

# OLIFANTSHOEK 132kV POWER LINE

Northern Cape Province

Basic Assessment Report

July 2020

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## PROJECT DETAILS

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<b>Title</b>	:	Basic Assessment Process: Basic Assessment Report for the Olifantshoek 132kV Power Line near Olifantshoek in the Northern Cape Province.
<b>Authors</b>	:	Savannah Environmental (Pty) Ltd Reuben Maroga Lisa Opperman Jo-Anne Thomas Nicolene Venter
<b>Client</b>	:	Gamagara Local Municipality
<b>Report Revision</b>	:	Revision 0
<b>Date</b>	:	July 2020

**When used as a reference this report should be cited as:** Savannah Environmental (2020) Basic Assessment for the Olifantshoek 132kV Power Line, Northern Cape Province.

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## PURPOSE OF THE BA REPORT AND INVITATION TO COMMENT

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The Northern Cape Province in the north east region of South Africa is associated with multiple mining operations which have led to the population expansion of the Kathu and Olifantshoek towns. As a result, there is pressure being exerted on the existing grid connection infrastructure in order to meet the current capacity and demands of the region, especially within the municipal area of the Gamagara Local Municipality. Considering these challenges, the **Gamagara Local Municipality** proposes the construction and operation of a grid connection infrastructure, consisting of a single-circuit 132kV overhead power line between the existing Emil Traction Substation and the authorised Olifantshoek Substation located near the town of Olifantshoek in the Northern Cape Province. The grid connection infrastructure will be used by the municipality to strengthen the existing grid network within its municipal area in order to ensure adequate supply of electricity for residents.

In terms of NEMA, the EIA Regulations, 2014 (GNR 326), and Listing Notices (Listing Notice 1 (GNR 327), Listing Notice 2 (GNR 325), and Listing Notice 3 (GNR 324)), the development of the Olifantshoek 132kV Power Line requires Environmental Authorisation (EA) from the National Department of Environmental Affairs (DEA) subject to the completion of a Basic Assessment process, as prescribed in Regulations 21 to 24 of the EIA Regulations, 2014 (GNR 326). The need for EA subject to the completion of Basic Assessment process is triggered by the inclusion of, amongst others, Activity 11(i) of Listing Notice 1 (GNR 327).

The BA Report is available for review from **Thursday, 30 July 2020** and **Monday, 31 August 2020**. The BA Report is available for download, review and comment on the Savannah Environmental website at: <https://www.savannahsa.com/public-documents/grid-infrastructure/>.

Please submit your comments by **Monday, 31 August 2020** to:

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

## EXECUTIVE SUMMARY

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The Northern Cape Province in the north east region of South Africa is associated with multiple mining operations which have led to the population expansion of the Kathu and Olifantshoek towns. As a result, there is pressure being exerted on the existing grid connection infrastructure in order to meet the current capacity and demands of the region, especially within the municipal area of the Gamagara Local Municipality. Considering these challenges, the **Gamagara Local Municipality** proposes the construction and operation of a grid connection infrastructure, consisting of a single-circuit 132kV overhead power line between the existing Emil Traction Substation and the authorised Olifantshoek Substation located near the town of Olifantshoek in the Northern Cape Province. The grid connection infrastructure will be used by the municipality to strengthen the existing grid network within its municipal area in order to ensure adequate supply of electricity for residents.

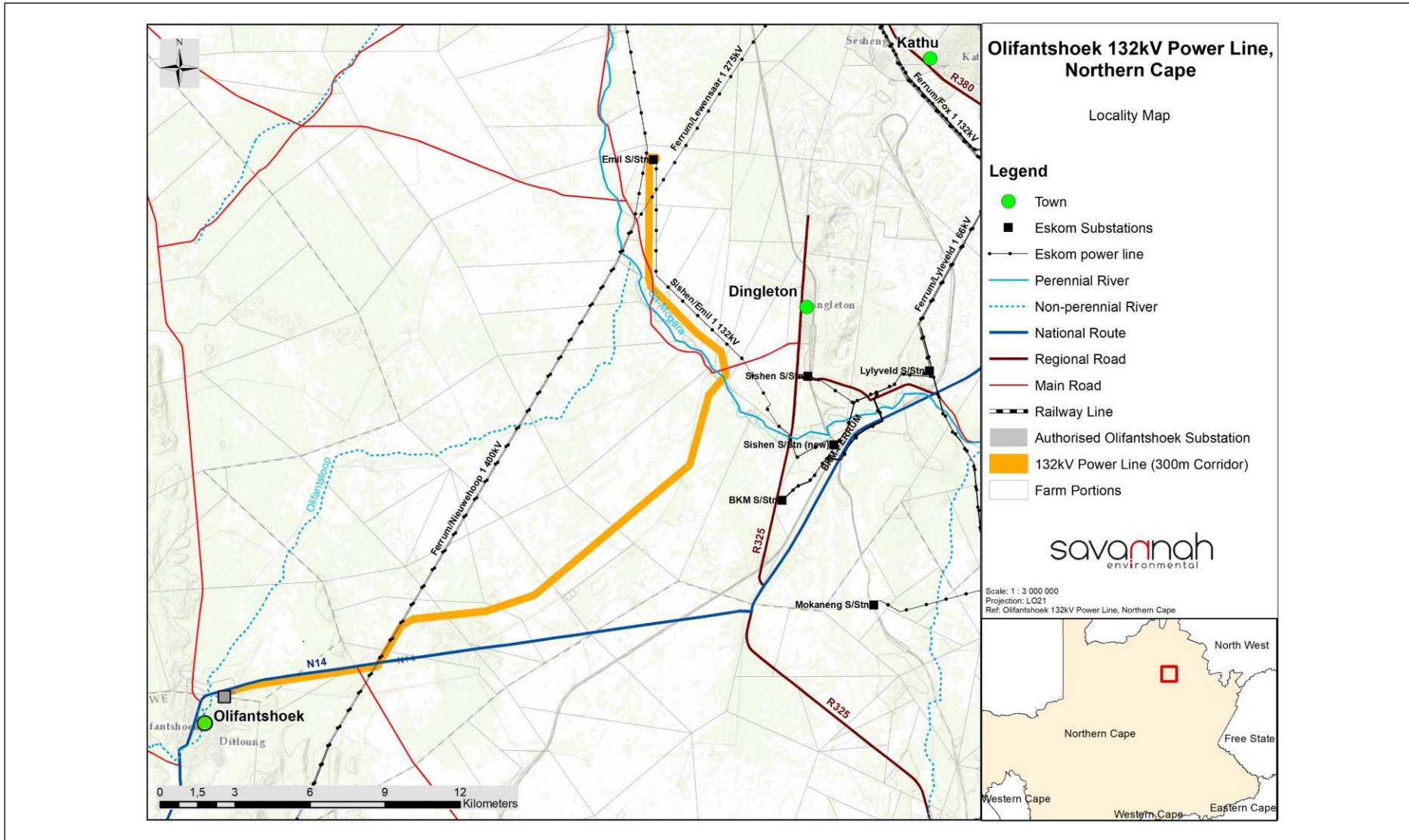
A 300m wide and 36km long grid connection corridor (refer to **Figure 0.1**) has been identified for investigation within which the development of the grid connection infrastructure (i.e. single-circuit 132kV power line) will be undertaken. The consideration of a corridor will allow for the optimisation of the power line route (a servitude of 31m) to be developed within the assessed corridor. The consideration of a larger grid connection corridor also provides an opportunity to avoid environmental sensitivities which may be present within the corridor. A 4m wide unsurfaced access road will be required during the construction and operation phase of the power line.

The proponent, Gamagara Local Municipality, has confirmed that the grid connection corridor is suitable for the development of grid connection infrastructure from a technical perspective due to site-specific characteristics such as topography and accessibility, the location of the grid connection corridor within the Northern Strategic Transmission Corridor, as well as the proximity of the grid connection corridor to authorised and existing grid connection infrastructure, i.e. Niewehoop/Upington 400kV, Ferrum/Niewehoop 400kV and the Ferrum/Mookodi 400kV power lines.

No environmental fatal flaws were identified in the detailed specialist studies conducted, and no impacts of unacceptable or high significance are expected to occur with the implementation of the recommended mitigation measures. These measures include, amongst others, the avoidance of sensitive features which include the spanning of the power line infrastructure (i.e. pylons/towers) across the Ga-Mogara River and the installation of anti-collision bird devices within certain sections of higher sensitivity. Some mitigation measures have already been considered and implemented through the identification of the grid connection corridor, such as the avoidance of the Brooks & Bredenkamp Nature Reserve which is located adjacent and west of the grid connection corridor.

Impacts identified to be associated with the proposed project and assessed within this report include:

- » Impacts on ecology (including flora, fauna and freshwater resources).
- » Impacts on avifauna.
- » Impacts on heritage resources, including archaeology and palaeontology.
- » Visual impacts on the landscape as a result of the power line infrastructure.
- » Impacts on the social environment.
- » Impacts on soil resources.



**Figure 0.1:** Locality map illustrating the location of the grid connection corridor under investigation for the development of the Olifantshoek 132kV Power Line.

### ***Impacts on Ecology and Freshwater Resources***

During the pre-construction and construction phase (and the decommissioning phase) impacts identified include impacts on vegetation and protected and listed plant species, impact on fauna, a loss of riparian systems and alluvial watercourses and a loss of localised surface water quality. The duration of the impacts ranges from short-term to long-term, with the magnitude of the impacts ranging from moderate to low. The significance of the construction phase impacts (and the decommissioning phase) is medium and low depending on the impact being considered, and with the implementation of the mitigation measures recommended by the specialist. No impacts of high significance were identified from an ecological and freshwater resources perspective.

During the operation phase, the anticipated impacts include an increase in sedimentation and soil erosion, and an impact on riparian systems. The duration of the impacts will be long-term, with a low magnitude. The significance of these impacts for the operation phase will be low with the implementation of the recommended mitigation measures. No impacts of a high or medium significance were identified.

From the findings of the Ecological and Freshwater Impact Assessment it can be concluded that no impacts of high significance or fatal flaws were identified which would hinder the development of the Olifantshoek 132kV Power Line. The grid connection corridor is therefore considered suitable for the establishment of the power line and associated infrastructure and all impacts associated with the development can be mitigated to an acceptable low significance. Therefore, the proposed development is considered to be appropriate and the ecological and freshwater impact acceptable and will not result in detrimental impacts to ecosystems, habitats, and freshwater features. As a result, the specialist has indicated that the Olifantshoek 132kV Power Line may be authorised, constructed, and operated subject to the implementation of the recommended mitigation measures.

Considering the grid connection corridor assessed for the development of the Olifantshoek 132kV Power Line, the specialist has indicated that the project can be supported from a terrestrial ecology and freshwater perspective.

### ***Impacts on Avifauna***

During the pre-construction and construction phase (and decommissioning phase) of the Olifantshoek 132kV Power Line, direct avifauna impacts are expected to include habitat destruction and alteration, and species disturbance. The impacts will be negative with a short-term to long-term duration and will have a low magnitude. Significance of the construction phase impacts will be low with the implementation of the recommended mitigation measures. No impacts of a high or medium significance for the construction phase are expected to occur.

Impacts on avifauna during the operation phase of the Olifantshoek 132kV Power Line include disturbance to avifauna species during maintenance operations, the electrocution of avifauna species on power line infrastructure, and the collision of the avifauna species with the power line infrastructure. The impact will be negative, with a short-term to long-term duration for the life of the power line and a magnitude of moderate to low. Significance of the impacts will be low, with the implementation of mitigation measures. No impacts of a high or medium significance for the construction phase are expected to occur.

From the results of the Avifauna Impact Assessment, it can be concluded that the grid connection corridor for the Olifantshoek 132kV Power Line is considered to be suitable for the development of the power line. Taking into consideration that the grid connection corridor supports a typical bioregional avifaunal assemblage, and that there are no known communal breeding or roosting sites of red-listed species, there are no impacts associated with the development that are regarded to be of a high residual significance and which cannot be mitigated to a low significance. No fatal flaws will be associated with the development of the power line. Therefore, the development of the Olifantshoek 132kV Power Line is considered to be acceptable and supported from an avifaunal perspective.

Considering the grid connection corridor assessed for the development of the Olifantshoek 132kV Power Line, the specialist has indicated that the project can be supported from an avifauna perspective.

### ***Impacts on Heritage (including archaeology and palaeontology)***

It is expected that impacts to heritage and palaeontological resources will occur during the construction phase due to the on-ground disturbance required by the construction activities. No impacts are expected during the operation phase of the project.

Two (2) sites consisting of unmarked human graves were identified within the grid connection corridor and a 50m no-go area buffer should be applied around these sites. The proposed development will have a low impact on archaeology and the palaeontological resources in the area subject to the implementation of the recommended mitigation measures. There is however an opportunity for fossils to be found within the Moidraai and the Lucknow formations and the Kalahari Group (particularly in the north-eastern section of the grid connection corridor), which is adjacent to the Kathu Pan deposits, that contain fossil faunal assemblages. Therefore, a Chance Fossil Finds Procedure/Protocol has been included as **Appendix D** in the Environmental Management Programme (included as **Appendix K** in the BA Report).

The impacts of the proposed development on archaeological and palaeontological resources is therefore of low significance, with a long-term duration and a low magnitude following the implementation of the recommended mitigation measures. Therefore, the development of the Olifantshoek 132kV Power Line will not have a significant negative impact on the archaeological and palaeontological resources identified within the grid connection corridor. As such, the development of the Olifantshoek 132kV Power Line is not associated with any fatal flaws from a heritage, archaeological and palaeontological perspective, and it is considered to be acceptable.

Considering the grid connection corridor assessed for the development of the Olifantshoek 132kV Power Line, the specialist has indicated that the project can be supported from a heritage and palaeontological perspective.

### ***Visual Impacts***

The Visual Impact Assessment (**Appendix G** of the BA Report) identified negative impacts on visual receptors during the construction (including decommissioning) and the operation phases of the Olifantshoek 132kV Power Line. The impacts include an impact on the general landscape character; the visibility of the proposed power line to and a visual impact on rural homesteads; the visibility of the proposed power line to and visual impact on the N14; and the visibility of the proposed power line to and visual impact on urban



settlement areas. The development of the Olifantshoek 132kV Power Line will, however, be viewed in the context of the existing Ferrum-Lewensaar 275kV Power Line located parallel to the proposed grid connection corridor.

The duration of the impacts is expected to be long-term, with a magnitude ranging from moderate to low. The significance of the impacts will be low with the implementation of mitigation measures. No impacts of a high or medium significance are expected to occur. The development of the Olifantshoek 132kV Power Line is therefore considered to be acceptable from a visual perspective.

Considering the grid connection corridor assessed for the development of the Olifantshoek 132kV Power Line, the specialist has indicated that the project can be supported from a visual perspective.

### **Social Impacts**

The Social Impact Assessment (**Appendix H** of the BA Report) identified that the majority of the negative and positive social impacts associated with the project are anticipated to occur during the construction phase. The anticipated duration for the construction phase of the project is approximately 6 months, following which the power line will be handed over to Eskom for the duration of the operation phase, which is anticipated to be 50 years. These impacts include the creation of direct and indirect employment opportunities; economic multiplier effects; an influx of jobseekers and a change in the population; safety and security impacts; impacts on the daily living and movement patterns; nuisance impacts; and a sense of place impacts. These impacts will have a short-term duration and a small to moderate magnitude.

For the operation phase of the power line, the impacts identified include direct and indirect employment opportunities; visual impacts and a sense of place impacts; and impacts associated with the loss of agricultural land. These impacts are associated with a long-term duration and a minor to low magnitude and will be of a low significance following the implementation of the recommended enhancement measures.

The development of the Olifantshoek 132kV Power Line is unlikely to result in permanent damaging social impacts. From a social perspective, it is concluded that the project is acceptable subject to the implementation of the recommended mitigation and enhancement measures and management actions identified for the project. Considering the findings of the study and potential for mitigation, it is the reasoned opinion of the specialist that the Olifantshoek 132kV Power Line can be authorised from a social perspective.

Considering the grid connection corridor assessed for the development of the Olifantshoek 132kV Power Line, the specialist has indicated that the project can be supported from a social perspective.

### **Soils, Agricultural & Land Potential Impacts**

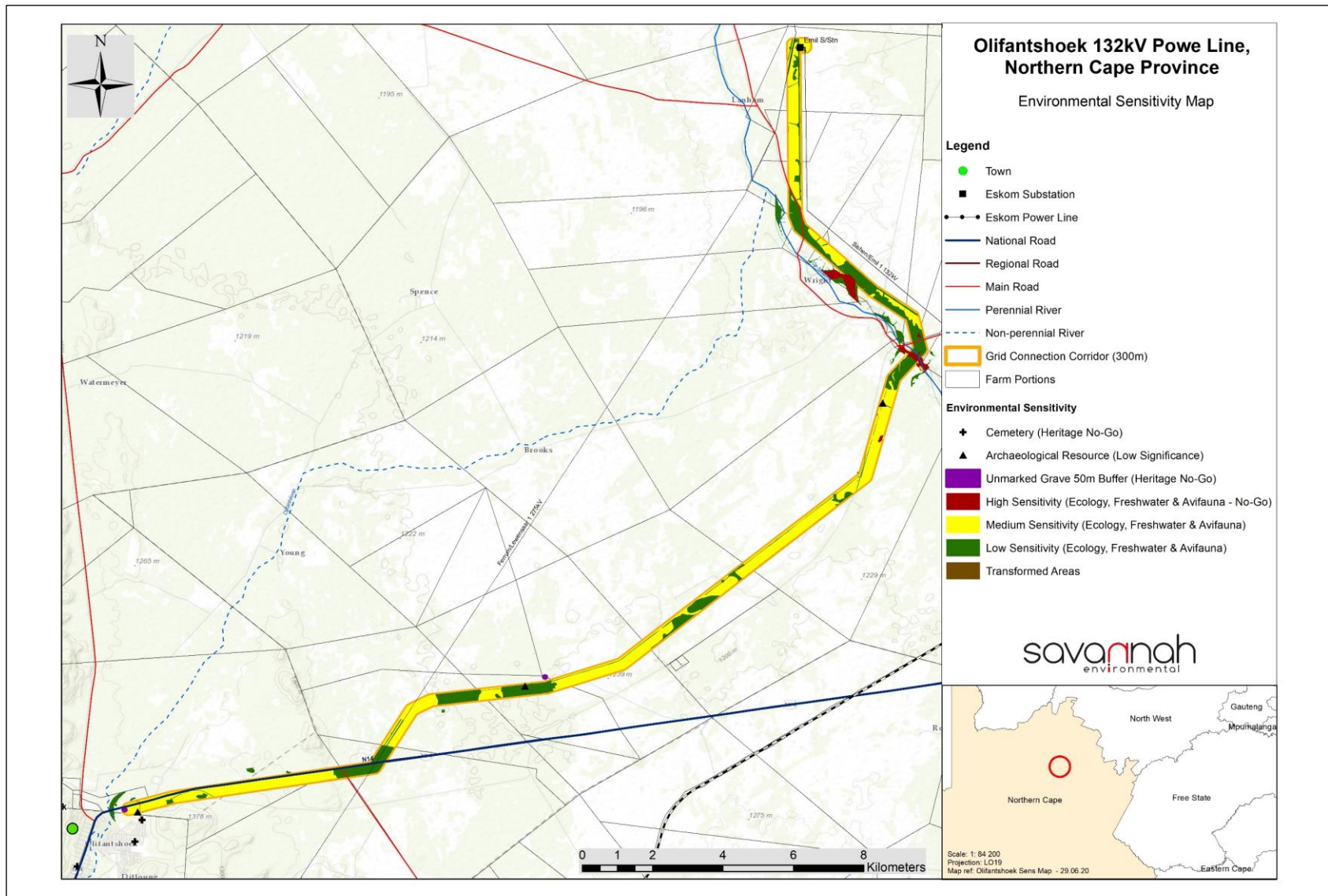
The Soils & Agricultural Compliance Statement (**Appendix I** of the BA Report) identified that the majority of the impacts are anticipated to occur during the construction phase of the proposed development. Impacts identified from a soil, agricultural and land potential include, a reduction of land with natural vegetation for livestock grazing, soil erosion and soil pollution. The anticipated impacts are associated with a short-term duration, given the short duration of the construction phase, i.e. 6 months and are associated with a low and moderate magnitude. The anticipated impacts are associated with a low significance following the implementation of the recommended mitigation measures.

Considering the grid connection corridor assessed for the development of the Olifantshoek 132kV Power Line, the specialist has indicated that the project can be supported from a soils, agricultural and land potential.

### **Assessment of Cumulative Impacts**

Cumulative impacts and benefits on various environmental and social receptors will occur to varying degrees with the development of grid connection infrastructure in South Africa and within the surrounding area of the grid connection corridor. The surrounding area is associated with large-scale ongoing iron ore mining operations, which have contributed to the transformation and industrialisation of the landscape in the area.

The grid connection corridor for the Olifantshoek 132kV Power Line is located within an area where several grid connection developments are proposed and existing. Existing grid connection infrastructure within the vicinity of the grid connection corridor for the Olifantshoek 132kV Power Line include the Ferrum/Lewensaar 275kV, Ferrum/Olien 1 275kV, Ferrum/Olien 2 275kV, Ferrum/Mookodi 400kV, Ferrum/Niewehoop and the Ferrum/Garona 400kV power lines. Therefore, considering all aspects, cumulative impacts associated with the Olifantshoek 132kV Power Line have been assessed to be acceptable, with no unacceptable loss or risk expected to occur.



**Figure 0.2:** Grid connection corridor map of the Olifantshoek 132kV Power Line, as was assessed as part of the BA process, overlain with the environmental sensitivities (refer to **Appendix N** for A3 maps)

## DEFINITIONS AND TERMINOLOGY

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

**Archaeological material:** Remains resulting from human activities which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.

**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.

**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.

**Disturbing noise:** A noise level that exceeds the ambient sound level measured continuously at the same measuring point by 7 dB or more.

**'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 Authorisation (EA):** means the authorisation issued by a competent authority (Department of Environmental Affairs) of a listed activity or specified activity in terms of the National Environmental Management Act (No 107 of 1998) and the EIA Regulations promulgated under the Act.

**Environmental assessment practitioner (EAP):** An individual responsible for the planning, management and coordinating of environmental management plan or any other appropriate environmental instruments introduced by legislation.

**Environmental assessment practitioner (EAP):** An individual responsible for the planning, management and coordinating of environmental management plan or any other appropriate environmental instruments introduced by legislation.

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

**Environmental impact assessment:** Environmental Impact Assessment, as defined in the NEMA EIA Regulations and in relation to an application to which scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application.

**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 (EMPr):** A plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a project or facility and its ongoing maintenance after implementation.

**Environmental Officer (EO):** The Environmental Officer (EO), employed by the Contractor, is responsible for managing the day-to-day on-site implementation of this EMPr, and for the compilation of regular (usually weekly) Monitoring Reports. The EO must act as liaison and advisor on all environmental and related issues and ensure that any complaints received from the public are duly recorded and forwarded to the Site Manager and Contractor.

**Habitat:** The place in which a species or ecological community occurs naturally.

**Hazardous waste:** Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

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

**Incident:** An unplanned occurrence that has caused, or has the potential to cause, environmental damage.

**Indirect impacts:** Indirect or induced changes that may 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 by the Contractor in response to the environmental specification or a request by the Site Manager, setting out the plant, materials, labour and method the Contractor proposes using to conduct an activity, in such detail that the Site Manager is able to assess whether the Contractor's proposal is in accordance

**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.

**Photovoltaic effect:** Electricity can be generated using photovoltaic solar panels which are comprised of individual photovoltaic cells that absorb solar energy to directly produce electricity. The absorbed solar radiation excites the electrons inside the cells and produces what is referred to as the Photovoltaic Effect.

**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 may 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).

**Riparian:** the area of land adjacent to a stream or river that is influenced by stream-induced or related processes. Riparian areas which are saturated or flooded for prolonged periods would be considered wetlands and could be described as riparian wetlands. However, some riparian areas are not wetlands (e.g. an area where alluvium is periodically deposited by a stream during floods, but which is well drained).

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

**Waste:** means— Any substance, whether or not that substance can be reduced, re-used, recycled and recovered-

- (a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of;
- (b) which the generator has no further use of for the purposes of production;
- (c) that must be treated or disposed of; or
- (d) that is identified by the Minister by notice in the Gazette.

and includes waste generated by the mining, medical or other sector, but –

- (i) a by-product is not considered waste; and
- (ii) any portion of waste once re-used, recycled and recovered, ceases to be waste.

## ACRONYMS

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BA	Basic Assessment
BAR	Basic Assessment Report
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEFF	Department of Environment, Forestry and Fisheries
DENC	Northern Cape Department of Environment and Nature Conservation
DoE	Department of Energy
DMRE	Department of Mineral Resources and Energy
EAP	Environmental Impact Practitioner
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
kV	Kilo Volt
NEMA	National Environmental Management Act
NEMAA	National Environmental Management Amendment Act
NEMBA	National Environmental Management: Biodiversity Act
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act
NWA	National Water Act
PM	Post Meridiem; "Afternoon"
SAHRA	South African National Heritage Resources Agency
SWMP	Stormwater Management Plan



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## CHAPTER 1: INTRODUCTION

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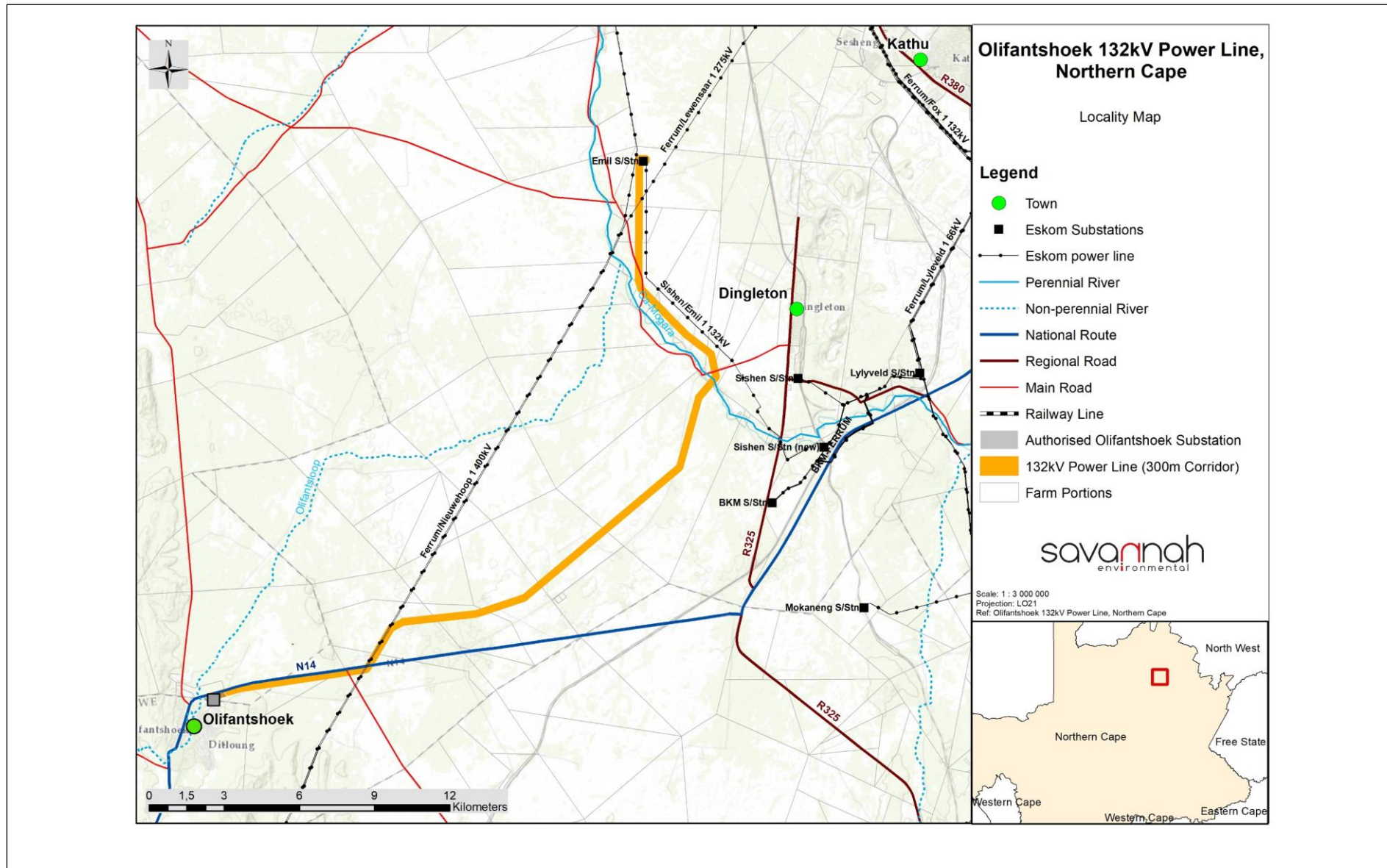
The Northern Cape Province in the north east region of South Africa is associated with multiple mining operations which have led to the population expansion of the Kathu and Olifantshoek towns. As a result, there is pressure being exerted on the existing grid connection infrastructure in order to meet the current capacity and demands of the region, especially within the municipal area of the Gamagara Local Municipality. Considering these challenges, the Gamagara Local Municipality proposes the construction and operation of a grid connection infrastructure, consisting of a single-circuit 132kV overhead power line between the existing Emil Traction Substation and the authorised Olifantshoek Substation located near the town of Olifantshoek in the Northern Cape Province. The grid connection infrastructure will be used by the municipality to strengthen the existing grid network within its municipal area in order to ensure adequate supply of electricity for residents.

A 300m wide and 36km long grid connection corridor has been identified for investigation within which the development of the grid connection infrastructure (i.e. single-circuit 132kV power line) will be undertaken. The consideration of a corridor will allow for the optimisation of the power line route (a servitude of 31m) to be developed within the assessed corridor. The consideration of a larger grid connection corridor also provides an opportunity to avoid environmental sensitivities which may be present within the corridor. A 4m wide unsurfaced access road will be required during the construction and operation phase of the power line.

The nature and extent of the grid connection infrastructure, as well as, the potential environmental impacts associated with the construction, operation and decommissioning phases of infrastructure of this nature is explored in detail in this BA Report. Site specific environmental issues and constraints within the assessed grid connection corridor are considered within the independent specialist studies in order to test the environmental suitability of the corridor identified for the development of the power line. The objective of the specialist studies is to also delineate areas and features of sensitivity within the corridor and ultimately inform the placement of the power line within the assessed corridor.

### 1.1 Overview of the Olifantshoek 132kV Power Line

The grid connection corridor identified for the construction and operation of the 132kV Olifantshoek Power Line traverses' multiple properties (**Figure 1.1**) within the municipal area of the John Taolo Gaetsewe District Municipality (DM) and the Gamagara Local Municipality (LM) in the Northern Cape Province. The assessed corridor is located within wards, 4, 5 and 6 of the Gamagara LM and the proposed infrastructure will be used to the strengthen the transmission network in the area to ensure an adequate supply of electricity to its residents.



**Table 1.1** below provides an overview of the locality details for the grid connection corridor. The key project details associated with the Olifantshoek 132kV Power Line are described in detail in Chapter 2 of this BA Report.

**Table 1.1:** Details of the assessed grid connection corridor for the proposed Olifantshoek 132kV Power Line

<b>Province</b>	Northern Cape Province
<b>District Municipality</b>	John Taolo Gaetsewe District Municipality
<b>Local Municipality</b>	Gamagara Local Municipality
<b>Ward number(s)</b>	3,4,5 and 6
<b>Nearest town(s)</b>	Olifantshoek (2.2km) west of the corridor and Kathu (13.3km) to the east of the corridor.
<b>Affected Properties: Farm Name(s), Number(s) and Portion Numbers</b>	<p><b>Grid Connection Corridor:</b></p> <ul style="list-style-type: none"> <li>» Remaining Extent of the Farm Fritz 540</li> <li>» Portion 1 of the Farm Fritz 540</li> <li>» Portion 2 of the Farm Fritz 540</li> <li>» Portion 4 of the Farm Fritz 540</li> <li>» Portion 5 of the Farm Fritz 540</li> <li>» Portion 8 of the Farm Fritz 540</li> <li>» Portion 9 of the Farm Fritz 540</li> <li>» Portion 10 of the Farm Fritz 540</li> <li>» Remaining Extent of the Farm Gamagara 541</li> <li>» Portion 1 of the Farm Gamagara 541</li> <li>» Portion 7 of the Farm Gamagara 541</li> <li>» Portion 1 of the Farm Wright 538</li> <li>» Remaining Extent of the Farm Dingle 565</li> <li>» Portion 2 of the Farm Dingle 565</li> <li>» Remaining Extent of the Farm Smythe 566</li> <li>» Remaining Extent of the Farm Murray 570</li> <li>» Portion 2 of the Farm Murray 570</li> <li>» Remaining Extent of the Farm Cox 571</li> <li>» Portion 1 of the Farm Cox 571</li> <li>» Portion 3 of the Farm Cox 571</li> <li>» Portion 4 of the Farm Cox 571</li> <li>» Remaining Extent of the Farm Hartley 573</li> <li>» Portion 3 of the Farm Hartley 573</li> <li>» Remaining Extent of the Farm Diegaart's Heuwel 765</li> <li>» Remaining Extent of the Farm Neylan 574</li> <li>» Portion 1 of the Farm Neylan 574</li> <li>» Remaining Extent of the Farm Neylan 766</li> <li>» Portion 3 of the Farm Neylan 766</li> <li>» Portion 4 of the Farm Neylan 766</li> <li>» Portion 7 of the Farm Neylan 766</li> <li>» Remaining of Erf 155 Olifantshoek</li> </ul>

<b>SG 21 Digit Code (s)</b>	<b>Grid Connection Corridor:</b>			
	» C04100000000054000000 » C04100000000054000001 » C04100000000054000002 » C04100000000054000004 » C04100000000054000005 » C04100000000054000008 » C04100000000054000009 » C04100000000054000010 » C04100000000054100000 » C04100000000054100001 » C04100000000054100007 » C04100000000053800001 » C04100000000056500000 » C04100000000056500002 » C04100000000056600000 » C04100000000057000000 » C04100000000057000002 » C04100000000057100000 » C04100000000057100001 » C04100000000057100003 » C04100000000057100004 » C04100000000057300000 » C04100000000057300003 » C04100000000076600000 » C04100000000076600003 » C04100000000076600004 » C04100000000076600007 » C04100000000076500000 » C04100000000057400000 » C04100000000057400001 » C04100040000015500000			
<b>Grid Co-ordinates</b>	<b>Connection Corridor</b>	<b>Starting Point</b> (Emil Traction Substation)	<b>Middle Point</b>	<b>End Point</b> (Authorised Olifantshoek Substation)
		27°44'9.73"S 22°55'17.18"E	27°52'19.29"S 22°54'11.52"E	27°55'51.78"S 22°44'55.42"E
<b>Current zoning and land use</b>	Agriculture			

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

This BA Report has been prepared in accordance with the requirements of the EIA Regulations published on 08 December 2014 (as amended) promulgated in terms of Chapter 5 of the National Environmental Management Act (No. 107 of 1998). This Chapter of the BA Report includes the following information required in terms of Appendix 1: Content of Basic Assessment Reports:

Requirement	Relevant Section
1(a) the details of the EAP who prepared the report and (ii) the expertise of the EAP, including a curriculum vitae.	The details and expertise of the EAP who prepared the report is included in section 1.4 and CVs of the project team are included in <b>Appendix A</b> .



Requirement	Relevant Section
(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.	A description of the location of the grid connection corridor assessed for the Olifantshoek 132kV Power Line is included in <b>Table 1.1</b> and <b>Figure 1.1</b> . The information provided includes the 21-digit Surveyor General Code of the affected properties and the farm names and numbers. Information on the relevant province, local and district municipalities, municipal wards and current land zoning and land use is also provided.
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 plan which locates the proposed activity is included as <b>Figure 1.1</b> . The starting, middle and ending point coordinates of the grid connection corridor are included in <b>Table 1.1</b> .

The BA Report is structured according to the following chapters:

- » **Chapter 1** provides background to Olifantshoek 132kV Power Line 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 Olifantshoek 132kV Power Line.
- » **Chapter 4** describes the existing biophysical and social environment within and surrounding the assessed grid connection corridor.
- » **Chapter 5** 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 6** presents the conclusions and recommendations based on the findings of the BA Report.
- » **Chapter 7** provides references used in the compilation of the BA Report.

### 1.3 Requirements for a Basic Assessment Process

The construction and operation of the Olifantshoek 132kV Power Line 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. The 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 DEA is the Competent Authority for the proposed development and will be assisted by the Northern Cape Department of Environment and Nature Conservation (DENC) as the Commenting Authority.

In terms of the EIA Regulations of 2014 (as amended on 07 April 2017) promulgated under Sections 24 and 24D of the NEMA, various aspects of the project are listed as activities that may have a detrimental impact on the environment. The main listed activity triggered by the development of the power line 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 BA process must be undertaken in support of an application for environmental authorisation for the construction and operation of the proposed power line.

#### 1.4 Details and Expertise of the Environmental Assessment Practitioner (EAP)

In accordance with Regulation 12 of the 2014 EIA Regulations (GN R326), MVM Africa Consulting Engineers (Pty) Ltd, on behalf of the Gamagara Local Municipality, has appointed Savannah Environmental (Pty) Ltd (Savannah Environmental) as the independent environmental consultant to undertake the Basic Assessment Process and prepare the BA Report for the Olifantshoek 132kV Power Line. Neither Savannah Environmental nor any of its specialists are subsidiaries of/or are affiliated to MVM Africa Consulting Engineers (Pty) Ltd or the Gamagara Local Municipality. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the proposed power line.

Savannah Environmental is a leading provider of integrated environmental and social consulting, advisory and management services with considerable experience in the fields of environmental assessment and management. The company is wholly woman-owned (51% black woman-owned) and is rated as a Level 2 Broad-Based Black Economic Empowerment (B-BBEE) Contributor. The company was established in 2006 with a clear objective to provide services to the infrastructure development sector. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team that has been actively involved in undertaking environmental studies for a wide variety of projects throughout South Africa and neighbouring countries. Strong competencies have been developed in project management of environmental processes, as well as strategic environmental assessment and compliance advice, and the assessment of environmental impacts, the identification of environmental management solutions and mitigation/risk minimising measures.

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

The Savannah Environmental team includes:

- » **Reuben Maroga** - the principle author of this report. He holds a Bachelor degree in Environmental Management and an Honours degree in Geology and has three years of experience in the environmental management field. His key focus is on undertaking environmental impact assessments, public participation, environmental management plans and programmes.
- » **Lisa Opperman** - the co-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.
- » **Jo-Anne Thomas** – is the registered EAP for this project. Jo-Anne holds a Master of Science Degree in Botany (M.S.c Botany) from the University of the Witwatersrand and is registered as an Environmental

Assessment Practitioner (2019/726) with the Environmental Assessment Practitioners Association of South Africa (EAPASA), as well as a Professional Natural Scientist (400024/2000) with the South African Council for Natural Scientific Professions (SACNASP). She has over 20 years of experience in the field of environmental assessment and management, and the management of large environmental assessment and management projects. Her responsibilities for environmental studies include project management, review and integration of specialist studies, identification and assessment of potential negative environmental impacts and benefits, and the identification of mitigation measures, and compilation of reports in accordance with applicable environmental legislation.

- » **Nicolene Venter** – a Board Member of IAPSA (International Association for Public Participation South Africa). She holds a Higher Secretarial Diploma and 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.

Curricula Vitae (CVs) detailing the Savannah Environmental team's expertise and relevant experience are provided in **Appendix A**.

## 1.5 Details of the Independent Specialist Team

In order to adequately identify and assess potential impacts associated with the project, a number of specialists have been appointed as part of the project team and have provided specialist input into this BA Report (refer to **Table 1.3**). CVs detailing the independent specialists' expertise and relevant experience are provided in **Appendix A**.

**Table 1.3:** Independent Specialists that contribute to the BA Report

Company	Specialist Area of Expertise	Specialist Name
Nkurenkuru Ecology & Biodiversity	Ecological & Surface Water/Wetland Assessment	Gerhard Botha
	Avifauna	
CTS Heritage	Heritage and Palaeontology	Jenna Lavin
Environmental Planning and Design	Visual	Jon Marshall
Savannah Environmental (with a peer review by Neville Bews of Neville Bews and Associates)	Social	Lisa Opperman Neville Bews (Peer Review)
TerraAfrica	Soils, Agricultural and Land Potential	Mariné Pienaar

## CHAPTER 2: PROJECT DESCRIPTION

This chapter provides an overview of the Olifantshoek 132kV Power Line and details the project scope (which includes the planning/design, construction, operation and decommissioning activities), the need and desirability of the proposed project in the context of the grid connection corridor location and the various alternatives considered for the project.

### 2.1. 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 the EIA Regulations, 2014 - Appendix 1: Content of basic assessment reports:

Requirement	Relevant Section
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 <b>Table 2.1</b> and <b>Table 2.2</b> .
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.	A motivation for the need and desirability of the Olifantshoek 132kV Power Line, including the desirability of the project in the context of the location is included in section 2.4.
(g) a motivation for the preferred site, activity and technology alternative;	A motivation for the preferred site, activity and technology alternative is included in sections, 2.3.1, 2.3.2, and 2.3.3.
(h)(i) details of all the alternatives considered;	Details of the alternatives considered for the development of the Olifantshoek 132kV Power Line are included in sections, 2.3.1, 2.3.2, 2.3.3 and 2.3.4.
(h)(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such.	No alternative corridors have been considered and assessed for the Olifantshoek 132kV Power line. The motivation for not considering alternative corridors for the proposed project is included in section 2.3.

### 2.2 Nature and Extent of the Olifantshoek 132kV Power Line

The Gamagara Local Municipality proposes the construction and operation of a new 132kV power line from the existing Emil Traction Substation near the town of Kathu and the Sishen Iron Ore Mine which will connect to the authorised Olifantshoek Substation in order to meet the current capacity demands within the municipality's jurisdictional area. Other infrastructure associated with the proposed development of the power line include a 4m wide unsurfaced road which will be required during the construction and operation phase of the power line.

### 2.2.1. Grid Connection Corridor Components and Project Development Phases

#### i. Grid Connection Corridor Components

The grid connection corridor assessed for the development and operation of the 132kV power line is 300m wide and 36km long. The power line will occupy a 31m wide servitude and will traverse the following thirty-one (31) properties:

- » Remaining Extent of the Farm Fritz 540
- » Portion 1 of the Farm Fritz 540
- » Portion 2 of the Farm Fritz 540
- » Portion 4 of the Farm Fritz 540
- » Portion 5 of the Farm Fritz 540
- » Portion 8 of the Farm Fritz 540
- » Portion 9 of the Farm Fritz 540
- » Portion 10 of the Farm Fritz 540
- » Remaining Extent of the Farm Gamagara 541
- » Portion 1 of the Farm Gamagara 541
- » Portion 7 of the Farm Gamagara 541
- » Portion 1 of the Farm Wright 538
- » Remaining Extent of the Farm Dingle 565
- » Portion 2 of the Farm Dingle 565
- » Remaining Extent of the Farm Smythe 566
- » Remaining Extent of the Farm Murray 570
- » Portion 2 of the Farm Murray 570
- » Remaining Extent of the Farm Cox 571
- » Portion 1 of the Farm Cox 571
- » Portion 3 of the Farm Cox 571
- » Portion 4 of the Farm Cox 571
- » Remaining Extent of the Farm Hartley 573
- » Portion 3 of the Farm Hartley 573
- » Remaining Extent of the Farm Diegaart's Heuwel 765
- » Remaining Extent of the Farm Neylan 574
- » Portion 1 of the Farm Neylan 574
- » Remaining Extent of the Farm Neylan 766
- » Portion 3 of the Farm Neylan 766
- » Portion 4 of the Farm Neylan 766
- » Portion 7 of the Farm Neylan 766
- » Remaining Extent of Erf 155 Olifantshoek

The power line and the associated infrastructure will be constructed within the assessed grid connection corridor. No alternative corridors are considered within the BA process for the proposed development. The assessed grid connection corridor for the proposed development will only include the towers of the 132kV power line, the 4m wide unsurfaced road will be required during the construction and operation phase of the power line. A summary of the details and dimensions of the infrastructure planned for the development is provided below in **Table 2.1**.

**Table 2.1:** Confirmed details or dimensions of the proposed grid connection infrastructure<sup>1</sup>

<b>Infrastructure</b>	<b>Footprint, dimensions and details</b>
Corridor width (for assessment purposes)	300m wide and 36km long
Power Line Capacity	132kV
Power Line Servitude Width	31m
Length of the Power Line	36km
Height of the Towers	20m
Access Road	A 4m wide unsurfaced access road will be required during the construction and operation phase of the power line. Where possible, existing roads will be used during the construction and operation phase.

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<sup>1</sup> The confirmed details and dimensions of the grid connection infrastructure was assessed as part of the independent specialist studies.

### 2.2.2 Project Development Phases associated with the Olifantshoek 132kV Power Line

**Table 2.2** provides the details regarding the requirements and the activities to be undertaken during the grid connection infrastructure development phases (i.e. construction phase, operation phase and decommissioning phase).

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

<b><u>Construction Phase</u></b>	
<ul style="list-style-type: none"> <li>» Duration of the construction phase is expected to be up to 6 months.</li> <li>» The project will create at least 10 employment opportunities for the local community members during the construction phase.</li> <li>» No on-site labour camps will be permitted. Employees are to be accommodated in the nearby towns of Olifantshoek and Kathu and will be transported to the main contractor camp and the workstations (tower positions) on a daily basis.</li> <li>» Overnight on-site worker presence, if required, will only be limited to security staff.</li> <li>» Construction waste will be stored at the main Contractor's Camp and the removal will be undertaken by a sub-contractor or the Gamagara Local Municipality.</li> <li>» At least 30 000 kilo litres of water per month will be required for the duration of the construction phase. Where possible, water will be sourced from the Gamagara Local Municipality or from private sources.</li> </ul>	
<b>Construction Sequence</b>	<p>Overhead power lines are constructed in the following simplified sequence:</p> <ul style="list-style-type: none"> <li>» Step 1: Surveying of the development corridor and negotiating with affected landowners;</li> <li>» Step 2: Final design and micro-siting of the infrastructure based on geo-technical, topographical conditions and potential environmental sensitivities; obtain required environmental permits (such as biodiversity permits, heritage permits &amp; WUL/GA);</li> <li>» Step 3: Vegetation clearance and construction of access roads/tracks (where required);</li> <li>» Step 4: Construction of tower foundations;</li> <li>» Step 5: Assembly and erection of infrastructure within and along the corridor; ;</li> <li>» Step 6: Stringing of conductors;</li> <li>» Step 7: Rehabilitation of disturbed areas;</li> <li>» Step 8: Continued maintenance.</li> </ul>

	The final definition of the centre line for the power line and co-ordinates of each bend in the line (if applicable) will be determined on receipt of an environmental authorisation of the assessed corridor by the Competent Authority and after negotiations with landowners and final environmental and technical surveys <sup>2</sup> .
<b>Activities to be Undertaken</b>	
Conduct surveys prior to construction	» Including, but not limited to: a geotechnical survey, site survey (survey the location of each power line tower position) and confirmation of the power line servitude, and all other associated infrastructure.
Establishment of Access Road	<ul style="list-style-type: none"> <li>» Access/Haul Road to be established within the power line servitude (underneath or adjacent to the final confirmed power line route) for the construction phase.</li> <li>» The Access Road will be established as construction commences at the various locations within the servitude.</li> <li>» Existing access roads in the area will be used, where possible to minimise impact.</li> <li>» The new access/haul road will be 4m wide and will only be required for the construction phase.</li> </ul>
Undertake Site Preparation	<ul style="list-style-type: none"> <li>» Including the clearance of vegetation within the power line corridor and servitude for the placement of the power line tower foundations and the haul road, power line tower positions, the establishment of access roads/tracks and excavations for foundations.</li> <li>» Stripping of topsoil at each of the tower position footprint areas and along the haul road. Soil will be stockpiled and used for backfilling and rehabilitation purposes.</li> <li>» Stripping of soil and the clearance of vegetation will be undertaken in a systematic manner in order to reduce the risk of the exposed ground being prone to erosion.</li> <li>» Search and Rescue (for flora and fauna species of concern), where required and the identification of any cultural/heritage sites worthy of conservation along the final power line route.</li> </ul>
Establishment of a Laydown Area	<ul style="list-style-type: none"> <li>» A Laydown Area for the storage of grid infrastructure components, including the civil engineering construction equipment.</li> <li>» No borrow pits will be required. Infilling or depositing materials will be sourced from licensed borrow pits within the surrounding areas.</li> </ul>
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.

**Operation Phase**

<sup>2</sup> The start, middle and end coordinates of the nominated preferred corridor is included in **Appendix M**.



- » Duration will be ~50 years.
- » Requirements for security and maintenance of the grid connection infrastructure.
- » Employment opportunities relating mainly to operation activities and maintenance. Very limited employment opportunities will be available<sup>3</sup>.
- » Current land-use activities, i.e. grazing and game farming, can continue in the areas adjacent to the infrastructure.

**Activities to be Undertaken**

Operation and Maintenance	<ul style="list-style-type: none"> <li>» On-going rehabilitation of those areas which were disturbed during the construction phase.</li> <li>» During this operation phase vegetation within the power line servitude (up to 31m), will require management only if it impacts on the safety and operational objectives of the project.</li> <li>» The maintenance of the grid connection infrastructure will be the responsibility of the holder of the Environmental Authorisation.</li> </ul>
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**Decommissioning Phase**

<b>Requirements</b>	<ul style="list-style-type: none"> <li>» Decommissioning of the grid connection infrastructure at the end of its economic life.</li> <li>» Expected lifespan of approximately 50 years (with maintenance) before decommissioning is required.</li> <li>» Decommissioning activities to comply with the legislation relevant at the time.</li> </ul>
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**Activities to be undertaken**

Site preparation	<ul style="list-style-type: none"> <li>» Confirming the integrity of access to the grid connection infrastructure to accommodate the required equipment.</li> <li>» Mobilisation of decommissioning equipment.</li> </ul>
Disassemble components and rehabilitation	<ul style="list-style-type: none"> <li>» The grid connection infrastructure components will be disassembled, and reused and recycled (where possible).</li> <li>» Where components cannot be reused or recycled these will be disposed of in accordance with the regulatory requirements at the time of decommissioning.</li> <li>» 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.</li> </ul>

It is expected that the areas affected by the development of the grid connection infrastructure will be rehabilitated back to their original land use, so the affected areas can be used for grazing during the operation phase of the power line. The areas affected by decommissioning activities when the power line reaches its economic life and all infrastructure is decommissioned, will be rehabilitated and where possible, the original land use of the areas will be retained.

<sup>3</sup> It must be noted that ownership of the power line will be transferred to Eskom following the completion of construction. The operation and maintenance of the line will be undertaken by Eskom.

Land use activities within the vicinity of the corridor include game farming and agriculture. These land uses are anticipated to continue during the project life cycles of the power line.

## 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

Eskom SOC Holdings Limited had previously lodged separate applications for the development of a 132kV power line<sup>4</sup> and a substation<sup>5</sup> near the town of Olifantshoek. The applications were authorised by the DEA. However, due to the power line corridor traversing the properties, Remaining Extent of the Farm Brooks 568 and the Remaining Extent of the Farm Bredenkamp 567, an appeal against the DEA's decision to authorise the power line development was lodged and upheld by the Department. The grounds for the appeal were a result of the properties being considered for the promulgation of a provincial nature reserve under section 33(1) of the National Environmental Management Act: Protected Areas Act of 2003 (Act No. 57 of 2003) (NEMPAA). The nature reserve is known as the Brooks and Bredenkamp Nature Reserve. Therefore, only the Olifantshoek Substation was authorised and available for development.

The grid connection corridor assessed within this BA process avoids the Brooks and Bredenkamp Nature Reserve area and therefore avoids the properties previously assessed but not considered to be compatible for the development of a power line. A consultation meeting prior to the commencement of the BA process was undertaken in Olifantshoek with officials from the Northern Cape DAFF and DENC to determine the suitability of the proposed corridor as a result of the previous appeal lodged and the presence of sensitive tree species (i.e. *Acacia erioloba*) in the area. The officials indicated that the corridor assessed within the BA process was acceptable subject to the implementation of the recommended mitigation measures by the ecological specialist. The assessed corridor is therefore considered as the most feasible option for the development of the power line considering the feedback from the officials during the consultation meeting in Olifantshoek and the previous BA process undertaken in the area.

The grid connection corridor is also located along existing linear infrastructure such as existing power lines, roads and railways. Existing roads, where possible will be used to provide access to the corridor and the power line during the project life cycles. Mining infrastructure is also present within the landscape. Therefore, the area within the vicinity of the grid connection corridor has undergone a degree of anthropogenic disturbance. The placement of the corridor adjacent to existing linear infrastructure and other industrial types of infrastructure provides an opportunity for the consolidation of similar infrastructure within the area, and the clustering of associated impacts to the environment. This will reduce negative environmental and social impacts associated with the development of the power line.

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<sup>4</sup> DEA Reference No: 14/12/16/3/3/1/1781

<sup>5</sup> DEA Reference No: 14/12/16/3/3/1/1856

The specific locality characteristics of the area considered for the identification of the preferred grid connection corridor, and the results thereof, are discussed in the sections below:

- » *Land Availability and Land Use:* In order to develop the power line and the associated infrastructure, sufficient space and access to land between the authorised Olifantshoek Substation and the existing Emil Traction Substation is required. The land use in the areas surrounding the grid connection corridor mainly includes agriculture and mining-related activities. However, the grid connection corridor does not infringe on sections of land where mining activities or intense agricultural activities are undertaken, meaning there is no conflict of surface land use rights or infringement and limitation in terms of land use.
- »
- » *Geographical and Topographical considerations:* The grid connection corridor is located within a terrain that is generally flat, providing good conditions for power line construction. The grid connection corridor will traverse freshwater features in the area; however, the power line infrastructure will where necessary, span these features. Due to this attribute, the area is characterised by similar linear infrastructure, which includes the existing Sishen/Elim 132kV and Ferrum/Lewensnaar 275kV power lines and the authorised Upington/Ferrum 400kV power line<sup>6</sup> which is located parallel to the assessed grid connection corridor. Furthermore, the Sishen-Saldanha Railway Line traverses through the area, however not through the grid connection corridor, towards the town of Hotazel.
- » *Access to the national grid:* The power line, once constructed will connect the Elim Traction Substation and the authorised Olifantshoek Substation.
- »
- » *Consideration of sensitive environmental features:* Following the consultation meeting undertaken with Northern Cape DAFF and DENC officials prior to the commencement of the BA process, the grid connection corridor has been located to avoid the previously identified Sen Sieve environmental conservation area (i.e. the Brooks and Bredenkamp Nature Reserve). The assessment of a 300m wide grid connection corridor enables the avoidance of environmental sensitivities, thereby ensuring that the power line can be appropriately placed without resulting in an unacceptable environmental impact. This consideration is in line with the mitigation strategy and enables the achievement of the objectives of the mitigation hierarchy (i.e. avoid, minimise and mitigate). This application of the mitigation strategy will result in the identification of the optimised placement of the power line within the assessed and preferred grid connection corridor.

Considering the above, no location alternatives have been considered and assessed for the development of the Olifantshoek 132kV Power Line.

### **2.3.2 Design and Layout Alternatives**

The design of the power line 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. The grid connection corridor assessed within this BA process represents a

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<sup>6</sup> DEA Reference No; 12/12/20/2607

technically feasible area for construction of the power line and allows for the avoidance of identified environmental sensitivities through the appropriate placement of the power line footprint and servitude within the preferred grid connection corridor.

### **2.3.3 Technology Alternatives**

No technology alternatives exist for the distribution of electricity. As such, no 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 not constructing the power line. Should this alternative be selected, there would be no environmental impacts or benefits as a result of the construction and operation activities associated with the power line. The 'do nothing' alternative for the project has been assessed as part of the BA process in **Chapter 6** of this BA Report.

## **2.4 Need and Desirability of the Olifantshoek 132kV Power Line**

The main purpose of the power line is to improve electricity distribution and supply within the municipal area of the Gamagara Local Municipality. The project is regarded as a necessary societal priority for the local community in the area in order to ensure that economic growth and development takes place. The project will also increase the electricity security of the area enabling development. The development of the project in the area will also benefit the local community through job creation, skills development and training opportunities (where available), which will in turn reduce poverty levels (albeit to a limited extent) that the area is currently facing.

The need for the project is aligned with regional policies and plans. These can be summarised as follows:

#### **i. Northern Cape Provincial Spatial Development Framework (PSDF)**

The Northern Cape Provincial Spatial Development Framework (NCPSDF) makes reference to six spatial planning categories, of which section C refers to agricultural areas. C8 of the PSDF which is ensuring the development of efficient SPC F: Surface Infrastructure. Therefore, the NCPSDF acknowledges that in order to promote economic growth and development in the Northern Cape, the availability of grid infrastructure, such as power lines is required. The NCPSDF also highlights the importance of co-operation between the public and private sectors in order for the economic growth potential of the Northern Cape to be realised. The proposed project will facilitate the improved supply of electricity to the municipal area of the Gamagara Local Municipality, which will contribute towards meeting the objective of the development of efficient surface infrastructure.

#### **ii. Gamagara Local Municipality Integrated Development Plan (IDP) 2019 – 2022**

The final second review of the Gamagara Local Municipality IDP highlights that the municipality currently has a back log of 3 015 households<sup>7</sup> that are not electrified as a result of capacity constraints. Although, the construction of the 40MVA Kathu West Substation has been completed, the review of the IDP indicates that this substation is meant to provide additional capacity to communities located to the west of the town of Kathu, where future developments have been identified. The review of the IDP further highlights that the provision of electricity in Olifantshoek remains a challenge as a result of capacity constraints, which only has available capacity 30km away, therefore a power line and substation would need to be developed to ensure sufficient capacity is provided for the town and communities.

The development of the proposed project will enable the Gamagara Local Municipality to meet its electricity objective of ensuring more homes are electrified and additional capacity in transmission and distribution of electricity is provided to the town of Olifantshoek and the surrounding communities.

## **2.5 Receptiveness and Desirability of the identified corridor to development of the Olifantshoek 132kV Power Line**

The feasibility of the identified grid connection corridor for the development of the power line also provides an indication of the desirability of the project to the area. The section below provides a description of the specific considerations that contribute to the desirability of the identified grid connection corridor.

The identified grid connection corridor being assessed for the development of the power line displays characteristics which contribute to the overall desirability and these include, land availability, land use, geographical and topographical considerations, access to the national grid, consideration of sensitive environmental features and planning. Additional details regarding the desirability of the proposed development with regards to the above-mentioned aspects is included above in section 2.4.

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<sup>7</sup> [https://www.gamagara.gov.za/documents/Final\\_Second\\_Review\\_IDP\\_2019\\_20.pdf](https://www.gamagara.gov.za/documents/Final_Second_Review_IDP_2019_20.pdf)

## CHAPTER 3: APPROACH TO THE BA PROCESS & LEGISLATIVE REQUIREMENTS

In terms of the EIA Regulations of December 2014 (as amended in April 2017) published in terms of the NEMA (Act No. 107 of 1998) as amended, the construction and operation of the Olifantshoek 132kV Power Line and associated infrastructure is a listed activity requiring environmental authorisation.

The BA process aims at identifying and describing potential environmental issues associated with the development of the proposed power line and the associated infrastructure. In order to ensure that a comprehensive assessment is provided to the competent authority and I&APs regarding the impacts of the power line, detailed independent specialist studies were undertaken as part of the BA process.

Following the initiation of the Basic Assessment, South Africa was subject to the enforcement 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. Considering the limitations in place, a comprehensive consultation process was designed and implemented to cater for the undertaking of a full-scale, innovative public participation process which included I&APs, the competent authority, directly impacted landowners/occupiers, adjacent landowners/occupiers, relevant Organs of State departments, ward councillors and other key stakeholders, while remaining within the limits as stipulated by the National Government. This chapter serves to outline the process that was followed during the BA process.

### 3.1. 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 the EIA Regulations, 2014 - 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	<b>Sections 3.5, 3.6</b> and <b>3.7</b> and provide an overview of the policy and legislative context relevant to the development of the proposed power line. The regulatory and planning context has been considered at a 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.	<b>Tables 3.5</b> and <b>3.6</b> illustrate the compliance of the project with the legislation, policies, plans, guidelines, tools, frameworks and instruments from a national, provincial and local level.
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 project have been included in <b>section 3.6</b> within <b>Table 3.4</b> .
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 project are included and described in section 3.2. In addition, the public participation plan proposed and approved by the DEA is included in <b>Appendix C1</b> of the BA Report.
3(h)(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which	Comments raised following the announcement of the BA process and the proposed development are included as

Requirement	Relevant Section
the issues were incorporated, or the reasons for not including them.	part of a Comments and Responses (C&R) Report which is included as <b>Appendix C9</b> of the BA Report.
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 project are included in <b>section 3.3</b> .

### 3.2 Overview of the Basic Assessment Process for the Olifantshoek 132kV Power Line

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. DEA) 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 as per the approved public participation plan), and the Department of Environmental Affairs (2017), Public Participation guidelines in terms of 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.
- » Undertaking of independent specialist studies in accordance with Appendix 6 of the EIA Regulations, 2014 (GNR326), as amended<sup>8</sup>.
- » Preparation of a BA report and EMPr in accordance with the requirements of Appendix 1 and Appendix 4 of GNR 326.
- » 30-day public and authority review period of the BA report.
- » Compilation of a Comments and Responses(C&R) Report detailing the comments raised by I&APs, addressing these comments in detail and finalisation of the BA report.
- » Submission of a final BA report to the DEA for review and decision-making.

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

#### 3.2.1 Authority Consultation and Application for Environmental Authorisation in terms of the EIA Regulations, 2014 (as amended)

In terms of Section 24C(1)(d)(iii), the DEA has been determined as the Competent Authority due to the proponent for the application being the Gamagara Local Municipality, and on the basis that the power line will be handed over to Eskom Holdings SOC Limited to operate and maintain for the duration of the operation phase, therefore section 24C(1)(d)(iii) is applicable. Through the decision-making process, the

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<sup>8</sup> The independent specialist studies (**Appendix D – H**) have been undertaken in line with the requirement of Appendix 6 of the EIA Regulations, 2014 (as amended) as per the confirmation provided by the DEA as part of the Pre-Application Meeting (**Appendix B**) and as per the email correspondence and directions received by Savannah Environmental via email from the Department on 02 July 2020.



DEA will be supported by the Northern Cape Department of Environment and Nature Conservation (DENC) as the Commenting Authority.

Consultation with the regulating authorities (i.e. DEA and DENC) as well as with all other relevant Organs of State will continue throughout the BA process. To date, this consultation has included the following:

- » Holding a pre-application meeting with the DEA on 7 July 2020 (via the Microsoft Teams Platform) during which the project details, progress and proposed Public Participation Plan were presented. The Public Participation Plan was approved following the pre-application meeting with the Case Officer's Supervisor (Mr Lerato Mokwena) via email on 16 July 2020.
- » Submission of the application form for Environmental Authorisation to the DEA via the use of the DEA Novell Filr System.
- » Submission of the BA Report for a 30-day review and comment period 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.

The submissions, as listed above, were undertaken electronically, as required by the DEA (in line with the directions for new Applications for Environmental Authorisations provided for in GNR650 of 05 June 2020).

A record of all authority, Organs of State and interested and affected party correspondence undertaken during the BA process is included in **Appendix B** and **Appendix C**.

### **3.2.2 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 proposed project.

The sharing of information forms the basis of the public participation process 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, i.e. local language and technical issues, 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, telephone, email and the online stakeholder engagement platform.
- » An adequate review period is provided for I&APs to comment on the findings of the BA Report.

The Public Participation Process undertaken for the proposed development of the Olifantshoek 132kV Power Line 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 DEA on 6 July 2020, prior to the pre-application meeting. Approval of the Plan was provided by the DEA Case Officer's Supervisor Mr Lerato Mokwena via email on 16 July 2020 following the pre-application meeting (**Appendix B**).

Together with the standard public participation approach, additional alternative means of undertaking consultation have been designed and implemented by Savannah Environmental to ensure that I&APs are afforded sufficient opportunity to access project information and raise comments on the project through an interactive web-based platform (i.e. online stakeholder engagement platform) readily available and accessible to any person registering their interest in the project, and ensures that the public participation process is undertaken in line with Regulations 41 to 44 of the EIA Regulations, 2014 as amended. The Public Participation Plan (**Appendix C1**) considers the limitations applied by the Disaster Management Act Regulations prohibiting the gathering of people, limitations which certain I&APs may have in terms of access to computers and internet, as well as access to public spaces currently not open for operation that inhibits access to hard copy documentation. The online stakeholder engagement platform implemented by Savannah Environmental for the project allowed the EAP to visually present details regarding the project as well as consultation documentation, including project maps and plans, presentations and posters. The platform also contains the BA report available for review. The use of an online tool enables stakeholders and I&APs to explore the project-specific content in their own time, and still enables 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 also giving the assurance that their comments have been submitted for inclusion in the project reporting. Where I&APs do not have access to the online platform, information will be shared via other means such as telephone, email, WhatsApp CD and communication via the Ward Councillor and community representatives.

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

- » Fix 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.
- » Release a BA Report for a 30-day review and comment period.
- » 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.

In compliance with the requirements of Chapter 6: Public Participation of the EIA Regulations, 2014 (as amended), and the approved Public Participation Plan, the following summarises the key public participation activities implemented. The schematic diagram 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 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, 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 and surrounding landowners have been identified and registered on the project database. Other stakeholders are required to formally register their interest in the project. An initial list of key stakeholders identified and registered is listed in **Table 3.1**.

**Table 3.1:** List of Stakeholders identified for the inclusion in the project database during the public participation process for the Olifantshoek 132kV Power Line

<b>Organs of State</b>
<b>National Government Departments</b>
Department of Agriculture, Forestry and Fisheries
Department of Mineral Resources and Energy
Department of Environmental Affairs
Department of Rural Development and Land Reform
Department of Water and Sanitation
<b>Government Bodies and State-Owned Companies</b>
Eskom Holdings SOC Limited
South African Civil Aviation Authority (CAA)
South African Heritage Resources Agency (SAHRA)
South African National Roads Agency Limited (SANRAL)
Air Traffic and Navigation Services (ATNS)
<b>Provincial Government Departments</b>
Northern Cape Department of Agriculture
Northern Cape Department of Environment and Nature Conservation (DENC)
Provincial Heritage Department - Ngwao Boswa Kapa Bokone (NBKB)
<b>Local Government Departments</b>
John Taolo Gaetsewe District Municipality
Gamagara Local Municipality - including the Ward councillors, ward committee members, community representative or local community forum members
<b>Landowners</b>
Affected landowners, tenants and occupiers
Neighbouring landowners, tenants and occupiers

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 C2** for a listing of the recorded parties). 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 of:<sup>9</sup>

<sup>9</sup> Contact details and addresses have not been included in the I&AP database as this information is protected by the Protection of Personal Information Act (Act No. 4 of 2013).

- » 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.

ii. 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, affected and neighbouring landowners and general public to register as I&APs and to actively participate in the process. This was achieved via the following:

- » Compilation of a background information document (BID) (refer to **Appendix C4**) providing technical and environmental details on the project and how to become involved in the BA process. The BID and a BA process notification letter announcing the BA process, notifying organs of state, affected and neighbouring landowners, as well as stakeholders/I&APs of the project, providing background information on the project and inviting I&APs to register on the project's database, were distributed via email on **24 February 2020**. The evidence of distribution of the BID and the process notification letters is included in **Appendix C** of the BA Report. The BID is also available electronically on the Savannah Environmental website (<https://www.savannahsa.com/public-documents/grid-infrastructure/olifantshoek-power-line/>).
- » Placement of site notices announcing the BA process at visible points along the boundary of the assessed corridor, in accordance with the requirements of the EIA Regulations, 2014 (as amended). Photographs and the GPS co-ordinates of the site notices are contained in **Appendix C3**. The site notices were placed on **22 June 2020**, on areas in the vicinity of the proposed grid connection corridor.
- » Placement of an advertisement announcing the BA process, the availability of the BA Report, and inviting comment on the BA Report in the Kalahari Bulletin Newspaper on **28 July 2020**. The proof of the newspaper advert placement will be included in **Appendix C3** of the Final BA Report. This advert:
  - announced the project and the associated BA process,
  - announced the availability of the BA report, the review period, and where it is accessible for review, and invited comment on the BA Report,
  - provided all relevant details to access the Savannah Environmental online stakeholder engagement platform.
- » A copy of the newspaper advert as sent to the newspaper is included in **Appendix C3** of the BA Report. The newspaper advert tear sheet will be included in the Final BA Report in **Appendix C3**.
- » A Radio Live Read by Kurara FM (98.9 MHz) on **30 July 2020** at the commencement of the 30-day review and comment period (**Appendix C3**). Further Radio Live Read segments have also been undertaken at Kurara FM as a reminder of the availability of the BA report for review and comment on 6 August 2020, 13 August 2020, 20 August 2020, and 28 August 2020. Kurara FM is a community radio station covering the towns<sup>10</sup> within the vicinity of the grid connection corridor for the Olifantshoek 132kV Power Line.
- » The BA Report has been made available for review by I&APs for a 30-day review and comment period from **30 July 2020** to **31 August 2020**. An electronic version of the BA Report (CD and/or Dropbox access link) have been circulated to Organs of State via courier and email at the commencement of the 30-day review period. The BA Report is also available on the Savannah Environmental website. The evidence of distribution of the BA Report will be included in the final BA Report, which will be submitted to the DEA.

### iii. Public Involvement and Consultation

In order to accommodate the varying needs of stakeholders and I&APs within the assessed corridor and the surrounding area, as well as capture their views, comments, issues and concerns regarding the project,

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<sup>10</sup> <http://www.kurarafm.co.za/about-us/>

various opportunities have been and will continue to be provided to I&APs to note their comments and issues.

**Table 3.2** below includes the methods of consultation used to engage with relevant organs of state, government departments and interested and affected parties.

**Table 3.2:** Public involvement for the Olifantshoek 132kV Power Line project

Activity	Date
Distribution of the BID and the process notification letters (including a stakeholder reply form) announcing the BA process and inviting I&APs to register on the project database.	24 February 2020
Placement of site notices on-site and in public places.	22 June 2020
Distribution of a notification letter announcing the availability of the BA Report for a 30-day review and comment period. The letter was distributed to Organs of State, Government Departments, Ward Councillors, landowners within the greater study area (including neighbouring landowners) and key stakeholder groups.	29 July 2020
Advertising of the availability of the BA Report for a 30-day review and comment period in the Kalahari Bulletin newspaper.	28 July 2020
Radio Live Read by Kurara FM (98.9 MHz) advertising the availability of the BA Report for a 30-day review and comment period, and the details of how to get involved and how contact with Savannah Environmental can be made.	30 July 2020 6 August 2020 13 August 2020 20 August 2020 28 August 2020
30-day review and comment period of the BA Report.	30 July 2020 – 31 August 2020
Virtual meetings through the use of virtual platforms as determined through discussions with the relevant stakeholder group: <ul style="list-style-type: none"> <li>» Landowners</li> <li>» Authorities and key stakeholders (including Organs of State, local municipality and official representatives of community-based organisations.</li> <li>» Where an I&amp;AP does not have access to a computer and/or internet to participate in a virtual meeting telephonic discussions (including WhatsApp video call) will be set-up and minuted for inclusion. The preferred language of the I&amp;AP has been considered when setting up these discussions.</li> </ul>	To be undertaken during the 30-day review and comment period
On-going consultation (i.e. telephone liaison; e-mail communication) with all I&APs	Continuous throughout the BA process

A consultation meeting prior to the commencement of the BA process was undertaken with Reuben Maroga (from Savannah Environmental) and a representative of the client (Andrew Randall) officials from the Northern Cape Provincial Department of Agriculture, Forestry and Fisheries (DAFF) and the Northern Cape Provincial Department of Environment and Nature Conservation (DENC) on 7 November 2019. The following officials were present for the meeting:

- » Jacolene Mans – DAFF
- » Samantha de la Fontaine – DENC



The officials indicated that the corridor for the development of the proposed power line was acceptable subject to the implementation of the recommended mitigation measures from the specialists. Records of all consultation undertaken are included in **Appendix C**.

iv. Registered I&APs entitled to Comment on the BA Report

- 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 subregulation (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.

No such person in terms of Regulation 44(2)(a) and (b) has been identified for the Olifantshoek 132kV Power Line during the consultation process undertaken for the project.

I&APs registered on the database have been notified by means of a notification letter of the release of the BA Report for a 30-day review and comment 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 report has been made available in soft copies to I&APs due to restrictions and limitations on public spaces during the national state of disaster related to COVID-19. No hard copies of the report have been made available for review and comment.

The BA Report has also been made available on the Savannah Environmental website (<https://www.savannahsa.com/public-documents/grid-infrastructure/>). The notification was distributed prior to the commencement of the 30-day review and comment period, on **29 July 2020**. Submission of comments has been enabled through the use of the Savannah Environmental online stakeholder engagement platform. Where I&APs were not able to provide written comments (including SMS and WhatsApp), other means of consultation, such telephonic discussions were used to provide the I&APs with a platform to verbally raise their concerns and comments on the proposed development.

v. Recording of Comments

Comments raised by I&APs following the announcement of the BA process have been synthesised into a Comments and Responses (C&R) Report which is included in the BA Report as **Appendix C9**. The C&R Report includes detailed responses from the members of the EIA project team and/or the project proponent to the

comments raised during the public participation process. The C&R Report only consists of written comments received.

All comments raised as part of the discussions and written comments submitted during the 30-day review and comment period will also be recorded and included in the final BA Report. Meeting notes will be drafted of all the focus group meetings conducted and discussions held during the 30-day review and comment period and will be included in **Appendix C8**.

### 3.3 Assessment of Issues Identified through the BA Process

Issues identified as requiring investigation, as well as the specialist consultants involved in the assessment of these impacts are indicated in **Table 3.3** below.

**Table 3.3:** Specialist consultants appointed to evaluate the potential impacts associated with the Olifantshoek 132kV Power Line

Specialist Name	Specialist Company	Specialist Area of Expertise	Appendices
Gerhard Botha	Nkurenkuru Ecology & Biodiversity	Ecology Impact Assessment (including Freshwater)	Appendix D
Gerhard Botha	Nkurenkuru Ecology & Biodiversity	Avifauna Impact Assessment	Appendix E
Jenna Lavin	CTS Heritage	Heritage Impact Assessment	Appendix F
Jon Marshall	Environmental Planning and Design	Visual Impact Assessment	Appendix G
Lisa Opperman	Savannah Environmental and a peer review by Neville Bews of Neville Bews & Associates	Social Impact Assessment	Appendix H
Mariné Pienaar	TerraAfrica	Soils, Agricultural and Land Potential Statement	Appendix I

Specialist studies commenced in February and April 2020 (refer to **Appendix N**) prior to the promulgation of the Specialist Protocols and have therefore been undertaken in accordance with Appendix 6 of the EIA Regulations.

Specialist studies considered direct and indirect environmental impacts associated with the development of all components of the project. Issues 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. A Generic Environmental Management Programme (EMPr) as required for overhead

electricity transmission infrastructure in accordance with GNR 435 of 22 March 2019 has been completed and is included as **Appendix K** in the BA Report.

### **3.4 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 proponent and I&APs to the environmental team was correct and valid at the time it was provided.
- » It is assumed that the assessed corridor identified by the proponent represents a technically suitable site for the establishment of the power line, which is based on the design undertaken by technical consultants for the project.
- » This BA Report and its investigations are project-specific, and consequently the environmental team did not evaluate any other electricity transmission alternatives.

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

### **3.5 Relevant Legislative Permitting Requirements and Guidelines that have informed the preparation of the BA Report**

The legislative permitting requirements applicable to the project as identified at this stage in the process are described under the respective sub-headings.

#### **3.5.1 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 proponents 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 conducted for the project is 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 3.4** details the listed activities in terms of the EIA Regulations of December 2014 (as amended) that apply to the project, and for which an Application for Environmental Authorisation has been submitted.

The table also includes a description of the specific project activities which relate to the applicable listed activities.

**Table 3.4:** Listed activities as per the EIA Regulations, 2014 (as amended) that are triggered by the project

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice):	Describe each listed activity as per project description
GN 327, 08 December 2014 (as amended on 07 April 2017)	11 (i)	<p>The development of facilities or infrastructure for the transmission and distribution of electricity -</p> <p>(i). outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.</p> <p><b><i>The project includes the construction and operation of a 132kV overhead power line from the existing Elim Traction Substation to the authorised Olifantshoek Substation near the town of Olifantshoek. The power line will be developed outside of the urban area.</i></b></p>
GN 327, 08 December 2014 (as amended on 07 April 2017)	12 (ii)(a)(c)	<p>The development of –</p> <p>(ii). Infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>where such development occurs –</p> <p>(a) within a watercourse; and</p> <p>(c) If no development set back exists, within 32 metres of a watercourse, measured from the edge of the watercourse.</p> <p><b><i>The power line infrastructure and the associated access/haul road will cross and / or span wetlands and the Ga-Mogara River located within the grid connection corridor.</i></b></p>
GN 327, 08 December 2014 (as amended on 07 April 2017)	19	<p>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.</p> <p><b><i>The development of the power line will require the access/haul road to cross and/or span drainage lines, wetlands and the Ga-Mogara River, which will result in the removal or moving of sand, pebbles or rock of more than 10 cubic meters from a watercourse.</i></b></p>

### 3.6 Legislation and Guidelines that have informed the preparation of the BA 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 in GNR R326).
- » 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).

**Table 3.5** provides an outline of the legislative permitting requirements applicable to the Olifantshoek 132kV Power Line.

**Table 3.5:** Applicable Legislation, Policies and/or Guidelines associated with the development of the project

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<b>National Legislation</b>			
Constitution of the Republic of South Africa (No. 108 of 1996)	<p>In terms of Section 24, the State has an obligation to give effect to the environmental right. The environmental right states that:</p> <p><i>“Everyone has the right –</i></p> <ul style="list-style-type: none"> <li>» <i>To an environment that is not harmful to their health or well-being, and</i></li> <li>» <i>To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:</i> <ul style="list-style-type: none"> <li>* <i>Prevent pollution and ecological degradation,</i></li> <li>* <i>Promote conservation, and</i></li> <li>* <i>Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”</i></li> </ul> </li> </ul>	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 developments 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)	<p>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).</p> <p>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.</p> <p>A Basic Assessment Process is required to be undertaken for the proposed project.</p>	<p>DEA – Competent Authority</p> <p>Northern Cape DENC – Commenting Authority</p>	The listed activities triggered by the proposed project have been identified and are being assessed as part of the BA process for the Olifantshoek 132kV Power Line. 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.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
National Environmental Management Act (No 107 of 1998) (NEMA)	<p>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 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.</p> <p>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.</p>	DEA  Northern Cape DENC	While no permitting or licensing requirements arise directly by virtue of the Olifantshoek 132kV Power Line, this section finds application through the consideration of potential cumulative, direct and indirect impacts.
Environment Conservation Act (No. 73 of 1989) (ECA)	<p>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.</p> <p>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.</p> <p>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).</p>	DEA  Northern Cape DENC  Gamagara Local Municipality	Noise impacts are expected to be associated with the construction phase of the project. Considering the location of the 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.
National Water Act (No. 36 of 1998) (NWA)	A water use listed under Section 21 of the NWA must be licensed with the Regional DWS, unless it is listed in Schedule 1 of the NWA (i.e. is an existing lawful use), is permissible under a GA, or if a responsible authority waives the need for a licence.	Regional Department of Water and Sanitation	The assessed corridor crosses the Ga-Mogara River. Should the access road or power line be constructed within a watercourse or within 500m of a wetland, the project proponent would require either a Water Use License (WUL) or General Authorisation (GA) in terms



Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>Water use is defined broadly, and includes consumptive and non-consumptive water uses, taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering a watercourse, removing water found underground for certain purposes, and recreation.</p> <p>Consumptive water uses may include taking water from a water resource (Section 21(a)), and storing water (Section 21(b)).</p> <p>Non-consumptive water uses may include impeding or diverting of flow in a water course (Section 21(c)), and altering of bed, banks or characteristics of a watercourse (Section 21(i)).</p>		<p>of Section 21(c) and (i) of the National Water Act (Act No. 36 of 1998).</p>
<p>Minerals and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA)</p>	<p>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. 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.</p> <p>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.</p>	<p>Department of Mineral Resources</p>	<p>No borrow pits are expected to be required for the construction of the project, and as a result a mining permit or EA is not required to be obtained in this regard.</p> <p>In terms of Section 53 of the MPRDA, approval is required from the Minister of Mineral Resources to ensure that the proposed project does not sterilise a mineral resource that might occur in the corridor.</p>
<p>National Environmental Management: Air Quality Act (No. 39 of 2004) (NEM:AQA)</p>	<p>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.</p>	<p>Northern Cape DENC / John Taolo Gaetsewe District Municipality</p>	<p>In the event that the construction of the power line results in the generation of excessive emissions of dust, the possibility could exist that a dust fall monitoring programme would be required for the project, in which case the dust fall monitoring results from the monitoring programme would need to be included in</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>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.</p> <p>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.</p>		<p>the dust fall monitoring report and a dust management plan would need to be developed.</p>
<p>National Heritage Resources Act (No. 25 of 1999) (NHRA)</p>	<p>Section 07 of the NHRA stipulates assessment criteria and categories of heritage resources according to their significance.</p> <p>Section 35 of the NHRA provides for the protection of all archaeological and palaeontological sites, and meteorites.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p>South African Heritage Resources Agency</p> <p>Ngwao Boswa Kapa Bokone (NBKB)</p>	<p>A Heritage Impact Assessment (including field survey) has been undertaken as part of the BA process (refer to <b>Appendix I</b> of this BA Report). The assessment did not identify any archaeological resources of significance within the assessed corridor; however, two (2) unmarked grave sites (NLM002 and MRR002) were identified within the corridor and a 50m buffer for each site has been recommended by the specialist.</p> <p>There is a low probability of significant fossil finds being made. Should fossil finds be made within the stromatolitic Mooidraai and Lucknow rock formations, the Fossil Finds Procedure as included in the EMP must be implemented.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<p>National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)</p>	<p>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.</p> <p>Three government notices have been published in terms of Section 56(1) of NEM:BA as follows:</p> <ul style="list-style-type: none"> <li>» Commencement of TOPS Regulations, 2007 (GNR 150).</li> <li>» Lists of critically endangered, vulnerable and protected species (GNR 151).</li> <li>» TOPS Regulations (GNR 152).</li> </ul> <p>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).</p>	<p>DEA Northern Cape DENC</p>	<p>Under NEM:BA, a permit would be required for any activity which is of a nature that may negatively impact on the survival of a listed protected species.</p>
<p>National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)</p>	<p>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.</p> <p>Applicable, and exempted alien and invasive species are contained within the Alien and Invasive Species List (GNR 864).</p>	<p>DEA Northern Cape DENC</p>	<p>No alien plant species listed in terms of Chapter 5 of NEM: BA were identified within the grid connection corridor as per the findings of the Ecological Impact Assessment (<b>Appendix D</b> of the BA Report).</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>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.</p>		
<p>Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA)</p>	<p>Section 05 of CARA provides for the prohibition of the spreading of weeds.</p> <p>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.</p> <p>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.</p>	<p>Department of Agriculture, Forestry and Fisheries (DAFF)</p>	<p>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 plan must be implemented.</p> <p>The permission of DAFF will be required if the project requires the draining of vleis, marshes or water sponges on land outside urban areas. However, this is not anticipated to be relevant for the project.</p> <p>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:</p> <ul style="list-style-type: none"> <li>» Uprooting, felling, cutting or burning.</li> <li>» Treatment with a weed killer that is registered for use in connection with such plants in accordance with the directions for the use of such a weed killer.</li> <li>» 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.</li> <li>» Any other method of treatment recognised by the executive officer that has as its object the control</li> </ul>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
			<p>of plants concerned, subject to the provisions of sub-regulation (4).</p> <p>» 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.</p>
<p>National Forests Act (No. 84 of 1998) (NFA)</p>	<p>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.</p> <p>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".</p>	<p>DAFF</p>	<p>A licence is required for the removal of protected trees listed under the National Forests Act of 1998 (No 84 of 1998). It is therefore necessary to conduct a walkthrough survey of the grid connection corridor that will determine the number and relevant details pertaining to protected tree species present within the route that cannot be reasonably avoided for the submission of relevant permits to authorities prior to the commencement of construction activities. The following NFA-listed tree species were identified within the grid connection corridor for the Olifantshoek 132kV Power Line: <i>Vachellia erioloba</i> and <i>Vachellia haematoxylon</i>.</p>
<p>National Veld and Forest Fire Act (No. 101 of 1998) (NVFFA)</p>	<p>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 cause soil erosion, and it is reasonably free of inflammable material capable of carrying a veldfire across it.</p>	<p>DAFF</p>	<p>While no permitting or licensing requirements arise from this legislation, this Act will be applicable during the construction and operation of the power line, in terms of the preparation and maintenance of firebreaks, and the need to provide appropriate equipment and personnel for firefighting purposes.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>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.</p>		
<p>Hazardous Substances Act (No. 15 of 1973) (HAS)</p>	<p>This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger, to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products.</p> <ul style="list-style-type: none"> <li>» 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</li> <li>» Group IV: any electronic product, and</li> <li>» Group V: any radioactive material.</li> </ul> <p>The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.</p>	<p>Department of Health (DoH)</p>	<p>It is necessary to identify and list all Group I, II, III, and IV hazardous substances that may be on site 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 (DoH).</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<p>National Environmental Management: Waste Act (No. 59 of 2008) (NEM:WA)</p>	<p>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.</p> <p>The Minister may amend the list by –</p> <ul style="list-style-type: none"> <li>» Adding other waste management activities to the list.</li> <li>» Removing waste management activities from the list.</li> <li>» Making other changes to the particulars on the list.</li> </ul> <p>In terms of the Regulations published in terms of NEM:WA (GNR 912), a BA or EIA is required to be undertaken for identified listed activities.</p> <p>Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that:</p> <ul style="list-style-type: none"> <li>» The containers in which any waste is stored, are intact and not corroded or in</li> <li>» Any other way rendered unfit for the safe storage of waste.</li> <li>» Adequate measures are taken to prevent accidental spillage or leaking.</li> <li>» The waste cannot be blown away.</li> <li>» Nuisances such as odour, visual impacts and breeding of vectors do not arise, and</li> <li>» Pollution of the environment and harm to health are prevented.</li> </ul>	<p>DEA – hazardous waste</p> <p>Northern Cape DENC – general waste</p>	<p>No waste listed activities are triggered by the project and therefore no Waste Management License is required to be obtained. General and hazardous waste handling, storage and disposal will be required during construction and operation. 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.</p>
<p>National Road Traffic Act (No. 93 of 1996) (NRTA)</p>	<p>The technical recommendations for highways (TRH 11): “Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads” outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures</p>	<p>South African National Roads Agency (SANRAL) – national roads</p>	<p>An abnormal vehicle permit may be required to transport various components of the power line tower structures to site for construction. These may include road clearances for vehicles carrying abnormally</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>to be followed in applying for exemption permits are described and discussed.</p> <p>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.</p> <p>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.</p>	<p>Northern Cape Department of Transport (DoT)</p>	<p>dimensioned loads (transport vehicles exceeding the dimensional limitations (length) of 22m).</p>
<b>Provincial Policies / Legislation</b>			
<p>Northern Cape Nature Conservation Act (Act No. 9 of 2009)</p>	<p>This Act provides for the sustainable utilisation of wild animals, aquatic biota and plants; provides for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; provides for offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; and provides for the issuing of permits and other authorisations. Amongst other regulations, the following may apply to the current project:</p> <ul style="list-style-type: none"> <li>» Boundary fences may not be altered in such a way as to prevent wild animals from freely moving onto or off of a property;</li> <li>» Aquatic habitats may not be destroyed or damaged;</li> <li>» The owner of land upon which an invasive species is found (plant or animal) must take the necessary steps to eradicate or destroy such species;</li> </ul>	<p>Northern Cape Department of Environment and Nature Conservation (DENC).</p>	<p>A collection/destruction permit must be obtained from Northern Cape Nature Conservation for the removal of any protected plant or animal species found within the corridor following the completion of the final walk through survey. The following protected plant species were identified within the grid connection corridor for the Olifantshoek 132kV Power Line: <i>Babiana hypogea</i>, <i>Boscia albitrunca</i>, <i>Boophone disticha</i>, <i>Crinum macowanii</i>, <i>Euphorbia mauritanica</i>, <i>Nerine laticoma</i>, <i>Ruscia cradockensis</i>, <i>Ruscia cradockensis</i>, <i>Aloe grandidentata</i>, and <i>Tridentea spp.</i></p>



Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	The Act provides lists of protected species for the Province.		

### 3.7 Policy and Planning Considerations at National, Provincial and Local Levels

National, Provincial and Local policies and plans adopted by South Africa that are considered to be relevant to the development of the power line have been summarised in **Table 3.6**.

**Table 3.6:** National, Provincial and Local policies, plans and legislation relevant to the proposed project.

Policy, Plan or Legislation	Is the development of the power line aligned with this policy, plan or legislation?
National Development Plan (NDP)	Yes. The NDP aims at ensuring a decent standard of living for all South Africans by 2030. One of the core elements for a decent standard of living is having access to housing, water, electricity and sanitation. The NDP further highlights that by 2030, South Africa will have an energy sector that promotes economic growth and development and adequate supply security. Through the development of the proposed project adequate supply of electricity and a better standard of living for the 3 015 unelectrified households will be made possible by the proponent.
Northern Cape Provincial Spatial Development Framework (PSDF), 2012	Yes. The PSDF acknowledges that limited capacity in transmission infrastructure is hindering development and manufacturing opportunities. The PSDF seeks to develop a Master Infrastructure Plan to align and coordinate infrastructure investment, improve levels of mobility, maintain road, built and bulk infrastructure development and integrate into the infrastructure planning activities throughout the Province. The development of the proposed project is in line with the NCPSTDF as it will promote economic growth and development in Olifantshoek by providing and strengthening supply of electricity to local communities and businesses in the municipal area of the Gamagara Local Municipality.
John Taolo Gaetsewe District Municipality Integrated Development Plan (IDP), 2019 – 2020	Yes. The development of electricity transmission infrastructure is considered a priority within the IDP of the DM. The need to increase the available capacity and electrify households within the DMs jurisdiction is emphasised in the Plan.
Gamagara Local Municipality Integrated Development Plan (IDP), 2019 – 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 review of the 2019 – 2022 IDP highlights that the municipality currently has a backlog of 3 015 unelectrified households as a result transmission capacity constraints. The proposed project will contribute, albeit to a limited extent, to service delivery, economic growth and poverty alleviation in Olifantshoek and the surrounding areas. Furthermore, the development of the project enables the municipality to fulfil its IDP objectives and those of the NDP by improving the standard of living through providing and strengthening the supply of electricity to the local communities.

## CHAPTER 4: DESCRIPTION OF THE RECEIVING ENVIRONMENT

This Chapter provides a description of the environment that may be affected by the development of the Olifantshoek 132kV Power Line. The 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 the development or could affect the power line have been described. This information has been sourced from both existing information available for the area as well as collected field data by specialist consultants and aims to provide the context within which this BA process is being conducted.

### 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
(h)(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	<p>The environmental attributes associated with the grid connection corridor of the Olifantshoek 132kV Power Line are included within this chapter. The environmental attributes that are assessed within this chapter include the following:</p> <ul style="list-style-type: none"> <li>» The regional location of the Olifantshoek 132kV Power Line is described in <b>section 4.2.</b></li> <li>» The climatic conditions of Olifantshoek and the surrounding area are included in <b>section 4.3.</b></li> <li>» Biophysical characteristics (including climatic conditions, geology, soil and land types, hydrology, ecology and avifauna) of the corridor and the surrounding area are included in <b>section 4.3.</b></li> <li>» Heritage resources, including the archaeology and palaeontology associated with the corridor and the surrounding area are described in <b>section 4.4.</b></li> <li>» The visual quality of the affected area surrounding the assessed corridor is described in <b>section 4.5.</b></li> <li>» Social characteristics of the surrounding area and the grid connection corridor are described in <b>section 4.6.</b></li> <li>» A description of the site accessibility of the grid connection corridor and the surrounding area is included in <b>section 4.7.</b></li> </ul>

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

## 4.2 Regional Setting

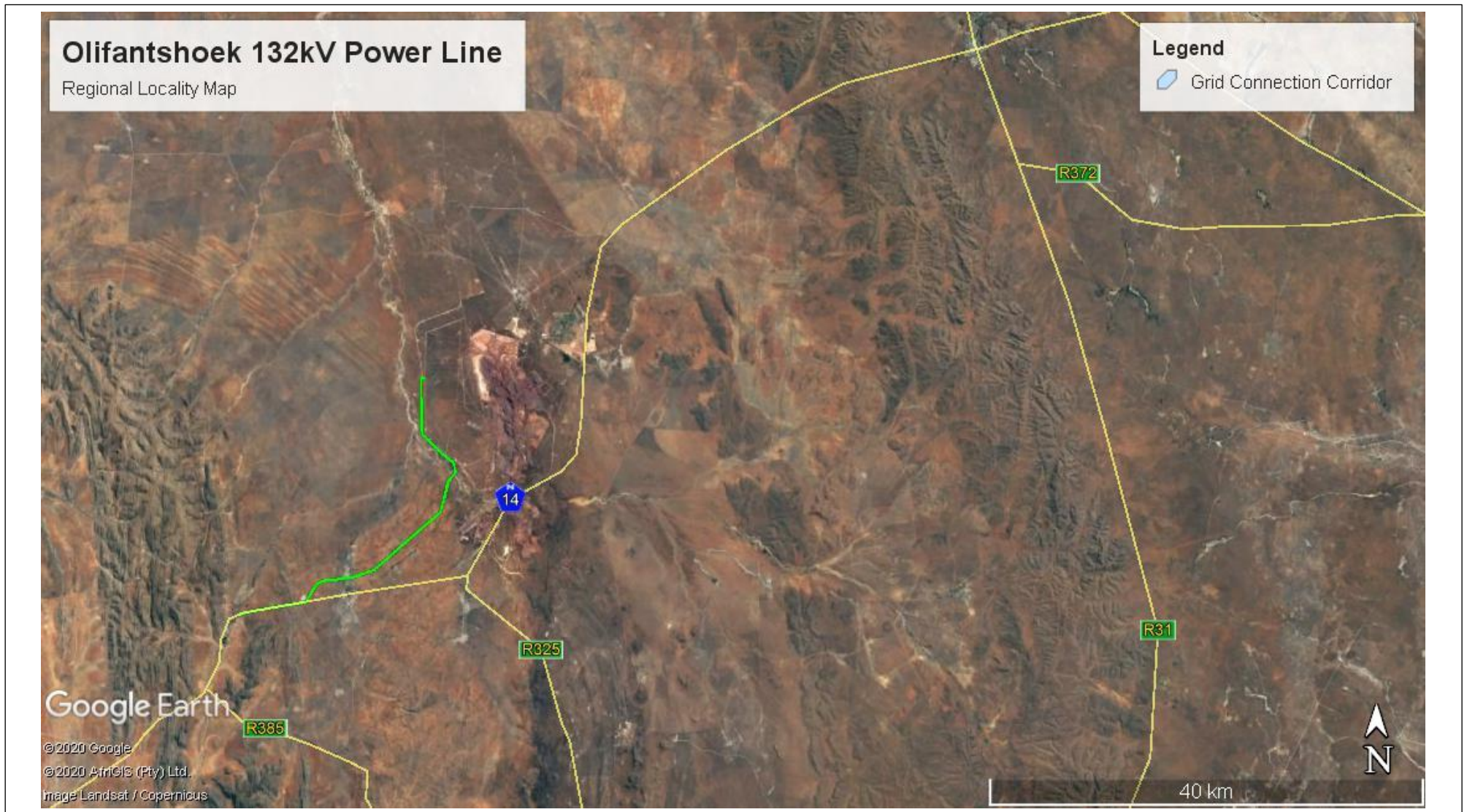
The Northern Cape Province is located in the north-western extent (**Figure 4.1**) of South Africa and constitutes South Africa's largest province, occupying an area of 372 889km<sup>2</sup> in extent, equivalent to nearly a third (30.5%) of the country's total land mass. It is also South Africa's most sparsely populated province with a population of 1 145 861, and a population density of 3.1/km<sup>2</sup>. 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 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.

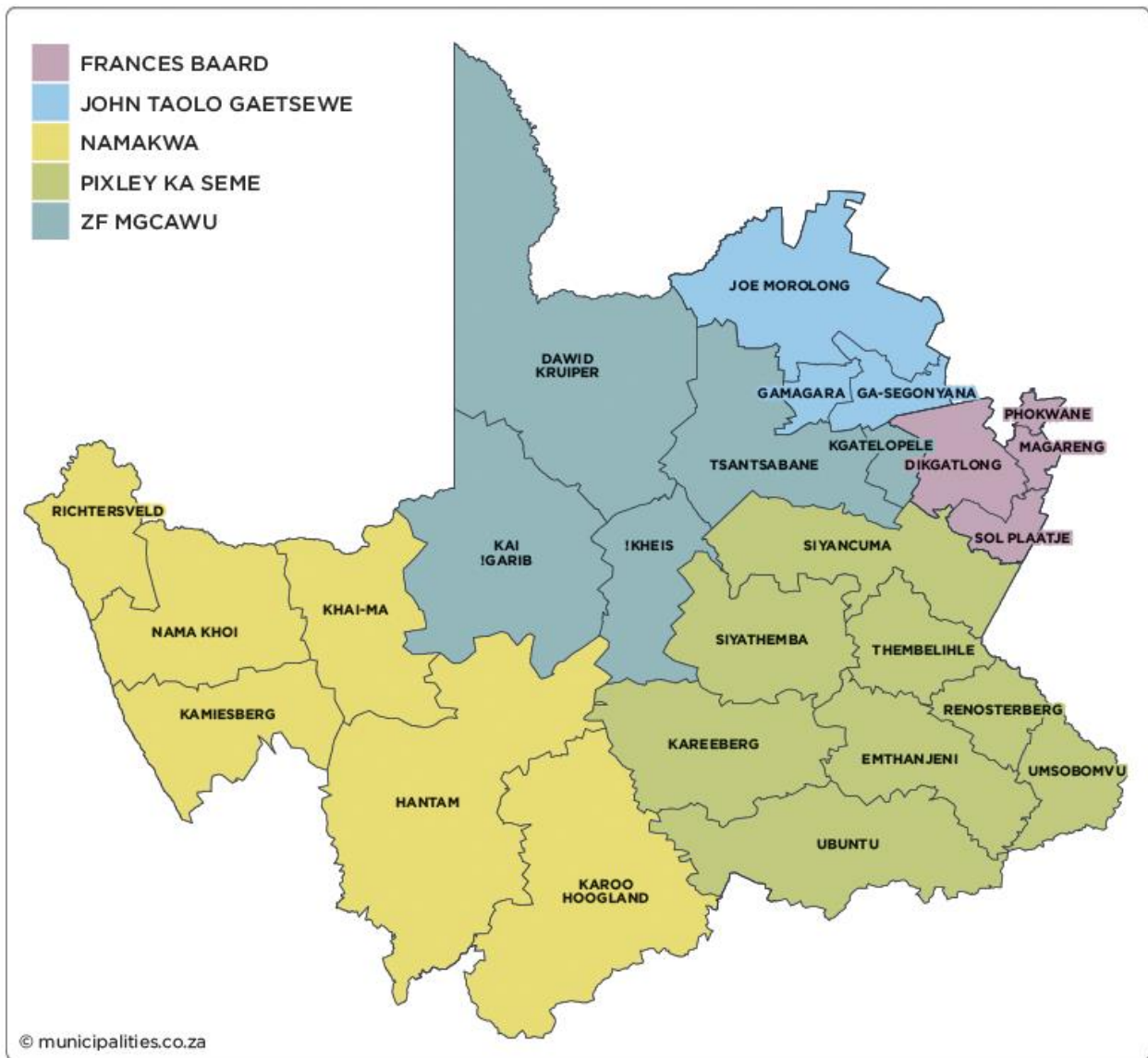
The province has fertile agricultural land in the Orange River Valley, especially at Upington, Kakamas and Keimoes, where grapes and fruit are cultivated intensively. The interior Karoo relies on sheep farming, while the karakul-pelt industry is one of the most important in the Gordonia District of Upington. 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, while only 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 /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 by 5 district municipalities, namely Francis Baard, John Taolo Gaetsewe, Namakwa, Pixley ka Seme and ZF Mgcawu (refer to **Figure 4.2**). The grid connection corridor for the Olifantshoek 132kV Power Line is located within the John Taolo Gaetsewe District Municipality and the Gamagara Local Municipality.



**Figure 4.1:** A regional locality map indicating the location of the grid connection corridor for the project and its regional context.



**Figure 4.2:** District municipalities of the Northern Cape Province (Source: Municipalities of South Africa)

The John Taolo Gaetsewe District Municipality (DM)<sup>11</sup> is situated in the north-eastern extent of Northern Cape Province and is bordered by the ZF Mgcawu DM to the west, the Francis Baard DM to the south-east and the Pixley ka Seme DM to the south. The John Taolo Gaetsewe DM occupies an area of land of approximately 27 322km<sup>2</sup> in extent, which is equivalent to 7% of the Northern Cape Province.

The John Taolo Gaetsewe DM includes the towns of Bankhara-Bodulong, Dibeng, Hotazel, Kathu, Kuruman, Mothibistad, Olifantshoek, Sishen, Santoy and Van Zylsrus. The town of Kuruman is the capital of the DM and

<sup>11</sup> Previously Kgalagadi

where the DM's seat of government is located. Kuruman is the largest town in the DM and is located on a main route between Gauteng, Namibia/Cape Town via Upington.

The main economic activities of the DM include mining and agriculture (cattle and game). Minerals mined in the DM include, manganese, iron, tiger's eye and crocidolite.

The John Taolo Gaetsewe DM comprises of three (3) local municipalities (LMs), namely, Joe Morolong, Gamagara and Ga-Segonyana (refer to **Figure 4.3**). The grid connection corridor for the Olifantshoek 132kV Power Line is located within the John Taolo Gaetsewe District Municipality and the Gamagara Local Municipality.



**Figure 4.3:** Local Municipalities of the John Taolo Gaetsewe DM (Source: Municipalities of South Africa)

#### 4.3 Local Setting: Location and Description of the Grid Connection Corridor

##### Grid Connection Corridor and Surrounding Area

The grid connection corridor is located within the Gamagara LM, which borders the Ga-Segonyana LM to the east and the Joe Morolong LM to the north. The Gamagara LM is a Category B<sup>12</sup> municipality and is the smallest of the three (3) LMs, with an extent of 2 648km<sup>2</sup>, accounting for 10% of the DMs geographical area. The key towns within the LM include, Kathu, Dibeng and Olifantshoek. The grid connection corridor within the Gamagara LM is located approximately 2km north-east of the town of Olifantshoek, 14km west of the town of Kathu, 16km south of Dibeng and 12km south-west of the Sishen Airport.

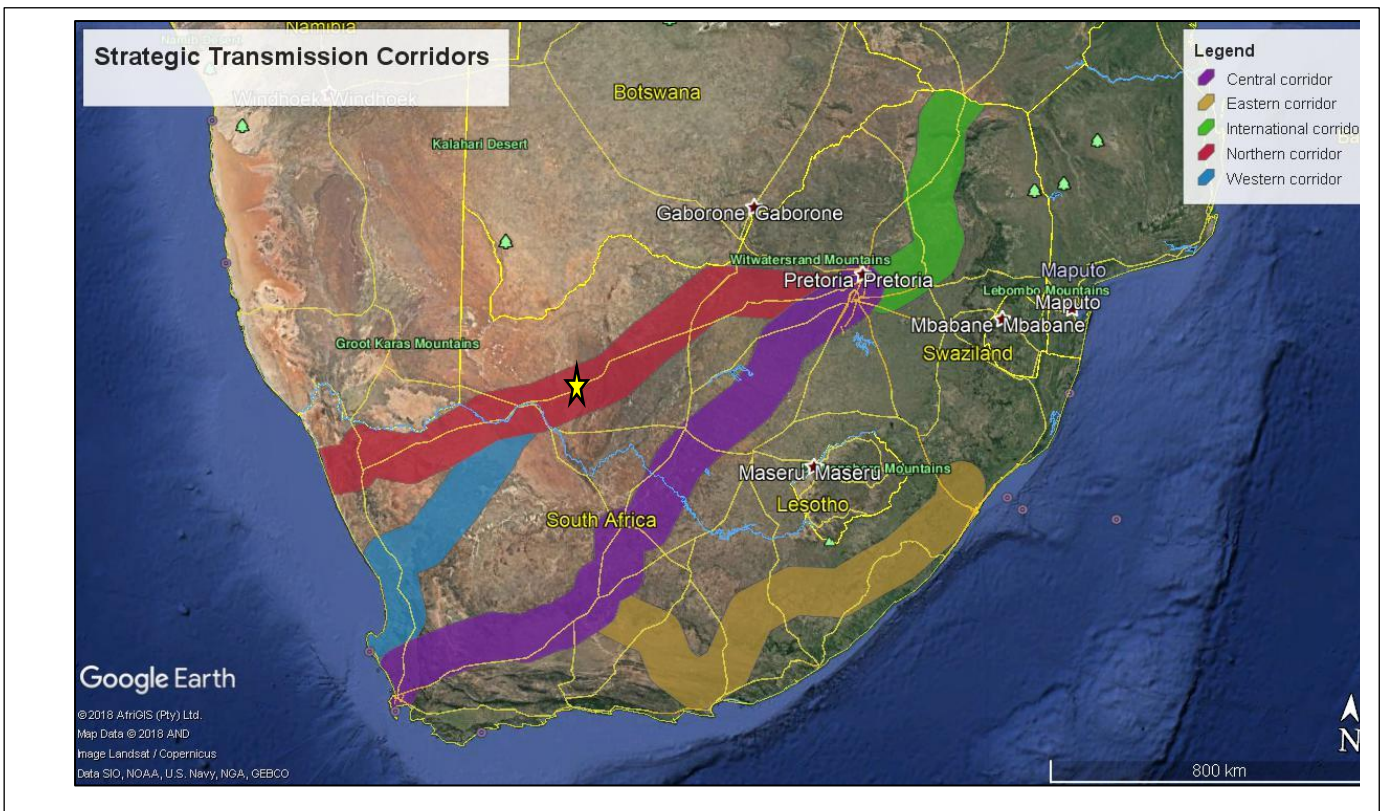
The grid connection traverses numerous properties, all used for various agricultural and pastoral land uses. The majority of the area is sparsely populated, with the local population being concentrated in the towns of Kathu and Dibeng. Economic activities within the surrounding area include mining, agriculture and power generation by solar renewable energy facilities (Sishen Solar PV Facility, Kathu Solar PV Facility and Kathu Solar Park CSP Facility). The Sishen, Khumani and Beeshoek iron ore mines are located within the surrounding area of the grid connection corridor, largely to the east and south-east of the grid connection corridor at a distance of approximately 3 – 5km.

The Northern Strategic Transmission Corridor, a strategic area identified by government for the development of grid connection infrastructure. The strategic transmission corridors are identified as the optimal locations where grid connection infrastructure expansion is needed to enable the balancing of future demand and supply requirements, while minimising negative impacts to the environment. The grid connection corridor assessed for the development of the Olifantshoek 132kV Power Line is located within the strategic transmission corridor the Northern Strategic Transmission Corridor (refer to **Figure 4.4**). The strategic transmission corridor is therefore a suitable area for the development of grid connection infrastructure. Planned and existing grid connection infrastructure in the vicinity of the grid connection corridor and the surrounding area include the proposed Ferrum-Upington and Niewehoop-Aries 400kV power line and the existing Ferrum-Lewensaar 275kV power line, and the Ferrum and Emil substations.

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<sup>12</sup> A municipality that shares municipal executive and legislative authority in its area with a District Municipality within whose area it falls:  
<https://www.brandsouthafrica.com/governance/government/south-african-local-and-municipal-governments>





**Figure 4.4:** The location of the grid connection corridor within the Northern Strategic Transmission Corridor for the proposed Olifantshoek 132kV Power Line is shown by the star.

The N14, and the R325 roads are located within the surrounding area and provide access to the grid connection corridor for the Olifantshoek 132kV Power Line. The N14 national road connects the towns of Olifantshoek and Kathu to Upington, Vryburg and Johannesburg. The Sishen Airport and the Sishen-Saldanha Railway Line are both located within the surrounding area of the grid connection corridor.

i. Climatic Conditions

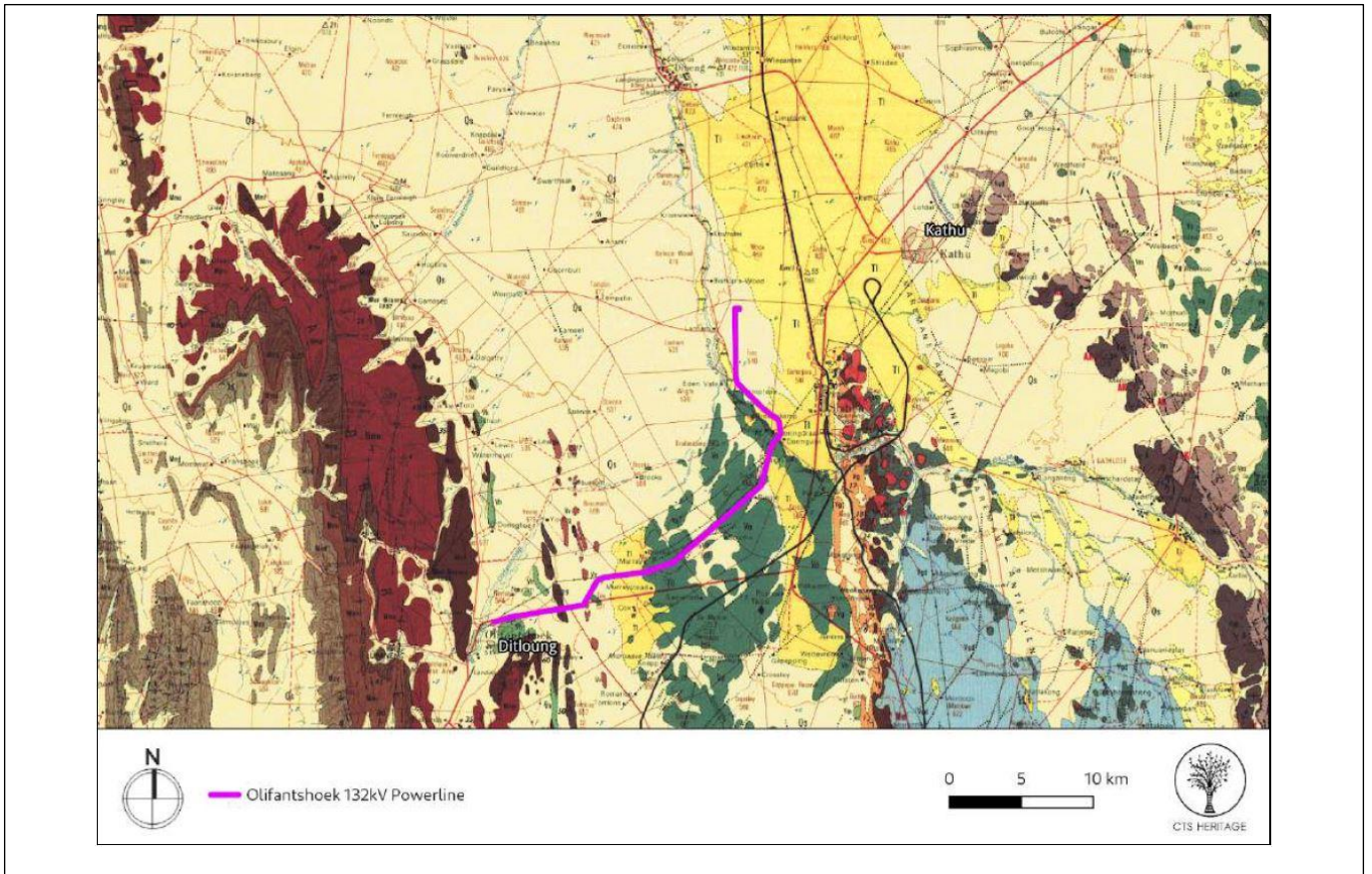
The surrounding area is characterised by an arid summer rainfall climate with an average annual temperature of 18.6°C and an average rainfall of 395mm falling predominantly in late summer (highest in April: 74mm). The driest month of the year in the area is July, with an annual precipitation of 3mm. With an average of 25.3°C, January is the warmest month, whilst July is the coldest month with an average of 10.8°C.

ii. Landscape Features

The surrounding area, including the grid connection corridor, is located within the floor of a broad valley system that generally falls from the south to the north. The landscape surrounding the grid connection corridor is arid, comprising of flat drainage plains with rocky outcrops to the south, east and west forming a valley side. The Langeberg Mountain range is also located approximately 2km west of the grid connection corridor.

iii. Geology

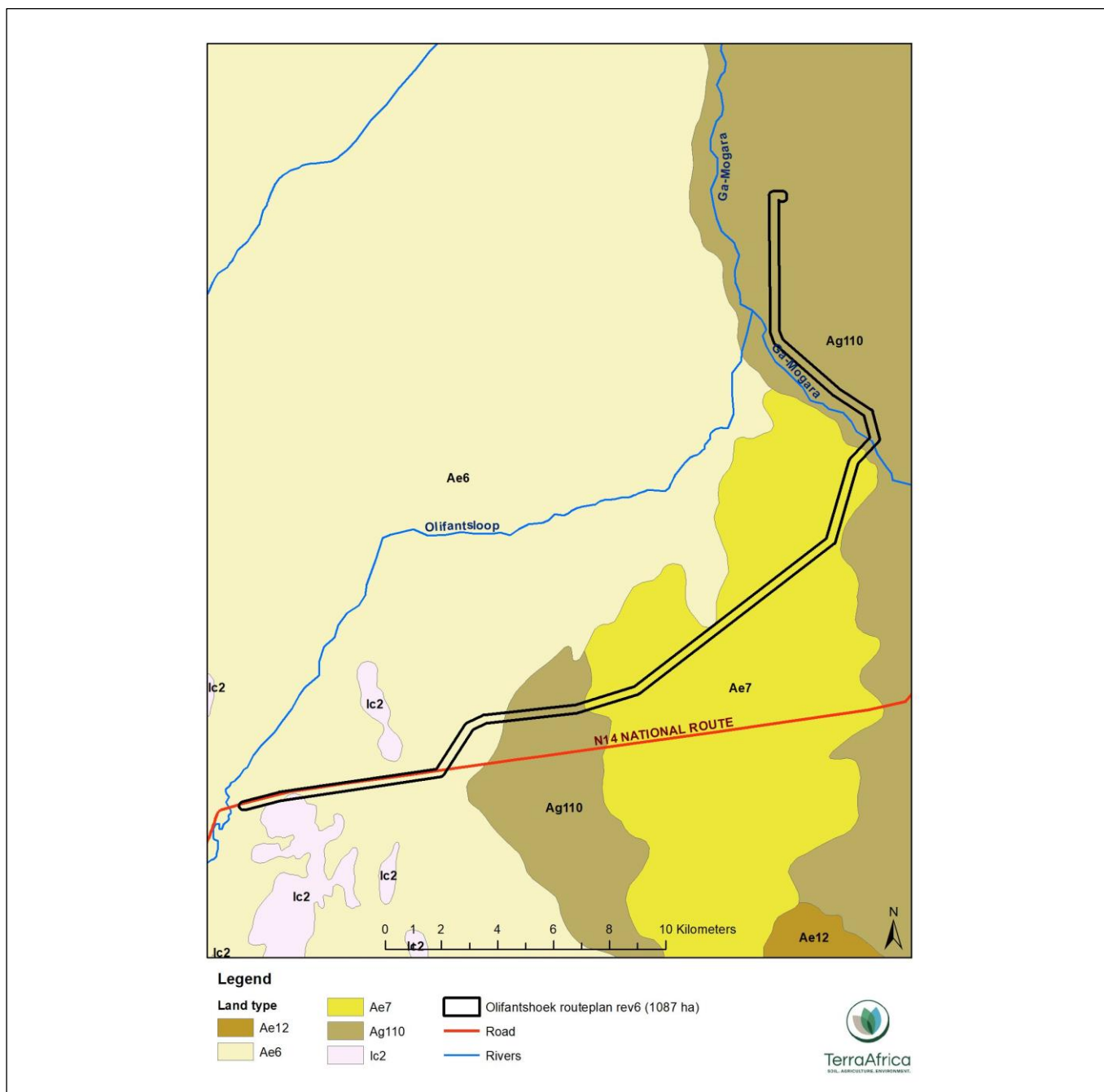
The grid connection corridor is underlain by Kalahari Group sands and calcretes as well as the Ongeluk Formation volcanic rocks (**Figure 4.5**). The grid connection corridor also traverses small exposures of the Voelwater and Lucknow formations as well as the Hartley Formation volcanic rocks.



**Figure 4.5:** A geological map of the grid connection corridor (shown by the purple line) and the surrounding area within which the proposed Olifantshoek 132kV Power Line is proposed.

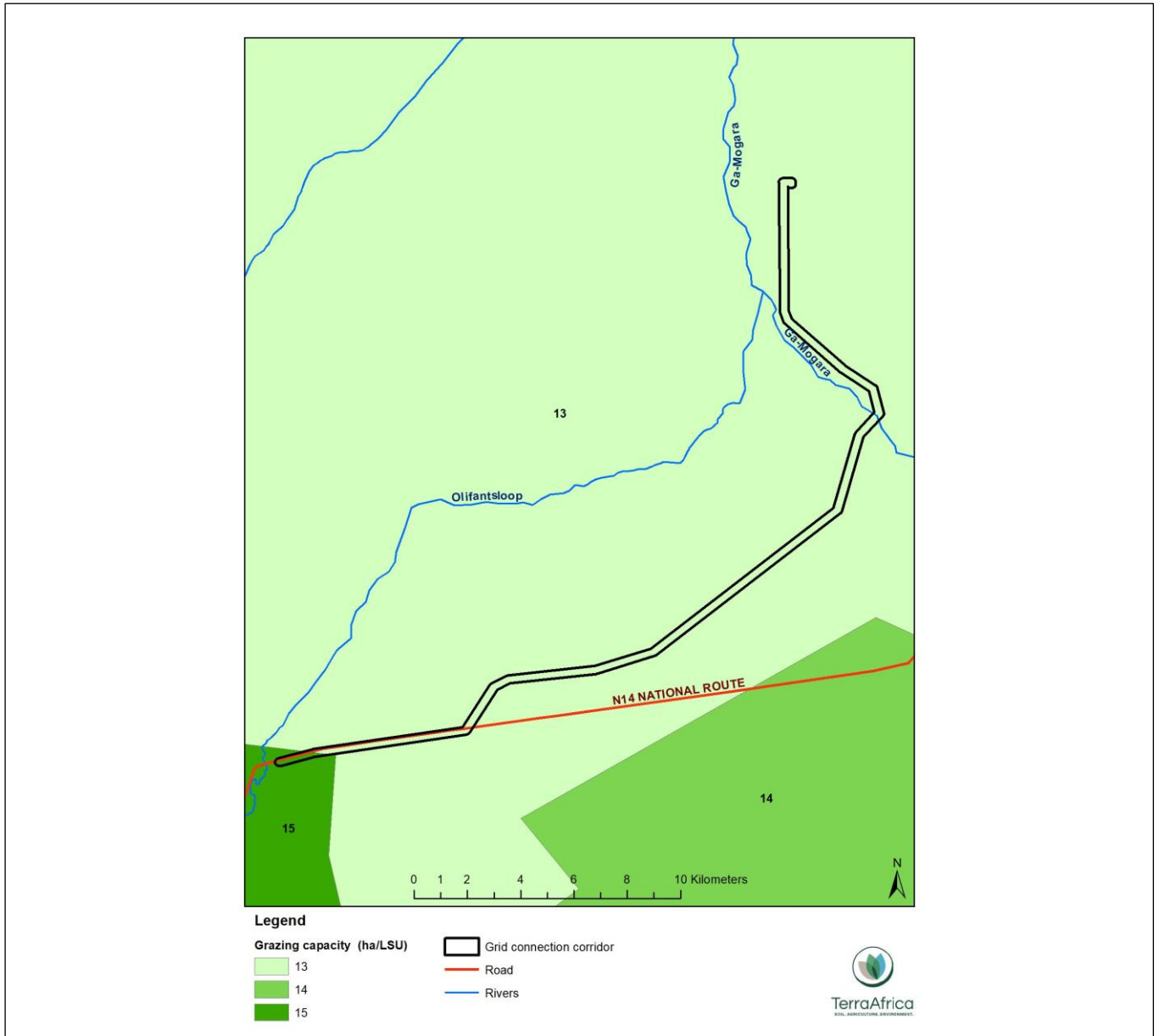
iv. Soil and Land Types

The majority of the grid connection corridor is situated within four (4) different land types (refer to **Figure 4.6**). Land Type Ae6 is the dominant land type in the area directly outside Olifantshoek for approximately 13km (in the direction towards Kathu). Small areas consisting of Land Type Ic2 may also be present in this area. The remaining length of the grid connection corridor consists mainly of two land types namely Land Type Ag110 and Land Type Ae7. Land Type Ae7 is present from approximately 21km east of Olifantshoek up to where the alignment runs in a northern direction near the Ga-Mogara River.



**Figure 4.6:** Land type classification of the Olifantshoek 132kV Power Line grid connection corridor and the surrounding area.

The grazing capacity associated with the area within which the development of the Olifantshoek 132kV Power Line is approximately 13ha per Large Stock Unit (LSU). Only a small section directly east of the town of Olifantshoek has a grazing capacity of 15ha/LSU (refer to **Figure 4.7**). These can be converted to 3 to 4ha/SSU depending on the quality of the veld in a specific area.



**Figure 4.7:** Grazing capacity of the proposed Olifantshoek 132kV Power Line grid connection corridor as well as the surrounding area.

i. Hydrology and Surface Water

» Ga-Mogara River

»

The grid connection area and the surrounding area are located within the Lower Vaal River Water Management Area (WMA) and within the D41J quaternary catchment area. The entire surrounding area is drained by two non-perennial watercourses namely, the Olifantsloop and Ga-Mogara rivers. The most prominent river system within the is region is the ephemeral Ga-Mogara River which is a tributary of the Kuruman River. The Ga-Mogara River is a 88km long non-perennial or ephemeral system which originates as small tributaries within the asbestos mountains located north-east of the town of Danielskuil and flows in a north-western direction past smaller settlements, as well as the southern portion of the Sishen Iron Ore

mining area to eventually flow into the Kuruman River near Hotazel. A small narrow and low flow channel (**Figure 4.6**), which is traversed by the grid connection corridor is located in the middle of the Ga-Mogara River and it is possible that the channel is episodically inundated with run-off following sufficient rainfall events.

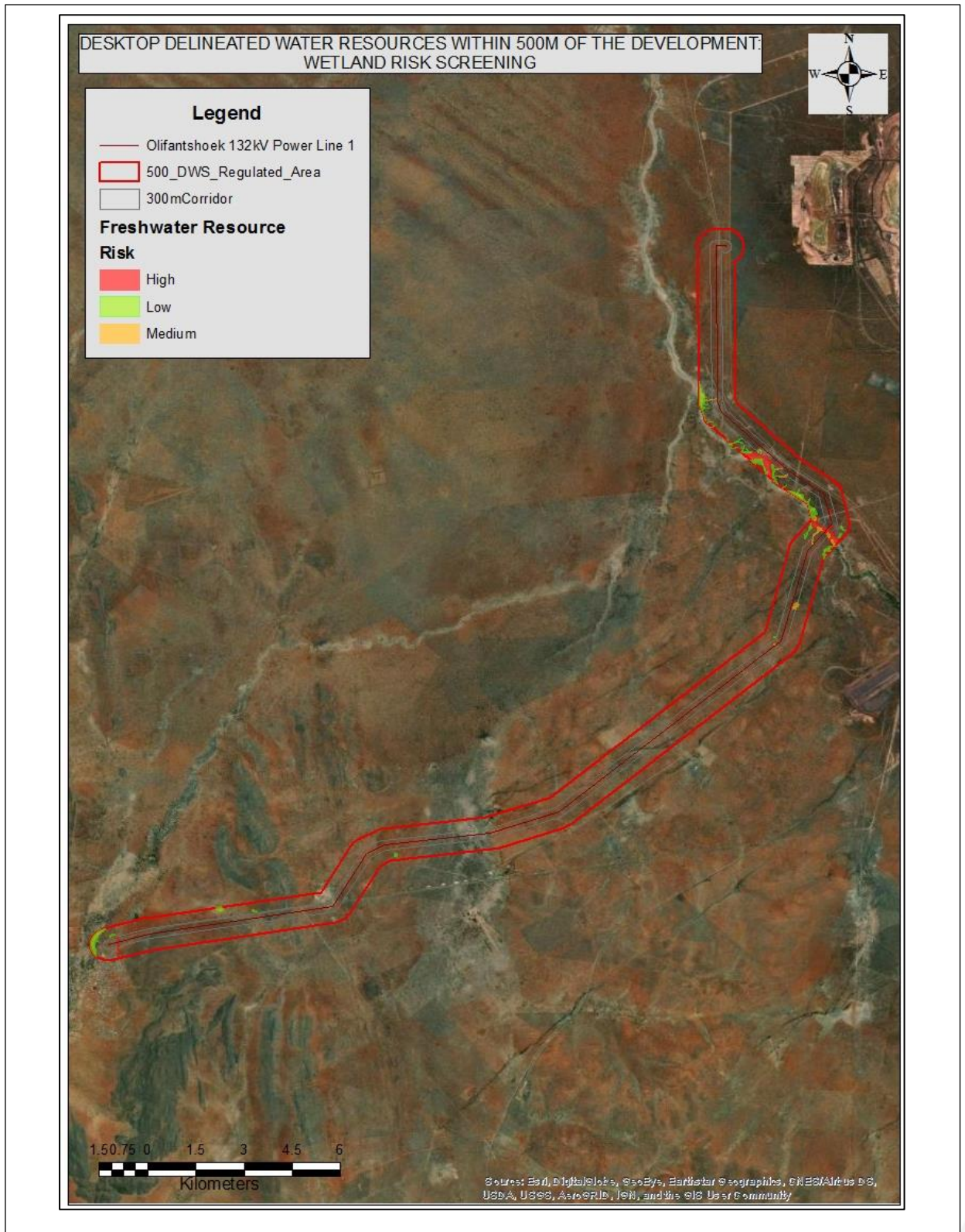
The low flow channel within the Ga-Mogara River is generally associated with vegetation that prefers moisture-rich grasses which include, *Juncus rigidus*, *Cyperus longus* var. *tenuiflorus* and *Panicum coloratum* as well as forbs such as *Helichrysum aureonitens* and *Stachys soathulata*.

In addition, patches of tall and dense *Vachellia* woodlands are found along the Ga-Mogara River and comprise tree species such as *Vachellia karroo*, *V. erioloba* and *Ziziphus mucronata*. The Present Ecological State (PES) scores the portion of the Ga-Mogara River and riparian area affected and within the vicinity of the grid connection corridor as C, meaning it is moderately modified, which is a result of the anthropogenic activities taking place upstream of the river, which have modified the hydrology systems of the river downstream.

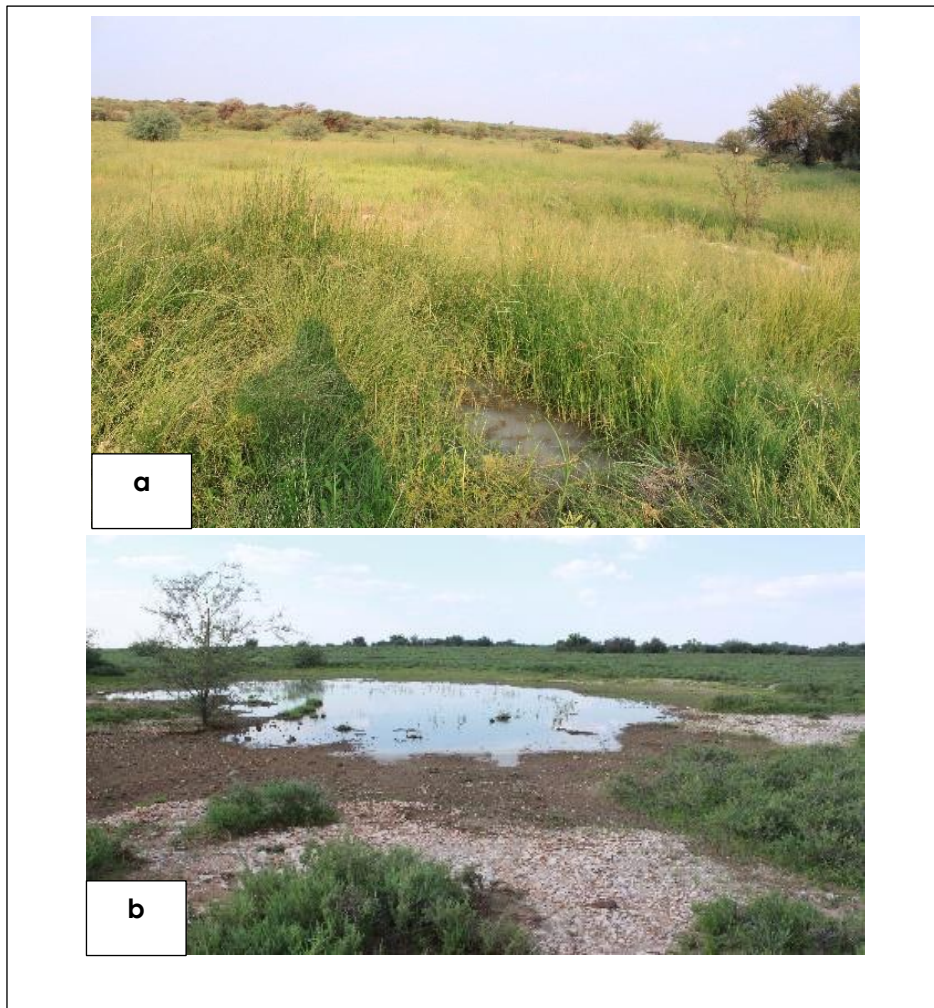
» Small Depression Wetlands

Natural wetlands within grid connection corridor and its vicinity (refer to **Figure 4.8** and **4.9**) are small and endorheic in nature. These freshwater features form as a result of micro-topography variations of the underlying substrates, i.e. shallower soils over calcrete, which gives rise to low grasslands on pan bottoms. These features are characterised by a low growing vegetation layer, mainly grasses and dwarf shrubs such as *Cynodon dactylon*, *Panicum coloratum* and *Aristida congesta*. The grassy depressions are associated with a fringe of small to medium-sized trees such as *Vachellia karroo*, *Senegalia mellifera*, *Ziziphus mucronata*, *Grewia flava* and *Diospyros lyciodes*.

The Present Ecological State (PES) scores for these depressions is B, meaning largely natural with small modifications due to obstructions and some farm roads traversing these features.



**Figure 4.8:** A map showing the grid connection and the freshwater features identified.



**Figure 4.9:** a) A photograph of the small and narrow flow channel within the Ga-Mogara River. b) A photograph of a small depression with a very sparse vegetation cover.

ii. Ecological Profile of the Grid Connection Corridor and the surrounding area

According to the National Vegetation Map (Mucina & Rutherford, 2006), the grid connection corridor falls predominantly within the Olifantshoek Plains Thornveld vegetation type. Other vegetation types affected by the proposed development to a lesser extent include the Kathu Bushveld and Kuruman Thornveld vegetation types.

The Olifantshoek Plains Thornveld has a limited extent of 8 496km<sup>2</sup> and occurs mostly on the pediment areas of the Korannaberg, Langeberg and Asbestos mountains, as well on some of the ridges located to the west of the Langeberg mountains. The unit is associated with open tree and shrub layers which vary from place to place and include key species such as, *Vachellia luederitzii*, *Boscia albitrunca* and *Searsia tenunineryis*. The vegetation unit is classified as 'Least Threatened' and has not been impacted by transformation, and as a result 99% remains intact.

The Kathu Bushveld vegetation unit has an extent of approximately 7 443km<sup>2</sup> and extends from Kathu, Dibeng and Hotazel in the north. The unit is associated with a tree layer which includes *Vachellia erioloba* and *Boscia albitrunca* and shrub layer which includes *Senegalia mellifera*, *Diosypros lycoides* and *Lycium*

*hirsutum*. The Kathu Bushveld vegetation unit is largely intact and less than 2% has been transformed by mining activities. The unit is classified as 'Least Threatened'.

The Kuruman Thornveld vegetation unit occupies an area of approximately 5 794km<sup>2</sup> and extends from Postmasburg and Danielskuil in the south via Kuruman and Dewar in the north. The Kuruman Thornveld vegetation unit typically contains a well-developed, closed shrub layer and a well-developed open tree stratum consisting of *Vachellia erioloba*. The unit is largely intact and only less than 2% has been transformed and does not fall within any conservation areas and is regarded to be 'Least Threatened'.

### iii. Critical Biodiversity Areas (CBA) and Broad-Scale Processes

According to the Northern Cape Conservation Plan, the majority of the grid connection corridor is located within Other Natural Areas (ONA) and some sections traverse Ecological Support Areas (ESAs) which are mostly associated with the Ga-Mogara River (refer to **Figure 4.10**). The grid connection corridor is not located within a Critical Biodiversity Area (CBA). The presence of the power line would not compromise the functioning of the ESA, as it will be routed along the existing Ferrum-Lewensnaar 275kV power line which already crosses the ESA towards the existing Elim Traction Substation. In addition, another 400kV power line has been proposed in the area to route from the Ferrum Substation to the Emil Substation and the grid connection corridor considered for the development will be parallel to the grid connection corridor for the proposed Olifantshoek 132kV Power Line. The grid connection corridor for the 132kV Olifantshoek Power Line avoids the Brooks & Bredenkamp Nature Reserve. As the infrastructure for the power line would have a relatively small footprint, the development of the power line is therefore unlikely to result in a significant disruption of broad-scale ecological processes.

The National Protected Areas Expansion Strategy (NPAES) spatial data (Holness, 2010) indicates that the proposed development footprint is located well outside any focus area, with the nearest focus area being the Eastern Kalahari Focus Area, which is located 18km north-west of the grid connection corridor. As a result, no NPAES Focus Area will be impacted by the proposed development.

### Faunal Communities

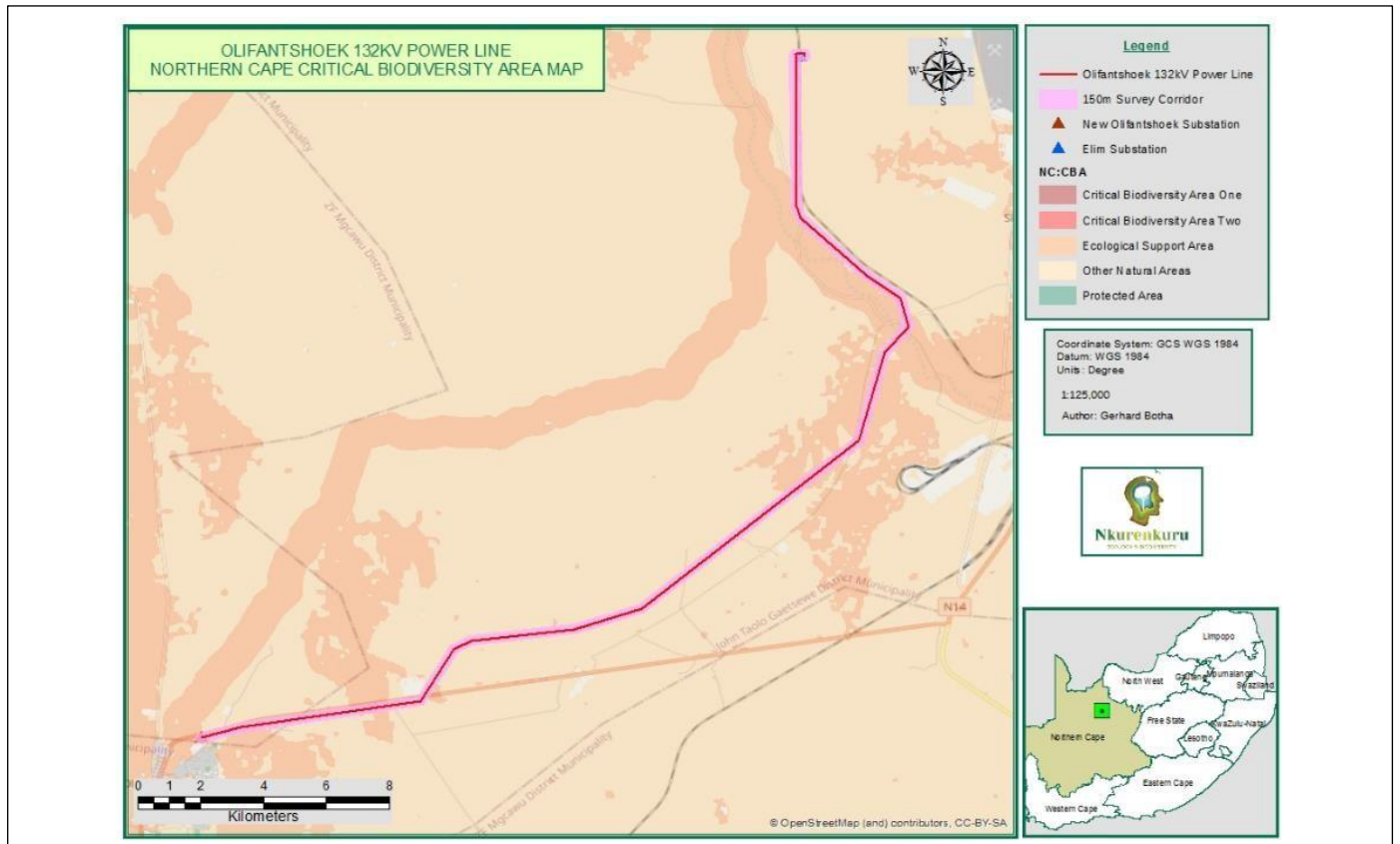
#### i. Mammals

The broader study area falls within the distribution range of 49 terrestrial mammals, indicating that the mammalian diversity of the area is of moderate to high potential. Areas of specific significance for mammals are likely to be outcrops, depression wetlands, ephemeral watercourses and the associated riparian fringe, which provides a greater cover as well as moisture and forage availability for species. The intervening veld in the area is not considered highly sensitive from a faunal perspective as similar habitat is widely available in the area.

Terrestrial mammal species that can be confirmed present within the surrounding area of the grid connection corridor include Aardvark, Damaraland Mole Rat, Cape Porcupine, Slender Mongoose, Stenbok, Savanna Hare, Gerbil species, Warthog, Kudu, Ground Squirrel, Springhare, Yellow Mongoose, Cape short-tailed gerbil, Savana Hare, Plains Zebra, Giraffe, Blue Wildebeest, Red hartebeest, Blesbok and Cape Fox.



Four-listed terrestrial mammal species which have the potential of occurring in the area include, the Honey Badger, Brown Hyaena, Southern African Hedgehog and the African Pangolin. Although the area is largely used for livestock production and game farming, human activity is fairly low, therefore, it is likely that all four listed terrestrial mammal species could occur in the area. Taking into consideration that these species have a wide national distribution, the proposed development of the power line would not lead to a significant extent of habitat loss for any of these species.



**Figure 4.10** A map showing the location and extent of the CBAs, ESAs in relation to the grid connection corridor assessed for the Olifantshoek 132kV Power Line. The grid connection corridor is not located within a CBA

ii. Reptiles & Amphibians

According to the South Africa Reptile Conservation Assessment (SARCA) Database, ADU data and other literature, approximately 37 reptile species are known to occur in the area, which shows the reptilian diversity of the area to be moderate. Only six (6) species of amphibians are known from the area, however due to the prevailing arid conditions of the environment in this area, amphibian abundance within the grid connection corridor is anticipated to be low. The depression wetlands and regular inundated sections of the Ga-Mogara River are regarded as important amphibian habitats and the species identified observed within the grid connection corridor and the surrounding area include, the Western Rock Sink, Rock Monitor, Spotted Sandveld, Spotted Sand Lizard, Bushveld Lizard, Ground Agama, Variable Skink, Kalahari Tree Skink and Tandy's Sand Frog. No amphibian and reptile species were observed within the Ga-Mogara River. In addition, no reptile and amphibian species of conservation concern are known to occur in the area.

iii. Avifauna

The field-based survey of the grid connection corridor undertaken from 4 – 6 April 2020 identified numerous avian micro-habitats which include open tree savanna, shrubland savanna, ridges and outcrops, non-perennial watercourses, small depression wetlands and the artificial landscape which comprises the cleared power line servitudes for existing power line infrastructure and the Olifantshoek Sewage Works.

The open tree savanna micro-habitat located primarily within the northern and southern sections of the grid connection corridor is associated with a medium-tall woody component, with key species such as *Vachellia erioloba*, *Vachellia tortilis* and *Ziziphus mucronata*. Small tree and shrub species also present include *Trachonanthus camphoratus*, *Senegalia mellifera*, *Grewia flava* and *Boscia albitrunca*. This micro-habitat provides a niche for a relatively high diversity of avian species, which include ground-dwelling species such as the Helmeted Guineafowl, Red-billed Spurfowl, Northern Black Korhaan, Red-crested Korhaan as well as the two (2) Sandgrouse species found in the region, which include the Namaqua Sandgrouse and the Burchell's Sandgrouse. Passerine and near-passerine avian species from this micro-habitat include chats, scrub-robins, larks and thrushes. Three (3) red listed data species were confirmed within this micro-habitat and include, the Kori Bustard, Martial Eagle, and the White-backed Vulture. The Martial Eagle and the White-backed Vulture were associated with the existing 400kV power line that traverses this habitat in the area.

The shrubland savanna micro-habitat is associated with the rocky ridges and hills or where the reddish sand becomes thinned out exposing rock beds. Large tree species are either absent or scattered as singular species within this micro-habitat. The shrub layer present is between 1.7m – 2.5m and has similar shrub species as the open tree savanna micro-habitat. The micro-habitat is associated with a lower abundance and diversity of avian species which are also present in the open tree savanna woodland micro-habitat. Species present within this micro-habitat include the Northern Black Karoo Korhaan and Lark species. The most abundant species from this micro-habitat include the Kalahari Scrub Robin, Sociable Weaver and the Scaly-feathered Weaver. No red-listed data avian species were confirmed from this micro-habitat.

The ridges and rocky outcrops micro-habitat is located to the south of the N14 national road. The micro-habitat is characterised by an open shrubland, with *Senegalia mellifera*. This micro-habitat is primarily utilised by passerine species also present within the shrubland micro-habitat which include chats, thrushes and scrub-robins. The *Acacia mellifera* encroaches some areas of the micro-habitat and provide nesting areas for smaller species such as the Yellow-billed Eremomela, Black-chested Prinia, and the Rufous-eared Warbler.

The non-perennial watercourses and small depression habitat is associated with the Ga-Mogara River and a series of small depressions that occur throughout the landscape of the area within the vicinity of the grid connection corridor. These micro-habitats are associated with tall riparian woodlands which contribute to habitat and niche diversity and low growing vegetation layer, particularly for the shrub species associated with the depression wetlands. The tall woodlands are considered as an important habitat for avifauna and provide shelter, nesting and perching sites for species. Smaller granivorous species such as the Black-

faced Waxbill, Violet-eared Waxbill and the Yellow canary constantly migrate between the outer edge of the woodlands and the grassy riverbed. Inundated areas of the larger depression wetlands were utilised by the waterfowl and other water preferring species such as the Little Grebe, Red-knobbed Coot, Red-billed Teal, African Spoonbill, Cape Shoveler, Egyptian Goose and the Black-winged Stilt. The depression wetlands

provide important sources of water and food in form of protozoans and small branchiopods which become active during sufficient inundation.

The artificial landscape micro-habitat consists of the cleared servitude areas for the existing power line infrastructure which are generally dominated by an open grassland with a sparse covering of low growing shrubs such as *Tarchonanthus camhoratus*, *Grewia flava* and *Vachellia erioloba*. This landscape also includes the Olifantshoek Sewage Works. Species present within this micro-habitat include the Spike-heeled Lark, Monotonous Lark, Kalahari Scrub-Robin, Ant-eating Chat, Scaly-feathered Weaver, Capped Wheatear and the Rufous-cheeked Nightjar. Avian species present within the vicinity of the Olifantshoek Sewage Works include, waterfowls and herons. These route between the water sources at the works and the gravel dam located to the south of the town of Olifantshoek.

In general, a total of 228 species have been recorded from the area by SABAP 1 and 2, with 11 species classified as Red data species (Barnes, 2014). These include Near-Threatened species such as the Black Stork, Secretary bird and the Black Harrier. Vulnerable species recorded include the Cape Vulture, White-backed Vulture, Lappet-faced Vulture, Tawny Eagle and the Martial Eagle. From the field-based survey, 106 species were recorded within the vicinity of the grid connection corridor and the surrounding area, with 9 species classified as endemic and 28 as near-endemic. The most commonly recorded species were passerine and near-passerine species such as Bokmakierie, Crimson-breasted Shrike, Lesser Grey Shrike and Fork-tailed Drongo. Endemic species recorded during the field-based survey include the South African Shelduck, White-backed Mousebird, Ant-eating Chat, Rufous-eared Warbler, Southern Pied Barbet, Karoo Scrub Robin, Sickle-winged Chat, Northern Black Korhaan and the Sociable Weaver. Red-listed species recorded within and around the vicinity of the grid connection corridor include the White-backed Vulture, Martial Eagle, Red-footed Falcon, Peregrine Falcon and the Kori Bustard. Listed avian species which were not recorded within the area but are highly likely to occur include the Secretary bird and the Lanner Falcon.

#### **4.4. Heritage Resources, including archaeology and palaeontology**

##### **4.4.1 Archaeology and the Built Environment**

The surrounding area, including the grid connection corridor, for the proposed development is located 15km west of the town of Kathu. The town of Kathu was established in the 1960's and 1970's as a result of the discovery of iron ore deposits, which over time led to the development of several open cast iron ore mining operations in the area, which include, Sishen, Khumani and Beeshoek.

The Grade 1 Kathu Pan Archaeological Site is located to the north of the proposed corridor for the development of the 132kV power line. At this site, evidence of early hominin occupation has been found at multiple sinkholes within the pan. The site is also known for its rich collection of Early Stone Age (ESA) artefacts, which are associated with rock outcrops of banded ironstone and the pan, with most artefacts coming from sinkholes in the pan.

Stone Age archaeological material of a high significance was identified within the grid connection corridor. Only a Late Stone Age (LSA) bladelet/trimmed flake was recorded within the grid connection corridor. Early Stone Age (ESA) and Middle Stone Age (MSA) artefacts and/or remains are located within the Kathu Pan and the surrounding areas. The possibility of artefacts being present within the grid connection corridor in the subsurface is not overruled.

A site exhibiting characteristics of former occupation was identified within the grid connection corridor on the Remaining Extent of the Farm Murray 570 . The cultural material identified within the grid connection corridor suggests that the items could be dating back to the 1800s and 1900s or later. Therefore, there is a possibility that the site was exposed to numerous occupations and that it probably served as a livestock post/overnight camp for farmers moving stock between the farms or regions. The site might have also served as a source of water during the South African War<sup>13</sup>.

Four (4) official municipal cemeteries were identified near the town of Olifantshoek, as well as, two (2) unmarked graves near the location of the authorised Olifantshoek Substation. An additional two (2) graves were also identified within the Remaining Extent of the Farm Murray 570 in close proximity to the historical site described above. All these graves identified are located far from the grid connection corridor, and therefore it is unlikely that the proposed development would have an impact on these sites.

#### **4.4.2 Palaeontology**

The grid connection corridor is mainly underlain by Kalahari Group sands, calcretes as well as the volcanic rocks of the Ongeluk Formation. The corridor does however traverse a small section of the Voelwater, Lucknow formations and the volcanic rocks of the Hartley Formation.

According to the SAHRIS Palaeosensitivity Map (**Figure 4.11**), the grid connection corridor is located within an area associated with a low to moderate palaeontological sensitivity. However, the north-east section of the corridor traverses the Kalahari Group, therefore the development of the power line may have a significant impact in this area due to the proximity of the Kalahari Group lithologies to the Kathu Pan.

The broader study area is underlain by the Gordonia Formation, the Bethesda Formation, the Janneslan Formation, the Keimoes Formation and the Straussburg Granite. The majority of these lithologies are igneous or metamorphic rocks, which renders them unfossiliferous. However, the quaternary cover sands of the Gordonia Formation (i.e. wind-blown sands) could preserve some fossils. The Formation rests on calcretes which lie atop pre-Kalahari bedrock. In areas to the south of the broader study area, there is evidence of the palaeo Koa Valley, which marks the Cenozoic Era, where the Kalahari River used to flow 66Ma prior to a continent uplift which led to the character of the South African landscape at present day. The Koa Valley was captured during the Miocene Era by the Orange River and only palaeo channels remain. In addition, some palaeo-channels contain gravel clasts, diamonds, silicified wood and vertebrate bones.

#### **4.5 Visual Quality**

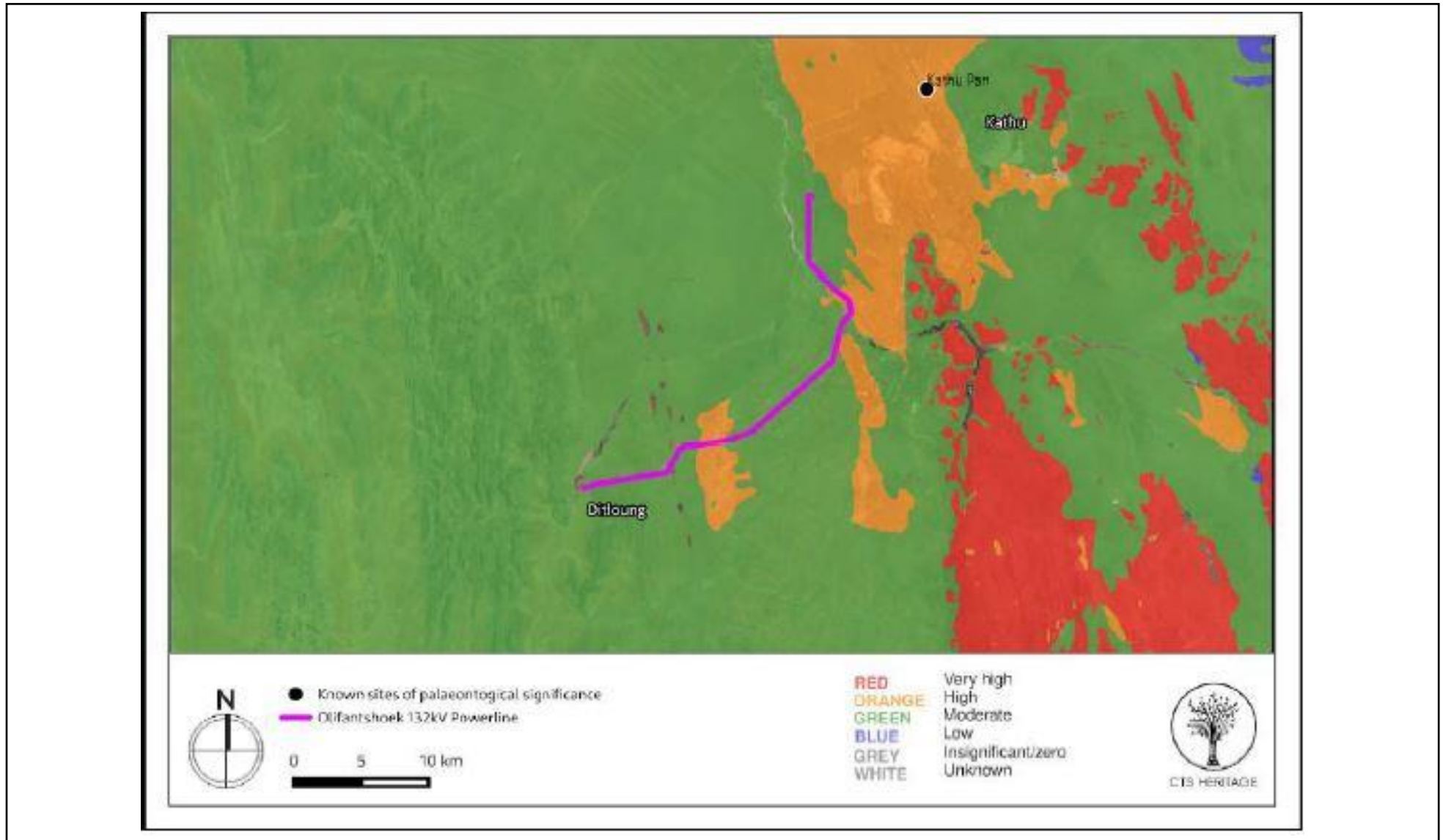
The grid connection corridor for the development of the power line is located within the floor of a broad valley system that generally falls from south to north, with the general landscape being arid and comprising of flat drainage plains with rocky outcrops to the south, east and west forming the valley sides. Numerous grid infrastructure (i.e. power line) developments have been developed within the vicinity of the grid

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<sup>13</sup> Also called the Anglo-Boer War which took place from 11 October 1899 – 31 May 1902.

connection corridor for the Olifantshoek 132kV Power Line and are obvious along the N14 national road towards Upington and Kathu.

Three (3) sensitive visual receptors have been identified for the development of the Olifantshoek 132kV Power Line. The low number of the receptors is a result of the development being viewed in the context of the existing Ferrum-Lewensaar 275kV Power Line and the proposed Ferrum-Upington and Ferrum-Niewehoop 400kV power lines which are located within the vicinity of the grid connection corridor.



**Figure 4.11:** A map showing palaeosensitivity of the grid connection corridor identified for the development of the 132kV power line.

» Area Receptors

Area receptors include the town of Olifantshoek. The findings of the site visit indicate that it is highly unlikely that the formal urban area of the town will be affected by the proposed development from a visual perspective; however, there are numerous informal dwellings close to the location of the authorised Olifantshoek Substation where residents and commuters (along the N14) may have views of the power line infrastructure.

» Point Receptors

Point receptors include homesteads that are sparsely distributed throughout the Olifantshoek area. The findings of the site visit identified the dominant land use for the area to be agricultural production and the homesteads identified in the area are classified into the following categories:

- \* Residential structures, include private homes and game lodges in the area which are likely to have the greatest possible views of the proposed power line infrastructure.
- \* Homesteads incorporated into working farmsteads which include numerous additional farm buildings such as workshops, storage and worker accommodation facilities.
- \* Homesteads that are stand-alone workers accommodation facilities. These structures include facilities that are associated with stock watering and handling and some are used on an ad-hoc basis during specific livestock management operations. Therefore, it is likely that the occupants are more likely to be focused on the activities they undertake rather than the proposed development, therefore, the outlook of the surrounding landscape is likely to be of a minor consideration.

» Linear Receptors

Linear receptors include the N14 national road, a major tourist route in the Northern Cape Province as it connects the province with towns and cities such as, Upington, Vryburg, Johannesburg and Pretoria.

#### **4.6 Social Profile**

The social profile provides an indication of the specific social aspects within the area which will be relevant to the development of the Olifantshoek 132kV Power Line, and which may be affected with the development of the proposed project. Within the vicinity of the grid connection corridor, no sensitive social receptors are present. Social receptors that could possibly be affected by the proposed development are local and tourist travellers making use of the N14 national road. Due to the presence of existing power lines in the area, the development of the Olifantshoek 132kV Power Line will not introduce grid connection infrastructure to the area or an additional land use. In addition, the distance of the grid connection corridor from the nearest settlement provides a buffer against direct social impacts subsequent to the development of the power line.

**Table 4.1** provides a baseline summary of the socio-economic profile of Gamagara LM within which the Olifantshoek 132kV Power Line is located. In order to provide context against which the LM's socio-economic profile can be compared, the socio-economic profiles of the John Taolo Gaetsewe DM, Northern Cape Province, and South Africa as a whole have also been considered. The data presented in this section have been derived from the 2011 Census, the Local Government Handbook South Africa 2019, the Northern

Cape Provincial Spatial Development Framework (PSDF), and the John Taolo Gaetsewe DM and Gamagara LM IDPs.

**Table 4.1:** Baseline description of the socio-economic characteristics of the area within which the Olifantshoek 132kV Power Line is proposed.

<b>Location characteristics</b>
<ul style="list-style-type: none"> <li>» The project is proposed within the Northern Cape Province, which is South Africa's largest, but least populated Province.</li> <li>» The project is proposed within the Gamagara LM of the John Taolo Gaetsewe DM.</li> <li>» The Gamagara LM is approximately 2619km<sup>2</sup> in extent, equivalent to approximately 10% of the John Taolo Gaetsewe DM.</li> </ul>
<b>Population characteristics</b>
<ul style="list-style-type: none"> <li>» Between 2011 and 2016 the Gamagara LM experienced a population growth rate of 28.93% over 5 years.</li> <li>» The Gamagara LM has a high urbanisation rate of 97.6%, which is significantly higher than that of the DM (24.9%). The main reason for the high rate is due to the Gamagara LM being a mining hub and individuals are moving in to the area seeking employment opportunities.</li> <li>» The Gamagara LM is male dominated, with males comprising approximately 56.4% of the LM population. The John Taolo Gaetsewe DM is female dominated, with females comprising approximately 50.8% of the DM population.</li> <li>» Black Africans comprise the predominant population group within the Gamagara LM and John Taolo Gaetsewe DM.</li> <li>» The Gamagara LM, John Taolo Gaetsewe DM, and Northern Cape provincial, and South African national population age structures are all youth dominated. A considerable proportion of the respective populations therefore comprise individuals within the economically active population between the ages of 15 and 64 years of age</li> </ul>
<b>Economic, education and household characteristics</b>
<ul style="list-style-type: none"> <li>» The Gamagara LM has a dependency ratio of 34.2, which is lower than the John Taolo Gaetsewe DM (57.9), Northern Cape Province (35.8), and South Africa (34.5).</li> <li>» Education levels within the Gamagara LM are low with approximately 33% of the population aged 20 years and older who have completed Grade 12 / Matric. Only 10.8% of the age group have received higher education. This implies that the majority of the population can be expected to have a relatively low-skill level and would either require employment in low-skill sectors, or skills development opportunities in order to improve the skills level of the area.</li> <li>» The unemployment rate of the Gamagara LM (17.7%) is lower than that of the John Taolo Gaetsewe DM (29.7%).</li> <li>» Approximately 32% of people in the Gamagara LM have no monthly income. At least 64% of the population are earning less than R6400 per month. The area can therefore be expected to have a high poverty level with associated social consequences such as not being able to pay for basic needs and services and poor living conditions.</li> <li>» The main economic sectors of the Gamagara LM includes mining, game farming and business services.</li> <li>» 43% of employed people in the Gamagara LM are employed in the formal sector, of which 5% are employed in the informal sector.</li> <li>» As of 2016 there were a total of 15 723 households within the Gamagara LM. This is equivalent to 21.7% of the total number of households within the John Taolo Gaetsewe DM (72 310), and 5% of the total number of households within Northern Cape Province (313 402).</li> <li>» The majority of households within the Gamagara LM comprise of houses or brick houses, informal dwellings (i.e. shacks), a flat or house in a backyard, townhouse and flat or apartment in a block of flats.</li> </ul>
<b>Services</b>
<ul style="list-style-type: none"> <li>» The Gamagara LM achieved to provide the following household services: <ul style="list-style-type: none"> <li>* 80.8% have access to flush toilet connected to sewerage;</li> <li>* 8.9% have weekly refuse removal;</li> <li>* 52% have access to piped water inside a dwelling; and</li> </ul> </li> </ul>



\* 88.1% have electricity for lighting.

#### **4.7 Site Accessibility**

The N14 national road and the R325 regional road will provide access to the grid connection corridor for the development of the power line. The N14 is classified as a Class 1 Expressway, with a single carriage way with one lane per direction running in an east – west direction; whereas, the R325 comes off the N14 and provides access to the grid connection corridor, the Khumani and Sishen Iron Ore mines and the settlement of Dingleton. The R325 in combination with other existing unsurfaced roads in the area provide access to the Emil Substation, the other connection point for the proposed Olifantshoek 132kV Power Line. Existing roads will be utilised to provide access for the proposed development; however, a 4m wide unsurfaced access road will also be constructed during the construction phase to provide access to the grid connection corridor.

## CHAPTER 5: ASSESSMENT OF POTENTIAL IMPACTS

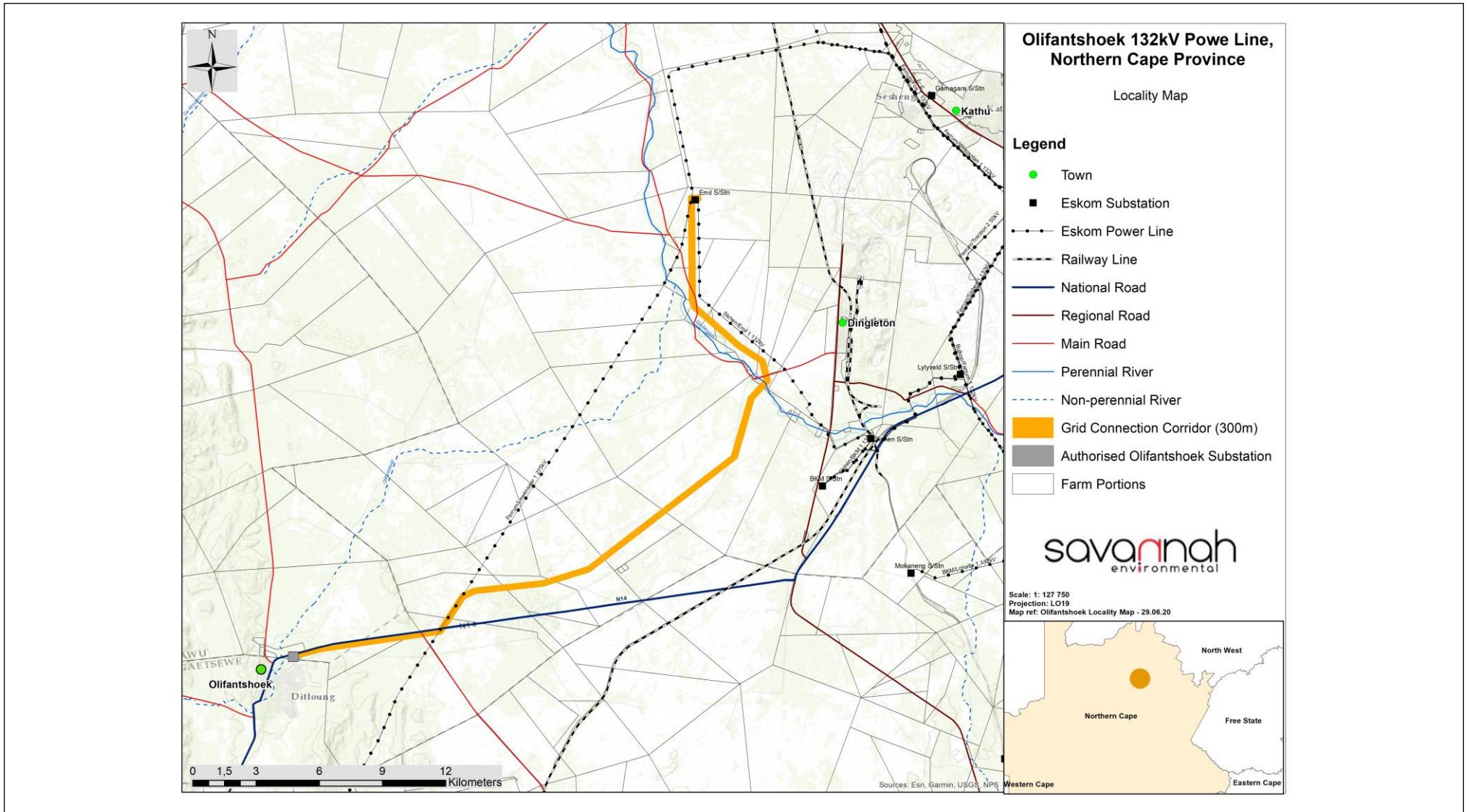
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This Chapter serves to assess the significance of the positive and negative environmental impacts (direct and indirect) expected to be associated with the development of the Olifantshoek 132kV Power Line and its associated infrastructure. This assessment has considered the construction of the power line with a capacity of up to 132kV and a servitude of 31m, within a 300m wide and 36km long grid connection corridor. The infrastructure associated with the proposed power line development will include the towers/pylons, cabling between the towers of the 132kV power line and a 4m wide unsurfaced road to be utilised during the construction and operation phases of the project.

The full extent of the grid connection corridor was considered through the BA process by independent specialists and the EAP. On-site sensitivities were identified through the review of existing information, desktop evaluations and field surveys. The grid connection corridor assessed for the development of the power line was proposed by the proponent through the consideration of the sensitive environmental features and areas identified prior to the commencement of the BA process. The grid connection corridor assessed within this BA process avoids the Brooks and Bredenkamp Nature Reserve and therefore avoids properties previously assessed but not considered to be compatible for the development of a power line. A consultation meeting prior to the commencement of the BA process was undertaken in Olifantshoek with officials from the Northern Cape DAFF and DENC (refer to **Appendix N**) to determine the suitability of the proposed grid connection corridor as a result of a previous appeal lodged due to the presence of sensitive tree species, i.e. *Acacia erioloba* in the area. The officials indicated that the grid connection assessed and considered for the development of the Olifantshoek 132kV Power Line within the BA process was acceptable subject to the implementation of recommended mitigation measures by the ecological specialist. The assessed grid connection corridor is therefore considered as the most feasible option for the development of the power line and associated infrastructure. As a result, the grid connection corridor route avoids environmentally sensitive areas not considered to be suitable for development or infringement and is considered as least intrusive on the environment and most suitable for development within the surrounding area, therefore, no feasible alternative grid connection corridors were identified for the BA process and the impact assessment.

The proposed development of the Olifantshoek 132kV Power Line will comprise the following phases:

- » *Pre-Construction and Construction* - will include pre-construction surveys; site preparation; establishment of the access road; and other required infrastructure; construction of foundations involving excavations, the transportation of components/construction equipment to site, manoeuvring and operating vehicles for unloading and installation of equipment; and commissioning of new equipment and site rehabilitation. The construction phase for the proposed power line development is expected to be up to 6 months.
- » *Operation* - will include the operation of the power line and the undertaking of maintenance activities on the power line as and when required for the duration of its operational lifespan which is anticipated to be 50 years.



**Figure 5.1:** Map illustrating the location of the grid connection corridor for the Olifantshoek 132kV Power Line.

- » *Decommissioning* – the power line and the associated infrastructure will be decommissioned at the end of the power line's economic life. At the end of the power line's lifespan, decommissioning will include the disassembly of the power line components. Where the components cannot be reused or recycled, these 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 area and the relevant legislation applicable at the time of decommissioning.

Environmental impacts associated with the pre-construction, construction (and decommissioning) of the Olifantshoek 132kV Power Line will include, amongst others habitat loss (for fauna and avifauna species); impacts on vegetation and protected plant species; a loss of riparian systems and alluvial watercourses due to the physical removal of the narrow strips of riparian zones; and soil erosion impacts. In addition, impacts anticipated for the operation phase of the power line, among others include the electrocution and collisions of avifauna specie and visual impacts on the rural homesteads, and travellers on the N14 national roads.

**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 the BA Report:

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 the development of the Olifantshoek 132kV Power Line 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 <b>section 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3 and 5.8.3</b>
3(h)(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	The positive and negative impacts associated with the development of the Olifantshoek 132kV Power Line are included in <b>sections 5.3.2, 5.4.2, 5.5.2, 5.6.2, and 5.7.2.</b>
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 Olifantshoek 132kV Power Line are included in <b>sections 5.3.3, 5.4.3, 5.5.3, 5.6.3 and 5.7.3.</b>
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 Olifantshoek 132kV Power Line during the BA process, and the extent to which the impact significance can be reduced through the implementation of the recommended mitigation measures provided by the specialists are included in sections in <b>5.3.3, 5.4.3, 5.5.3, 5.6.3 and 5.7.3.</b>

Requirement	Relevant Section
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 development of the Olifantshoek 132kV Power Line, 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 sections <b>in 5.3.3, 5.4.3, 5.5.3, 5.6.3 and 8.7.3.</b>
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 EMP.	Mitigation measures recommended by the various specialists for the reduction of the impact significance are included in <b>sections 5.3.3, 5.4.3, 5.5.3, 5.6.3 and 5.7.3.</b>

**5.2. Quantification of Areas of Disturbance within the grid connection corridor**

Site-specific impacts associated with the construction and operation of Olifantshoek 132kV Power Line include the clearance of vegetation which will lead to the loss of current habitat; disturbance on fauna and a loss of habitat during the construction phase; a loss of riparian systems and alluvial watercourses due to the physical removal of the narrow strips of riparian zones; an impact on the localised surface water quality; and soil erosion and pollution impacts. In order to quantitatively assess the impacts associated with the development of the power line, it is necessary to consider the extent of the identified grid connection corridor (i.e. 300m wide and 36km long) and the extent of the 31m servitude to be affected by the construction and operation activities of the proposed power line. The area of disturbance (to be cleared for the construction of foundations) required for each tower/pylon is equivalent to 100m<sup>2</sup> within the grid connection corridor.

**5.3. Assessment of Impacts on Ecology (Fauna and Flora) and Freshwater**

The construction and operation phase of the power line will have an impact on the ecological and freshwater resources identified within the corridor. The resources include vegetation, protected and listed plant species, fauna, habitat and broad-scale ecological processes and alluvial watercourses. A summary of the ecological and freshwater impacts identified and the significance thereof for the proposed development are included below. Reference should be made to **Appendix D** for more detail.

**5.3.1 Results of the Ecological and Freshwater Impact Assessment**

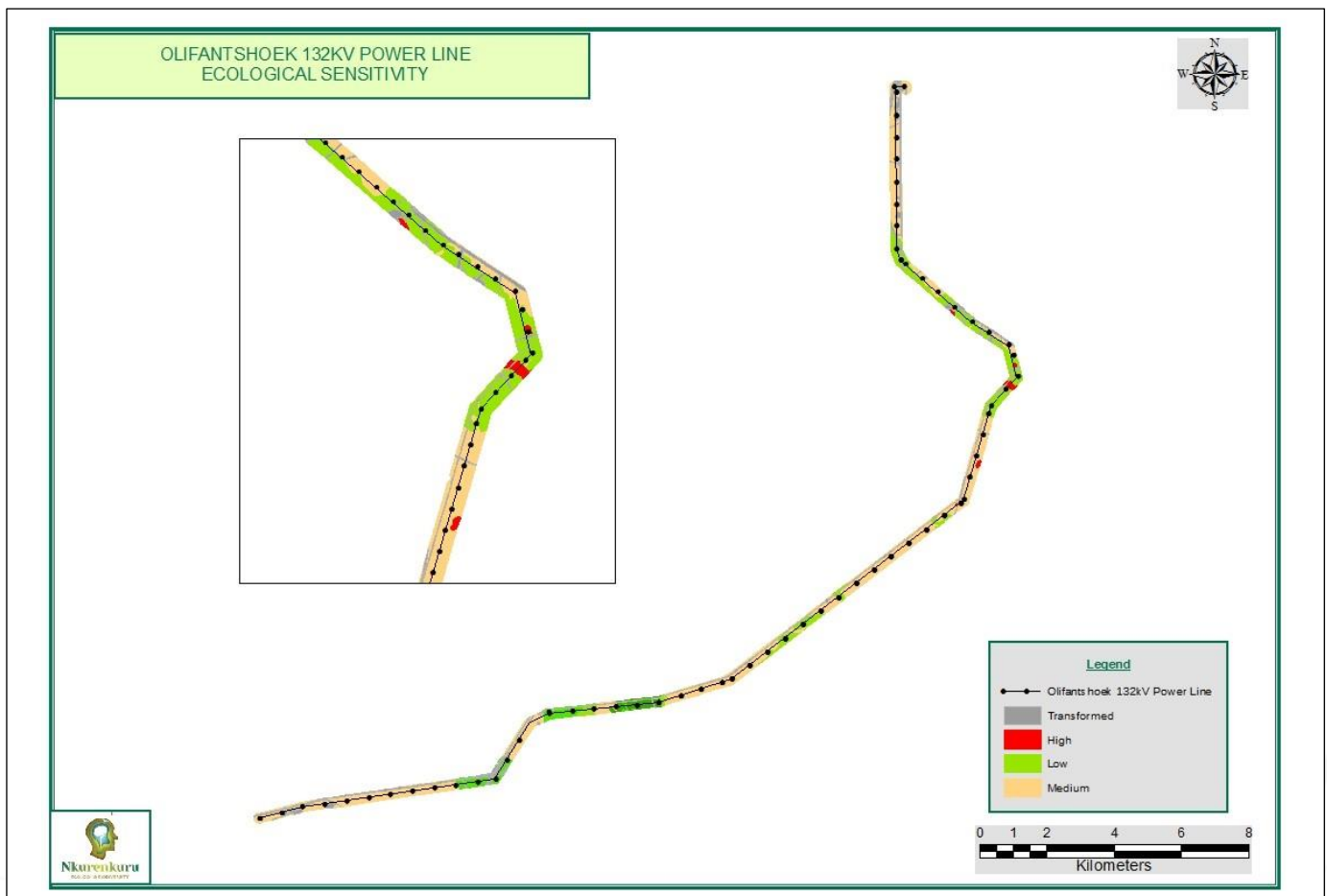
The vegetation within the assessed corridor is relatively homogenous and there are no areas of open veld that are considered to be of a high sensitivity. Sensitive features present within the corridor include the Ga-Mogara River (including the associated riparian habitat) and small depression wetlands. The river is classified as a non-perennial or ephemeral system and the most prominent hydrological feature in the region. The river is inundated with run-off following significant rainfall events in the area. The riparian habitat of the river is covered with moisture-loving grasses and patches of tall and dense *Vachellia karroo*, *Vachellia erioloba* and *Ziziphus mucronata* tree species. The ecological functions of the river include the absorption and reduction of occasional flash floods; serving as an important corridor for abiotic and biotic material transfer, as well as for wildlife and serving as a habitat for species that are restricted to this area. As a result,

the Ga-Mogara River is considered to be of a high sensitivity and only minimal clearance of vegetation is permitted within the immediate footprint area of the power line pylon/tower which will be equivalent to 100m<sup>2</sup>.

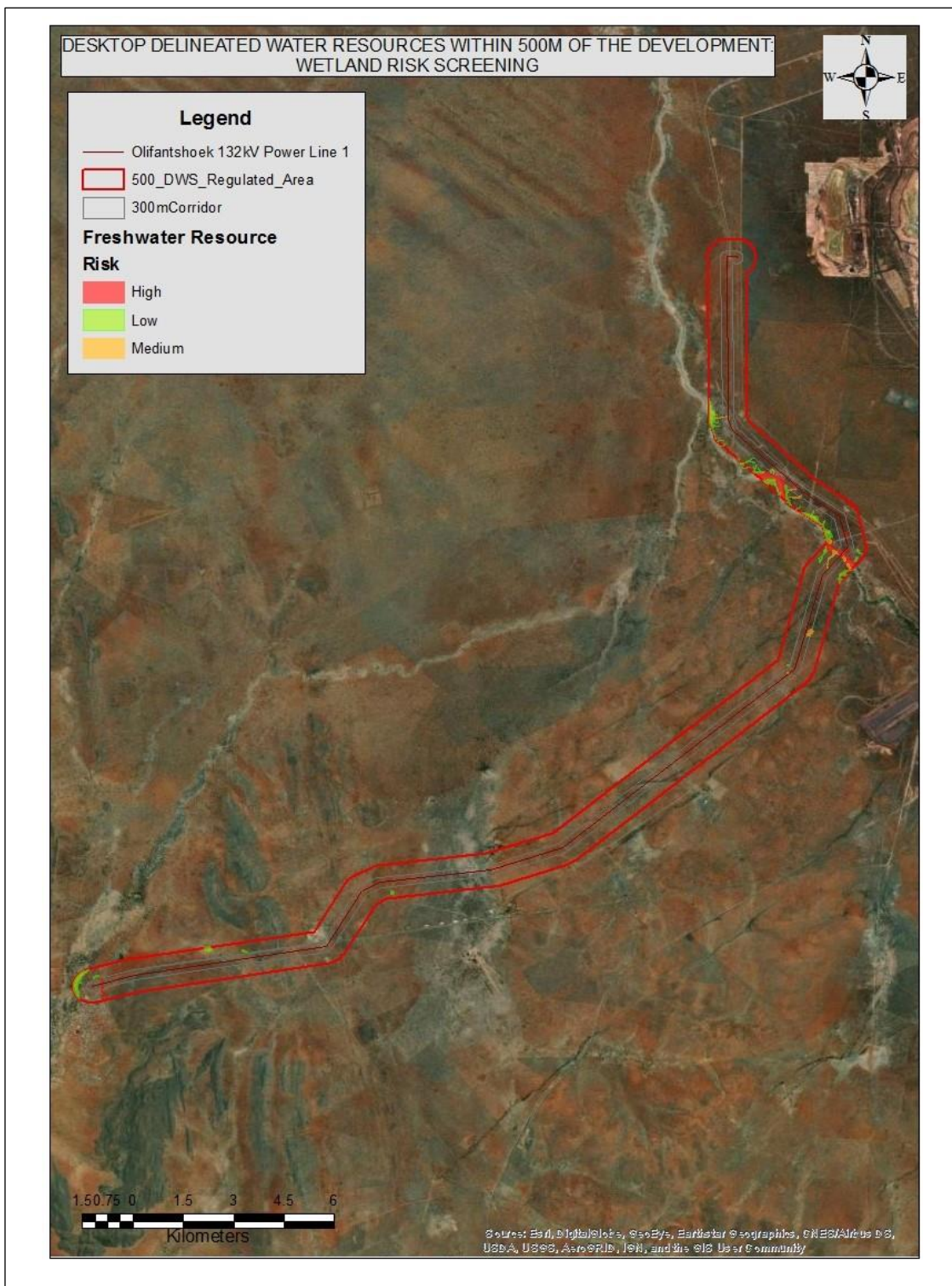
The depression wetlands present in the area are largely natural, small and endorheic. The depressions are associated with a fringe of small to medium-sized trees such as *Vachellia karoo* and *Senegalia mellifera* and serve as a niche habitat for certain fauna species in the area. Although the depression wetlands are located within the outer fringes of the grid connection corridor, they are associated with a high sensitivity and no change in the morphology and vegetation structure of the wetlands is allowed.

The woodland savanna type habitat associated with the peripheries of the depression wetlands and the Ga-Mogara River are considered to be of a high conservation value as these fringes create micro-habitats for the persistence of plant species, as well as fauna. These areas contribute to habitat, niche and species diversity and add to the resilience of the ecological system and support pollinator populations during the different seasons. Therefore, due to the functions of the vegetation in the area, these areas are regarded as high sensitivity and no-go areas for development.

Sensitivity maps illustrating the sensitive ecological and freshwater features identified for the assessed corridor are included in **Figures 5.2** and **5.3**.



**Figure 5.2:** Ecological sensitivity map of the grid connection corridor for the development of the Olifantshoek 132kV Power Line.



**Figure 5.3:** Identified freshwater features and the associated sensitivities within the grid connection corridor for the development of the Olifantshoek 132kV Power Line.

### **5.3.2 Description of Ecological and Freshwater impacts**

The following ecological and freshwater impacts have been identified for the development of the Olifantshoek 132kV Power Line:

#### Potential Impacts on vegetation and protected and listed plant species

Several protected plant species in terms of the National Forest Act (Act No. 84 of 1998) of 1998 and the Northern Cape Nature Conservation Act (Act No. 9 of 2009) of 2009 (i.e. *Vachellia erioloba*, and *Boscia albitrunca*) occur within the grid connection corridor and may be impacted by the development of the power line. The footprint of the power line is relatively small, and the vegetation to be impacted by the power line has a wide distribution and is regarded as Least Concern. In addition, the clearance of vegetation during the construction phase of the power line will lead to the loss of some habitat within the corridor.

#### Potential impacts on fauna

Increased levels of intrusion (i.e. noise, human presence, pollution, etc.) during the construction phase may affect the local fauna. Sensitive and shy fauna will move away from the grid connection corridor during the construction phase as a result of noise and human activities present. Slow moving faunal species (i.e. tortoises and snakes, etc.) would not be able to avoid construction activities and might be killed as a result. However, this impact is likely to occur only during the construction phase.

#### Loss of riparian systems and alluvial watercourses

The physical removal of the narrow strips of riparian zones and disturbance to any of the alluvial watercourses as a result of replacement in some of these areas by hard and engineered structures during the construction and operation phase. The impact would be localised as a large portion of the catchment in the area would remain intact.

#### Loss of localised surface water quality

During the pre-construction, construction and to a limited extent, the operation phase, chemical pollutants (i.e. hydrocarbons from equipment and vehicles, etc.) can be washed downslope and lead to an impact on the surface water quality of the area.

### **5.3.3 Impact tables summarising the significance of impacts on ecology and freshwater during the construction (including decommissioning phase) and operation phases (with and without mitigation)**

The impacts assessed below apply to the grid connection corridor assessed for the development of the Olifantshoek 132kV Power Line. Based on the grid connection corridor, which already avoids highly sensitive features (i.e. the Brooks and Bredenkamp Nature Reserve), the significance of the impacts with the implementation of the recommended mitigation measures is low, which is considered to be acceptable from an ecological and freshwater perspective.

#### **Construction Phase Impacts**



<b>Nature:</b> <i>Potential impacts on vegetation and listed and protected plant species.</i>		
Impacts on vegetation will occur due to disturbance and vegetation clearing associated with the construction of the power line. In addition, it is likely that some loss of individuals of protected tree species will occur.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Moderate (6)	Minor (1)
<b>Probability</b>	Definite (5)	Highly Probable (4)
<b>Significance</b>	<b>Medium (55)</b>	<b>Low (24)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Unlikely	Unlikely
<b>Can impacts be mitigated?</b>	Impacts on protected plant species can to some extent be mitigated through avoidance, but, some impact on vegetation and protected plant species is inevitable and cannot be avoided.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» A pre-construction walk-through of the power line route/servitude, within the grid connection corridor, must be undertaken in order to locate species of conservation concern that can be translocated as well as comply with the Northern Cape Nature Conservation Act (Act No. 9 of 2009) of 2009 and DENC/DAFF permit conditions.</li> <li>» Vegetation clearing must only commence after the walk-through has been completed and the necessary permits obtained.</li> <li>» Pre-construction environmental induction for all construction staff on site must be undertaken 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, minimising wildlife interactions, remaining within demarcated construction areas etc.</li> <li>» Environmental Officer (EO) must provide supervision and oversight of vegetation clearing activities near sensitive areas.</li> <li>» Vegetation clearing must be kept to a minimum. No unnecessary vegetation must be cleared. Preferably, <i>Acacia erioloba</i> trees within the power line servitude should be trimmed and not cut down completely.</li> <li>» All construction vehicles must adhere to clearly defined and demarcated roads. No off-road driving must be allowed.</li> <li>» Existing tracks must be used for access wherever possible.</li> <li>» The morphology and hydrology of the riverbeds must not be altered by unnecessary excavations, dumping of soil and other waste.</li> <li>» Rehabilitated areas must be monitored to prevent the infestation of alien vegetation species that may establish.</li> </ul>		
<b>Residual Impacts:</b>		
Some vegetation loss will result from the development, equivalent to the operational footprint of the power line.		

<b>Nature:</b> <i>Disturbance, transformation and loss of habitat will have a negative effect on resident fauna during the construction phase</i>		
Fauna resident species within the corridor will be impacted as a result of the construction activities of the power line. Increased levels of noise, pollution, disturbance and human presence during the construction phase may affect local fauna. Sensitive and shy fauna would move away from the area during the construction phase.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Short-term (2)	Short-term (2)

<b>Magnitude</b>	Low (5)	Low (4)
<b>Probability</b>	Probable (4)	Probable (3)
<b>Significance</b>	<b>Medium (32)</b>	<b>Low (21)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Medium	Medium
<b>Irreplaceable loss of resources?</b>	Unlikely	Unlikely
<b>Can impacts be mitigated?</b>	Noise and disturbance within the grid connection corridor during the construction phase are largely unavoidable.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» All personnel must undergo environmental induction with regards to fauna and, in particular, awareness about not harming or collecting species such as snakes, tortoises and owls, which are often persecuted out of superstition, or the pangolin which is traded illegally.</li> <li>» Any fauna threatened by the construction activities must be removed to safety by an appropriately qualified person.</li> <li>» No construction activity must be allowed in the grid connection corridor between sunset and sunrise.</li> <li>» All construction vehicles must adhere to a low speed limit (30km/h) to avoid collisions with susceptible species such as snakes and tortoises.</li> <li>» All hazardous materials must be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site must be cleaned up in the appropriate manner as related to the nature of the spill.</li> </ul>		
<b>Residual Impacts:</b>		
There will be minimal residual impact as the power line will have a low operational impact on fauna after the completion of the construction phase.		

<b>Nature:</b> <u>Loss of riparian systems and alluvial watercourses</u>		
The physical removal of the narrow strips of riparian zones and disturbance of any alluvial watercourses as a result of the construction of the power line infrastructure (i.e. pylons, etc.) and road crossings, as well as being replaced by hard and engineered surfaces during the construction phase. This biological impact would however be localised as a large portion of the remaining catchment would remain intact.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Minor (2)	Small (0)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Low (21)</b>	<b>Low (15)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Medium	Medium
<b>Irreplaceable loss of resources?</b>	Unlikely	Unlikely
<b>Can impacts be mitigated?</b>	Impacts on riparian vegetation can be avoided by excluding these areas from the development footprint and crossing the Ga-Mogara River where there are no woody riparian habitats present within the grid connection corridor. Significant impacts on the water resource can be significantly reduced by spanning the river without the placement of any pylon structures within the watercourse itself.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» No pylon must be placed within the delineated watercourses and the riparian habitat; however, the pylon may span these features.</li> <li>» Use as far as possible the existing roads/tracks in the area.</li> </ul>		

- » Where water crossings are required, the engineering team must provide effective means to minimise the potential upstream and downstream effects of sedimentation and erosion (erosion protection) as well as minimise the loss of the riparian vegetation.
- » No vehicles must be allowed to refuel within the watercourse/riparian vegetation.
- » With micro adjustments of the pylon positions, it is possible to place pylons outside of the riparian zones.
- » All depression wetlands must be excluded from the development footprint and should be regarded as no-go areas.

**Residual Impacts:**

Possible impact on the remaining catchment due to the changes in run-off characteristics within the corridor.

**Nature:** *Impacts on localised surface water quality*

During the pre-construction, construction and to a limited extent the operation phase, chemical pollutants associated with site clearing equipment and machinery could be washed downslope via the ephemeral system in the area.

	Without mitigation	With mitigation
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Short-term (2)	Short-term (2)
<b>Magnitude</b>	Moderate (6)	Minor (2)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (10)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	High	High
<b>Irreplaceable loss of resources?</b>	Medium	Low
<b>Can impacts be mitigated?</b>	Yes, to a large extent.	

**Mitigation:**

- » Use only the existing service roads when crossing any watercourses.
- » Any erosion problems observed to be associated with the project infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.
- » All bare areas, as a result of the development, must be re-vegetated with locally occurring species, to bind the soil and limit erosion potential.
- » Silt traps must be used where there is a danger of topsoil or material stockpiles eroding and entering streams and other sensitive areas.
- » Topsoil must be removed and stored separately and must be re-applied where appropriate as soon as possible, to encourage and facilitate the rapid regeneration of the natural vegetation on cleared areas.
- » Where practical, phased development and vegetation clearing must be applied so that cleared areas are not left un-vegetated and vulnerable to erosion for extended periods.
- » Undertake construction of gabions and other stabilisation features to prevent erosion if deemed necessary.
- » There must be reduced activity within the corridor after large rainfall events when the soils are wet. No driving on hardened roads must occur immediately following large rainfall events until soils have dried out and the risk of bogging down has decreased.
- » All chemicals and lubricants (i.e. oil and other lubricants, etc.) should be stored in bunded areas.
- » Drip trays should be placed underneath machinery during maintenance and when machinery is parked.
- » Spill kits should be made available at all construction areas and at the main Contractor's Camp.
- » The re-fuelling and maintenance of equipment and machinery within any of the watercourses is not permitted.

**Residual Impacts:**

Due to the extent and nature of the development, altered streambed morphology, as a residual impact, is unlikely to occur.

<b>Nature:</b> <u>Increase in sedimentation and erosion within the corridor.</u>		
This may alter the local watercourse morphology and influence water quality downstream.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Short-term (1)
<b>Magnitude</b>	Low (2)	Small (0)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Low (21)</b>	<b>Low (4)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	High	High
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes, to a large extent.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Use only the existing service roads when crossing any watercourses.</li> <li>» Any erosion problems observed to be associated with the project infrastructure must be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.</li> <li>» All bare areas, as a result of the development, must be re-vegetated with locally occurring species, to bind the soil and limit erosion potential.</li> <li>» Silt traps must be used where there is a danger of topsoil or material stockpiles eroding and entering streams and other sensitive areas.</li> <li>» Topsoil must be removed and stored separately and must be re-applied where appropriate as soon as possible, to encourage and facilitate the rapid regeneration of the natural vegetation on cleared areas.</li> <li>» Where practical, phased development and vegetation clearing must be applied so that cleared areas are not left un-vegetated and vulnerable to erosion for extended periods.</li> <li>» Undertake the construction of gabions and other stabilisation features to prevent erosion if deemed necessary.</li> <li>» There must be reduced activity at the site after large rainfall events when the soils are wet. No driving off of hardened roads must occur immediately following large rainfall events until soils have dried out and the risk of bogging down has decreased.</li> </ul>		
<b>Residual Impacts:</b>		
Due to the extent and nature of the development, residual impacts are unlikely to occur, however, where infrastructure is to be directly placed within the watercourses, an altered streambed morphology is likely to occur. this residual impact is unlikely to occur.		

## Operation Phase

<b>Nature:</b> <u>Increase in sedimentation and erosion within the development footprint of the power line extending throughout the operation phase.</u>		
The undertaking of maintenance activities for the power line may have an impact on sedimentation and erosion.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (2)	Low (2)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Low (21)</b>	<b>Low (14)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	High	High
<b>Irreplaceable loss of resources?</b>	No	No

<b>Can impacts be mitigated?</b>	Yes, to a large extent.
<b>Mitigation:</b>	
<ul style="list-style-type: none"> <li>» Use only the existing service roads when crossing any watercourses.</li> <li>» Any erosion problems observed to be associated with the project infrastructure must be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.</li> <li>» Silt traps must be used where there is a danger of topsoil or material stockpiles eroding and entering streams and other sensitive areas.</li> </ul>	
<b>Residual Impacts:</b>	
Due to the extent and nature of the development, residual impact is unlikely to occur.	

<b>Nature:</b> <i>Impact on riparian systems during the operation phase as a result of hard engineered surfaces and the removal of vegetation during the construction phase.</i>		
This impact could lead an increase in surface water run-off and impact on riparian form and function.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Medium (33)</b>	<b>Low (27)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	High	High
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes, to a large extent.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Ensure that existing roads/tracks are used when crossing watercourses.</li> </ul>		
<b>Residual Impacts:</b>		
Due to the extent and nature of the development, residual impact is unlikely to occur.		

### 5.3.4 Implications for Project Implementation

Based on the outcomes of the assessment of impacts associated with the construction of the power line within the assessed grid connection corridor, which already avoids highly sensitive features not suitable for development, the significance of the impacts with the implementation of the recommended mitigation measures is low, which is considered to be acceptable from an ecological and freshwater perspective. No fatal flaws were identified. From the outcomes of the ecological and freshwater impact assessment, it is concluded that the power line and associated infrastructure can be developed with the implementation of the recommended mitigation measures. On-site mitigation is viewed as the most practical and appropriate action and viable options for reducing the overall impact of the project on the sensitive areas as detailed below:

- » The crossing of the power line within the Ga-Mogara River is considered to be acceptable; however, no other infrastructure or construction activities are permitted in this area or within the riparian habitat. Furthermore, no power line pylons/towers are permitted to be constructed within the Ga-Mogara River.

- » The depression wetlands (including the associated riparian habitat) identified within the grid connection corridor and within the surrounding area are associated with a high sensitivity and should be excluded from development.
- » A pre-construction walk-through of the power line servitude must be undertaken to identify species of conservation concern that would be affected and that can be translocated prior to the commencement of the construction phase.
- » Before the construction phase of the project commences, individuals of protected and listed plant species within the servitude that would be affected by the development, must be counted and marked and translocated where deemed necessary by the ecologist conducting the pre-construction walk-through survey. Permits from the relevant national and provincial authorities, i.e. the DAFF and the Northern Cape DENC, must be obtained before the individuals are disturbed. In addition, where protected tree species within the servitude are to be cut, permits should be obtained from DAFF and the DENC.

#### **5.4. Assessment of Impacts on Avifauna**

The construction and operation phase of the power line will have an impact on avifauna in the area. Potential impacts and the associated significance of the impacts are summarised below (refer to **Appendix E** for more details).

##### **5.4.1 Results of the Avifauna Impact Assessment**

Important avian microhabitats play an integral role within the landscape, providing nesting, foraging and reproductive benefits to the local avifauna. In order to ensure that the development does not have a long-term negative impact on the local avifauna, it is important to delineate these avian microhabitats within the grid connection corridor. **Figure 5.4** was generated by integrating avian microhabitats present within the grid connection corridor and field-survey data collected from 4 – 6 April 2020.

The grid connection corridor supports six (6) main avifaunal microhabitats, i.e. open tree savanna, shrubland savanna, ridges and outcrops, non-perennial watercourses, small depression wetlands and artificial landscapes. These microhabitats have marginally different sensitivities as a result of the subtle differences in the avifaunal assemblages that they support. As a result, these microhabitats have been classified as low, medium and high are described below.

The microhabitat associated with the open tree and shrubland savanna is associated with a low sensitivity from an avifauna perspective, apart from the taller woodland component which comprises of *Vachellia karroo* and *Vachellia erioloba* tree species which are regarded to be of a medium sensitivity. Apart from the unique patches of the tall woodland component, these microhabitats are associated with homogenous vegetation that have a wide and extensive distribution outside the grid connection corridor. The encroachment of the *S. mellifera* species within these microhabitats contributes to the low diversity of avian species present, as this has led to some of the lark species moving out of the densely vegetated area. The larger *S. mellifera* species provide protective nesting areas for some of the smaller bird species such as the Black-chested Prinia and the Pirit Batis. In addition, three (3) red data-listed species have been confirmed within these microhabitats and include the Kori Bustard, Martial Eagle and the White-backed Vulture.

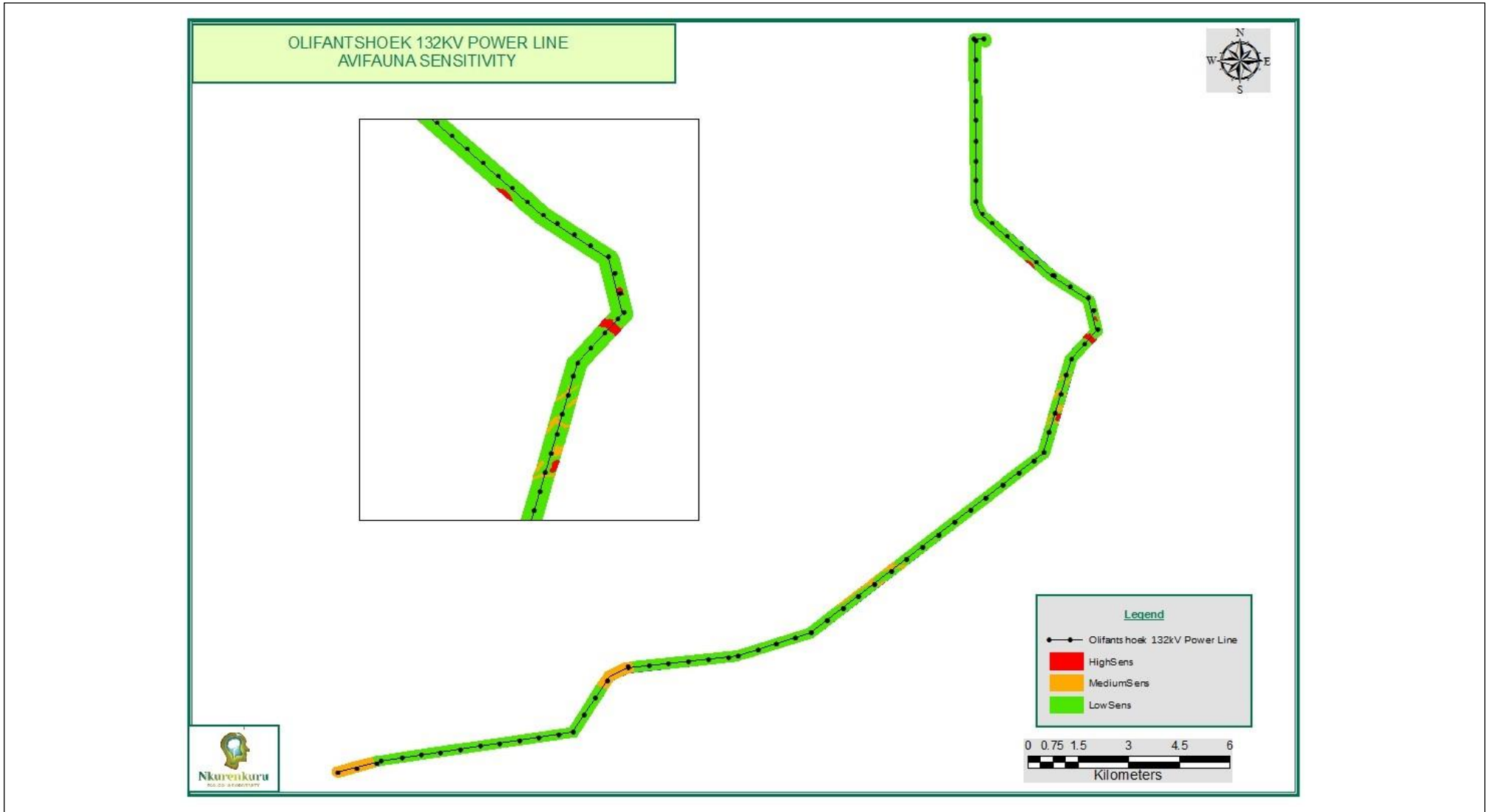
The ridges and outcrops microhabitat is associated with a dense vegetation of *Vachellia erioloba* species and is located approximately 1.5km north of the N14 national road. The microhabitat is associated with a

medium sensitivity due to the movement of red data-listed species identified in the area such as the Martial Eagle, Cape Vulture and the Kori Bustard. Both the Cape Vulture and the Martial Eagle were recorded and found perching within this area on the existing Ferrum-Lewensaar 275kV Power Line.

The southern portion of the grid connection corridor is largely occupied by the artificial landscape microhabitat and comprises of the existing power line infrastructure in the area and the Olifantshoek Sewage Works. This microhabitat is classified as a medium sensitivity due to its proximity to the grid connection corridor at a distance of approximately 500m. The microhabitat provides a permanent water body which has been inhabited by various waterfowl and wader species. These species likely migrate between a dam, located to southern section of the town of Olifantshoek, and the sewage works.

The non-perennial watercourses microhabitat includes the Ga-Mogara River and the associated riparian vegetation, as well as the depression wetlands and their riparian peripheries. This microhabitat is classified as high sensitivity, due to the function of the ephemeral system (i.e. Ga-Mogara River, etc.) being an important corridor for the movement of avifauna species. In addition, the riparian vegetation and/or the tree fringe of the Ga-Mogara River and the depression wetlands are associated with a diverse assemblage of avifauna species of which numerous are dependent on this microhabitat for nesting and feeding. Furthermore, the depression wetlands function as an important source of water and food (in the form of protozoans and small branchiopods which become active during rainfall events). As a result, this microhabitat must be regarded as a no-go area for development, however, the spanning of the power line across the Ga-Mogara River channel remains acceptable (subject to no tower/pylon infrastructure being placed within the feature).

From the above, it can be concluded that the development of the Olifantshoek 132kV Power Line will mainly occur within an area associated with a low avifauna sensitivity, with portions of the grid connection corridor traversing small areas of medium and high sensitivity (refer to **Figure 5.4**).



**Figure 5.4:** A map illustrating the avifaunal sensitivity of the grid connection corridor assessed for the development of the Olifantshoek 132kV Power Line



### 5.4.2 Description of Avifaunal Impacts

Negative avifauna impacts anticipated to occur with the development of the Olifantshoek 132kV Power Line include habitat destruction, disturbance during the construction and operation phases as a result of intrusion-related impacts to the area and the electrocution and collisions of avifauna with the power line infrastructure.

#### Habitat Destruction and Transformation

During the construction phase, some habitat destruction and alteration will occur, however the destruction will be limited to tower footprints and areas of new road development. The construction-related activities will have a negligible impact on foraging, breeding and roosting avifauna species within the grid connection corridor and the surrounding area due to limited extent of the pylon/tower footprint and the power line servitude. In addition, it is anticipated that only red data-listed species may be potentially displaced from the area as a result of the activities and habitat transformation; however, the displacement will be restricted to the area and the impact will be localised.

#### Disturbance during the construction and operation phases

Disturbance (including human presence and movement during the operation phase for the undertaking of maintenance activities on the power line) will have a negative impact on resident avifauna during the construction phase. Species sensitive to disturbance include ground-nesting avifauna species within the grid connection corridor. Disturbance within the corridor may also have an influence on the community structure of the avifauna within close proximity to the corridor as certain species will be displaced as a result of the development and forced into certain territories. Avifauna species occurring within the grid connection corridor and likely to be affected include the Kori Bustard and other small non-red data avifauna species.

#### Electrocution of birds due to the overhead power line and collisions

Electrocution of birds on power line infrastructure is an important cause of mortality for a variety of large bird species, particularly storks, cranes and raptors in South Africa (Van Rooyen & Ledger, 1999). Collisions are the biggest single threat posed by transmission power lines to birds in Southern Africa (van Rooyen, 2004). Avifauna species most susceptible and impacted upon are bustards, storks and cranes. The potential of collisions within the grid connection corridor by certain species such as the Kori bustard and Secretary bird are possible. This is true for the bustards which have a low manoeuvrability once in flight.

### 5.4.3 Impact tables summarising the significance of impacts on avifauna during construction (including decommissioning) and operation phases (with and without mitigation)

#### Construction Phase Impacts

<b>Nature:</b> <u>Habitat destruction and alteration</u>		
During the construction phase of the power line, some habitat destruction and alteration will occur, although it will be limited.		
	<b>Without mitigation</b>	<b>With mitigation</b>

<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (3)	Minor (2)
<b>Probability</b>	Definite (5)	Probable (3)
<b>Significance</b>	<b>Medium (40)</b>	<b>Low (21)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	Only very slight loss of resources.	Only very slight loss of resources.
<b>Can impacts be mitigated?</b>	Yes, impacts are limited to the construction phase.	

**Mitigation:**

- » Consolidate infrastructure to areas where existing impacts occur (e.g. placing the proposed power line alongside existing power lines and roads)
- » The patches of the tall riparian woody component associated with the Ga-Mogara River must be regarded as a no-go area for development.
- » The footprint of the development must be kept to a minimum by only clearing vegetation from areas within the corridor that will be required for development.
- » The boundaries of the pylon/tower footprints are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area.
- » Open fires are strictly prohibited and only allowed at designated areas.
- » Provide adequate briefing for site personnel on the possible important (Red Data) species occurring and/or nesting in the area and the procedures to be followed in this regard (for example notification of ECO and avoidance of area until appropriate recommendations have been provided by a specialist).
- » The above measures must be covered in a site specific EMP and monitored by an EO.

**Residual Impacts:**

Some residual habitat loss will result from the development, due to the presence of the access road which will also be required during the operation phase of the project, as well as trees and/or shrubs that may be cut or trimmed for safety purposes.

**Nature:** Disturbance during construction

Disturbance impacts will have a negative effect on resident avifauna during the construction phase. Species sensitive to disturbance include ground-nesting species within the grid connection corridor. Species of concern to be affected by this impact include the Kori Bustard and other small avifauna species which are present within the grid connection corridor.

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Short-term (2)	Short-term (2)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Highly Probable (4)	Probable (3)
<b>Significance</b>	<b>Low (28)</b>	<b>Low (21)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	High	Medium
<b>Irreplaceable loss of resources?</b>	Only very slight loss of resources.	Only very slight loss of resources.
<b>Can impacts be mitigated?</b>	Yes, impacts can be mitigated to a large extent. Noise and disturbance at the site during construction are largely unavoidable but only limited to the construction period (i.e. 6 months).	

**Mitigation:**

- » Strict control must be maintained over all activities during construction, in line with an approved construction Environmental Management Programme (EMPr).
- » During construction, if any of the Red Data species identified in the BA Report and the Avifauna Impact Assessment (included in the BA Report as **Appendix E**) are observed to be roosting and/or breeding in the vicinity, the Environmental Control Officer (ECO) must be notified and where deemed necessary an appropriate buffer should be placed around the nests and/or roosting areas. If uncertain on the size of such buffer the Environmental Officer (EO) must contact an avifaunal specialist for advice.
- » The construction equipment camps must be as close to the site as possible and must be located within disturbed areas as far as possible.
- » Contractors and working staff must remain within the development footprint and movement outside these areas especially into avian micro-habitats must be restricted.
- » Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the construction phase.
- » Breeding, egg laying and incubation occur typically between October and February for the Kori bustard and most of the sensitive ground-nesting avifaunal species. During these months, disturbances within natural and near-natural habitats should be limited as far as possible.

**Residual Impacts:**

There will be minimal residual impact as the power line will have low operational impacts on avifauna, after the construction phase.

**Operation Phase Impacts**

**Nature:** *Disturbance during maintenance*

Disturbance during the operation phase (movement and maintenance within and along the power line servitude) may have an impact on resident avifauna. Disturbance could have a negative impact on the breeding activities of various species, particularly if it occurs during the sensitive period of the breeding cycle. Species of concern, likely to be affected include the Kori Bustard and other small avifauna species in the area.

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Short-term (1)	Very Short-term (1)
<b>Magnitude</b>	Minor (3)	Small (1)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Low (15)</b>	<b>Low (6)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	High
<b>Irreplaceable loss of resources?</b>	Only very slight loss of resources	Unlikely
<b>Can impacts be mitigated?</b>	Yes, impacts can be mitigated to a large extent. Noise and disturbance at the site during maintenance operations are largely unavoidable but will only be limited to the maintenance activities being undertaken.	

**Mitigation:**

- » Strict control must be maintained over all activities during maintenance, in line with an approved EMPr.
- » Contractors and working staff must remain within the servitude footprint and movement outside these areas, especially into sensitive avian micro-habitats, must be restricted.
- » Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the maintenance phase.

- » Breeding, egg laying and incubation occur typically between October and February for Kori bustard and most of the sensitive ground nesting avifaunal species. During these months, disturbances within natural and near-natural habitats must be limited as far as possible.
- » Eskom's EO for the region/area must be notified by the Contractors and Technicians working in the area should there be Red Data species be observed to be roosting and/or breeding within the vicinity of the power line.

**Residual Impacts:**

Residual impacts as a result of maintenance activities is unlikely.

**Nature:** Electrocution of birds

Electrocution of birds on associated overhead power line infrastructure is an important cause of mortality for a variety of large bird species, particularly storks, cranes and raptors in South Africa (Van Rooyen & Ledger, 1999). Electrocution refers to the scenario where a bird is perched or attempts to perch on the electrical structure and causes an electrical short circuit by physically bridging the air gap between live components and/or live and earthed components (Van Rooyen, Lehman *et al.*, 2007).. The impact of the proposed development on the electrocution of birds is of a moderate significance prior to the implementation of the recommended mitigation measures and associated with a low significance following the implementation of the recommended mitigation measures, which include the installation of bird diverter diverters.

	Without mitigation	With mitigation
<b>Extent</b>	Regional (3)	Local (2)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Moderate (6)	Minor (2)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (39)</b>	<b>Low (16)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Medium
<b>Irreplaceable loss of resources?</b>	Yes, owing to the potential loss of the critically endangered and endangered bird species. Only very slight loss of resources	Unlikely
<b>Can impacts be mitigated?</b>	Yes, impacts can be mitigated to a large extent. Noise and disturbance at the site during maintenance operations are largely unavoidable but will only be limited to the maintenance activities being undertaken.	

**Mitigation:**

- » Strict control must be maintained over all activities during maintenance, in line with an approved EMPr.
- » Contractors and working staff must remain within the servitude footprint and movement outside these areas, especially into sensitive avian micro-habitats, must be restricted.
- » Driving must take place on existing roads and a speed limit of 30km/h must be implemented on all roads associated with the project during the maintenance phase.
- » Breeding, egg laying and incubation occur typically between October and February for Kori bustard and most of the sensitive ground nesting avifaunal species. During these months, disturbances within natural and near-natural habitats must be limited as far as possible.

**Residual Impacts:**

Residual impacts as a result of maintenance activities is unlikely.

**Nature:** Collision of birds with power line infrastructure

Collisions are the biggest single threat posed by transmission power lines to birds in Southern Africa (van Rooyen, 2004). Avian species most susceptible and impacted upon are bustards, storks and cranes (especially bustards which have been confirmed are at risk within the grid connection corridor and the surrounding area). These species are heavy-bodied birds with limited manoeuvrability (as a result of high wing loading), which makes it difficult for them to take the necessary evasive action to avoid colliding with power lines (van Rooyen, 2004 and Anderson, 2001). Many of the collision sensitive species are considered threatened in Southern Africa.

The Red Data species that are vulnerable to power line collisions are generally long living, slow reproducing species. Furthermore, various species require specific conditions for breeding, resulting in very few successful breeding attempts and breeding might be restricted to very small areas. Consistent high adult mortality over an extensive period could have a serious long-term effect on the population.

Potential collision impacts with the proposed power line by certain species such as Kori Bustard and Secretary bird are possible. This is particularly true for the bustards which have low manoeuvrability once in flight. All three species mentioned have been recorded within the top ten avian species in South Africa prone to collisions with overhead power lines.

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Regional (3)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Highly Probable (4)	Probable (3)
<b>Significance</b>	<b>Medium (52)</b>	<b>Low (27)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low (birds will be injured or killed)	Low (birds will be injured or killed)
<b>Irreplaceable loss of resources?</b>	Medium	Low
<b>Can impacts be mitigated?</b>	Yes, to a large extent.	

**Mitigation:**

- » Construction of the power line in close proximity to the existing lines will reduce the cumulative impacts and collision risk.
- » All relevant perching surfaces must be fitted with bird guards and perch guards as deterrents (Hunting, 2002).
- » Mark sections of line in high sensitivity areas with anti-collision marking devices (diurnal and nocturnal diverters) to increase the visibility of the power line and reduce likelihood of collisions. Marking devices should be spaced 10m apart.
- » These line marking devices include spiral vibration dampers, strips, Bird Flight Diverters, bird flappers, aerial marker spheres, ribbons, tapes, flags and aviation balls (Prinsen et al., 2012).
- » It is proposed that sections of the line in close proximity to rivers, wetlands and dams (including evaporation ponds of the local sewage works) be fitted with "Double Loop Bird Flight Diverters" (BFDs). This includes the section of line spanning the Ga-Mogara River.
- » The risk of collision is particularly high where the proposed servitude traverse across corridors for avifaunal movement between dams, wetlands and other water bodies that are generally within 300m of the power line. Such a corridor for movement is likely present between the Olifantshoek dam to the south-west and the evaporation ponds of the towns' sewage works to the north-east and anti-collision marking devices should be installed along the line section that falls within the flight corridor.
- » The power line should, as far as possible, be placed parallel to existing power lines or other linear infrastructure such as roads, as this will also greatly increase the visibility of the overhead cables.

**Residual Impacts:**

Residual impacts as a result of maintenance activities is unlikely.

**5.4.4 Implications for Project Implementation**

With the implementation of mitigation measures by the proponent, the significance of the impacts associated with the development of the Olifantshoek 132kV Power Line will be low. From the outcomes of the avifauna impact assessment, it is concluded that the power line can be developed and impacts on avifauna can be managed by taking the following into consideration:

- » The patches of the tall riparian woody component associated with the Ga-Mogara River must be regarded as a no-go area for development.
- » The depression wetlands and their associated woody peripheries must be regarded as no-go areas for development.
- » Sections of high sensitivity areas, in the south-west from the Olifantshoek Sewage Works and to the north-east within the grid connection corridor should be marked with anti-collision devices (i.e. diurnal and nocturnal diverters) to increase the visibility of the power line and reduce the likelihood of collisions. The marking devices should be spaced 10m apart.
- » The section of the Ga-Mogara River to be spanned by the power line infrastructure, depression wetlands and the evaporation dams at the Olifantshoek Sewage Works should be fitted with 'Double Loop Bird Diverters'.
- » The power line infrastructure (i.e. pylons/towers and access road, etc.) should as far as possible be placed parallel to existing power lines as this will greatly increase the visibility of the overhead cables in the area.
- » The placement of the access road next to the microhabitats should be done with care, so as not to disrupt the natural movement of avifauna, especially near freshwater features.
- » All construction vehicles accessing the site must adhere to a low speed limit of 30km/h to avoid collisions with susceptible species such as nocturnal and crepuscular species (e.g. night jars, thick-knees and owls) which sometimes forage or rest along roads.

## **5.5 Assessment of Impacts on Heritage, including Archaeology and Palaeontological Resources**

The construction and operation phase of the power line will have an impact on archaeological and palaeontological resources in the area. The potential impacts and the relative significance are summarised below (refer to **Appendix F** for more details).

### **5.5.1 Results of the Heritage Impact Assessment**

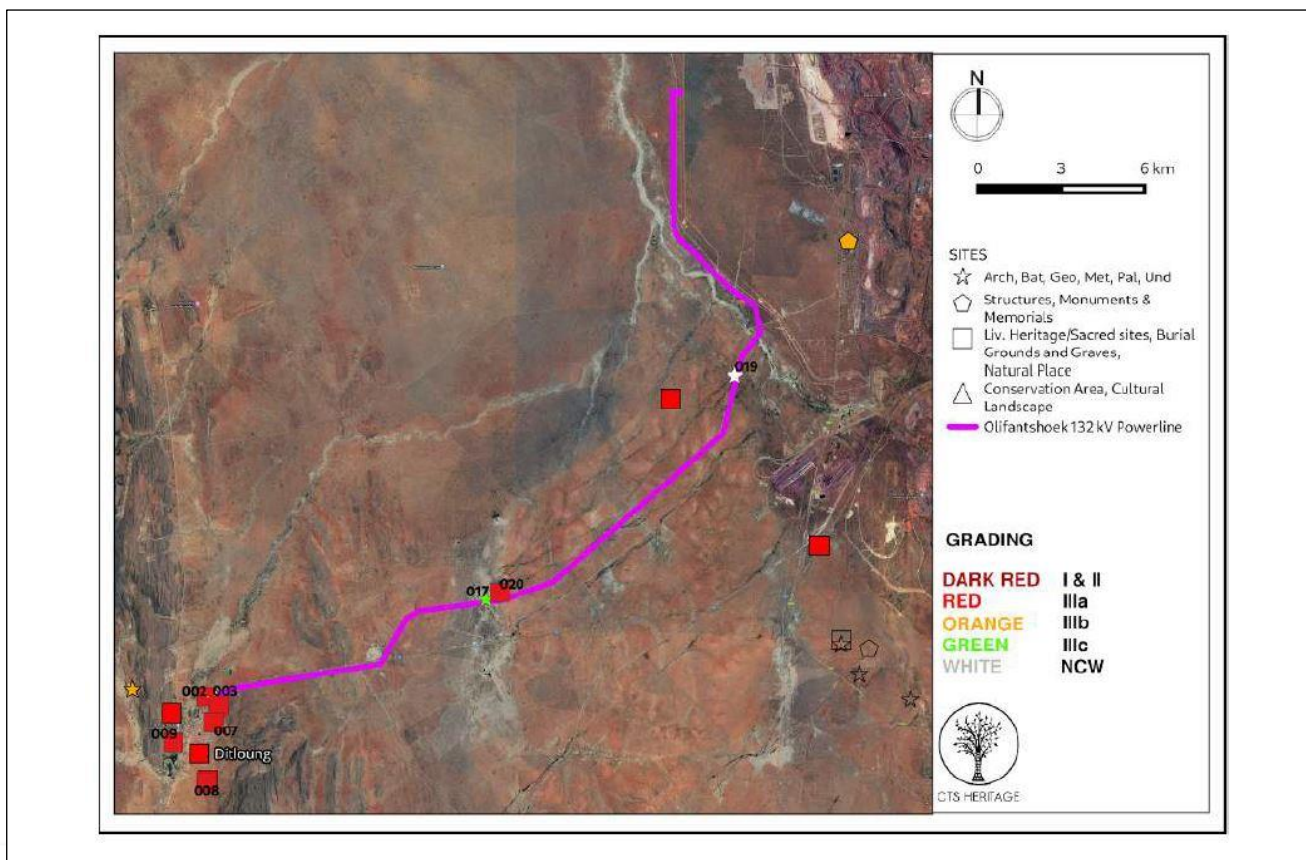
The grid connection corridor is located is mainly underlain by the Kalahari Group sands, calcretes as well the volcanic rocks of the Ongeluk Formation. The grid connection corridor also traverses small exposures of the Voëlwater, Lucknow formation and the Hartley Formation volcanic rocks. Based on the geology of the grid connection corridor as well as the surrounding area, the anticipated impact on palaeontological resources as a result of the proposed development is likely to be low to moderate, however, the north-eastern section of the grid connection corridor which traverses the Kalahari Group deposits, may have a high impact due to the close proximity to the Kathu Pan deposits.

The presence of volcanic rocks in the area, within the Hotazel and Hartley formations make it unlikely that they could preserve fossils. However, the Moidraai Formation of the Voëlwater Subgroup could preserve stromatolites and dolostones could be preserved within the Lucknow Formation. The Kalahari Group has a sparse and poorly diverse fossil record, however, the close proximity of the grid connection to the Kathu Pan deposits, approximately 11km from the north-east terminal point of the grid connection corridor, as well as the fact that the grid connection corridor traverses the same geological formations as the Kathu Pan, which

makes it a possibility for faunal assemblages to be present. For the remainder of the grid connection corridor, there is little opportunity for chance of fossil finds, therefore, should any fossils be identified, particularly from the stromatolitic Moodraai and Lucknow formations, these should be reported to the South African Heritage Resources Agency (SAHRA) by the proponent. Furthermore, should other fossil finds be found during the project life cycle, the recommendations of the Fossil Finds Procedure/protocol should be implemented.

During the archaeological field assessment, very few archaeological resources of significance were identified. This was considered to be unusual given the proximity of the grid connection corridor to the Kathu Pan. Only one Late Stone Age (LSA) artefact was identified; however, it was without context and has been regarded not to be conservation-worthy. Furthermore, a collapsed stone wall was identified, which is also considered to have a low significance and is regarded not to be conservation-worthy.

A site indicating historical occupation and use was identified on the Remaining Extent of the Farm Murray 570 and the cultural material associated with the site can be dated back to 1890 – 1910 and later. However, this site has been disturbed through erosion and is considered to be of low significance. Two (2) sets of unmarked graves (Figure 5.5 and 5.6) were identified within the grid connection corridor. Given the fact that human remains are associated with a high social significance, these sites should be avoided by the proposed development. Archaeological finds from the Kathu Pan sinkholes are associated with banded ironstone, therefore, a scoping study is recommended prior to the commencement of construction activities in order to confirm the absence of Kathu Pan-like deposits within the grid connection corridor.



**Figure 5.5:** A map showing the location of the heritage finds identified within the grid connection corridor of the Olifantshoek 132kV Power Line and the surrounding area.



**Figure 5.6:** Photographs illustrating one of the unmarked graves and the collapsed stone wall present within the grid connection corridor.

### 5.5.2 Description of Heritage Impacts, including Archaeology and Palaeontology

The impacts identified for archaeological and palaeontological resources associated with the proposed development area only for the construction (including decommissioning phase). The development of the Olifantshoek 132kV Power Line will not have a negative impact on significant heritage resources identified within the vicinity of the grid connection corridor and the surrounding area. Two (2) sites consisting of unmarked human graves were identified within the corridor and a 50m no-go area buffer should be implemented by the proponent around these sites. In general, the proposed development will have a low significance on archaeological and palaeontological resources following the implementation of the recommended mitigation measures.

The impact of the development to palaeontological resources will also be low subject to the implementation of the recommended mitigation measures. There is however an opportunity for fossils to be found within the Moidraai and the Lucknow formations and the Kalahari Group (particularly in the north-eastern section of the grid connection corridor) which is adjacent to the Kathu Pan deposits that contain fossil faunal assemblages. Therefore, a Chance Fossil Finds Procedure/Protocol has been included as **Appendix D** in the Environmental Management Programme.

### 5.5.3 Impact table summarising the significance of the impacts on heritage, including archaeological and palaeontological resources, during the construction phase (with and without mitigation)

#### Construction Impacts

<b>Nature:</b> <i>Impact of the proposed Olifantshoek 132kV Power Line on archaeological and cultural heritage resources.</i>		
No archaeological resources of significance were identified during the field assessment for archaeology within the grid connection corridor; however, two (2) unmarked graves were identified within the corridor and a 50m buffer (no-go) should be implemented around these sites.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)



<b>Duration</b>	Long-term (5)	Long-term (5)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (20)</b>
<b>Status (positive or negative)</b>	Neutral with mitigation	
<b>Reversibility</b>	Any impacts to archaeological and cultural heritage resources that do occur area irreversible.	
<b>Irreplaceable loss of resources?</b>	Unlikely with mitigation	
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
» A 50m 'No-Go' buffer should be established around the sites NL002 and MRR002, and these site areas clearly marked as 'No-Go' areas on all the project maps.		
<b>Residual Impacts:</b>		
Should any significant resources be impacted (however unlikely) residual impacts may occur, including a negative impact due to the loss of potentially scientific heritage resources.		

<b>Nature:</b> <u>Impact of the proposed Olifantshoek 132kV Power Line on palaeontological resources.</u>		
No palaeontological resources of a high significance were identified during the desktop-based survey of the palaeontology for the proposed development. Based on the palaeontological sensitivity of the bedrocks (i.e. Hartley and Lucknow formations and superficial sediments within the vicinity of the majority of the grid connection corridor is rated as low to very low; therefore, this impact would be very unlikely. However, the north-east section of the corridor traverses the Kalahari Group, which has a high sensitivity given the proximity of the Kathu Pan deposits from this area.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (5)	Long-term (5)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (20)</b>
<b>Status (positive or negative)</b>	Neutral with mitigation	
<b>Reversibility</b>	Any impacts to palaeontological resources that do occur are irreversible.	
<b>Irreplaceable loss of resources?</b>	Unlikely with mitigation	
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
» A field-based scoping study should be undertaken on the surface limestones of the Molkanen Formation before the commencement of excavations in order to confirm the absence of Kathu Pan-like deposits that may contain Pleistocene fossil faunal assemblages.		
» Should fossils be identified during the project life cycle, the recommendations of the Fossils Chance Find Procedure/Protocol should be implemented.		
<b>Residual Impacts:</b>		
Should any significant resources be impacted (however unlikely) residual impacts may occur, including a negative impact due to the loss of potentially scientific palaeontological resources.		

#### 5.5.4 Implications on Project Implementation

The development of the Olifantshoek 132kV Power Line will not have a negative impact on the heritage, including archaeological and palaeontological resources, located within the grid connection corridor and

the surrounding area subject to the implementation of the recommended mitigation measures. The significance of the negative impacts on heritage and palaeontological resources expected within the grid connection corridor have been assessed as low, following the implementation of the recommended mitigation measures and due to the identification of very few archaeological resources. From the outcomes of the heritage impact assessment, it is concluded that the power line can be developed and impacts on archaeological and palaeontological resources can be managed by taking the following into consideration:

- » The implementation of a 50m buffer around the grave sites NLN002 and MRR002. These sites should be excluded from development.
- » The surface limestones of the Molkanen Formation must be inspected before any excavations take place in order to confirm the absence of the Kathu Pan-like deposits that may contain Pleistocene fossil faunal assemblages.
- » Should any human remains or evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragment, charcoal and ash concentrations), fossils or other categories of heritage resources be discovered within the grid connection corridor, work on the project must cease and the SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be contacted to determine a way forward.

## **5.6. Assessment of Visual Impacts**

Negative impacts on visual receptors will occur during the undertaking of construction activities and the operation of the Olifantshoek 132kV Power Line. Potential impacts and the relative significance of the impacts are summarised below (refer to **Appendix G** for more details).

### **5.6.1 Results of the Visual Impact Assessment**

The Zone of Theoretical Visibility (ZTV) for the proposed development has shown that the power line is unlikely to be visible/obvious at a distance greater 3km. The ZTV indicates that the power line will be visible within the Lowland Landscape Character Area (LCA) and within the Upland LCA. However, the topography associated with this area will help screen the views of the power line infrastructure. There are approximately 23 homesteads that are located within the Lowland LCA, and adjacent to the grid connection corridor, which will have views of the power line.

The existing Ferrum-Niewehoop 400kV overhead power line crosses the N14 approximately 6.5km to the east of the town of Olifantshoek. The proposed grid connection corridor crosses the N14 immediately to the east of this existing line, therefore due to the visual mass and height of the Ferrum-Niewehoop 400kV power line, it has a visual influence over a larger area and will therefore not extend the impact footprint of the road crossing for the proposed power line. To the east of the crossing, at a distance of the approximately 1.4km, the closest to the N14, the power line is likely to be visible but not highly obvious. To the west of the road crossing, the grid connection corridor follows the southern section of the N14, and the corridor is set back approximately 120m from the road edge. In addition, there is also a significant amount of dense vegetation adjacent to the road and is largely above a driver's eye height. Apart from the occasional rise in the road, where an overview of the landscape is possible, the proposed Olifantshoek 132kV Power Line is likely to be largely screened from motorists by the vegetation.

Due to the grid connection corridor being located to the eastern edge of the town of Olifantshoek, and due to the presence of dense vegetation in this area, the proposed Olifantshoek 132kV Power Line is unlikely to have impact on the town. However, there is a small informal settlement located on the eastern side of the town, but the authorised Olifantshoek Substation will be located between this informal settlement and the proposed power line. As a result, the views of the power line are unlikely to be visible from the informal settlement. This is further substantiated by the fact that the grid connection corridor terminates approximately 1km away from any informal or formal housing, therefore, taking into account the distance and the presence of dense vegetation in the area, the views of the power line are unlikely to be visible.

The Olifantshoek 132kV Power Line is anticipated to have a low impact on the existing residential areas in the vicinity of the grid connection corridor and the already authorised Olifantshoek Substation due to this area being impacted by the presence of the existing 400kV power line as well as other grid connection infrastructure in the area.

### 5.6.2 Description of the Visual Impacts

The visual impact assessment of the grid connection corridor takes into consider the large-scale ongoing open cast mining activities associated with the Khumani and Sishen Iron Ore mines. The visual impacts identified and associated with the proposed development include the following:

- » Impact on the general landscape character.
- » The visibility of the proposed power line to and visual impact on rural homesteads.
- » The visibility of the proposed power line to and visual impact on the N14.
- » The visibility of the proposed power line to and visual impact on urban settlement areas.

### 5.6.3 Impact tables summarising the significance of the impacts on sensitive visual receptors

#### Construction (including decommissioning), Operation and Decommissioning Phases

<b>Nature:</b> <u>Impact of the proposed development on the general landscape character</u>		
Degradation of the character of the existing landscape. This is particularly relevant to existing natural areas (Lowland and Upland LCAs) where there is a possibility that the development could introduce industrial components.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Immediate surroundings (2)	Immediate surroundings (2)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (4)	Minor (2)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (16)</b>
<b>Status (positive or negative)</b>	The character of the rural landscape around a small number of rural landscape will be changed. It is likely that the influence of industrial elements will not be highly obvious to the majority of people. It is likely that the majority of people will not consider the sight of a small	Negative

	overhead power line as a negative impact.	
<b>Irreplaceable loss of resources?</b>	No irreplaceable loss.	No irreplaceable loss.
<b>Can impacts be mitigated?</b>	Yes, impacts can be mitigated.	
<b>Mitigation:</b> » » Ensure that vegetation is not unnecessarily removed during the construction period. » Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed of regularly at appropriately licensed waste facilities. » Reduce the construction period as far as possible through careful logistical planning and productive implementation of resources. » Align power line as far from the N14 as possible within the identified corridor particularly to the west of the proposed N14 road crossing. » Align power line as far from homesteads as possible within the identified corridor.		
<b>Residual Risks:</b> Lack of rehabilitation on decommissioning is likely to result in degraded areas.		

<b>Nature:</b> <u>The visibility of the power line and visual impact on the rural homesteads.</u>		
Numerous homesteads are located within the grid connection corridor. The majority are at a sufficient distance from the grid connection corridor and either have mature trees within and around their vicinity, therefore, they will largely be screened from the view of the power line.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Immediate surroundings (2)	Immediate surroundings (2)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (4)	Minor to Low (3)
<b>Probability</b>	Highly Probable (4)	Probable (3)
<b>Significance</b>	<b>Medium (40)</b>	<b>Low (27)</b>
<b>Status (positive or negative)</b>	The character of the rural landscape around a small number of rural homesteads will be changed. It is likely that some people will not consider the sight of an additional overhead power line in the context of existing lines as a negative intrusion. The closer that the power line is to a homestead however, the more likely that it will be considered as a negative intrusion.	Negative
<b>Reversibility</b>	High	High
<b>Irreplaceable loss of resources?</b>	No irreplaceable loss.	No irreplaceable loss.
<b>Can impacts be mitigated?</b>	Yes, impacts can be mitigated.	
<b>Mitigation:</b> » Plan the placement of the construction equipment camp in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever possible. » Ensure that vegetation is not unnecessarily removed during the construction, operation or maintenance period.		

- » Restrict the activities and movement of workers and vehicles during construction and operation of the site and existing access roads.
- » Ensure that rubble, litter, and maintenance materials are removed once construction and maintenance activities are complete and discarded at appropriately licensed waste facilities.
- » Rehabilitate all disturbed areas immediately after the completion of construction works.
- » Maintain the general natural appearance of the power line servitude as a whole.
- » Rehabilitated areas must be monitored to prevent the infestation of alien vegetation species that may establish.
- » Align the power line within the identified corridor as far from homesteads as possible.

**Residual Risks:**

Lack of rehabilitation on decommissioning is likely to result in degraded areas.

**Nature:** The visibility of the power line and the visual impact on the N14

Only the southernmost portion of the proposed power line will impact on the N14 as it will cross the road and run close to and parallel with it for approximately 6 - 7km. As the N14 road crossing is in the vicinity of an existing 400kV power line road crossing, this element is unlikely to create significant additional impact.

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Immediate surroundings, (2)	Immediate surroundings (2)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Moderate (6)	Minor to low (3)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Medium (36)</b>	<b>Low (27)</b>
<b>Status</b>	Neutral to negative, the character of the rural landscape adjacent to the affected section of the N14 will be modified. It is likely that the majority of people will not consider the sight of an additional overhead power line close to the road as a negative intrusion.	Neutral to negative
<b>Reversibility</b>	High	High
<b>Irreplaceable loss</b>	No irreplaceable loss	No irreplaceable loss
<b>Can impacts be mitigated?</b>	Yes	

**Mitigation:**

- » Align power line as far from the road as possible within the identified grid connection corridor.
- » Ensure that vegetation is not unnecessarily removed during the operation or maintenance period.
- » Restrict the activities and movement of workers and vehicles during the construction and operation phase (including maintenance) of the site and existing access roads.
- » Ensure that rubble, litter, and maintenance materials are removed once the construction and maintenance activities are complete and discarded at appropriately licensed waste facilities.
- » Rehabilitate all disturbed areas immediately after the completion of construction works.
- » Maintain the general natural appearance of the power line servitude as a whole; and
- » Rehabilitated areas must be monitored to prevent the infestation of alien vegetation species that may establish.

**Residual Risks:**

Lack of rehabilitation on decommissioning is likely to result in degraded areas.

**Nature:** The visibility of the power line and the visual impact on urban residential areas.

<p>Only the southernmost portion of the power line may impact on urban areas. The proposed power line is located some distance away from any residential property. There is significant existing vegetation between the power line and residential structures. The authorised Olifantshoek Substation is also located between the majority of residential structures on the eastern side of Olifantshoek and the proposed power line. It is therefore unlikely that the proposed power line will have any significant visual impact on residential structures.</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Immediate surroundings, (2)	Immediate surroundings (2)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Small to Minor (1)	Small (0)
<b>Probability</b>	Improbable (2)	Very improbable (1)
<b>Significance</b>	<b>Low (14)</b>	<b>Low (6)</b>
<b>Status</b>	Negative. It is likely that the majority of people will consider the sight of electrical infrastructure in close proximity to a residential area as a negative impact.	Neutral
<b>Irreplaceable loss</b>	No irreplaceable loss	No irreplaceable loss
<b>Can impacts be mitigated?</b>	Yes	
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>» Ensure that vegetation is not unnecessarily removed during construction and the operation phase;</li> <li>» Ensure that rubble, litter, and maintenance materials are removed once the construction / maintenance activities are complete and discarded at appropriately licensed waste facilities;</li> <li>» Rehabilitate all disturbed areas immediately after the completion of construction / maintenance works;</li> <li>» Maintain the general natural appearance of the power line servitude; and</li> <li>» Rehabilitated areas must be monitored to prevent the infestation of alien vegetation species that may establish.</li> </ul>		
<p><b>Residual Risks:</b></p> <p>Lack of rehabilitation on decommissioning is likely to result in degraded areas.</p>		

#### 5.6.4 Implications for Project Implementation

Overall, the significance of the visual impacts is expected to be low with mitigation, depending on the impact being considered, as a result of the generally undeveloped character of the landscape as well as the presence of existing similar developments that are visible in the area. The following mitigation is possible:

- » Plan the placement of the construction equipment camp in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever possible.
- » Maintain the general appearance of the infrastructure.
- » Remove infrastructure not required for the post-decommissioning use.
- » Rehabilitate all affected areas.

## 5.7. Assessment of Social Impacts

Impacts on the social environment are expected during both the construction and operation phases. Potential social impacts and the relative significance of the impacts associated with the development of the Olifantshoek 132KV Power Line are summarised below (refer to **Appendix H**).

### 5.7.1 Results of the Social Impact Assessment

The majority of social impacts associated with the project are anticipated to occur during the construction phase of the development and are typical of the type of social impacts generally associated with construction activities. These impacts will be temporary and short-term (~6 months) but could have long-term effects on the surrounding social environment if not planned or managed appropriately. It is therefore necessary that the detailed design phase be conducted in such a manner so as not to result in permanent social impacts associated with the ill-placement of project components or associated infrastructure or result in the mis-management of the construction phase activities.

It is anticipated that the Olifantshoek 132kV Power Line will operate for approximately 50 years. While the grid connection infrastructure will be largely self-sufficient, monitoring and periodic maintenance activities will be required during the operation phase. It must be noted that the ownership of the grid connection infrastructure will be transferred to Eskom following completion of construction, who will be responsible for the operation and maintenance of the infrastructure.

### 5.7.2 Description of the Social Impacts

The positive and negative social impacts identified and assessed for the construction phase includes:

- » Direct and indirect employment opportunities
- » Economic multiplier effects
- » Influx of jobseekers and change in population
- » Safety and security impacts
- » Impacts on daily living and movement patterns
- » Nuisance impacts, including noise and dust
- » Visual impacts and sense of place impacts

The potential positive and negative social impacts that could arise as a result of the operation of the proposed project include the following:

- » Direct and indirect employment opportunities
- » Visual impact and sense of place impacts
- » Impacts associated with the loss of agricultural land

### 5.7.3 Impact tables summarising the significance of the social impacts

#### Construction Phase

**Nature:** *The creation of direct and indirect employment opportunities during the construction phase of the project.*

It is anticipated that development of the grid connection infrastructure will result in the creation of approximately 10 employment opportunities unskilled positions. Employment opportunities generated as a result of the project will be temporary in nature and will last for the duration of the construction period (i.e. ~6 months). The general labour force will, as far as possible and where skills are available, be sourced from the local labour pool. Where relevant skills are unavailable from the local labour pool, these would need to be sought elsewhere. The injection of income into the area, albeit limited, in the form of wages will represent an opportunity for the local economy and businesses in the area.

A number of indirect employment opportunities will also be created. Indirect employment opportunities will predominantly be created in the service industry, through the opportunity for the provision of secondary services to the construction team. Services may include, but are not limited to, accommodation, catering, and laundry services.

	<b>Without enhancement</b>	<b>With enhancement</b>
<b>Extent</b>	Local- Regional (3)	Local- Regional (3)
<b>Duration</b>	Short term (1)	Short term (1)
<b>Magnitude</b>	Small (0)	Minor (2)
<b>Probability</b>	Highly probable (4)	Highly probable (4)
<b>Significance</b>	<b>Low (16)</b>	<b>Low (24)</b>
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes (enhanced)	

**Enhancement:**

- » A local employment policy should be adopted to maximise opportunities made available to the local labour force.
- » Labour should be sourced from the local labour pool where possible. If the necessary skills are unavailable, labour should be sourced from (in order of preference) the greater Gamagara LM, John Taolo Gaetsewe DM, Northern Cape Province, South Africa, or elsewhere. Where required, training and skills development programmes should be initiated prior to the commencement of the construction phase.
- » Labour force suppliers should as far as possible be sourced locally.
- » Where feasible, local suppliers and contractors that are compliant with the Broad-Based Black Economic Empowerment (B-BBEE) criteria, must be used as far as possible to ensure that the benefits resulting from the project accrue, as far as possible, to the local communities which are also likely to be most significantly impacted / affected by the project.
- » The recruitment selection process must seek to promote gender equality and the employment of women wherever possible.
- » Proof of skills development must be provided to the upskilled individuals.

**Residual impacts:**

- » Improved pool of skills and experience in the local area.
- » Economic growth for small-scale entrepreneurs.

**Nature:** Significance of the impact from the economic multiplier effects from the use of local goods and services.

There are likely to be opportunities for local businesses and service providers to provide services and materials for, and in doing so benefit from, the construction phase of the Olifantshoek 132kV Power Line. Off-site accommodation in the nearest towns (Olifantshoek or Kathu) may be required for contract workers and certain employees. The economic multiplier effects from the use of local goods and services will include, but is not limited to, construction materials, equipment and workforce essentials such as catering, trade clothing, safety equipment, accommodation, transportation and other goods.



<p>In terms of business opportunities for local companies, expenditure during the construction phase will create business opportunities for the regional and local economy. The increase in demand for new materials and services in the nearby area may stimulate local business and local economic development. There is likely to be a direct increase in industry and indirect increase in secondary businesses.</p>		
	<b>Without enhancement</b>	<b>With enhancement</b>
<b>Extent</b>	Local- Regional (3)	Local- Regional (3)
<b>Duration</b>	Short term (1)	Short term (1)
<b>Magnitude</b>	Small (0)	Minor (2)
<b>Probability</b>	Highly probable (4)	Highly probable (4)
<b>Significance</b>	<b>Low (16)</b>	<b>Low (24)</b>
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	N/A	N/A
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes (enhanced)	
<b>Enhancement:</b>		
<ul style="list-style-type: none"> <li>» A local procurement policy should be adopted to maximise the benefit to the local economy and the existing local SMMEs.</li> <li>» A database of local companies, specifically Historically Disadvantaged Individuals (HDIs) which qualify as potential service providers (e.g. construction companies, security companies, catering companies, waste collection companies, transportation companies etc.) should be created and companies listed thereon should be invited to bid for project-related work where applicable.</li> <li>» Local procurement must be encouraged along with engagement with local authorities and business organisations to investigate the possibility of procurement of construction materials, goods and products from local suppliers where feasible.</li> </ul>		
<b>Residual impacts:</b>		
<ul style="list-style-type: none"> <li>» Improved local service sector; growth in local business.</li> </ul>		

<p><b>Nature:</b> <i>In-migration of labourers in search of employment opportunities, and a resultant change in population, and increase in pressure on local resources and social networks, or existing services and infrastructure.</i></p>		
<p>An influx of people looking for employment or other economic opportunities could result in increased pressure being placed on economic and social infrastructure, and a change in the local population. Population change refers to the size, structure, density as well as demographic profile of the local community.</p>		
<p>An influx of jobseekers into an area, could lead to a temporary increase in the level of crime, cause social disruption and put pressure on basic services. It could also potentially create conflict between locals and outsiders due to potential differences in racial, cultural and ethnic composition. A further negative impact that could result due to an influx of jobseekers into an area is an increase in unemployment levels due to an oversupply of available workforce, particularly with respect to semi- and unskilled workers.</p>		
<p>The Gamagara Local Municipality is already experiencing a high rate of urbanisation which implies an existing influx of people into the area which will create increased pressure in terms of service delivery as urbanisation increases. The development of the Olifantshoek 132kV Power Line is not expected to contribute significantly to the pressure due to the nature of the project and the actual employment opportunities available.</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Short-term (2)	Short-term (2)
<b>Magnitude</b>	Small (0)	Small (0)

<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Low (9)</b>	<b>Low (6)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Reversible	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Develop and implement a recruitment protocol in consultation with the municipality and local community leaders. Ensure that the procedures for applications for employment are clearly communicated.</li> <li>» Develop and implement a local procurement policy which prioritises "locals first" to prevent the movement of people into the area in search of work.</li> <li>» Engage with local community representatives prior to construction to facilitate the adoption of the local's first procurement policy.</li> <li>» Provide transportation for workers (from towns such as Olifantshoek and Kathu) to ensure workers can easily access their place of employment and do not need to move closer to the project site.</li> <li>» Compile and implement a grievance mechanism.</li> <li>» Appoint a Community Liaison Officer (CLO) to assist with the procurement of local labour.</li> <li>» Prevent the recruitment of workers at the construction site.</li> <li>» Implement a method of communication whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.</li> <li>» Establish clear rules and regulations for access to the construction site.</li> <li>» Appoint a security company and implement appropriate security procedures to ensure that workers do not remain on site after working hours.</li> <li>» Inform local community organisations and policing forums of construction activities and times and the duration of the construction phase.</li> </ul>		
<b>Residual impacts:</b>		
<ul style="list-style-type: none"> <li>» Possibility of outside workers remaining in the area after construction is completed and subsequent pressures on local infrastructure, resources and services.</li> </ul>		

**Nature:** Temporary increase in safety and security concerns associated with the influx of people during the construction phase.

The commencement of construction activities can be associated with an increase in crime within an area. The perceived loss of security during the construction phase of a project due to an influx of workers and / or outsiders to the area (as in-migration of newcomers, construction workers or jobseekers are usually associated with an increase in crime), may have indirect effects such as increased safety and security concerns for neighbouring properties, damage to property, increased risk of veld fire, stock theft, poaching, crime and so forth.

The labour force will not permanently reside within the construction site.

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (2)	Local (2)
<b>Duration</b>	Short term (2)	Short term (2)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (16)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Reversible	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		

- » Working hours should be kept within daylight hours during the construction phase.
- » Employees should be easily identifiable and must adhere to the security rules of the construction site.
- » Provide transportation for workers (from towns such as Olifantshoek and Kathu) to ensure workers do not need to move closer to the construction site.
- » The perimeter of the main contractor's camp should be appropriately secured to prevent any unauthorised access to the site. The fencing of the site should be maintained throughout the construction period.
- » The appointed contractor must appoint a security company and ensure appropriate security procedures and measures are implemented.
- » Access in and out of the construction site should be strictly controlled by a security company.
- » A Community Liaison Officer (CLO) should be appointed and a grievance mechanism implemented. A communication protocol should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.
- » The contractor to implement a stakeholder management plan to address neighbouring landowner concerns regarding safety and security.

**Residual impacts:**

- » None anticipated.

**Nature:** Temporary increase in traffic disruptions and movement patterns during the construction phase.

Project components and equipment will be transported using road transport. The N14 national road provides the primary access to the area, as well as secondary roads and gravel farm roads. Local farmers utilise the gravel access roads to access their farms; whereas travellers and community members utilise the N14 to access the towns and residential areas surrounding the grid connection corridor.

Increased traffic due to the movement of construction vehicles could cause disruptions to the local community and increase safety hazards. The use of local roads and transport systems may cause road deterioration and congestion. This impact will be magnified since farm roads are not designed to carry heavy traffic and are prone to erosion. Noise, vibrations, dust and visual pollution from heavy vehicle traffic and construction activities during the construction phase could also negatively impact local residents and road users.

Sensitive land uses have been identified within the corridor which will need to be avoided by the careful placement of the power line route within the grid connection corridor. These sensitive land uses include permanent residences as well as commercial activities such as the brick manufacturing plant and the associated mining activities that go with it.

	Without mitigation	With mitigation
<b>Extent</b>	Local-Regional (3)	Local (2)
<b>Duration</b>	Short term (1)	Short term (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (21)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Reversible	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	

**Mitigation:**

- » Working hours must preferably be restricted to daylight hours during the construction phase. Where deviation of working hours is required it must be approved by the relevant local authorities and surrounding landowners must be notified.
- » All vehicles must be road worthy and drivers must be licensed, obey traffic rules, follow speed limits and made aware of the potential road safety issues.

- » Construction vehicles should be inspected regularly by the contractor to ensure their road worthiness.
- » Adequate and strategically placed traffic warning signs and control measures must be placed along the N14 and gravel farm access roads to warn road users of the construction activities taking place for the duration of the construction phase. Warning signs must be visible at all times, and especially at night and must be maintained throughout the construction phase.
- » Implement penalties for reckless driving as a way to enforce compliance to traffic rules.
- » Avoid heavy vehicle activity through residential areas during "peak" hours (when children are taken to school, people driving to work, etc.).
- » The developer and contractor must ensure that all fencing along access roads is maintained in the present condition or repaired if disturbed or damaged due to construction activities.
- » The developer and EPC Contractor must ensure that the roads utilised for construction activities are either maintained in the present condition or upgraded if damaged (i.e. wear and tear) due to construction activities.
- » A protocol for communication must be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.
- » Undertake information sessions with the surrounding communities, and affected and adjacent landowners, prior to construction in order to ensure that communities are fully informed of the project to be developed in its final form. This must be undertaken through the appointment of a CLO.
- » The placement of the power line route within the grid connection corridor must avoid the sensitive land uses undertaken by the affected landowners as far as possible. Consultation with the affected landowners must be undertaken in this regard.

**Residual impacts:**

- » None anticipated.

**Nature:** *Nuisance impacts in terms of temporary increase in noise and dust.*

Nuisance impacts associated with construction related activities include noise, dust, and possible disruption to adjacent properties. Site clearing activities increase the risk of dust and noise being generated, which can in turn negatively impact on adjacent properties. The movement of heavy construction vehicles and construction activities and equipment also have the potential to create noise, as well as impacts on travellers travelling along the N14 national road, and gravel access roads. The primary sources of noise during construction would be from construction equipment, vehicle and truck traffic. Noise levels can be audible over a large distance although are generally short in duration. Dust would be generated from construction activities as well as trucks / vehicles driving on gravel access roads. This impact will negatively impact sensitive receptors. The impact of noise and dust on sensitive receptors can be reduced through the application of appropriate mitigation measures.

	Without mitigation	With mitigation
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Short-term (2)	Short-term (2)
<b>Magnitude</b>	Moderate (6)	Minor (2)
<b>Probability</b>	Highly probable (4)	Probable (3)
<b>Significance</b>	<b>Medium (36)</b>	<b>Low (15)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Reversible	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	

**Mitigation:**

- » The movement of heavy vehicles associated with the construction phase through populated areas should be timed to avoid weekends, public holidays and holiday periods, where feasible.
- » Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.
- » A speed limit of 30km/hr should be implemented on gravel roads.

- » Ensure all vehicles are road worthy, drivers are licensed and are made aware of the potential noise and dust issues.
- » A CLO should be appointed. A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.
- » A stakeholder management plan must be implemented by the EPC contractor to address neighbouring farmer concerns regarding safety and security.

**Residual impacts:**

- » Residual damage from construction activities.

**Nature:** *Intrusion impacts from construction activities will have an impact on the area's "sense of place".*

Intrusion impacts such as aesthetic pollution (i.e. building materials, construction vehicles, etc.), noise and light pollution will impact the "sense of place" for the local community. Construction related activities have the potential to negatively impact a local area's "sense of place". Such an impact is likely to be present during the construction phase. It is however expected that the power line will only affect areas and receptors that have already been exposed to other existing grid connection infrastructure (i.e. power lines and substations) and other industrial infrastructure, specifically mining related infrastructure (i.e. for which the sense of place has already been altered).

Given the location of the corridor within an area characterised as having a low-medium population density, and given the project's location within close proximity to operational and visible grid infrastructure and other industrial developments (such as mines), the visual impact and impact on the area's sense of place, from a social perspective, associated with the construction of the proposed project is anticipated to be of a very limited significance.

The identification of the significance of the impact or change on the general landscape character for the construction phase was undertaken through the consideration of the Landscape and Visual Impact Assessment (Environmental Planning and Design, 2020) undertaken for the project. The significance of the impact will be low with the implementation of the recommended mitigation measures provided for in the Visual Impact Assessment.

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Short-term (1)	Short-term (1)
<b>Magnitude</b>	Minor (2)	Small (0)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Low (12)</b>	<b>Low (4)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Reversible	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	

**Mitigation:**

- » Limit noise generating activities to daylight working hours and avoid weekends and public holidays.
- » The movement of heavy vehicles associated with the construction phase should be timed to avoid weekends, public holidays and holiday periods where feasible.
- » Appropriate dust suppression measures must be implemented along gravel roads on a regular basis and vehicles used to transport sand and building materials must be fitted with tarpaulins or covers.
- » All vehicles must be road-worthy and drivers must be licensed and made aware of the potential road safety issues and need for strict speed limits.
- » Communication, complaints and grievance channels must be implemented and contact details of the CLO must be provided to the relevant local communities.
- » Ensure proper management and tidiness of the construction site.
- » Implement the relevant mitigation measures as recommended in the Visual Impact Assessment.

**Residual impacts:**

» None anticipated.

**Operation Phase**

**Nature:** *The creation of employment opportunities and skills development opportunities during the operation phase*

During the operation phase, it is expected that very limited employment opportunities will be available to Eskom employees as the maintenance will be undertaken by Eskom according to scheduled and preventative maintenance regimes. These opportunities will be available for limited periods of time, during this phase of the Olifantshoek 132kV Power Line which will have a negligible positive impact to the area.

	Without enhancement	With enhancement
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Short term (2)	Short term (2)
<b>Magnitude</b>	Small (0)	Small (0)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Low (9)</b>	<b>Low (9)</b>
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	N/A	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	No enhancement is relevant as Eskom employees will be utilised for the maintenance of the grid connection infrastructure.	

**Enhancement:**

None available due to limited employment opportunities available.

**Residual impacts:**

None

**Nature:** *Visual impacts and sense of place impacts associated with the operation phase of the Olifantshoek 132kV Power Line.*

An area's sense of place is created through the interaction of various characteristics of the environment, including atmosphere, visual resources, aesthetics, climate, lifestyle, culture, and heritage. An area's sense of place is however subjective and largely dependent on the demographics of the population residing within the area and their perceptions regarding trade-offs. For example, while some individuals may prefer not to see any form of infrastructure development, others may be interested in large-scale infrastructure, or engineering projects and consider the impact to be less significant. Such a scenario may be true given that one of the main economic sectors within the area is mining which has altered the landscape from natural to industrial.

Given the location of the corridor within an area characterised as having a low-medium population density, and given the project's location within close proximity to existing operational and visible grid infrastructure and other industrial developments (i.e. mining activities), the visual impact and impact on the area's sense of place associated with the construction of the proposed project, from a social perspective, is anticipated to be of a very limited significance.

The identification of the significance of the impact and change of the general landscape character was undertaken through the consideration of the Landscape and Visual Impact Assessment (Environmental Planning and Design, 2020) undertaken for the project. The impact on the general landscape character was identified as being low, as per the Visual Impact Assessment.

	Without mitigation	With mitigation
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<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Minor (2)	Small (0)
<b>Probability</b>	Improbable (2)	Improbable (2)
<b>Significance</b>	<b>Low (14)</b>	<b>Low (10)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Maintain and manage the grid connection infrastructure to be in a good and neat condition to ensure that no degradation of the area and the associated infrastructure servitude takes place and impacts the visual quality of the area.</li> <li>» Implement the relevant mitigation measures as recommended in the Visual Impact Assessment for the change in the general landscape character.</li> </ul>		
<b>Residual impacts:</b>		
<ul style="list-style-type: none"> <li>» The visual impact of the grid infrastructure will remain until the infrastructure is completely decommissioned and removed. Thereafter the impact will be removed.</li> </ul>		

<b>Nature:</b> <i>Loss of agricultural land and overall productivity as a result of the operation of the proposed project on an agricultural property.</i>		
<p>The area is very dry which limits the undertaking of crop production within the affected properties. Cattle grazing and game farming are therefore rather undertaken within the area. With the development of the Olifantshoek 132kV Power Line existing agricultural activities will still be possible within the affected properties considering the nature and extent of the development.</p>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Site (1)	Site (1)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Minor (2)	Small (0)
<b>Probability</b>	Improbable (2)	Improbable (2)
<b>Significance</b>	<b>Low (14)</b>	<b>Low (10)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Reversible	Reversible
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Keep the project footprint as small as possible.</li> <li>» Avoid interference with current agricultural activities undertaken within the affected properties.</li> </ul>		
<b>Residual impacts:</b>		
<ul style="list-style-type: none"> <li>» None expected to occur.</li> </ul>		

#### 5.7.4 Implication for Project Implementation

The significance of the *positive impacts* associated with the socio-economic aspects that will be affected by the Olifantshoek 132kV Power Line will be low with the implementation of the enhancement measures recommended. These enhancement measures include:

- » A local employment policy should be adopted to maximise opportunities made available to the local labour force.
- » Labour should be sourced from the local labour pool, and only if the necessary skills are unavailable, should labour be sourced from the Gamagara Local Municipality, John Taolo Gaetsewe District Municipality, Northern Cape Province, South Africa or elsewhere.
- » A database of local companies, specifically Historically Disadvantaged Individuals (HDIs) which qualify as potential service providers (e.g. construction companies, security companies, catering companies, waste collection companies, transportation companies etc.) should be created and companies listed thereon should be invited to bid for project-related work where applicable.
- » Vocational training programmes should be established to promote the development of skills.
- » Proof of skills development must be provided to the upskilled individual.
- » A Community Needs Assessment (CNA) must be conducted to ensure that the LED and social upliftment programmes proposed by the project are meaningful.

The significance of the *negative impacts* associated with the social aspects that will be affected by the Olifantshoek 132kV Power Line are low with the implementation of the recommended mitigation measures. The mitigation measures include:

- » Develop and implement a local procurement policy which prioritises "locals first" to prevent the movement of people into the area in search of work.
- » Engage with local community representatives prior to construction to facilitate the adoption of the locals first procurement policy.
- » Appoint a Community Liaison Officer (CLO) to assist with the procurement of local labour.
- » Undertaken information sessions with the surrounding communities prior to construction in order to ensure that communities are fully informed of the project to be developed in its final form. This must be undertaken through the appointment of a Community Liaison Officer (CLO).
- » Implement a method of communication whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process.
- » The Contractor must appoint a security company to ensure appropriate security procedures and measures are implemented.
- » All vehicles must be road worthy and drivers must be qualified, obey traffic rules, follow speed limits and be made aware of the potential road safety issues.
- » Appropriate dust suppression measures must be implemented along gravel roads on a regular basis and vehicles used to transport sand and building materials must be fitted with tarpaulins or covers.

## **5.8. Assessment of Soil Impacts**

Soil impacts assessed for the development of the Olifantshoek 132kV Power Line are mainly associated with the construction phase of the proposed development. The assessed impacts and the relative significance of the impacts associated with the proposed development are summarised below (refer to **Appendix I**).

### **5.8.1 Results of the Soils and Agricultural Compliance Statement**

Two (2) main impacts have been identified and assessed for the development of the Olifantshoek 132kV Power Line. These impacts are associated mainly with the construction phase of the proposed development and include, soil erosion and soil pollution. The impacts are associated with a short-term duration and a low



magnitude as they are predominantly limited to the construction phase of the proposed development, which will have a duration of approximately 6 months.

### 5.8.2 Description of the Social Impacts

Impacts identified from a soils perspective include soil erosion and soil pollution as a result of the undertaking of the construction activities which will include the clearance of the vegetation, which will expose the soils to agents of erosion such as wind. In addition, the proposed development will also require the operation of machinery and vehicles during the construction phase, which will also require the storage and handling of hazardous and pollution-causing substances, which if handled inappropriately may lead to soil pollution impacts.

### 5.8.3 Impact tables summarising the significance of the soil impacts

<b>Nature:</b> <u>Reduction of land with natural vegetation for livestock grazing</u>		
The availability of grazing land for livestock farming will be reduced during the construction phase. It is anticipated that the significance impact will gradually reduce as vegetation re-establishes during the operational phase and animals can graze again around the pylons.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Short-term (2)	Very short-term (1)
<b>Magnitude</b>	Low (4)	Minor (2)
<b>Probability</b>	Definite (4)	Probable (3)
<b>Significance</b>	<b>Low (28)</b>	<b>Low (12)</b>
<b>Status (positive or negative)</b>	Negative	Positive
<b>Reversibility</b>	High	High
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	N/A
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Vegetation clearance must be restricted to areas within the servitude where the power line will be constructed.</li> <li>» Removal of obstacles to allow for access of construction vehicles must be kept to only where essential.</li> <li>» Prior arrangements must be made with the landowners to ensure that livestock and game animals are moved to areas where they cannot be injured by vehicles traversing the area.</li> <li>» No boundary fence must be opened without the landowners' permission.</li> <li>» All left-over construction material must be removed from site once construction on a land portion is completed.</li> <li>» No open fires made by the construction teams are allowable during the construction phase.</li> </ul>		
<b>Residual impacts:</b>		
» The residual impact from the construction and operation of the Olifantshoek 132kV Power Line is considered low.		

<b>Nature:</b> <u>Soil erosion</u>
The clearing and levelling of a limited area of land within the proposed power line servitude will increase the risk of soil erosion in the area. It is anticipated that the risk will naturally reduce as grass and lower shrubs re-establishes in the area once the construction has wrapped up and the operational phase continues.

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Medium-term (3)	Medium-term (3)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (16)</b>
<b>Status (positive or negative)</b>	Negative	Positive
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Yes	No
<b>Can impacts be mitigated?</b>	Yes	N/A
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Land clearance must only be undertaken immediately prior to construction activities and only within the development footprint/servitude;</li> <li>» Unnecessary land clearance must be avoided;</li> <li>» Level any remaining soil removed from excavation pits that remained on the surface instead of allowing small stockpiles of soil to remain on the surface; and</li> <li>» Where possible, conduct the construction activities outside of the rainy season.</li> </ul>		
<b>Residual impacts:</b>		
<ul style="list-style-type: none"> <li>» The residual impact from the construction and operation of the Olifantshoek 132kV Power Line on the susceptibility to erosion is considered low.</li> </ul>		

#### 5.8.4 Implications for Project Implementation

The significance of the identified soil impacts will be low with the implementation of the mitigation measures. These mitigation measures include:

- » Undertaking land clearance immediately prior to the commencement of the construction phase and only within the servitude of the power line route.
- » Levelling of any remaining soil removed from excavation pits that remained on the surface instead of allowing small stockpiles of soil to remain on the surface.

#### 5.9. Assessment of the 'Do Nothing' Alternative

The do-nothing' alternative (i.e. no-go alternative) is the option of not constructing the Olifantshoek 132kV Power Line. This means that the status quo of the environment would remain unchanged and no impacts would occur, however, the implementation of the 'Do Nothing' alternative will result in a situation where the proponent, Gamagara Local Municipality will not be able to meet up the current capacity demands of their municipal area, particularly the town of Olifantshoek. Ultimately, the aim of the project is to improve the performance of supply in the region, in-turn contributing to a greater availability of electricity to residents and industry in Olifantshoek. By not increasing the supply of electricity to the area, development within the area will be constrained. This is not seen as desirable since there are approximately 3 015 unelectrified households within the municipal area. As there are no impacts of high significance associated with the proposed development, the implementation of the project is considered acceptable. The 'Do Nothing' alternative is therefore not preferred.

## CHAPTER 6: ASSESSMENT OF POTENTIAL CUMULATIVE IMPACTS

As identified and assessed in Chapter 5, the proposed Olifantshoek 132kV Power Line may impact (positive and negative) on natural resources and on the people living in the area surrounding the project. The preceding impact assessment chapter has reported on the assessment of the impacts associated with the project largely in isolation (from other similar developments). In close proximity to the grid connection corridor, prominent grid connection infrastructure has been introduced to the landscape, including 400kV, 275kV and 132kV lines, substations and smaller power lines. The area is also characterised by mining activities and the associated infrastructure, as well as other industrial operations such as brick manufacturing. Therefore, the development of the Olifantshoek 132kV Power Line will not introduce grid connection infrastructure, as well as industrial infrastructure and disturbance to an untouched, undeveloped landscape but rather expand such features and developments within the landscape.

This chapter assesses the potential for the impacts associated with the Olifantshoek 132kV Power Line to become more significant when considered in combination with the other known or proposed grid connection infrastructure projects and other industrial or mining developments within the area. Grid connection infrastructure projects (i.e. transmission power lines, etc.) and mines within the area are under consideration in this cumulative assessment. The mines under consideration as they add greatly to the disturbance within the vicinity of the grid connection corridor and the surrounding area.

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

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

Requirement	Relevant Section
3(j)(i) an assessment of each identified potentially significant impact and risk, including cumulative impacts.	The cumulative impacts associated with the development of the Olifantshoek 132kV Power Line are included and assessed within this chapter.

### 6.2 Approach taken to Assess Cumulative Impacts

The cumulative impacts that have the potential to be compounded through the development of the grid connection infrastructure and its associated infrastructure in proximity to other similar developments in this area include impacts such as those listed below:

- » Reduced ability to meet conservation obligations and targets, impacts on broad-scale ecological processes and a compromise on ecological processes as well as ecological functioning of important habitats;
- » Unacceptable risk to aquatic resources through disturbance associated with construction activities and increased runoff and erosion during the operation phase;
- » Regional losses of avifauna natural habitats;
- » Increased soil erosion;
- » Complete or whole-scale change in the sense of place and character of an area and unacceptable visual intrusion; and

- » Unacceptable impact to social factors and components.

The role of the cumulative assessment is to determine and confirm if such impacts are relevant to the Olifantshoek 132kV Power Line within the grid connection corridor being considered for the development, as well as the associated significance thereof.

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 in order to ensure that the concentration of grid connection infrastructure developments does not lead to detrimental environmental impacts. The scale at which the cumulative impacts are assessed is important. For example, the significance of the cumulative impact on the regional or national economy will be influenced by grid connection infrastructure developments throughout South Africa, while the significance of the cumulative impact on visual amenity within a concentrated area may only be influenced by grid connection infrastructure developments that are in closer proximity to each other.

**Figure 6.1** indicates the location of the Olifantshoek 132kV Power Line grid connection corridor in relation to all other known and viable grid connection developments (i.e. projects already developed, those with a valid Environmental Authorisation and identified through the Eskom Transmission Development Plan 2020 – 2029), as well as existing mining areas.

The potential for cumulative impacts is summarised in the sections that follow and has been considered within the specialist studies (refer to **Appendices D – I**).

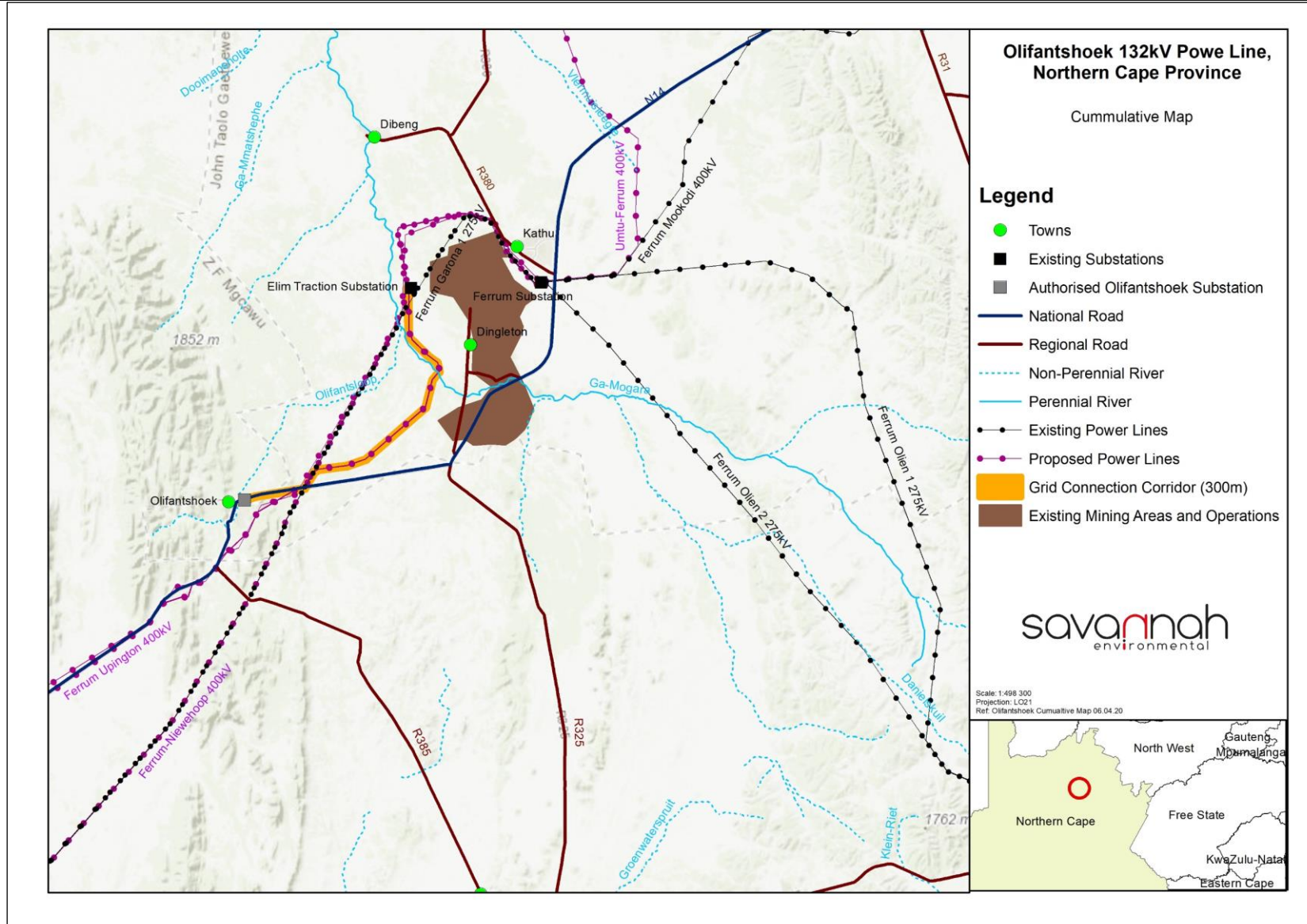
**Table 6.1:** Grid connection developments located within the surrounding area of the Olifantshoek 132kV Power Line grid connection corridor. The grid connection corridor for the majority of the route is parallel to the existing Ferrum/Lewensaar 275kV Power Line.

Project Name	Project Status
Ferrum/Lewensaar 275kV	Existing
Ferrum/Olien 1 275kV	Existing
Ferrum/Olien 2 275kV	Existing
Ferrum/Mookodi 400kV	Existing
Ferrum/Niewehoop 400kV	Existing
Ferrum/Upington 400kV	Approved
Umtu/Ferrum 400kV	Approved
Ferrum/Garona 400kV	Existing

The cumulative impacts of other grid connection infrastructure developments in the area surrounding the grid connection corridor are qualitatively assessed in this Chapter.

The following potential impacts are considered:

- » Cumulative impacts on ecological processes (including fauna, flora and freshwater features)
- » Cumulative impacts on avifauna
- » Cumulative impacts on heritage resources (including archaeology and palaeontology)
- » Cumulative visual impacts
- » Cumulative social impacts



**Figure 6.1:** Identified grid connection infrastructure developments and mining operations located within the surrounding areas of the Olifantshoek 132KV Power Line grid connection corridor considered as part of the cumulative impact assessment

### 6.3 Cumulative Impacts on Ecological Processes and Freshwater Resources

Cumulative impacts from an ecological and freshwater perspective have been identified and assessed for the development of the Olifantshoek 132kV Power Line (**Appendix D**) and are considered to be of low significance due to the presence of existing grid connection infrastructure within the vicinity of the grid connection corridor and the surrounding area.

Provided that landscape connectivity can be maintained, then the contribution of the Olifantshoek 132KV Power Line and the associated access road to cumulative impacts on habitat loss and fragmentation in the area would be low. In terms of habitat loss within the surrounding area, the affected vegetation and habitat types are widespread in the area and have experienced significant levels of transformation to date, due to the undertaking of mining activities in the area. However, due to the limited footprint of the proposed development, the loss of the currently intact habitat likely to result from the development is not considered highly significant, as a result the cumulative impacts associated with the development of the power line are therefore considered acceptable from an ecological and freshwater resources perspective.

The ecological and freshwater resources cumulative impacts associated with the Olifantshoek 132kV Power Line will be of a low significance. These impacts have been assessed in the context of the extent of the proposed development, other grid connection infrastructure developments within the area and general habitat loss and transformation due to agriculture and other land use activities (including mining) within the area.

<b>Nature:</b> <i>Reduced ability to meet conservation obligations and targets</i>		
The loss of unprotected vegetation types on a cumulative basis from the surrounding area impacts the Province's ability to meet its conservation targets.		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (1)	Regional (2)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Small (0)	Minor (2)
<b>Probability</b>	Very Improbable (1)	Highly Improbable (2)
<b>Significance</b>	<b>Low (5)</b>	<b>Low (16)</b>
<b>Status (positive or negative)</b>	Neutral	Slightly Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Highly Unlikely	Unlikely
<b>Can impacts be mitigated?</b>	Yes, to a large extent.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» The development footprint should be kept to a minimum and natural vegetation should be encouraged to return to disturbed areas.</li> <li>» Consolidate infrastructure to areas where existing impacts occur (e.g. placing the proposed power line alongside existing power lines and roads).</li> </ul>		

<b>Nature:</b> <i>Negative impact on broad-scale ecological processes</i>
Transformation of intact habitat could potentially compromise ecological processes as well as ecological functioning of important habitats and would contribute to the fragmentation of the landscape and would potentially disrupt the

connectivity of the landscape for fauna and flora and impair their ability to respond to environmental fluctuations. This is relevant from an ecological and freshwater perspective.

	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (1)	Regional (2)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Small (0)	Minor (2)
<b>Probability</b>	Very improbable (1)	Highly improbable (2)
<b>Significance</b>	<b>Low (5)</b>	<b>Low (16)</b>
<b>Status (positive or negative)</b>	Neutral	Slightly negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	Highly unlikely	Unlikely
<b>Can impacts be mitigated?</b>	Yes, to a large extent.	
<b>Mitigation:</b>		
» The development footprint should be kept to a minimum and natural vegetation should be encouraged to return to disturbed areas.		

**Nature: Compromise ecological processes as well as ecological functioning of important habitats**

Transformation of intact habitat could potentially compromise ecological processes as well as ecological functioning of important habitats and would contribute to the fragmentation of the landscape and would potentially disrupt the connectivity of the landscape for fauna and flora and impair their ability to respond to environmental fluctuations. This is especially of relevance for larger watercourses and wetlands serving as important groundwater recharge and floodwater attenuation zones, important microhabitats for various organisms, and important corridor zones for faunal movement (mostly located downstream, outside of the grid connection corridor mainly associated with the Kuruman River).

	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Small (1)	Small (1)
<b>Probability</b>	Very improbable (1)	Highly improbable (1)
<b>Significance</b>	<b>Low (6)</b>	<b>Low (6)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	High	High
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes, to a large extent.	
<b>Mitigation:</b>		
» The development footprint should be kept to a minimum and natural vegetation should be encouraged to return to disturbed areas.		
» Use existing service roads when crossing the watercourses.		
» Avoid placing pylons within the boundaries of the watercourses.		
» Avoid any activities within the depression wetlands.		
» Avoid clearing the fringing shrubby vegetation associated with the depression wetlands.		

## 6.4 Cumulative Impacts on Avifauna

Cumulative impacts on avifauna have been identified (**Appendix E**) and include impacts to avifauna habitats, migration routes, nesting areas due to cumulative loss and fragmentation of the impacted habitats, electrocution of birds due to the presence of the overhead power lines, and collisions of birds with the overhead power lines.

In terms of habitat loss, the affected habitat is largely intact and has an extensive distribution in the area. The transformation and loss of habitat associated with the development of the Olifantshoek 132kV Power Line within the area is considered to be of a medium significance. In addition, the grid connection corridor is not considered to lie within an area that is considered a likely avifauna movement corridor or an important ecological gradient.

<b>Nature:</b> <i>Regional losses of natural habitat.</i>		
Regional losses of natural habitat and subsequently the displacement of the birds.		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (1)	Regional (2)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Minor (2)	Moderate (6)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Low (21)</b>	<b>Medium (36)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	Low
<b>Irreplaceable loss of resources?</b>	Only very slight loss of resources.	Yes
<b>Can impacts be mitigated?</b>	Yes, to a large extent.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» Consolidate infrastructure to areas where existing impacts occur (e.g. placing the proposed power line alongside existing power lines and roads).</li> <li>» The development footprint of the various individual facilities must be kept as small as possible and sensitive habitats must be avoided.</li> </ul>		

<b>Nature:</b> <i>Collision of birds with the overhead power lines</i>		
Avian collision impacts related to the overhead power lines during the operation phase.		
	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (1)	Regional (3)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (4)	Moderate (7)
<b>Probability</b>	Probable (3)	Highly probable (4)
<b>Significance</b>	<b>Low (27)</b>	<b>Medium (56)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low (birds will be injured or killed)	Low (birds will be injured or killed)
<b>Irreplaceable loss of resources?</b>	Low	Yes, owing to the potential loss of critically endangered or endangered avifaunal species.
<b>Can impacts be mitigated?</b>	Yes, to some extent.	
<b>Mitigation:</b>		



- » Consolidate infrastructure to areas where existing impacts occur (e.g. placing the proposed power line alongside existing power lines and roads).
- » The development footprint of the various individual facilities must be kept as small as possible and sensitive habitats must be avoided.

**Nature:** *Electrocution of birds due to overhead power lines*

Avian electrocution related to the power lines during the operation phase.

	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (2)	Regional (3)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Minor (2)	Moderate (7)
<b>Probability</b>	Improbable (2)	Highly probable (4)
<b>Significance</b>	<b>Low (16)</b>	<b>Medium (56)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low (birds will be injured or killed)	Low (birds will be injured or killed)
<b>Irreplaceable loss of resources?</b>	Low potential for irreplaceable loss of resources.	Yes, owing to the potential loss of critically endangered or endangered avifaunal species.
<b>Can impacts be mitigated?</b>	Yes, to some extent.	

**Mitigation:**

- » Consolidate infrastructure to areas where existing impacts occur (e.g. placing the proposed power line alongside existing power lines and roads).

## 6.6 Cumulative Impacts on Heritage (including archaeology and palaeontology)

Cumulative heritage impacts have been identified for the Olifantshoek 132kV Power Line (refer to **Appendix F**). From a heritage perspective, the cumulative impacts associated with the proposed development area low.

**Nature:** *Cumulative impact on the sense of place*

The addition of multiple grid connection developments and related infrastructure can result in destruction of heritage resources and increased visual clutter in the natural and cultural landscape.

	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Medium-term (3)	Long-term (4)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Improbable (2)	Probable (3)
<b>Significance</b>	<b>Low (16)</b>	<b>Low (27)</b>
<b>Status (positive or negative)</b>	Neutral	Neutral
<b>Reversibility</b>	High	Low
<b>Irreplaceable loss of resources?</b>	Unlikely	Unlikely
<b>Can impacts be mitigated?</b>	No, no significant impacts are anticipated, therefore no mitigation is required.	

**Mitigation:**

No mitigation is required.

It must be noted that even if no mitigation is recommended by the specialist, the requirements of the National Heritage Resources Act (Act No. 25 of 1999) would still be relevant to the project. Should any site of human remains or archaeological finds be discovered during the construction and operation phase of the proposed development, these should be reported to SAHRA and any other relevant authority as assigned by the NHRA.

**6.7 Cumulative Visual Impacts**

Cumulative visual impacts have been identified and assessed for the development of the Olifantshoek 132kV Power Line (refer to **Appendix G**). In terms of general landscape change, the affected natural landscape (Lowland and Upland Landscape Character Areas (LCAs)) is not a highly natural area as it is already impacted by existing grid connection infrastructure and the iron ore mines in the area. Therefore, the proposed Olifantshoek 132kV Power Line will add marginally to the local intensity of existing visual impacts of grid connection infrastructure within the Lowland LCA, as the grid connection infrastructure runs parallel to the N14, along with the existing Ferrum-Lewensaar 275kV Power Line. As a result, the overall cumulative impact associated with the proposed grid connection infrastructure in isolation and when combined with other existing grid connection infrastructure in the area, the significance is assessed as low.

Cumulative visual impacts associated with the proposed and existing grid connection infrastructure on the rural homesteads will have a low significance. Three (3) homesteads regarded as worker’s accommodation facilities will have views of the proposed Olifantshoek 132kV Power Line infrastructure. However, the findings of the cumulative assessment indicate that the residents may not have major concerns with the development of the power line.

The development of the Olifantshoek 132kV Power Line will add to the grid connection infrastructure in the area, which includes high and low voltage power line infrastructure which is visible in the landscape. The cumulative visual impacts associated with the proposed and existing grid connection infrastructure are likely to affect travellers on the N14 national road. The findings of the cumulative impact assessment indicates that only the southern-most portion of the grid connection corridor will have an impact on a section of the

N14, as the grid connection corridor crosses the road and runs adjacent and parallel to it for a distance of approximately 6km. The overall impact of the proposed development on the N14 has been assessed as low.

**Nature:** *General landscape change and degradation of the natural landscape characteristics*

The affected natural landscape (Lowland and Upland Landscape Character Areas (LCAs)) is not a highly natural area as it is already impacted by existing infrastructure including an existing 400kV overhead power line, as well as several smaller power lines of similar scale to the proposed line.

The proposed 132kV overhead power line will add marginally to the local intensity of existing visual impacts of electrical infrastructure within the Lowland LCA. They will also extend the impact into the Upland LCA as the alignments run along the N14 towards Olifantshoek.

	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Immediate surroundings (2)	Immediate surroundings (2)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Minor to Low (3)	Minor (2)

<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Low (27)</b>	<b>Low (16)</b>
<b>Status (positive or negative)</b>	Negative	Neutral - Negative
<b>Reversibility</b>	High	High
<b>Irreplaceable loss of resources?</b>	No	
<b>Confidence in findings</b>	High	

**Nature:** *The visibility of the power line to and potential visual impact on rural homesteads*

Three homesteads that are workers accommodation appear to have the potential to be affected visually. All are affected by existing small power lines. It also seems likely that residents may not have major concern over the possible change of outlook.

	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Immediate surroundings (2)	Immediate surroundings (2)
<b>Duration</b>	Immediate surroundings (4)	Long-term (4)
<b>Magnitude</b>	Low (4)	Minor to Low (3)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (27)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	High	High
<b>Irreplaceable loss of resources?</b>	No	
<b>Confidence in findings</b>	High	

**Nature:** *The visibility of the power line to and potential visual impact on the N14*

Only the southern-most portion of the proposed power line will impact on the N14 as it will cross the road and run close to and parallel with it for approximately 6km. The power line will add to the extent of infrastructure including low voltage power lines that are visible in the landscape.

	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Immediate surroundings (2)	Immediate surroundings (2)
<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (4)	Minor to Low (3)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (27)</b>
<b>Status (positive or negative)</b>	Negative	Neutral to Negative
<b>Confidence in findings</b>	High	

**Nature:** *The visibility of the power line to and potential visual impact on urban areas*

Only the southern-most portion of the proposed power line has the potential to impact on the urban area of Olifantshoek. This section is unlikely to create a significant additional visual impact. Currently, the Olifantshoek Substation is located immediately adjacent to residential homesteads.

	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Immediate surroundings (2)	Immediate surroundings (2)

<b>Duration</b>	Long-term (4)	Long-term (4)
<b>Magnitude</b>	Low (4)	Minor to Low (3)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (27)</b>
<b>Status (positive or negative)</b>	Negative	Neutral to Negative
<b>Confidence in findings</b>	High	

## 6.8 Cumulative Social Impacts

The potential for social cumulative impacts is likely and includes both positive and negative impacts (refer to **Appendix H**). The significance of the negative cumulative impacts of the Olifantshoek 132kV Power Line and other projects in the area is low, and the significance of the positive cumulative impacts of the proposed development and other projects in the area is medium. This is based on the location of the Olifantshoek 132kV Power Line within an area already disturbed by mining activities. Considering the concentration of grid connection infrastructure within the surrounding area of the proposed Olifantshoek 132kV Power Line, the potential for cumulative impacts to occur is likely. Potential cumulative social impacts identified for the project include positive impacts on the economy, business development, and employment, as well as negative impacts such as an influx of jobseekers and change in the areas sense of place.

**Nature:** *An increase in employment opportunities, skills development, and business opportunities with the establishment of various grid connection infrastructure within the area.*

The Olifantshoek 132kV Power Line and other existing and proposed grid connection infrastructure associated with the national grid within the area has the potential to result in significant positive cumulative impacts, specifically with regards to the creation of a number of limited socio-economic opportunities for the region, which in turn, can result in positive social benefits. The positive cumulative impacts include creation of limited employment, skills development and training opportunities, and downstream/spin-off business opportunities. The cumulative benefits to the local, and regional economy through limited employment and procurement of services are more considerable than that of the Olifantshoek 132kV Power Line alone.

	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local- Regional (3)	Local- Regional (3)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Minor (2)	Minor (2)
<b>Probability</b>	Probable (3)	Highly Probable (4)
<b>Significance</b>	<b>Low (27)</b>	<b>Medium (36)</b>
<b>Status (positive or negative)</b>	Positive	Positive
<b>Reversibility</b>	N/A	
<b>Irreplaceable loss of resources?</b>	N/A	
<b>Can impacts be mitigated?</b>	Yes (enhanced)	
<b>Confidence in findings</b>	High	

**Enhancement:**

» The establishment of grid connection infrastructure projects within the area has the potential to have a positive cumulative impact on the area in the form of limited employment opportunities, skills development and business opportunities. The positive benefits will be enhanced if local employment policies are adopted and local services providers are utilised to maximise the project opportunities available to the local community.

**Residual impacts:**

» Improved pool of skills and experience in the local area.  
» Improved standard of living through the creation of employment opportunities.

» Economic growth for small-scale entrepreneurs.

**Nature:** *Negative impacts and change to the local economy with an in-migration of labourers, businesses and jobseekers to the area.*

While the development of the Olifantshoek 132kV Power Line may not result in a major influx of people into the area, the development of several projects at the same time may have a cumulative impact on the in-migration and movement of people, it must however be noted that limited new grid connection infrastructure is currently planned for the area. Levels of unemployment, and the low level of earning potential may attract individuals to the area in search of better employment opportunities and standards of living.

It is very difficult to control an influx of people into an area, especially in a country where the unemployment rate is high. It is therefore important that the project proponent implements and strictly adheres to a local employment policy in order to reduce the potential of such an impact occurring.

	<b>Overall impact of the proposed project considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Local (1)	Local-Regional (3)
<b>Duration</b>	Long term (4)	Long term (4)
<b>Magnitude</b>	Minor (2)	Low (4)
<b>Probability</b>	Very Improbable (1)	Improbable (2)
<b>Significance</b>	<b>Low (7)</b>	<b>Low (22)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Yes	
<b>Irreplaceable loss of resources?</b>	No	
<b>Can impacts be mitigated?</b>	Yes	
<b>Confidence in findings</b>	High	

**Mitigation:**

- » Develop a recruitment policy / process (to be implemented by contractors), which will ensure the sourcing of labour locally, where available.
- » Work together with government agencies to ensure that service provision is in line with the development needs of the local area.
- » Form joint ventures with community organisations, through Trusts, which can provide local communities with benefits, such as employment opportunities and services.
- » Develop and implement a recruitment protocol in consultation with the municipality and local community leaders. Ensure that the procedures for applications for employment are clearly communicated.

**Residual impacts**

- » Possibility of outside workers remaining in the area after the construction is completed and the subsequent potential pressure on local infrastructure and services.

## 6.9 Conclusion regarding Cumulative Impacts

The assessment of the cumulative impacts was undertaken through the consideration of the Olifantshoek 132kV Power Line in isolation and compared to the cumulative impacts of the Olifantshoek 132kV Power Line and other grid connection developments surrounding the grid connection corridor. Cumulative impacts are expected to occur with the development of the grid connection infrastructure throughout all phases of the project life cycle and within all areas of study considered as part of this BA Report. The main aim for the assessment of cumulative impacts considering the Olifantshoek 132kV Power Line is to determine

whether the cumulative impact will be acceptable within the landscape proposed for the development, and whether the cumulative loss, from an environmental and social perspective, will be acceptable without whole-scale change.

The significance of the cumulative impacts associated with the development of the Olifantshoek 132kV Power Line are low to medium, depending on the impacts being considered. A summary of the cumulative impacts is included in **Table 6.2** below.

**Table 6.2:** Summary of the cumulative impact significance for the Olifantshoek 132kV Power Line within the grid connection corridor

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
Ecology (fauna, flora and freshwater)	Low	Low
Avifauna	Low	Medium
Heritage (archaeology and palaeontology)	Low	Low
Visual	Low or medium (depending on the impact being considered)	Low
Social	Low (positive impacts) Low (negative impacts)	Medium (positive impacts) Low (negative impacts)

The role of the cumulative impact assessment is to test if the impacts anticipated for the proposed development are relevant to the Olifantshoek 132kV Power Line development within the proposed grid connection corridor. Therefore, the following can be concluded from a cumulative impact assessment for the Olifantshoek 132kV Power Line:

- » Reduced ability to meet conservation obligations and targets, impacts on broad-scale ecological processes and a compromise on ecological processes as well as ecological functioning of important habitats: Cumulative ecological impacts within the surrounding area are of minor concern due to the small footprint associated with the grid infrastructure development. Furthermore, there are no features significantly contributing to maintaining ecological connectivity within the grid connection corridor, therefore, the contribution of the Olifantshoek 132kV Power Line to the cumulative impacts on the reduced ability to meet conservation obligations and targets is considered acceptable. In terms of cumulative impacts on broad-scale ecological processes, the affected vegetation and the habitat types are widespread in the area and would not experience significant levels of transformation. As a result, the cumulative impacts associated with the development of the Olifantshoek 132kV Power Line are acceptable from an ecological perspective.
- » Regional losses of avifauna natural habitats: Cumulative avifauna impacts within the study area are of potential concern due to the proliferation of grid connection developments along the N14 towards Olifantshoek and Kathu. However, given the footprint of the power line infrastructure and the identified avian habitats, it is concluded that there are no features significantly contributing to maintaining ecological connectivity within the grid connection corridor, and therefore, the contribution of the Olifantshoek 132kV Power Line to the cumulative impacts on habitat loss for avifauna species are acceptable. In terms of the loss, the affected vegetation and the habitat types are widespread in the area and would not experience significant levels of transformation. In addition, the proposed grid

connection corridor is not located within an area considered to be an avifaunal movement corridor or along an important ecological gradient, as such, the overall cumulative impact of the development is considered to be low.

- » Unacceptable risk to freshwater resources through disturbance associated with construction activities and increased runoff and erosion during the operation phase: The development of the Olifantshoek 132kV Power Line will not result in an unacceptable risk to freshwater resources as it will easily avoid direct impacts on the identified wetlands and river through appropriate design. Therefore, the proposed development is considered acceptable from a freshwater perspective.
- » Unacceptable loss of agricultural potential areas presenting a risk to current land use activities and increased soil erosion: The proposed development of the Olifantshoek 132kV Power Line is considered a viable land use option for an area that has been characterised by low rainfall in an erratic pattern that significantly limits the agricultural potential of the area.
- » Unacceptable loss of heritage resources (including palaeontological and archaeological resources): Due to the limited heritage resources identified within the assessed corridor, the development of the Olifantshoek 132kV Power Line is not expected to result in the unacceptable loss of heritage resources, however the recommendation of the impact assessment regarding the placement of the 50m buffer areas around the identified human grave sites should be implemented. In general, the development of the grid connection infrastructure is considered acceptable from a heritage perspective subject to the recommended mitigation measures.
- » Complete or whole-scale change in the sense of place and character of an area and unacceptable visual intrusion: The development of the Olifantshoek 132kV Power Line is proposed within an area where grid infrastructure and other industrial infrastructure (such as mines) have already been developed. The proposed power line will not add significantly to this existing impact. Therefore, the development of the Olifantshoek 132kV Power Line will not result in the whole-scale change in the sense of place and character based on the existing disturbance. As a result, the proposed development will not result in an unacceptable visual intrusion within the proposed landscape, and as such the development is considered acceptable from a visual perspective.
- » Unacceptable impact to social factors and components: The development of the Olifantshoek 132kV Power Line will not result in unacceptable social impacts within the area where the project is proposed. Therefore, the social impacts are considered acceptable.
- » Unacceptable risk of soil erosion and pollution: The development of the Olifantshoek 132kV Power Line will not result in unacceptable soil erosion and pollution impact, however, should additional power lines be developed within the area, where waste is not removed to designated waste areas, there will be an increased risk in soil pollution impacts within the area. In addition, the development of additional power lines within the area will lead to more areas being exposed to soil erosion through wind and water movement. The development of the Olifantshoek 132kV Power Line will not result in an unacceptable risk to soil erosion and soil pollution within the proposed grid connection corridor, subject to the implementation of the recommended mitigation measures, therefore, the cumulative soil impacts are considered acceptable.

Based on the specialist cumulative assessments and findings, the development of the Olifantshoek 132kV Power Line and its contribution to the overall impact of grid connection infrastructure surrounding the grid connection corridor, it can be concluded that the project cumulative impacts will be of a low to medium significance. There are no impacts or risks identified to be considered as unacceptable with the development of the Olifantshoek 132kV Power Line and other grid connection infrastructure within the surrounding area. In addition, no impacts which will result in whole-scale change are expected with the proposed development.



## CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

The Northern Cape Province is associated with multiple mining operations which have led to the population expansion of the Kathu and Olifantshoek towns. As a result, there is pressure being exerted on the existing grid connection infrastructure in order to meet the current capacity demands of the region, especially within the municipal area of the Gamagara Local Municipality. Considering these challenges, the Gamagara Local Municipality proposes the construction and operation of grid connection infrastructure, consisting of a single-circuit 132kV overhead power line between the existing Emil Traction Substation and the authorised Olifantshoek Substation located near the town of Olifantshoek in the Northern Cape Province. The grid connection infrastructure will be used by the municipality to strengthen the existing grid network within its municipal area in order to ensure adequate supply of electricity for residents.

A 300m wide and 36km long grid connection corridor has been identified by the proponent for the development of the Olifantshoek 132kV Power Line and associated infrastructure, which has been fully considered within this BA process and assessed in terms of its suitability from an environmental and social perspective within this BA Report. The consideration and assessment of the grid connection corridor provides opportunity for the avoidance of major environmental sensitivities during the final micro-siting of the power line within the required 31m servitude. The Olifantshoek 132kV Power Line will have a capacity of up to 132kV and will include the towers of the power line and a 4m unsurfaced road to provide access to the grid connection corridor during the construction and operation phases.

The proponent, Gamagara Local Municipality, has confirmed that the grid connection corridor is suitable for the development of grid connection infrastructure from a technical perspective due to site-specific characteristics such as topography and accessibility, the location of the grid connection corridor within the Northern Strategic Transmission Corridor, as well as the proximity of the grid connection corridor to authorised and existing grid connection infrastructure, i.e. Niewehoop/Upington 400kV, Ferrum/Niewehoop 400kV and the Ferrum/Mookodi 400kV power lines.

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

### 7.1. 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(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 Olifantshoek 132kV Power Line has been included in <b>section 7.2</b> .
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	An environmental impact statement containing the key findings of the environmental impacts of the Olifantshoek 132kV Power Line has been included as <b>section 7.5</b> . Sensitive environmental features located within the grid connection corridor have

Requirement	Relevant Section
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.	been identified and are shown in <b>Figure 7.1</b> . A summary of the positive and negative impacts associated with the Olifantshoek 132kV Power Line have been included in <b>section 7.2</b> .
h (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity.	A concluding statement indicating the preferred location for the grid connection infrastructure is included in <b>section 7.5</b> .
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 of the Olifantshoek 132kV Power Line have been included in <b>section 7.6</b> .
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 Olifantshoek 132kV Power Line should be authorised has been included in <b>section 7.6</b> .

## 7.2. Evaluation of the Olifantshoek 132kV Power Line

The preceding chapters of this BA Report together with the specialist studies contained within **Appendices D-H** provide a detailed assessment of the potential impacts that may result from the development of the Olifantshoek 132kV Power Line. This chapter concludes the environmental assessment of the grid connection corridor 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 Environmental Assessment Practitioner (EAP) and presents a combined and informed opinion of the environmental impacts associated with the development.

No environmental fatal flaws were identified in the detailed specialist studies conducted, and no impacts of unacceptable or high significance are expected to occur with the implementation of the recommended mitigation measures. These measures include, amongst others, the avoidance of sensitive features which include the spanning of the power line infrastructure (i.e. pylons/towers) across the Ga-Mogara River and the installation of anti-collision bird devices within certain sections of higher sensitivity. Some mitigation measures have already been considered and implemented through the identification of the grid connection corridor, such as the avoidance of the Brooks & Bredenkamp Nature Reserve which is located adjacent and west of the grid connection corridor.

Impacts identified to be associated with the proposed project and assessed within this report include:

- » Impacts on ecology (including flora, fauna and freshwater resources).
- » Impacts on avifauna.
- » Impacts on heritage resources, including archaeology and palaeontology.
- » Visual impacts on the landscape as a result of the power line infrastructure.
- » Impacts on the social environment.

### **7.2.1 Impacts on Ecology and Freshwater Resources**

During the pre-construction and construction phase (and the decommissioning phase) impacts identified include impacts on vegetation and protected and listed plant species, impact on fauna, a loss of riparian systems and alluvial watercourses and a loss of localised surface water quality. The duration of the impacts ranges from short-term to long-term, with the magnitude of the impacts ranging from moderate to low. The significance of the construction phase impacts (and the decommissioning phase) is medium and low depending on the impact being considered, and with the implementation of the mitigation measures recommended by the specialist. No impacts of high significance were identified from an ecological and freshwater resources perspective.

During the operation phase, the anticipated impacts include an increase in sedimentation and soil erosion, and an impact on riparian systems. The duration of the impacts will be long-term, with a low magnitude. The significance of these impacts for the operation phase will be low with the implementation of the recommended mitigation measures. No impacts of a high or medium significance were identified.

From the findings of the Ecological and Freshwater Impact Assessment it can be concluded that no impacts of high significance or fatal flaws were identified which would hinder the development of the Olifantshoek 132kV Power Line. The grid connection corridor is therefore considered suitable for the establishment of the power line and associated infrastructure and all impacts associated with the development can be mitigated to an acceptable low significance. Therefore, the proposed development is considered to be appropriate and the ecological and freshwater impact acceptable and will not result in detrimental impacts to ecosystems, habitats and freshwater features. As a result, the specialist has indicated that the Olifantshoek 132kV Power Line may be authorised, constructed and operated subject to the implementation of the recommended mitigation measures.

### **7.2.2 Impacts on Avifauna**

During the pre-construction and construction phase (and decommissioning phase) of the Olifantshoek 132kV Power Line, direct avifauna impacts are expected to include habitat destruction and alteration, and species disturbance. The impacts will be negative with a short-term to long-term duration and will have a low magnitude. Significance of the construction phase impacts will be low with the implementation of the recommended mitigation measures. No impacts of a high or medium significance for the construction phase are expected to occur.

Impacts on avifauna during the operation phase of the Olifantshoek 132kV Power Line include disturbance to avifauna species during maintenance operations, the electrocution of avifauna species on power line infrastructure, and the collision of the avifauna species with the power line infrastructure. The impact will be negative, with a short-term to long-term duration for the life of the power line and a magnitude of moderate to low. Significance of the impacts will be low, with the implementation of mitigation measures. No impacts of a high or medium significance for the construction phase are expected to occur.

From the results of the Avifauna Impact Assessment, it can be concluded that the grid connection corridor for the Olifantshoek 132kV Power Line is considered to be suitable for the development of the power line. Taking into consideration that the grid connection corridor supports a typical bioregional avifaunal assemblage, and that there are no known communal breeding or roosting sites of red-listed species, there

are no impacts associated with the development that are regarded to be of a high residual significance and which cannot be mitigated to a low significance. No fatal flaws will be associated with the development of the power line. Therefore, the development of the Olifantshoek 132kV Power Line is considered to be acceptable and supported from an avifaunal perspective.

### **7.2.3 Impacts on Heritage (including archaeology and palaeontology)**

It is expected that impacts to heritage and palaeontological resources will occur during the construction phase due to the on-ground disturbance required by the construction activities. No impacts are expected during the operation phase of the project.

Two (2) sites consisting of unmarked human graves were identified within the corridor and a 50m no-go area buffer should be applied around these sites. The proposed development will have a low impact on archaeology and the palaeontological resources in the area subject to the implementation of the recommended mitigation measures. There is however an opportunity for fossils to be found within the Moidraai and the Lucknow formations and the Kalahari Group (particularly in the north-eastern section of the grid connection corridor), which is adjacent to the Kathu Pan deposits, that contain fossil faunal assemblages. Therefore, a Chance Fossil Finds Procedure/Protocol has been included as **Appendix D** in the Environmental Management Programme (included as **Appendix K** in the BA Report).

The impacts of the proposed development on archaeological and palaeontological resources is therefore of low significance, with a long-term duration and a low magnitude following the implementation of the recommended mitigation measures. Therefore, the development of the Olifantshoek 132kV Power Line will not have a significant negative impact on the archaeological and palaeontological resources identified within the grid connection corridor. As such, the development of the Olifantshoek 132kV Power Line is not associated with any fatal flaws from a heritage, archaeological and palaeontological perspective, and it is considered to be acceptable.

### **7.2.4 Visual Impacts**

The Visual Impact Assessment (**Appendix G**) identified negative impacts on visual receptors during the construction (including decommissioning) and the operation phases of the Olifantshoek 132kV Power Line. The impacts include an impact on the general landscape character; the visibility of the proposed power line to and a visual impact on rural homesteads; the visibility of the proposed power line to and visual impact on the N14; and the visibility of the proposed power line to and visual impact on urban settlement areas. The development of the Olifantshoek 132kV Power Line will, however, be viewed in the context of the existing Ferrum-Lewensaar 275kV Power Line located parallel to the proposed grid connection corridor.

The duration of the impacts is expected to be long-term, with a magnitude ranging from moderate to low. The significance of the impacts will be low with the implementation of mitigation measures. No impacts of a high or medium significance are expected to occur. The development of the Olifantshoek 132kV Power Line is therefore considered to be acceptable from a visual perspective.

### **7.2.5 Social Impacts**

The Social Impact Assessment (**Appendix H**) identified that the majority of the negative and positive social impacts associated with the project are anticipated to occur during the construction phase.

The anticipated duration for the construction phase of the project is approximately 6 months, following which the power line will be handed over to Eskom for the duration of the operation phase, which is anticipated to be 50 years. These impacts include the creation of direct and indirect employment opportunities; economic multiplier effects; an influx of jobseekers and a change in the population; safety and security impacts; impacts on the daily living and movement patterns; nuisance impacts; and a sense of place impacts. These impacts will have a short-term duration and a small to moderate magnitude.

For the operation phase of the power line, the impacts identified include direct and indirect employment opportunities; visual impacts and a sense of place impacts; and impacts associated with the loss of agricultural land. These impacts are associated with a long-term duration and a minor to low magnitude and will be of a low significance following the implementation of the recommended enhancement measures.

The development of the Olifantshoek 132kV Power Line is unlikely to result in permanent damaging social impacts. From a social perspective, it is concluded that the project is acceptable subject to the implementation of the recommended mitigation and enhancement measures and management actions identified for the project. Considering the findings of the study and potential for mitigation, it is the reasoned opinion of the specialist that the Olifantshoek 132kV Power Line can be authorised from a social perspective.

#### **7.2.6 Soils, Agricultural & Land Potential Impacts**

The Soils & Agricultural Compliance Statement (**Appendix I** of the BA Report) identified that the majority of the impacts are anticipated to occur during the construction phase of the proposed development. Impacts identified from a soil, agricultural and land potential include, a reduction of land with natural vegetation for livestock grazing, soil erosion and soil pollution. The anticipated impacts are associated with a short-term duration, given the short duration of the construction phase, i.e. 6 months and are associated with a low and moderate magnitude. The anticipated impacts are associated with a low significance following the implementation of the recommended mitigation measures. Considering the findings of the study and potential for mitigation, it is the reasoned opinion of the specialist that the Olifantshoek 132kV Power Line can be authorised from a soils, agricultural and land potential perspective.

#### **7.2.7 Assessment of Cumulative Impacts**

Cumulative impacts and benefits on various environmental and social receptors will occur to varying degrees with the development of grid connection infrastructure in South Africa and within the surrounding area of the grid connection corridor. The surrounding area is associated with large-scale ongoing iron ore mining operations, which have contributed to the transformation and industrialisation of the landscape in the area.

The grid connection corridor for the Olifantshoek 132kV Power Line is located within an area where several grid connection developments are proposed and existing. Existing grid connection infrastructure within the vicinity of the grid connection corridor for the Olifantshoek 132kV Power Line include the Ferrum/Lewensaar 275kV, Ferrum/Olien 1 275kV, Ferrum/Olien 2 275kV, Ferrum/Mookodi 400kV, Ferrum/Niewehoop and the Ferrum/Garona 400kV power lines. Therefore, considering all aspects,

cumulative impacts associated with the Olifantshoek 132kV Power Line have been assessed to be acceptable, with no unacceptable loss or risk expected (refer to **Table 7.1** and Chapter 6).

**Table 7.1:** Summary of the cumulative impact significance for the Olifantshoek 132kV Power Line

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
Ecology & Freshwater	Low	Low
Avifauna	Low	Medium
Heritage (archaeology and palaeontology)	Low	Low
Visual	Low or medium (depending on the impact being considered)	Low
Social	Low (positive impacts) Low (negative impacts)	Medium (positive impacts) Low (negative impacts)

Based on the specialist cumulative assessments and findings regarding the development of the Olifantshoek 132kV Power Line and its contribution to the overall impact within the surrounding area, it can be concluded that there are no cumulative impacts or risks identified as unacceptable with the development of the Olifantshoek 132kV Power Line and other grid connection infrastructure within the surrounding area. In addition, no impacts that will result in whole-scale change are expected as a result of the Olifantshoek 132kV Power Line.

### 7.3. Environmental Sensitivity Mapping

As part of the specialist investigations undertaken within the grid connection corridor of the Olifantshoek 132kV Power Line, specific environmental features and areas were identified which will be impacted by the placement of the power line infrastructure. The current condition of the features identified (i.e. intact or disturbed) informed the sensitivity of the environmental features and the capacity for disturbance and change associated with the proposed development.

The environmental sensitive features and areas identified within the grid connection corridor are illustrated in **Figure 7.1**. The sensitive features identified specifically relate to ecological, freshwater resources, avifauna and heritage resources. The following points provide a description of the sensitive features identified within the grid connection corridor, as well as the surrounding area:

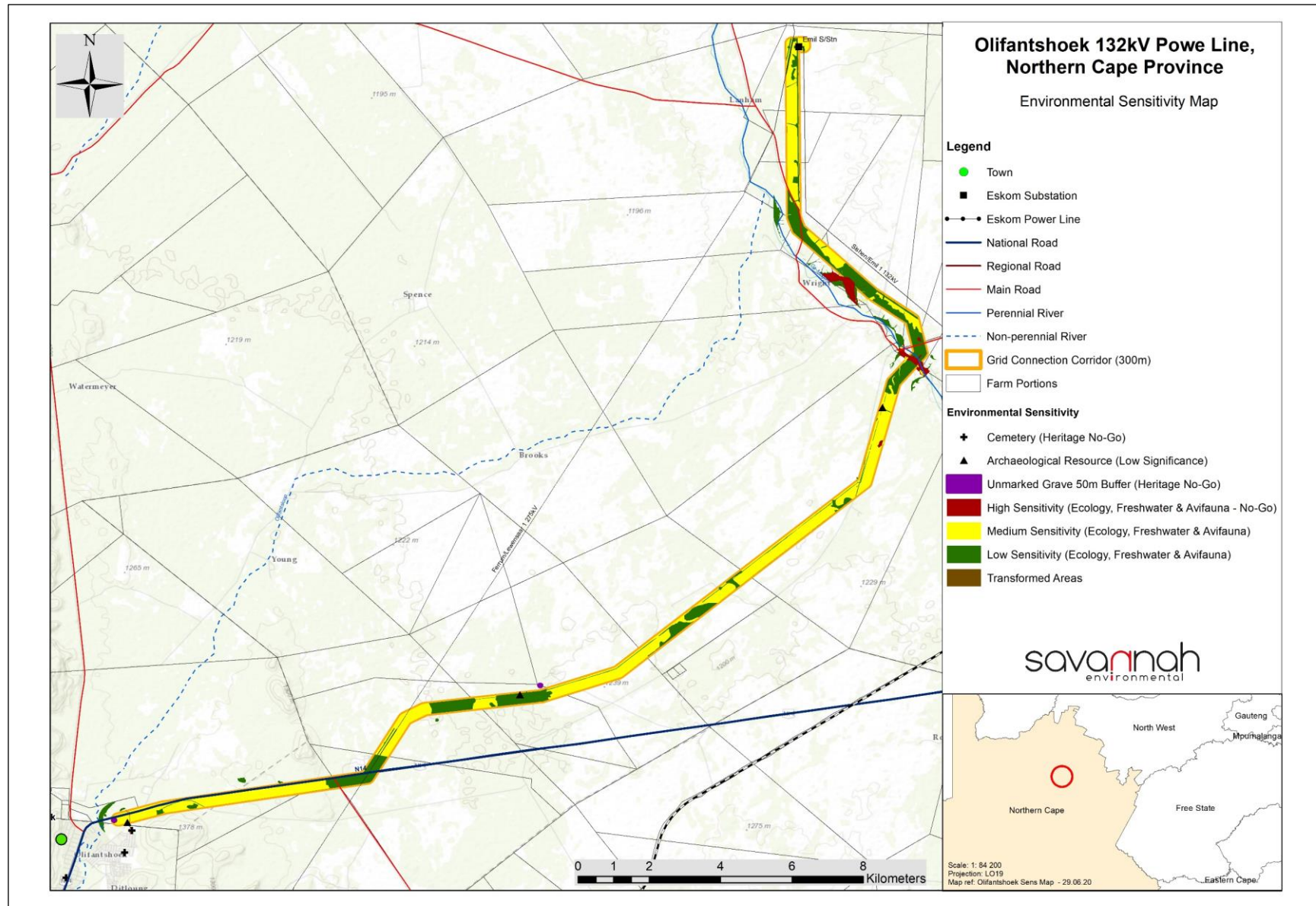
- » The Ga-Mogara River and the associated riparian habitat is associated with a high ecological, freshwater and avifauna sensitivity due to its ecological functions which include the absorption and reduction of occasional floods and also serves as an important corridor for abiotic and biotic material transfer (refer to **Figure 7.1**). In addition, the riparian habitat of the river is mostly covered with water-loving grasses and patches of tall and dense *Vachellia erioloba*, *Vachellia karro* and *Ziziphus mucronata* which adds to the sensitivity of the river and the riparian habitat.
- » The depression wetlands identified within the grid connection corridor are largely natural, small and endorheic. These features are associated with a fringe of small to medium-sized trees such as *Vachellia karoo* and *Senegalia mellifera* and serve as a niche habitat for certain fauna species in the area. The depression wetlands are associated with a high ecological, freshwater and avifauna sensitivity and no development within these features or the riparian habitat is permitted.

- » The ridges, outcrops and artificial landscape microhabitats are associated with a medium avifauna sensitivity due to the presence of dense vegetation of *Vachellia erioloba* species. The ridges and outcrops microhabitat is associated with the medium avifauna sensitivity due to the preference of red data-listed species such as the Martial Eagle, Cape Vulture and Kori Bustard, which were identified in the area. The artificial landscape microhabitat is associated with a medium avifauna sensitivity due to its proximity to permanent water bodies which are inhabited by various waterfowl and water species. As a result, these species are likely to migrate between a man-made dam located to the southern section of the town of Olifantshoek and the Olifantshoek Sewage Works.
- » The two (2) unmarked human grave sites identified within the grid connection corridor and its vicinity are of a high sensitivity and development in these areas is not permitted. As a result, a 50m no-go buffer should be implemented.
- » The cemeteries located to the south of the grid connection corridor should be excluded from development.

#### **7.4. Environmental Costs versus Benefits of the Power Line**

Environmental costs (including those to the natural environment, economic and social environment) 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 EMPr, are implemented and adhered to. No fatal flaws have been identified. These environmental costs could include:

- » *A loss of biodiversity, flora and fauna due to the clearing of land for the construction and utilisation of land for the power line* - The cost of loss of biodiversity is considered to be limited due to the small footprint associated with the power line infrastructure (i.e. tower footprint and associated access roads) and the placement of the grid connection corridor within vegetation and features considered of a low and medium sensitivity.
- » *Loss of avifauna habitat and loss of avifauna as a result of electrocutions and collisions of avifauna species with power line infrastructure* – The cost of the loss of habitat and the loss of avifauna species due to electrocutions and collisions of avifauna with power line infrastructure is not considered to be significant as the majority of the avifauna of the affected and surrounding environment appears fairly similar to that found across the bioregion. There is an absence of communal or solitary roosting and nesting sites for red-listed species within the grid connection corridor.
- » *Visual impacts associated with the power line* - The development of the power line may have a visual impact on residents and travellers along the N14 national road in the area. However, the proposed power line infrastructure will be viewed in the context of existing grid connection infrastructure in the area, which runs parallel to the proposed grid connection corridor (i.e. the existing Ferrum-Lewensaar 275kV Power Line, etc).
- » *Change in land-use and loss of land available for agricultural activities within the grid connection corridor* - The environmental cost is anticipated to be very limited due to the fact that the power line infrastructure is associated with a small footprint; the grid connection corridor does not traverse areas of a high agricultural sensitivity and the area within the vicinity of the corridor has been extensively transformed due to the presence of the iron ore mining operations.



**Figure 7.1:** Environmental features identified within the grid connection corridor of the Olifantshoek 132kV Power Line.



Benefits of the Olifantshoek 132kV Power Line include the following:

- » The project will result in important economic benefits at the local and regional scale through job creation and other downstream economic development activities due to the presence of a reliable electricity supply for the Olifantshoek area. These benefits will persist during the pre-construction, construction, operation and phases of the project.
- » The project contributes towards the Provincial and Local IDP objectives for the provision of electricity to approximately 3 015 households in the Olifantshoek area.

The benefits of the Olifantshoek 132kV Power Line are expected to occur at a regional and local level. As the costs to the environment at a site-specific level have largely been limited through the appropriate placement of the grid connection corridor within an area considered to be acceptable for development. Site-specific sensitivities (i.e. the Ga-Mogara River and the depression wetlands, human grave sites, etc.) can be avoided by the appropriate placement of the power line pylons/towers within the grid connection corridor. Therefore, the benefits of the projects are expected to outweigh the environmental costs.

## **7.5. Overall Conclusion (Impact Statement)**

The construction and operation of a single-circuit, 132kV power Line with a servitude of xxm, and associated access roads of 4m in width within a 36km long and 300m wide grid connection corridor near the town of Olifantshoek in the Gamagara Local Municipality and the John Taolo Gaetsewe District Municipality has been proposed by the Gamagara Local Municipality. A technically viable grid connection corridor has been proposed by the proponent and assessed as part of the BA process. The assessment of the grid connection corridor 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 environmental fatal flaws associated with the development of the Olifantshoek 132kV Power Line within the identified corridor. The grid connection corridor assessed through this BA process is considered as the most appropriate and preferred for the development of the power line and associated infrastructure and is considered to be acceptable within all fields of specialist study undertaken for the project. All impacts associated with the preferred grid connection corridor can be mitigated to acceptable levels or enhanced through the implementation of the recommended mitigation or enhancement measures.

## **7.6. Overall Recommendation**

Considering the findings of the independent specialist studies, the impacts identified, the grid connection corridor proposed by the proponent, as well as the potential to further minimise the impacts to acceptable levels through mitigation, it is the reasoned opinion of the Environmental Assessment Practitioner (EAP) that the development of the Olifantshoek 132kV Power Line and associated infrastructure is acceptable within the landscape and can reasonably be authorised. The following infrastructure should be included within the authorisation issued for the project:

- » A single-circuit 132kV Power Line within a 300m wide and 36km long grid connection corridor and a 31m wide servitude.
- » Where no existing roads exist, a 4m wide unsurfaced road to provide access to the grid connection corridor and servitude during the construction and operation phase.

The following key conditions would be required to be included within the environmental authorisation issued for the Olifantshoek 132kV Power Line:

- » The 31m power line servitude and associated access roads should be located within the assessed corridor. The project footprint must remain within the assessed grid connection corridor.
- » As far as possible, existing access roads must be used.
- » All mitigation measures detailed within this BA Report, as well as the specialist reports contained within **Appendices D to I**, are to be implemented.
- » The EMPr as contained within **Appendix K** of this BA Report should form part of the contract with the Contractor appointed to construct and the maintain the Olifantshoek 132kV Power Line in order to ensure compliance with environmental specifications and management measures. The implementation of this EMPr for all life cycle phases of the Olifantshoek 132kV Power Line is considered key in achieving the appropriate environmental management standards as detailed for this project.
- » Following the final design of the Olifantshoek 132kV Power Line, a final layout/route should illustrate the position of each of the pylon/tower positions which must be submitted to the DEA for review and approval prior to commencing with construction activities.
- » The placement of infrastructure within the Ga-Mogara River, the depression wetlands and the riparian habitat is not permitted.
- » The power line pylons/towers and the unsurfaced access road should be as far as possible placed parallel to existing power lines in the area in order to increase the visibility of the overhead cables in the area to avifauna.
- » The section of the Ga-Mogara River to be spanned by the power line must be fitted with 'Double Loop Bird Diverters.'
- » A pre-construction walk-through of the final power line route within the grid connection corridor 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. Permits from the relevant national and provincial authorities, i.e. the Northern Cape Department of Environment and Nature Conservation (DENC) and the Department of Agriculture, Forestry and Fisheries (DAFF), must be obtained before the individuals are disturbed.
- » The necessary water use authorisation must be obtained from the Department of Human Settlements, Water and Sanitation (DHSWS) for impacts to a watercourse prior to construction.
- » A comprehensive rehabilitation plan must be developed and implemented from the project onset within watercourse areas to ensure a net benefit to the aquatic environment. This should form part of the suggested walk down as part of the Final EMPr preparation.
- » The surface limestones of the Molkanen Formation must be inspected before any excavations can take place in order to confirm the absence of Kathu Pan-like deposits that may contain Pleistocene fossil faunal assemblages.
- » A 50m buffer should be implemented around the grave sites NLN002 and MRR002. These sites should be excluded from development.

- » A Chance Find Protocol/Procedure (**Appendix D** of the EMPr) must be developed and implemented in the event that archaeological or palaeontological resources are found. In the case where the proposed development activities bring these materials to the surface, work must cease and SAHRA must be contacted immediately.

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