GRID CONNECTION INFRASTRUCTURE, INCLUDING 132KV OVERHEAD POWER LINE, SWITCHING STATION AND ANCILLARIES FOR THE GREAT KAROO WIND FARM, NORTHERN CAPE PROVINCE

Basic Assessment Report

November 2020

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PROJECT DETAILS

Title	:	Grid connection infrastructure including 132kV overhead power line, switching station and ancillaries for the Great Karoo wind farm, Northern Cape Province
Authors	:	Savannah Environmental (Pty) Ltd Lisa Opperman Gideon Raath Jo-Anne Thomas
Client	:	Great Karoo Wind Energy Facility (Pty) Ltd
Report Revision	:	Draft for public review
Date	:	November 2020

When used as a reference this report should be cited as: Savannah Environmental (2020). Basic Assessment Report for grid connection infrastructure including 132kV overhead power line, switching station and ancillaries for the Great Karoo wind farm, Northern Cape Province.

PURPOSE OF THE BASIC ASSESSMENT REPORT AND INVITATION TO COMMENT

Great Karoo Wind Energy Facility (Pty) Ltd has appointed Savannah Environmental as the independent environmental consultant to undertake the Basic Assessment (BA) for the grid connection infrastructure including 132kV overhead power line, switching station and ancillaries for the Great Karoo wind farm, Northern Cape Province. The BA process is being undertaken in accordance with the requirements of the 2014 EIA Regulations promulgated in terms of the National Environmental Management Act (NEMA; Act No. 107 of 1998).

This Basic Assessment (BA) report has been compiled in accordance with Appendix 1 of the EIA Regulations, 2014 (as amended) and consists of the following sections:

- **Chapter 1** provides background to the proposed project and the BA process.
- **Chapter 2** provides a description of the proposed development, the identified and assessed project alternatives and the need and desirability of the project.
- **Chapter 3** outlines the approach to undertaking the BA process and the strategic regulatory and legal context for energy planning in South Africa, specifically relating to the grid connection infrastructure for the Great Karoo Wind Farm.
- **Chapter 4** describes the approach to undertaking the basic assessment process, the legal requirements as per the EIA regulations and the relevant legislative permitting requirements.
- **Chapter 5** provides a description of the existing biophysical, regional, and social environment within and surrounding the assessed grid connection corridor.
- **Chapter 6** provides an assessment of the potential impacts and cumulative impacts associated with the proposed development and presents recommendations for the mitigation of significant impacts.
- **Chapter 7** presents the conclusions and recommendations based on the findings of the BA Report.
- **Chapter 8** provides the references used in the compilation of the BA Report

The BA report is available for download and review from **Tuesday, 3rd of November until Thursday, 3rd of December 2020** on the Savannah Environmental website: https://www.savannahsa.com/public-documents/grid-infrastructure/great-karoo-wef-grid-connection/

To obtain further information and register on the project database, please submit your name, contact information and interest in the project in writing to:

Please submit your comments by **Thursday, 3rd of December 2020** to:
Nicolene Venter PO Box 148, Sunninghill, 2157 Tel: 011-656-3237 Fax: 086-684-0547 Email: publicprocess@savannahsa.com

Comments can be made as written submission via fax, post or email.

EXECUTIVE SUMMARY

Great Karoo Wind Farm (Pty) Ltd proposes the development of specific grid connection infrastructure required to connect and evacuate the generated power of the authorised Great Karoo Wind Farm (DEFF Ref 12/12/20/2370/3) to the national electricity grid. Following consultation with Eskom, it has been confirmed that the Great Karoo Wind Farm must connect to the Hidden Valley substation located at the Karusa Wind Farm (currently under construction). The project is located ~44km south of Sutherland and ~50km north of Matjiesfontein within the Northern Cape Province and falls within the Namakwa District Municipality and the Karoo Hoogland Local Municipality.

The grid connection infrastructure (Figure 1) required includes a switching station (up to 100m x 100m) to be developed adjacent to the authorised Great Karoo Wind Farm substation. A 132kV double- or single-circuit overhead power line, with a length of up to 14km, will connect the proposed switching station to the Eskom Hidden Valley substation. A corridor of 300m has been identified for the power line and a 500m study area for the switching station, which is collectively referred to as the grid connection corridor. The proposed infrastructure will be appropriately placed within the respective power line corridor and switching station study area through consideration and avoidance of environmental sensitivities and other energy infrastructure on the affected properties. The pylon structures of the power line will be up to 32m high and the power line will be developed within the servitude of up to 40m wide.

The grid connection corridor is located within the Karoo Hoogland Local Municipality and the Namakwa District Municipality (DC6) and traverses the following three (3) affected properties:

- The Farm Kentucky No. 206;
- RE Portion 1 of the Farm Orange Fontein No. 203; and
- The Farm De Hoop No. 202.

The entire extent of the corridor is located within the Komsberg Renewable Energy Development Zone (REDZ) and within the central corridor of the Strategic Transmission Corridors. Access to the grid connection corridor is possible via numerous existing smaller farm roads in close proximity to the corridor, primarily off the Regional 354 (R354) tarred road running between the towns of Matjiesfontein and Sutherland. During construction, a service track along the length of the power line servitude of up to 6m wide will be established to allow for large crane movement. This track will be rehabilitated following the construction phase to a typical 'jeep' track (i.e. off-road track) for use during operation. Formal roads will therefore not be constructed underneath the power line for maintenance purposes. However, where the power line traverses drainage lines, road crossing infrastructure (e.g. culverts) may be developed within the drainage line. The switching station will be accessed via the already authorised access road to the Great Karoo Wind Farm substation. Other associated infrastructure includes temporary laydown area/s that will be rehabilitated upon completion of the construction phase.

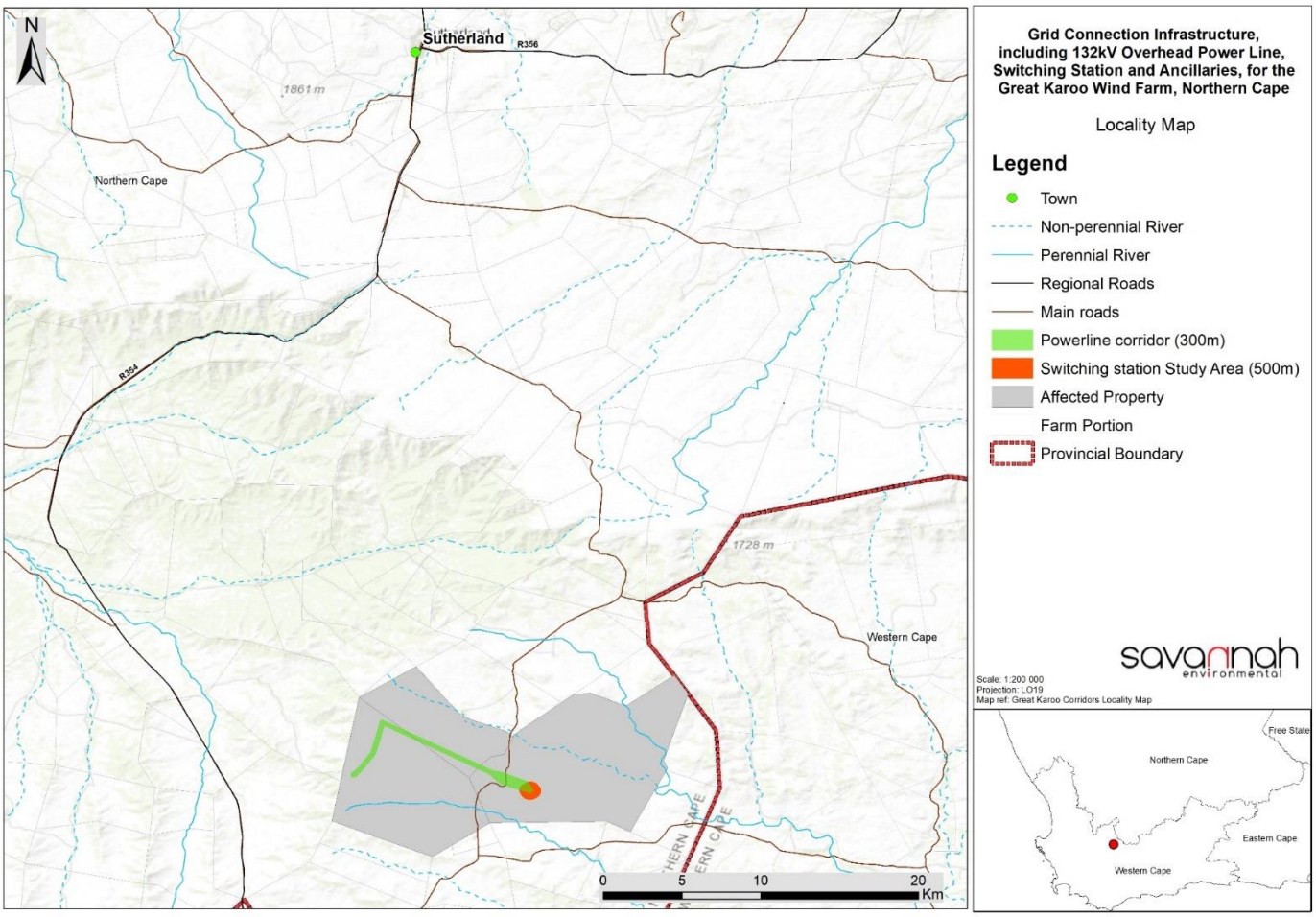

Figure 1. Locality map showing the grid connection corridor for the authorised Great Karoo Wind Farm.

No environmental fatal flaws or impacts of high significance were identified in the detailed specialist studies conducted, and no impacts of unacceptable significance are expected to occur with the implementation of the recommended mitigation measures. These measures include, amongst others, the avoidance of sensitive features as specified by the specialists. The specialist conclusions associated with the proposed project are summarised as follows:

Biodiversity Impacts

The main expected biodiversity impacts of the proposed OHL and Switching Station will include the following:

- habitat loss and fragmentation;
- degradation of surrounding habitat; and
- disturbance and displacement caused during the construction and maintenance phases.

Bearing in mind that the Great Karoo Wind Farm has already received authorisation, and the proposed grid connection infrastructure is a necessity for the distribution of energy, development may proceed from a biodiversity perspective. The OHL routing traverses the authorised Great Karoo, Karusa and Soetwater Wind Farms. The latter two are under construction and therefore the OHL is not a new disturbance in the landscape However, considering that the corridor has been identified as being of significance for biodiversity maintenance and ecological processes (CBAs and NPAES focus area), the specialist has recommended that development only proceed with the implementation of mitigation measures as

described in the specialist assessment (also detailed in the impact assessment). Development anywhere within the grid connection corridor assessed is deemed acceptable from a biodiversity perspective.

Avifauna Impacts

The main expected avifaunal impacts of the proposed OHL and Switching Station will include the following:

- habitat loss and fragmentation;
- degradation of surrounding habitat;
- disturbance and displacement caused during the construction and maintenance phases;
- collisions with powerlines; and
- electrocution by powerlines.

Mitigation measures as described in the avifaunal specialist report can be implemented to reduce the significance of the risk but there is still a possibility of collision by large non-passerine avifauna species. Considering that this area that has been identified as being of significance for biodiversity maintenance and ecological processes (CBAs and NPAES focus area), development may proceed but with caution and only with the implementation of the mitigation measures provided for by the avifaunal specialist (also detailed in the impacts chapter of this Basic Assessment report).

Furthermore, the proposed Great Karoo OHL will be wholly located within 3 wind farms and will run adjacent to an existing (under construction) 132kV OHL for a portion of the line. These factors may ameliorate the impact of the GK OHL and therefore, regarded as fairly "minor" in the context of the surrounding infrastructure). The specialist concluded that the grid connection infrastructure can be located anywhere within the assessed grid connection corridor, subject to adherence to the specified no-go areas (refer section 6.8), and the implementation of the recommended mitigation measures.

Impacts on Heritage Resources

Based on the information available from heritage assessments previously conducted in the area proposed for development, the proposed development of the OHL and switching station for the Great Karoo WEF is unlikely to negatively impact significant archaeological, built environment and palaeontological heritage as long as the recommendations contained in Booth (2012) and Rossouw (2012)(detailed below in this impact assessment) are implemented. From a heritage perspective, the proposed OHL and switching station can be located anywhere within the 500m area and 300-750m corridor assessed in the heritage specialist report. The following heritage impacts were determined by the heritage impact assessment.

Impacts on soils and land capability

It is the specialist's conclusion that the assessment corridor is not associated with any arable soils, due to the type of soil, the slope of some of the areas as well as the climate, which in itself limits crop production significantly. The land capabilities associated with the assessment corridor are only suitable to grazing, which ties in with the current land use. The specialist therefore determined that the proposed development will have negligible impact on the agricultural production ability of the land. Therefore, the proposed development of the powerline and the substation may be favourably considered from a soil and agricultural conservation perspective. It is also worth noting that no high sensitive land capabilities are located within the 50 m regulated area. Accordingly, the specialist found that the proposed grid connection infrastructure may be located anywhere within the assessed corridor.

Cumulative Impacts

Based on the specialist cumulative assessment and findings, it can be concluded that the contribution of the project to cumulative impacts will be of a low to moderate significance depending on the impact being considered. There are no impacts or risks identified to be of a high significance or considered as unacceptable with the development of the proposed development. In addition, no impacts that will result in whole-scale change are expected to occur. The anticipated cumulative impact of the project is therefore deemed acceptable.

Environmental Sensitivity of the Assessed Grid Connection Corridor

From the specialist investigations undertaken for the grid connection infrastructure, sensitive areas/environmental features have been identified and demarcated within the grid connection corridor, which were discussed in further detail in Chapter 6 and 7. A summary is provided below:

- Avifaunal mitigation priority areas: The fine-scale avifauna habitats were categorised from 'Low mitigation priority' to 'Very High mitigation priority', with 'Very High mitigation priority' areas requiring stringent mitigation measures and 'Low mitigation priority" areas not of concern or requiring minimum mitigation measures. Generally, lowland areas and rocky slopes were assigned a 'Moderate' category as they were typically dominated by small passerine species. However, where threatened or priority species occurred or displayed breeding behaviour, these areas were categorised as a 'Very High' mitigation priority. Drainage lines are likely to be used as flyways, especially by heavy-bodied waterfowl, and therefore were assigned a 'High' priority category. It is important to note that the avifaunal mitigation priority areas are not considered by the specialist to be no-go areas, but rather areas where stringent mitigation must be applied, as detailed in the avifaunal impact assessment.
- Biodiversity Sensitivity: Four different habitat types were delineated within the assessment and allocated a sensitivity category based on the criteria determined by the specialist. Ridges and Rocky Slope spatially varied in their sensitivity. Ridges were allocated a 'high' sensitivity as they were the source points for drainage lines as well as their uniqueness within the landscape. Rocky slopes were generally assigned a 'moderate' sensitivity, except where they formed the source point of drainage lines and were accordingly assigned a 'high' sensitivity. Please note, the specialist report indicates that areas of high sensitivity are not regarded as no-go's or exclusion zones, and therefore provided the mitigation measures supplied are applied by the proponent, development may proceed within these regions.
- Heritage: One heritage feature was found on site for the Soetwater OHL corridor, which is shared partially by this proposed development corridor. A no-go buffer of 35m was determined for this feature with no other heritage sensitivities assigned by the specialist.
- Land use capability: The agricultural compliance statement confirmed the regional sensitivity moderate sensitivity as per the DEA screening tool results, however concluded that the proposed development will have a negligible impact on the agricultural production of the land.

Buffer zones, no-go zones or exclusion zones

The heritage specialist has indicated that the measures required by SAHRA for the feature relating to Soetwater should also apply to that of this project, and so a 35m conservation buffer, deemed as a no-go

for any project related infrastructure, is deemed appropriate for this heritage feature. Please refer to Figure 5.18 and Figure 6.2 for the location of the feature along the grid connection corridor and as well as the 35m no-go buffer.

In addition, the avifaunal specialist determined a 50m no-go buffer to apply around the Bubo africanus (Spotted-Eagle Owl) nest, in addition to a 100m pylon (for the power line) exclusion zone. Power line pylons are therefore to be excluded within 100m from the Spotted-Eagle Owl nest. Where possible, the specialist further recommended a 200m best-practice region for power line pylons, however, did not determine the 200m buffer to be a no-go.

No other exclusion zones, buffer zones or no-go zones were determined for the proposed development.

Figure 2 and 3 below provides an environmental sensitivity map of the grid connection corridor assessed as part of the BA process, as well as the environmental sensitivities identified, and the no-go/exclusion zones determined by the specialists.

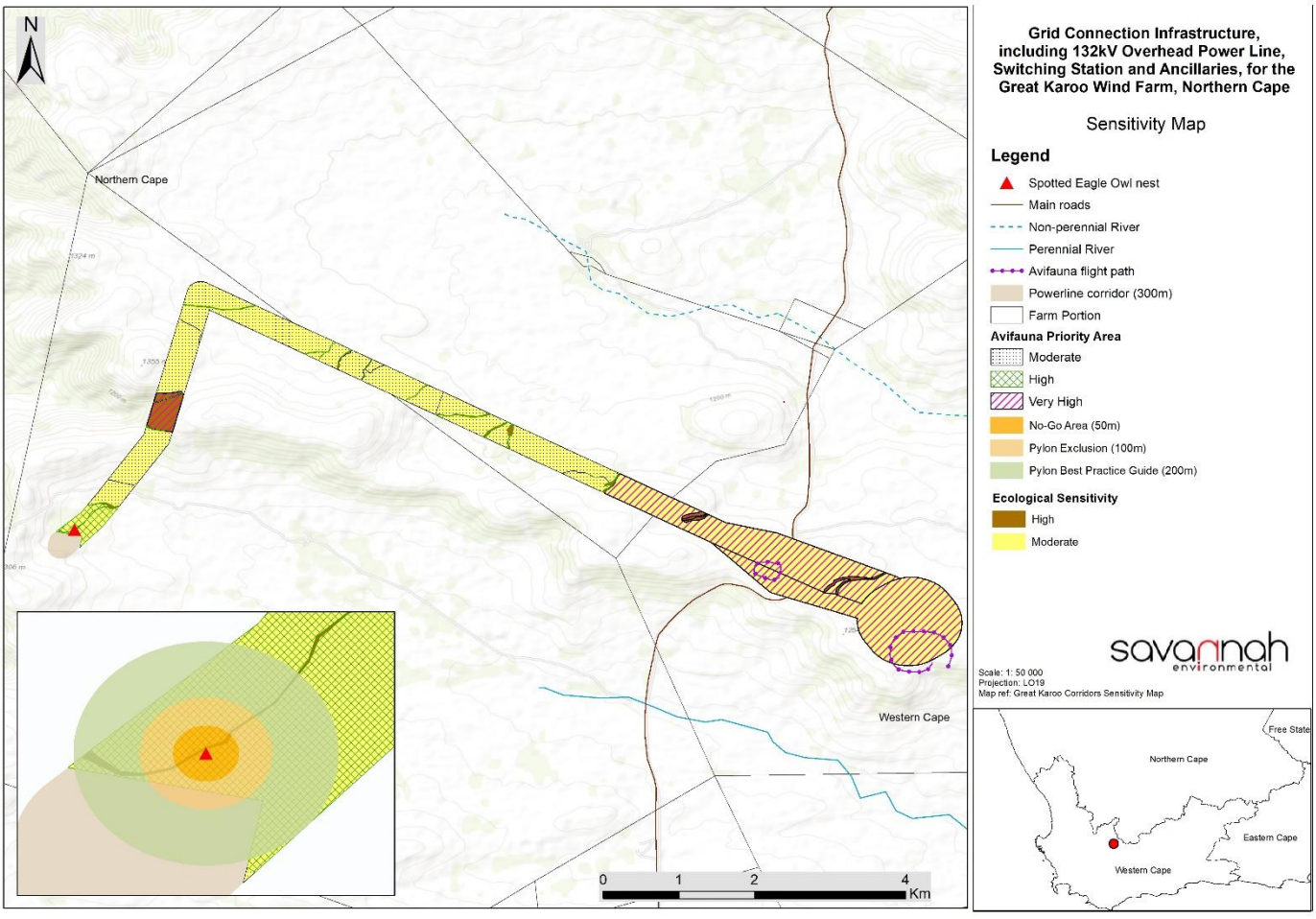

Figure 2. Biodiversity sensitivity map and avifaunal mitigation priority areas for the grid connection corridor.

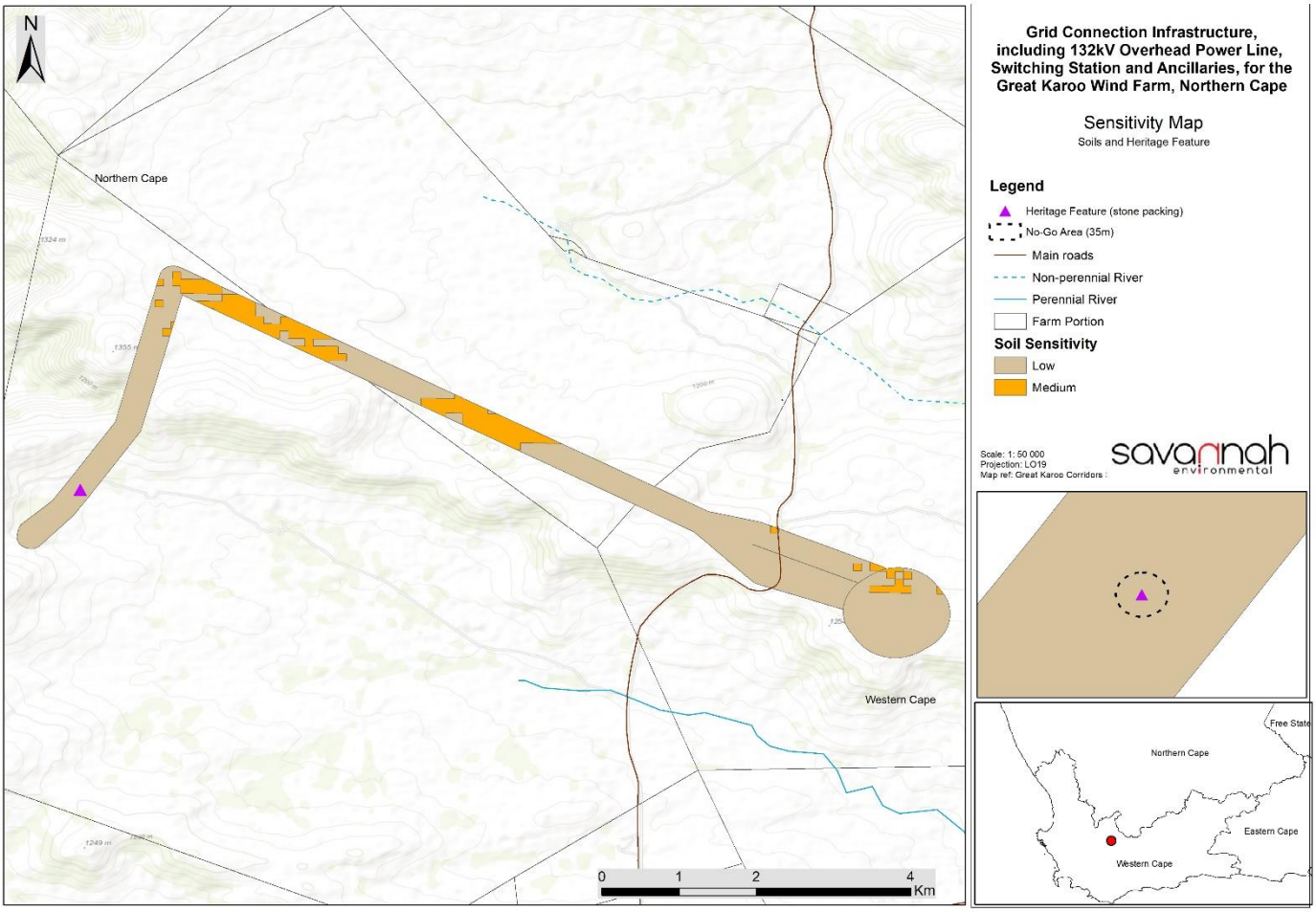

Figure 3. Land capability sensitivity map and heritage feature within the grid connection corridor.

Through the assessment of the proposed development it can be concluded that the proposed project is environmentally acceptable (subject to the implementation of the recommended mitigation measures and adherence to the specialist specified exclusion zones) with no unacceptable impact significance of whole-scale change.

DEFINITIONS AND TERMINOLOGY

Alternatives: Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives July include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.

Commence: The start of any physical activity, including site preparation and any other activity on site furtherance of a listed activity or specified activity, but does not include any activity required for the purposes of an investigation or feasibility study as long as such investigation or feasibility study does not constitute a listed activity or specified activity.

Commissioning: Commissioning commences once construction is completed. Commissioning covers all activities including testing after all components of the wind turbine are installed.

Construction: Construction means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity. Construction begins with any activity which requires Environmental Authorisation.

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 (e.g. discharges of nutrients and heated water to a river that combine to cause algal bloom and subsequent loss of dissolved oxygen that is greater than the additive impacts of each pollutant). Cumulative impacts can occur from the collective impacts of individual minor actions over a period and can include both direct and indirect impacts.

Decommissioning: To take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned. This usually occurs at the end of the life of a facility.

Direct impacts: Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation, or maintenance of an activity and are generally obvious and quantifiable.

'Do nothing' alternative: The 'do nothing' alternative 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.

Endangered species: Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

Emergency: An undesired/ unplanned event that results in a significant environmental impact and requires the notification of the relevant statutory body, such as a local authority.

Endemic: An "endemic" is a species that grows in a particular area (is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.

Environment: the surroundings within which humans exist and that are made up of:

i. The land, water and atmosphere of the earth;
ii. Micro-organisms, plant and animal life;
iii. Any part or combination of (i) and (ii) and the interrelationships among and between them; and
iv. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental impact: An action or series of actions that have an effect on the environment.

Environmental management: Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

Environmental management programme: An operational plan 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.

Heritage: That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act of 2000).

Indigenous: All biological organisms that occurred naturally within the study area prior to 1800.

Indirect impacts: Indirect or induced changes that July occur because of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place because of the activity.

Interested and affected party: Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups, and the public.

Method statement: A written submission to the ECO and the site manager (or engineer) by the EPC Contractor in collaboration with his/her EO.

Mitigation hierarchy: The mitigation hierarchy is a framework for managing risks and potential impacts related to biodiversity and ecosystem services. The mitigation hierarchy is used when planning and implementing development projects, to provide a logical and effective approach to protecting and conserving biodiversity and maintaining important ecosystem services. It is a tool to aid in the sustainable management of living, natural resources, which provides a mechanism for making explicit decisions that balance conservation needs with development priorities

No-go areas: Areas of environmental sensitivity that should not be impacted on or utilised during the development of a project as identified in any environmental reports.

Pollution: A change in the environment caused by substances (radio-active or other waves, noise, odours, dust or heat emitted from any activity, including the storage or treatment or waste or substances.

Pre-construction: The period prior to the commencement of construction, this July include activities which do not require Environmental Authorisation (e.g. geotechnical surveys).

Rare species: Taxa with small world populations that are not at present Endangered or Vulnerable but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare."

Red data species: Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).

Significant impact: An impact that by its magnitude, duration, intensity, or probability of occurrence July have a notable effect on one or more aspects of the environment

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1. INTRODUCTION

Great Karoo Wind Farm (Pty) Ltd proposes the development of specific grid connection infrastructure required to connect and evacuate the generated power of the authorised Great Karoo Wind Farm (DEFF Ref 12/12/20/2370/3) to the national electricity grid. Following consultation with Eskom, it has been confirmed that the Great Karoo Wind Farm must connect to the Hidden Valley substation located at the Karusa Wind Farm (currently under construction). The project is located ~44km south of Sutherland and ~50km north of Matjiesfontein within the Northern Cape Province and falls within the Namakwa District Municipality and the Karoo Hoogland Local Municipality.

1.1. Requirements for an Environmental Impact Assessment Process

The construction and operation of the grid connection infrastructure for the Great Karoo Wind Farm is subject to the requirements of the EIA Regulations, 2014 (as amended), published in terms of Section 24(5) of the National Environmental Management Act (NEMA) 107 of 1998. NEMA is the national legislation that provides for the authorisation of certain controlled activities known as "listed activities". In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed, and reported on to the Competent Authority (the decision-maker) charged by NEMA with granting of the relevant environmental authorisation.

The main listed activity triggered by the proposed project is Activity 11(i) of Listing Notice 1 (GNR 327 of the EIA Regulations, 2014 (as amended)), which relates to the development of facilities or infrastructure for the transmission and distribution of electricity outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts. As a result, a Basic Assessment process must be undertaken in support of an application for Environmental Authorisation.

In terms of GNR 779 of 01 July 2016, the national Department of Environment, Forestry and Fisheries (DEFF) has been determined as the Competent Authority (CA) for all projects which relate to the Integrated Resource Plan for Electricity (IRP) 2010 – 2030, and any updates thereto. As this project is associated with a renewable energy development intended to form part of the country's national energy supply (which is included in the IRP), the DEFF is considered as the CA. Through the decision-making process, the DEFF will be supported by the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform as the commenting authority.

1.2. Legal Requirements as per the EIA Regulations, 2014 (as amended)

This Basic Assessment Report (BAR) has been prepared in accordance with the requirements of the EIA Regulations published on 08 December 2014 (as amended in April 2017) promulgated in terms of Chapter 5 of the National Environmental Management Act (Act No 107 of 1998).

This chapter of the BAR Report includes the following information required () in terms of the EIA Regulations - Appendix 1: Content of Basic Assessment Reports:

Requirement	Relevant Section
3(a) the details of the (i) EAP who prepared the report and (ii) the expertise of the EAP, including a curriculum vitae.	The details of the EAP who prepared the report and the expertise of the EAP is included in section 1.4. The

Requirement	Relevant Section
	curriculum vitae of the EAP, project team and independent specialists are included in **Appendix A**.
3(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 and (iii) where the required information in items (i) and (ii) is not available, the co-ordinates of the boundary of the property or properties.	The location of the grid connection corridor, within which the grid connection infrastructure is proposed, is included in section 1.3, **Table 1.1** and Figure 1.1. The information provided includes the 21-digit Surveyor General code of the affected properties and the farm names. Additional information is also provided regarding the location of the development which includes the relevant province, local and district municipalities, ward and current land zoning.

This Basic Assessment (BA) report has been compiled in accordance with Appendix 1 of the EIA Regulations, 2014 (as amended) and consists of the following sections:

- **Chapter 1** provides background to the proposed project and the BA process.
- **Chapter 2** provides a description of the proposed development, the identified and assessed project alternatives and the need and desirability of the project.
- **Chapter 3** outlines strategic regulatory and legal context for energy planning in South Africa, specifically relating to the grid connection infrastructure for the Great Karoo Wind Farm.
- **Chapter 4** describes the approach to undertaking the basic assessment process, the legal requirements as per the EIA regulations and the relevant legislative permitting requirements.
- **Chapter 5** provides a description of the existing biophysical, regional, and social environment within and surrounding the assessed grid connection corridor.
- **Chapter 6** provides an assessment of the potential impacts and cumulative impacts associated with the proposed development and presents recommendations for the mitigation of significant impacts.
- **Chapter 7** presents the conclusions and recommendations based on the findings of the BA Report.
- **Chapter 8** provides the references used in the compilation of the BA Report.

1.3. Project overview

The grid connection infrastructure (Figure 1.1) required includes a switching station (up to 100m x 100m) to be developed adjacent to the authorised Great Karoo Wind Farm substation. A 132kV double- or single-circuit overhead power line, with a length of up to 14km, will connect the proposed switching station to the Eskom Hidden Valley substation. A corridor of 300m has been identified for the power line and a 500m study area for the switching station, which is collectively referred to as the grid connection corridor. The proposed infrastructure will be appropriately placed within the respective power line corridor and switching station study area through consideration and avoidance of environmental sensitivities and other energy infrastructure on the affected properties. The pylon structures of the power line will be up to 32m high and the power line will be developed within the servitude of up to 40m wide.

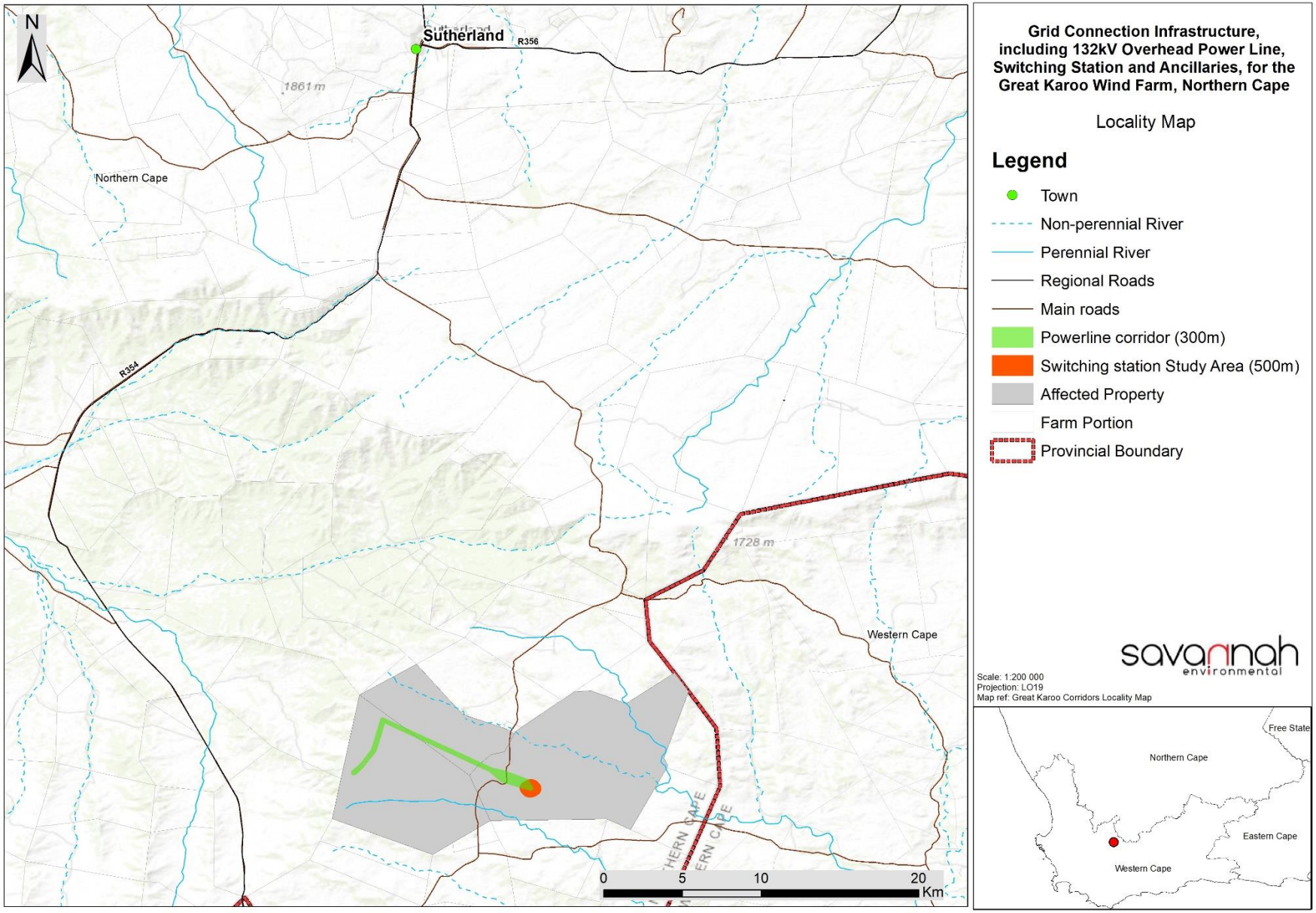

Figure 1.1. Locality map showing the grid connection corridor for the authorised Great Karoo Wind Farm.

The development of grid connection infrastructure supports the identified objectives of the national and provincial government, and local and district municipalities to develop renewable energy facilities for power generation purposes. The grid connection corridor is located within the Komsberg Renewable Energy Development Zone (REDZ) and within the Central corridor of the Strategic Transmission Corridors. From a regional perspective, this area is considered favourable for the development of the proposed grid connection infrastructure.

The nature and extent of the proposed grid connection infrastructure, as well as the potential environmental impacts associated with the construction, operation and decommissioning phases of the proposed infrastructure are assessed in this Basic Assessment Report. Site specific environmental issues and constraints within the grid connection corridor are considered within independent specialist studies in order to test the environmental suitability of the corridor for the proposed project, delineate areas of sensitivity within the corridor, and ultimately inform the placement of the grid connection infrastructure within the grid connection corridor.

Table 1.1 provides a summary of the location of the grid connection corridor. Specific details of the grid connection infrastructure are included within section 2.2.

Table 1.1. Details of the location of the grid connection corridor

Province	Northern Cape Province
District Municipality	Namakwa District Municipality (DC6)
Local Municipality	Karoo Hoogland Municipality
Ward number(s)	3
Nearest town(s)	Sutherland (+/- 44km) and Matjiesfontein (+/- 50km)
Affected Properties: Farm name(s), number(s) and portion numbers	**Grid Connection Corridor:** » Farm Kentucky 206; » RE Portion 1 of the Farm Orange Fontein No. 203; and » Farm De Hoop 202.
SG 21 Digit Code (s): Affected Properties	**Grid Connection Corridor:** » Farm Kentucky 206 - C07200000000020600000 » RE Portion 1 of the Farm Orange Fontein 203 - C07200000000020300001 » Farm De Hoop 202 - C07200000000020200000

1.4. Details of the Environmental Assessment Practitioner and Expertise to conduct the BA process

In accordance with Regulation 12 of the 2014 EIA Regulations (GNR 326), Great Karoo Wind Farm (Pty) Ltd has appointed Savannah Environmental (Pty) Ltd (Savannah Environmental) as the independent Environmental Assessment consultant to undertake the Basic Assessment and prepare the BA Report for the grid connection infrastructure for the authorised Great Karoo Wind Farm. Neither Savannah Environmental nor any of its specialists are subsidiaries of or are affiliated to Great Karoo Wind Farm (Pty) Ltd. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the proposed project.

Savannah Environmental is a specialist environmental consulting company providing a holistic environmental management service, including environmental assessment and planning to ensure compliance and evaluate the risk of development, and the development and implementation of

environmental management tools. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team.

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

The Environmental Assessment Practitioners (EAPs) from Savannah Environmental responsible for this project include:

» **Lisa Opperman** is the principle the author of this report. She holds a Bachelor degree with Honours in Environmental Management and has five years of experience in the environmental field. Her key focus is on environmental impact assessments, public participation, environmental management plans and programmes, as well as mapping using ArcGIS for a variety of environmental projects. She has completed numerous EIA processes for renewable energy projects and associated grid connection infrastructure.

» **Jo-Anne Thomas** is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA). She provides technical input for projects in the environmental management field, specialising in Strategic Environmental Advice, Environmental Impact Assessment studies, environmental auditing and monitoring, environmental permitting, public participation, Environmental Management Plans and Programmes, environmental policy, strategy and guideline formulation, and integrated environmental management. Her Key focus is on integration of the specialist environmental studies and findings into larger engineering-based projects, strategic assessment, and providing practical and achievable environmental management solutions and mitigation measures. Responsibilities for environmental studies include project management (including client and authority liaison and management of specialist teams); review and manipulation of data; identification and assessment of potential negative environmental impacts and benefits; review of specialist studies; and the identification of mitigation measures.

» **Nicolene Venter** is responsible for the public participation process for the BA. She is a Board Member of IAPSA (International Association for Public Participation South Africa). She has over 21 years of experience in public participation, stakeholder engagement, awareness creation processes and facilitation of various meetings (focus group, public meetings, workshops, etc.). She is responsible for project management of public participation processes for a wide range of environmental projects across South Africa and neighbouring countries.

The EAP Declaration of Independence and Affirmation is included in **Appendix L**.

2. METHODOLOGY AND APPROACH OF THE STUDY

This chapter provides an overview of the grid connection infrastructure proposed for the Great Karoo Wind Farm and details the project scope, which includes the planning/design, construction, operation and decommissioning activities required for the development.

2.1. Legal Requirements as per the EIA Regulations, 2014 (as amended)

This chapter of the BAR report includes the following information required in terms of the EIA Regulations, 2014 - Appendix 1: Content of Basic Assessment Reports:

Requirement	Relevant Section
3(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 and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	The location of the proposed grid connection corridor for the Great Karoo Wind Farm is detailed in Chapter 1, Table 1.1, as well as in section 2.2 below.
3(c)(i)(ii) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or on land where the property has not been defined, the coordinates within which the activity is to be undertaken	A locality map illustrating the grid connection corridor within which the grid connection infrastructure is proposed is included as Figure 1.1.
3(d)(ii) a description of the scope of the proposed activity, including a description of the activities to be undertaken including associated structures and infrastructure	A description of the activities to be undertaken with the development of the grid connection infrastructure is included in Table 2.1 and Table 2.2.
3(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.	The need and desirability for the development of the grid connection corridor is included and discussed as a whole within section 2.4.
3(g) a motivation for the preferred site, activity and technology alternative	The motivation for the alternatives associated with the development proposal is included in section 2.3. It must be noted that no activity, technology or layout alternatives are associated with the development due to the specific requirements for the infrastructure to connect the Great Karoo Wind Farm to the national grid.
3(h)(i) details of the alternative considered	The details of all alternatives considered as part of the grid connection infrastructure is included in section 2.3.
3(h)(ix) the outcome of the site selection matrix	The site selection process followed by the developer in order to identify the grid connection corridor is described in section 2.3.
3(h)(x) if no alternatives, including alternative locations for the activity were investigation, the motivation for not considering such	Where no alternatives have been considered, motivation has been included in section 2.3.

2.2. Nature and extent of the Grid Connection Infrastructure for the Great Karoo Wind Farm

Following consultation with Eskom, it has been confirmed that the Great Karoo Wind Farm must connect to the Hidden Valley substation located at the Karusa Wind Farm (currently under construction to the west of the Great Karoo Wind Farm). Therefore, Great Karoo Wind Farm (Pty) Ltd is proposing the development of grid connection infrastructure from the authorised Great Karoo Wind Farm substation to the Hidden Valley substation in order to connect and evacuate the generated power of the authorised Great Karoo Wind Farm to the national electricity grid.

The grid connection infrastructure includes a switching station (up to 100m x 100m) to be developed adjacent to the authorised Great Karoo Wind Farm substation and a 132kV double- or single-circuit overhead power line, with a length of up to 14km. The pylon structures of the power line will be up to 32m high and the power line will be developed within a servitude of up to 40m wide. A corridor of 300m wide has been identified for the power line, widening to ~750m wide in the eastern section of the power line. In addition, a 500m assessment area around the wind farm substation has been considered for the placement of the switching station. Collectively, this assessment area is referred to as the grid connection corridor. The proposed grid connection infrastructure will be located within the grid connection corridor based on environmental sensitivities and technical constraints. Is it important to note that the entire grid connection corridor is being proposed for approval, and not the exact layout of the grid connection infrastructure therein. This is due to the need to determine the associated Great Karoo Wind Farm layout first, before exact determination of the technical routing may be possible. As such, the entire corridor is proposed for development with the understanding that all environmentally sensitive features will be avoided.

2.2.1. Grid Connection Corridor

The grid connection corridor is located within the Karoo Hoogland Local Municipality and the Namakwa District Municipality (DC6) and traverses the following three (3) affected properties:

- The Farm Kentucky No. 206;
- RE Portion 1 of the Farm Orange Fontein No. 203; and
- The Farm De Hoop No. 202.

The entire extent of the corridor is located within the Komsberg Renewable Energy Development Zone (REDZ) and within the central corridor of the Strategic Transmission Corridors. Access to the grid connection corridor is possible via numerous existing smaller farm roads in close proximity to the corridor, primarily off the Regional 354 (R354) tarred road running between the towns of Matjiesfontein and Sutherland. During construction, a service track along the length of the power line servitude of up to 6m wide will be established to allow for large crane movement. This track will be rehabilitated following the construction phase to a typical 'jeep' track (i.e. off-road track) for use during operation. Formal roads will therefore not be constructed underneath the power line for maintenance purposes. However, where the power line traverses drainage lines, road crossing infrastructure (e.g. culverts) may be developed within the drainage line. The switching station will be accessed via the already authorised access road to the Great Karoo Wind Farm substation. Other associated infrastructure includes temporary laydown area/s that will be rehabilitated upon completion of the construction phase.

2.2.2. Components of the Grid Connection Infrastructure for the Great Karoo Wind Farm

A summary of the details and dimensions of the planned grid connection infrastructure associated with the project is provided in Table 2.1.

Table 2.1. Details of the proposed grid connection infrastructure for the Great Karoo Wind Farm.[1]

Infrastructure	Footprint, dimensions, and details
Corridor width (for assessment purposes)	A grid connection corridor has been identified for the assessment and placement of the grid connection infrastructure. The grid connection corridor comprises of a 300m wide power line corridor, which widens to ~750m wide in the eastern section of the power line and a 500m wide assessment area for the switching station. (please refer Figure 1.1). As detailed above, the entire corridor is being proposed for development provided the infrastructure remains within the assessed corridor and environmental sensitivities are avoided.
Power line capacity	132kV (single- or double-circuit)
Tower height	Up to 32m
Power line servitude width	Up to 40m
Length of the power line	Approximately 14km in length
Size of the Switching Station	Up to 100m x 100m
Capacity of the Switching Station	132kV
A description and coordinates of the corridor in which the proposed activity or activities is to be undertaken	The grid connection corridor proposed for authorisation will comprise the powerline, access roads, switching station and ancillaries, as well as associated infrastructure, which will be located wholly within the grid connection corridor. The grid connection corridor coordinates are as follows:

Grid Infrastructure Corridor		
No.	**Latitude**	**Longitude**
1	32°48'39.21"S	20°37'19.83"E
2	32°48'38.33"S	20°37'19.13"E
3	32°48'37.34"S	20°37'18.67"E
4	32°48'36.30"S	20°37'18.48"E
5	32°48'35.24"S	20°37'18.57"E
6	32°48'33.90"S	20°37'18.77"E
7	32°48'32.82"S	20°37'19.07"E
8	32°48'31.86"S	20°37'19.46"E
9	32°48'30.78"S	20°37'20.27"E
10	32°48'29.72"S	20°37'21.58"E
11	32°48'20.87"S	20°37'33.20"E
12	32°47'47.70"S	20°37'59.70"E
13	32°46'45.97"S	20°38'18.38"E
14	32°46'44.93"S	20°38'18.85"E
15	32°46'44.21"S	20°38'19.39"E
16	32°46'43.44"S	20°38'20.26"E
17	32°46'42.86"S	20°38'21.30"E

Infrastructure	Footprint, dimensions, and details		
	18	32°46'42.47"S	20°38'22.47"E
	19	32°46'42.31"S	20°38'23.97"E
	20	32°46'42.42"S	20°38'25.21"E
	21	32°46'42.74"S	20°38'26.34"E
	22	32°46'43.33"S	20°38'27.65"E
	23	32°48'25.40"S	20°42'8.65"E
	24	32°48'29.85"S	20°42'30.41"E
	25	32°48'30.04"S	20°42'31.04"E
	26	32°48'48.46"S	20°43'21.40"E
	27	32°48'48.94"S	20°43'22.42"E
	28	32°48'49.45"S	20°43'23.15"E
	29	32°48'49.14"S	20°43'24.77"E
	30	32°48'48.99"S	20°43'26.01"E
	31	32°48'48.90"S	20°43'27.69"E
	32	32°48'48.91"S	20°43'28.94"E
	33	32°48'49.04"S	20°43'30.62"E
	34	32°48'49.28"S	20°43'32.27"E
	35	32°48'49.55"S	20°43'33.48"E
	36	32°48'50.00"S	20°43'35.07"E
	37	32°48'50.57"S	20°43'36.61"E
	38	32°48'51.25"S	20°43'38.08"E
	39	32°48'52.04"S	20°43'39.47"E
	40	32°48'52.69"S	20°43'40.46"E
	41	32°48'53.65"S	20°43'41.70"E
	42	32°48'54.69"S	20°43'42.83"E
	43	32°48'55.60"S	20°43'43.66"E
	44	32°48'56.68"S	20°43'44.55"E
	45	32°48'57.76"S	20°43'45.44"E
	46	32°48'58.82"S	20°43'46.31"E
	47	32°48'59.66"S	20°43'46.97"E
	48	32°49'0.84"S	20°43'47.78"E
	49	32°49'1.80"S	20°43'48.32"E
	50	32°49'3.12"S	20°43'48.93"E
	51	32°49'4.13"S	20°43'49.29"E
	52	32°49'5.17"S	20°43'49.58"E
	53	32°49'6.22"S	20°43'49.79"E
	54	32°49'7.27"S	20°43'49.91"E
	55	32°49'8.33"S	20°43'49.95"E
	56	32°49'9.75"S	20°43'49.88"E
	57	32°49'11.15"S	20°43'49.66"E
	58	32°49'12.19"S	20°43'49.40"E
	59	32°49'13.21"S	20°43'49.06"E
	60	32°49'14.55"S	20°43'48.49"E
	61	32°49'15.83"S	20°43'47.78"E
	62	32°49'16.75"S	20°43'47.16"E

Infrastructure	Footprint, dimensions, and details		
	63	32°49'17.93"S	20°43'46.23"E
	64	32°49'18.49"S	20°43'45.72"E
	65	32°49'19.30"S	20°43'44.90"E
	66	32°49'20.06"S	20°43'44.02"E
	67	32°49'20.77"S	20°43'43.08"E
	68	32°49'21.69"S	20°43'41.65"E
	69	32°49'22.59"S	20°43'40.11"E
	70	32°49'23.46"S	20°43'38.61"E
	71	32°49'24.24"S	20°43'37.26"E
	72	32°49'24.78"S	20°43'36.18"E
	73	32°49'25.26"S	20°43'35.05"E
	74	32°49'25.80"S	20°43'33.50"E
	75	32°49'26.13"S	20°43'32.31"E
	76	32°49'26.47"S	20°43'30.68"E
	77	32°49'26.68"S	20°43'29.02"E
	78	32°49'26.78"S	20°43'26.93"E
	79	32°49'26.72"S	20°43'25.25"E
	80	32°49'26.53"S	20°43'23.59"E
	81	32°49'26.23"S	20°43'21.95"E
	82	32°49'25.80"S	20°43'20.36"E
	83	32°49'25.26"S	20°43'18.81"E
	84	32°49'24.60"S	20°43'17.32"E
	85	32°49'23.84"S	20°43'15.90"E
	86	32°49'22.75"S	20°43'14.26"E
	87	32°49'22.02"S	20°43'13.34"E
	88	32°49'20.98"S	20°43'12.20"E
	89	32°49'19.57"S	20°43'10.95"E
	90	32°49'18.62"S	20°43'10.17"E
	91	32°49'17.37"S	20°43'9.15"E
	92	32°49'15.76"S	20°43'7.87"E
	93	32°49'14.52"S	20°43'7.07"E
	94	32°49'13.22"S	20°43'6.39"E
	95	32°49'11.54"S	20°43'5.74"E
	96	32°49'10.16"S	20°43'5.38"E
	97	32°49'8.76"S	20°43'5.16"E
	98	32°49'7.69"S	20°43'5.09"E
	99	32°49'6.47"S	20°43'5.12"E
	100	32°49'6.16"S	20°43'4.07"E
	101	32°49'1.10"S	20°42'46.97"E
	102	32°48'56.19"S	20°42'30.44"E
	103	32°48'55.93"S	20°42'29.54"E
	104	32°48'55.71"S	20°42'28.83"E
	105	32°48'55.43"S	20°42'28.16"E
	106	32°48'55.08"S	20°42'27.53"E
	107	32°48'54.47"S	20°42'26.74"E

Infrastructure	Footprint, dimensions, and details

108	32°48'53.72"S	20°42'25.86"E
109	32°48'34.00"S	20°42'2.60"E
110	32°46'54.48"S	20°38'27.74"E
111	32°47'51.17"S	20°38'10.54"E
112	32°47'51.59"S	20°38'10.36"E
113	32°47'51.98"S	20°38'10.15"E
114	32°47'52.44"S	20°38'9.82"E
115	32°47'56.93"S	20°38'6.25"E
116	32°48'26.59"S	20°37'42.53"E
117	32°48'27.05"S	20°37'42.15"E
118	32°48'27.43"S	20°37'41.77"E
119	32°48'28.22"S	20°37'40.89"E
120	32°48'39.67"S	20°37'28.14"E
121	32°48'40.19"S	20°37'27.34"E
122	32°48'40.40"S	20°37'26.91"E
123	32°48'40.73"S	20°37'25.98"E
124	32°48'40.91"S	20°37'25.00"E
125	32°48'40.94"S	20°37'23.74"E
126	32°48'40.79"S	20°37'22.75"E
127	32°48'40.50"S	20°37'21.81"E
128	32°48'40.07"S	20°37'20.94"E
129	32°48'39.67"S	20°37'20.35"E

Figure 1.1 illustrates the grid connection corridor within which the grid connection infrastructure will be placed.

2.2.3. Project Development Phases associated with the Grid Connection Infrastructure

Table 2.2 details the activities to be undertaken for the various grid connection infrastructure development phases.

Table 2.2. Details of the grid connection infrastructure across the development phases (i.e. construction, operation and decommissioning)

Construction Phase	
Requirements	» Duration of the construction phase is expected to be 9-12 months. » Create direct construction employment opportunities. Up to 40 employment opportunities will be created during the construction phase. » No on-site labour camps. Employees to be accommodated in the nearby towns such as Sutherland (+/- 39km), Laingsburg (+/- 49km) or Matjiesfontein (+/- 46km) and transported to and from site daily. » Overnight on-site worker presence would be limited to security staff. » Construction waste will be temporarily stored on site and waste removal and sanitation will be undertaken by an appropriate contractor on a regular basis.

	» Electricity required for construction activities will be generated by a generator or will be sourced from available Eskom distribution networks in the area. » Negligible water will be required for the construction phase and potable needs. If required, water will be sourced from the local municipality, existing borehole/s on or near the project site (subject to agreement with landowners and authorisation from DHSWS), or water will be extracted from any bulk water supply pipelines near the corridor.
Construction sequence	Overhead power lines are constructed in the following simplified sequence: Step 1: Surveying of the development area, engaging with affected landowners, environmental specialist walkthroughs to inform permitting requirements; Step 2: Final design and micro-siting of the infrastructure based on geo-technical, topographical conditions and identified environmental sensitivities; Step 3: Search-and-rescue activities, vegetation clearance and construction of access roads/tracks (where required) and watercourse crossings (where required); Step 4: Construction of tower foundations; Step 5: Assembly and erection of infrastructure on site; Step 6: Stringing of conductors; Step 7: Rehabilitation of disturbed areas; Step 8: Continued maintenance. Similarly, the following simplified sequence is conducted for the construction of the switching substation: Step 1: Surveying of the development area, engaging with affected landowners, environmental specialist walkthroughs to inform permitting requirements; Step 2: Final design and micro-siting of the infrastructure based on geo-technical, topographical conditions and potential environmental sensitivities; Step 3: Search-and-rescue activities, vegetation clearance and construction of access roads/tracks (where required), including installation of fencing; Step 4: Trenching and ground grid conduit installation Step 5: Installation of concrete foundations Step 6: Assembly and installation of steel structures and isolators; Step 7: Control building assembly; Step 8: Gravel placement and commissioning Step 9: Rehabilitation of disturbed areas; Step 10: Continued maintenance.
Activities to be undertaken	
Conduct surveys prior to construction	» Including, but not limited to: a geotechnical survey, final environmental walkthroughs to inform search-and-rescue and permitting requirements, site survey (including the location of the towers along the proposed power line route) and confirmation of the power line servitude, and all other associated infrastructure. » Undertake search and rescue of floral and faunal species of concern.
Undertake site preparation	» Including the clearance of vegetation at the pylon foundations and switching station, trimming of vegetation along the final power line route (if required to ensure sufficient clearance between vegetation and the power line), establishment of the laydown areas, the establishment of access roads/tracks and watercourse crossings, and excavations for foundations as well as the fencing of the switching station. » Stripping of topsoil to be stockpiled, backfilled, removed from site and/or spread on site. To be undertaken in a systematic manner to reduce the risk of exposed ground being subjected to erosion.

	» Include search and rescue of floral and faunal species of concern (only where and if required) and the identification and excavation of any sites of cultural/heritage value (only where and if required) along the power line route and switching station footprint.
Establishment of laydown areas and batching plant on site	» Laydown area/s for the storage of grid infrastructure and substation components, including the civil engineering construction equipment. » The laydown area will also accommodate building materials and equipment associated with the construction of buildings. » No borrow pits will be required. Infilling or depositing materials (if required) will be sourced from third-party suppliers or licenced borrow pits within the surrounding areas. » If necessary, a temporary concrete batching plant of 50m x 50m in extent to facilitate the concrete requirements for grid infrastructure and switching station foundations. Other options include the use of mobile batching plants that allow for in situ batching of concrete. Should concrete batching be required, the proponent will utilise that of the Great Karoo Wind Farm if feasible.
Undertake site rehabilitation	» Commence with rehabilitation efforts once construction is completed in an area, and all construction equipment is removed. » On commissioning, access points to the site that will not be required for the operation phase will be closed and prepared for rehabilitation.
<u>Operation Phase</u>	
Requirements	» Duration will be at least 20 years, or longer as needed for the operation of the Great Karoo Wind Farm. » Requirements for security and maintenance of the power line and switching station infrastructure. » Control operations associated with the electrical switching station. » Employment opportunities relating mainly to operation activities and maintenance. Very limited employment opportunities will be available.
Activities to be undertaken	
Operation and Maintenance	» Ad hoc infrastructure maintenance activities. Once built, the power line and switching station will likely be ceded to Eskom, and it will be Eskom's full-time employees undertaking maintenance. » Disposal of waste products (e.g. oil) in accordance with relevant waste management legislation. » On-going rehabilitation of those areas which were disturbed during the construction phase. » During this operation phase natural vegetation within the power line servitude (up to 40m), will require management only if it impacts on the safety and operational objectives of the project. Alien plant management will be required throughout the operation phase in accordance with relevant legislation. » The maintenance of the grid connection infrastructure will be the responsibility of the holder of the Environmental Authorisation.
<u>Decommissioning Phase</u>	
Requirements	» Decommissioning of the power line and switching station may occur at the end of its economic life and that of the Great Karoo Wind Farm, unless the infrastructure is required by Eskom. » Expected lifespan of at least 20 years (with maintenance) before decommissioning is required. » Decommissioning activities to comply with the legislation relevant at the time.
Activities to be undertaken	
Site preparation	» Confirming the integrity of access to the grid connection infrastructure to accommodate the required equipment. » Mobilisation of decommissioning equipment.
Disassemble components and rehabilitation	» The power line and switching station infrastructure components will be disassembled and reused and recycled (where possible). » Where components cannot be reused or recycled it will be disposed of in accordance with the regulatory requirements at the time of decommissioning.

	» Disturbed areas, where infrastructure has been removed, will be rehabilitated, if required and depending on the future land-use of the affected areas and the relevant legislation applicable at the time of decommissioning.

It is expected that the areas affected by the grid connection infrastructure will revert back to the original land-use (i.e. primarily agricultural use) once the Great Karoo Wind Farm (and by implication the proposed Great Karoo grid connection infrastructure) has reached the end of its economic life and all infrastructure has been decommissioned.

2.3. Alternatives Considered during the BA Process

In accordance with the requirements of Appendix 1 of the EIA Regulations (GNR 326), 2014 (as amended) a BA Report must contain a consideration of alternatives including site (i.e. development footprint), activity, technology alternatives, as well as the "do-nothing" alternative. Alternatives are required to be assessed in terms of social, biophysical, economic and technical factors.

2.3.1. Location Alternatives

The grid connection corridor within which all the grid connection infrastructure will be placed is 300m wide in the western segment of the corridor, widening to ~750m wide in the eastern section near the switching substation. The corridor also included a 500m region around the Great Karoo wind farm substation within which the switching station will be placed. The widening of the corridor is due to the final turbine positions of the wind farm still being subject to final micro-siting and the final positions of the turbines may therefore be adjusted slightly. The wider grid connection corridor is needed to ensure that the powerline can be positioned within the corridor, while being routed around the final turbine locations. The exact routing is therefore informed by the need to avoid the turbine infrastructure of the associated Great Karoo WEF, and was thus determined on similar layout considerations of the associated Great Karoo WEF.

The proposed grid connection infrastructure will be located within the grid connection corridor based on environmental sensitivities and technical constraints. Is it important to note that the entire grid connection corridor is being proposed for approval, and not the exact layout of the grid connection infrastructure therein. This is due to the need to determine the associated Great Karoo Wind Farm layout first, before exact determination of the technical routing may be possible. As such, the entire corridor is proposed for development with the understanding that all environmentally sensitive features will be avoided.

It is a technical requirement that the switching station be located adjacent to the authorised Great Karoo Wind Farm substation. The location of the switching station (and the starting point of the powerline) is dictated by the location of the authorised wind farm substation, and no alternate OHL start-point or switching station location is possible. The powerline must connect to the Hidden Valley substation (under construction) and there is thus no alternative end-point for the proposed powerline.

The broader location of the grid connection corridor was informed by the owner of Farm De Hoop 202 having requested that the section of the grid connection corridor running east-west across Farm De Hoop 202 be located as far north on his farm as possible to protect his homestead from visual impacts, and hence the corridor placement towards the north of the Farm De Hoop 202.

The south-north axis of the proposed grid connection corridor has been positioned to run parallel to the Soetwater power line (currently under construction). The grid connection corridor was sited along an identical routing to the Soetwater power line, approximately 15m to the west of the Soetwater power line, in order to take advantage of the maintenance track being developed for the Soetwater power line, and the reduced impact due to the close proximity of the lines (i.e. limiting the total disturbance corridor in the landscape).

Combined, the above considerations informed the entirety of the grid assessment corridor from both a technical connection perspective, as well as reduced impact footprint perspective, and is thus regarded as optimal for the placement of the proposed grid connection infrastructure. The corridor is also considered to be suitable for the proposed development considering its location within the central corridor of the Strategic Grid Corridors.

2.3.2. Design and Layout Alternatives

The design of the grid connection infrastructure is required to conform to Eskom's technical standards as it will form part of the national electricity supply network and must therefore be in-line with the existing network systems, technology, and infrastructure. As such, technical specifications as determined by Eskom will be adhered to by the proponent. Therefore, no design alternatives are possible or assessed within this BA Report.

A broader grid infrastructure corridor was assessed within this BA Report in order to accommodate the associated Great Karoo WEF final layout (which is still to be determined) and that of the Karusa and Soetwater Wind Farms, and allow for avoidance of any identified environmental sensitivities where possible, as well as any specific landowner conditions as applicable to this application. The location of specific towers within the corridor will be finalised following during the final design phase of the project negotiations with the affected landowners and detailed technical surveys of the area. The switching station location, technical specifications and layout will be determined by the requirements of Eskom during the final design phase for the wind farm. All grid connection infrastructure will be located within the grid connection corridor. No layout alternatives are assessed as part of this BA report.

2.3.3. Technology Alternatives

No technology alternatives exist for similar large-scale distribution and switching of electricity, with conductor and substation technology having been refined for numerous years by Eskom and employed throughout the country. As such, the selected technology is regarded the most suitable and appropriate for this development type, and no further technology alternative is assessed for the project as part of this BA process.

2.3.4. The 'Do Nothing' Alternative

The 'do-nothing' alternative is the option of Great Karoo Wind Farm (Pty) Ltd not constructing the grid connection infrastructure. This would result in no environment or social impacts (positive or negative) as a result of the development. However the do-nothing alternative would also mean that energy generated by the authorised Great Karoo Wind Farm could not be exported into the national electricity grid, with the result being that the Great Karoo Wind Farm would not be constructed, resulting in all positive socio-economic benefits associated with the wind farm and the grid connection being foregone. This alternative is assessed and further detailed in Chapter 6.

2.4. Need and Desirability of the Great Karoo OHL Extension

One of the requirements of Appendix 1 of the EIA Regulations, 2014, as amended, is to motivate for "*the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location*". The need and desirability of a development needs to consider whether it is the right time and place for locating the type of land-use / activity within the proposed location.

The need and desirability for the proposed project is directly linked to the need for the Great Karoo Wind Farm which was authorised in 2014 (DEFF ref.: 12/12/20/2370/3), as the main purpose of the grid connection infrastructure is to connect this facility to the national grid at a feasible connection point (i.e. the Hidden Valley Substation).

Given the relationship between, and the necessity of, the proposed grid connection infrastructure for the Great Karoo Wind Farm, similar need and desirability considerations are applicable. These are aligned with national, regional, and local policies and plans, as detailed below:

- The need for the country to respond to the international commitments regarding climate change and reduction in carbon emissions, through a lower emission energy mix.
- The need at a national level to diversify the power generation technology mix to include renewable energy, with allocations as defined in the Integrated Resource Plan (IRP), 2019 (as discussed in detail in Chapter 3).
- The need to align development with the requirements of the National Development Plan in order to address the identified socio-economic issues affecting development in South Africa.
- The need for sustainable development at a Provincial level, including the need to utilise its extensive resources for the benefits of the local area.
- The identification of the need for potential IPP projects to become operational in the local municipality as per the Karoo Hoogland Local Municipality Integrated Development Plan.

From an overall environmental sensitivity and planning perspective, the proposed grid connection infrastructure supports the broader strategic context of the municipality as it is linked to a renewable energy facility which is considered a driver for economic growth in the region as per the Namakwa District Municipality's Integrated Development Plan. It is also in line with broader societal needs and the public interest as it is linked to a renewable energy facility, for which there is national policy and support. No exceedance of social, ecological, heritage or avifaunal limits will result from the construction of the proposed project, and no significant disturbance of biological diversity is anticipated, as detailed in this Basic Assessment Report.

The project will not compromise IDP objectives but will rather assist in reaching these objectives as the IDP of the municipality aims to ensure that the quality of life of the Namakwa District community through purposeful and quality service, and the effective and optimal utilisation of resources is achieved. This project will assist in supporting the local and national electricity supply through its contribution to the National Eskom Grid. The project will further assist in local job creation which will further help achieve IDP objectives and inject money into the local and regional economy.

3. REGULATORY AND PLANNING CONTEXT

This chapter provides insight into the policy and legislative context within which the proposed development will be undertaken. It identifies environmental legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process which may be applicable to or have bearing on the proposed project.

3.1. Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Basic Assessment Report (BA)

This chapter of the BA Report includes the following information required in terms of Appendix 1: Content of Basic Assessment reports:

Requirement	Relevant Section
3(e)(i) a description of the policy and legislative context within which the development is proposed including 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	Chapter 3 as a whole provides an overview of the policy and legislative context which is considered to be associated and relevant to the proposed development. Regulatory and planning context has been considered at international, national, provincial and local level.
3(e)(ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools, frameworks and instruments.	Tables 3.1, 3.2, 3.3 and 3.4 illustrate the compliance of the proposed development with the legislation, policies, plans, guidelines, tools, frameworks and instruments.

The regulatory hierarchy of policy and planning documentation that supports the development of a project of this nature consists of three tiers of authority who exercise control through both statutory and non-statutory instruments – that is National, Provincial and Local levels. These policies are discussed in more detail in the following sections, along with the provincial and local policies or plans that have relevance to the proposed development of the Great Karoo grid connection infrastructure.

At **National Level**, the main regulatory agencies are:

- ***Department of Environment, Forestry and Fisheries*** This Department is responsible for environmental policy and is the controlling authority in terms of NEMA and the 2014 EIA Regulations (GN R326) as amended. DEFF is the competent authority for this project (as per GNR 779 of 01 July 2016), based on its association with the authorised Great Karoo Wind Farm.
- ***South African Heritage Resources Agency (SAHRA):*** SAHRA is a statutory organisation established under the National Heritage Resources Act (No. 25 of 1999) (NHRA), as the national administrative body responsible for the protection of South Africa's cultural heritage.
- ***Department of Human Settlements, Water and Sanitation:*** This Department is responsible for effective and efficient water resources management to ensure sustainable economic and social development. This Department is also responsible for evaluating and issuing licenses pertaining to water use (i.e. Water Use Licenses (WUL) and General Authorisation), where these may be applicable.
- ***Department of Mineral Resources and Energy (DMRE):*** This Department is responsible for granting approvals for the use of land which is contrary to the objectives of the Mineral and Petroleum Resource Development Act (No. 28 of 2002) (MPRDA) in terms of Section 53 of the MPRDA. Therefore, in terms of

the Act, approval from the Minister is required to ensure that the proposed activities do not sterilise mineral resource that could occur within the broader study area and development area.

At **Provincial Level**, the main regulatory agencies are:

- ***Department of Agriculture, Environmental Affairs, Rural Development and Land Reform:*** This Department is a Commenting Authority for the project and is also responsible for issuing any biodiversity and conservation-related permits. The department's involvement relates specifically to sustainable resource management, conservation of protected species and land care.
- ***Northern Cape Department of Roads and Public Works (NCDRPW)***: NCDRPW is responsible for roads and the granting of exemption permits for the conveyance of abnormal loads on regional roads. Where national roads are applicable, these will be issued the South African National Roads Agency SOC Ltd (SANRAL).
- ***Ngwao Boswa Kapa Bokone (NBKB):*** NBKB, the Northern Cape Provincial Heritage Resources Authority is responsible for the identification, conservation and management of heritage resources, as well as commenting on heritage related issues within the Province.
- ***Northern Cape Department of Transport, Safety and Liaison:*** This Department provides effective co-ordination of crime prevention initiatives, provincial police oversight, traffic management and road safety towards a more secure environment.

At the **Local Level** the local and municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. In the Northern Cape, both the local and district municipalities play a role. The local municipality traversed by the grid infrastructure corridor is the Karoo Hoogland Municipality, which forms part of the Namakwa District Municipality (DC6). In terms of the Municipal Systems Act (Act No 32 of 2000) it is compulsory for all municipalities to go through an Integrated Development Planning (IDP) process to prepare a five-year strategic development plan for the area under their governance.

The relevant legislation and policies listed and discussed below are relevant to the proposed development and the associated Great Karoo Wind Farm, due to close association of the grid connection infrastructure proposed to that of the Great Karoo Wind Farm. Neither Great Karoo Wind Farm or the grid connection infrastructure can operate on its own and require the other to be developed in order to fulfil the need for the development of both in its entirety.

3.2. Policy and Planning Considerations on International, National, Provincial and Local Levels

3.2.1. Policy and Planning on an International Level

South Africa has committed to various international policies which relate to environmental concerns, specifically that of climate change and global warming. Table 3.1 below provides a summary of the international policies and plans that South Africa has made commitments towards, and how the proposed development aligns with the thinking or commitments of these agreements.

Table 3.1. International policies and plans relevant to the proposed development.

Policy or Plan	Is the development of the Great Karoo Grid Connection Infrastructure aligned with this policy or plan?
The Kyoto Protocol, 1997	Yes. The protocol calls for the reduction of South Africa's greenhouse gas emissions through actively cutting down on using fossil fuels, or by utilising more renewable resources. The development of Great Karoo grid connection infrastructure will enable the evacuation of additional renewable energy into the national electricity grid and strengthen the commitment and action plan to achieve the requirements as set out in the protocol.
United Nations Framework Convention on Climate Change and COP21 – Paris Agreement	Yes. The Conference of the Parties (COP), established by Article 7 of the UNFCCC, is the supreme body and highest decision-making organ of the Convention. It reviews the implementation of the Convention and any related legal instruments and takes decisions to promote the effective implementation of the Convention. The Conference of the Parties (COP) 21 was held in Paris from 30 November to 12 December 2015. From this conference, an agreement to tackle global warming was reached between 195 countries. This Agreement is open for signature and subject to ratification, acceptance or approval by States and regional economic integration organisations that are Parties to the Convention from 22 April 2016 to 21 April 2017. Thereafter, this Agreement shall be open for accession from the day following the date on which it is closed for signature. The agreement can only be sanctioned once it has been ratified by 55 countries, representing at least 55% of emissions. South Africa signed the Agreement in April 2016 and ratified the agreement on 01 November 2016. The Agreement was assented to by the National Council of Provinces on 27 October 2016, and the National Assembly on 1 November 2016. The Agreement was promulgated on 04 November 2016, thirty days after the date on which at least 55 Parties to the Convention, which account for at least 55% of the total global greenhouse gas emissions have deposited their instruments of ratification, acceptance, approval or accession with the Depositary. Following COP21, countries met in Katowice, Poland from 2 December to 14 December 2018 for COP24. Countries agreed on various elements from COP21 held in Paris in 2015, which pertained to how governments will measure, report and verify their emission-cutting efforts, which was a key element as it ensured all countries are held to proper standards and will find it difficult to renege from the signed agreements. There was, however, a disagreement amongst countries over carbon credits which are awarded to countries for their emission-cutting efforts and their carbon sinks, such as forests, which absorb carbon. The emission count towards countries' emission-cutting targets. Brazil, which hoped to benefit from its large rainforest cover, insisted on a new form of wording which would allow double counting of credits, undermining the integrity of the system. This issue was put on hold and will be discussed at the COP25, to be held in Santiago de Chile, Chile. Largely absent from the COP24 discussions was the question of how countries will step up their targets on cutting emissions. On current targets, the world is set for 3° of warming from pre-industrial levels, which scientists have said would be disastrous, resulting in droughts, floods, sea level rises and the decline of agricultural productivity. However, in 2019, the United Nations will meet again in Chile to discuss the final elements of the COP21 agreement and begin to work on future emission targets[2].

[2] https://www.theguardian.com/environment/2018/dec/16/what-was-agreed-at-cop24-in-poland-and-why-did-it-take-so-long

Policy or Plan	Is the development of the Great Karoo Grid Connection Infrastructure aligned with this policy or plan?
	South Africa's National Climate Change Response Policy (NCCRP) establishes South Africa's approach to addressing climate change, including adaptation and mitigation responses. The NCCRP formalises Government's vision for a transition to a low carbon economy, through the adoption of the 'Peak, Plateau and Decline' (PPD) GHG emissions trajectory whereby South Africa's emissions should peak between 2020 and 2025, plateau for approximately a decade, and then decline in absolute terms thereafter, and based on this the country has pledged to reduce emissions by 34% and 42% below Business As Usual (BAU) emissions in 2020 and 2025, respectively. The policy provides support for the Great Karoo grid connection infrastructure which will contribute to managing climate change impacts, supporting the emergency response capacity, as well as assist in reducing GHG emissions in a sustainable manner.
The Equator Principles III, June 2013	Yes. The Equator Principles (EPs) III constitute a financial industry benchmark used for determining, assessing, and managing a project's environmental and social risks. The EPs are primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making. The EPs are applicable to large infrastructure projects and apply globally to all industry sectors. In terms of the EPs, South Africa is a non-designated country, and as such the assessment process for projects located in South Africa evaluates compliance with the applicable IFC Performance Standards on Environmental and Social Sustainability and Environmental Health and Safety (EHS) Guidelines. The Great Karoo grid connection infrastructure is currently being assessed in accordance with the requirements of the 2014 EIA Regulations, as amended (GNR 326), published in terms of Section 24(5) of the National Environmental Management Act (No. 107 of 1998) (NEMA), which is South Africa's national legislation providing for the authorisation of certain controlled activities. Through this assessment, all potential social and environmental risks are identified and assessed, and appropriate mitigation measures proposed. While the specific EPFI will determine the category applicable, it is likely this project may be classified as Category B.
International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability, January 2012	Yes. The overall objectives of the IFC performance standards are to fight poverty, do no harm to people or the environment, fight climate change by promoting low carbon development, respect human rights, promote gender equality, provide information prior to project development, collaborate with the project developer in order to achieve the performance standard, provide advisory services and notify countries of trans boundary impacts. When considering the proposed development, the following performance standards are anticipated to be applicable at this stage of the BA process: » *Performance Standard 1:* Assessment and Management of Environmental and Social Risks and Impacts » *Performance Standard 2:* Labour and Working Conditions » *Performance Standard 3:* Resource Efficiency and Pollution Prevention » *Performance Standard 4:* Community Health, Safety and Security » *Performance Standard 6:* Biodiversity Conservation and Sustainable Management of Living Natural Resources » *Performance Standard 8:* Cultural Heritage
Environmental, Health, and Safety General Guidelines April 2007	Yes. The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them. The applicability

Policy or Plan	Is the development of the Great Karoo Grid Connection Infrastructure aligned with this policy or plan?
	of the EHS Guidelines should be tailored to the hazards and risks established for each project on the basis of the results of an environmental assessment in which site-specific variables, such as host country context, assimilative capacity of the environment, and other project factors, are taken into account. The applicability of specific technical recommendations should be based on the professional opinion of qualified and experienced persons.
Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution April, 2007	Yes. The EHS Guidelines for Electric Power Transmission and Distribution include information relevant to power transmission between a generation facility and a substation located within an electricity grid, in addition to power distribution from a substation to consumers located in residential, commercial, and industrial areas. Annexure A of the EHS Guidelines document provides a summary of industry sector activities.
Environmental, Health, and Safety Guidelines for Wind Energy of August, 2015	Yes. The EHS Guidelines for wind energy include information relevant to environmental, health, and safety aspects of onshore and offshore wind energy facilities. It should be applied to wind energy facilities from the earliest feasibility assessments, as well as from the time of the environmental impact assessment, and continue to be applied throughout the construction and operational phases. As this project relates directly to that of the Great Karoo Wind Farm, these guidelines have indirect application.

3.2.2. Policy and Planning on a National Level

National policies and plans adopted by South Africa which are considered to be relevant to the proposed development have been summarised in Table 3.2.

Table 3.2. National policies, plans and legislation relevant to proposed development

Policy, Plan or Legislation	Is the development of the Great Karoo grid connection infrastructure aligned with this policy, plan or legislation?
Constitution of the Republic of South Africa, 1996	Yes. Section 24 of the Constitution pertains specifically to the environment. It states that Everyone has the right to an environment that is not harmful to their health or well-being, and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. The Constitution outlines the need to promote social and economic development. Section 24 of the Constitution therefore requires that development be conducted in such a manner that it does not infringe on an individual's environmental rights, health, or well-being. This is especially significant for previously disadvantaged individuals who are most at risk to environmental impacts.
National Environmental Management Act (No. 107 of 1998) (NEMA)	Yes. South Africa's environmental legislation sets the framework for environmental management in South Africa. NEMA is founded on the principle that everyone has the right to an environment that is not harmful to their health or well-being as contained within the Bill of Rights. The national environmental management principles states that the social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed, evaluated, and decisions must be appropriate in the light of such consideration and assessment.

Policy, Plan or Legislation	Is the development of the Great Karoo grid connection infrastructure aligned with this policy, plan or legislation?
	The need for responsible and informed decision-making by government on the acceptability of environmental impacts is therefore enshrined within NEMA.
The National Energy Act (2008)	Yes. One of the objectives of the Act is to promote the diversity of the supply of energy and its sources. In this regard, the preamble makes direct reference to renewable resources and states that provision must be made for increased generation and consumption of renewable energies. The development of the grid connection infrastructure enables the evacuation of renewable power into the national grid and thereby promotes diversity of supply of energy and the source of supply, in line with the Act's objectives.
White Paper on the Energy Policy of South Africa, 1998	Yes. The South African Energy Policy of 1998 identifies five key objectives, namely increasing access to affordable energy services, improving energy sector governance, stimulating economic development, managing energy related environmental impacts and securing supply through diversity. In order to meet these objectives South Africa needs to optimally use available energy resources. The development of the grid connection infrastructure will enable the contribution, albeit only to a limited extent, to the achievement of the five objectives of the Energy Policy of the country.
White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)	Yes. This White Paper fosters the uptake of renewable energy in the economy and has a number of objectives that need to be met, including that equitable resources are invested in renewable technologies. South Africa is also endowed with renewable energy resources that can be sustainable alternatives to fossil fuels. The development of additional renewable energy projects (including supporting infrastructure projects such as this application) will promote the use of the abundant South African renewable energy resources and contribute to long-term energy security and diversification of the energy mix.
The Electricity Regulation Act, 2006 (Act No. 4 of 2006), as amended	Yes. The Act establishes a national regulatory framework for the electricity supply industry of the country and introduces the National Energy Regulator as the custodian and enforcer of the National Electricity Regulatory Framework. The Act also provides for licences and registration as the manner in which generation, transmission, distribution, trading and the import and export of electricity are regulated. The proponent of this grid connection infrastructure will have to ensure compliance with this Act for the distribution of the generated power into the national grid.
Renewable Energy Policy in South Africa	Yes. Support for the Renewable Energy Policy is guided by a rationale that South Africa has a very attractive range of renewable energy resources, particularly solar and wind, and that renewable applications are, in fact, the least cost energy service in many cases from a fuel resource perspective (i.e. the cost of fuel in generating electricity from such technology); more so when social and environmental costs are taken into account. However, the National Energy Policy acknowledges that the development and implementation of renewable energy applications has been largely neglected in South Africa. Challenges regarding the implementation of renewable energy have been identified. Through the development of renewable energy projects (including supporting infrastructure such as considered in this application), additional renewable energy will be made available which will assist with the further growth and development of the renewable energy sector. The development of the grid connection infrastructure enables the evacuation of the generated power into the national grid and thereby enables further growth and development of the renewable energy sector.
National Development Plan (NDP)	Yes. The NDP aims at eliminating poverty and reducing inequality by 2030 and 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. Expansion and acceleration of commercial renewable energy is identified as a key intervention

Policy, Plan or Legislation	Is the development of the Great Karoo grid connection infrastructure aligned with this policy, plan or legislation?
	strategy. The plan also sets out steps that aim to ensure that, in 20 years, South Africa's energy system looks very different to the current situation: coal will contribute proportionately less to the primary-energy needs, while gas and renewable energy resources – especially wind, solar and imported hydroelectricity – will play a much larger role. Through the development of renewable energy projects (including supporting infrastructure projects such as this application) additional renewable energy will be available which will assist in expanding the renewable energy sector of the country and add to the diversification of the energy mix, which is moving away from coal and towards the use of gas and renewable energy.
Integrated Energy Plan (IEP)	Yes. The IEP takes into consideration the crucial role that energy plays in the entire economy of the country and is informed by the output of analyses founded on a solid fact base. Eight key objectives were identified which relate mainly to the security, cost, access, diversity, efficiency, impact in terms of emissions, conservation and social benefits in terms of energy planning. The IEP recognises the potential of renewable energy for power generation. With the additional renewable energy to be generated by Great Karoo Wind Farm and to be evacuated to the national grid via the proposed grid connection infrastructure, a contribution to this objective will be made. Also, with the implementation of the Great Karoo Wind Farm and the proposed grid connection infrastructure, the eight key objectives in terms of energy planning will be met, even if only to a limited extent.
Integrated Resource Plan (IRP) 2010 - 2030	Yes. The IRP attempts to harmonize the dichotomy, especially with regard to nuclear, gas and energy storage technologies, which technologies require more consideration of future developments. The South African power system consists of the generation options, which are 38 GW installed capacity from coal, 1.8 GW from nuclear, 2.7 GW from pumped storage, 1.7 GW from hydro, 3.8 GW from diesel and 3.7 GW from renewable energy. The electricity generated is transmitted through a network of high-voltage transmission lines that connect the load centres and Eskom and municipalities distribute the electricity to various end users. Eskom also supply a number of international customers, including electricity utilities, in the SADC region. Energy security in the context of this IRP is defined as South Africa developing adequate generation capacity to meet its demand for electricity, under both the current low-growth economic environment and even when the economy turns and improves to the level of 4% growth per annum. Generation capacity must accordingly be paced to restore the necessary reserve margin and to be ahead of the economic growth curve at least possible cost, including renewable energy projects such as the Great Karoo Wind Farm. The IRP Update (2019) confirms the Government's commitment to the procurement of additional energy from wind power projects, from the present day up to 2030. The development of the proposed grid connection infrastructure enables the evacuation of the generated power from the Great Karoo Wind Farm into the national grid and thereby contributes to the energy mix of the country as set out in the IRP.
Strategic Integrated Projects (SIP)	Yes. In 2010, a National Development Plan was drafted to address socio-economic issues affecting development in South Africa. These issues were identified and placed under 18 different Strategic Integrated Projects (SIPs) to address the spatial imbalances of the past by addressing the needs of the poorer provinces and enabling socio-economic development. The development the grid connection infrastructure will support the Strategic Integrated Projects within one SIP, which relates to the development of the

Policy, Plan or Legislation	Is the development of the Great Karoo grid connection infrastructure aligned with this policy, plan or legislation?
	associated infrastructure. This is known as SIP 10 – electricity transmission and distribution for all. In support of SIP 10, the Department of Environmental Affairs undertook a Strategic Environmental Assessment (SEA) which aims to provide guidance for the efficient and sustainable expansion of strategic electricity grid infrastructure in South Africa. This SEA identified the optimal location for strategic corridors where transmission infrastructure expansion is needed to enable the balancing of future demand and supply requirements, while minimising negative impacts to the environment. These areas are referred to Strategic Transmission Corridors and were gazetted within GNR113 of February 2018. The grid connection infrastructure proposed in this application is located within the Central Transmission Corridor and is therefore considered to be aligned with national planning in this regard.
New Growth Path (NGP) Framework, 2010	Yes. The purpose of the New Growth Path (NGP) Framework is to provide effective strategies towards accelerated job-creation through the development of an equitable economy and sustained growth. The target of the NGP is to create 5 million jobs by 2020. With economic growth and employment creation as the key indicators identified in the NGP. To achieve this, government will seek to, amongst other things, identify key areas for large-scale employment creation, as a result of changes in conditions in South Africa and globally, and to develop a policy package to facilitate employment creation in these areas. The proposed development will assist with the creation of both temporary and permanent employment opportunities during the construction and operation phases, which will contribute, albeit to a limited extent, to the economy and sustainable growth.
National Climate Change Response Strategy	Yes. This strategy aims to address issues identified as priorities for dealing with climate change in the country. The focus of the strategy is adapting to climate change; developing a sustainable energy programme; adopting an integrated response by the relevant government departments; compiling inventories of greenhouse gases; accessing and managing financial resources; and research, education, and training. The proposed development (through the Great Karoo Wind Farm) will enable additional uptake of renewable energy into the national grid which will reduce the need for the use of coal as an energy resource and thereby assist in addressing climate change and global warming.
Climate Change Bill, 2018	Yes, with limited relevance. The Bill provides a framework for climate change regulation in South Africa aimed at governing South Africa's sustainable transition to a climate resilient, low carbon economy and society. The Bill provides a procedural outline that will be developed through the creation of frameworks and plans. The bill aims to provide for the coordinated and integrated response to climate change and its impacts, provide effective management of inevitable climate change impacts and to make a fair contribution to the global effort to stabilise greenhouse gas concentrations. The proposed development relates only to the evacuation of renewable energy into the national grid, and would therefore not result in the generation or release of emissions during its operation.

3.2.3. Policy and Planning at a Provincial Level

Policies and plans have been adopted by the Northern Cape Province for the management of the area and are considered to be relevant to the proposed development. Table 3.3 provides a summary of the relevant provincial plans and policies.

Table 3.3. Provincial policies and plans relevant to the proposed development

Policy or Plan	Is the development of the Great Karoo grid connection infrastructure aligned with this policy or plan?
Northern Cape Provincial Spatial Development Framework (PSDF), 2012	Yes. The Northern Cape Provincial Spatial Development Framework (PSDF) 2012 states that the overarching goal for the province is to enable sustainability through sustainable development. The province considers social and economic development as imperative in order to address the most significant challenge facing the Northern Cape, which is poverty. The PSDF identifies key sectoral strategies and plans which are considered to be the key components of the PSDF. Sectoral Strategy 19 refers to a provincial renewable energy strategy. Within the PSDF a policy has been included which states that renewable energy sources are to comprise 25% of the province's energy generation capacity by 2020. The overall energy objective for the province also includes promoting the development of renewable energy supply schemes which are considered to be strategically important for increasing the diversity of domestic energy supply and avoiding energy imports, while also minimising the detrimental environmental impacts. The implementation of sustainable renewable energy is also to be promoted within the province through appropriate financial and fiscal instruments. With the developed and proposed independent power producer capacity (including the Great Karoo Wind Farm), the Province will produce more than 100% of its own electrical power needs from renewable energy resources (although this energy will be fed into the national grid for national use). The proposed development (through the Great Karoo Wind Farm) will enable additional uptake of renewable energy into the national grid which will promote the province's objectives.
The Northern Cape Climate Change Response Strategy	Yes. The key aspects of the Northern Cape Climate Change Response Strategy (NCCCRS) Report are summarised in the MEC's (NCPG: Environment and Nature Conservation) 2011 budget speech: "*The Provincial Climate Change Response Strategy will be underpinned by specific critical sector climate change adaptation and mitigation strategies that include the Water, Agriculture and Human Health sectors as the 3 key Adaptation Sectors, the Industry and Transport alongside the Energy sector as the 3 key Mitigation Sectors with the Disaster Management, Natural Resources and Human Society, livelihoods and Services sectors as 3 remaining key. Sectors to ensure proactive long-term responses to the frequency and intensity of extreme weather events such as flooding and wildfire, with heightened requirements for effective disaster management*". Key points from the MEC address include the NCPG's commitment to develop and implement policy in accordance with the National Green Paper for the National Climate Change Response Strategy (2010), and an acknowledgement of the NCP's extreme vulnerability to climate-change driven desertification. The development and promotion of a provincial green economy, including green jobs, and environmental learnership is regarded as an important provincial intervention in addressing climate change. The renewable energy sector, including solar and wind energy (but also biofuels and energy from waste), is explicitly indicated as an important element of the Provincial Climate Change Response Strategy. The MEC further indicated that the NCP was involved in the processing 7 wind energy facility and 11 solar energy facility EIA applications (March 2011)[3]. The development of grid connection infrastructure will assist in achieving (although only to a limited extent) the promotion of the provincial green economy of the Northern Cape through the evacuation of generated wind power from the Great Karoo Wind Farm.

[3] (www.info.gov.za/speech/DynamicAction?pageid=461&sid=22143&tid=45200).

3.2.4. Policy and Planning on a District and Local Level

Strategic policies at the district and local level have similar objectives for the respective areas, namely the delivery of basic services, including the provision of electricity. The development of the proposed grid connection infrastructure is considered to align with the aims of these policies. Table 3.4 below provides a summary of the district and local level policies and plans considered to be relevant to the proposed development.

Table 3.4. District and local policies and plans relevant to proposed development

Policy or Plan	Is the development of the Great Karoo grid connection infrastructure aligned with this policy or plan?
Namakwa District Municipality Rural Development Plan (RDP), 2017	Yes. Renewable energy developments are considered to be development priorities within the RDP. The need to evaluate localisation possibilities for all renewable energy technologies is emphasised in the Plan. The development of renewable energy projects (including the supporting grid connection infrastructure proposed) will contribute to the achievement of the need for the development of renewable energy developments within the Province.
Namakwa District Municipality Integrated Development Plan (IDP), 2017 - 2022	Yes. The plan identifies the need for support to the local municipalities to deliver basic services such as water, sanitation, housing, electricity and waste management. The IDP also seeks to establish good governance by enforcing the climate change response plan. The development of the grid connection infrastructure may contribute to the delivery of basic services, however only to a limited extent. The proposed wind farm and the associated grid infrastructure will contribute to the application of the climate change response plan through reduced production of greenhouse gas emissions during the operation of the facility.
Karoo Hoogland Municipality Integrated Development Plan (IDP), 2017-2022	Yes. The Karoo Hoogland Municipality IDP details a Local Economic Development vision of creating a safe, healthy, economically sustainable environment for all residents, with an explicit goal being assisting economic interventions in sector development, specifically that of agriculture, tourism and renewable energy. A further goal is that of promoting business and investment (attraction and retention) into the region, and enhancing skills development within the local economy. The proposed development, by enabling the operation of the Great Karoo Wind Farm indirectly supports all these goals and thus contribute meaningfully to the achievement of Local Economic Development within the municipality.

4. APPROACH TO UNDERTAKING THE BASIC ASSESSMENT PROCESS

In terms of the EIA Regulations of December 2014 (as amended) published in terms of NEMA (Act No. 107 of 1998) as amended, the construction and operation of the grid infrastructure for the Great Karoo Wind Farm is a listed activity requiring environmental authorisation. Due to the triggering of *inter alia* Activity 11(i) of Listing Notice 1, of the EIA Regulations, 2014 (as amended), a Basic Assessment (BA) process must be undertaken in support of the application for environmental authorisation.

The BA process aims at identifying and describing potential environmental issues associated with the development of the grid infrastructure within the identified grid corridor, and providing recommendations regarding appropriate mitigation measures required to be implemented.

In order to ensure that a comprehensive assessment is provided to the competent authority (DEFF in this instance) and Interested & Affect Parties (I&APs) regarding the impacts of the proposed infrastructure, detailed independent specialist studies were undertaken as part of the BA process. In addition, a comprehensive consultation process was conducted, and includes I&APs, the competent authority, directly impacted landowners/occupiers, relevant Organs of State, national and provincial departments, ward councillors and other key stakeholders. This chapter serves to outline the process that was followed during the BA process.

4.1. Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Basic Assessment Report

This chapter of the BA Report includes the following information required in terms of Appendix 1: Content of the BA Report:

Requirement	Relevant Section
3(d)(i) a description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for.	All listed activities triggered as a result of the development of the grid infrastructure have been included in section 4.2, Table 4.1. The specific project activity relating to the relevant triggered listed activity has also been included in Table 4.1.
3(h)(ii) details of the public participation process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs.	The details of the public participation process undertaken for the grid infrastructure have been included and described in section 4.3.2.
3(h)(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.	A comments and responses (C&R) Report has been compiled that includes all comments raised on the Great Karoo grid infrastructure prior to the commencement of the 30-day review period of the BA Report. The C&R Report is included as **Appendix C6**. All comments raised during the 30-day review period of the BA Report and through consultation with I&APs will be included as part of the final C&R Report to be submitted as part of the final BA Report to DEFF for decision-making. The C&R Report will also include the relevant responses on the submitted comments from the relevant responding party.

Requirement	Relevant Section
3(h)(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.	The methodology used to assess the significance of the impacts of the grid infrastructure has been included in section 4.5.
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed.	The assumptions and limitations of the BA process being undertaken for the Great Karoo grid infrastructure is included in section 4.6.

4.2. Relevant legislative permitting requirements

The legislative permitting requirements applicable to the development of the Great Karoo grid infrastructure as identified at this stage in the process, are described in more detail under the respective sub-headings:

4.2.1. National Environmental Management Act (No. 107 of 1998) (NEMA)

NEMA is South Africa's key piece of national environmental legislation that provides for the authorisation of certain controlled activities known as "listed activities". In terms of Section 24(1) of NEMA, the potential impact on the environment associated with listed activities must be considered, investigated, assessed and reported on to the competent authority (the decision-maker) charged by NEMA with granting of the relevant EA.

The need to comply with the requirements of the EIA Regulations published under NEMA ensures that developers are provided the opportunity to consider the potential environmental impacts of their activities early in the project development process, and also allows for an assessment to be made as to whether environmental impacts can be avoided, minimised or mitigated to acceptable levels. Comprehensive, independent environmental studies are required to be undertaken in accordance with the EIA Regulations to provide the competent authority with sufficient information in order for an informed decision to be taken regarding the project.

The BA process being conducted for the grid connection infrastructure is being undertaken in accordance with Section 24 (5) of NEMA. Section 24 (5) of NEMA pertains to Environmental Authorisations (EAs), and requires that the potential consequences for, or impacts of, listed or specified activities on the environment be considered, investigated, assessed, and reported on to the competent authority. Listed Activities are activities identified in terms of Section 24 of NEMA which are likely to have a detrimental effect on the environment, and which may not commence without an EA from the competent authority subject to the completion of an environmental assessment process (either a Basic Assessment (BA) or full Scoping and EIA).

Table 4.1 details the listed activities in terms of the EIA Regulations of December 2014 (as amended) that apply to the development of the grid connection infrastructure, and for which an Application for Environmental Authorisation has been submitted. The table also includes a description of the specific project activities that relate to the applicable listed activities.

Table 4.1. Listed activities as per the EIA regulations that are triggered by the Great Karoo grid infrastructure

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice):	Describe each listed activity as per the project description
GN 327, 08 December 2014 (as amended on 07 April 2017)	11(i)	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 infrastructure proposed includes a single- or double-circuit 132kV power line and a 132kV switching substation outside urban areas**
GN 327, 08 December 2014 (as amended on 07 April 2017)	12 (ii)(a)(c)	The development of (ii) infrastructure or structures with a physical footprint of 100 square meters or more, where such development occurs a) within a watercourse; (c) if no development setback exists, within 32 meters of a watercourse, measured from the edge of a watercourse. **The development will require the establishment of infrastructure with a physical footprint exceeding 100m^2 which will occur within a drainage line, or within 32m of a drainage line.**
GN R327, 08 December 2014 (as amended on 07 April 2017)	19	The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse. **The development of the grid connection infrastructure will require the removal of approximately 10m^3 of soil and rock from drainage lines during the construction phase, due to the establishment of drainage line crossings along the power line route.**
GN R327, 08 December 2014 (as amended on 07 April 2017)	27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation. **The development of the switching substation will require the clearance of more than 1ha, but less than 20ha, of indigenous vegetation for the construction of the infrastructure.**
GN 327, 08 December 2014 (as amended on 07 April 2017)	28(ii)	Residential, mixed, retail, commercial, industrial, or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare. **The total area to be developed for the grid connection infrastructure is greater than 1ha and occurs outside an urban area, which is currently used for agriculture (grazing).**
GN 324, 08 December 2014 (as amended on 07 April 2017)	4(g)(ii)(aa)(ee)	The development of a road wider than 4 metres with a reserve less than 13,5 metres in:

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice):	Describe each listed activity as per the project description
		(i) Northern Cape (ii) Outside urban areas; (bb) National Protected Area Expansion Strategy Focus areas; (ee) within Critical Biodiversity Areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans **The development of a service track of up to 6m width within CBAs 1 and 2 will be required for the powerline.**
GN 324, 08 December 2014 (as amended on 07 April 2017)	12(g)(ii)	The clearance of an area of 300 square meters or more of indigenous vegetation (g) in the Northern Cape Province (ii) within critical biodiversity areas identified in bioregional plans. **More than 300 square metres of indigenous vegetation will be cleared during the construction of this project.** **Approximately 100m^2 will be cleared per tower/ pylon foundation , and the switching station will have a footprint of approximately 100m X 100m (~10 000m^2). Vegetation clearance may also be required along the length of the service track (up to 6m wide)** **The Project falls within the critical biodiversity areas (CBA 1 and 2) which are located along the route within which the service track, towers, switching station and ancillaries will be placed, thereby triggering this activity**
GN 324, 08 December 2014 (as amended on 07 April 2017)	14 (ii)(a)(c)(g)(ii)(bb)(ff)	The development of (iii) infrastructure or structures with a physical footprint of 10 square meters or more; Where such development occurs – (a) within a watercourse; (c) If no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of the watercourse. (g) In the Northern Cape: (ii) Outside urban areas, in: (bb) National Protected Area Expansion Strategy Focus Area; (ff) Critical biodiversity areas or ecosystem service areas as identified in system Biodiversity plans adopted by the competent authority or in bioregional plans **The infrastructure required for the project will exceed 10 square metres in size and will occur within a critical biodiversity area (CBA 1 and CBA 2) within 32m of a watercourse. Where the service track crosses drainage lines, crossing structured (e.g. culverts) may be installed within the watercourse.**

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice):	Describe each listed activity as per the project description
GN 324, 08 December 2014 (as amended on 07 April 2017)	18(g)(ii)(bb)(ee)(ii)	The lengthening of a road by more than 1 kilometre (g) In Northern Cape Province (ii) Outside urban areas, in: (bb) National Protected Area Expansion Strategy Focus Area (ee) Critical biodiversity areas or ecosystem service areas as identified in system Biodiversity plans adopted by the competent authority or in bioregional plans. (ii) Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland. **Where feasible, existing farm tracks may be utilized and lengthened, to serve as the service track for the powerline. The service track will be up to 14km long and up to 6m wide.**

4.2.2. National Water Act (No. 36 of 1998) (NWA)

Water uses under S21 of the Act must be licensed unless such water use falls into one of the categories listed in S22 of the Act or falls under the general authorisation.

In terms of S19, the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to prevent and remedy the effects of pollution to water resources from occurring, continuing, or recurring.

A water use license (WUL) or General Authorisation (GA) will be required in terms of Section 21 (c) & (i) of the Act as drainage lines on the site will be impacted by the access and service road development of the project during the construction phase. The relevant Authority for such applications will be the National Department of Water and Sanitation (DWS) and the Northern Cape Department of Water and Sanitation.

The proponent must therefore approach DWS and apply/register for the requisite Water Use Authorisation, as applicable, prior to commencement of construction.

4.2.3. National Heritage Resources Act (No. 25 of 1999) (NHRA)

The National Heritage Resources Act (No. 25 of 1999) (NHRA) provides an integrated system which allows for the management of national heritage resources and to empower civil society to conserve heritage resources for future generations. Section 38 of NHRA provides a list of activities which potentially require the undertaking of a Heritage Impact Assessment.

Section 38: Heritage Resources Management

1). Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as –

- *a. the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- *b. the construction of a bridge or similar structure exceeding 50m in length;*
- *c. any development or other activity which will change the character of a site –*
  - *i). exceeding 5 000m² in extent; or*

ii). involving three or more existing erven or subdivisions thereof; or

iii). involving three or more erven or divisions thereof which have been consolidated within the past five years; or

iv). the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

Must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

In terms of Section 38(8), approval from the heritage authority is not required if an evaluation of the impact of a development on heritage resources is required in terms of any other legislation (such as NEMA), provided that the consenting authority ensures that the evaluation of impacts fulfils the requirements of the relevant heritage resources authority in terms of Section 38(3) and any comments and recommendations of the relevant resources authority with regard to such development have been taken into account prior to the granting of the consent. As the proposed power line exceeds 300m in length and the switching station exceeds 5000m^2, a Heritage Impact Assessment has been undertaken for this project (refer to **Appendix F**). Should heritage resources of significance be affected by proposed development, a permit is required to be obtained prior to disturbing or destroying such resources as per the requirements of Section 48 of the NHRA, and the SAHRA Permit Regulations (GNR 668).

4.3. Overview of the Basic Assessment Process

Key tasks undertaken for the BA included:

» Consultation with relevant decision-making and regulating authorities (at National, Provincial and Local levels).
» Submission of the completed Application for Environmental Authorisation to the competent authority (i.e. DEFF) in terms of Regulations 5 and 6 of the EIA Regulations, 2014 (GNR 326), as amended.
» Undertaking a public participation process in accordance with Chapter 6 of GNR326, and the Department of Environmental Affairs (2017), Public Participation guidelines in terms of the NEMA EIA Regulations, Department of Environmental Affairs, Pretoria, South Africa (hereinafter referred to as "the Guidelines") in order to identify issues and concerns associated with the proposed project.
» Considerations of the restrictions enforced in terms of Government Gazette 43096 which placed the country in a national state of disaster limiting the movement of people to curb the spread of the COVID-19 virus.
» Undertaking of independent specialist studies in accordance with Appendix 6 of the EIA Regulations, 2014 (GNR326), as amended and the relevant Specialist Protocols defined in Government Notice 320 of 20 March 2020, as relevant.
» Preparation of a BA Report in accordance with the requirements of Appendix 1 of GNR326.
» Preparation of two distinct EMPrs through the use of the generic EMPrs in line with GNR 435 of March 2019, as follows:
    - The Generic Environmental Management Programmes (EMPr) for the development and expansion of overhead electricity distribution and transmission infrastructure. This EMPr will be utilised for the proposed powerline; and
    - The Generic Environmental Management Programmes (EMPr) for the development and expansion of substation infrastructure for the distribution and transmission of electricity. This EMPr will be used for the switching station infrastructure.

- 30-day public and authority review period of the BA Report and EMPrs.
- Compilation of a Comments and Responses (C&R) report detailing the comments raised by I&APs prior to and during the 30-day review period of the BA Report, addressing these comments in detail and finalisation of the BA Report.
- Submission of a final BA Report to the DEFF for review and decision-making.

The tasks are discussed in detail in the sub-sections below.

4.3.1. Authority Consultation and Application for Authorisation in terms of the 2014 EIA Regulations (as amended)

Consultation with the regulating authorities (i.e. DEFF and Department of Agriculture, Environmental Affairs, Rural Development and Land Reform), as well as with all other relevant Organs of State has been undertaken and will continue throughout the BA process. To date, this consultation has included the following:

- Submission of the application for Environmental Authorisation to the DEFF.
- Submission of the BA Report for review and comment by:
  - The competent and commenting authorities.
  - State departments that administer laws relating to a matter affecting the environment relevant to an application for Environmental Authorisation.
  - Organs of State that have jurisdiction in respect of the activity to which the application relates.

As per the approved public participation plan all correspondence with authorities has been via electronic communication/electronic formats. A record of all authority correspondence undertaken during the BA process is included in **Appendix B** and **Appendix C6** as part of the Comments and Responses Report (CRR).

An authority site visit will be undertaken should the case officer require such a visit, to be confirmed once the final Basic Assessment report has been submitted to the department for decision making.

4.3.2. Public Participation Process

Public Participation is an essential and regulatory requirement for an environmental authorisation process and is guided by Regulations 41 to 44 of the EIA Regulations 2014 (GNR 326) (as amended). The purpose of public participation is clearly outlined in Regulation 40 of the EIA Regulations 2014 (GNR 326) (as amended) and is being followed for this project.

The sharing of information forms the basis of the Public Participation Process (PPP) and offers the opportunity for I&APs to become actively involved in the BA process from the outset. The public participation process is designed to provide sufficient and accessible information to I&APs in an objective manner. The public participation process affords I&APs opportunities to provide input into and receive information regarding the BA process in the following ways:

During the BA process:

- provide an opportunity to submit comments regarding the project;
- assist in identifying reasonable and feasible alternatives;
- contribute relevant local information and knowledge to the environmental assessment;

- allow registered I&APs to verify that their comments have been recorded, considered and addressed, where applicable, in the environmental investigations;
- foster trust and co-operation;
- generate a sense of joint responsibility and ownership of the environment; and
- comment on the findings of the environmental assessments.

During the decision-making phase:

- to advise I&APs of the outcome of the competent authority's decision, and how and by when the decision can be appealed.

The public participation process therefore aims to ensure that:

- Information containing all relevant facts in respect of the application is made available to potential stakeholders and I&APs for their review.
- The information presented during the public participation process is presented in such a manner which ensures that the information is carried over to all parties in an understandable manner such that it avoids the possible alienation of the public and prevents them from participating.
- Public participation is facilitated in such a manner that I&APs are provided with a reasonable opportunity to comment on the project.
- Various ways are provided to I&APs to correspond and submit their comments i.e. fax, post, email.
- An adequate review period is provided for I&APs to comment on the findings of the BA Report.

In terms of the requirement of Chapter 6 of the EIA Regulations of December 2014, as amended, the following key public participation tasks have been undertaken:

- Fixing of a notice board at a place conspicuous to the public at the boundary or on the fence of—
  - (i) the site where the activity to which the application relates is or is to be undertaken; and
  - (ii) any alternative site mentioned in the application;
- Give written notice to:
  - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  - (v) the municipality which has jurisdiction in the area;
  - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  - (vii) any other party as required by the competent authority.
- Place an advertisement in one local newspaper.
- Open and maintain a register of I&APs and Organs of State.
- Prepare a Comments and Responses (C&R) Report which documents the comments received on the BA process and the responses provided by the project team prior to the release of the BA Report for a 30-day review period.
- Release a BA Report for a 30-day review period, including the notification of I&APs of the availability and review thereof.

» Update the C&R Report with all comments raised during the 30-day review period for submission with the final BA Report.

As a result of the COVID-19 Alert Levels and associated lockdown, alternative means of undertaking consultation has been designed and will be implemented by Savannah Environmental together with the standard public participation approach to ensure that I&APs are afforded sufficient opportunity to raise comments on the project through an interactive web-based platform readily available and accessible to any person illustrating interest in the project and enables the public participation process to be undertaken in line with Regulations 41 to 44 of the EIA Regulations, 2014, as amended. The Public Participation Process undertaken for the proposed project considers the restrictions and limitations imposed by Government through section 27 (2) of the Disaster Management Act (Act No. 57 of 2002) of 2002 and the Directions issued by the Minister of Forestry and Fisheries (DEFF) in terms of consultations with I&APs. A Public Participation Plan was prepared and submitted to the DEFF on 13 October 2020. Approval of the Plan was provided by the DEFF Case Officer via email on 2 November 2020 (**Appendix B**).

This online stakeholder engagement platform allows the EAP to visually present details regarding the project and our consultation documentation, including project maps and plans, presentations and posters regarding the project, and reports available for review. The use of online tools enables stakeholders and I&APs to explore the project-specific content in their own time and allow them to participate in a meaningful way in the consultation process. The online platform allows for instant feedback and comments to be submitted, in so doing saving time for the stakeholder and giving the assurance that their comments have been submitted for inclusion in the project reporting. The approved public participation plan considers the limitations applied by the Disaster Management Act Regulations prohibiting the gathering of people, as well as limitations which certain I&APs may have in terms of access to computers and internet as well as access to public spaces not open for operation or which have restricted access. Additional means of contact included by the Public Participation plan include contact with the ward councillors where persons are unable to download documentation, sms/whatsapp contact with I&APs where needed and employing the online portal for publications and information dissemination.

The benefits of the online stakeholder engagement platform include:

» Ability to create a dedicated project-specific online platform to enable easy access to project-related information.
» Ability to reach a wider audience, allowing more widespread consultation for major infrastructure projects.
» Allowing stakeholders and I&APs the opportunity to engage on a project without leaving their office or home.
» Enabling stakeholders and I&APs to register their interest in a project (for inclusion on the project database), and automatically gaining access to comprehensive project documentation.
» Enabling the EAP to maintain a complete database of I&APs through maintaining a record of persons accessing the online stakeholder consultation platform.
» Enabling the EAP and stakeholders/I&APs to meet virtually.
» Provides a resilient solution to a public consultation process.

Where I&APs do not have the applicable facilities i.e. access to internet, mobile phones, or computers, provision has been made to include these I&APs in the consultation process by consulting with any of the

following, where available: the Ward Councillor, the ward committee members, community representatives and local community forum members.

The schematic illustration below provides an overview of the tools that are available to I&APs and stakeholders to access project information and interact with the public participation team to obtain project information and resolve any queries that may arise, and to meet the requirements for public participation.

i. Stakeholder identification and register of I&APs	•Register as an I&AP on the online platfrom via completion of a form and provison of contact information, by responding to an advert, or sending a 'please call me' which will be responded to •State interest in the project •Receive all project related information via email, posrt or other appropriate means
ii. Advertisments and notifications	•Advertisements, site notices and notifications provide information and details on where to access project information •Notifications regarding the EIA process and availability of project reports for public review to be sent via email, post or SMS notifications
iii. Public Involvement and consultation	Submission of comments or queries via the online platform, email or post to the PP team •Virtual presentations available via the online platform •Availability of project information via the online platform, email, post and telephonic platforms such as WhatsApp, and including telephonic discussions to provide descrption of information verbally. •An opportunity for I&APs and stakeholders to request virtual meetings with the project team
iv. Comment on the BA Report	•Availability of the project reports via the online platform for 30-day comment period. Hard copies to be available only where sanitary conditions can be assured. •Submission of comments via the online platform, email, email or post to the PP team •Comments recorded and responded to, as part of the process
v. Identification and recording of comments	•Comments and Responses Report, including all comments received to be included in the reporting. •Comments received prior to report release for review to be included in draft reports. •Comments received during full process to be included within the final Report for decision making

The PP plan, as set out in the table above, was drafted to ensure that reasonable opportunity is provided to I&APs and that all administrative actions are reasonable. Proof of all notifications will be included in the public participation appendix included in the Basic Assessment report (refer **Appendix C**).

The PP plan was submitted to the Department of Environmental Affairs, for discussion and agreement before the PP process was undertaken for the proposed project.

Please see below the detailed Public Participation Plan, in particular the "Discussion of approach and methodology to meet the requirements of the Regulations", for more detail on the precise engagement methods approved in the public participation plan (Refer **Appendix C7**).

4.1.1.1. Stakeholder identification and Registration of Interested and Affected Parties

42. A proponent or applicant must ensure the opening and maintenance of a register of I&APs and submit such a register to the competent authority, which register must contain the names, contact details and addresses of –
    (a) All persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;
    (b) All persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and
    (c) All organs of state which have jurisdiction in respect of the activity to which the application relates.

I&APs have been identified through a process of networking and referral, obtaining information from Savannah Environmental's existing stakeholder database for other EIAs undertaken in the area, liaison with potentially affected parties in the greater study area and a registration process involving the completion of a reply form. Key stakeholders and affected landowners have been identified and registered on the project database. Other stakeholders and/or I&APs are required to formally register their interest in the project. An initial list of key stakeholders identified and registered is listed in Table 4.2.

Table 4.2. List of Stakeholders identified for the inclusion in the project database during the public participation process for the Great Karoo grid infrastructure

Organs of State
National Government Departments
Department of Environment, Forestry and Fisheries (DEFF)
Department of Agriculture, Land Reform and Rural Development (DALRRD)
Department of Local Government and Traditional Affairs
Department of Water and Sanitation (Catchment Management Agencies)
Department of Science and Innovation
Cooperative Governance and Traditional Affairs
Department of Mineral Resources and Energy
Government Bodies and State-Owned Companies
Eskom Holdings SOC Limited
South African National Roads Agency LTD (SANRAL)
National Energy Regulator of South Africa (NERSA)
South African Civil Aviation Authority (SA CAA)
South Africa Heritage Resources Agency (SAHRA)
Department of Science and Technology (incl. Astronomy Management Authority – Southern African Large Telescope)
Telkom SA SOC Limited (OpenServe)
Provincial Government Departments: Northern Cape Province
Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (DAEARD&LR)
Department of Roads and Public Works
Department of Water and Sanitation Provincial
Ngwao-Boswa Ya Kapa Bokone

Local Government Departments
Namakwa District Municipality
Karoo Hoogland Local Municipality
Key Stakeholders
Air Traffic and Navigation Services
Endangered Wildlife Trust
South African Radio Astronomy Observatory (SARAO)
SENTECH
AgriSA
South African National Roads Agency LTD (SANRAL)
Aviation Authorities
Agricultural Associations
Nature Reserves
BirdLife SA
Landowners
Affected landowners, adjacent landowners, tenants and occupiers of land
Karusa & Soetwater Wind Farms (in the broader region)

As per Regulation 42 of the EIA Regulations, 2014 (as amended), all relevant stakeholder and I&AP information has been recorded within a register of I&APs (refer to **Appendix C1** for a listing of the recorded parties). Please note however that contact details have been omitted for public release versions in compliance with the Protection of Personal Information Act, No. 4 of 2013 (POPIA). In addition to the above-mentioned EIA Regulations, point 4.1 of the Public Participation Guidelines has also been followed. The register of I&APs contains the names, contact details and addresses of:

- all persons who requested to be registered on the database in writing and disclosed their interest in the project;
- all Organs of State which hold jurisdiction in respect of the activity to which the application relates;
- all persons identified and approached through networking or a chain referral system to identify any other stakeholder (i.e. ratepayers associations); and
- all persons who submitted written comments or attended meetings during the public participation process.

I&APs have been encouraged to register their interest in the BA process from the onset of the project, and the identification and registration of I&APs will be on-going for the duration of the BA process. The database of I&APs will be updated throughout the BA process and will act as a record of the I&APs involved in the public participation process.

*4.1.1.2. **Advertisements and Notifications***

40.(2)(a)	Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of – (i) The site where the activity to which the application or proposed application relates is or is to be undertaken; and (ii) Any alternative site.

40.(2)(b)	Giving written notice, in any of the manners provided for in section 47D of the Act, to – (i) The occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken; (ii) Owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken; (iii) The municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area; (iv) The municipality which has jurisdiction in the area; (v) Any organ of state having jurisdiction in respect of any aspect of the activity; and (vi) Any other party as required by the competent authority.
40.(2)(c)	Placing an advertisement in – (i) One local newspaper; or (ii) Any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
40.(2)(d)	Placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii); and
40.(2)(e)	Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to – (i) Illiteracy; (ii) Disability; or (iii) Any other disadvantage.

The BA process was announced with an invitation to the Organs of State, potentially affected landowners and general public to register as I&APs and to actively participate in the process. This was achieved via the following:

- Placement of site notices regarding the BA process at visible points along the affected properties of the grid connection corridor, in accordance with the requirements of the EIA Regulations, on 24 October 2020. Photographs and the GPS co-ordinates of the site notices are contained in **Appendix C2**.
- Placement of advertisement announcing the BA process and the availability of and inviting comment on the BA Report in a local newspaper on Friday, 30 October 2020 at the commencement of the 30-day review period. This advert also included the details on the review period for the BA report and the location of where the report can be accessed. The advert tearsheet will be contained in **Appendix C2** of the final BA Report.

The BA Report has been made available for review by I&APs for a 30-day review period from ***Tuesday, 3rd of November until Thursday, 3rd of December 2020***. Electronic versions of the BA Report have been circulated to certain Organs of State via online platforms at the commencement of the review period. The BA Report is also available on the Savannah Environmental website. Access to the project documentation via the Savannah Environmental website remains unrestricted to all I&APs. I&APs wanting to access the report electronically are required to request a release code to access the documents in order to register the I&AP on the project database. The online portal supports the EAP in maintaining a complete and accurate record and database of all parties who have interest in the project (and who choose to access the report via the online portal), in line with the requirements of the Regulations. The evidence of distribution of the BA Report will be included in the final BA Report, which will be submitted to the DEFF

4.1.1.3. Public Involvement and Consultation

In order to accommodate the varying needs of stakeholders and I&APs within the greater study area, as well as capture their views, comments, issues and concerns regarding the project, various opportunities have been and will continue to be provided to I&APs to note their comments and issues (Table 4.3). I&APs are being consulted through the following means:

- **Focus group meetings**: Virtual focus group meetings will be held with key government departments, stakeholders and landowners during the scoping phase of the process. The purpose of these focus group meetings is to introduce the project and EIA process, to facilitate comments on the EIA process and Basic Assessment Report, as well as to record any issues or concerns raised by stakeholders regarding the project. As per the approved public participation plan, these meetings will be held via virtual platform. The minutes of these meetings will be included in the final BA Report for review and acceptance by the DEFF.
- **One-on-one consultation meetings** for example with directly affected or surrounding landowners. As per the approved public participation plan, these meetings will be held via virtual platform.
- **Telephonic** consultation sessions.
- Written, faxed or e-mail correspondence.

No comments have been received to date on the project. All comments received during the 30-day review period will be included in **Appendix C6** and minutes of all meetings held during the review period will be included in **Appendix C8** within the Final BA report.

Table 4.3. Consultation undertaken for the Great Karoo grid infrastructure

Activity	Date
Virtual distribution of the process notification and stakeholder reply form announcing the BA process and inviting I&APs to register on the project database.	2 November 2020
Placement of site notices on-site and in public places	24 October 2020
Virtual distribution of notification letters announcing the availability of the BA Report for review for a 30-day review and comment period. These letters were distributed to Organs of State, Government Departments, Ward Councillors, landowners within the greater study area and key stakeholder groups.	2 November 2020
Advertising of the availability of the BA Report for a 30-day review period in local newspaper.	30 October 2020
30-day review period of the BA Report	Tuesday, 3rd of November until Thursday, 3rd of December 2020
On-going consultation (i.e. telephone liaison; e-mail communication) with all I&APs	Throughout BA process

4.1.1.4. Registered I&APs entitled to Comment on the BA Report and Plans

43.(1)	A registered I&AP is entitled to comment, in writing, on all reports or plans submitted to such party during the public participation process contemplated in these Regulations and to bring to the attention of the proponent or applicant any issues which that party believes may be of significance to the consideration of

the application, provided that the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.

(2) In order to give effect to section 24O of the Act, any State department that administers a law relating to a matter affecting the environment must be requested, subject to regulation 7(2), to comment within 30 days.

44.(1) The applicant must ensure that the comments of interested and affected parties are recorded in reports and plans and that such written comments, including responses to such comments and records of meetings, are attached to the reports and plans that are submitted to the competent authority in terms of these Regulations.

(2) Where a person desires but is unable to access written comments as contemplated in sub-regulation (1) due to –

(a) A lack of skills to read or write;

(b) Disability; or

(c) Any other disadvantage;

Reasonable alternative methods of recording comments must be provided for.

The BA Report has been made available for review by I&APs for a 30-day review and comment period from **Tuesday, 3rd of November until Thursday, 3rd of December 2020.** The BA Report is available for download on Savannah Environmental's website and will be provided in electronic format to stakeholders and I&APs via appropriate electronic means on request. Where hard copies are requested, these will be provided only where sanitary conditions can be maintained. This is in line with the approved Public Participation Plan.

I&APs registered on the database have been notified by means of a notification letter (e-mail, or post/fax/sms where email is unavailable) of the release of the BA Report for a 30-day review period, invited to provide comment on the BA Report, and informed of the manner in which, and timeframe within which such comment must be made. The notification was distributed prior to commencement of the 30-day review period, on Monday, 2 November 2020. In addition, the availability of the report was advertised in the local newspaper (as detailed in the sections above). Proof of distribution of the BA Report will be included in the final BA Report, which will be submitted to the DEFF.

4.1.1.5. Identification and Recording of Comments

I&APs are able to provide comment via the online stakeholder engagement platform, e-mail, fax, telephone or post. All comments received will be recorded and included in **Appendix C6** of the Final BA Report. Comments raised by I&APs over the duration of the BA process will be synthesised into a C&R Report and will be included in **Appendix C6** of the Final BA Report. The C&R Report will include detailed responses from members of the EIA project team and/or the project proponent to the issues and comments raised prior to the release of the 30-day review period.

4.4. DEFF Screening Tool Results

In terms of GN R960 (promulgated on 5 July 2019) and Regulation 16(1)(b)(v) of the 2014 EIA Regulations (as amended), the submission of a Screening Report generated from the national web based environmental screening tool is compulsory for the submission of applications in terms of Regulation 19 and 21 of the 2014 EIA Regulations.

The requirement for the submission of a Screening Report for the proposed development is applicable as it triggers Regulation 19 of the 2014 EIA Regulations (as amended). Provided below (Table 4.4) is a summary

of the specialist assessment requirements identified for the project site in terms of the screening tool (based on the identified corridor) (refer to **Appendix M** for the report) and responses to each assessment requirement based on the nature and extent of the project.

Table 4.4. A summary of the proposed specialist studies and sensitivity ratings as per the online tool.

No.	Specialist Assessment as indicated by the Screening Tool	Switching Station Applicable	Powerline Applicable	Sensitivity rating as per the online tool	Comment
1	Landscape/Visual Impact Assessment	YES	YES	Unrated	The proposed grid connection infrastructure will be entirely contained within the footprints of the authorised Karusa WEF, Great Karoo WEF and Soetwater WEF, by virtue of crossing the footprint area for these currently authorised developments (both Karusa and Soetwater wind farms are currently under construction). In addition, the proposed grid connection infrastructure will be located as close as possible (approximately 15m away) from the already authorised Soetwater overhead power line (under construction), running in parallel thereto on the north-south axis of the line (western section of the power line). This development thus represents a similar development to the authorised Soetwater overhead power line, within authorised wind farms under construction. The erection of a power line and switching substation within the bounds of existing wind farms will not result in any additional visual impact not already experienced by virtue of the wind farms. No visual impact assessment was therefore conducted for this Basic Assessment.
2	Archaeological and Cultural Heritage Impact Assessment	YES	YES	Medium	A heritage screener report, from Cedar Tower Services has been included into this Basic Assessment, to address the archaeological and cultural impact, as well as the palaeontology impact anticipated from the proposed development.
3	Palaeontology Impact Assessment	YES	YES	Medium	
4	Terrestrial Biodiversity Impact Assessment	YES	YES	Very High	An Ecological assessment (flora & fauna) & avifauna assessment has been included for this Basic Assessment, to address any terrestrial biodiversity impact anticipated.
5	Aquatic Biodiversity	YES	YES	Low	The nature of overhead power lines, where large spans may be possible (up to 500m

No.	Specialist Assessment as indicated by the Screening Tool	Switching Station Applicable	Powerline Applicable	Sensitivity rating as per the online tool	Comment
	Impact Assessment				between supporting pylons), and the dry nature of this area (i.e. the relative scarcity of water features within the landscape) allow for the carefully selected placement of supporting pylon structures and switching station footprint to not impact on the water sources potentially occurring within the grid connection corridor. In addition, use will be made of existing access roads (Soetwater OHL access roads for example) as far as possible in order to avoid any impacts on watercourses on site. No aquatic or hydrological biodiversity impact assessment was therefore conducted for this Basic Assessment, however measures to avoid or mitigate impacts to aquatic resources are included in the EMPr and biodiversity report. Considering the infrastructure associated with this development will span any freshwater features within the assessment corridor and will be purposefully located outside watercourse features on site (with the exception of minimal drainage line crossings along the service track), no direct impact on any features are anticipated, and consequently no hydrological study was conducted.
6	Hydrology Assessment	YES	YES	Low	
7	Socio-Economic Assessment	YES	YES	Unrated	The proposed grid connection infrastructure will be entirely contained within the authorised Karusa, Soetwater and Great Karoo WEFs, by virtue of crossing the footprint area for these currently authorised developments. The erection of a power line and switching station within the bounds of these wind farms will not incur any additional socio-economic impacts not already associated with the wind farm developments. No socio-economic impact assessment was therefore conducted for this Basic Assessment

No.	Specialist Assessment as indicated by the Screening Tool	Switching Station Applicable	Powerline Applicable	Sensitivity rating as per the online tool	Comment
8	Plant Species Assessment	YES	YES	High	Government Notice 1150 of 30 October 2020, specific to animal and plant species protocols, indicated that: "The requirement of these protocols will apply from the date of publication, except where the applicant provides proof to the competent authority that the specialist assessment affected by these protocols had been commissioned by the date of publication of these protocols in the Government Gazette, in which case Appendix 6 of the Environmental Impact Assessment Regulations, 2014, as amended, will apply to such applications." Please refer to **Appendix N** for proof of the applicant that the specialist studies for this application were commissioned prior to the date of publication in the Government Gazette (30 October 2020), and that therefore Appendix 6 requirements apply. This assessment is addressed by the biodiversity specialist study conducted for the project.

4.5. Assessment of Impacts Identified through the BA Process

Based on the outcomes of the above considerations from the Screening Report, the following specialist studies (Table 4.5) have been undertaken as part of this BA process.

Table 4.5. Specialist studies undertaken as part of the BA process

Specialist Name	Specialist Company	Specialist Area of Expertise	Appendices
Mahomed Desai	The Biodiversity Company (Pty) Ltd	Terrestrial Ecology Assessment	**Appendix D**
Mahomed Desai	The Biodiversity Company (Pty) Ltd	Avifaunal Assessment	**Appendix E**
Jenna Lavin	CTS Heritage (Pty) Ltd	Heritage (including archaeology and palaeontology)	**Appendix F**
Andrew Husted	The Biodiversity Company (Pty) Ltd	Agricultural Compliance Statement	**Appendix G**

Specialist studies considered direct and indirect environmental impacts associated with the development of all components of the grid infrastructure. Impacts were assessed in terms of the following criteria:

- The **nature**, a description of what causes the effect, what will be affected, and how it will be affected;
- The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of between 1 and 5 is assigned as appropriate (with a score of 1 being low and a score of 5 being high);
- The **duration**, wherein it is indicated whether:
  - The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - The lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - Medium-term (5–15 years) – assigned a score of 3;
  - Long term (> 15 years) - assigned a score of 4;
  - Permanent - assigned a score of 5.
- The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
  - 0 is small and will have no effect on the environment;
  - 2 is minor and will not result in an impact on processes;
  - 4 is low and will cause a slight impact on processes;
  - 6 is moderate and will result in processes continuing but in a modified way;
  - 8 is high (processes are altered to the extent that they temporarily cease);
  - 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability of occurrence**, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
  - Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
  - Assigned a score of 2 is improbable (some possibility, but low likelihood);
  - Assigned a score of 3 is probable (distinct possibility);
  - Assigned a score of 4 is highly probable (most likely);
  - Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high;
- The **status**, which is described as either positive, negative or neutral;
- The degree to which the impact can be reversed;
- The degree to which the impact may cause irreplaceable loss of resources;
- The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

S = (E+D+M) P; where

S = Significance weighting.
E = Extent.
D = Duration.
M = Magnitude.
P = Probability.

The **significance weightings** for each potential impact are as follows:

- **< 30 points:** Low (i.e. where this impact would not have a direct influence on the decision to develop in the area);

- **30-60 points:** Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated);
- **> 60 points:** High (i.e. where the impact must have an influence on the decision process to develop in the area).

As the proponent has the responsibility to avoid or minimise impacts and plan for their management (in terms of the EIA Regulations, 2014 (as amended)), the mitigation of significant impacts is discussed. Assessment of impacts with mitigation is made in order to demonstrate the effectiveness of the proposed mitigation measures. Generic Environmental Management Programmes, contemplated in Regulation 19(4) of the EIA Regulations, 2014 (as amended) and as per GNR 435 of 22 March 2019 is used for this BA. This is due to the triggering of activity 11 of Listing Notice 1 of the EIA Regulations, 2014 (as amended). The generic EMPr for overhead electricity transmission and distribution infrastructure, as well as the generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity is included in **Appendix H & I** of this BA Report.

4.6. Assumptions and Limitations of the BA Process

The following assumptions and limitations are applicable to the studies undertaken within this BA process:

- All information provided by the developer and I&APs to the environmental team was correct and valid at the time it was provided.
- It is assumed that the grid connection corridor identified by the developer represents a technically suitable corridor for the establishment of the grid infrastructure associated with the Great Karoo grid infrastructure.
- This report and its investigations are project-specific, and consequently the environmental team did not evaluate any other grid connection technology alternatives.

Refer to the specialist studies in **Appendices D – G** for specialist study specific limitations.

4.7. Legislation and Guidelines that have informed the preparation of this Basic Assessment Report

The following legislation and guidelines have informed the scope and content of this BA Report:

- National Environmental Management Act (Act No. 107 of 1998);
- EIA Regulations of December 2014, published under Chapter 5 of NEMA (as amended);
- Department of Environmental Affairs (2017), Public Participation guidelines in terms of NEMA EIA Regulations; and International guidelines – the Equator Principles, the IFC Performance Standards, the Sustainable Development Goals, World Bank Environmental and Social Framework, and the and World Bank Group Environmental, Health, and Safety Guidelines (EHS Guidelines).

Relevant legislation and permitting requirements applicable to the grid infrastructure are summarised in Table 4.6.

Table 4.6. Applicable Legislation, Policies and/or Guidelines associated with the development of the Grid Connection Infrastructure

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
National Legislation			
Constitution of the Republic of South Africa (No. 108 of 1996)	In terms of Section 24, the State has an obligation to give effect to the environmental right. The environmental right states that: "*Everyone has the right –* » *To an environment that is not harmful to their health or well-being, and* » *To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:* * *Prevent pollution and ecological degradation,* * *Promote conservation, and* * *Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development*."	Applicable to all authorities	There are no permitting requirements associated with this Act. The application of the Environmental Right however implies that environmental impacts associated with proposed development are considered separately and cumulatively. It is also important to note that the "right to an environment" clause includes the notion that justifiable economic and social development should be promoted, through the use of natural resources and ecologically sustainable development.
National Environmental Management Act (No 107 of 1998) (NEMA)	The 2014 EIA Regulations have been promulgated in terms of Chapter 5 of NEMA. Listed activities which may not commence without EA are identified within the Listing Notices (GNR 327, GNR 325 and GNR 324) which form part of these Regulations (GNR 326). In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation. A Basic Assessment Process is required to be undertaken for the proposed project.	DEFF – Competent Authority Department of Agriculture, Environmental Affairs, Rural Development and Land Reform – Commenting Authority	The listed activities triggered by the proposed project have been identified and are assessed throughout the BA process for the grid connection infrastructure. The BA process will culminate in the submission of a final BA Report to the competent authority in support of the Application for Environmental Authorisation.
National Environmental Management Act (No 107 of 1998) (NEMA)	In terms of the "Duty of Care and Remediation of Environmental Damage" provision in Section 28(1) of NEMA every person who causes, has caused or may cause significant pollution or degradation of the	DEFF Department of Agriculture,	While no permitting or licensing requirements arise directly by virtue of the proposed grid connection infrastructure, this section finds application through the

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment. In terms of NEMA, it is the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.	Environmental Affairs, Rural Development and Land Reform	consideration of potential cumulative, direct, and indirect impacts.
Environment Conservation Act (No. 73 of 1989) (ECA)	The Noise Control Regulations in terms of Section 25 of the ECA contain regulations applicable for the control of noise in the Provinces of Limpopo, North West, Mpumalanga, Northern Cape, Eastern Cape, and KwaZulu-Natal Provinces. The Noise Control Regulations cover the powers of a local authority, general prohibitions, prohibitions of disturbing noise, prohibitions of noise nuisance, use of measuring instruments, exemptions, attachments, and penalties. In terms of the Noise Control Regulations, no person shall make, produce or cause a disturbing noise, or allow it to be made, produced or caused by any person, machine, device or apparatus or any combination thereof (Regulation 04).	DEFF Department of Agriculture, Environmental Affairs, Rural Development and Land Reform Karoo Hoogland Local Municipality	Minor construction noise is associated with the construction phase of the project. Considering the location of the grid connection corridor in relation to residential areas and provided that appropriate mitigation measures are implemented, construction noise is unlikely to present a significant intrusion to the local community. There is therefore no requirement for a noise permit in terms of the legislation.
Minerals and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA)	In accordance with the provisions of the MPRDA a mining permit is required in accordance with Section 27(6) of the Act where a mineral in question is to be mined, including the mining of materials from a borrow pit.	DMRE	Any person who wishes to apply for a mining permit in accordance with Section 27(6) must simultaneously apply for an Environmental Authorisation in terms of NEMA. No borrow pits are expected to be required for the construction of the grid connection infrastructure, and as a result a

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
			mining permit or EA is not required to be obtained.
	Section 53 of the MPRDA states that any person who intends to use the surface of any land in any way which may be contrary to any object of the Act, or which is likely to impede any such object must apply to the Minister for approval in the prescribed manner.		In terms of Section 53 of the MPRDA, approval is required from the Minister of Mineral Resources to ensure that the proposed grid connection infrastructure does not sterilise a mineral resource that might be present within the grid connection corridor. Where an application has not completed for the properties related to this project for the Wind Farm, a S53 application will be required prior to commencement of construction.
National Environmental Management: Air Quality Act (No. 39 of 2004) (NEM:AQA)	The National Dust Control Regulations (GNR 827) published under Section 32 of NEM:AQA prescribe the general measures for the control of dust in all areas, and provide a standard for acceptable dustfall rates for residential and non-residential areas. In accordance with the Regulations (GNR 827) any person who conducts any activity in such a way as to give rise to dust in quantities and concentrations that may exceed the dustfall standard set out in Regulation 03 must, upon receipt of a notice from the air quality officer, implement a dustfall monitoring programme. Any person who has exceeded the dustfall standard set out in Regulation 03 must, within three months after submission of the dustfall monitoring report, develop and submit a dust management plan to the air quality officer for approval.	Department of Agriculture, Environmental Affairs, Rural Development and Land Reform / Namakwa District Municipality (DC6)	In the event that the construction of the grid connection infrastructure results in the generation of excessive levels of dust, the possibility could exist that a dustfall monitoring programme would be required for the project, in which case dustfall monitoring results from the dustfall monitoring programme would need to be included in a dust monitoring report, and a dust management plan would need to be developed. However, with mitigation measures implemented, construction activities related to the proposed project are not anticipated to result in significant dust generation or the requirement of a dust monitoring programme.
National Heritage Resources Act (No. 25 of 1999) (NHRA)	Section 07 of the NHRA stipulates assessment criteria and categories of heritage resources according to their significance.	South African Heritage Resources Agency	A Desktop Heritage Impact Assessment (HIA) has been undertaken as part of the BA process (refer to **Appendix F**). The HIA

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	Section 35 of the NHRA provides for the protection of all archaeological and palaeontological sites, and meteorites. Section 36 of the NHRA provides for the conservation and care of cemeteries and graves by SAHRA where this is not the responsibility of any other authority. Section 38 of the NHRA lists activities which require developers or any person who intends to undertake a listed activity to notify the responsible heritage resources authority and furnish it with details regarding the location, nature, and extent of the proposed development. Section 44 of the NHRA requires the compilation of a Conservation Management Plan as well as a permit from SAHRA for the presentation of archaeological sites as part of tourism attraction.	Ngwao Boswa Kapa Bokone (NBKB)	considers impacts on both archaeology, heritage and palaeontology. Based on the information available from heritage assessments previously conducted in the area proposed for development, the proposed development of the OHL and switching station for the Great Karoo WEF is unlikely to negatively impact significant archaeological, built environment and palaeontological heritage as long as the recommendations contained in the specialist report (included into this BAR, and EMPRs) are implemented. From a heritage perspective, the proposed OHL and switching station can be located anywhere within the 500m area and 300m corridor assessed in this screening assessment. Should a heritage resource be impacted, a permit may be required from SAHRA or Ngwao Boswa Kapa Bokone (NBKB) in accordance with Section 48 of the NHRA, and the SAHRA Permit Regulations (GNR 668). In addition, in accordance with Section 38 requirements NHRA, the proponent must submit a Notice of Intent to Develop (NIDs) (NID) and obtain SAHRA final comment with application to the development, to be conducted as part of the Basic Assessment process.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)	Section 53 of NEM:BA provides for the MEC / Minister to identify any process or activity in such a listed ecosystem as a threatening process. Three government notices have been published in terms of Section 56(1) of NEM:BA as follows: » Commencement of TOPS Regulations, 2007 (GNR 150). » Lists of critically endangered, vulnerable and protected species (GNR 151). » TOPS Regulations (GNR 152). It provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), and vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (NEM:BA: National list of ecosystems that are threatened and in need of protection, (Government Gazette 37596, GNR 324), 29 April 2014).	DEFF Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	Under NEM:BA, a permit would be required for any activity that is of a nature that may negatively impact on the survival of a listed protected species. Please refer to the Biodiversity Impact Assessment (**Appendix D)** for further details.
National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)	Chapter 5 of NEM:BA pertains to alien and invasive species, and states that a person may not carry out a restricted activity involving a specimen of an alien species without a permit issued in terms of Chapter 7 of NEM:BA, and that a permit may only be issued after a prescribed assessment of risks and potential impacts on biodiversity is carried out.	DEFF Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	Restricted Activities and the respective requirements applicable to persons in control of different categories of listed invasive species are contained within the Alien and Invasive Species Regulations (GNR 598) published under NEM:BA, together with the requirements of the Risk Assessment to be undertaken.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	Applicable, and exempted alien and invasive species are contained within the Alien and Invasive Species List (GNR 864).		Please refer to the Biodiversity Impact Assessment (**Appendix D)** for further details. Both EMPRs (power line and switching substation) **(Appendix H & I)** makes provision for mitigation measures for alien vegetation present within the grid connection corridor and switching station area.
Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA)	Section 05 of CARA provides for the prohibition of the spreading of weeds. Regulation 15 of GNR 1048 published under CARA provides for the classification of categories of weeds and invader plants, and restrictions in terms of where these species may occur. Regulation 15E of GNR 1048 published under CARA provides requirement and methods to implement control measures for different categories of alien and invasive plant species.	Department of Environment, Forestry and Fisheries	CARA will find application throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies need to be developed and implemented. In addition, a weed control and management measures must be included into the EMPr where they are not already included by virtue of the standardised EMP templates utilised. In terms of Regulation 15E (GNR 1048) where Category 1, 2 or 3 plants occur a land user is required to control such plants by means of one or more of the following methods: » Uprooting, felling, cutting or burning. » Treatment with a weed killer that is registered for use in extension with such plants in accordance with the directions for the use of such a weed killer. » Biological control carried out in accordance with the stipulations of the Agricultural Pests Act (No. 36 of 1983), the ECA and any other applicable legislation.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
			» Any other method of treatment recognised by the executive officer that has as its object the control of plants concerned, subject to the provisions of sub-regulation (4). » A combination of one or more of the methods prescribed, save that biological control reserves and areas where biological control agents are effective shall not be disturbed by other control methods to the extent that the agents are destroyed or become ineffective.
National Forests Act (No. 84 of 1998) (NFA)	According to this Act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. Notice of the List of Protected Tree Species under the National Forests Act (No. 84 of 1998) was published in GNR 734. The prohibitions provide that "no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister".	DEFF	A licence is required for the removal of protected trees which may not be reasonably avoided during the construction phase. The Biodiversity Impact Assessment undertaken as part of the BA Report allowed for the preliminary identification of any protected tree species that may require a license in terms of the NFA within the project development corridors (refer to **Appendix D** of this BA Report), as may be applicable.
National Veld and Forest Fire Act (No. 101 of 1998) (NVFFA)	Chapter 4 of the NVFFA places a duty on owners to prepare and maintain firebreaks, the procedure in this regard, and the role of adjoining owners and the fire protection association. Provision is also made for the making of firebreaks on the international boundary of the Republic of South Africa. The applicant must ensure that firebreaks are wide and long enough to have a reasonable chance of preventing a veldfire from spreading to or from neighbouring land, it does not	DEFF	While no permitting or licensing requirements arise from this legislation, this Act will be applicable during the construction and operation of the proposed project infrastructure, in terms of the preparation and maintenance of firebreaks (if/as applicable), and the need to provide appropriate equipment and personnel for firefighting purposes.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	cause soil erosion, and it is reasonably free of inflammable material capable of carrying a veldfire across it. Chapter 5 of the Act places a duty on all owners to acquire equipment and have available personnel to fight fires. Every owner on whose land a veldfire may start or burn or from whose land it may spread must have such equipment, protective clothing and trained personnel for extinguishing fires, and ensure that in his or her absence responsible persons are present on or near his or her land who, in the event of fire, will extinguish the fire or assist in doing so, and take all reasonable steps to alert the owners of adjoining land and the relevant fire protection association, if any.		
Hazardous Substances Act (No. 15 of 1973) (HAS)	This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger, to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products. » Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared as Group I or Group II substance » Group IV: any electronic product, and » Group V: any radioactive material.	Department of Health	It is necessary to identify and list all Group I, II, III, and IV hazardous substances that may present with the development of the proposed project and in what operational context they are used, stored or handled. If applicable, a license would be required to be obtained from the Department of Health.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.		
National Environmental Management: Waste Act (No. 59 of 2008) (NEM:WA)	The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. The Minister may amend the list by – » Adding other waste management activities to the list. » Removing waste management activities from the list. » Making other changes to the particulars on the list. In terms of the Regulations published in terms of NEM:WA (GNR 912), a BA or EIA is required to be undertaken for identified listed activities. Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that: » The containers in which any waste is stored, are intact and not corroded or in » Any other way rendered unlit for the safe storage of waste. » Adequate measures are taken to prevent accidental spillage or leaking. » The waste cannot be blown away. » Nuisances such as odour, visual impacts and breeding of vectors do not arise, and » Pollution of the environment and harm to health are prevented.	DEFF– Hazardous Waste Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	No listed activities are triggered by the grid connection infrastructure and therefore no Waste Management License is required to be obtained. General and hazardous waste handling, storage and disposal will however be required during construction and operation of the proposed project. The National Norms and Standards for the Storage of Waste (GNR 926) published under Section 7(1)(c) of NEM:WA will need to be considered in this regard, if applicable.
National Road Traffic Act (No. 93 of 1996) (NRTA)	The technical recommendations for highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events	SANRAL – national roads	An abnormal load / vehicle permit may be required to transport the various components to site for construction. These

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	on Public Roads" outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed. Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts. The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations.	Northern Cape DoT	include route clearances and permits which may be required for vehicles carrying abnormally heavy or abnormally dimensioned loads (transport vehicles exceeding the dimensional limitations (length) of 22m). Depending on the trailer configuration and height when loaded, some of the powerline components may not meet specified dimensional limitations (height and width) and will therefore require a permit.
	Provincial Policies / Legislation		
Northern Cape Nature Conservation Act (Act No. 9 of 2009)	This Act provides for the sustainable utilisation of wild animals, aquatic biota and plants; provides for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; provides for offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; and provides for the issuing of permits and other authorisations. Amongst other regulations, the following may apply to the current project: » Boundary fences may not be altered in such a way as to prevent wild animals from freely moving onto or off of a property;	Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	A collection/destruction permit must be obtained from the Northern Cape Nature Conservation authority for the removal of any protected plant or animal species found on site.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	» Aquatic habitats may not be destroyed or damaged; » The owner of land upon which an invasive species is found (plant or animal) must take the necessary steps to eradicate or destroy such species; The Act provides lists of protected species for the Province.		
GNR 805 of 29 May 2019 under the Astronomy Geographic Advantage Act, No. 21 of 2007	These regulations apply to specified activities within the Sutherland Central Astronomy Advantage Area declared for optical astronomy purposes and related scientific endeavours. The restriction of the specified activities within the Sutherland Central Astronomy Advantage Area is intended to protect the optical astronomy observations carried out within the Sutherland Core Astronomy Advantage Area from a detrimental impact. The regulation sets out maximum lighting levels for specified activities within the Sutherland Central Astronomy Advantage Area, including establishing a minimum acceptable night time brightness levels, as well as prescribed conditions for lighting activities and the nature of lighting used. In addition, dust and wind turbine conditions are provided within the Sutherland Central Astronomy Advantage Area. The regulation state that: (1) Unless authorised by the management authority, no person may allow any general area lighting and outdoor recreational lighting activities within the Sutherland Central Astronomy Advantage Area to cause the average night sky brightness stated in sub -regulation 3(2) to be exceeded within the Sutherland Core Astronomy Advantage Area.	Department of Science and Innovation	All construction activities must be in accordance with these regulations by obtaining earthwork approval from the DSI prior to construction commencing and adhering to lighting types and levels on site as specified in the minimum standards of these regulations.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	In addition to: 5. Activities creating air pollution (1) Any person who intends to conduct any activity within the Sutherland Central Astronomy Advantage Area that may involve any earth works creating dust, must submit an application on the prescribed form (Annexure B), a copy of which can be obtained from the management authority, for approval by the management authority prior to commencing such activities. Fines of up to R 200 000.00 are determined for any intentional contravention of the regulations		

5. DESCRIPTION OF THE RECEIVING ENVIRONMENT

This chapter provides a description of the environment that may be affected by the proposed development. This information is provided in order to assist the reader in understanding the possible effects of the project on the environment within which it is proposed to be developed. Aspects of the biophysical and social environment that could be directly or indirectly affected by, or could affect, the grid connection infrastructure have been described. This information has been sourced from both existing information available for the area, specialist studies undertaken as part of this application, as well as specialist consultants for similar projects within and around the area, and aims to provide the context within which this BA process is being conducted.

5.1. Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Basic Assessment Report

This chapter of the BA Report includes the following information required in terms of Appendix 1: Content of BA Reports:

Requirement	Relevant Section
3(h)(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, heritage and cultural aspects.	The environmental attributes associated with the grid connection corridor and the broader environment are described and considered within this chapter and include the following:
	» The regional and social setting within which the grid connection corridor is located is described in section 5.2 and 5.3.
	» The climatic conditions of the Sutherland area are described in section 5.4.
	» The biophysical characteristics of the broader study area and the surrounding areas, as well as for the grid connection corridor, are described in section 5.5. This includes the topography, soils and agricultural potential, the ecological profile (including fauna, flora and avifauna) of the broader study and the grid corridor and switching station assessment area.
	» The heritage of the affected environment (including archaeology, palaeontology and cultural landscape) is discussed in section 5.6.

A more detailed description of each aspect of the affected environment is included in the specialist reports contained within the **Appendices D – G.**

5.2. Regional Setting

The Northern Cape Province is located in the north-western extent of South Africa and constitutes South Africa's largest province, occupying an area of 372 889km² in extent, equivalent to nearly a third (30.5%) of the country's total land mass. It is also South Africa's most sparsely populated province with a population of 1, 145, 861, and a population density of 3.1/km². The capital city is Kimberley, and other important towns include Upington, Springbok, Kuruman, De Aar and Sutherland. It is bordered by the Western Cape, and Eastern Cape Provinces to the south, and south-east, Free State, and North West Provinces to the east,

Botswana and Namibia, to the north, and the Atlantic Ocean to the west. The Northern Cape is the only South African province which borders Namibia and plays an important role in terms of providing linkages between Namibia and the rest of South Africa. The Orange River, which is South Africa's largest river, is a significant feature and is also the main source of water in the Province, while also constituting the international border between the Northern Cape (i.e. South Africa) and Namibia.

The Northern Cape is rich in minerals including alluvial diamonds, iron ore, asbestos, manganese, fluorspar, semi-precious stones and marble. The mining sector in the province is the largest contributor of the provincial Gross Domestic Product (GDP) and of a great importance to South Africa as it produces ~37% of the country's diamonds, 44% of its zinc, 70% of its silver, 84% of its iron ore, 93% of its lead and 99% of its manganese.

The province has fertile agricultural land in the Orange River Valley, especially at Upington, Kakamas and Keimoes, where grapes and fruit are cultivated intensively. The interior Karoo relies on sheep farming, while the karakul-pelt industry is one of the most important in the Gordonia District of Upington. Wheat, fruit, peanuts, maize and cotton are produced at the Vaalharts Irrigation Scheme near Warrenton. The agricultural sector employs approximately 19.5% of the total formally employed individuals. The sector is also experiencing significant growth in value-added activities, including game-farming, while food production and processing for the local and export markets is also growing significantly (PGDS, July 2011). Furthermore, approximately 96% of the land in the province is used for livestock and game farming, whilst, approximately 2% is used for crop farming mainly under irrigation in the Orange River Valley and the Vaalharts Irrigation Scheme.

The Northern Cape offers unique tourism opportunities including wildlife conservation destinations, natural features, historic sites, festivals, cultural sites, star gazing, adventure tourism, agricultural tourism, ecotourism, game farms, and hunting areas, etc. The Province is home to the Richtersveld Botanical and Landscape World Heritage Site, which comprises a United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Site under the World Heritage Convention. The province is also home to two (2) Transfrontier National Parks, namely the Kgalagadi Transfrontier Park, and the Richtersveld or Ai-Ais Transfrontier Park, as well as five (5) national parks and six (6) provincial reserves. In addition, the province plays a significant role in South Africa's science and technology sector, as it is home to the Square Kilometre Array (SKA), the Southern African Large Telescope (SALT), and the Karoo Array Telescope (MeerKAT).

The Northern Cape is made up of 5 district municipalities, namely Francis Baard, John Taolo Gaetsewe, Namakwa, Pixley ka Seme and ZF Mgcawu (refer to Figure 5.1).

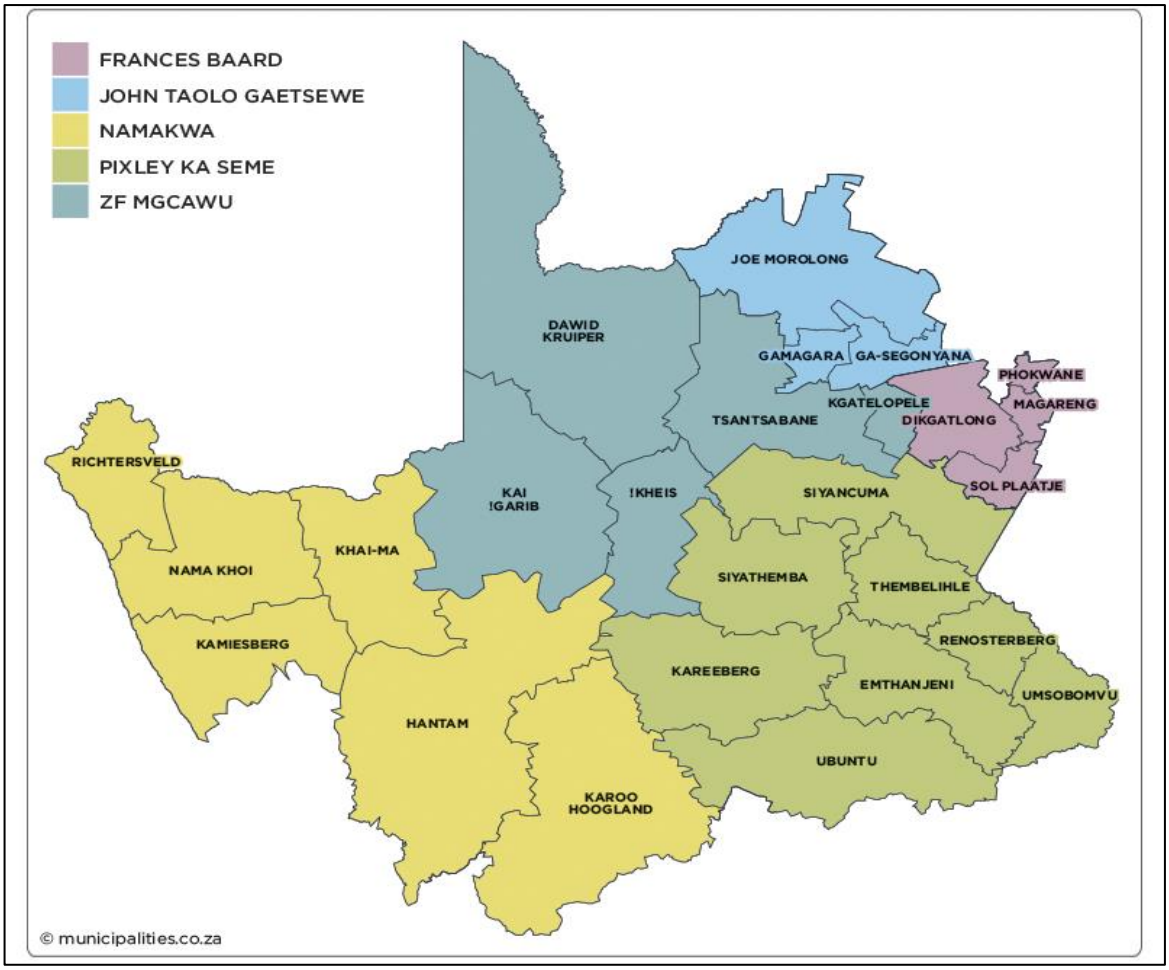

Figure 5.1. District municipalities of the Northern Cape Province (Source: Municipalities of South Africa).

The Namakwa District Municipality is a Category C municipality located in the Northern Cape Province. It is bordered by the republic of Namibia in the north, ZF Mgcawu Local Municipality in the north-east, Cape Winelands District Municipality in the south, West Coast District Municipality in the south-west, Pixley Ka Seme District Municipality in the east, Central Karoo District Municipality in the south-east, and the Atlantic Ocean in the west.

It is the largest district in the province, approximately 126 836km² in extent, making up over a third of its geographical area. It is comprised of six local municipalities: Nama Khoi, Hantam, Khai-Ma, Kamiesberg, Karoo Hoogland and Richtersveld (refer to Figure 5.2).

Figure 5.2. Local Municipalities of the Namakwa DM (Source: Municipalities of South Africa).

The seat of the Namakwa District Municipality is Springbok. Other Cities of this District include Aggeneys, Alexander Bay, Brandvlei, Bulletrap, Calvinia, Carolusberg, Concordia, Eksteensfontein, Frasersburg, Garies, Hondeklip Bay, Kamieskroon, Kleinzee, Koingnaas, Komaggas, Kuboes, Leliefontein/Kamiesberg, Loeriesfontein, Middelpos, Nababeep, Nieuwoudtville, O'Kiep, Onderste Doorns, Pella, Pofadder, Port Nolloth, Richtersveld, Sanddrift, Steinkopf, Sutherland and Williston.

The broader study area for the Great Karoo grid connection corridor is located within the Karoo Hoogland LM. The Karoo Hoogland LM is a Category B municipality and is situated in the Namakwa District of the Northern Cape Province. It is the second largest of the six municipalities in the district, making up a quarter of its geographical area, with an extent of 30 230km², accounting for a quarter of the DMs geographical area. The key towns within the LM include, Frasersburg, Sutherland and Williston.

5.3. Social and economic setting

The community, social and personal services sector with 42.5%, is the biggest contributor of the LM's GDP and of great importance to the economy of the Namakwa DM. The transport, storage and communication sector contribute 15%, the wholesale and retail trade, catering and accommodation sector contribute

13.7%, the agriculture, forestry and fishing sector contribute 13%, the finance, insurance, real estate and business services sector contribute 8.8% and the manufacturing sector 5.9%.

Karoo Hoogland Municipality has a total population of approximately 11 601 according to STATS SA Survey done in 2011. The three main towns in Karoo Hoogland, as stated above, Williston, Fraserburg and Sutherland which are respectively 499 km, 592 km and 539 km from Springbok. Karoo Hoogland Municipality is divided into 4 Wards and there is an estimate of 2204 households in the area serviced by the Municipality.

The population distribution in Karoo Hoogland Municipality is: Fraserburg: 23% of total population, Non-Urban areas (Rural): 31% of total population, Sutherland: 19% of total population and Williston: 27% of total population. It is evident that the most significant portion of Karoo Hoogland's urban population resides in Williston (27%). The Karoo Hoogland LM also has a large rural population, with 31% of its population residing in the non-urban (NU) regions within the Municipality which covers approximately 99% of the LMs geographical area.

The age distribution of a population is important because the largest age group inevitably indicates its own demands on the market. Many residents are still dependent on government grants and is the unemployment rate currently 23.1%. This has a negative influence on the payment of services and a total of 1035 households are subsidise by the service subsidized scheme. 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. The Karoo Hoogland gender distribution is 47, 8% males and 52, 2% females.

According to the 2011 Census data, 3 655 people are employed, 623 are unemployed, and 395 are classified as discouraged work-seekers. The unemployment rate is ~14,6%. Amongst the youth (aged 15 – 34 years), 1 317 people are employed, 329 are unemployed, 218 are classified as discouraged work-seekers, and 1 433 are not economically active. The unemployment rate is thus relatively high.

The closest town to the proposed project is Sutherland, which is located approximately 42km to the north. Matjiesfontein is approximately 47km to the south.

5.4. Climatic Conditions

The climate is arid to semi-arid. Rainfall may fall at any time of the year, although there is a peak in autumn / winter on the lowlands and slightly earlier (March) on the uplands. Mean temperatures of the mountainous regions are generally lower than the plains to the south of the escarpment. Frost is a common phenomenon in the mountainous areas with up to 50 days of frost per year. Mean annual rainfall is 180 to 200 mm per year.

Altitude has a strong influence on most climatic variables. Generally, an increase in altitude corresponds with a decrease in temperature and an increase in rainfall. Mountains also have an orographic influence on rainfall, escarpment zones usually experiencing increased rainfall and mist, depending on aspect, cause either an increase or decrease in mean daily insolation levels. The broader project area is located just south of the Great Escarpment and the climate is therefore strongly influenced by the presence of these mountains. All areas with less than 400 mm annual rainfall are arid. The study site can therefore be regarded as arid to very arid area.

5.5. Land use And Landcover of The Study Area

Stock farming (mostly sheep) is the traditional mainstay of the economies of Karoo Hoogland Local Municipality areas. Economically viable farming units are spatially extensive (around Sutherland, around ~7 000 ha). In the case of Sutherland, the Sutherland Observatory, located approximately 15km east of Sutherland, is internationally renowned, and attracts both local and international visitors and scientists. The town itself has seen some modest growth as a lifestyle resettlement destination over the past decade. Tourist flows into the study area municipality is currently limited, and mainly associated with the town of Sutherland (observatory) and the small Victorian rail siding of Matjiesfontein, which is located approximately 30 km west of Laingsburg.

Landcover data for the area (Fairbanks et al. 2000) indicates that most of the surroundings are in a natural condition. There are some small areas indicated as cultivation in the valley bottoms. The natural parts of the landscape consist primarily of "shrubland and low fynbos" (Fairbanks et al. 2000).

5.6. Biophysical Characteristics of the broader study area and grid corridor / switching station

5.6.1. Vegetation and protected plant species

The proposed Great Karoo OHL and Switching Station is situated within Renosterveld, which is an evergreen, fire-prone shrubland dominated by evergreen *asteraceous* shrubs, principally *Dicerothamnus rhinocerotis*, and possesses a high biomass and diversity of geophytes. The proposed development overlaps with Shale Renosterveld. This broad-scale vegetation type accounts for 86% of the total area of Renosterveld. Rainfall patterns permit a relatively high proportion of grass cover and abundance of non-succulent shrubs, and therefore, the structure of the vegetation is more congruent with proximal karoo types than other Renosterveld types.

On a fine-scale vegetation type, the proposed Great Karoo OHL and Switching Station overlaps with Central Mountain Shale Renosterveld (Figure 5.3). Central Mountain Shale Renosterveld occurs in the Western and Northern Cape on the southern and south-eastern 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.

The ecology of Central Mountain Shale Renosterveld type is poorly known. This vegetation type is described as follows:

- Topography – Slopes and broad ridges of low mountains and escarpments;
- Geology – Clayey soils overlying Adelaide Subgroup mudstones and subordinate sandstones. Glenrosa and Mispah forms are prominent;
- Climate – Arid to semi-arid climate. Mean Annual Precipitation (MAP) 180 – 410 mm, with relatively even rainfall throughout the seasons, albeit minimally elevated during Autumn-Winter. Mean daily maximuim and minimum temperatures 29.9˚C and 0.9 ˚C for January and July, respectively; and
- Important Taxa – Low shrubs: *Elytropappus rhinocerotis, Diospyros austro-africana, Eriocephalus africanus var. africanus, E. ericoides subsp. ericoides, E. grandifloras, Felicia ovata, Pteronia glauca, P. incana, P. sordida, Zygophyllum spinosum*. Succulent shrubs: *Delosperma subincanum, Drosanthemum lique, Euphorbia stolonifera, Trichodiadema barbatum, Tylecodon reticulatus subsp. reticulatus, T. wallichi subsp. wallichi*. Geophytic herbs: *Bulbine asphodeloides, Drimia intricate,*

Othonna auriculifolia, Oxalis obtusa. Succulent Herbs: *Crassula deceptor, C. muscosa, C. tomentosa var. glabrifolia, Senecio radicans*. There does not appear to be any species endemic to this vegetation type.

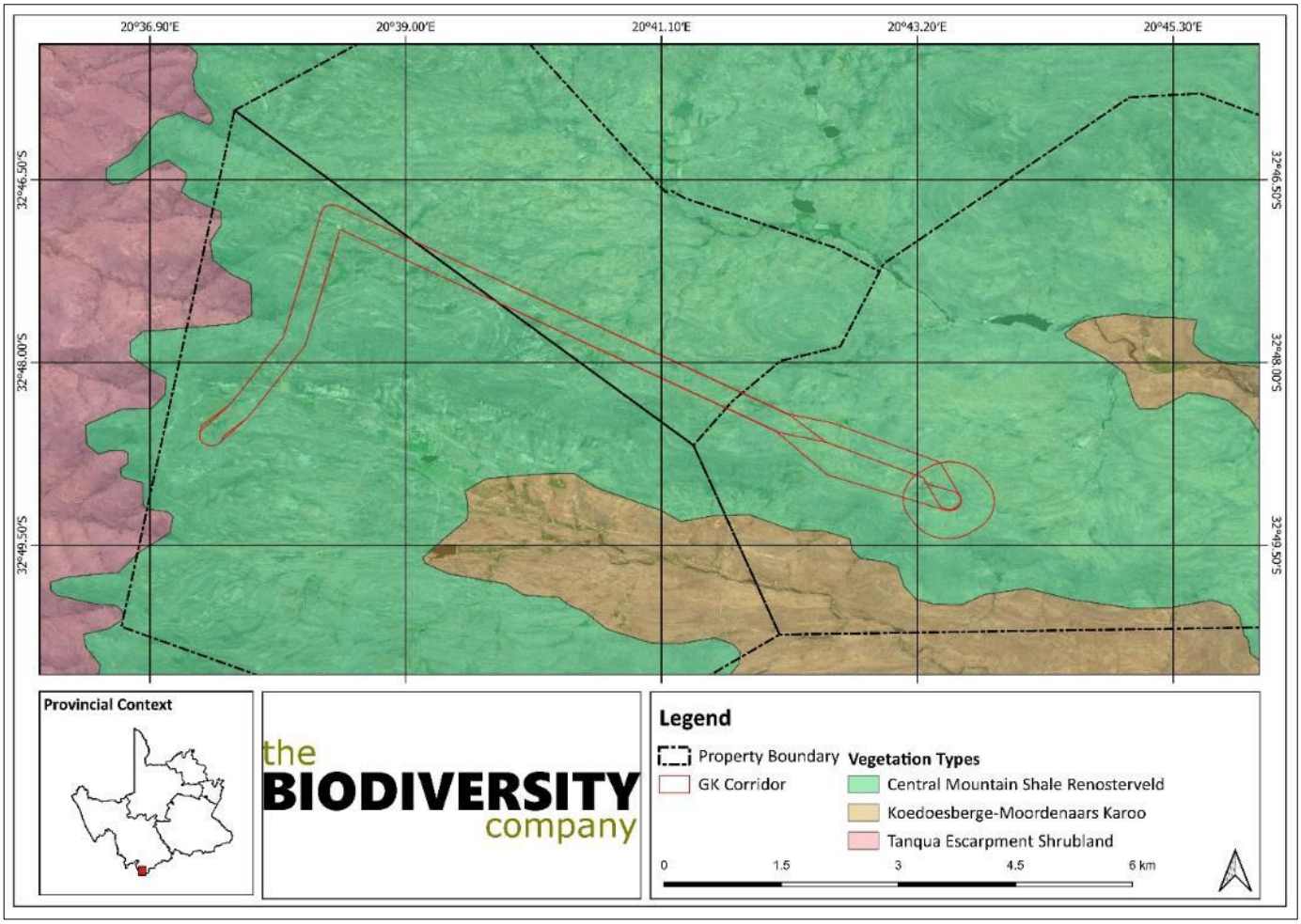

Figure 5.3. Map illustrating the vegetation type associated with the proposed Great Karoo OHL and Switching Station and surrounding landscape based on the Vegetation Map of South Africa, Lesotho & Swaziland (Mucina and Rutherford, 2012).

The Plants of Southern Africa (POSA) database indicates that 160 species of indigenous plants are expected to occur within the assessment area and immediate landscape (refer to **Appendix D** for a complete listing). Six Species of Conservation Concern (SCC) based on their conservation status are expected to occur within the assessment area and are provided in Table 5.1 below.

Table 5.1. Threatened flora species that are expected to occur within the assessment area associated with proposed Great Karoo OHL and Switching Station. DD = Data Deficient, VU = Vulnerable, EN = Endangered and NT = Near Threatened.

Family	Species Name	Conservation Status	Endemism	Habitat	Likelihood of Occurrence
Aizoaceae	Antimima pumila	DD	Endemic	Rocky slopes, possibly favouring south-facing slopes.	High
Fabaceae	Lotononis venosa	EN	Endemic	Open karroid scrub on sandy clay alluvium. Known only from four locations. Extent of occurrence 84 km² and area of occupancy 16 km².	Moderate
Hyacinthaceae	Lachenalia longituba	VU	Endemic	Stony clay in seasonally wet, boggy sites that bake rock hard in summer. Known from five locations. EOO 350 km², AOO <20 km².	Moderate
Iridaceae	Geissorhiza karooica	NT	Endemic	Coarse shale slopes. Known from six locations. EOO 497 km²	High
Iridaceae	Ixia mollis	VU	Endemic	Among rocks on seasonally moist south-facing sandy or clay slopes. Known from only five locations in the Olifants River Valley between Clanwilliam and Citrusdal and the western Cederberg. EOO 74 km²	Low
Iridaceae	Romulea eburnea	VU	Endemic	Shale soils in the Klein Roggeveld. Rare and localised as it known from only two locations.	High

The biodiversity specialist field assessment found that the species composition of the assessment area was congruent with typical Central Mountain Shale Renosterveld. Nevertheless, distinctive communities were observed and can be divided into ridges, rocky slopes, lowlands and drainage lines.

The ridges and rocky slope floral community was typically dominated by *Dicerothamnus rhinocerotis, Euryops lateriflorus, Oedera genistifolia, Montinia caryophyllacea, Pteronia paniculata, P. aspalatha, Eriocephalus africanus var. paniculatus*. The lowland areas on deeper soils generally consisted of species such as *Dicerothamnus rhinocerotis, Euryops lateriflorus, Oedera genistifolia, Pteronia incana, Ruschia cradockensis, Eriocephalus ericoides var. ericoides, Hermannia cuneifolia,* and *Asparagus capensis*. The patches of disturbed grazing areas were dominated by pioneer species comprising of *Gazania rigida*, *Arctotheca calendula* and *Senecio arenarius*. The larger drainage lines of the assessment area were dominated by *Diospyros austroafricana*, *Galenia africana*, *Dimorphotheca cuneata*, *Euryops lateriflorus* and *Rupera spinosa*.

Geophytes and succulents were ubiquitous throughout the assessment area and occurred within all the communities described above. Geophytes were particularly abundant within the lowland areas. It is important to note that these growth forms, and their non-succulent relatives, are protected under the Northern Cape Legislation and include:

- All species of Amaryllidaceae;
- All species of Asphodelaceae;
- All species of Crassulaceae;
- All Iridaceae;
- All species of Mesembryanthemaceae:
- All Colchicum (Colchicaceae);
- All Euphorbia (Euphorbiaceae);
- All Lachenalia (Hyacinthaceae); and
- All Oxalis (Oxalidaceae).

In addition to the aforementioned protected flora, two (2) threatened plant species occur within the assessment area, detailed in Table 5.2 below. None of the expected threatened flora species provided in the listing above however were recorded within the assessment area during the survey period.

Table 5.2. Summary of threatened flora species recorded within the assessment area associated with the proposed Great Karoo OHL and Switching Station and their respective growth form and conservation status.

Family	Species	Growth Form	Conservation Status	Endemism	Threats
Asteraceae	Eriocephalus grandiflorus	Shrub	Rare	Endemic	Habitat destruction due to development
Poaceae	Ehrharta eburnea	Graminoid	NT	Endemic	Livestock grazing

5.6.2. Invasive Alien Plants

Invasive Alien Plants (IAP) are scarce within the assessment area due to the limited disturbance from anthropogenic influences. Two (2) IAP species were recorded within the assessment area, *Erodium moschatum* and *Portulaca quadrifida*. These species are not listed under the Alien and Invasive Species List 2016, Government Gazette No. 40166. However, there were additional IAPs observed within the landscape along the larger river systems, in grazing pastures and at houses. Three (3) are categorised as Category 1b, one (1) as Category 2 and one (1) as Category 3 (Table 5.3 below).

Considering that IAPs primarily tend to encroach into disturbed areas, the disturbance generated from the activities associated with the proposed development, suggests that these species may invade the grid connection corridor. Considering the predominantly natural integrity of the vegetation within the assessment area, IAP species must be controlled by implementing an Invasive Alien Plant Management Programme in compliance of section 75 of the Act as stated above.

Table 5.3. Summary of Invasive Alien Plants (IAPs) recorded within the assessment area and surrounding landscape associated with the proposed Great Karoo OHL and Switching Station.

Species	Growth Form	NEMBA Category	Control
Erodium moschatum	Herb	-	Physical removal ensuring root system is removed.
Sisymbrium orientale	Herb	-	Physical removal ensuring root system is removed.
Chrysanthemum segetum	Herb	-	Physical removal ensuring root system is removed.
Sonchus asper asper	Herb	-	Physical removal ensuring root system is removed.
Urtica urens	Herb	-	Physical removal ensuring root system is removed.
Eucalyptus camaldulensis	Large tree	1b	Physical removal of seedlings or felling and stump herbicide treatment for large specimens
Portulaca quadrifida	Herb	-	Physical removal ensuring root system is removed.
Malva parviflora	Herb	-	Physical removal ensuring root system is removed.
Schinus molle	Large tree	-	Physical removal of seedlings ensuring root system is removed. Large specimens to be felled and stump treated with herbicide.
Schinus terebinthifolius	Large tree	3 (NC)	Physical removal of seedlings ensuring root system is removed. Large specimens to be felled and stump treated with herbicide.
Casuarina cunninghamiana	Large tree	2 1b within 100 m of riparian areas or untransformed land	Physical removal of seedlings ensuring root system is removed. Large specimens to be felled and stump treated with herbicide.
Opuntia ficus indica	Succulent tree	1b	Physical removal of seedlings ensuring root system is removed. Large specimens to be treated with herbicide ensuring all plant material removed from site.
Atriplex nummularia nummularia	Woody shrub	2	Physical removal ensuring that the root system is removed.

5.6.3. Amphibians

Based on the IUCN Red List Spatial Data and the FrogMAP database, 8 amphibian species are expected to occur within the area (**Appendix D**). None of these expected species are threatened. No amphibian species were however recorded during the survey period, mainly due to no night survey being undertaken. All eight (8) expected species are widely distributed and thus have a high likelihood of occurrence.

5.6.4. Reptiles

Based on the IUCN Red List Spatial Data and the ReptileMAP database, 49 reptile species are expected to occur within the area (refer **Appendix D** for a complete listing). Three (3) are regarded as threatened (Table 5.4).

Table 5.4. Threatened reptile species that are expected to occur within the assessment area associated with the proposed Great Karoo OHL and Switching Station. EN = Endangered and NT = Near Threatened.

Family	Scientific Name	Common Name	Conservation Status	Endemism	Habitat	Likelihood of Occurrence
Testudinidae	Chersobius boulengeri	Karoo Padloper	EN	Endemic	Rocky areas, particularly dolerite ridges. Secretive species sheltering under rock slabs.	Moderate
Testudinidae	Psammobates tentorius tentorius	Karoo Tent Tortoise	NT	Endemic	Shrubland habitats with summer- or all-year-rainfall and frequent frost	Low
Testudinidae	Psammobates tentorius verroxii	Verrox's Tent Tortoise	NT	Near-Endemic	Inland plateau above 900 m in summer-rainfall areas of open shrubland.	High

Chersobius boulengeri is a South African endemic, limited to the Great Karoo region at altitudes between 800 – 1500 m.a.s.l. Although the species has a relatively wide distribution, there are indications of considerable decline. Surveys conducted between 2005 and 2017 indicated that most localities (approximately 85%) where populations previously occurred no longer possess viable populations and is therefore listed as Endangered (Hofmeyer et al, 2018a). Threats include overgrazing by livestock, road kills and shale gas exploration. Climate change further exacerbates habitat loss.

Psammobates tentorius is widely distributed but has been exhibiting declining and is therefore regarded as Near Threatened (Hofmeyer et al, 2018b). Threats include overgrazing, destructive or illegal mining, and unsustainable land use involving ploughing of natural veld for fodder cropping, uncontrolled harvesting of natural products and irresponsible tourism activities in sensitive areas. Climate change further exacerbates habitat loss.

Seven (7) species of herpetofauna were recorded within the assessment area during the survey period (Table 5.5). However, there are several reptile species that are known to occur within the landscape based on communication with landowners and construction personnel at the Karusa Wind Farm such as *Psammobates tentorius*, *Naja nivea* (Cape Cobra), *Bitis arietans* (Puff Adder) and *Psammophis notostictus* (Karoo Sand Snake), but these were not recorded during the survey period. The lack of species richness was likely due to the combination of the inherent secretive nature of herpetofauna species, limited time available for fieldwork and no night survey was undertaken.

None of the seven species recorded are regarded as threatened, albeit five are protected under provincial legislation. The *Homopus (Testudinidae)* species recorded could not be identified to species level as only the carapace of a dead specimen was found.

Table 5.5. Summary of reptile species recorded within the assessment area associated with the proposed Great Karoo OHL and Switching Station during the survey period. Species highlighted in bold are of conservation concern as they are either threatened or protected. LC = Least Concern.

Family	Scientific Name	Common Name	Conservation Status	Endemism
Agamidae	Agama atra	Southern Rock Agama	LC	Near-Endemic
Cordylidae	**Cordylus minor**	**Western Dwarf Girdled Lizard**	**LC**	**Endemic**
Cordylidae	**Karusasaurus polyzonus**	**Karoo Girdled Lizard**	**LC**	**Near-Endemic**
Lacertidae	**Pedioplanis lineoocellata pulchella**	**Common Sand Lizard**	**LC**	**Near-Endemic**
Scincidae	Trachylepis variegata	Variegated Skink	LC	
Testudinidae	**Chersina angulata**	**Angulate Tortoise**	**LC**	
Testudinidae	**Homopus sp.**	**Padloper**	**N/A**	**N/A**

5.6.5. Mammals

The IUCN Red List Spatial Data lists 52 mammal species that could be expected to occur within the area. Five (5) of these expected species are regarded as threatened (Table 5.6).

Table 5.6. Threatened mammal species that are expected to occur within the assessment area associated with the proposed Great Karoo OHL and Switching Station. CR = Critically Endangered, NT= Near Threatened and VU = Vulnerable.

Family	Scientific Name	Common Name	Conservation Status	Likelihood of Occurrence	Habitat
Bovidae	Pelea capreolus	Grey Rhebok	NT	High	Rocky hills, rocky mountainsides, mountain plateaux with good grass cover.
Felidae	Felis nigripes	Black-footed cat	VU	High	Open habitat in arid areas with some cover in the form of tall stands of grass or scrub.
Felidae	Panthera pardus	Leopard	VU	Low-Moderate	Diverse. Rocky areas and forest.
Leporidae	Bunolagus monticularis	Riverine Rabbit	CR	Low	Confined to riparian bush on the narrow alluvial fringe of seasonally dry watercourses in the Central Karoo.
Mustelidae	Aonyx capensis	Cape Clawless Otter	NT	Low	Permanent water bodies with suitable abundance of prey items.

Fourteen (14) mammal species were observed during the survey (Table 5.7) based on either direct observation or the presence of visual tracks and signs. The low number of species recorded was likely due to limited time available for fieldwork, as groups such as rodents and shrews require trapping over an extensive period. A single threatened species, *Palea capreolus* (Grey Rhebok), was recorded.

Table 5.7. Summary of mammal species recorded within the assessment area associated with the proposed Great Karoo OHL and Switching Station during the field survey. Species highlighted in bold are of conservation concern as they are either threatened or protected. LC = Least Concern and NT = Near-Threatened.

Family	Scientific Name	Common Name	Conservation Status	Endemism
Bathyergidae	**Cryptomys hottentotus**	**African Mole Rat**	**LC**	**Endemic**
Bovidae	**Antidorcas marsupialis**	**Springbok**	**LC**	
Bovidae	**Pelea capreolus**	**Grey Rhebok**	**NT**	**SLS**
Bovidae	**Oreotragus oreotragus**	**Klipspringer**	**LC**	
Bovidae	**Raphicerus campestris**	**Steenbok**	**LC**	
Canidae	Canis mesomelas	Black-backed Jackal	LC	
Cercopithecidae	Papio ursinus	Chacma Baboon	LC	
Herpestidae	**Cynictis penicillata**	**Yellow Mongoose**	**LC**	
Hystricidae	**Hystrix africaeaustralis**	**Cape Porcupine**	**LC**	
Leporidae	**Lepus capensis**	**Cape Hare**	**LC**	**Endemic**
Leporidae	**Pronolagus saundersiae**	**Hewitt's Red Rock Hare**	**LC**	**Endemic**
Muridae	**Micaelamys namaquensis**	**Namaqua Rock Mouse**	**LC**	
Orycteropodidae	**Orycteropus afer**	**Aardvark**	**LC**	
Procaviidae	**Procavia capensis**	**Rock Hyrax**	**LC**	

Pelea capreolus (Grey Rhebok) is listed as Near Threatened globally (Taylor et al, 2017). The species is endemic to South Africa, Lesotho and Swaziland and occurs in rocky habitats with good grass cover for shelter and to hide from predators, and thereby exhibits a patchy distribution. They are predominantly browsers, with majority of their diet comprised of herbaceous shrubs. *P. capreolus* are largely water independent, obtaining most of their water requirements from food. They often use steep open areas with little cover when feeding. It is estimated there is a minimum of 2 000 individuals in formally protected areas, but further research is required to confirm whether there are over 10 000 individuals across its range. There are noted declines in the species population, including in protected areas. Although further research is required to identify the threats driving population declines, it is suspected that the main threat is increased levels of bushmeat and illegal sport hunting with dogs. Habitat degradation from climate change or poor land management may also play a role.

5.6.6. Critical Biodiversity Areas & Broad-Scale Processes

The National CBA spatial data indicates that the proposed development overlaps with a CBA 1 and marginally with a CBA 2.

The Namakwa District Biodiversity Spatial Plan (NDBSP) categorises CBAs into the following types:

- T1 – Critically Endangered (CR) vegetation types and irreplaceable biodiversity areas (areas definitely required to meet conservation targets);
- T2 – Endangered (EN) and Vulnerable (VU) vegetation types and important terrestrial habitats; and

» ESA – Ecological Support Areas including corridors.

The proposed development traverses T2 CBAs that have been defined as such because they are slope habitat. The Northern Cape Critical Biodiversity Area (CBA) Map updates, revises and replaces all older systematic biodiversity plans and associated products for the province. Therefore, the most relevant categorisation for the assessment area is CBA 1 and CBA 2 (Figure 5.4).

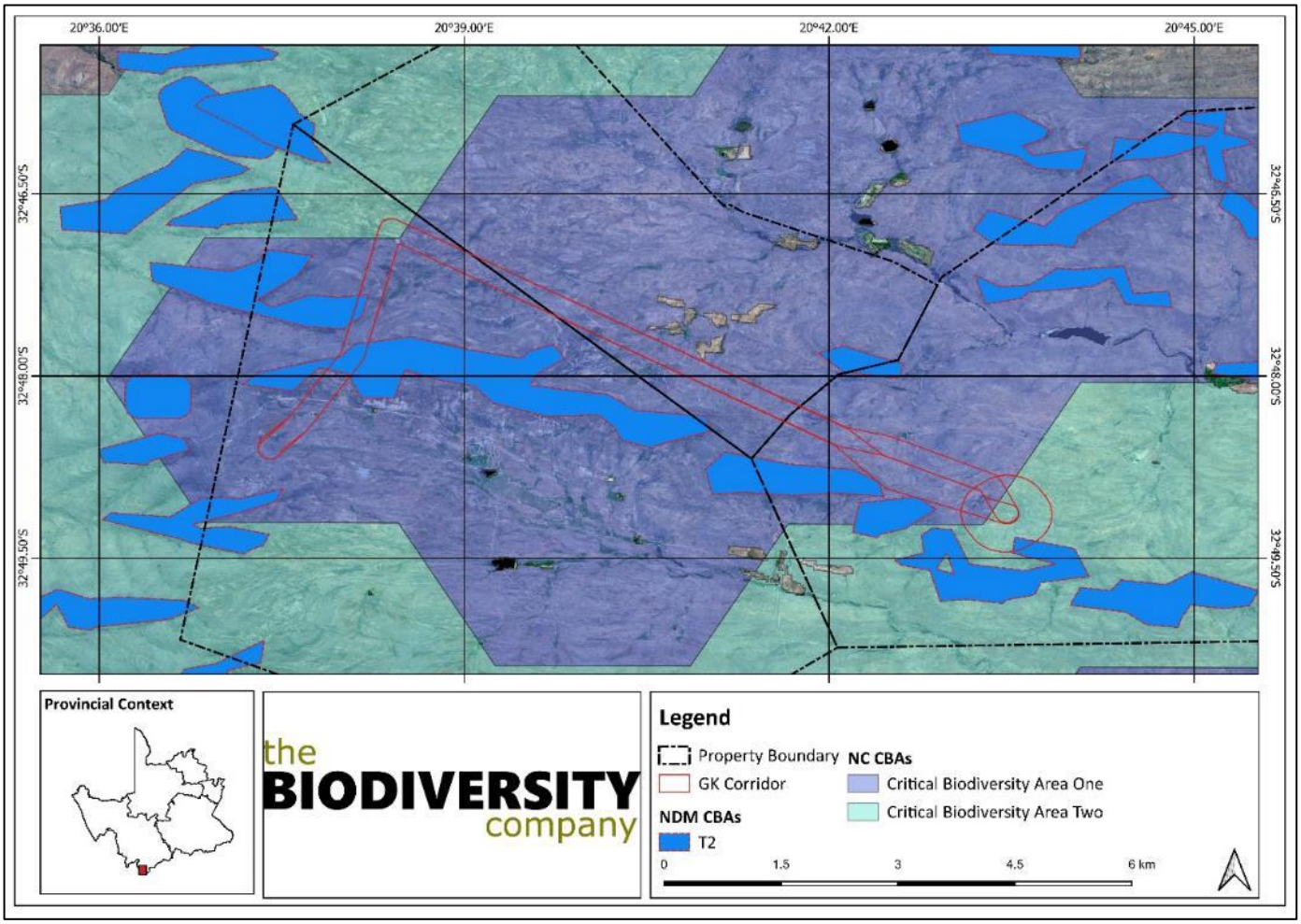

Figure 5.4. Map illustrating the locations of Critical Biodiversity Areas proximal to the Great Karoo OHL and Switching Station.

5.6.7. Protected Areas

According to the protected area spatial datasets from SAPAD (2019), the proposed development does not occur within any protected area (Figure 5.5). The Witteberg Nature Reserve, Anysberg Provincial Nature Reserve and Zuurkloof Private Nature Reserve are located approximately 50 km to the south of the proposed development and the Tankwa Karoo National Park occurs approximately 60 km to the north-west of the proposed development.

The proposed development is located within the Western Karoo focus area for the National Protected Area Expansion Strategy (NPAES) (Figure 5.5). Focus areas for land-based protected area expansion are large, intact and unfragmented areas of high importance, suitable for the creation or expansion of large

protected areas. These areas should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. Therefore, development, depending on its level of impact, may occur within a portion of these areas.

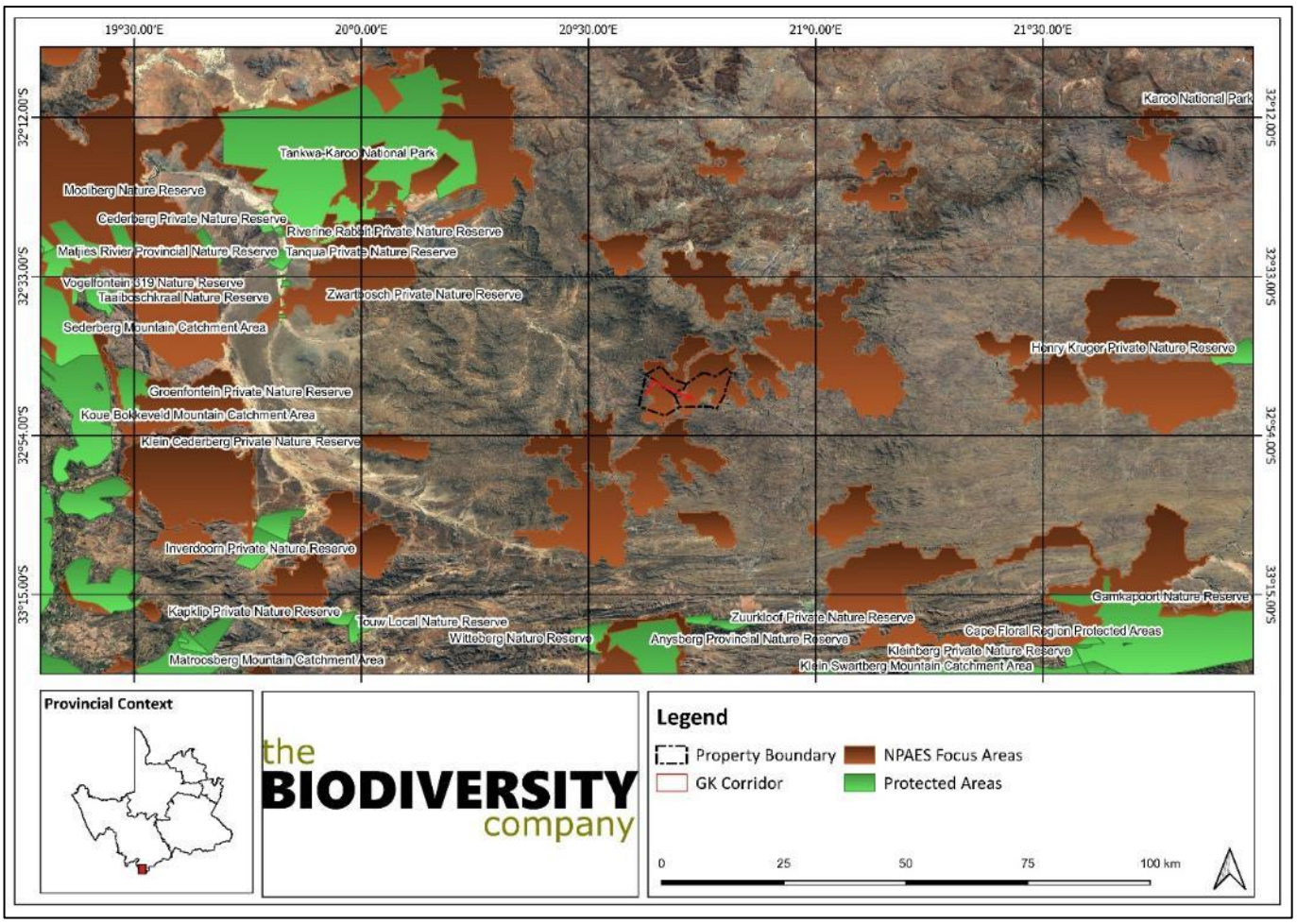

Figure 5.5. Map illustrating the location of protected areas and National Protected Area Expansion Strategy (NPAES) focus areas proximal to the proposed Great Karoo OHL and Switching Station.

5.6.8. Important Bird and Biodiversity Areas (IBAs)

The proposed development is not located within an IBA. The Anysberg Nature Reserve IBA is located approximately 50 km to the south of the proposed development and the Cedarberg-Koue Bokkeveld Complex IBA is located approximately 70 km to the west of the proposed development. Important Bird and Biodiversity Areas are therefore not relevant to the proposed development.

5.6.9. Avifauna

Based on the SABAP2 database, 101 species of avifauna are expected to occur within the area. Of the expected bird species list generated, four (4) species are regarded as threatened (Table 5.8).

Table 5.8. Threatened avifauna species that may occur within the assessment area associated with the proposed Great Karoo OHL and Switching Station. EN = Endangered, LC = Least Concern, NT= Near Threatened and VU = Vulnerable.

Family	Scientific Name	Common Name	Conservation Status	Endemism	Habitat	Likelihood of Occurrence
Accipitridae	Aquila verreauxii	Verreaux's Eagle	VU		Mountain ridges and cliffs	High
Accipitridae	Circus maurus	Black Harrier	EN	Near-Endemic	Open fynbos, renosterveld and grassland areas.	Low
Ciconiidae	Ciconia nigra	Black Stork	VU		Wetlands, pans and river systems. Requires tall trees or cliffs for nesting	Low
Otididae	Eupodotis vigorsii	Karoo Korhaan	NT		Shrubland habitat with a preference for denser growths.	Low

Thirty (30) avifauna species were observed within the assessment area and surrounding landscape during the survey period, based on either direct observations or species calls (Table 5.9). The species recorded could be regarded as species typical of Renosterveld. The most speciose families were the *Accipitridae* and *Muscicapidae*, represented by four species each. Species from the *Alaudidae* and *Muscicapidae* families were the most ubiquitous within the assessment area. Majority (30%) of the species are categorised as omnivorous ground-foragers, with four (4) species categorised as carnivorous ground-hawkers.

Table 5.9. Summary of avifauna species recorded within the assessment area associated with the proposed Great Karoo OHL and Switching Station during the field survey. Species highlighted in bold are of conservation concern as they are either threatened. EN = Endangered, LC = Least Concern and VU = Vulnerable. CGH = Carnivore-Ground Hawker, CN = Carnivore-Nocturnal, OGF = Omnivore-Ground Forager, HGF = Herbivore-Ground Forager, IGG = Invertivore-Ground Gleaner, IFG = Invertivore-Foliage Gleaner, C/S = Carnivore/Scavenger, GGUG = Granivore-Ground to Undergrowth Gleaner, IAHAC = Invertivore-Aerial Hawker Above Canopy and FUCG = Frugivore-Upper Canopy Gleaner.

Family	Scientific Name	Common Name	Conservation Status	Endemism	Guild
Accipitridae	Aquila verreauxii	Verreaux's Eagle	VU		CGH
Accipitridae	Buteo rufofuscus	Jackal Buzzard	LC	Near-Endemic	CGH
Accipitridae	Circaetus pectoralis	Black-chested Snake-eagle	LC		CGH
Accipitridae	Melierax canorus	Pale Chanting Goshawk	LC		CGH
Alaudidae	Calendulauda albescens	Karoo Lark	LC	Near-Endemic	OGF
Alaudidae	Galerida magnirostris	Large-billed Lark	LC		OGF
Alaudidae	Mirafra apiata	Cape Clapper Lark	LC	Near-Endemic	OGF
Anatidae	Alpochen aegyptica	Egyptian Goose	LC		HGF
Anatidae	Tadorna cana	South African Shelduck	LC		OGF

Family	Scientific Name	Common Name	Conservation Status	Endemism	Guild
Charadriidae	Vanellus coronatus	Crowned Lapwing	LC		IGG
Cisticolidae	Cisticola subruficapilla	Grey-backed Cisticola	LC		IFG
Cisticolidae	Prinia maculosa maculosa	Shrub Karoo Prinia	LC	Near-Endemic	IFG
Corvidae	Corvus albus	Pied Crow	LC		C/S
Emberizidae	Emberiza capensis	Cape Bunting	LC		OGF
Falconidae	Falco rupicolus	Rock Kestrel	LC		CGH
Fringillidae	Crithagra flaviventris	Yellow Canary	LC		GGUG
Hirundinidae	Hirundo fuligula	Rock Martin	LC		IAHAC
Muscicapidae	Cercomela schlegelii	Karoo Chat	LC		IGG
Muscicapidae	Cercomela sinuata	Sickle-winged Chat	LC	Near-Endemic	IGG
Muscicapidae	Cercotrichas coryphoeus	Karoo Scrub-robin	LC		IGG
Muscicapidae	Oenanthe monticola	Mountain Wheatear	LC		IGG/FUCG
Nectariniidae	Nectarinia famosa	Malachite Sunbird	LC		N
Otididae	Afrotis afra	Southern Black Korhaan	VU	Endemic	OGF
Otididae	Neotis ludwigii	Ludwig's Bustard	EN	Near-Endemic	OGF
Phasianidae	Corturnix corturnix	Common Quail	LC		OGF
Phasianidae	Pternistis capensis	Cape Spurfowl	LC	Endemic	OGF
Phasianidae	Scleroptila africanus	Grey-winged Francolin	LC	SLS	OGF
Pycnonotidae	Pycnonotus capensis	Cape Bulbul	LC	Endemic	FUCG
Strigidae	Bubo africanus	Spotted Eagle-owl	LC		CN
Sturnidae	Onychognathus nabouroup	Pale-winged Starling	LC		FUCG/IGG

Majority of the avifauna species recorded are protected under provincial legislation, with three (3) species regarded as red-listed.

Afrotis afra (Southern Black Korhaan) is listed as Vulnerable on a global scale (BirdLife International, 2016a). The species is endemic to southwestern South Africa. The species is restricted to the non-grassy, winter rainfall or mixed winter-summer rainfall fynbos, renosterveld and succulent Karoo biomes, and the extreme south of the Nama-Karoo biome, in a narrow strip along the southern and western coastlines of South Africa. Collisions with power lines are also an emerging threat. It is unknown if the size of the power lines affects the probability of collision. The specimens observed within the assessment area were displaying breeding behaviour and therefore, the area forms part of the species breeding range. Considering the decrease in breeding success within the species' range, the area is considered vital for the continued population wellbeing.

Aquila verreauxii (Verreaux's Eagle) is listed globally as Least Concern but Vulnerable on a regional scale with the regional population to be between 3 500 and 3 750 mature individuals (Taylor, 2015). The species occupies mountainous areas including savannah and semi-desert, where there is a relatively high abundance of *Procavia capensis* (Rock Hyrax) (BirdLife International, 2016b). The principle threat in southern Africa is persecution where it coincides with livestock farms, but because the species does not take carrion, it is little threatened by poisoned carcasses. Risk of electrocution is regarded a threat (Prinsen et al, 2011).

Neotis ludwigii (Ludwig's Bustard) is listed as Endangered on a global scale (BirdLife International, 2018). The species has a large range centred on the dry biomes of the Karoo and Namib in southern Africa, being found in the extreme south-west of Angola, western Namibia and South Africa. The primary threat to the species is collisions with overhead power lines, irrespective of size, with potentially thousands of individuals involved in such collisions each year (Jenkins et al. 2011). Collision rates on high voltage transmission lines in the Karoo may exceed one Ludwig's Bustard per kilometre per year. Bustards have limited frontal vision so may not see power lines, even if they are marked (Martin and Shaw 2010). A total of seven (7) individuals were observed within the assessment area, specifically around the eastern portion, and an additional specimen was observed within the broader landscape.

The SABAP 2 reporting rate for these species as well as those species that are known to occur within the broader landscape that are identified as exhibiting a high potential for impacts by energy generation and distribution are provided in Table 5.10.

Table 5.10. Summary of avifauna species within the assessment area that are prone to impacts by the energy production and distribution sector, based on the priority score (Retief et al, 2011) and their respective SABAP 2 pentad reporting rate.

Scientific Name	Common Name	Priority Score	SABAP2 Pentad Reporting Rate			
			3230_2030	3235_2025	3235_2035	3240_2030
Afrotis afra	Southern Black Korhaan	270				
Aquila pennatus	Booted Eagle	230	3.23			
Aquila verreauxii	Verreaux's Eagle	360	19.35	14.29	66.67	
Bubo africanus	Spotted Eagle-owl	170			33.33	
Buteo rufofuscus	Jackal Buzzard	250	3.23		33.33	100.00
Ciconia nigra	Black Stork	330	3.23	0.00		
Circaetus pectoralis	Black-chested Snake-eagle	230		0.00		
Circus maurus	Black Harrier	345		0.00		
Eupodotis vigorsii	Karoo Korhaan	240		28.57		
Neotis ludwigii	Ludwig's Bustard	320				

5.6.10. Avifaunal habitat use

The assessment area overlaps with four avifaunal fine-scale habitats, namely lowlands, rocky slopes, ridges/cliffs and drainage lines (Figure 5.6).

The **lowland vegetation** was the most expansive habitat and supports an abundance of small omnivorous ground-gleaning passerines, especially *Calendulauda albescens* (Karoo Lark) and *Mirafra apiata* (Cape Clapper Lark), as well as non-passerines, including priority species such as *Scleroptila africanus* (Grey-winged Francolin), *Afrotis afra* (Southern Black Korhaan), *Neotis ludwigii* (Ludwig's Bustard) and *Pternistis capensis* (Cape Spurfowl). *Melierax canorus* (Pale Chanting Goshawk) was the most ubiquitous raptor within the lowland habitats.

These **lowland areas** graduated into rocky slopes and although they were inhabited by a similar species assemblage, species such as *Oenanthe monticola* (Mountain Wheatear) and *Crithagra flaviventris* (Yellow Canary) were only recorded here. The rocky slope habitat also possessed a lower richness and abundance of non-passerine species, albeit these species use the rocky slopes as flyways.

Ridges/cliffs tended to possess unique avifaunal communities within the landscape, generally being dominated by *Cercomela schlegelii* (Karoo Chat) and *Cercomela sinuata* (Sickle-winged Chat). Majority of the raptor sightings were observed within this habitat type, including *Aquila verreauxii* (Verreaux's Eagle), *Buteo rufofuscus* (Jackal Buzzard), *Circaetus pectoralis* (Black-chested Snake-eagle), *Falco rupicolus* (Rock Kestrel), as they utilise the thermals to forage more efficiently. It is also important to consider that the main prey item of *Aquila verreauxii*, *Procavia capensis* (Rock Hyrax), occupy these habitats.

Drainage lines within the landscape formed a distinct vegetation structure as they were dominated by larger shrub and smaller tree species, such as *Diospyros austro-africana* and *Roepera spinosa* forming a denser canopy cover when compared to the surrounding vegetation. Avifauna species that exhibited a preference for this habitat type comprised of invertivore foliage-gleaners such as *Cisticola subruficapilla* (Grey-backed Cisticola) and *Prinia maculosa maculosa* (Shrub Karoo Prinia), as well as *Cercotrichas coryphoeus* (Karoo Scrub-robin). In addition, in drainage lines where surface water was available, species such as *Alpochen aegyptica* (Egyptian Goose), *Tadorna cana* (South African Shelduck) and *Vanellus armatus* (Blacksmith Lapwing) were present.

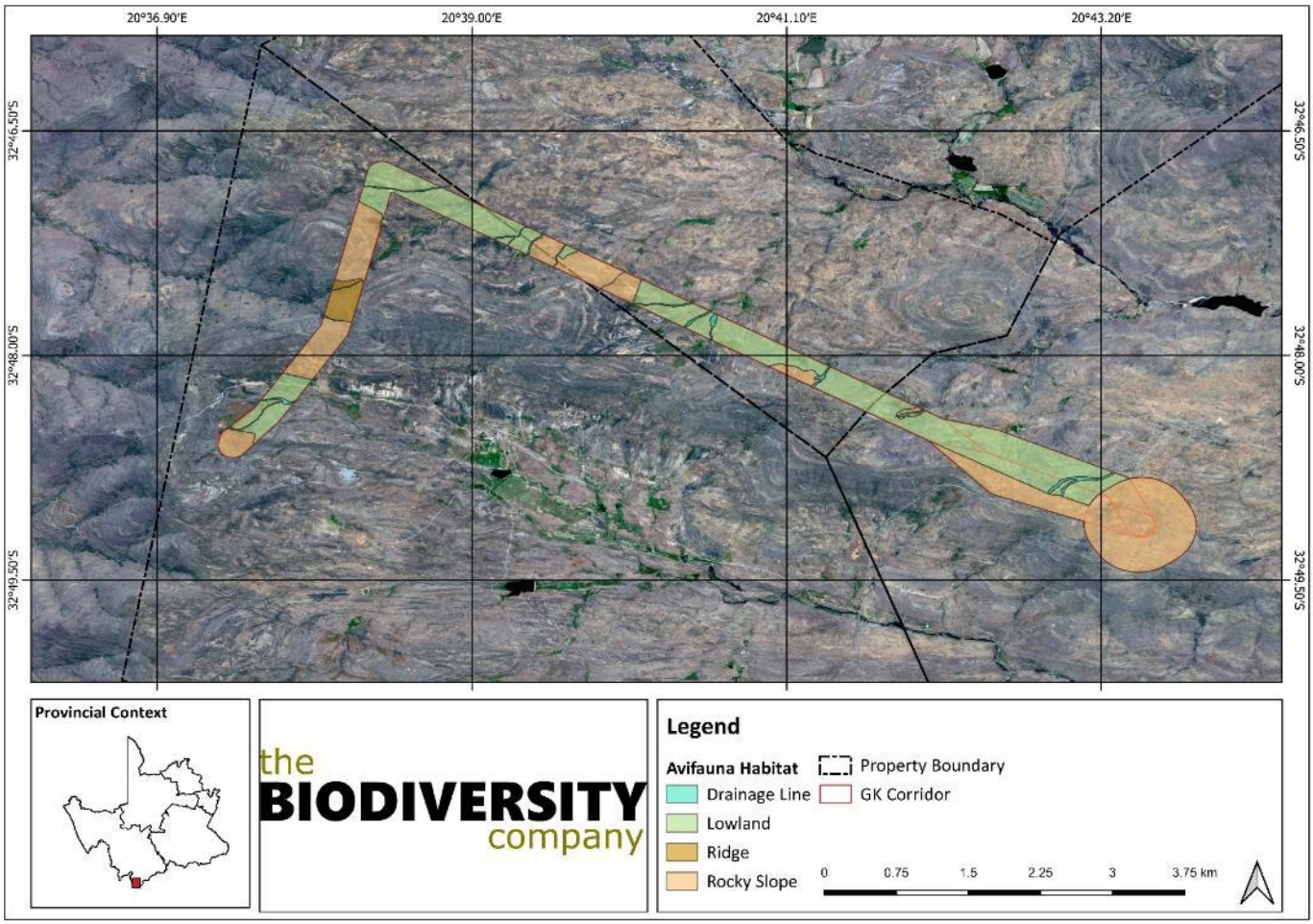

Figure 5.6. Map illustrating the location and extent of avifauna fine-scale habitat types delineated within the assessment area associated with the proposed Great Karoo OHL and Switching Station.

5.6.11. Flight paths and nest locations

Observing and monitoring flight paths and nesting sites are important in ascertaining habitat sensitivity and evaluating the impact risk significance of any proposed development. Given that there are three (3) SCC, and ten species are regarded as priority species for wind energy development and power line infrastructure, during the field survey recording flight-paths and nesting sites were undertaken for certain species. However, given the limited time available the results of this section must be interpreted with caution, as each species movement is likely to be more extensive and there may have been nesting sites that were not observed. Figure 5.7 below illustrates the location and extent of flight paths and nesting sites of select priority species within the assessment area.

A pair of *Bubo africanus* (Spotted-Eagle Owl) were observed to be nesting within the drainage line parallel to the OHL adjacent to the Karusa Substation. The species forms life-long pair bonds and tends to re-use nesting sites. The breeding season starts in late winter to spring in southern Africa, with the incubation period between 32-34 days. The fledgling period is around 7 weeks. Therefore, the specialist recommended that construction and installation within this portion of the OHL be undertaken in late August to avoid disturbance. If this is not possible, a 50 m buffer around the nest site should be maintained to ensure no construction activity occurs within the buffer (refer Figure 5.8). Although, the risk of collision for owls tend to be minimal due to their eyesight, the species is at risk of electrocution (Prinsen et al, 2011). No pylons are to be erected

within 100 m of the nest site to reduce the risk of electrocution (Figure 5.8). Where technically feasible, the distance between the nest and the nearest pylons should be increased to 200m.

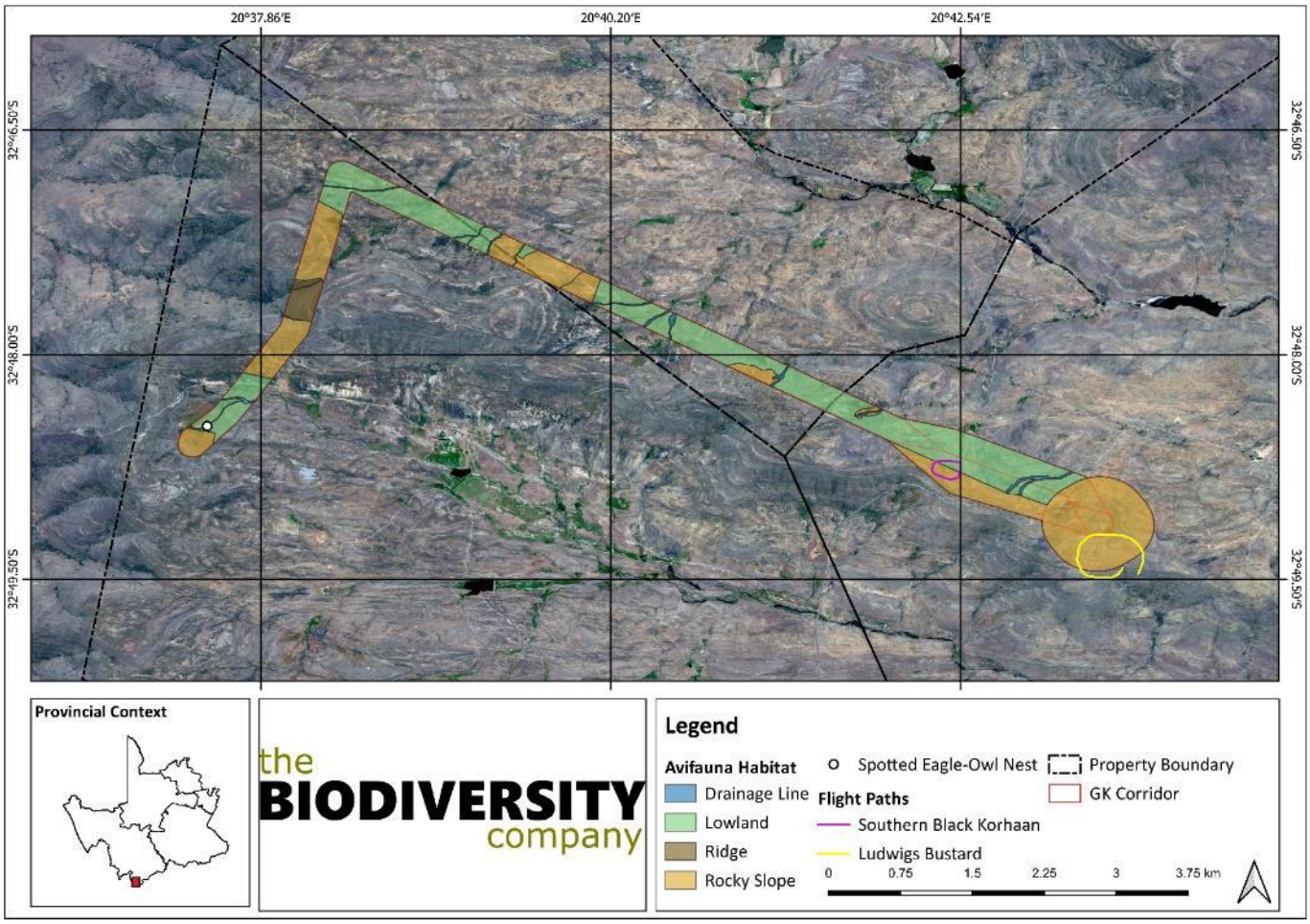

Figure 5.7. Map illustrating the flight paths and nests observed of priority species within the assessment area associated with the proposed Great Karoo OHL and Switching Station.

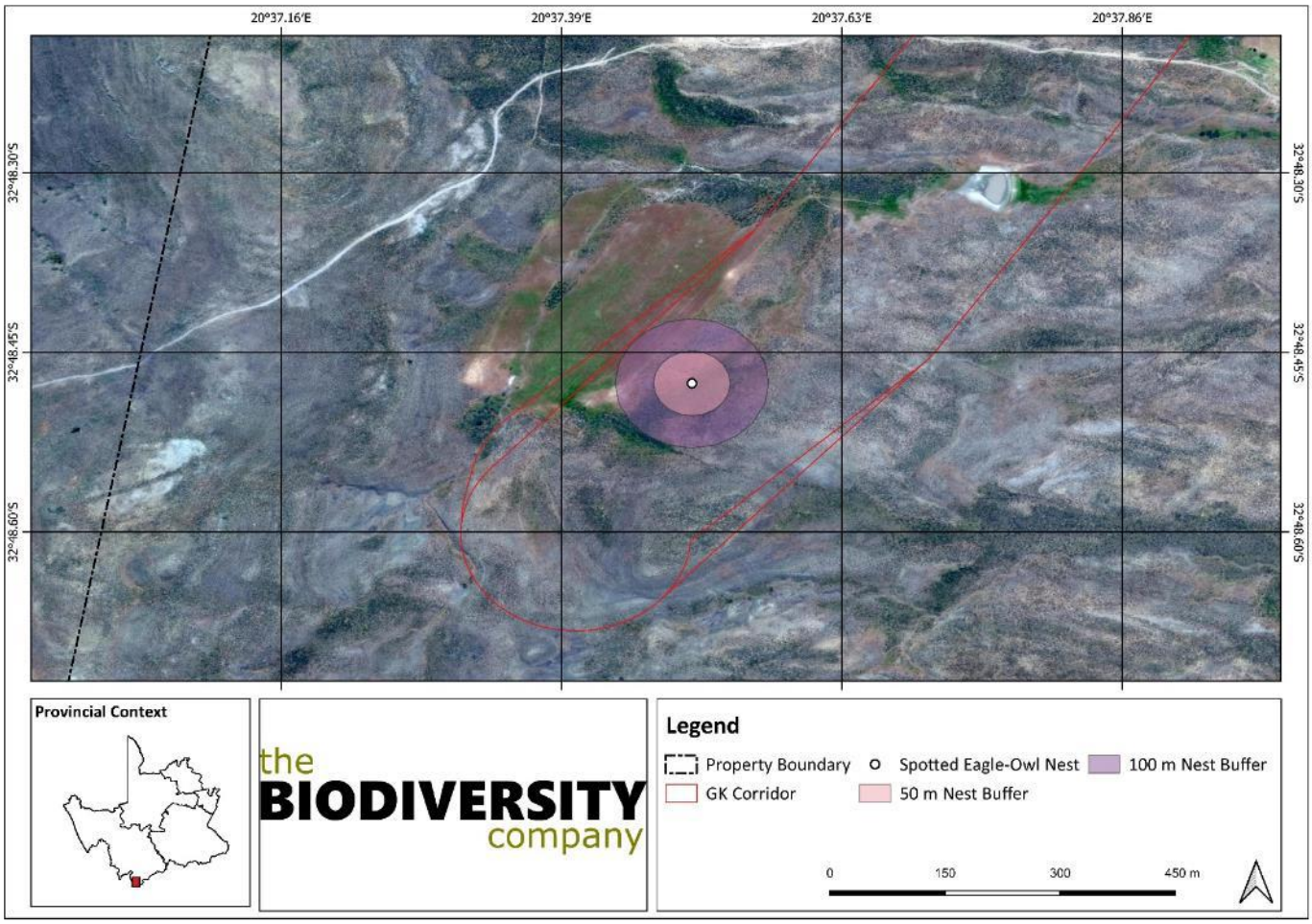

Figure 5.8. Map illustrating the location of the Spotted Eagle-Owl (Bubo africanus) nest and associated buffer zones within the assessment area associated with the proposed Great Karoo OHL and Switching Station.

5.6.12. Avifaunal priority areas

The avifaunal assessment delineates fine-scale priority avifaunal areas. The priority categories range from 'Low' to 'Very High', with 'Very High' areas requiring stringent mitigation measures and 'Low" areas not of concern or requiring minimum mitigation measures. Development of the grid connection infrastructure is possible in all priority areas, subject to the implementation of the mitigation measures prescribed for each priority area. Generally, lowland areas and rocky slopes were assigned a 'Moderate' category as they were typically dominated by small passerine species. However, where threatened or priority species occurred or displayed breeding behaviour, these areas were categorised as a 'Very High' priority (Figure 5.9). Drainage lines are likely to be used as flyways, especially by heavy-bodied waterfowl, and therefore were assigned a 'High' priority category.

The proposed grid corridor also intersects a turbine exclusion zone identified during the original pre-construction bird monitoring study undertaken for the "Hidden Valley" wind farm cluster (the Great Karoo, Karusa and Soetwater Wind Farms) (EWT, 2014). The point of intersection lies just to the north of the Hidden Valley substation, where the grid connection passes over mountain ridges. The turbine exclusion zone was predicted by flight models, and the report stated that associated turbine infrastructure, including roads, power lines and buildings, should avoid the exclusions zones as far as possible (EWT, 2014). This turbine exclusion zone is therefore considered to be of 'Very High' priority. Considering there is an existing powerline

traversing this area, the Great Karoo OHL can proceed within this mountain ridge with the utmost caution and the appropriate mitigation measures must be implemented. This can include consolidation with the current powerline and installation of bird diverters and flappers.

It is important to note that the priority category of the habitat does not necessarily dictate that the area is a 'no-go' area but indicates where extra caution is required due to the presence of particular species and that the implementation of mitigation measures to reduce collision must be implemented. Monitoring the efficacy of the mitigation measures within these priority areas of the route must be implemented.

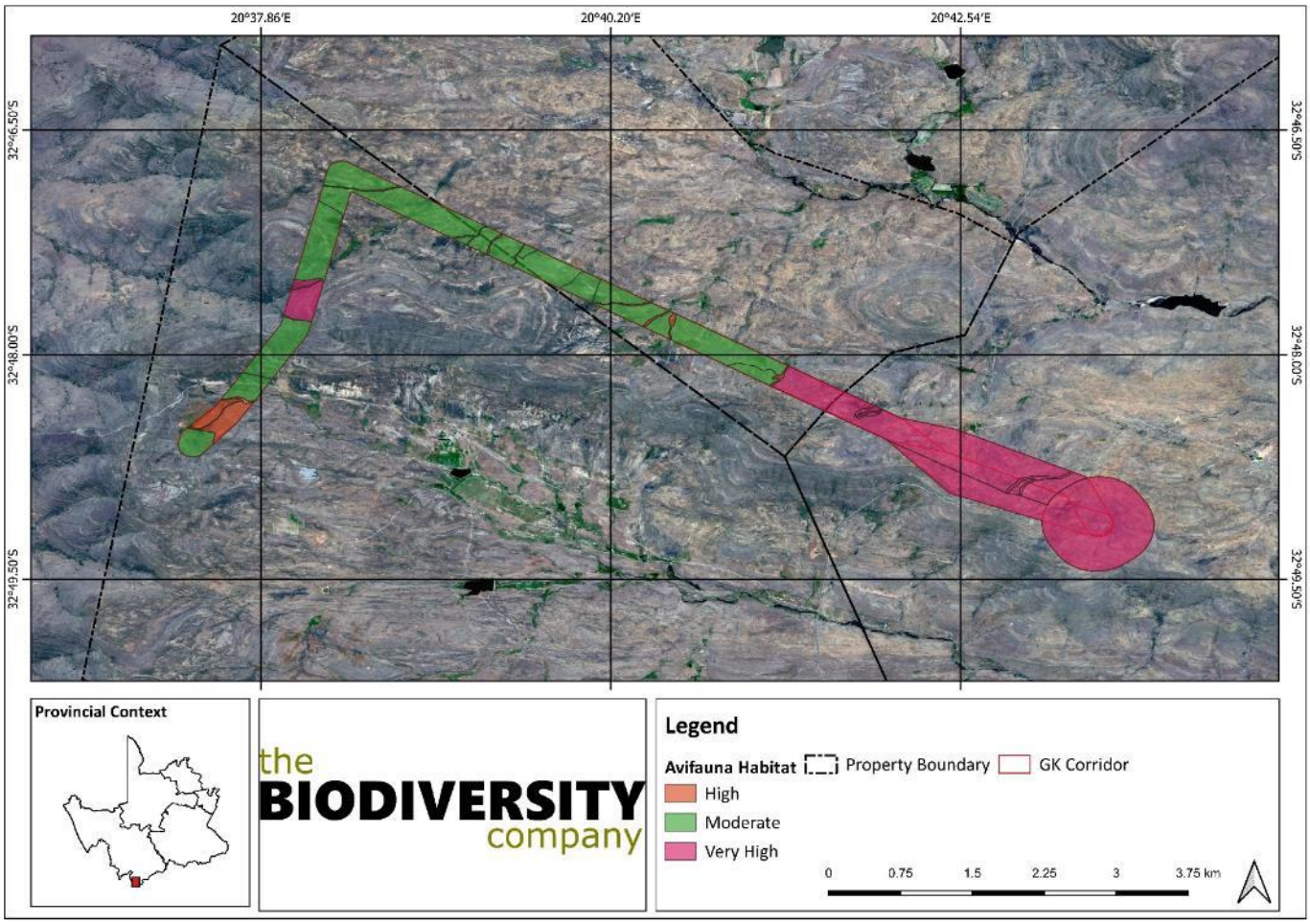

Figure 5.9. Map illustrating the priority category of fine-scale avifauna habitats within the assessment area associated with the proposed Great Karoo OHL and Switching Station.

5.6.13. Ecological habitats and sensitivity

Four different ecological habitat types were delineated within the assessment area (Table 5.11). The location and extent of these habitats are illustrated in Figure 5.10**.** All habitats within the assessment area of the proposed Great Karoo OHL and Switching Station assessment area were allocated a sensitivity category. Ridges and Rocky Slope spatially varied in their sensitivity. Ridges were allocated a 'high' sensitivity as they were the source points for drainage lines as well as their uniqueness within the landscape. Rocky slopes were generally assigned a 'moderate' sensitivity, except where they formed the source point of drainage lines and were accordingly assigned a 'high' sensitivity. The sensitivities of the habitat types delineated are

illustrated in Figure 5.11. Furthermore, Figure 5.12 provides photographs illustrating examples of the different habitat types delineated within the assessment area.

Table 5.11. Summary of habitat types delineated within the assessment area of the proposed project.

Habitat Type	Description	Dominant Flora	Ecosystem Processes and Services	Area (ha)	Habitat Sensitivity
Ridges AND **Rocky Slope**	Steep to moderately slopes with shallow soils.	Dicerothamnus rhinocerotis Oedera genistifolia Ixia thomasiae Eriocephalus punctulatus Pteronia incana	Capture precipitation and run-off from melting snow. Rising air currents are used by raptor species to increase flight efficiency. Provides habitat for rupicolous species, including Procavia capensis which is a major component of the diet of Aquila verreauxii.	249.24	Moderate to High
Lowland	Low to no slope with deep soils.	Euryops lateriflorus Ruschia intricata Romulea tortuosa Romulea citrina Drimia altissima Oxalis obtusa	Provides grazing for livestock. Aids in filtration of water permeating through the soil into drainage lines. Relatively high abundance of pollinating monkey beetles.	274.06	Moderate
Drainage Line	Channel through which surface water naturally collates and flows. Perennial or ephemeral systems were both considered for this habitat type.	Diospyros austro-africana Dimorphotheca cuneata Euryops lateriflorus Roepera spinosa	Provides surface water within the landscape. Aids in trapping sediment and nutrients derived from land runoff. Corridor for fauna dispersion within the landscape.	9.96	High

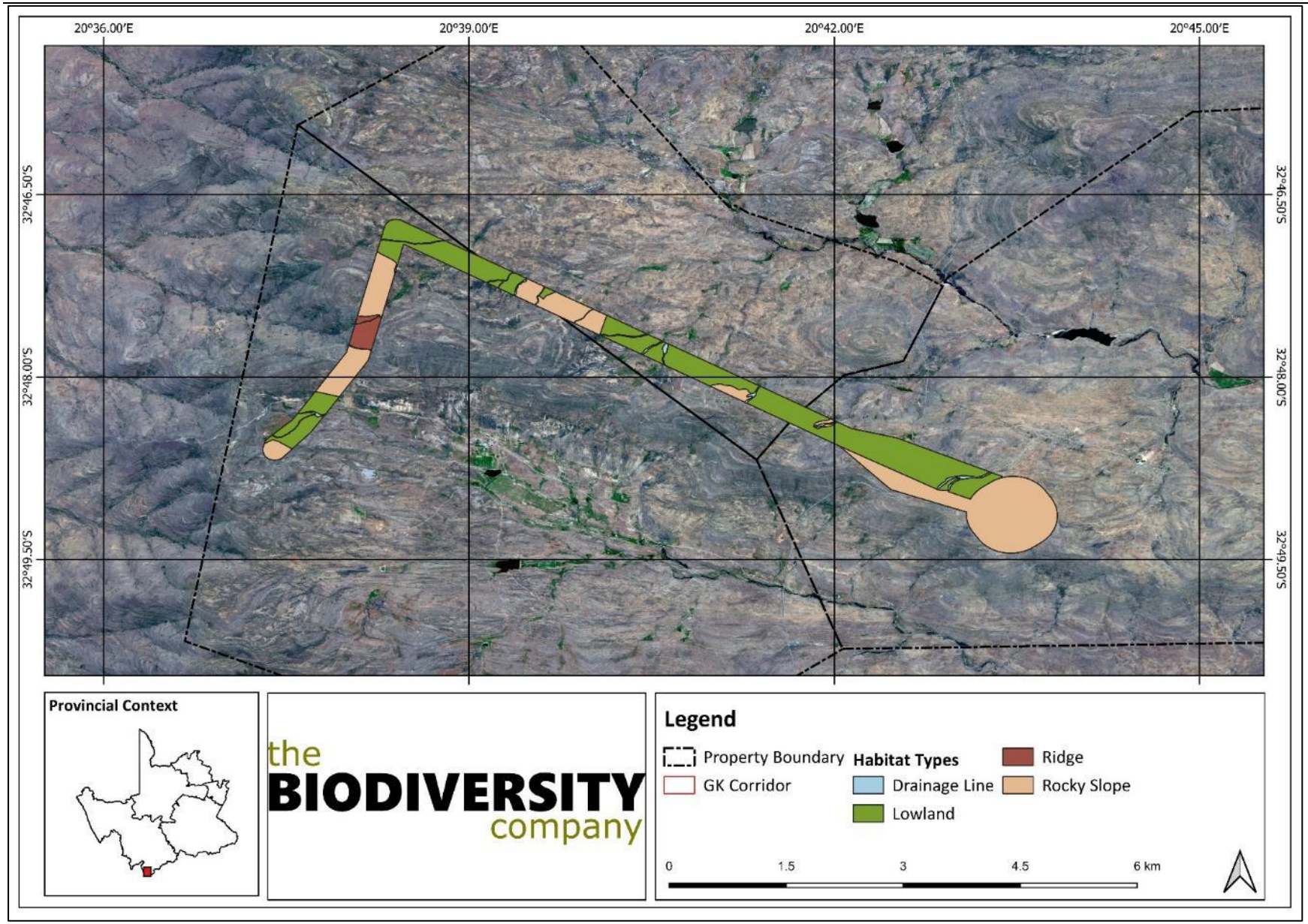

Figure 5.10. Map illustrating location and extent of ecological habitat types within the assessment area associated with the proposed Great Karoo OHL and Switching Station.

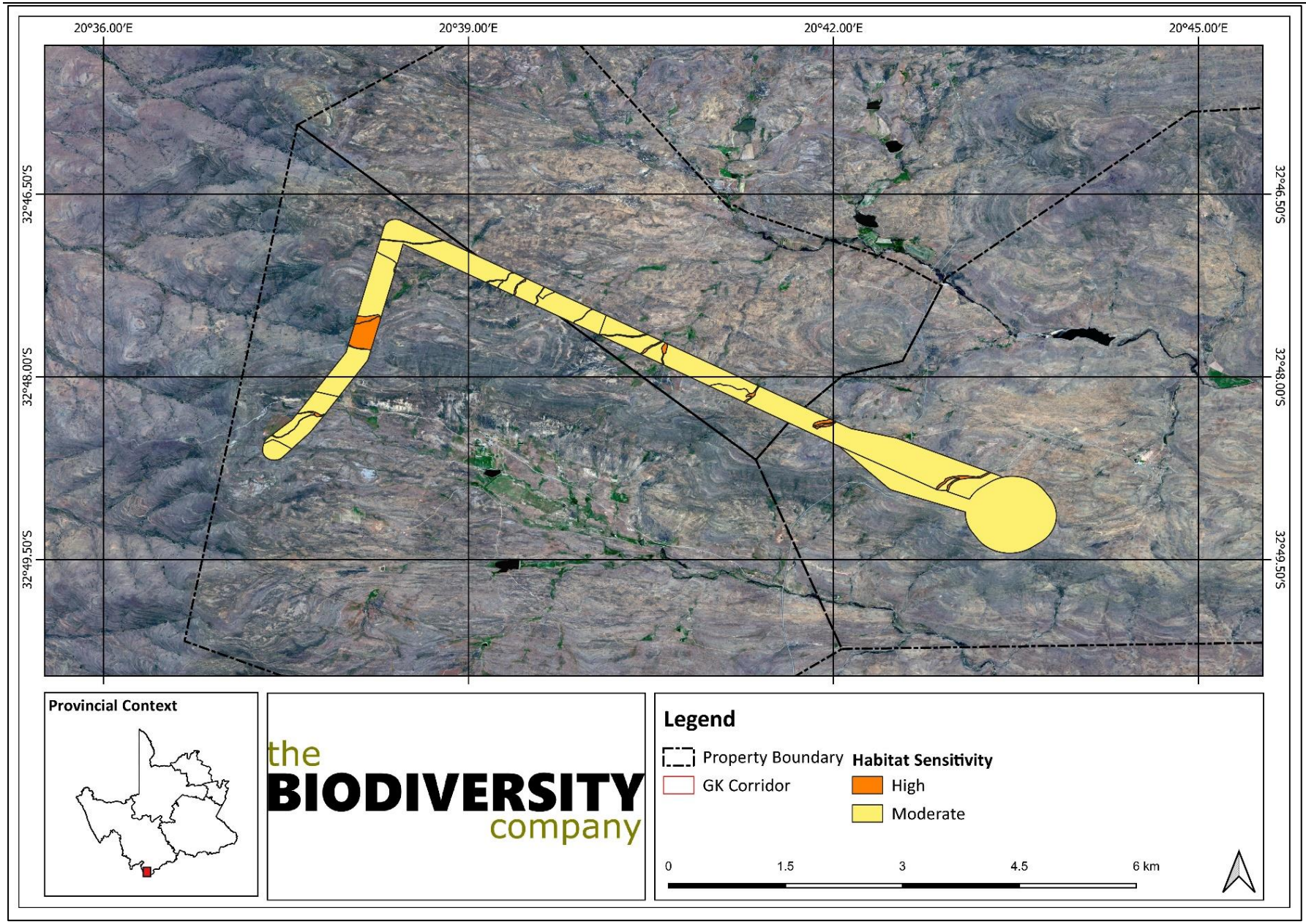

Figure 5.11. Map illustrating ecological habitat sensitivity within the assessment area associated with the proposed project.

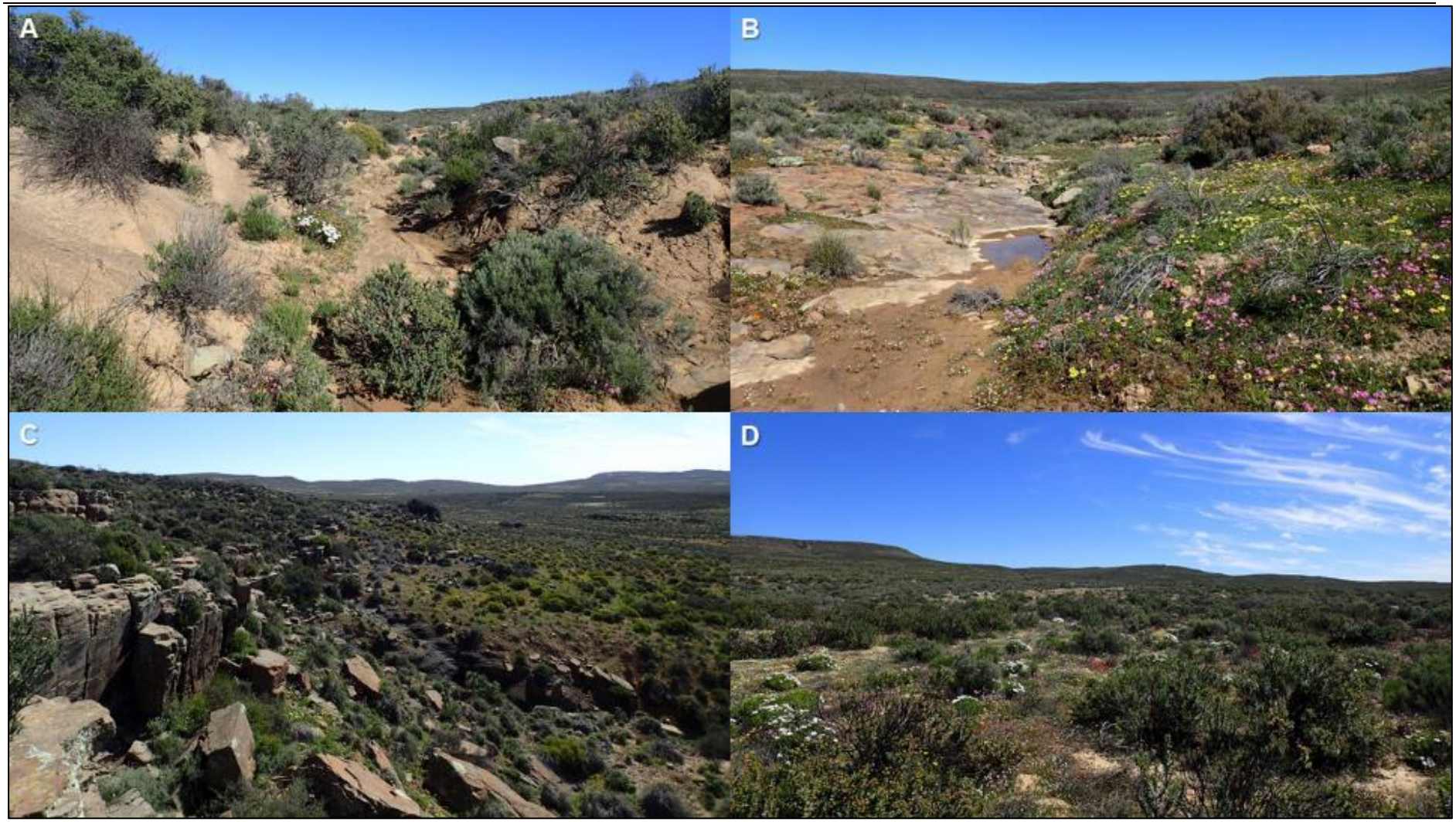

Figure 5.12. Photographs illustrating examples of the habitat types delineated within the assessment area associated with the proposed Great Karoo OHL and Switching Station. A) Drainage Line, B) Drainage Line, C) Ridges and Rocky Slopes and D) Lowlands

5.6.14. Hydrological Setting

The proposed development is located predominantly within the Groot River catchment, specifically quaternary catchments J11A and J11D (Figure 5.13). There is minor overlap with the Doring River catchment, specifically quaternary E23A. There are no major river systems that overlap with the assessment area, but there are drainage lines that drain into the Meintjiesplaas River towards the south, and an unnamed system to the north (Figure 5.13).

The South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was released with the National Biodiversity Assessment (NBA) 2018. Ecosystem threat status (ETS) of river ecosystem types is based on the extent to which each river ecosystem type had been altered from its natural condition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Least Threatened (LT), with CR, EN and VU ecosystem types collectively referred to as 'threatened' (Van Deventer et al., 2019; Skowno et al., 2019). The river systems proximal to the proposed development are all regarded as Least Threatened (Figure 5.13).

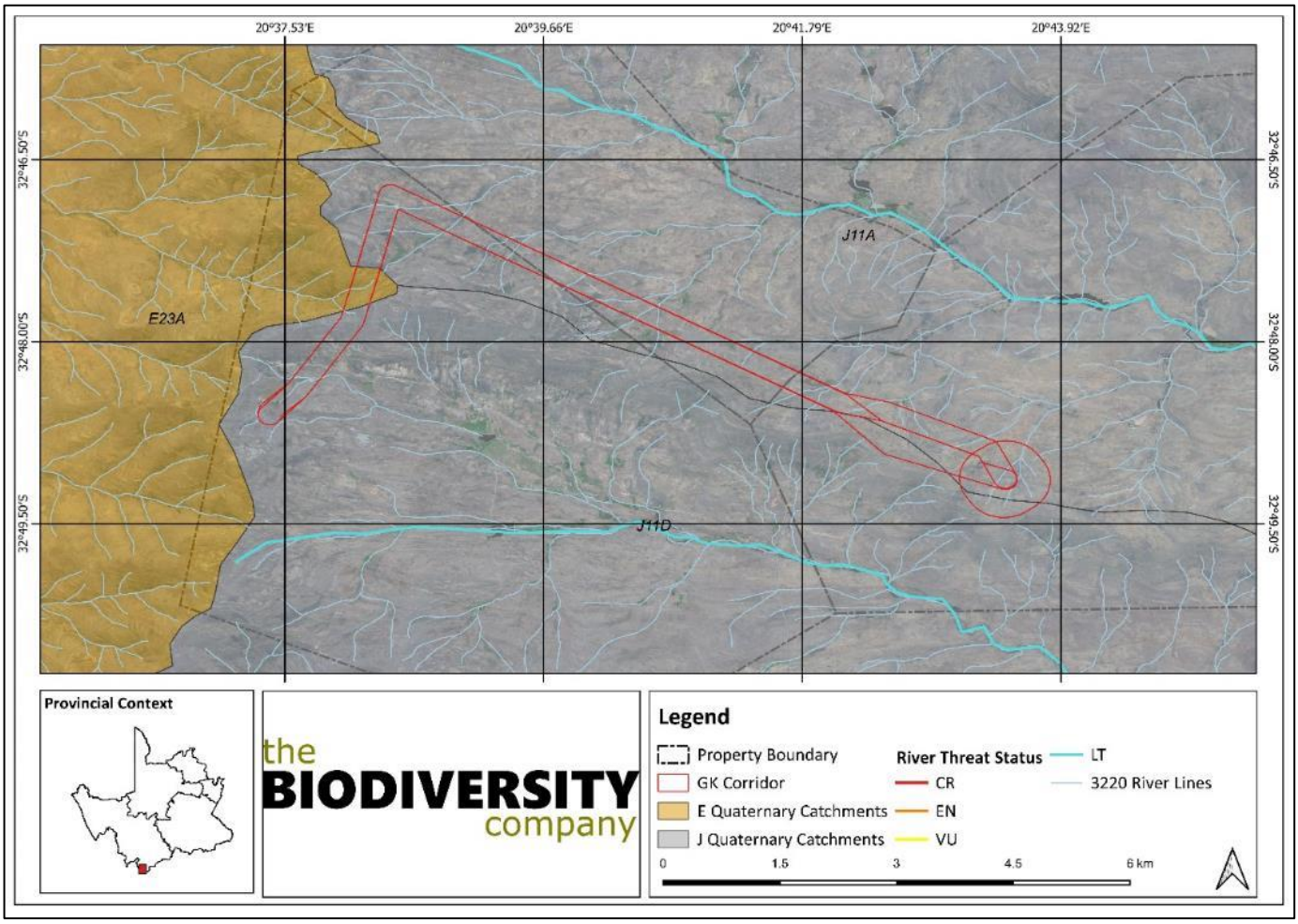

Figure 5.13. Map illustrating the hydrological setting of the proposed Great Karoo OHL and Switching Station.

5.6.15. Soils

According to the land type database (Land Type Survey Staff, 1972 - 2006) the proposed development area occurs within the Fc265 and Ib228 land types. The Fc land type consists of Glenrosa and/or Mispah soil forms with the possibility of other soils occurring throughout. Lime is rare or absent within this land type in upland

soils but generally present in low-lying areas. The Ib land type consists of miscellaneous land classes including rocky areas with miscellaneous soils. As for the portion of the powerline already assessed to the east, the Fc 265, Fc 266, Ib 228 and Ib 231 land types are expected to occur within the assessment corridor boundary (see Figure 5.14).

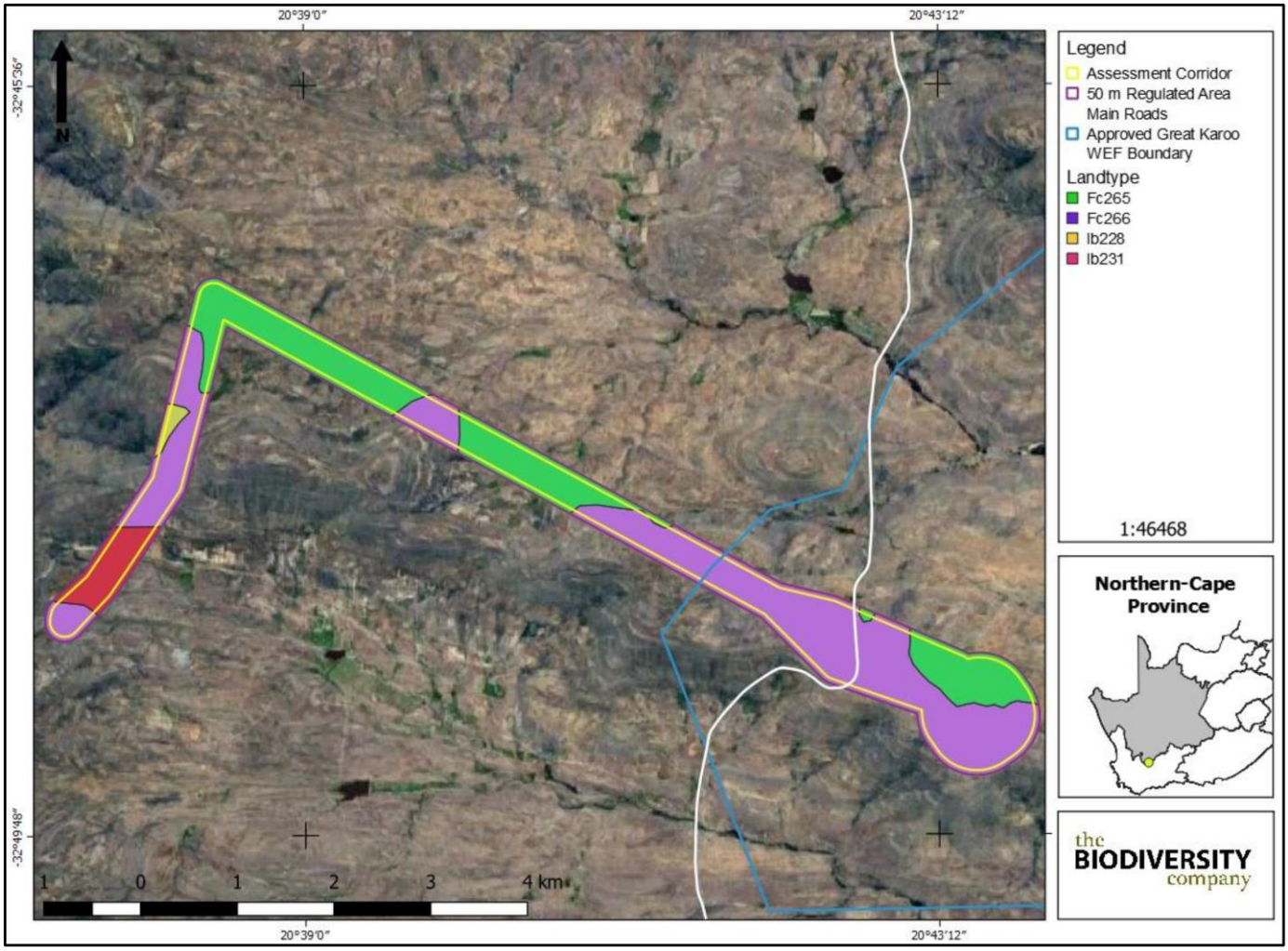

Figure 5.14. Land Types present within the assessment corridor boundaries.

The following soils forms were identified within the portion of the corridor assessed (also see Figure 5.15, and for soil horizons Figure 5.16):

- Magudu soil form (Orthic topsoil above a Red Structured Apedal horizon, which in turn is underlain by a Lithic horizon);
- Mispah soil form (Orthic topsoil on top of a Hard Rock layer);
- Glenrosa soil form (Orthic topsoil on top of a Lithic horizon);
- Bare Rock (Exposed rock);
- Bethesda (Orthic topsoil on top of a Neocutanic horizon, which in turn is underlain by a Hard rock layer);
- Prieska (Orthic topsoil on top of a Neocutanic horizon, which in turn is underlain by a Hard Carbonate horizon); and

» Tshiombo (Orthic topsoil on top of a Neocutanic horizon, which in turn is underlain by an Unconsolidated material with signs of wetness).

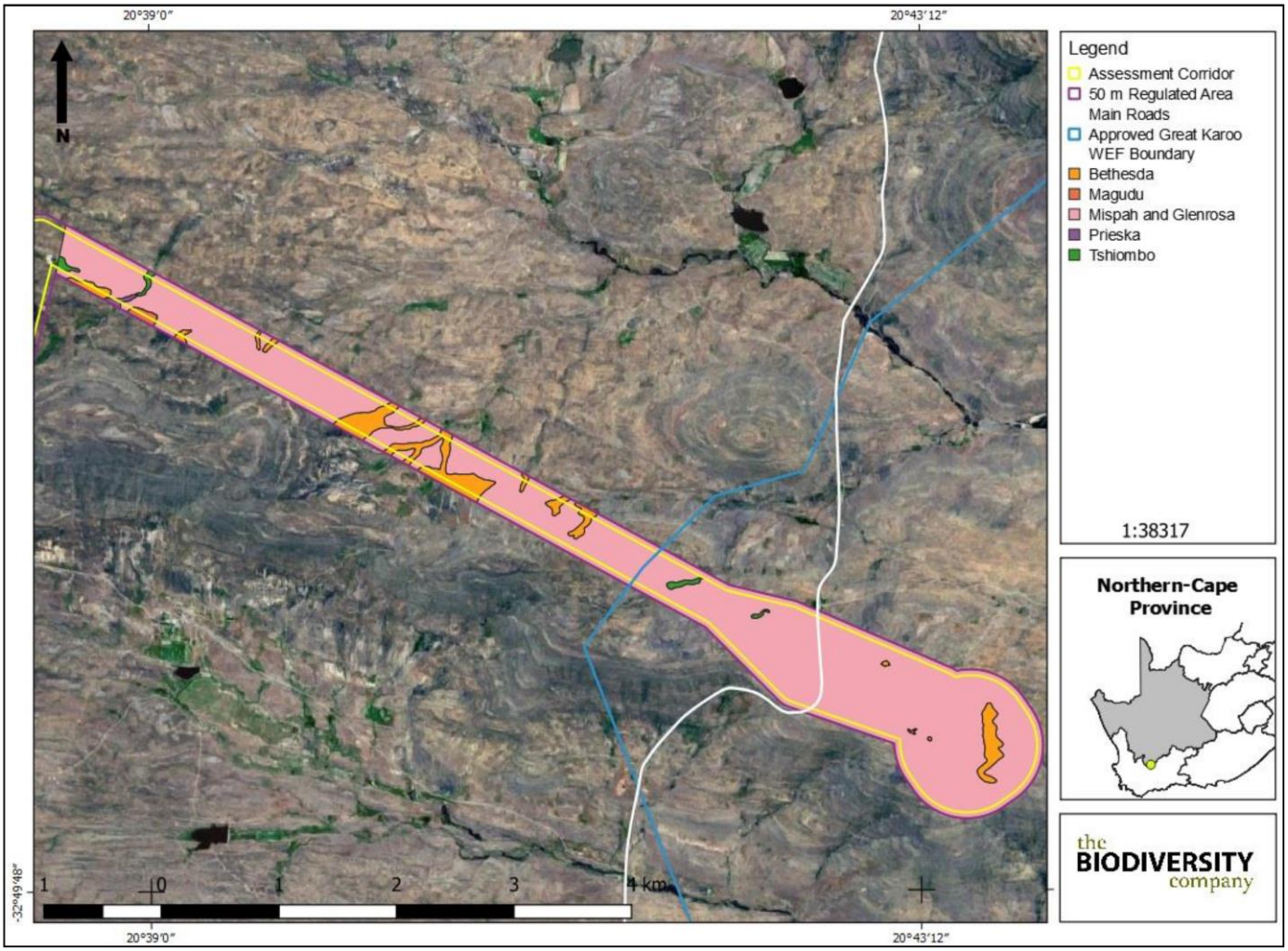

Figure 5.15. Delineated soil forms on site (note the western portion of the line is assessed by TerraAfrica in a separate study, results of which have been incorporated into the specialist assessment for this application).

The land capability of the above mentioned soils range from a land capability 3 to a land capability 7 with the climate capability determined to be a climate capability level 8 given the low Mean Annual Precipitation (MAP) and the high Mean Annual Potential Evapotranspiration (MAPE) rates. The combination between the determined land capabilities and climate capabilities result in a land potential of "6" to "8". These land potential levels are associated with "Very Restricted Potential" and "Very Low Potential

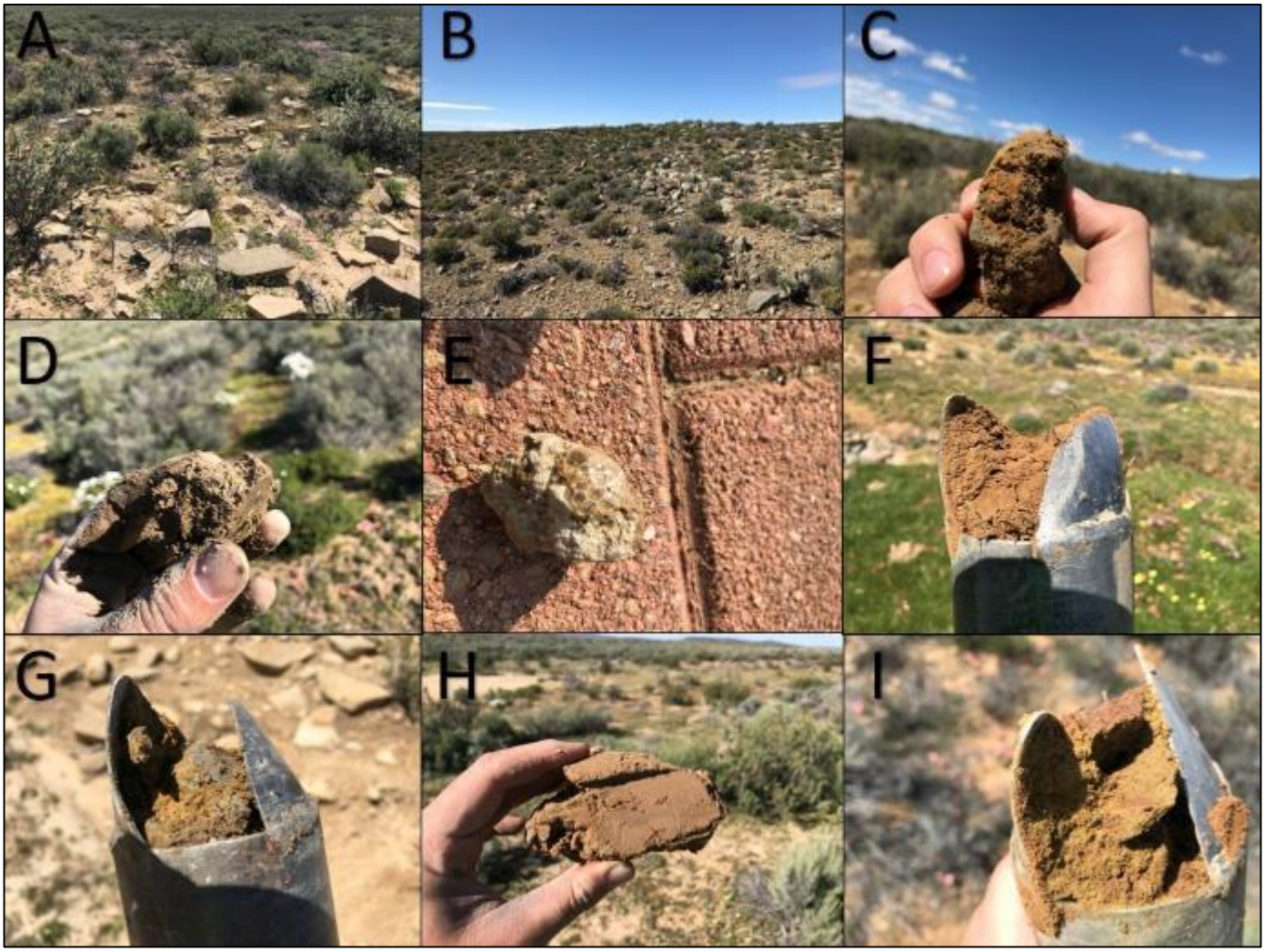

Figure 5.16. Soil horizons identified within the assessment corridor. A and B) Glenrosa and exposed rock. C and G) Unconsolidated material with signs of wetness. D) Hard Carbonate. E) Hard Carbonate reacting to HCl. F) Neocutanic horizon. H) Red Structured horizon. I) Transition between Neocutanic horizon and Hard Rock.

5.6.16. Archaeology and Built Environment Heritage

Booth (SAHRIS NID 44935) conducted a field assessment of the area proposed for development in 2012. Booth (2012) noted that "No archaeological heritage remains were documented within the areas proposed for the development of the wind turbines." Furthermore, the proposed grid connection infrastructure is to be located in an area that has been previously assessed for impacts to archaeological resources by Booth (2012). Booth (2012) identified no heritage resources in this area. However, Booth (2012) did identify a family graveyard (Site ID 35235) and an informal labourers' graveyard (Site ID 35281) situated near the current farmstead complex (approximately 1.5 to 2km from the authorised Great Karoo WEF Substation), the remnants of a stone-walled kraal to the north of the current farmstead complex (not mapped) and the ruins of a stone walled, large farmstead complex were documented within one of the valleys (Site ID 35230, 35232 and 35233). These identified sites have been mapped in relation to the proposed development (Figure 5.17).

In a recent walkdown of the proposed Soetwater OHL (July 2020), a stone packed feature (possible burial) was identified within the proposed OHL corridor (Figure 5.18). This site is recorded on SAHRIS as Site 131150

and is described in detail by Booth (2020, SAHRIS NID 539589, Case ID 15452): "The stone packed feature cannot be confirmed as being a grave unless systematic excavations are conducted to establish whether the area contains a burial. This method of mitigation is however the least preferred. The stone packed feature may be established as being older than 30 years owing the landowner and farm staff being unaware of its origin or existence, or older than the establishment of colonial settlements and farming activities within the area. However, the more recent-looking packing of the stones may not confirm that the feature is older than 100 years." Booth (2020) makes the following recommendations regarding this site, which have been endorsed and added to by SAHRA (September 2020) (please note, this SAHRA comment was produced for another application):

- The stone packed feature should be fenced with an entry gate and clearly demarcated prior to the construction activities for the establishment of pylon No. 5. SAHRA's previous recommendations (26 May 2014) stipulate that the fence be placed 5 meters away from the perimeter of the graves and that no development is allowed within 30 meters of the fence line surrounding the graves. However, it is acceptable that the relocation of Pylon No. 5 be shifted 15 m south to allow for a 5 m buffer between the stone packed feature and the fence and therefore allow a 10 m buffer between the fence and tower, taking into consideration the limiting factors mentioned above.
- General fencing materials may be used, mesh fencing approximately 1.2 m in height, and treated wooden droppers as the corner posts, approximately 5 cm in width, or similar alternative materials.
- The environmental control officers (ECOs) must liaise with the archaeologist regarding the fencing materials being used for the erection of the fence, the planned area for the establishment of the fence, during the erection and completion of the fence, as well as during the construction of the tower.
- At this point it is not necessary for the archaeologist to be on-site during the construction of the fence and pylon if the ECO keeps in contact with the archaeologist, as in recommendation 3.
- If concentrations of pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work must cease immediately and be reported to the archaeologist and/or the South African Heritage Resources Authority (SAHRA) (021 462 4502) for Northern Cape findings and Heritage Western Cape (HWC) (021 483 5959) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts may then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.

The heritage specialist assessment has included the above recommendations and indicated that they must also apply to the proposed development of the Great Karoo grid connection infrastructure, as relevant to the infrastructure for this application. These recommendations have therefore been incorporated into the impact assessment contained within this report (refer section 6.5), and the power line EMPR.

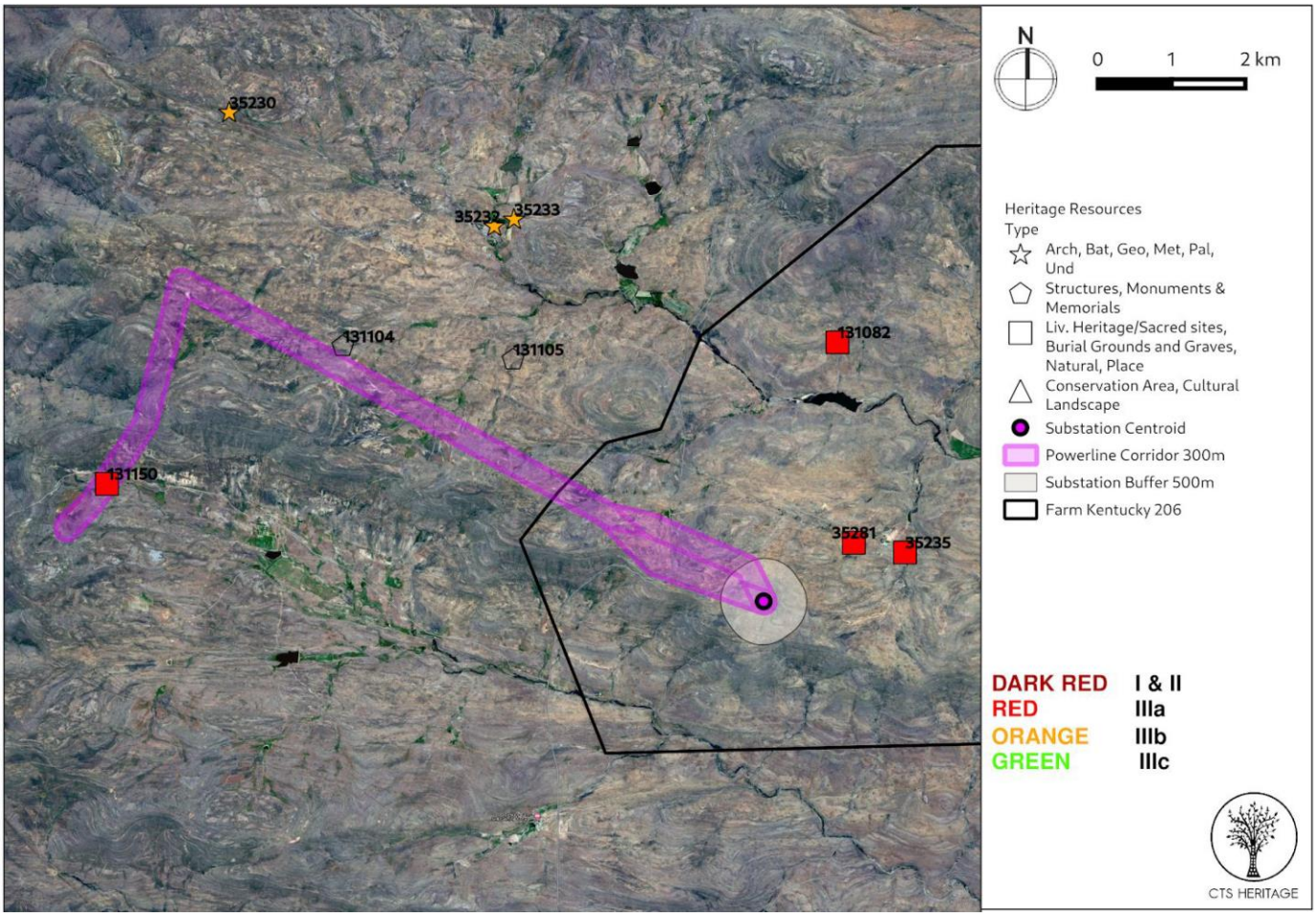

Figure 5.17. Heritage Resources Map. Heritage resources previously identified within the study area, with SAHRIS Site IDs indicated.

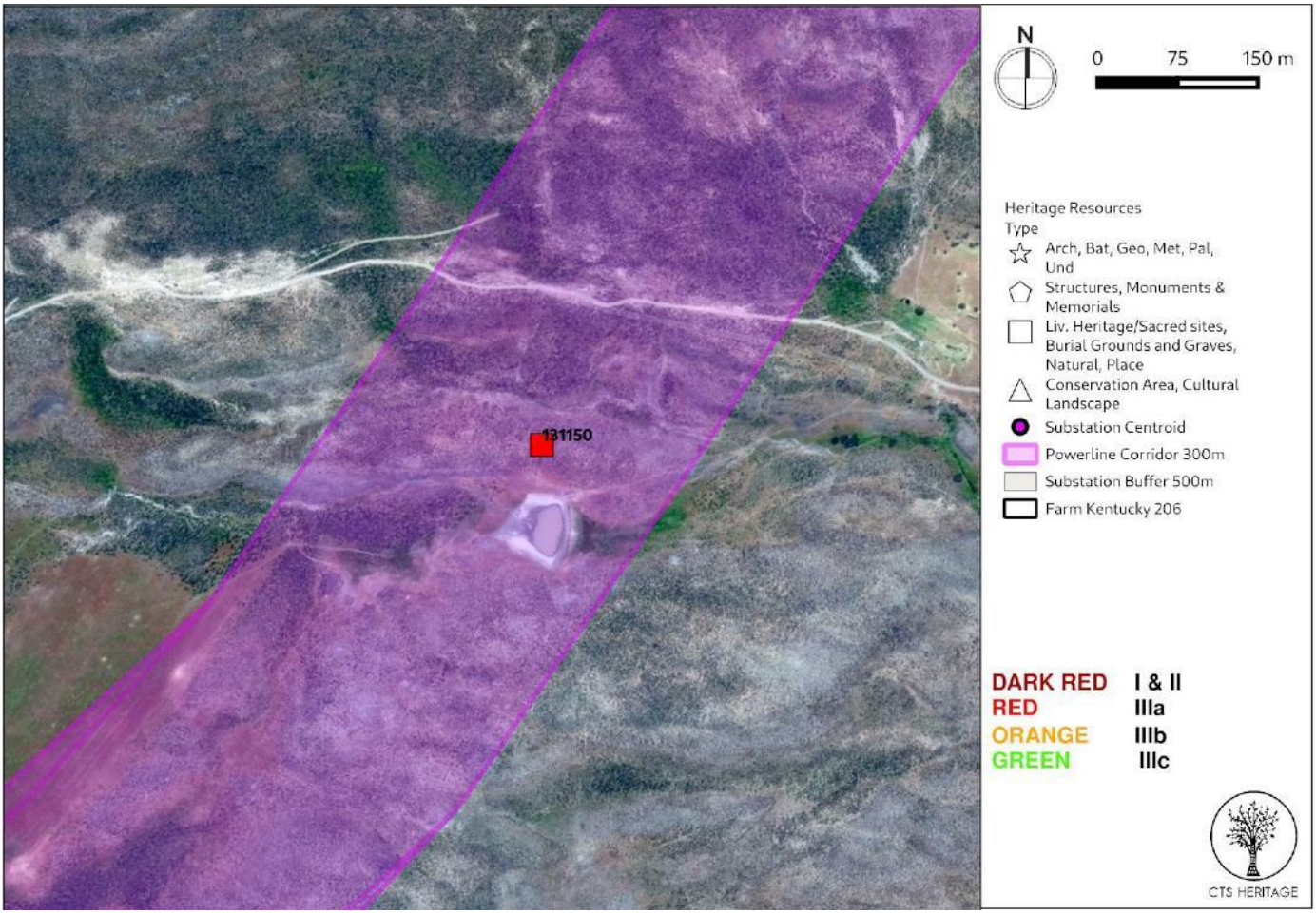

Figure 5.18. Heritage Resources Map. More detailed view of the location of the Site 131150 (possible burial) located within the assessment corridor.

Based on the information available from heritage assessments previously conducted in the area proposed for development, the proposed development of the grid connection infrastructure for the Great Karoo WEF is unlikely to negatively impact significant archaeological, built environment and palaeontological heritage as long as the recommendations contained in the heritage impact assessment (and incorporated into this report and associated EMPR) are implemented. From a heritage perspective, the specialists determined that the proposed OHL and switching station infrastructure can be located anywhere within the 500m area and 300m corridor assessed in this screening assessment.

5.6.17. *Palaeontology*

The area proposed for development is underlain by sediments that have very high palaeontological sensitivity according to the SAHRIS Fossil Sensitivity Map (Figure 5.19). The geology map of the area (Council of GeoScience Map 3220 Sutherland) indicates that the area is underlain by sediments of the Karoo Supergroup assigned to the Beaufort group, within the Abrahamskraal Formation of the Adelaide Subgroup. This was confirmed by Rossouw (2012, SAHRIS ID 44936) in the Desktop Palaeontological Impact Assessment conducted for the proposed Hidden Valley WEF which includes the area proposed for this development.

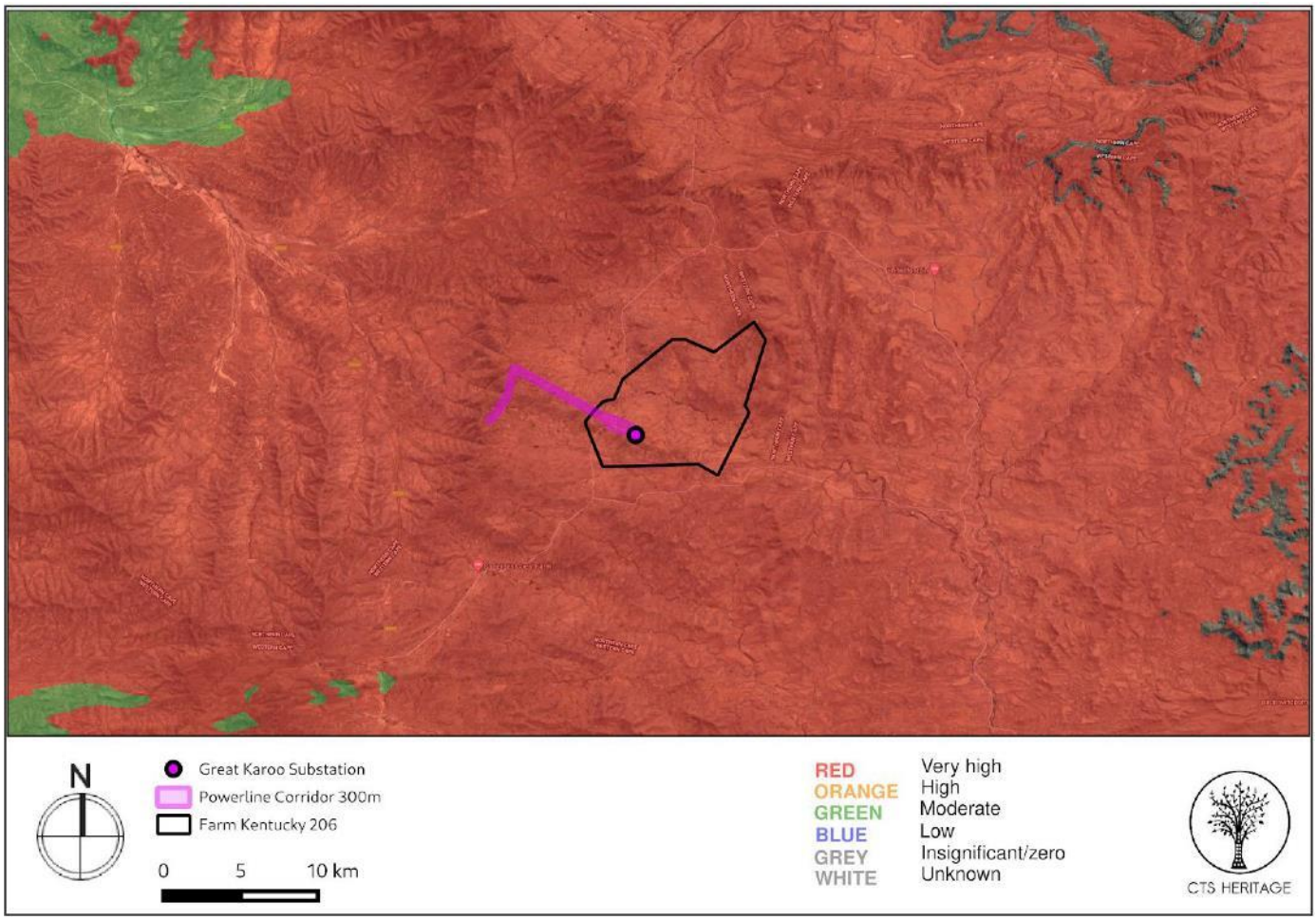

Figure 5.19. Palaeosensitivity map indicating fossil sensitivity underlying the grid connection corridor.

In an assessment for the Soetwater WEF conducted by Almond (2015, SAHRIS NID 353707) which covers the area assessed in this report, it is noted that "that the Lower Beaufort Group bedrocks in the Soetwater Wind Farm study area are generally of low palaeontological sensitivity and this also applies to the overlying Late Caenozoic superficial sediments (colluvium, alluvium, calcrete, surface gravels, soils etc)." Almond (2015) goes on to state that:

> *"Construction of the proposed Soetwater Wind Farm is unlikely to entail significant impacts on local fossil heritage resources. Due to the general great scarcity of fossil remains as well as the extensive superficial sediment cover observed within the study area, the overall impact significance of the construction phase of the proposed Soetwater Wind Farm is assessed as LOW. The operational and decommissioning phases of the wind farm are very unlikely to involve further adverse impacts on local palaeontological heritage."*

The heritage specialist study for this application concluded that this same result can be applied to the Great Karoo grid connection infrastructure development as this development falls within the area assessed by Almond (2015).

Furthermore, Rossouw (2012) recommended that a palaeontological field assessment be conducted of the turbine footings, access roads, offices and substation and underground cable routes prior to the commencement of development activities associated with the Great Karoo WEF. In addition, Rossouw

(2012) recommended that palaeontological monitoring take place during the construction phase of the Great Karoo WEF development. In their Final Comment for the Great Karoo WEF dated 25 August 2016, SAHRA recommended that a walk-down of the amended layout is required prior to construction. This must be conducted by a qualified palaeontologist to ensure that no heritage resources are to be impacted by the new locations of the turbines. If heritage resources are identified at or near any proposed infrastructure, an assessment of the significance of the heritage resources and the impact to the identified heritage resource must be completed. A report detailing the results of the survey must be submitted to SAHRA before construction of the Great Karoo WEF commences. A palaeontological walk down conducted for the Soetwater 132kv OHL confirmed the low palaeontological sensitivity of this area.

Finally, in a subsequent letter from SAHRA dated 21 October 2016, SAHRA indicated that "There will be no need for further palaeontological field assessment, as the Desktop Study is sufficient. A map of the identified palaeontological resources relative to the layout of the proposed development must be emailed to the case officer and the ECO must monitor all excavations in the Great Karoo WEF." No such map is yet available and as such, it is recommended that this recommendation also apply to the proposed development of the OHL.

Based on the information available from heritage assessments previously conducted in the area proposed for development, the proposed development of the grid connection infrastructure for the Great Karoo WEF is unlikely to negatively impact significant archaeological, built environment and palaeontological heritage as long as the recommendations contained in the heritage impact assessment (and incorporated into this report and associated EMPR) are implemented. From a heritage perspective, the specialists determined that the proposed OHL and switching station infrastructure can be located anywhere within the 500m area and 300m-750m corridor assessed in this screening assessment.

6. ASSESSMENT OF IMPACTS

This chapter serves to assess the significance of the positive and negative environmental impacts (direct and indirect) expected for the proposed grid connection infrastructure, including cumulative impacts. The full extent of the grid connection corridor (considering all proposed infrastructure) was considered through the specialist assessments undertaken as part of this BA process, as well as within this Basic Assessment report.

The proposed development will comprise the following phases:

» ***Pre-Construction and Construction*** – will include pre-construction surveys; site preparation; establishment of access roads (where required), laydown area; required); drainage line crossings (where required); laydown construction of foundations involving excavations; the transportation of components/construction equipment to site, manoeuvring and operating vehicles for unloading and installation of equipment; stringing and cabling; installation of switching station infrastructure and commissioning of new equipment and site rehabilitation. The construction phase is estimated to be between 9-12 months.

» ***Operation*** – will include the operation of the 132kV power line and switching station, which will enable the evacuation of electricity from the Great Karoo Wind Farm into the national grid. The operation phase of the project is linked to the operational lifespan of the Great Karoo Wind Farm and is expected to be at least 20 years (with maintenance).

» ***Decommissioning*** – depending on the economic viability of the Great Karoo Wind Farm and Eskom's plans for the grid connection infrastructure, the length of the operation phase may be extended beyond a 20-year period. At the end of the project's life, decommissioning will include site preparation, disassembling of the components of the grid connection infrastructure, clearance of the relevant infrastructure along the power line servitude and switching station region, and rehabilitation. **Note:** that impacts associated with decommissioning are expected to be similar to those associated with construction activities. However, in some instances some specialists have identified and assessed specific decommissioning impacts associated with the project, these impacts are assessed as separate impact tables where relevant below.

Environmental issues associated with pre-construction, construction and decommissioning activities may include, among others, threats to biodiversity and ecological processes, including habitat alteration and impacts to fauna and avifauna, impacts to sites of heritage value and soil erosion.

Environmental impacts associated with the operation phase include habitat alteration and impacts to fauna and avifauna, and potential invasion by alien and invasive plant species.

6.1. Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Basic Assessment Report

This chapter of the BA Report includes the following information required in terms of Appendix 1: Content of BA Reports:

Requirement	Relevant Section
3(h)(v) the impacts and risks identified 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.	The impacts and risk associated with proposed development, including the nature, significance, consequence, extent, duration and probability of the impacts and the degree to which the impact can be reversed and cause an irreplaceable loss of resources are included in sections Chapter 6, sections 6.3 to 6.7.
3(h)(vii) positive and negative impacts that the proposed activity 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	The positive and negative impacts associated with the proposed development are included in Chapter 6, sections 6.3 to 6.7.
3(h)(viii) the possible mitigation measures that could be applied and the level of residual risk.	The mitigation measures that can be applied to the impacts associated with the proposed development are included in Chapter 6, sections 6.3 to 6.7.
3(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,.	A description of all environmental impacts identified for the proposed development, and the extent to which the impact significance can be reduced through the implementation of suitable mitigation measures as provided by the specialists are included in sections Chapter 6, sections 6.3 to 6.7.
3(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.	An assessment of each impact associated with the proposed development (including cumulative impacts), including the nature and significance, the extent and duration, the probability, the reversibility, and the potential loss of irreplaceable resources, as well as the degree to which the significance of the impacts can be mitigated are included in Chapter 6, sections 6.3 to 6.7.
3(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr.	Mitigation measures recommended by the various specialists for the reduction of the impact significance are included in Chapter 6, sections 6.3 to 6.7.

6.2. Quantification of Areas of Disturbance within the Grid Connection Corridor

Site-specific impacts associated with the proposed project relate to the direct loss of vegetation and species of special concern, disturbance of animals (including avifauna) and loss of habitat and impacts on soils. In order to assess the impacts associated with the proposed development, it is necessary to understand the extent of the affected development footprint within the corridor. In this regard, the following is relevant:

- The 132kV power line will be constructed within a servitude of up to 40m in width over a distance of up to 14km.
- The power line towers are an average distance of 200m apart but the span distance can be greater or less depending on the topography, terrain, type of pylon used and sensitive environmental features to

be spanned. The number of towers to be implemented along the power line will be informed by specific landowner requirements and the final design.
» Tower footprints will be approximately 100m^2 (10m X 10m) in extent.
» A switching station of ~100x100m will be placed within the grid connection corridor.
» A grid connection corridor of 300m-750m wide for the power line and a 500m corridor for the switching station has been assessed, with the infrastructure being placed anywhere within this development corridor (outside of environmentally sensitive "no-go" areas).

Please note: A combined sensitivity description is provided at the end of this chapter incorporating all the specialist sensitivities discussed. The following sections discuss each specialist results in further detail. The detailed assessments are included in **Appendix D – G** of this Basic Assessment report.

6.3. Assessment of impacts on biodiversity

Anthropogenic activities drive habitat destruction causing displacement of fauna and flora and possibly direct mortality. Land clearing destroys local wildlife habitat and can lead to the loss of local breeding grounds, nesting sites and wildlife movement corridors such as rivers, streams and drainage lines, or other locally important features. The removal of natural vegetation may reduce the habitat available for fauna species and may reduce animal populations and species compositions within the area.

The main expected impacts of the proposed OHL and Switching Station will include the following:
» habitat loss and fragmentation;
» degradation of surrounding habitat; and
» disturbance and displacement caused during the construction and maintenance phases.

Bearing in mind that the Great Karoo Wind Farm has already received authorisation, and the proposed grid connection infrastructure is a necessity for the distribution of energy, it was concluded that development may proceed with acceptable impact from a biodiversity perspective. The OHL routing traverses the authorised Great Karoo, Karusa and Soetwater Wind Farms. The latter two are under construction and therefore the OHL is not a new disturbance in the landscape However, considering that the corridor has been identified as being of significance for biodiversity maintenance and ecological processes (CBAs and NPAES focus area), the specialist has concluded that development may proceed with the implementation of mitigation measures as described in the specialist biodiversity assessment report (and detailed in this impact assessment). Development of infrastructure can occur within any area of the corridor footprint, but pylons and the switching station are not be located in drainage lines. Formal crossings must be developed for the road to traverse these drainage lines. The location of the proposed infrastructure is not to exceed the boundary of the corridor. The following biodiversity impacts were determined by the biodiversity impact assessment (refer **Appendix D**).

6.3.1. Biodiversity: Construction Phase

Impact Nature: Loss of vegetation within development footprint		
There will be a loss of natural vegetation due to construction of the switching station, pylon foundations and access road/ service track and associated watercourse crossings.		
	Without mitigation	**With mitigation**
Extent	Very low (1)	Very low (1)
Duration	Long term (4)	Long term (4)

Magnitude	Moderate (6)	Low (4)
Probability	Definite (5)	Definite (5)
Significance	**Medium (55)**	**Medium (45)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	Moderate
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes, although this impact cannot be well mitigated as the loss of vegetation is unavoidable.	

Mitigation:

- Pre-construction walk-through of the final layout and corridor in order to locate species of conservation concern that can be translocated.
- Vegetation clearing to commence only after walk-through has been conducted and necessary permits obtained.
- Environmental Officer (EO) to provide supervision and oversight of vegetation clearing activities within sensitive areas such as in/near the drainage lines.
- Pre-construction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to.

Residual Impacts:

The loss of currently intact vegetation is an unavoidable consequence of the development and cannot be entirely mitigated. The residual impact would however be low.

Impact Nature: Degradation and loss of surrounding natural habitat including CBAs and NPAES areas

Degradation and loss of surrounding natural vegetation, which includes CBAs and NPAES areas, arising from construction activities.

	Without mitigation	**With mitigation**
Extent	Moderate (3)	Very low (1)
Duration	Permanent (5)	Very short term (1)
Magnitude	Very high (10)	Minor (2)
Probability	Definite (5)	Improbable (2)
Significance	**High (90)**	**Low (8)**
Status (positive or negative)	Negative	Neutral
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	

Mitigation:

- Pre-construction environmental induction and awareness training for all construction staff on site to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, remaining within demarcated construction areas etc.
- All construction activity and roads to be within the clearly defined and demarcated areas.
- Temporary laydown areas should be located within areas that have been identified as being of moderate sensitivity. These areas should be rehabilitated after use.
- Appropriate dust control measures to be implemented.
- Suitable sanitary facilities to be provided for construction staff.

Residual Impacts:

It is unlikely that residual impacts are expected if the appropriate mitigation measures are implemented. However, there may still be minimal degradation due to dust precipitation.

Impact Nature: Direct mortality or disturbance of fauna

Construction activity will likely lead to direct mortality of fauna due to earthworks, vehicle collisions, accidental hazardous chemical spills and persecution. Disturbance due to dust and noise pollution, as well as vibration may disrupt behaviour.		
	Without mitigation	**With mitigation**
Extent	Low (2)	Low (2)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Probable (3)
Significance	**Medium (40)**	**Low (18)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, to some extent. Noise and disturbance cannot be well mitigated, impacts on fauna due to human presence such as vehicle collisions, poaching, and persecution can be mitigated.	

Mitigation:

- All personnel should undergo environmental induction with regards to fauna and awareness about not harming or collecting species, especially tortoises and snakes.
- Prior to commencing work each day, two individuals should traverse the working area in order to disturb (flush out) any fauna so they have a chance to vacate.
- Any fauna threatened by the construction activities should be removed safely by an appropriately qualified environmental officer or removal specialist.
- All construction vehicles should adhere to a speed limit of maximum 40 km/h on site to avoid collisions.
- 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.
- If holes or trenches need to be dug for pylons or electrical cabling, these should not be left open for extended periods of time as fauna may fall in and become trapped in them. Holes should only be dug when they are required and should be used and filled shortly thereafter. Alternately, open excavations must be monitored daily to release any fauna that become trapped.

Residual Impacts:

It is probable that some individuals of susceptible species will be lost to construction-related activities despite mitigation. However, this is not likely to impact the viability of the local population of any fauna species.

6.3.2. Biodiversity: Operation Phase

Impact Nature: Continued habitat degradation		
Disturbance created during the construction phase will leave the development area vulnerable to erosion and Invasive Alien Plant (IAP) encroachment.		
	Without Mitigation	**With Mitigation**
Extent	Low (2)	Low (2)
Duration	Permanent (5)	Very short term (1)
Magnitude	High (8)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium (60)**	**Low (10)**
Status	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources	Yes	No
Can impacts be mitigated?	Yes, with proper management and avoidance, this impact can be mitigated to a low level.	

Mitigation:

- A rehabilitation plan must be written for the development area and it must be ensured that it is adhered to.

- Access roads and crossings (if applicable) should have run-off control features which redirect water flow and dissipate any energy in the water which may pose an erosion risk.
- All erosion observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.
- There should be follow-up rehabilitation and re-vegetation of any remaining denuded areas with local indigenous perennial shrubs and succulents from the area.
- An IAP management plan must be written and implemented for the development during operation.
- Regular monitoring for IAP encroachment during the operation phase to ensure that no alien invasion problems have developed as result of the disturbance. This should be every 6 months during the first two years of the operation phase and annually for the life of the project.
- All IAP species must be removed/controlled using the appropriate techniques as indicated in the IAP management programme.

Residual Risks:
There is still the potential some potential for erosion and IAP encroachment even with the implementation of control measures but would have a low impact.

Impact Nature: Disturbance or persecution of fauna		
The operation and maintenance of the proposed development may lead to disturbance or persecution of fauna in the vicinity of the development.		
	Without Mitigation	**With Mitigation**
Extent	Low (2)	Low (2)
Duration	Long term (4)	Very short term (1)
Magnitude	High (8)	Minor (2)
Probability	Probable (3)	Very improbable (1)
Significance	**Medium (42)**	**Low (5)**
Status	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources	No	No
Can impacts be mitigated?	Yes	

Mitigation:
- Any fauna threatened by the maintenance and operational activities should be allowed to passively vacate the area or be removed to a safe location by an appropriate individual.
- 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.
- All vehicles accessing the site should adhere to a max 40 km/h on site to avoid collisions.
- If any holes or trenches are to be dug these must not be left open for more than a few hours and must be filled at night. Alternately, open excavations must be monitored daily and any entrapped fauna must be freed.

Residual Risks:
Disturbance from maintenance activities will occur albeit at a low and infrequent level.

6.3.3. Biodiversity: Decommissioning Phase

Impact Nature: Continued habitat degradation		
Disturbance created during decommissioning will leave the development area vulnerable to erosion and alien plant invasion for several years.		
	Without Mitigation	**With Mitigation**
Extent	Local (1)	Local (1)
Duration	Long-term (4)	Long-term (3)
Magnitude	Medium (3)	Minor (2)
Probability	Probable (3)	Improbable (2)
Significance	**Medium (24)**	**Low (12)**

Status	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources	Yes	No
Can impacts be mitigated?	Yes, with proper management and avoidance, this impact can be mitigated to a low level.	

Mitigation:

- Rehabilitation in accordance with the Rehabilitation Plan for the development must be undertaken in areas disturbed during the decommissioning phase.
- Monitoring of the rehabilitated area must be undertaken for a minimum of 3 years after the decommissioning phase.
- All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.
- There should be follow-up rehabilitation and revegetation of any remaining bare areas with indigenous flora.
- IAP management must occur annually for at least 2 years after decommissioning. A further 1-3 years of monitoring and control may be required, depending on the condition of the site at the end of year 2. Woody aliens should be controlled using the appropriate alien control techniques as determined by the species present. This might include use of herbicides where no practical manual means are feasible.

Residual Risks:

No significant residual risks are expected, although IAP encroachment and erosion might still occur but would have a negligible impact if effectively managed.

6.3.4. Biodiversity: Cumulative impact

Cumulative impacts are assessed in context of the extent of the proposed development area, other developments in the area, as well as general habitat loss and transformation resulting from other activities in the area.

Impact Nature: Cumulative habitat loss within the southern Roggeveld		
The development of the proposed Great Karoo Grid Connection Infrastructure will contribute to cumulative habitat loss within CBAs, NPAE Areas and other broad-scale cumulative impacts on ecological processes in the southern Roggeveld.		
	Overall impact of the proposed development considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Low (2)	Moderate (3)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	High (8)
Probability	Probable (3)	Probable (3)
Significance	**Medium (30)**	**Medium (45)**
Status	Negative	Negative
Reversibility	High	Low
Irreplaceable loss of resources	No	No
Can impacts be mitigated	To some degree, but the majority of the impact results from the presence of the various facilities which cannot be well mitigated.	

Mitigation:

- Ensure that sensitive habitats such as drainage lines, pans and quartz patches are not within the development footprint. Where crossings of drainage lines are unavoidable, the disturbance footprint must be minimized and formal crossings be developed.
- Ensure that a rehabilitation plan and IAP management plan be compiled for each development and are effectively implemented.

6.4. Assessment of impacts on avifauna

Although different avifauna species and groups will react differently to the development, the risk assessment was undertaken bearing in mind the potential impacts to the priority species listed in the avifaunal specialist study (refer **Appendix E**). Moreover, the north-south section of the OHL will run directly adjacent to an existing 132kV OHL currently under construction by Soetwater wind farm, denoting that this will not be a new disturbance within the landscape and was consequently considered for the impact ratings provided. The assessment of impact significance considered pre- and post-mitigation scenarios.

The main expected impacts of the proposed OHL and Switching Station will include the following:

- habitat loss and fragmentation;
- degradation of surrounding habitat;
- disturbance and displacement caused during the construction and maintenance phases;
- collisions with power lines; and
- electrocution by power lines.

Mitigation measures as described in the avifaunal specialist report can be implemented to reduce the significance of the risk but there is still a possibility of collision by large non-passerine avifauna species. Considering that this area that has been identified as being of significance for biodiversity maintenance and ecological processes (CBAs and NPAES focus area), development may proceed but with caution and only with the implementation of the mitigation measures provided for by the avifaunal specialist (also detailed in the impacts section below).

Furthermore, the proposed Great Karoo OHL will be wholly located within 3 wind farms and will run adjacent to an existing (under construction) 132kV OHL for a portion of the line. These factors may ameliorate the impact of the GK OHL and therefore, regarded as fairly "minor" in the context of the surrounding infrastructure). The specialist concluded that the development of infrastructure can occur within any area of the corridor footprint, but pylons and the switching station are not be located in drainage lines, and subject to adherence to the specified no-go areas (refer section 6.8), and the implementation of the recommended mitigation measures. Formal crossings must be developed for the road to traverse these drainage lines. The location of the proposed infrastructure is not to exceed the boundary of the corridor. The following avifaunal impacts were determined by the avifaunal impact assessment (refer **Appendix E**).

6.4.1. Avifaunal: Construction Phase

Impact Nature: Habitat loss and degradation		
Degradation and loss of surrounding natural vegetation arising from construction activities and dust precipitation.		
	Without mitigation	**With mitigation**
Extent	Moderate (3)	Low (2)
Duration	Long term (4)	Short term (2)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium**	**Low**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, although the loss of vegetation cannot be mitigated against.	

Mitigation:

- Construction activity to only be within the project footprint and the area is to be well demarcated.
- Areas where vegetation has been temporarily cleared must be re-vegetated within local indigenous plant species.
- The affected area must be monitored for invasive plant encroachment and erosion and must be controlled.
- Unnecessary damage to important habitats such as drainage lines and cliffs must not occur. Appropriate crossings must be constructed where the access road traverses drainage lines.
- The use of laydown areas within the corridor should be used where feasible, to avoid habitat loss and disturbance to adjoining areas.

Residual Impacts:

The loss of habitat is a residual impact that is unavoidable. The disturbance may still cause some erosion and invasive alien plant encroachment.

Impact Nature: Direct mortality		
Direct mortality within the construction area and surrounds due to collisions with vehicles and poaching of eggs and adults.		
	Without mitigation	**With mitigation**
Extent	Very low (1)	Very low (1)
Duration	Short term (2)	Very short term (1)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium**	**Low**
Status (positive or negative)	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	

Mitigation:

- All personnel should undergo environmental induction and awareness training with regards to avifauna and in particular awareness about not harming, collecting or hunting terrestrial species (e.g. bustards, korhaans, francolin), and owls, which are often persecuted out of superstition.
- All construction vehicles should adhere to clearly defined and demarcated roads. No off-road driving to be allowed outside of the construction area.
- All vehicles (construction or other) accessing the site should adhere to a low speed limit on site (40 km/h max) to avoid collisions with susceptible avifauna, such as nocturnal and crepuscular species (e.g. nightjars and owls) which sometimes forage or rest on roads, especially at night.

Residual Impacts:

There is the possibility that roadkill may still occur.

6.4.2. Avifaunal: Operation Phase

Impact Nature: Collisions with powerlines		
Several priority species occur within the assessment area that exhibit a high probability of colliding with power lines.		
	Without mitigation	**With mitigation**
Extent	Moderate (3)	Low (2)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Low (4)
Probability	Definite (5)	Highly probable (4)
Significance	**High**	**Medium**
Status (positive or negative)	Negative	Negative

Impact Nature: Collisions with powerlines		
Several priority species occur within the assessment area that exhibit a high probability of colliding with power lines.		
Reversibility	Low	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	

Mitigation:

- The design of the proposed power line must be of a type or similar structure as endorsed by the Eskom-EWT Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa.
- Infrastructure should be consolidated where possible in order to minimise the amount of ground and air space used. This would involve using existing/approved pylons and associated infrastructure for different lines.
- The power line should be marked with bird diverters along all high-priority sections in order to make the lines as visible as possible to collision-susceptible species. Recommended bird diverters such as brightly coloured 'aviation' balls, thickened wire spirals and flapping devices that increase the visibility of the lines should be fitted where considered necessary (collision hot-spots). These should be identified during the preconstruction walk-through.
- If lights are to be used at night for ensuring that infrastructure on site is lit, this should be done with downward-directed low-UV type lights (such as most HPS or LPS bulbs), which do not attract insects and their avian predators., so as to minimise disturbance to birds flying over the site at night.
- A recommended option (but not a requirement) is that Bird Strike Indicators could be installed to alert about collisions.
- Ensure that monitoring is sufficiently frequent to detect collisions reliably and that any areas where regular collisions occur are fitted with flight diverters.
- During the first year of operation quarterly reports, summarising interim findings should be complied and submitted to BirdLife South Africa. If the findings indicate that collisions have not occurred or are minimal with no red-listed species, an annual report can be submitted.

Residual Impacts:

There is still the risk of Ludwig's Bustard colliding due to the species poor eyesight. This can be reduced further by 'staggering' the pylons as far as practicable in relation to neighbouring pylons during construction (subject to other environmental and technical considerations), rather than aligning the pylons of adjacent power lines, so that the profile of the combined power lines will be more visible to flying birds. The consolidation of infrastructure will also aid in mitigation against collision.

Impact Nature: Electrocution with power lines		
Several priority species occur within the assessment that exhibit a high probability of electrocution by powerlines. These are typically the raptor species that use the powerlines as perching spots.		
	Without mitigation	**With mitigation**
Extent	Moderate (3)	Low (2)
Duration	Long term (4)	Moderate term (3)
Magnitude	High (8)	Low (4)
Probability	Definite (5)	Probable (3)
Significance	**High**	**Low**
Status (positive or negative)	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	

Mitigation:

- The design of the proposed power line must be of a type or similar structure as endorsed by the Eskom-EWT Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa.

- Infrastructure should be consolidated where possible/practical in order to minimise the amount of ground and air space used. This would involve using the existing/approved pylons and associated infrastructure for different lines.
- Ensure that monitoring is sufficiently frequent to detect electrocutions reliably and that any areas where regular collisions occur are fitted with flight diverters.
- During the first year of operation quarterly reports, summarising interim findings should be complied and submitted to BirdLife South Africa. If the findings indicate that electrocutions have not occurred or are minimal with no red-listed species, an annual report can be submitted.

Residual Impacts:

There may still be the possibility of electrocution although the severity of the impact is mimised if the appropriate mitigation measures are implemented.

Impact Nature: Direct mortality during maintenance procedures		
The maintenance of infrastructure may possibly lead to road kills along the access road.		
	Without mitigation	**With mitigation**
Extent	Very low (1)	Very low (1)
Duration	Long term (4)	Long term (4)
Magnitude	High (8)	Minor (2)
Probability	Definite (5)	Improbable (2)
Significance	**High**	**Low**
Status (positive or negative)	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	

Mitigation:

- All personnel should undergo environmental induction and awareness training with regards to avifauna and in particular awareness about not harming, collecting or hunting terrestrial species (e.g. bustards, korhaans, francolin), and owls, which are often persecuted out of superstition.
- All vehicles should adhere to clearly defined and demarcated roads. No off-road driving to be allowed.
- All vehicles accessing the site should adhere to a low speed limit on site (40 km/h max) to avoid collisions with susceptible avifauna, such as nocturnal and crepuscular species (e.g. nightjars and owls) which sometimes forage or rest on roads, especially at night.

Residual Impacts:

There may still be the possibility of road kills although the severity of the impact is minimised if the appropriate mitigation measures are implemented.

6.4.3. Avifaunal: Decommissioning Phase

Impact Nature: Disturbance and direct mortality		
Disturbance will occur during the removal of infrastructure and direct mortality due to collisions with vehicles and poaching of eggs and adults.		
	Without mitigation	**With mitigation**
Extent	Very low (1)	Very low (1)
Duration	Short term (2)	Very short term (1)
Magnitude	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium**	**Low**
Status (positive or negative)	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources?	No	No

Can impacts be mitigated?	Yes to an extent, the noise generated from heavy machinery is difficult to mitigate against.

Mitigation:

- All personnel should undergo environmental induction and awareness training with regards to avifauna and in particular awareness about not harming, collecting or hunting terrestrial species (e.g. bustards, korhaans, francolin), and owls, which are often persecuted out of superstition.
- All construction vehicles should adhere to clearly defined and demarcated roads. No off-road driving to be allowed outside of the construction area.
- All vehicles (construction or other) accessing the site should adhere to a low speed limit on site (40 km/h max) to avoid collisions with susceptible avifauna, such as nocturnal and crepuscular species (e.g. nightjars and owls) which sometimes forage or rest on roads, especially at night.

Residual Impacts:
There is the possibility that roadkill may still occur, and the noise generated will be difficult to mitigate against.

Impact Nature: Habitat degradation		
Disturbance created during the decommissioning phase will potentially lead to habitat erosion and encroachment of invasive alien plants. This will degrade the habitat within the project footprint and proximal surrounding environment, thereby leading to a negative shift in the avifauna community.		
	Without mitigation	**With mitigation**
Extent	Low (2)	Very low (1)
Duration	Permanent (5)	Very short term (1)
Magnitude	High (8)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	**Medium**	**Low**
Status (positive or negative)	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	

Mitigation:

- Rehabilitation in accordance with the Rehabilitation Plan for the development must be undertaken in areas disturbed during the decommissioning phase.
- Monitoring of the rehabilitated area must be undertaken for a minimum of 3 years after the decommissioning phase.
- All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.
- There should be follow-up rehabilitation and revegetation of any remaining bare areas with indigenous flora.
- IAP management must occur annually for at least 2 years after decommissioning. A further 1-3 years of monitoring and control may be required, depending on the condition of the site at the end of year 2. Woody aliens should be controlled using the appropriate alien control techniques as determined by the species present. This might include use of herbicides where no practical manual means are feasible.

Residual Impacts:
No significant residual risks are expected, although IAP encroachment and erosion might still occur but would have a negligible impact if effectively managed.

6.4.4. Avifaunal: Cumulative impact

The following is the cumulative impact that is assessed as being a likely consequence of the development (construction, operational and decommissioning phases) of the Great Karoo Grid Connection Infrastructure. It is assessed in context of the extent of the current site, other developments in the area as well as general

habitat loss and transformation resulting from other activities in the area. The assessment for site in isolation assumes that the appropriate mitigation measures are implemented.

Nature: Cumulative impacts to avifauna within the southern Roggeveld region		
Impact on avifaunal habitats, migration routes and nesting areas due to cumulative loss and fragmentation of habitat, as well collisions and electrocutions along the grid connection (dealt with specifically under Operational Impacts).		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Very low (1)	High (4)
Duration	Long term (4)	Long term (4)
Magnitude	Low (4)	High (8)
Probability	Probable (3)	Probable (3)
Significance	**Low**	**Medium**
Status (positive or negative)	Negative	Negative
Reversibility	High	Low
Irreplaceable loss of resources?	No	Yes
Can impacts be mitigated?	Yes, the impacts can be mitigated to some degree, but many of the long-term impacts from the presence of the Wind Energy Facilities in the area cannot be well mitigated.	
Mitigation: • The design of the proposed power facilities must be congruent with best-practice guidelines as indicated by the Endangered Wildlife Trust and BirdLife South Africa. • Ensure that monitoring is sufficiently frequent to detect fatalities reliably and that any areas where regular electrocutions or collisions occur are fitted with the appropriate mitigation measures. Reports should be complied and submitted to BirdLife South Africa. • Rehabilitation of disturbed areas must occur throughout the corridor to mitigate against habitat degradation within the broader southern Roggeveld area.		
Residual Impacts: No significant residual risks are expected, although IAP encroachment and erosion might still occur but would have a negligible impact if effectively managed.		

6.5. Assessment of Impacts on heritage resources

Based on the information available from heritage assessments previously conducted in the area proposed for development, the proposed development of the OHL and switching station for the Great Karoo WEF is unlikely to negatively impact significant archaeological, built environment and palaeontological heritage as long as the recommendations contained in Booth (2012) and Rossouw (2012)(detailed below in this impact assessment) are implemented. From a heritage perspective, the proposed OHL and switching station can be located anywhere within the 500m area and 300-750m corridor assessed in the heritage specialist report. The following heritage impacts were determined by the heritage impact assessment (refer **Appendix F**).

6.5.1. Heritage: Construction Phase

Impact Nature: Significant archaeological and built environment heritage resources may be impacted by the construction phase of the proposed development		
Significant archaeological and built environment heritage resources may be impacted by the construction phase of the proposed development		
	Without mitigation	**With mitigation**

Extent	Localised (1)	Localised (1
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (3)	Low (1)
Probability	Probable (3)	Very Improbable (1)
Significance	**Low (27)**	**Low (7)**
Status (positive or negative)	Neutral	Neutral
Reversibility	Any impacts to heritage resources that do occur are irreversible	Any impacts to heritage resources that do occur are irreversible
Irreplaceable loss of resources?	Possible	Possible
Can impacts be mitigated?	Yes	

Mitigation:

- A stone packed feature was identified along the Soetwater OHL corridor during the walkdown for that project, and in response SAHRA issued certain recommendations for the Soetwater OHL project (SAHRA Case ID: 15452 dated 23 September 2020). Given that the Great Karoo OHL corridor runs parallel to the Soetwater OHL, the recommendations made by SAHRA in respect of the stone-packed feature should be noted and applied as relevant to the construction of the Great Karoo OHL:
    - The stone packed feature (possible grave) should be fenced with an entry gate and clearly demarcated prior to the construction activities along the north-south length of the powerline.
    - SAHRA's previous recommendations (26 May 2014) stipulate that the fence be placed 5 meters away from the perimeter of the graves and that no development is allowed within 30 meters of the fence line surrounding the graves. This must be implemented for the entirety of the construction phase.
    - General fencing materials may be used, mesh fencing approximately 1.2 m in height, and treated wooden droppers as the corner posts, approximately 5 cm in width, or similar alternative materials.
    - The environmental control officers (ECOs) must liaise with the archaeologist regarding the fencing materials being used for the erection of the fence, the planned area for the establishment of the fence, during the erection and completion of the fence, as well as during the construction of pylons in the vicinity of the fenced-in feature.
    - At this point it is not necessary for the archaeologist to be on-site during the construction of the fence and pylon if the ECO keeps in contact with the archaeologist, as in recommendation 3.
    - No material may be deposited on the stone feature during the construction i.e. material from excavation for pylon foundation.
    - Care must be taken during the lifting of the pylon and stringing of the line in the vicinity of the stone feature.
    - A monitoring report must be submitted to the SAHRIS Case Application once the construction phase of the pylon in question has been concluded. This monitoring report must include before and after photographs of the feature, the fence and the surrounding area.
- A walk-down of the proposed OHL and switching station area is required prior to construction. This must be conducted by a qualified archaeologist to ensure that no heritage resources are to be impacted by the development. If heritage resources are identified at or near any proposed infrastructure, an assessment of the significance of the heritage resources and the impact to the identified heritage resource must be completed. A report detailing the results of the survey must be submitted to SAHRA before construction commences. This walkthrough does not affect the layout, but is rather intended to inform whether any additional mitigation measures (e.g. sampling) may be required before construction commences.
- Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
- If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately in the vicinity of the finds and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken.

Residual Impacts:

There will not be residual impacts as a walkthrough would have been conducted prior to site establishment. However, if any impacts occur they are irreversible and therefore even the slightest disturbance will be residual (assuming all mitigation was applied).

Impact Nature: Significant palaeontological heritage resources may be impacted by the construction phase of the proposed development		
Significant palaeontological heritage resources may be impacted by the construction phase of the proposed development		
	Without mitigation	**With mitigation**
Extent	Localised (1)	Localised (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Moderate (6)	Small (1)
Probability	Improbable (1)	Improbable (1)
Significance	**Low (12)**	**Low (7)**
Status (positive or negative)	Neutral	Neutral
Reversibility	Any impacts to heritage resources that do occur are irreversible	Any impacts to heritage resources that do occur are irreversible
Irreplaceable loss of resources?	Possible	Possible
Can impacts be mitigated?	Yes	
Mitigation: • Construction managers/foremen should be informed before construction starts on the possible types of palaeontological material they may encounter and the procedures to follow when they find sites. • A map of the identified palaeontological resources relative to the layout of the proposed development must be emailed to the SAHRA case officer and the ECO must monitor all excavations associated with the OHL and switching station. • If concentrations of palaeontological material are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken. • A Palaeontological Chance Finds Procedure must be implemented for all excavation activities.		
Residual Impacts: There will not be residual impacts as a walkthrough would have been conducted prior to site establishment. However, if any impacts occur they are irreversible, and therefore even the slightest disturbance will be residual (assuming all mitigation was applied).		

6.5.2. Heritage: Cumulative impact

The proposed OHL development will form part of the infrastructure required for the authorised Great Karoo WEF and is located immediately adjacent to the substation and operations and maintenance facilities associated with the Great Karoo WEF. Furthermore, the proposed OHL and switching station is located within an already approved WEF which is also located within a belt of approved renewable energy facilities. In terms of impacts to heritage resources, it is preferred that this kind of infrastructure development is concentrated in one location and is not sprawled across an otherwise culturally significant landscape. The construction of the proposed OHL and switching station is therefore unlikely to result in unacceptable risk or loss, nor will the proposed grid connection development result in a complete change to the sense of place of the area or result in an unacceptable increase in impact.

6.6. Assessment of impacts of agricultural potential and soils

As the area is considered to be of moderate sensitivity (as per the DEA screening tool results), a Compliance Statement was compiled for the project.

Five soils forms were identified within the assessment corridor, including the Bethesda, Tshiombo, Mispah, Glenrosa, Bare Rock, Magudu and Prieska soil form. The land capability sensitivities (DAFF, 2017) indicates land capabilities with "Very Low" and "Low to Moderate" sensitivities, which correlates with the findings from the baseline studies.

It is the specialist's conclusion that the assessment corridor is not associated with any arable soils, due to the type of soil, the slope of some of the areas as well as the climate, which in itself limits crop production significantly. The land capabilities associated with the assessment corridor are only suitable to grazing, which ties in with the current land use. The specialist therefore determined that the proposed development will have very little impact on the agricultural production ability of the land. Therefore, the proposed development of the powerline and the switching station may be favourably considered anywhere within the assessment corridor. It is also worth noting that no high sensitive land capabilities are located within the 50 m regulated area. Accordingly, the specialist found that the proposed grid connection infrastructure may be located anywhere within the assessed corridor.

The following mitigation measures must be considered by the issuing authority for authorisation however, as it relates to soil conservation within the study area:

» In cases of erosion, erosion berms must be implemented to minimize any further erosion.
» Compacted areas are to be ripped to loosen the soil structure.
» Existing roads should be used as much as possible during construction.
» Temporary cleared areas should be revegetated with indigenous species after the construction phase.
» All laydown yards must be constructed within the Glenrosa, Mispah or Bare Rock areas due to the fact that this soil form is characterised by a lower land capability and land potential than the other soil forms.
» A stormwater management plan must be compiled for the proposed switching station, focussing on stormwater and considering erosion that might be caused as a result thereof.
» Prevent any spills from occurring. Machines must be parked within hard park areas or dedicated storage areas and must be checked daily for fluid leaks.
» Prevent any spills from occurring. Machines must be parked within hard park areas or dedicated storage areas and must be checked daily for fluid leaks.

6.7. Combined sensitivity assessment

Combined sensitivity maps for the grid connection corridor is provided below. This has been compiled based on the specialist sensitivities determined from their respective studies, and therefore aims to represent the entirety of the site and the combined sensitivities. Please note, to improve display and clarity of the various features, two maps have been produced, one showing the avifaunal mitigation priority areas and the biodiversity sensitivity (refer Figure 6.1), and one showing the land capability sensitivity and heritage features present within the corridor (refer Figure 6.2). The following explanatory notes are applicable to the sensitivities depicted below:

» Avifaunal mitigation priority areas: The fine-scale avifauna habitats that were delineated within the avifaunal specialist assessment were assigned a mitigation priority category based on the characteristics of the avifauna assemblage within each one. The priority categories range from 'Low'

to 'Very High', with 'Very High' areas requiring stringent mitigation measures and 'Low" areas not of concern or requiring minimum mitigation measures. Generally, lowland areas and rocky slopes were assigned a 'Moderate' category as they were typically dominated by small passerine species. However, where threatened or priority species occurred or displayed breeding behaviour, these areas were categorised as a 'Very High' mitigation priority. Drainage lines are likely to be used as flyways, especially by heavy-bodied waterfowl, and therefore were assigned a 'High' priority category. It is important to note that the avifaunal mitigation priority areas are **not considered by the specialist to be no-go areas**, but rather areas where stringent mitigation must be applied, as detailed in the avifaunal impact assessment section above and the specialist assessment report (refer to **Appendix D - G**). No-go zones are however determined from an avifaunal perspective, which are detailed further in **section 6.8** below, and depicted in the sensitivity maps below.

» Biodiversity Sensitivity: Four different habitat types were delineated within the assessment and allocated a sensitivity category based on the criteria determined by the specialist. Ridges and Rocky Slope spatially varied in their sensitivity. Ridges were allocated a 'high' sensitivity as they were the source points for drainage lines as well as their uniqueness within the landscape. Rocky slopes were generally assigned a 'moderate' sensitivity, except where they formed the source point of drainage lines and were accordingly assigned a 'high' sensitivity. Please note, the specialist report indicates that areas of high sensitivity are not regarded as no-go's or exclusion zones, and therefore provided the mitigation measures supplied are applied by the proponent, development may proceed within these regions.

» Heritage: one heritage feature was found on site for the Soetwater OHL corridor, which is shared partially by this proposed development. A no-go buffer of 35m (detailed further below) is shown along with the location of the feature within the grid connection corridor, is shown on Figure 6.2. No other heritage features were located within the grid connection corridor and so no other sensitivities are assigned.

» Land use capability: The agricultural compliance statement confirmed the regional sensitivity of low to moderate sensitivity, as per the DEA screening tool results, however concluded that the proposed development will have a negligible impact on the agricultural production of the land. The low to moderate sensitivity confirmed by the specialist is shown in Figure 6.2 below.

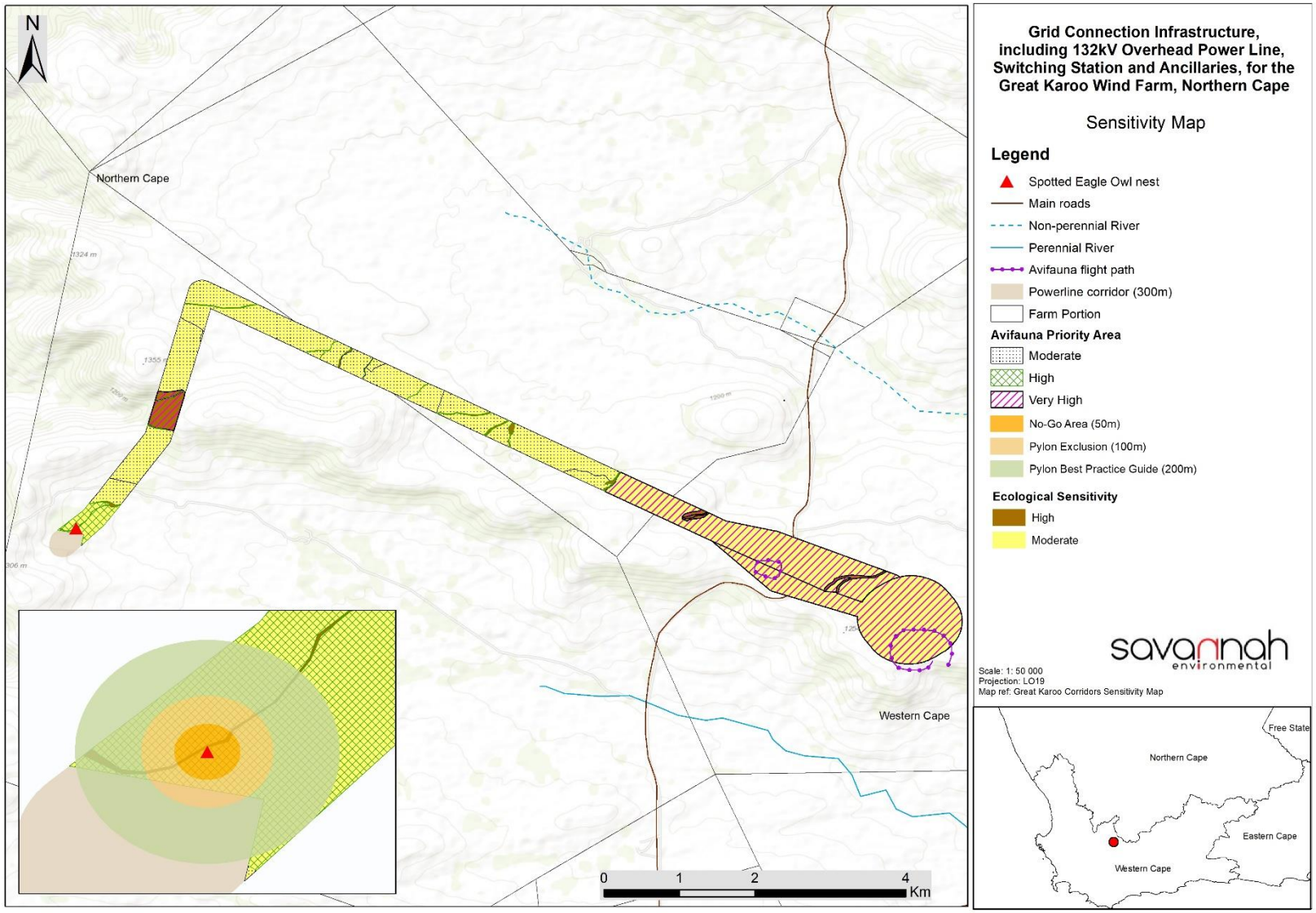

Figure 6.1. Biodiversity sensitivity map and avifaunal mitigation priority areas for the grid connection corridor.

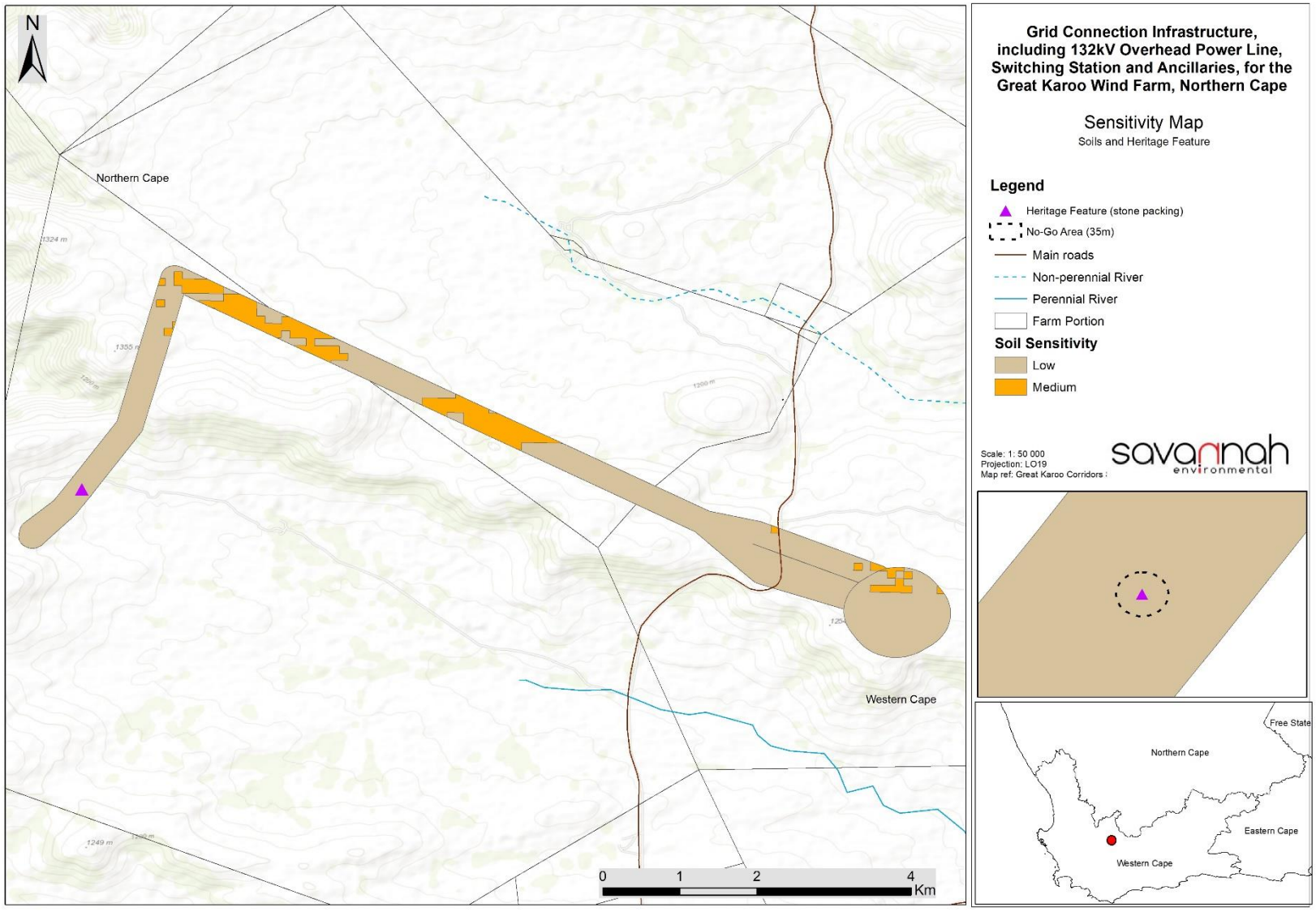

Figure 6.2. Land capability sensitivity map and heritage feature within the grid connection corridor.

6.8. Buffer zones, no-go zones or exclusion zones

One heritage feature was found on site for the Soetwater OHL corridor, which is shared partially by this proposed development(the proposed Great Karoo powerline will run parallel to the Soetwater OHL along the north-south section of the line). This feature is shown on Figure 6.2. Recent comment by SAHRA related to the Soetwater project indicated that the feature (a 'stone packed feature') must be surrounded by a fence with 5m clearance from the feature itself, and that no development is allowed within 30m of the fence surrounding the site (**i.e. a no-go zone of 35m around the feature itself is to be established**). The heritage specialist has indicated that the measures required by SAHRA for the feature relating to Soetwater should also apply to that of this project, and therefore a 35m conservation buffer, deemed as a no-go for any project related infrastructure, is deemed appropriate for this heritage feature. Please refer to Figure 6.2for the location of the feature along the grid connection corridor and as well as the 35m no-go buffer.

In addition, the avifaunal specialist found a pair of *Bubo africanus* (Spotted-Eagle Owl) nesting within the drainage line parallel to the OHL adjacent to the Hidden Valley (Karusa) Substation. The species forms life-long pair bonds and tends to re-use nesting sites. The avifaunal specialist therefore recommended that construction and installation within this portion of the OHL be undertaken in late August to avoid disturbance. Where this is not possible due to the construction timelines, the specialist suggested a 50 m buffer around the nest site be maintained to ensure no construction activity occurs within the buffer. Although, the risk of collision for owls tend to be minimal due to their eyesight, the species is at risk of electrocution (Prinsen et al, 2011). The specialist further indicated that no pylons are to be erected within 100 m of the nest site to reduce the risk of electrocution. Where technically feasible, the distance between the nest and the nearest pylons should be increased to 200m. These exclusions areas have been depicted in the sensitivity maps above (refer Figure 6.1and Figure 6.2).

The biodiversity specialist concluded that development of infrastructure can occur within any area of the corridor footprint, but pylons and the switching station are not be located in drainage lines. Formal crossings must be developed for the road to traverse these drainage lines. The location of the proposed infrastructure is not to exceed the boundary of the corridor.

No other exclusion zones, buffer zones or no-go zones were determined for the proposed development.

6.9. Cumulative setting

The cumulative impacts of the proposed grid connection infrastructure have been assessed through the consideration of other existing grid connection infrastructure located within the vicinity of the proposed project, as well as other industrial type infrastructure which have resulted in vertical and/or horizontal disturbance within the landscape surrounding the proposed project. These cumulative impacts have been detailed in the respective impact assessment sections of this chapter as well as within the specialist assessment reports contained in **Appendices D to G**.

It is important to explore the potential for cumulative impacts as this will lead to a better understanding of these impacts and the potential for mitigation that may be required. The scale at which the cumulative impacts are assessed is important. For the development of the proposed grid connection infrastructure, the existing infrastructure and transformation in the directly surrounding areas was considered which includes the following (refer to Figure 6.3):

- The Soetwater 132kV power line currently under construction, parallel to which the proposed line is partially planned;
- The authorised Gunstfontein Wind Farm power line from the Gunstfontein substation to the Heuwels substation on Soetwater Wind Farm;
- The Heuwels and Hidden Valley substations (under construction);
- The Soetwater Wind Farm and associated infrastructure (under construction);
- The Karusa Wind Farm and associated infrastructure (including power lines) (under construction); and
- The authorised Great Karoo Wind Farm.
- The authorised Gunstfontein Wind Farm.

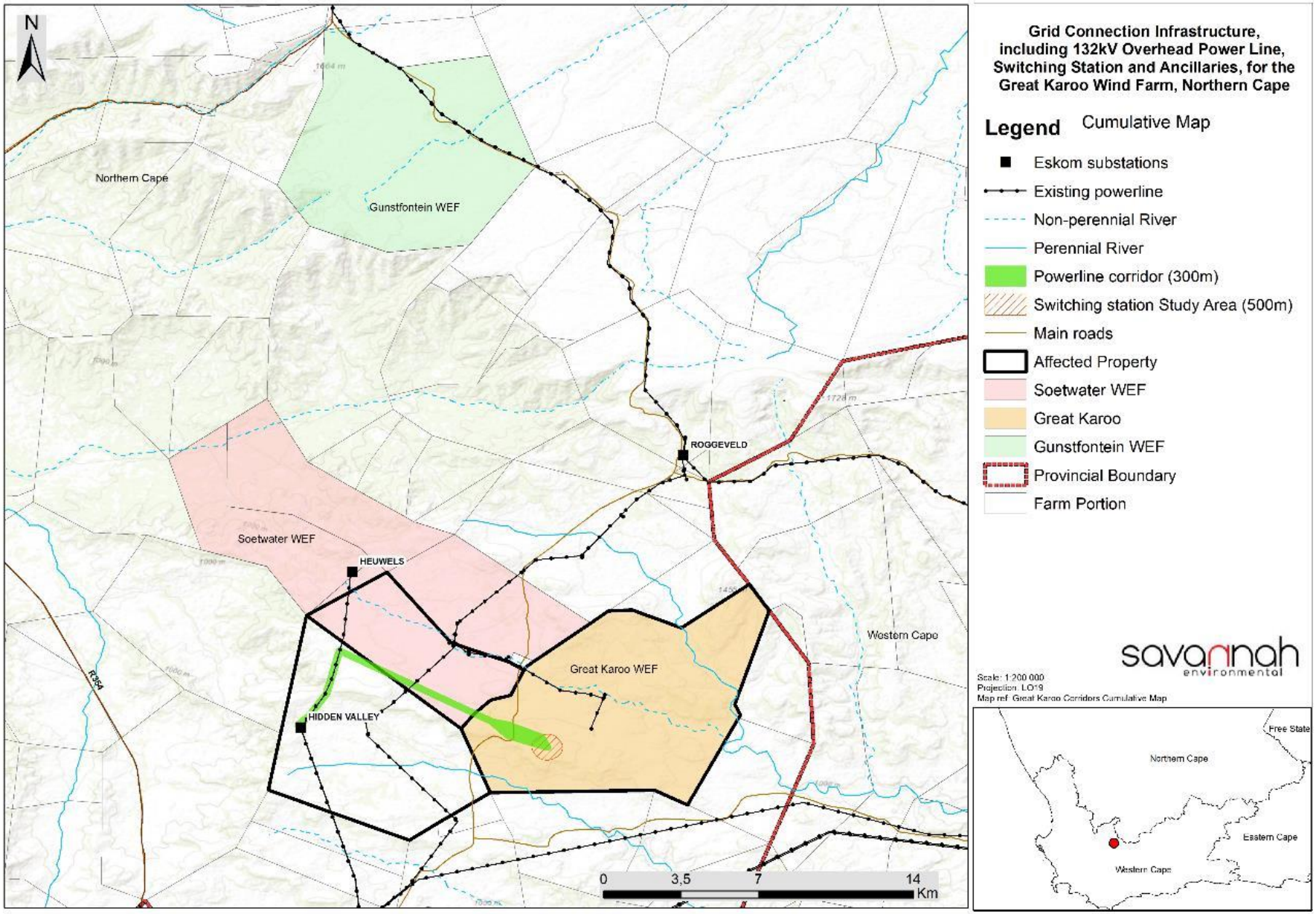

Figure 6.3. Cumulative map for the Great Karoo grid connection infrastructure

All cumulative impacts associated with proposed project will be of a low or moderate significance. A summary of the cumulative impacts is included in Table 6.1 below.

Table 6.1. Summary of the cumulative impact significance of the proposed project.

Specialist assessment	Overall significance of impact of the proposed project considered in isolation	Cumulative significance of impact of the project and other projects in the area
Biodiversity: Cumulative habitat loss within the southern Roggeveld	Medium	Medium
Avifauna: Cumulative impacts to avifauna within the southern Roggeveld region	Low	Medium
Heritage (archaeology, palaeontology and cultural landscape)	Negligible	Negligible

Based on the specialist cumulative assessment and findings, it can be concluded that the contribution of the project to cumulative impacts will be of a low to moderate significance depending on the impact being considered. There are no impacts or risks identified to be of a high significance or considered as unacceptable with the development of the proposed development. In addition, no impacts that will result in whole-scale change are expected to occur. The anticipated cumulative impact of the project is therefore deemed acceptable.

6.10. Assessment of the 'Do Nothing' Alternative

The 'do-nothing' alternative (i.e. no-go alternative) is the option of not constructing the grid connection infrastructure for the Great Karoo Wind Farm, as discussed previously in this report. Should this alternative be selected, there would be no environmental impacts within the proposed project due to the construction and operation activities associated with the proposed infrastructure. The implementation of the 'do-nothing' alternative will result in the Great Karoo Wind Farm not being able to evacuate the generated electricity to the national grid and will, therefore, render the development of the associated facilities and the operation thereof not feasible. If the grid connection infrastructure is not developed, the Great Karoo Wind Farm would not be developed and all positive socio-economic benefits associated with the wind farm (including generation of renewable energy, job creation and local socio-economic development) would be foregone.

The 'do-nothing' alternative will do little to influence the renewable energy targets set by government due to competition in the sector, and the number of renewable energy projects being bid to the Department of Energy. In addition, the Northern Cape Province will not benefit from additional generated power being evacuated through the proposed grid connection infrastructure directly into the Province's grid. Therefore, from a regional perspective, the 'do-nothing' alternative is not preferred as there is a perceived loss of benefits for the regional area.

This would result in negative impacts at a local, regional and national scale from a socio-economic and economic perspective and is not considered desirable. The negative impacts of the "Do Nothing" alternative are therefore considered to outweigh the positive impacts of this alternative. The 'Do nothing' alternative is, therefore, not a preferred alternative.

The proposed grid connection infrastructure is essential infrastructure for the evacuation of the generated power from the authorised Great Karoo Wind Farm into the national grid. Should the 'do-nothing'

alternative be implemented for this proposed project, it will result in the inability of the Great Karoo Wind Farm to connect to the national grid and, therefore, result in the Great Karoo Wind Farm being functionally inoperable. This would result in the lost opportunity for additional electricity from the Great Karoo Wind Farm being fed into the national grid. Given that renewable energy such as would be generated by the wind farm is required in terms of the IRP (Integrated Resource Plan – the Government's strategic targets for the procurement of new generation capacity), the option of not developing the Great Karoo grid connection infrastructure (this application) required for the Great Karoo Wind Farm is not preferred.

7. CONCLUSIONS AND RECOMMENDATIONS

Great Karoo Wind Farm (Pty) Ltd proposes the construction and operation of grid connection infrastructure for the Great Karoo Wind Farm, near Sutherland in the Northern Cape Province in order to connect the authorised Great Karoo Wind Farm to the Eskom National Grid. The project will include the development of a single or double circuit power line and associated infrastructure, as well as a switching station.

The grid connection infrastructure is considered as essential infrastructure to the authorised Great Karoo Wind Farm in order to enable the operation of the wind farm facility within the project site which has been authorised for the development.

A corridor of 300m has been identified for the power line, widening to ~750m in the eastern section of the power line. In addition, a 500m assessment area around the wind farm substation has been considered for the placement of the switching station. The proposed grid connection infrastructure will be developed within this assessed grid connection corridor.

The full length of the assessed corridor traverses three affected properties, namely:
» Farm Kentucky 206;
» RE Portion 1 of the Farm Orange Fontein No. 203; and
» The Farm De Hoop 202.

A summary of the recommendations and conclusions for the proposed project as determined through the BA process is provided in this Chapter.

7.1. 8.1. Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Basic Assessment Report

This chapter of the BA Report includes the following information required in terms of Appendix 1: Content of BA reports:

Requirement	Relevant Section
3(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	A summary of the findings of the specialist studies undertaken for the grid connection corridor has been included in section 7.2.
3(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.	An environmental impact statement containing the key findings of the environmental impacts of the proposed project has been included as section 7.6. An environmental sensitivity map of the grid connection corridor has been included as Figure 6.1 and Figure 6.2which overlays the assessed grid connection corridor with the sensitive environmental features present within the corridor. A summary of the positive and negative impacts associated with the proposed development has been included in section 7.2.

Requirement	Relevant Section
3(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.	All conditions required to be included in the Environmental Authorisation for the proposed project have been included in section 7.7.
3(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.	A reasoned opinion as to whether the proposed project should be authorised has been included in section 7.6.

7.2. Evaluation of the proposed project

The preceding chapters of this report together with the specialist studies contained within **Appendices D - G** provide a detailed assessment of the potential impacts that may result from the development. This chapter concludes the environmental assessment of the proposed development by providing a summary of the results and conclusions of the assessment. In doing so, it draws on the information gathered as part of the BA process, the knowledge gained by the environmental specialists and the EAP, and presents a combined and informed opinion of the environmental impacts associated with the project.

No environmental fatal flaws or impacts of high significance were identified in the detailed specialist studies conducted, and no impacts of unacceptable significance are expected to occur with the implementation of the recommended mitigation measures. These measures include, amongst others, the avoidance of sensitive features as specified by the specialists.

The specialist conclusions associated with the proposed project are summarised as follows:

7.2.1. Biodiversity Impacts

The main expected biodiversity impacts of the proposed OHL and Switching Station will include the following:

- habitat loss and fragmentation;
- degradation of surrounding habitat; and
- disturbance and displacement caused during the construction and maintenance phases.

Bearing in mind that the Great Karoo Wind Farm has already received authorisation, and the proposed grid connection infrastructure is a necessity for the distribution of energy, development may proceed from a biodiversity perspective. The OHL routing traverses the authorised Great Karoo, Karusa and Soetwater Wind Farms. The latter two are under construction and therefore the OHL is not a new disturbance in the landscape However, considering that the corridor has been identified as being of significance for biodiversity maintenance and ecological processes (CBAs and NPAES focus area), the specialist has recommended that development only proceed with the implementation of mitigation measures as described in the specialist assessment (also detailed in the impact assessment). The biodiversity specialist concluded that development of infrastructure can occur within any area of the corridor footprint, but pylons and the switching station are not be located in drainage lines. Formal crossings must be developed for the road to traverse these drainage lines. The location of the proposed infrastructure is not to exceed the boundary of the corridor.

7.2.2. Avifauna Impacts

The main expected avifaunal impacts of the proposed OHL and Switching Station will include the following:

- habitat loss and fragmentation;
- degradation of surrounding habitat;
- disturbance and displacement caused during the construction and maintenance phases;
- collisions with powerlines; and
- electrocution by powerlines.

Mitigation measures as described in the avifaunal specialist report can be implemented to reduce the significance of the risk but there is still a possibility of collision by large non-passerine avifauna species. Considering that this area that has been identified as being of significance for biodiversity maintenance and ecological processes (CBAs and NPAES focus area), development may proceed but with caution and only with the implementation of the mitigation measures provided for by the avifaunal specialist (also detailed in the impacts chapter of this Basic Assessment report).

Furthermore, the proposed Great Karoo OHL will be wholly located within 3 wind farms and will run adjacent to an existing (under construction) 132kV OHL for a portion of the line. These factors may ameliorate the impact of the GK OHL and therefore, regarded as fairly "minor" in the context of the surrounding infrastructure). The specialist concluded that the grid connection infrastructure can be located anywhere within the assessed grid connection corridor, subject to adherence to the specified no-go areas (refer section 6.8), and the implementation of the recommended mitigation measures.

7.2.3. Impacts on Heritage Resources

Based on the information available from heritage assessments previously conducted in the area proposed for development, the proposed development of the OHL and switching station for the Great Karoo WEF is unlikely to negatively impact significant archaeological, built environment and palaeontological heritage as long as the recommendations contained in Booth (2012) and Rossouw (2012)(detailed above in the impact assessment) are implemented. From a heritage perspective, the proposed OHL and switching station can be located anywhere within the 500m area and 300-750m corridor assessed in the heritage specialist report.

7.2.4. Impacts on soils and land capability

It is the specialist's conclusion that the assessment corridor is not associated with any arable soils, due to the type of soil, the slope of some of the areas as well as the climate, which in itself limits crop production significantly. The land capabilities associated with the assessment corridor are only suitable to grazing, which ties in with the current land use. The specialist therefore determined that the proposed development will have negligible impact on the agricultural production ability of the land. Therefore, the proposed development of the powerline and the substation may be favourably considered from a soil and agricultural conservation perspective. It is also worth noting that no high sensitive land capabilities are located within the 50 m regulated area. Accordingly, the specialist found that the proposed grid connection infrastructure may be located anywhere within the assessed corridor.

7.2.5. Cumulative Impacts

Based on the specialist cumulative assessment and findings, it can be concluded that the contribution of the project to cumulative impacts will be of a low to moderate significance depending on the impact being considered. There are no impacts or risks identified to be of a high significance or considered as unacceptable with the development of the proposed development. In addition, no impacts that will result in whole-scale change are expected to occur. The anticipated cumulative impact of the project is therefore deemed acceptable.

7.3. Environmental Sensitivity of the Assessed Grid Connection Corridor

From the specialist investigations undertaken for the grid connection infrastructure, sensitive areas/environmental features have been identified and demarcated within the grid connection corridor, which were discussed in further detail in Chapter 6 and 7. A summary is provided below:

- Avifaunal mitigation priority areas: The fine-scale avifauna habitats were categorised from 'Low mitigation priority' to 'Very High mitigation priority', with 'Very High mitigation priority' areas requiring stringent mitigation measures and 'Low mitigation priority" areas not of concern or requiring minimum mitigation measures. Generally, lowland areas and rocky slopes were assigned a 'Moderate' category as they were typically dominated by small passerine species. However, where threatened or priority species occurred or displayed breeding behaviour, these areas were categorised as a 'Very High' mitigation priority. Drainage lines are likely to be used as flyways, especially by heavy-bodied waterfowl, and therefore were assigned a 'High' priority category. It is important to note that the avifaunal mitigation priority areas are not considered by the specialist to be no-go areas, but rather areas where stringent mitigation must be applied, as detailed in the avifaunal impact assessment.
- Biodiversity Sensitivity: Four different habitat types were delineated within the assessment and allocated a sensitivity category based on the criteria determined by the specialist. Ridges and Rocky Slope spatially varied in their sensitivity. Ridges were allocated a 'high' sensitivity as they were the source points for drainage lines as well as their uniqueness within the landscape. Rocky slopes were generally assigned a 'moderate' sensitivity, except where they formed the source point of drainage lines and were accordingly assigned a 'high' sensitivity. Please note, the specialist report indicates that areas of high sensitivity are not regarded as no-go's or exclusion zones, and therefore provided the mitigation measures supplied are applied by the proponent, development may proceed within these regions.
- Heritage: One heritage feature was found on site for the Soetwater OHL corridor, which is shared partially by this proposed development corridor. A no-go buffer of 35m was determined for this feature with no other heritage sensitivities assigned by the specialist.
- Land use capability: The agricultural compliance statement confirmed the regional sensitivity moderate sensitivity as per the DEA screening tool results, however concluded that the proposed development will have a negligible impact on the agricultural production of the land.

7.4. Buffer zones, no-go zones or exclusion zones

The heritage specialist has indicated that the measures required by SAHRA for the feature relating to Soetwater should also apply to that of this project, and so a 35m conservation buffer, deemed as a no-go for any project related infrastructure, is deemed appropriate for this heritage feature. Please refer to Figure 5.18 and Figure 6.2 for the location of the feature along the grid connection corridor and as well as the 35m no-go buffer.

In addition, the avifaunal specialist determined a 50m no-go buffer to apply around the *Bubo africanus* (Spotted-Eagle Owl) nest, in addition to a 100m pylon (for the power line) exclusion zone. Power line pylons are therefore to be excluded within 100m from the Spotted-Eagle Owl nest. Where possible, the specialist further recommended a 200m best-practice region for power line pylons, however, did not determine the 200m buffer to be a no-go.

The biodiversity specialist concluded that development of infrastructure can occur within any area of the corridor footprint, but pylons and the switching station are not be located in drainage lines. Formal crossings must be developed for the road to traverse these drainage lines. The location of the proposed infrastructure is not to exceed the boundary of the corridor.

No other exclusion zones, buffer zones or no-go zones were determined for the proposed development.

7.5. Environmental cost and benefit comparison for the proposed project

Limited environmental costs can be anticipated at a local and site-specific level and are considered acceptable provided the mitigation measures as outlined in the BA Report and the respective EMPRs are implemented and adhered to. These environmental costs could include:

» Biodiversity: Habitat loss and fragmentation, as well as disturbance and displacement caused during the construction and maintenance phases. This impact can be reduced through the implementation of the recommended mitigation measures and the appropriate placement of infrastructure during the final design.
» Avifauna: habitat loss and fragmentation, disturbance and displacement during construction and maintenance, avifaunal collisions with power lines and avifaunal electrocution by power lines. This impact can be reduced through the implementation of the recommended mitigation measures and the appropriate placement of infrastructure during the final design.
» Heritage: Potential impacts to archaeological, built environment and Palaeontological heritage resources during the construction phase. Impacts can be effectively reduced through the implementation of appropriate mitigation measures during the construction phase.

All impacts across all specialist disciplines were mitigable to medium or low levels following implementation of mitigation, with no impacts of high significance remaining following mitigation.

Benefits of the grid connection infrastructure include the following:
» The project will facilitate the connection of the Great Karoo Wind Farm to the national grid. South Africa's per capita greenhouse gas emissions are amongst the highest in the world due to the reliance on fossil fuels. The Great Karoo Wind Farm (with its associated grid connection solution) will contribute to achieving goals for implementation of renewable energy and sustaining a 'green' economy within South Africa. The Great Karoo Wind Farm will also be associated with significant socio-economic benefits and local economic development. Without the grid connection infrastructure, this will not be possible.
» Limited worker benefit through skills development and procurement of local labour.
» The project indirectly contributes towards the Provincial and Local goals for the development of renewable energy as outlined in the respective IDPs.

The benefits of the grid connection infrastructure for the Great Karoo Wind Farm are expected to occur at a national, regional and local level. As the costs to the environment at a site-specific level have been largely limited through the appropriate placement of the grid connection corridor within areas considered to be acceptable for the development, as well as the consolidation of similar infrastructure in the area, the benefits of the project are expected to outweigh the environmental costs.

7.6. Overall Conclusion (Impact Statement)

The construction and operation of the grid connection solution for the Great Karoo Wind Farm in the Northern Cape has been proposed by Great Karoo Wind Farm (Pty) Ltd. A technically viable grid connection corridor within which the infrastructure could be developed was proposed by the applicant and assessed as part of the BA process. The assessment of the environmental suitability of the corridor for the development of the proposed infrastructure was undertaken by independent specialists and their findings have informed the results of this BA Report.

The specialist findings have indicated that there are no identified environmental fatal flaws or impacts of a high significance (following the implementation of mitigation) associated with the implementation of the proposed project. All specialists have determined that the placement of the infrastructure anywhere within the grid connection corridor is acceptable provided that the specific no-go (exclusion zones) as determined by the specialists and detailed in section 6.8 of this report, and that the mitigation measures presented in this Basic Assessment report are implemented.

The preferred grid connection option is therefore the technically preferred option, which is a direct connection of the Great Karoo Wind Farm to the Hidden Valley Substation within the assessed corridor. The entire corridor is considered suitable for development and it is concluded that the grid infrastructure can be placed anywhere within this corridor based on specific landowner and technical requirements, provided the specific no-go (exclusion zones) as determined by the specialists and detailed in section 6.8 of this report are adhered to. All impacts associated with the project establishment within the grid connection corridor can be mitigated to acceptable levels or enhanced through the implementation of the recommended mitigation or enhancement measures.

Through the assessment of the proposed development it can be concluded that the proposed project is environmentally acceptable (subject to the implementation of the recommended mitigation measures and adherence to the specialist specified exclusion zones) with no unacceptable impact significance of whole-scale change.

7.7. Overall Recommendation

Considering the findings of the independent specialist studies, the impacts identified, the grid connection corridor proposed by the developer, the avoidance of sensitive environmental features within the grid connection corridor, as well as the potential to further minimise the impacts to acceptable levels through mitigation, it is the reasoned opinion of the EAP that the development of the grid connection infrastructure for the Great Karoo Wind Farm is acceptable within the landscape and can reasonably be authorised to be developed within the assessed grid connection corridor.

The following infrastructure would be included within an authorisation issued for the project:

» a single- or double-circuit 132kV overhead power line;

- Switching station and ancillaries;
- access roads/ service tracks and drainage line crossing, as required;
- Laydown areas; and
- associated infrastructure.

The following key conditions would be required to be included within an authorisation issued the proposed project:

- A 10-year validity period is requested for the Environmental Authorisation if approved by the competent authority.
- The grid connection infrastructure must be wholly developed and optimised within the assessed grid connection corridor assessed in this Basic Assessment report.
- The specific no-go (exclusion zones) as determined by the specialists and detailed in section 6.8 of this report must be adhered to by the proponent.
- All mitigation measures detailed within this BA Report, as well as the specialist reports contained within **Appendices D to G**, are to be implemented.
- The biodiversity specialist concluded that development of infrastructure can occur within any area of the corridor footprint, but pylons and the switching station are not be located in drainage lines. Formal crossings must be developed for the road to traverse these drainage lines.
- The respective EMPrs as contained within **Appendix H and I** of this BA Report should form part of the contract with the Contractors appointed to construct and maintain the grid connection infrastructure in order to ensure compliance with environmental specifications and management measures. The implementation of these EMPRs for all life cycle phases of the infrastructure is considered key in achieving the appropriate environmental management standards as detailed for this project.
- Following optimisation of the power line routing and prior to construction, coordinates for the power line routing and switching station within the grid connection corridor must be communicated to the Competent Authority. Please note, no further public participation is deemed necessary for this measure as the infrastructure will remain within the assessed corridor.
- A pre-construction walk-through of the final power line alignment by an ecologist to survey for species of conservation concern that would be affected and that can be translocated must be undertaken prior to the commencement of the construction phase. Relevant permits must be obtained where required prior to undertaking fauna/flora search-and-rescue activities.
- Before construction commences individuals of listed species within the development footprint that would be affected by the infrastructure and associated servitudes must be counted and marked and translocated, where deemed necessary, by the ecologist conducting the pre-construction walk-through survey. Permits from the relevant provincial authorities, i.e. the Northern Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform must be obtained before the individuals are disturbed.
- A pre-construction walk-through of the power line route to identify heritage sites that will be impacted by the grid connection extension infrastructure must be undertaken prior to the commencement of the construction phase.
- The infrastructure placement must avoid the heritage feature found within the assessment corridor, and the associated 35m no-go zone (refer to the heritage specialist study, **Appendix F** for more detail).
- Monitoring of the 132kV power line must be undertaken as per the requirements included in the Avifauna Impact Assessment Report (**Appendix E**).
- A chance find procedure must be developed and implemented in the event that archaeological or palaeontological resources are found during the construction of the grid connection infrastructure. In

the case where the proposed development activities bring these materials to the surface, work must cease in the vicinity of the find and SAHRA must be contacted immediately.

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