already disturbed;
- Existing roads and farm tracks should be used where possible;
- The minimum footprint areas of infrastructure should be used wherever possible, including servitude widths and lengths;
- Where possible, grid infrastructure (within the WEF site) should not be constructed in High Sensitivity Zones;
- Construction of grid infrastructure (within the WEF site) must consider avifaunal sensitivity zones and avoid areas of higher sensitivities where possible;
- Environmental Control Officers to oversee activities and ensure that the site specific EMPr is implemented and enforced;
- Any clearing of stands of alien trees on site should be approved first by an avifaunal specialist.
- Following construction, rehabilitation of all areas disturbed (e.g. temporary access tracks and laydown areas) must be undertaken and to this end a habitat restoration plan is to be developed by a specialist and included within the EMPr.
- Beyond the WEF site, the grid connection route should, where possible, follow existing linear infrastructure such as roads and power lines, and should be constructed as close as practically possible to the existing infrastructure.
- Where possible the grid connection route must avoid sensitive areas such as wetlands, dams, rivers and cultivated lands.
- Prior to construction, the avifaunal specialist should conduct a site walkthrough, covering the final grid connection route and pylon locations, to identify any nests/breeding activity of sensitive species, as well as any additional sensitive habitats. The results of which may inform the final construction schedule, in close proximity to that specific area, including

abbreviating construction time, scheduling activities around avian breeding and/or movement schedules, and lowering levels of associated noise.

- A site specific Operational Environmental Management Plan (OEMP) (within the EMPr) must be implemented, which gives appropriate and detailed description of how operational and maintenance activities must be conducted to reduce unnecessary disturbance. All contractors are to adhere to the OEMP and should apply good environmental practice during all operations.
- Any grid connection power line/s must be of a design that minimizes electrocution risk by using adequately insulated 'bird friendly' monopole structures, with clearances between live components of 1.8 m or greater and which provide a safe bird perch.
- The operational monitoring programme for the associated WEF site must be in line with the South African monitoring guidelines and must include regular monitoring of the grid connection power line and all new associated substations for electrocution (and collision) mortalities. Any mortalities should be reported to the Endangered Wildlife Trust (EWT).
- Where possible, grid infrastructure (within the WEF site) should not be constructed in High Sensitivity Zones.
- Construction of grid infrastructure (within the WEF site) must consider avifaunal sensitivity zones and avoid areas of higher sensitivities where possible;
- Construct new power lines close to existing power lines where possible.
- An avifaunal specialist must conduct a site walk through of final grid connection route and pylon positions prior to construction to determine if, and where, bird flight diverters (BFDs) are required.
- Install bird flight diverters as per the instructions of the specialist following the site walkthrough, which may include the need for modified BFDs fitted with solar powered LED lights on certain spans.

Freshwater Ecology:

- Should any of the grid towers be located on steep slopes, adequate erosion protection should be installed to prevent any surface water run-off from eroding these areas.
- Transmission line towers to the grid should be placed outside of the watercourses (including all 32m buffers)

Social Environment

Agricultural Potential:

- Avoid any areas under cultivation (if any);
- Minimize vegetation removal to smallest possible footprint;
- Control possible runoff by using soil conservation and soil retention measures, especially on steep slopes;
- Store any removed topsoil for later use (contains indigenous seeds etc) and re-vegetate as soon as possible; and
- Once specific infrastructure sites are known, site-specific measures can be devised for implementation and any potentially high risk sites can be identified.

Social:

- The recruitment selection process for the training and skills development programme should seek to promote gender equality and the employment of women wherever possible.
- Before the construction phase commences, the proponent should meet with representatives from the LLM to establish the existence of a skills database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase.

- The local authorities and relevant community representatives should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.
- Where reasonable and practical the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.
- The proponent should liaise with the LLM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g. construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction contractors. These companies should be notified of the tender process and invited to bid for project-related work.
- Where possible, the proponent should assist local BBBEE companies to complete and submit the required tender forms and associated information.
- The LLM, in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.
- Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.
- The proponent and contractor (s) should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase;
- The contractor should provide transport to and from the site on a daily basis for low and semi-skilled construction workers. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site;
- The contractors should make the necessary arrangements to transport workers from other local towns in the area, such as Worcester and Paarl, home over weekends. This will reduce the risk posed to local family structures and social networks in Laingsburg and Sutherland;
- No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.
- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase proven to be associated with the construction activities for the WEF will be compensated for. The agreement should be signed before the construction phase commences;
- The contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties;
- The proponent should establish a Monitoring Forum that includes local farmers and develop a Code of Conduct for construction workers. This committee should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before the contractors move onto site;
- The proponent should hold contractors liable for compensating farmers in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities;

- The Environmental Management Programme (EMP) should outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested;
- The contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.
- The contractors appointed by the proponent must ensure that construction workers who are found guilty of trespassing, stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation;
- The housing of construction workers on the site should be strictly limited to security personnel.
- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase proven to be associated with the construction activities for the WEF will be compensated for. The agreement should be signed before the construction phase commences;
- Contractors should ensure that open fires on the site for cooking or heating are not allowed except in designated areas;
- The contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter months;
- The contractor should provide adequate firefighting equipment on-site;
- The contractor should provide fire-fighting training to selected construction staff;
- No construction staff, with the exception of security staff, to be accommodated on site over night;
- As per the conditions of the Code of Conduct, in the event of a fire proven to be caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage.
- The final selection of access roads should be discussed with the affected landowners.
- The contractor must ensure that damage caused by construction related traffic to local public and internal farm roads is repaired on a regular basis throughout the construction phase. The costs associated with the repair must be borne by the contractor. The maintenance for roads is the responsibility of the local district roads authority. In many instances, the local district roads authority lack the resources to maintain the local road network. In addition, due to legal restrictions, it is not possible for the contractor to repair damage to public roads. This can result in damage to roads not being repaired before the construction phase is completed. This is an issue that should be addressed with the local district roads authority prior to the commencement of the construction phase;
- As far as possible, the transport of any large components to the site along the N1 should be planned to avoid weekends and holiday periods;
- Laydown and construction areas should be clearly defined. No vehicles or activities should be permitted outside of these areas;
- Movement of vehicles on the site must be confined to access roads. No vehicles should be allowed to drive into the veld;
- The contractor must ensure that all construction vehicles adhere to speed limits and vehicles used to transport sand and building materials must be fitted with tarpaulins or covers;
- All workers should receive training/ briefing on the reasons for and importance of closing farm gates and driving slowly;

- All vehicles must be road-worthy and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits;
- The Contractor should ensure that workers are informed that no waste can be thrown out of the windows while being transported to and from the site. Workers who throw waste out windows should be fined;
- The Contractor should be required to collect waste along the road reserve on a weekly basis;
- Waste generated during the construction phase should be transported to the local landfill site;
- EMP measures (and penalties) should be implemented to ensure farm gates are closed at all times;
- EMP measures (and penalties) should be implemented to ensure speed limits are adhered to at all times.
- The location of access roads, laydown areas etc. should be informed by the findings of key specialist studies, including the soil and botanical studies;
- The location of access roads, laydown areas etc. should be discussed with the locally affected landowners in the finalisation process and inputs provided should be implemented in the layout subject to practicality and cost;
- The footprint areas for the pylons should be clearly demarcated prior to commencement of construction activities. All construction related activities should be confined to the demarcated area and minimised where possible. No vehicles or activities should be permitted outside of these areas;
- An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase;
- All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop areas etc., should be rehabilitated at the end of the construction phase. The rehabilitation plan should be informed by input from a botanist with experience in arid regions;
- The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed;
- The implementation of a Rehabilitation Programme should be monitored by the ECO;
- All workers should receive training/ briefing on the reasons for and importance of not driving in undesignated areas;
- Disturbance footprints should be reduced to the minimum.
- The proponent should ensure that retrenchment packages are provided for all staff retrenched when the WEF is decommissioned;
- All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning;
- All disturbed areas should be rehabilitated on decommissioning.
- The proponent should investigate the option of establishing an Environmental Rehabilitation Trust Fund to cover the costs of decommissioning and rehabilitation of disturbed areas. The Trust Fund should be funded by a percentage of the revenue generated from the sale of energy to the national grid over the 20 to 25 year operational life of the facility. The rationale for the establishment of a Rehabilitation Trust Fund is linked to the experiences in the mining sector in South Africa and their failure to allocate sufficient funds during operational phase to cover the costs of rehabilitation and closure. Alternatively, the funds from the sale of the transmission lines or towers as scrap metal should be allocated to the rehabilitation of the site.

Noise:

- The power lines must be further than 100m from any receptor.

Visual:

- Avoid visually sensitive skylines, such as peaks, scarp edges and other prominent elevations, as well as drainage courses, in the siting of powerlines.
- Avoid slopes steeper than 1:5 gradient, where possible, these being highly sensitive.
- Apply setbacks to pylons, similar but smaller than those for wind turbines documented in this BAR.
- Locate internal reticulation connecting powerlines below ground where possible, particularly on visually exposed ridges (in areas of shallow bedrock, powerlines could be covered with overburden).
- Locate powerline trenches ideally on the same alignment as access roads to minimise disturbance.
- Rehabilitate disturbed areas with indigenous vegetation after construction.

Heritage, Archaeology and Palaeontology:

- Safeguarding of chance fossil finds (preferably in situ) during the construction phase by the responsible ECO, followed by reporting of finds to Heritage Western Cape / SAHRA.
- Recording and judicious sampling of significant chance fossil finds by a qualified palaeontologist, together with pertinent contextual data (stratigraphy, sedimentology, taphonomy) within the final footprint.
- Curation of fossil material within an approved repository (museum / university fossil collection) by a qualified palaeontologist.
- Do not disturb and old stone kraals or ruins, do not remove stone from walls, or artefacts from the earth or earth surface.
- Avoid farm yards and buildings (none in the alignment).
- Report any chance discoveries of human remains to an archaeologist or a heritage authority.
- Avoid farmsteads and structures (at least 400 m buffer).
- Consider using a lattice tower form as these are visually more permeable, and at a distance are almost invisible against a backdrop. Monopoles would also be acceptable.

Is an EMPr attached?	**YES**

The EMPr must be attached as **Volume 3**.

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 F**.

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

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

Emily Herschell Pr. Sci. Nat

NAME OF EAP

SIGNATURE OF EAP

16-03-2016

DATE

7 SECTION F: APPENDICES