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VISUAL IMPACT ASSESSMENT AS PART OF THE BASIC ASSESSMENT PROCESS FOR THE PROPOSED WOLF OVERHEAD POWERLINE, STRETCHING BETWEEN THE WOLF, SKILPAD, AND GRASSRIDGE SUBSTATIONS, IN THE EASTERN CAPE PROVINCE

Prepared for:

Red Rocket South Africa (Pty) Ltd

March 2022

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EXECUTIVE SUMMARY

Scientific Aquatic Services (SAS) was appointed to conduct a Visual Impact Assessment (VIA) as part of the basic assessment process for the proposed 132 kV overhead powerline (OHPL) as part of the proposed development of the Wolf Wind Energy Facility (WEF). The proposed OHPL stretches from the Wolf substation to the Skilpad substation and ties in at the Grassridge substation, within the Eastern Cape Province.

The total extent of the proposed OHPL is approximately 90 kilometers (km) in length. The Wolf substation is situated approximately 2,4 km south of the town of Kleinpoort, while the Skilpad substation is situated directly adjacent to the Daniell Cheetah Project Farm (the middle of the OHPL) and the Grassridge substation is located approximately 8,6 km north north west of the town of Coega, Eastern Cape.

Based on the findings from both the desktop and field assessments it is evident that there are limited receptors located within a 2 km radius along the entire proposed 90 km OHPL and is mostly confined to Game Farm farmhouses and associated infrastructure and a network of roads. The proposed OHPL is located in a remote area with isolated farmsteads, mostly associated with the surrounding Game Farms, and small villages. The terrain is a unique combination of mountains and plains and undulating topography, which is characterised by thickets, shrubland and scattered bushclumps. Even though the proposed OHPL is situated within a remote area, existing overhead powerlines and substations are present within the landscape, thus the landscape character has already been affected by energy transmission infrastructure. As such, the receptors within the surrounding area have grown accustomed to these structures, therefore the proposed OHPL is expected to have a low visual impact on the landscape character within the region.

Vegetation clearing will form part of the construction phase of the proposed project, which will lead to a moderate visual impact on the surrounding environment, however there is already an existing maintenance dirt road associated with the existing overhead powerline. In light of the above the proposed maintenance road is likely to lead to increased visual scarring, in the form of more bare ground present in the landscape.

With the unique landscape of mountains, hills, valleys and plains, there are significant topographical variety in the area, therefore the visual quality and viewing experience of the landscape is considered high. However, with the existing overhead powerlines and substations and other anthropogenic structures such as houses, gravel roads and fences, the proposed OHPL will not introduce discordant elements into the environment. Furthermore, during the field assessment it was evident that with the permeability of the existing support towers, the overhead powerlines were not significantly visually intrusive.

The Visual Absorption Capacity (VAC) of the area is considered high, indicating that the proposed OHPL will be absorbed in the area resulting in a low visual intrusion. The main contributing factor to the high VAC is the visual variety presented by the region in the form of undulating topography and the mountainous backdrop with plains and valley thickets, as well as the permeability of the proposed infrastructure. The existing overhead powerlines in the area serve to reduce the visual impact. As noted, the structures associated with the proposed OHPL are permeable and comprise of a smaller powerline and support tower, thus the proposed OHPL will be less visually intrusive on the receiving environment.

Given the relatively low scale of anthropogenic activities and development, the vast landscape is appealing to one's visual senses, which may fill the observer with a sense of calmness, tranquillity and wellbeing. These characteristics have led to the development of a number of lodges and conservation areas, notably the Adddo Elephant National Park (AENP) and a number of game farms and private reserves. As such this landscape offers a unique sense of place which can be described as calm, tranquil and peaceful and being one with nature. As there are already overhead powerlines, wind farms, and substations present in the landscape the proposed project will not have a highly significant effect on the sense of place of the area. To reiterate further the AENP will not be affected by the proposed OHPL due to the distance and relatively low height of the proposed support towers, as such the sense of place experienced at AENP will not be affected.

The proposed OHPL further falls within the Eastern Corridor of the Strategic Transmission Corridors, in terms of GNR 113 of 16 February 2018. When considering the landscape value of an area, one has to take into consideration the services that may be provided by the landscape, as such with the area falling within the Eastern Corridor, the landscape value of the area is considered moderately high. As the proposed project forms part of the renewable energy projects (OHPL for the Wolf Wind Energy Facility) for the region, it will not have a significantly negative impact on the landscape value of the area, as it will provide services to the receptors in the landscape. Additionally, it is likely to increase the economic growth of the municipality.

The proposed OHPL is located within a remote area where the lighting environment of the region is considered natural and intrinsically dark. Since the proposed OHPL support towers itself will not have any sources of lighting, the proposed project will not be a source of light pollution within the area. However, should construction and emergency maintenance activities occur at night, security lights from vehicles may potentially be a source of light pollution, however for a short, relatively localised and intermittent duration.

Based on the impact assessment, it was evident that the proposed OHPL will have a low visual impact during the development phases of the project, prior to mitigation measures being implemented. The main visual impact is attributed to the vegetation clearing during the construction phase and increased human activity and vehicles in a quiet area. Once operational, the proposed project will not have significant visual impacts and human activity, apart from routine maintenance of the support tower structures will be limited.

Based on the outcome of the visual assessment it is the specialist's opinion that the proposed OHPL may be considered for authorisation with the knowledge that the significance of risk to the receiving environment is limited.

DOCUMENT GUIDE

The following table indicates the requirements for Specialist Studies as per Appendix 6 of Government Notice 326 as published in Government Notice 40772 of 2017, amendments to the Environmental Impact Assessment (EIA) Regulations, 2014 as it relates to the National Environmental Management Act, 1998 (Act No. 107 of 1998).

NEMA Regulations (2014) - Appendix 6		Relevant section in report
1a	Details of	
	(i) the specialist who prepared the report; and	Appendix M
	(ii) the expertise of that specialist to compile a specialist report including	Appendix M
b	a declaration that the specialist is independent in a form as may be specified by the competent authority;	Appendix M
c	an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.3
cA	an indication of the quality and age of base data used for the specialist report	Section 3.2
cB	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 5
d	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 3.2
e	A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3 and Appendix A to J
f	details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan	Section 4 and 5
g	an identification of any areas to be avoided, including buffers	Not applicable – findings from ecological assessment may be used to conserve natural visual resources
h	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Not applicable – findings from ecological assessment may be used to conserve natural visual resources
i	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.5
j	a description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities;	Section 5 and 6 and Appendix K
k	any mitigation measures for inclusion in the EMPr	Section 5.4 and Appendix K
l	any conditions for inclusion in the environmental authorisation	Section 5.4 and Appendix K
m	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 5.4 and Appendix K
n	a reasoned opinion	
	(i)as to whether the proposed activity, activities or portions thereof should be authorised;	Section 6
	(1A) regarding the acceptability of the proposed activity or activities; and	Section 6
	(ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 5 and 6 and Appendix K
o	a description of any consultation process that was undertaken during the course of preparing the specialist report;	Consultation with interested and affected parties (I&APs) will be undertaken as part of the project
p	summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Comments and responses that are raised by I&APs will be included in the BA report compiled by the EAP
q	any other information requested by the competent authority	No information requested at this time

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GLOSSARY OF TERMS

Best Practicable Environmental Option	This is the alternative/option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.
Characterisation	The process of identifying areas of similar landscape character, classifying and mapping them and describing their character.
Characteristics	An element, or combinations of elements, which make a contribution to landscape character.
Development	Any proposal that results in a change to the landscape and/ or visual environment.
Elements	Individual parts, which make up the landscape, for example trees and buildings.
Feature	Particularly prominent or eye-catching elements in the landscape such as tree clumps, church towers or wooded skylines.
Geographic Information System (GIS)	A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database.
Impact (Visual)	A description of the effect of an aspect of the development on a specified component of the visual, aesthetic or scenic environment within a defined time and space.
Key characteristics	Those combinations of elements which are particularly important to the current character of the landscape and help to give an area it particularly distinctive sense of place.
Land cover	The surface cover of the land, usually expressed in terms of vegetation cover or the lack of it. Related to but not the same as Land use.
Land use	What land is used for based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry.
Landform	The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.
Landscape	An area, as perceived by people, the character of which is the result of the action and interaction, of natural and/ or human factors.
Landscape Character Type	These are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur, they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.
Landscape integrity	The relative intactness of the existing landscape or townscape, whether natural, rural or urban, and with an absence of intrusions or discordant structures.
Landscape quality	A measure of the physical state of the landscape. It may include the extent to which typical landscape character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Landscape value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a variety of reasons.
Receptors	Individuals, groups or communities who are subject to the visual influence of a particular project. Also referred to as viewers, or viewer groups.
Sense of place	The unique quality or character of a place, whether natural, rural or urban, allocated to a place or area through cognitive experience by the user. It relates to uniqueness, distinctiveness or strong identity and is sometimes referred to as genius loci meaning 'spirit of the place'.
Sky glow	Brightening of the night sky caused by outdoor lighting and natural atmospheric and celestial factors.
Skylining	Siting of a structure on or near a ridgeline so that it is silhouetted against the sky.

View catchment area	A geographic area, usually defined by the topography, within which a particular project or other feature would generally be visible.
Viewshed	The outer boundary defining a view catchment area, usually along crests and ridgelines.
Visibility	The area from which project components would potentially be visible. Visibility is a function of line of sight and forms the basis of the VIA as only visible structures will influence the visual character of the area. Visibility is determined by conducting a viewshed analysis which calculates the geographical locations from where the proposed power line might be visible.
Visual Absorption Capacity	The ability of an area to visually absorb development as a result of screening topography, vegetation or structures in the landscape.
Visual Character	The overall impression of a landscape created by the order of the patterns composing it; the visual elements of these patterns are the form, line, colour and texture of the landscape's components. Their interrelationships are described in terms of dominance, scale, diversity and continuity. This characteristic is also associated with land use.
Visual Exposure	The relative visibility of a project or feature in the landscape. Visual exposure is based on distance from the project to selected viewpoints. Visual exposure or visual impact tends to diminish exponentially with distance.
Visual Intrusion	The nature of intrusion of an object on the visual quality of the environment resulting in its compatibility (absorbed into the landscape elements) or discord (contrasts with the landscape elements) with the landscape and surrounding land uses.
Zone of visual influence	An area subject to the direct visual influence of a particular project.

*Definitions were derived from Oberholzer (2005) and the Institute of Environmental Management and Assessment (2013)

LIST OF ACRONYMS

AENP	Addo Elephant National Park
ARC	Agricultural Research Council
BLM	(United States) Bureau of Land Management
BPEO	Best Practicable Environmental Option
CDM	Cacadu District Municipality
DEA	Department of Environmental Affairs
DEM	Digital Elevation Model
DTM	Digital Terrain Model
DWAF	Department of Water Affairs and Forestry
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
IEM	Integrated Environmental Management
GIS	Geographic Information System
GN	Government Notice
GPS	Global Positioning Systems
IAPs	Interested and Affected Parties
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
KOP	Key Observation Point
LI IEMA	Landscape Institute and Institute of Environmental Management and Assessment
m.a.m.s.l.	Meters above mean sea level
NEMA	National Environmental Management Act (No. 108 of 1997)
NMBMM	Nelson Mandela Bay Metropolitan Municipality
OHPL	Overhead Powerline
NGL	Natural Ground Level
PNR	Private Nature Reserve
REDZ	Renewable Energy Development Zones
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SACAD	South African Conservation Areas Database
SANBI	South African National Biodiversity Institute
SAPAD	South African Protected Areas Database
SAS	Scientific Aquatic Services
SEA	Strategic Environmental Assessment
SRVLM	Sundays River Valley Local Municipality
UNESCO	United Nations Educational Scientific and Cultural Organization
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
VRM	Visual Resource Management
WEF	Wind Energy Facility
WHS	World Heritage Site

1 INTRODUCTION

1.1 Background

Scientific Aquatic Services (SAS) was appointed to conduct a Visual Impact Assessment (VIA) as part of the basic assessment process for the proposed 132 kV overhead powerline (OHPL) as part of the proposed development of the Wolf Wind Energy Facility (WEF). The proposed OHPL stretches from the Wolf substation to the Skilpad substation and ties in at the Grassridge substation, within the Eastern Cape Province.

The total extent of the proposed OHPL is approximately 90 kilometers (km) in length. The Wolf substation is situated approximately 2,4 km south of the town of Kleinpoort, while the Skilpad substation is situated directly adjacent to the Daniell Cheetah Project Farm (the middle of the OHPL) and the Grassridge substation is located approximately 8,6 km north north west of the town of Coega, Eastern Cape. The extent of the proposed OHPL is depicted in Figures 1 – 2 below.

A VIA entails a process of data collection, spatial analysis, visualisation and interpretation to describe the quality of the landscape prior to development taking place and then identifying possible visual impacts after development. Assessing visual impacts can be complicated as it is very subjective due to a person's perception being affected by more than only the immediate environmental factors (Oberholzer, 2005).

This report, after consideration and description of the visual integrity of the surface infrastructure area, must guide the proponent, authorities and Environmental Assessment Practitioner (EAP), by means of recommendations, as to the suitability of the proposed project area for the intended land use, from a visual resource management and aesthetic point of view. This report should furthermore serve to inform the planning, design and decision-making process as to the layout and nature of the proposed development activities.

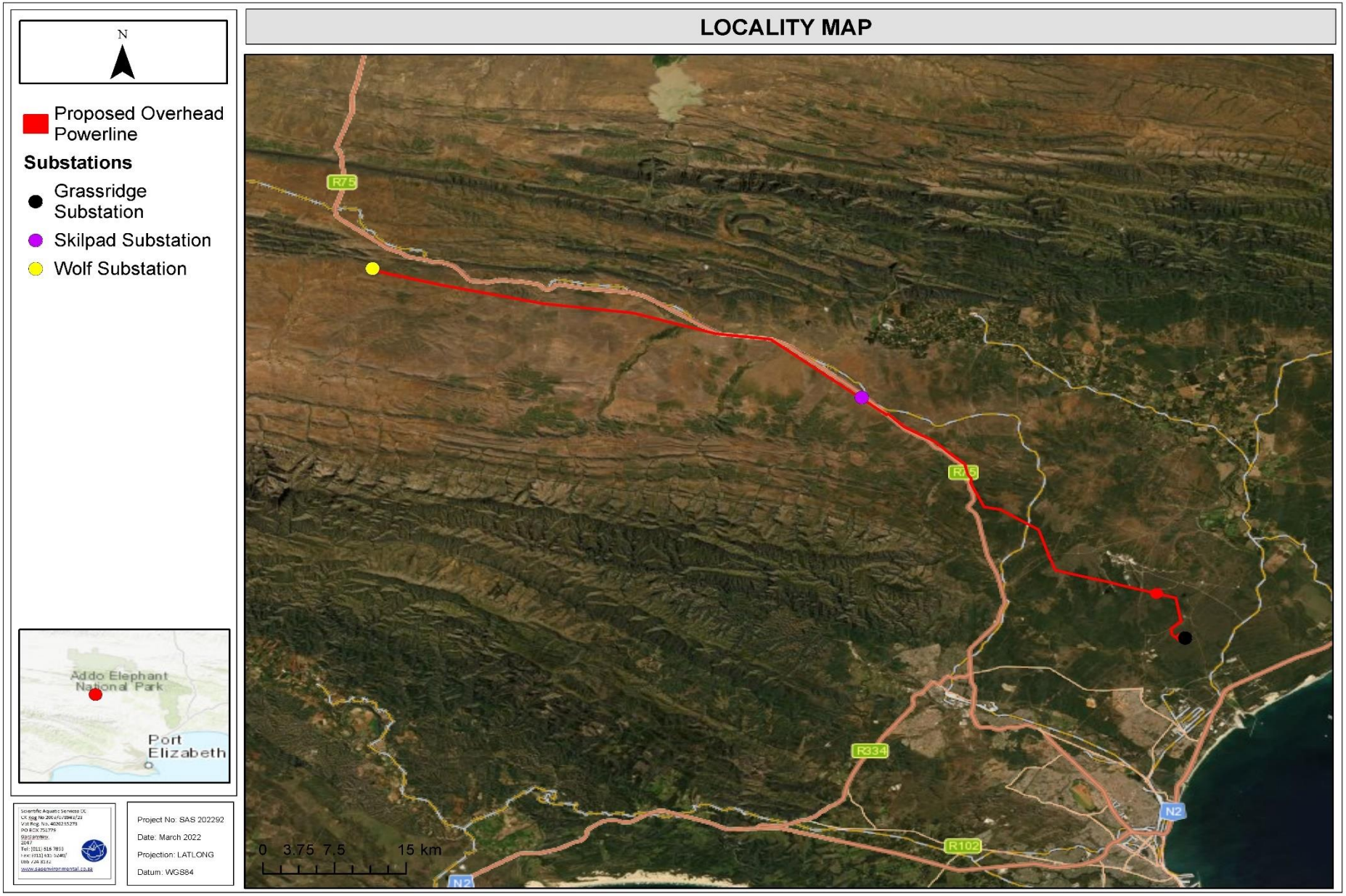


Figure 1: Digital satellite image depicting the location of the proposed OHPL and associated substations, in relation to the surrounding region.

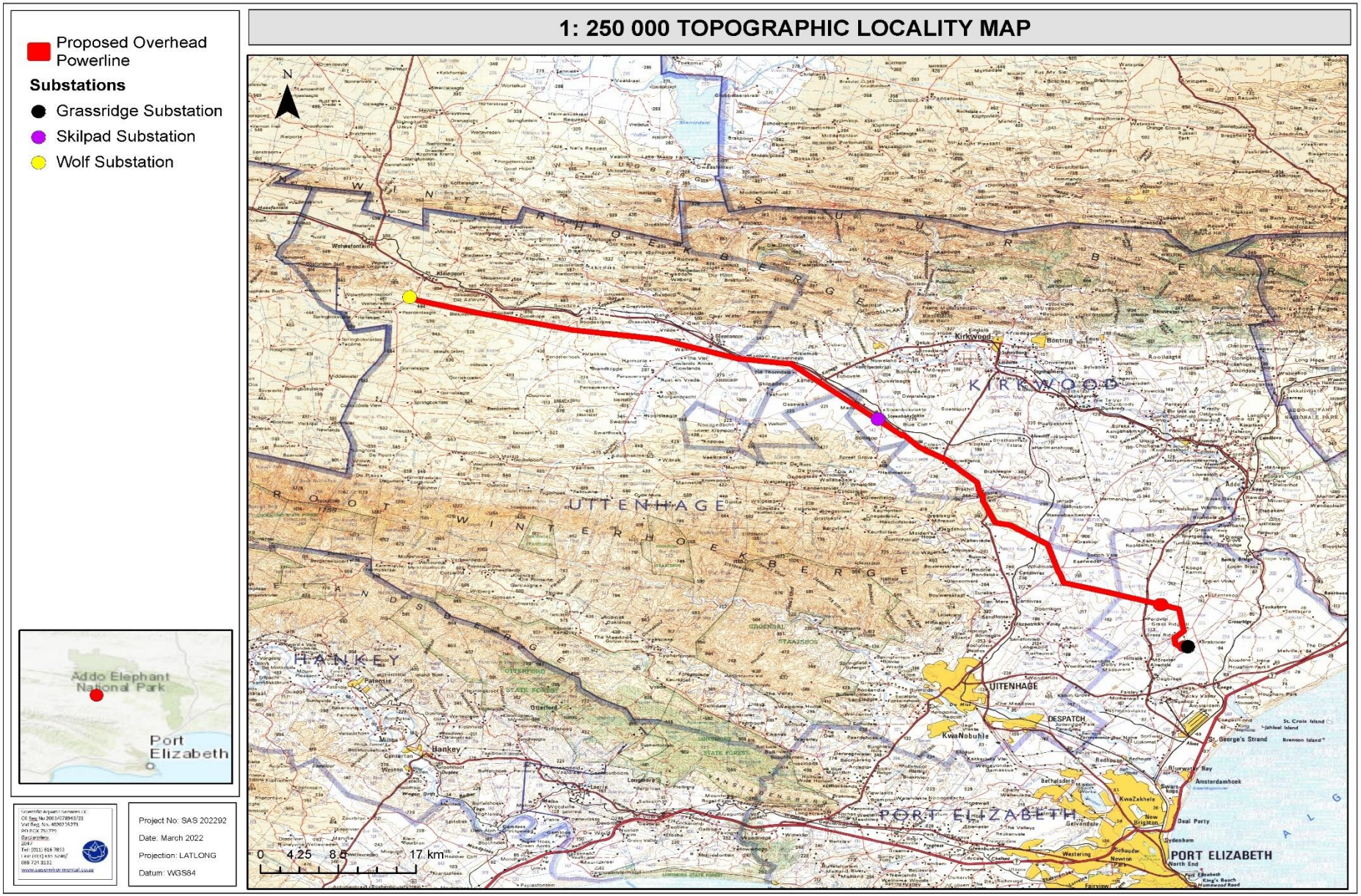


Figure 2: 1:50 000 Topographical map depicting the location of the proposed OHPL and associated substations, in relation to the surrounding region.

1.2 Project Description

The information below was taken from the technical document compiled by Red Rocket's engineers. SAS takes no responsibilities for any inaccuracies pertaining to details of the proposed project contained therein.

An existing 132kV transmission line runs between the Wolf and Skilpad substations (approximately 46 km long) and Skilpad to Grassridge substations (approximately 44 km long) and is located north of Kariega and West of Kirkwood. The line runs from the Grassridge substation in a general north-westerly direction to the Skilpad- and Wolf substation and is approximately 90km in length.

Eskom requires that Wolf Wind Farm (RF) (Pty) Ltd, a preferred bidder in the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) Bid Window 5, construct a new Wolf-Skilpad-Grassridge 132kV transmission line adjacent to the existing line and that the old line be decommissioned in the future. The new transmission line forms part of the works required for connecting the Wolf Wind Farm to the national grid and will prevent potential future capacity issues and failure of the infrastructure. The monopole structures will be at a height of 40 m, and depending on the terrain, the conductors can vary and may go up to 100 m high, this will however only be determined once the lidar survey is complete. For the purpose of the VIA though, only the heights of the monopole structures will be utilised for the viewshed analysis, as the conductors are considered a low visual impact due to its permeability. Self-supporting monopole structures will be used where required.

There will be two types of disturbance associated with the erection of the monopoles;

- **Temporary disturbance** consisting of the excavation of the foundation and general construction activities; and
- **Permanent disturbance** which is the infrastructure that is mounted on the foundation and is located above ground.

The support tower structure type to be used for the proposed new OHPL needs to be confirmed, but it will likely be steel monopole and lattice structures (Figure 3). The new line will be accessed via new tracks under the proposed OHPL. The figure below illustrates the typical design of a steel monopole and steel lattice tower structure.

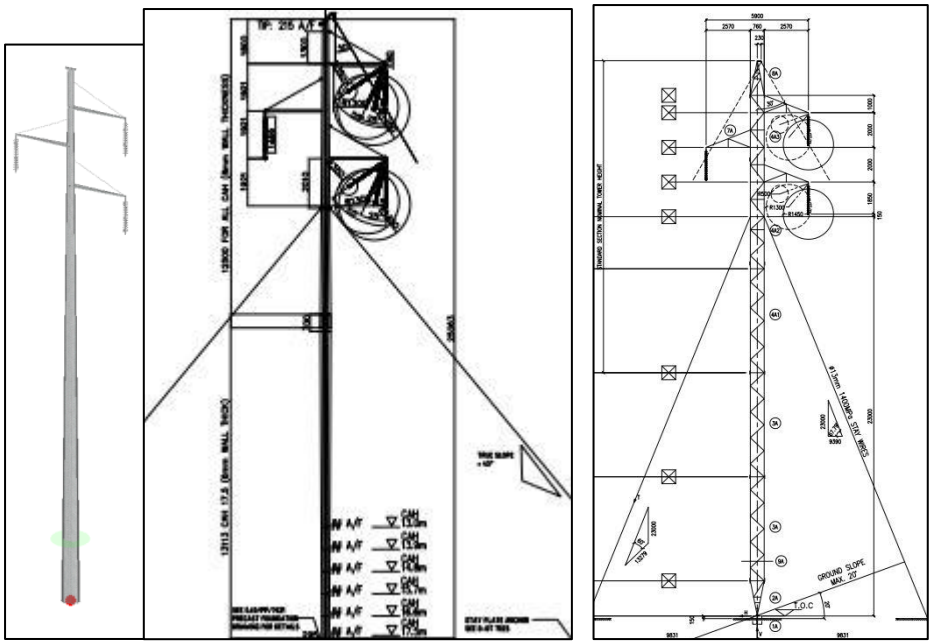


Figure 3: Typical monopole (left) and lattice (right) tower structure.

1.3 Project Scope

The purpose of this report is:

- To determine the Category of Development and Level of Assessment as outlined by Oberholzer (2005);
- To describe the receiving environment in terms of regional context, location and environmental and landscape characteristics;
- To describe and characterise the proposed project and the receiving environment in its envisioned future state;
- To identify the main viewsheds through undertaking a viewshed analysis, based on the proposed heights of infrastructure components and the Digital Elevation Model (DEM), as a mechanism to identify the locations of potential sensitive receptors sites and the distance of these receptor sites from the surface infrastructure area;
- To identify and describe potential sensitive visual receptors residing at or utilising receptor sites;
- To establish receptor sites and identify Key Observation Points (KOPs) from which the proposed project will have a potential visual impact, if necessary;
- To prepare a photographic study and conceptual visual simulation of the proposed project as the basis for the viewshed identification and analysis, if necessary;
- To assess the potential visual impact of the proposed project from selected receptors sites in terms of standard procedures and guidelines; and
- To describe mitigation measures in order to minimise any potential visual impacts.

1.4 Principles and Concepts of VIAs

Visual resources have value in terms of the regional economy and inhabitants of the region. Furthermore, these resources are often difficult to place a value on as they normally also have cultural or symbolic values. Therefore, VIAs are to be performed in a logical, holistic, transparent and consistent manner. Oberholzer (2005) identifies the following concepts to form an integral part of the VIA process:

- Visual resources include the visual, aesthetic, cultural and spiritual aspects of the environment, which contribute toward and define an area's sense of place;
- Natural and cultural landscapes are inter-connected and must be considered as such;
- All scenic resources, protected areas and sites of special interest within a region need to be identified and considered as part of the VIA;
- All landscape processes such as geology, topography, vegetation and settlement patterns that characterise the landscape must be considered;
- Both quantitative criteria, such as 'visibility' and qualitative criteria, such as aesthetic value or sense of place has to be included as part of the assessment;
- VIAs must inform the Environmental Impact Assessment (EIA) process in terms of visual inputs; and
- Public involvement must form part of the process.

The guideline furthermore recommends that the VIA process identifies the Best Practicable Environmental Option (BPEO) based on the following criteria:

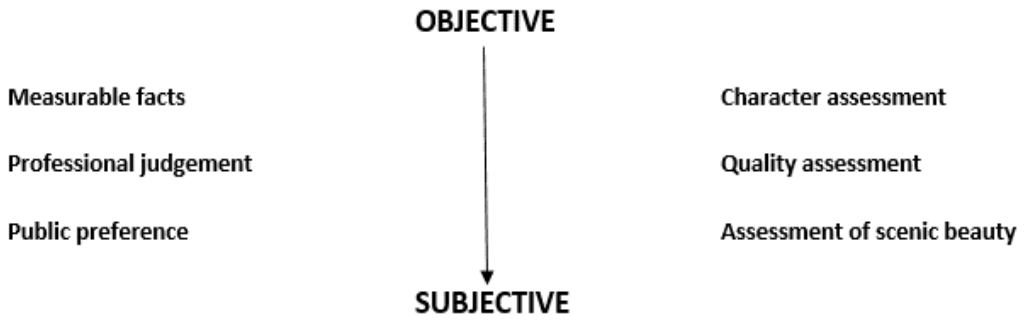
- Long term protection of important scenic resources and heritage sites;
- Minimisation of visual intrusion on scenic resources;
- Retention of wilderness or special areas intact as far as possible; and
- Responsiveness to the area's uniqueness, or sense of place.

1.5 Assumptions and Limitations

- No specific national legal requirements for VIAs currently exist in South Africa. However, the assessment of visual impacts is required by implication when the provisions of relevant acts governing environmental management are considered and when certain characteristics of either the receiving environment or the proposed project indicate that visibility and aesthetics are likely to be significant issues and that visual input is required (Oberholzer, 2005);
- Due to a lack of visual specialist guidelines within the Eastern Cape Province, the "Guidelines for Involving Visual and Aesthetic Specialists in the EIA Process"

(Oberholzer, 2005), prepared for the Western Cape Department of Environmental Affairs & Development Planning, was used;

- Distance, terrain, existing infrastructure within the surrounding area plays a critical role when assessing visual impacts of an area. Since the majority of the proposed OHPL is aligned with the existing OHPL, the visual impact is already present, as such the potential sensitive receptors in the area are accustomed to the OHPL. As such, due to the undulating terrain and existing powerline and substation infrastructure, it was deemed sufficient to identify all potential sensitive receptors within a 2 km radius of the proposed OHPL, on a desktop-level, which were then verified during the field assessment. The 2 km radius can be considered the visual assessment zone. It should be noted that the visibility of an object decreases exponentially the further away the observer is from the source of impact;
- All information relating to the proposed project as referred to in this report is assumed to be the latest available information. Additionally, best practice guidelines were taken into consideration and the maximum expected heights of the infrastructure and the placement thereof utilised in the viewshed calculations as a precautionary approach; and
- Abstract or qualitative aspects of the environment and the intangible value of elements of visual and aesthetic significance are difficult to measure or quantify and as such depend to some degree on subjective judgments. It therefore is necessary to differentiate between aspects that involve a degree of subjective opinion and those that are more objective and quantifiable, as outlined in the diagram below (The Landscape Institute and Institute of Environmental Management and Assessment (LI IEMA, 2002).



2 LEGAL, POLICY AND PLANNING CONTEXT FOR VIAs

Oberholzer (2005) indicates that current South African environmental legislation governing the EIA process, which may include consideration of visual impacts if this is identified as a key

issue of concern, is the National Environmental Management Act, 1998 (Act No. 107 of 1998). This includes the 2014 NEMA EIA regulations as amended (published in General Notice (GN) No. 324, GN No. 325 and GN No. 327).

In addition, the following acts and guidelines are applicable (Oberholzer, 2005):

The National Environmental Management: Protected Areas Act (Act No. 57 of 2003)

This act was developed in 2003 for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes

- Restricted activities involving national and protected parks:
- 48(1) Despite other legislation, no person may conduct commercial prospecting, mining, exploration, production, or related activities–
  - (a) in a special nature reserve, national park, or nature reserve
  - (b) in a protected environment without the written permission of the Minister and the Cabinet member responsible for minerals and energy affairs; or
  - (c) in a protected area referred to in section 9(b), (c) or (d).

The National Heritage Resources Act (Act No. 25 of 1999)

This provides legislative protection for listed or proclaimed sites, such as urban conservation areas, nature reserves and proclaimed scenic routes.

The Advertising on Roads and Ribbons Act (Act No. 21 of 1940)

Visual pollution is controlled, to a limited extent, by the Advertising on Roads and Ribbons Act (Act 21 of 1940), which deals mainly with signage on public roads.

The Municipal Systems Act (Act No. 32 of 2000)

In terms of the Municipal Systems Act (Act 32 of 2000), it is compulsory for all municipalities to initiate an Integrated Development Planning (IDP) process in order to prepare a five-year strategic development plan for the area under their control. The IDP process, specifically the spatial component is based in certain areas and provinces on a bioregional planning approach to achieve continuity in the landscape and to maintain important natural areas and ecological processes. The majority of the proposed OHPL, including the Wolf and Skilpad substations are situated within the Sundays River Valley Local Municipality (SRVLM) and the Cacadu District Municipality (CDM) while the south eastern portion of the proposed OHPL and the Grassridge substation is situated within the Nelson Mandela Bay Metropolitan Municipality (NMBMM).

The 2021/2022 IDP of the SRVLM acknowledges that due to the growing citrus industry and subsequent growth of the population there is strain on the current electricity grid, as such alternative sources of energy such as wind turbines are being developed in the area.

The strategic focus in respect of the provision of electricity and energy in Nelson Mandela Bay is to ensure universal access to safe and reliable electricity supply to all residents; to provide support to social and economic activities through capable and reliable electricity infrastructure; and to implement and investigate renewable energy and alternative energy technologies to ensure future sustainability (Nelson Mandela Bay IDP 2021/22). The electricity landscape has been subjected to vast changes during recent times, and with the innovation and developments in own-generation facilities, many households have elected to connect and install photovoltaic installations on their premises. According to the IDP, the refurbishment of old infrastructure such as powerlines and their supporting structures are intended for the near future. As such this project aligns with the intentions of the IDPs.

Renewable Energy Development Zones

A Strategic Environmental Assessment (SEA) was undertaken by the former Department of Environmental Affairs (DEA), which is now known as DEFF, in order to identify geographical areas most suitable for the rollout of wind and solar PV energy projects and the supporting electricity grid network. These areas are referred to as Renewable Energy Development Zones (REDZs), in which development will be incentivised and streamlined. The proposed Project Sites are not located within any REDZs. According to GNR 114 of 16 February 2018, where an Application for Environmental Authorisation for large scale wind or solar PC facilities is being made, and these facilities fall outside of the REDZs, these applications will be considered in terms of the requirements of the EIA Regulations of 2014 (as amended). The proposed OHPL falls within the Eastern Corridor of the Strategic Transmission Corridors, in terms of GNR 113 of 16 February 2018.

Other

- Visual and aesthetic resources are also protected by local authorities, where policies and by-laws relating to urban edge lines, scenic drives, special areas, signage, communication masts, etc. have been formulated; and

3 METHOD OF ASSESSMENT

3.1 Desktop Assessment

The method of assessment for this report is based on a spatial analysis of the proposed project area and the surrounding areas, using Geographic Information Systems (GIS) such as Planet GIS, ArcGIS, Global Mapper as well as digital satellite imagery, photographs, various databases and all available data on the planned infrastructure. The desktop assessment served to guide the field assessment through identifying preliminary areas of importance in terms of potential visual impacts.

The desktop study included an assessment of the current state of the environment of the area including the climate of the area, topography, land uses and land cover with data obtained from the websites of the South African National Biodiversity Institute (SANBI) and the Agricultural Research Council (ARC). All databases used were published within the last 5 years and contain up to date and relevant information.

During the desktop assessment, which took place prior to and in preparation of the field assessment, the 1:50 000 topographical map, as well as high definition aerial photographs from Google Earth Pro were used to identify the dominant landforms and landscape patterns. These resources together with digital elevation data were utilised to establish a parameter within which potential sensitive receptors were to be identified via Google Earth Pro. These parameters can henceforth be referred to as the visual assessment zone. Based on the existing infrastructure in the area, the visual assessment zone encompasses a 2 km radius of the proposed OHPL. The potentially sensitive receptors identified within the visual assessment zone during the desktop assessment was verified during the field assessment.

Detailed assessment methods used to determine the landscape characteristics of the receiving environment and potential visual impacts of the project are outlined in the relevant sections below as well as in Appendices A – J.

3.2 Field Assessment

A field assessment was undertaken during the summer season from the 7th of February until the 11th of March 2022. As the surrounding area predominantly comprises thicket and shrubland vegetation and some agricultural practices, thus the season within which the VIA takes place is irrelevant as the vegetation screening factor will remain similar. Seasonal colour variation will however be evident between winter and summer.

The field assessment included a drive-around and on-foot survey of the proposed OHPL and in the immediate vicinity thereof and a drive-around of the surrounds, to determine the visual context within which the proposed project is to be developed. Focus was placed on assessing the potentially sensitive receptors identified within the visual assessment zone, these included farms and prominent roads within the area. Points from where the proposed OHPL was determined to be visible were recorded (making use of Global Positioning Systems (GPS) to confirm these aesthetically sensitive viewpoints and potential sensitive visual receptors in relation to the proposed project.

4 RESULTS OF INVESTIGATION

4.1 Public Involvement

A public participation process will be initiated as part of the Basic Assessment process, at which time stakeholders are invited to provide input concerning the proposed development. Any concerns regarding visual impacts will be addressed through this process.

4.2 Development Category and Level of Impact Assessment

Through application of the VIA methods of assessment as presented in Appendix A, it was determined that the proposed project can be defined as a Category 5 development, which includes powerlines. The environment within which the proposed project is located is considered of low cultural significance, however a high visual impact is still expected.

Based on the outcome of the field assessment it is evident that the proposed OHPL is aligned with the existing overhead powerline servitudes and thus located within already disturbed areas, where the powerlines are features in the landscape. It is also important to note that the structures are permeable / transparent and a 132 kV powerline with its associated monopole towers, steel or lattice structures, is a smaller line, thus less visually intrusive. Since the landscape already contains powerline structures and associated existing substations, therefore the potential visual impact of the proposed OHPL is likely insignificant and will not be visually intrusive on the receiving environment. In light of the above, the proposed OHPL is likely to have a low visual impact on the receiving environment, therefore a Level 2 Assessment was undertaken versus a level 4 Assessment.

4.3 Description of the Receiving Environment

To holistically describe the receiving environment, this section of the report aims to determine the intrinsic value of the receiving landscape including aspects of the natural, cultural and scenic landscape, taking both tangible and intangible factors into consideration. The table below aims to describe the particular character, uniqueness, intactness, rarity, vulnerability and representability of the surface infrastructure area within its existing context. General views of the landscape associated with the proposed OHPL and surrounds and the overall character are indicated in the table below.

Table 1: Summary of the visual assessment of the proposed OHPL and surrounds.

General view of the proposed OHPL route, indicating the thickets, shrubland vegetation within the area, the existing powerline structures and substations, the surrounding mountainous terrain.

Climate (Appendix C)	As this region is characterised by undifferentiated, year-round precipitation, the appearance and perception of the landscape within the surroundings of the proposed OHPL remains largely constant throughout the seasons in terms of the chroma of the area. As such variation as a result of seasonal precipitation cycles, may have some effect on the area from where project components would potentially be visible, with visibility expected to be slightly higher during the drier months when seasonal screening effects from vegetation is somewhat lowered. The significance of this variation is however limited.	**Landscape Character (Appendix E)**	The proposed OHPL is located within a remote area with isolated farmsteads, mostly associated with the surrounding Game Farms, and small villages. The terrain is a unique combination of mountains and plains and undulating topography, which is characterised by thickets, shrubland and scattered bushclumps. Key aesthetic aspects of the landscape associated with the proposed OHPL and the surrounding region is described in Appendix E. The proposed OHPL is situated within a unique landscape with mountain ranges, valley thickets and plains, providing topographical diversity in the panoramic view. With the mountain ranges and undulating topography the form of the landscape is considered rolling. Since the area is remote with limited human interaction, the movement within the area of the proposed OHPL is considered still with limited movement resulting from farmers and people visiting the Game Farm in the area. Due to the network of gravel roads and existing grid connection of overhead powerlines and substations present in the landscape, the landscape character has already been affected by similar structures to that which is proposed. As such, the visual impact associated with proposed OHPL is already present, therefore receptors within the vicinity thereof have grown accustomed to it. It is therefore concluded that the proposed OHPL is expected to have a low to negligible impact on the landscape character within the region.
Land Use and visual receptors (Appendix D)	The proposed OHPL is situated in a remote area where disturbance is mostly limited to a network of existing powerlines and associated maintenance roads and substations, railway lines and roads and isolated farmsteads. The area predominantly comprised of thickets, shrubland and scattered bushclumps. Since the proposed OHPL is situated within a remote area with a low population density, there are limited villages along the proposed OHPL route. These villages are limited to Kleinpoort, and Glenconnor, Due to the limited development in the region there are several Game Reserves and Private Nature Reserves namely: Blaawbosch Game Farm, Schuilpatdop Game Farm, Brakkefontein Game Farm, Inthaba Lodge Game Farm, Citruslandgoed Game Farm, Grassridge Private Nature Reserve, Tregathlyn Game Farm, and the Adddo Elephant National Park (AENP) (all listed under SAPAD (2021) and NPAES (2009) Databases). Permanent residents in the area and visitors to the Game Farms, Nature Reserves and AENP are considered highly sensitive receptors, while people at their place of work are moderately sensitive receptors, as they are likely to focus on the activities at hand and not the surrounding environment. As noted, the proposed OHPL is located at existing overhead powerline servitudes tying in with existing substations, thus the residents in the villages and visitors at the Game Farms have either grown accustomed to the grid connection setting, or is unlikely to observe the proposed OHPL, therefore the sensitivity of these receptors may be considered moderately low. The AENP's Park Management Plan provides for interface zones along the boundaries of the park, which shows which show areas within which land use change could affect the Park. These include 'Priority Natural Areas' – zones around the AENP aiming to ensure long term persistence of biodiversity, within and around the park, by identifying key areas on which the long term survival of the park depends, this zone acts as a guide or filter to EIAs, and a 'Viewshed Protection Zone' – areas where development could impact the aesthetic quality of a visitors experience in the park (D. J/v Vuuren, 2015). The proposed OHPL does not fall within the Viewshed Protection Zone, however a small northern section falls within the Priority Natural Areas zone. Due to the relative distance, undulating terrain, existing powerlines and the permeability and relatively low height of the proposed OHPL, visitors at the AENP, will not have a clear line of sight toward the proposed OHPL, as such the visual impact on the AENP, in particular, will be negligible.	**Visual Absorption Capacity (VAC) (Appendix F)**	**High (Score 12)** The VAC of the area is considered high, indicating that the proposed OHPL will be absorbed in the area resulting in a low visual intrusion. The main contributing factor to the high VAC is the visual variety presented by the region in the form of undulating topography and the mountainous backdrop with plains and valley thickets, as well as the permeability of the proposed infrastructure. The existing overhead powerlines in the area serve to lessen the visual impact. As noted, the structures associated with the proposed OHPL are permeable and a smaller powerline and support tower, thus the proposed OHPL will be less visually intrusive on the receiving environment.
		Landscape Quality (Appendix G)	**High (Score 19)** With the unique landscape of mountains, hills, valleys and plains, there is significant topographical variety in the area, therefore the visual quality and viewing experience of the landscape is considered high. The adjacent scenery greatly enhances the viewing experience and panoramas of the area. Even though there are watercourse associated with the proposed OHPL, it is not dominant in the landscape. With the existing overhead powerlines and substations and other anthropogenic structures such as houses, gravel roads and fences, the proposed OHPL will not introduce discordant elements into the environment. Furthermore, during the field assessment it was evident that with the permeability of the existing support towers, the overhead powerlines were not

	Major roads include the R75 from Jansenville to Port Elizabeth and the R335 from Somerset East to Coega. The majority of the proposed OHPL runs parallel with the R75. Other roads include the R336, and a network of access roads to farms, all of which are dirt roads. The R336 provides access to AENP from the west. A network of 22kV distribution lines and a single 132kV line between Skilpad and Wolf Substations impact on views of the landscape in places. As powerlines are more commonly aligned with roads, motorists have grown accustomed to having powerlines in their view when traveling, thus motorists are classified as low sensitivity receptors.		significantly visually intrusive. As such with the proposed OHPL support towers being smaller than the existing support towers, the anticipated visual impact will be insignificant.
Topography	The local topography of the area associated with the proposed OHPL is characterised by a unique combination of mountains and plains and undulating topography. Mountain ranges in an east-west orientation are a dominant feature in the landscape with high visual prominence along the proposed OHPL. The plains wherein the proposed OHPL is situated, accentuates the quality of the visibility of the mountain ranges that appear in all panoramas. Refer to Figure 6 & 7 for the elevation and slopes associated with the area.	**Landscape Value (Appendix H)**	As mentioned in Section 2 the municipalities recognise the need to meet energy requirements of its residents in a dynamic sector. The proposed OHPL will thus be developed to serve growing energy requirements of the Eastern Cape Province and will generate power for delivery to the local / national grid. The proposed OHPL further falls within the Eastern Corridor of the Strategic Transmission Corridors, in terms of GNR 113 of 16 February 2018. When considering the landscape value of an area, one has to take into consideration the services that may be provided by the landscape, as such with the area falling within the Eastern Corridor, the landscape value of the area is considered moderately high. As the proposed project forms part of the renewable energy projects (OHPL for the Wolf Wind Energy Facility) for the region, it will not have a significantly negative impact on the landscape value of the area, as it will provide services to the receptors in the landscape. Additionally, it is likely to increase the economic growth of the municipality.
Vegetation Cover (Appendix C)	The majority of the proposed OHPL falls within the Sundays Valley Thicket vegetation, while the remaining portions fall within the Albany Alluvial Vegetation, Sundays Arid Thicket, and Grassridge Bontveld according to Mucina & Rutherford (2018). With the low population density of the area, there are limited disturbance, thus the vegetation remains largely representative of the vegetation types as classified by Mucina and Rutherford (2018). The vegetation presents a relatively unique Karoo landscape, with the vegetation presenting a short continuous cover. With the exception of the scattered bushclumps and isolated trees, the vegetative component of the area provides relatively low screening ability, thus not providing significant assistance to the visual absorption capacity of the area. Vegetation clearing will form part of the construction phase of the proposed project, which will lead to a moderate visual impact on the surrounding environment, however there is already an existing maintenance dirt road associated with the existing overhead powerline, where the vegetation is cleared. In light of the above the proposed maintenance road is likely to lead to increased visual scarring, in the form of more bare ground present in the landscape.	**Sense of Place**	Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. It is created by the land use, character and quality of a landscape, as well as by the tangible and intangible value assigned thereto. Given the relatively limited scale of anthropogenic activities and development, the vast landscape is appealing to one's visual senses, which may fill the observer with a sense of calmness, tranquillity and wellbeing. These characteristics have led to the development of a number of lodges and conservation areas, notably the AENP and a number of private reserves. As such this landscape offers a unique sense of place which can be described as calm, tranquil and peaceful and being one with nature. As there are already overhead powerlines, wind farms, and substations present in the landscape the proposed project will not lead to a significant change in the sense of place of the area. To reiterate further the AENP will not be affected by the proposed OHPL due to the distance and relatively low height of the proposed support towers, as such the sense of place experienced at AENP will not be significantly affected.
Night Time Lighting (Appendix I)			
The proposed OHPL is located within a remote area where there are very limited and scattered sources of night-time lighting, such as the farmsteads and the villages. The lighting environment of the region is therefore considered natural and intrinsically dark (Zone E1). Since the proposed OHPL support towers itself will not have any sources of lighting, the proposed OHPL will not be a source of light pollution within the area. However, should construction and emergency maintenance activities occur at night, security lights from vehicles may potentially be a source of light pollution, however for a short intermittent duration.		
Visual Exposure and Visibility (Appendix J)			

Taking the VAC (vegetation and topography) of the surrounding environment into consideration, the proposed OHPL will not be highly visible to sensitive receptors situated further than 2 km. Additionally, taking the existing OHPL and substations in the area and the proposed smaller support tower structures into consideration the proposed OHPL is likely to have a low visual exposure. The proposed OHPL is therefore considered to be in the moderately low visibility zone to any receptors situated within 2 km of the proposed OHPL, with the exception of some roads traversing the OHPL route and the Daniell Cheetah Project Farm which is more visually exposed. Although as mentioned earlier the proposed OHPL is replacing the existing overhead powerline with smaller support towers, therefore the visual impact is already existing and can be concluded to be less visually intrusive support towers. The proposed OHPL is situated within the low visibility zone of any receptors located further than 2 km, due to the permeability of the structures and the existing powerlines making it difficult to distinguish at a distance.

From the viewshed analysis, it was evident that the proposed OHPL will fall within the high visibility zone to receptors or vantage points situated within a 2 km radius of the proposed OHPL (Figure 8). According to the viewshed analysis the south eastern and northern portion of the proposed OHPL will not be visible to receptors located to the north and situated further than 2,5 km, however receptors located to the south is likely to observe the proposed OHPL. It should be noted that the proposed OHPL is situated within a remote area, as such there are a limited number of receptors present. With the exception of the Blaawbosch Garm Farm and the Grassridge Private Nature Reserve, the Game Farms located in the area is not likely to experience a high visual impact from the proposed OHPL due to the distance, undulating topography, bushclumps and permeability of the proposed infrastructure. Even though Blaawbosch Game Farm and Grassridge Private Nature Reserve borders the proposed OHPL, the visual impact is already present in the landscape due to existing overhead powerlines, and the permeability of the proposed OHPL and mountainous terrain renders a moderately low visual impact. As observed in the field, the proposed OHPL will not be significantly visible to receptors located further than 2 km, due to the existing powerlines and substations in the area, as well as the permeability of the structures.

The portion of the OHPL located between the Wolf and Skilpad Substations are likely to be visible to receptors located within a 5 km radius. The viewshed analysis does not take into account the existing anthropogenic structures such as the existing powerlines and substations and vegetation, therefore the field assessment provided a more accurate assessment of the visibility. The 132kV powerline is a smaller line and the support tower structures are smaller, therefore the proposed OHPL are less visually intrusive and are difficult to observe from a distance.

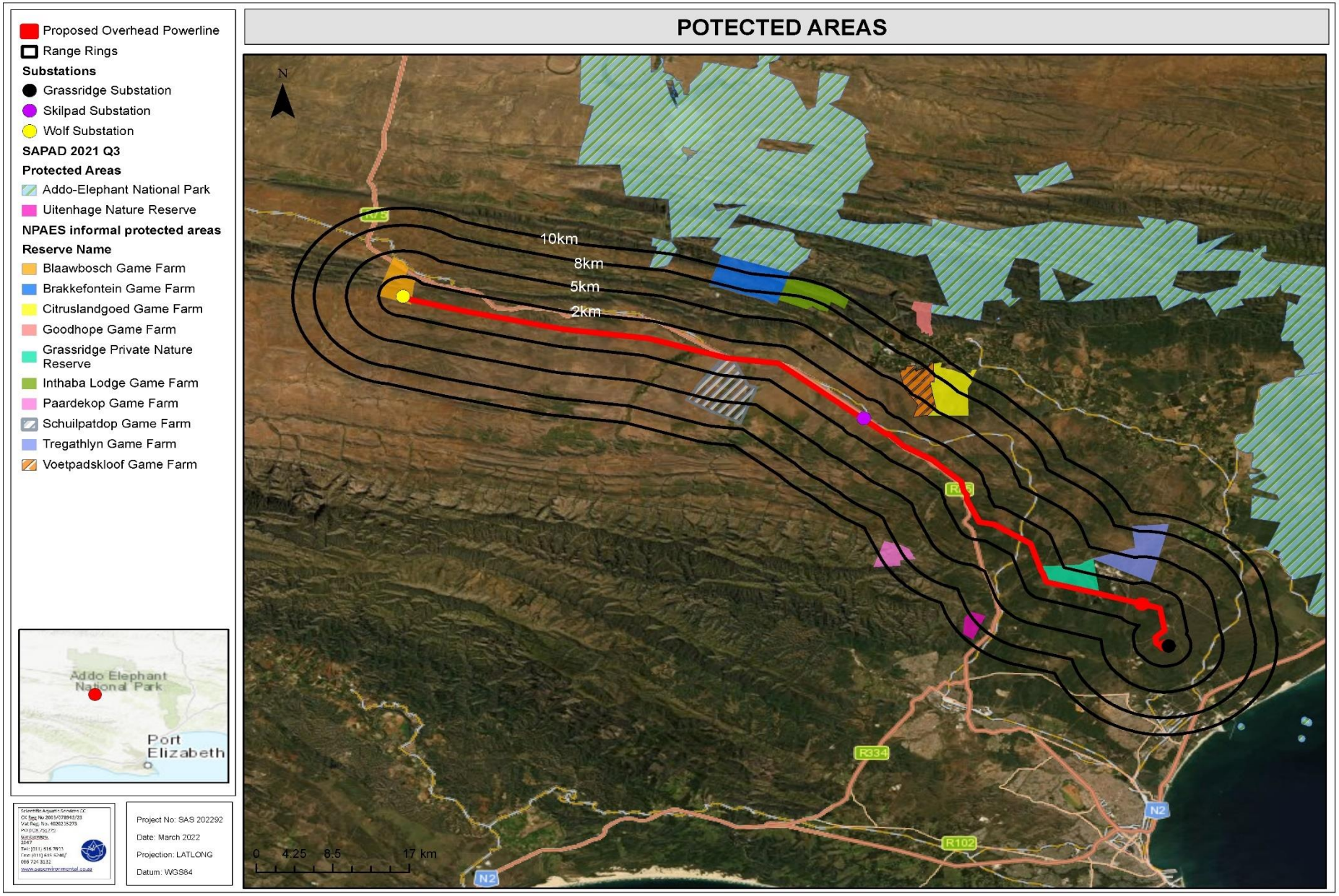


Figure 4: Map indicating the location of protected areas within a 10 km radius of the proposed OHPL and substations.

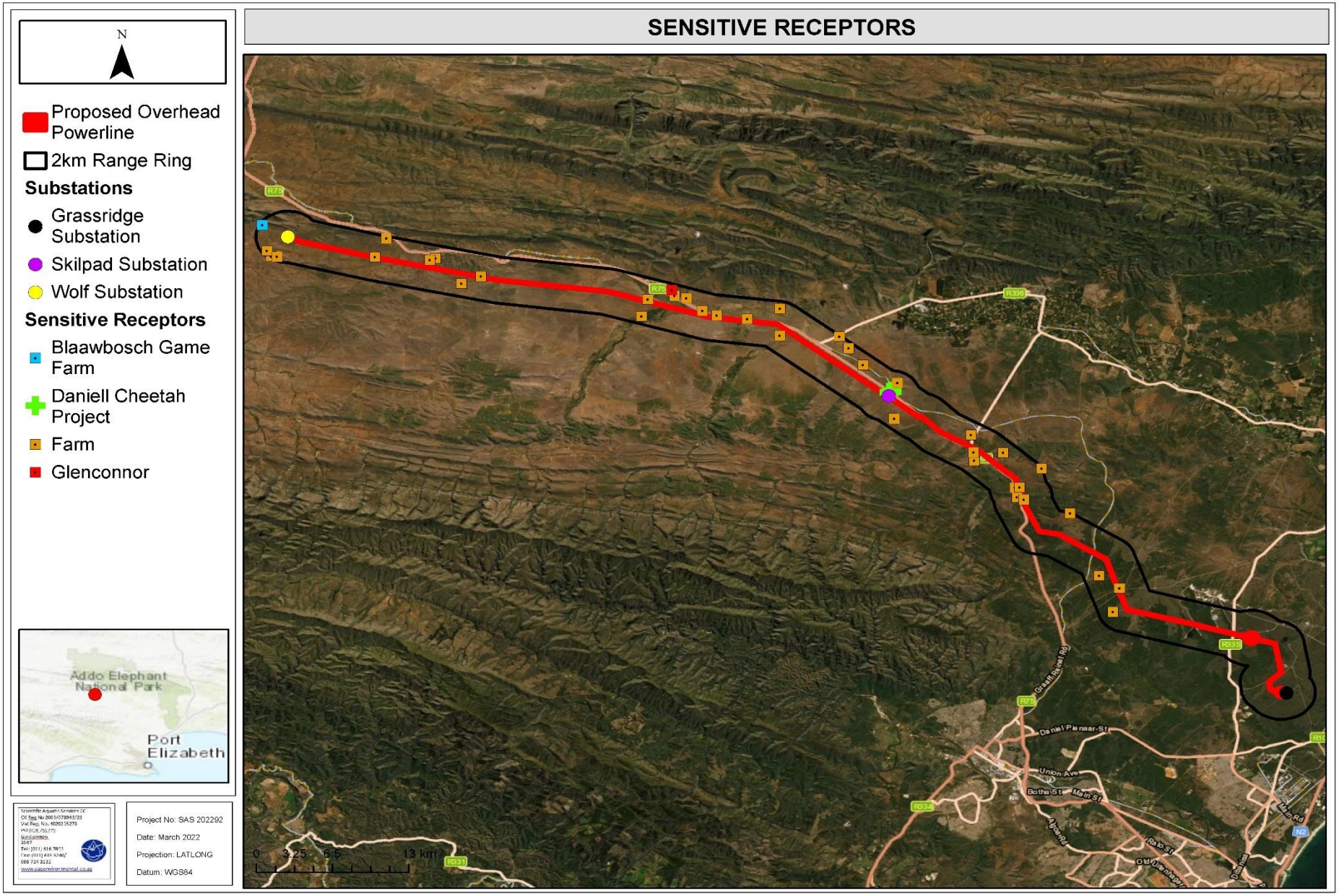


Figure 5: Map indicating the location of potential visual receptors within a 2 km radius of the proposed OHPL and substations.

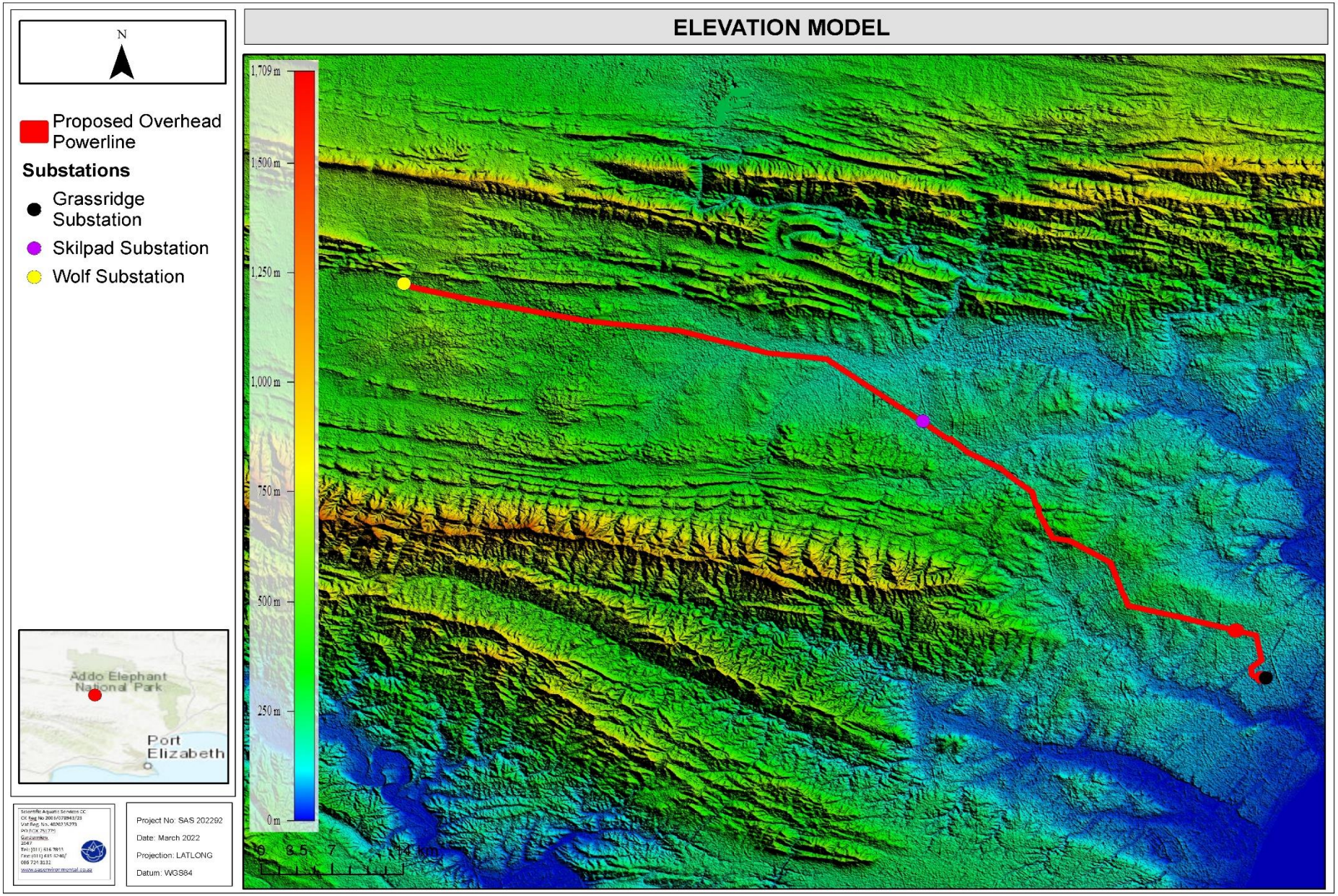


Figure 6: False colour elevation rendering depicting the topographical character of the proposed OHPL and substations.

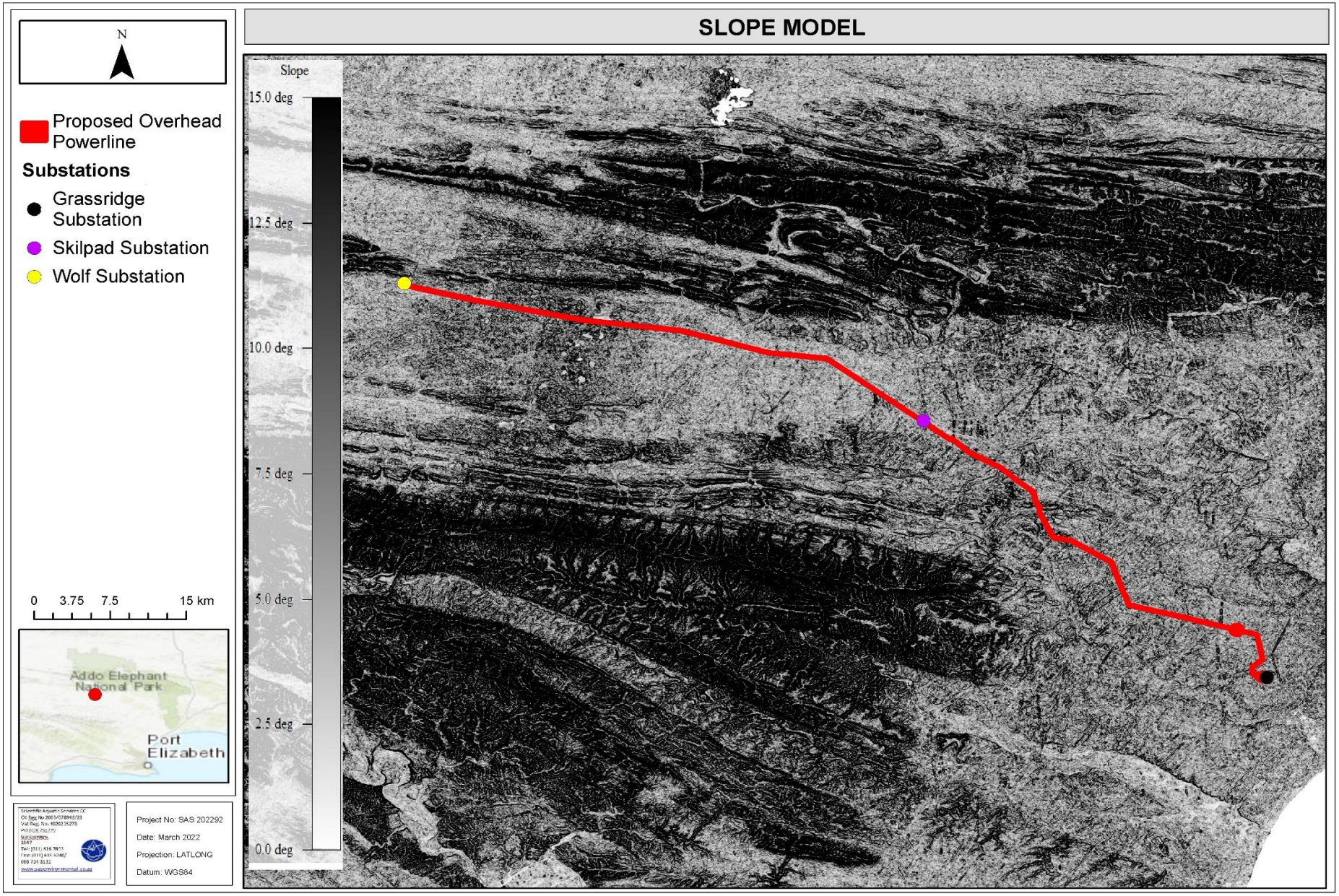


Figure 7: Monochromatic map indicating the general relief associated with the proposed OHPL and substations.

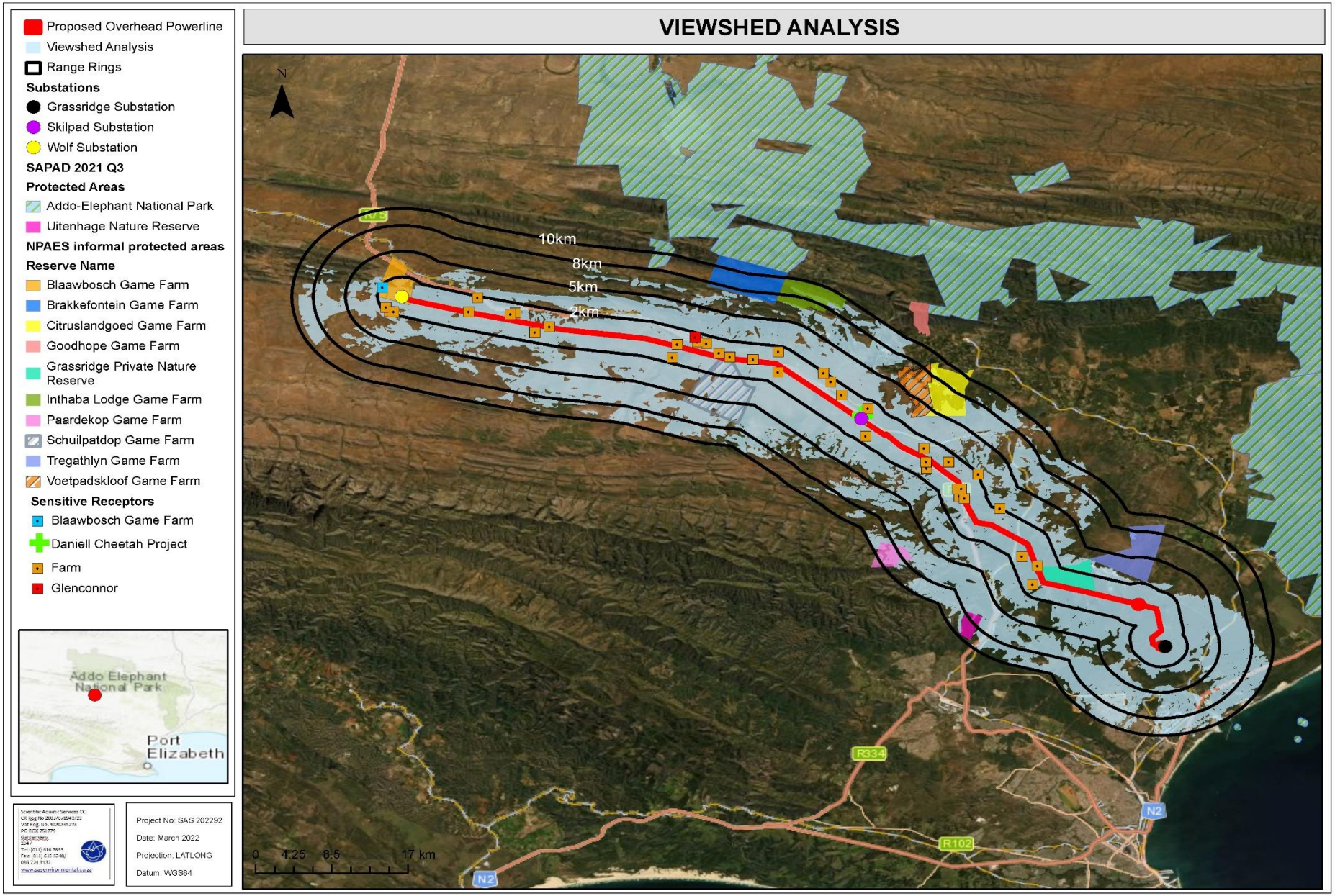


Figure 8: Viewshed (indicated as shaded areas) of the proposed OHPL overlaid onto digital satellite imagery.

The figures below indicate the view of the proposed OHPL from specific viewpoints within the surrounding area. It should be noted that the majority of these vantage points are from farmsteads where the existing powerlines and support tower structures are visible, as such the residents are accustomed to the presence of the overhead powerlines in the landscape. The visual impact of the proposed OHPL will therefore be very limited.

From the figures below it is evident that the wind-break treelines and associated roadside vegetation, existing vegetation associated with residences, farms and commercial and industrial facilities as well as the undulating topography and existing anthropogenic structures, screens the view of the study area from most directions and vantage points accessible to the public.

Figure 9: View from the farm house located directly adjacent to the proposed OHPL. The existing support towers of the overhead powerlines are visible in the distance, and not significantly visually intrusive. As such the proposed OHPL, following the same line, will not be visually intrusive and will not introduce new discordant elements in the landscape.

Figure 10: View from the gravel road and gate of a farmhouse located approximately 1,8 km south of the proposed OHPL. The existing overhead powerlines blend in with the mountainous terrain. The proposed OHPL, following the same line, will therefore not be visually intrusive and will not increase visual exposure.

Figure 11: View from the R75 road crossing located approximately 1 km north of the proposed OHPL. The existing overhead powerlines adjacent to the R75 will result in the proposed OHPL falling in the background and blending in with the mountainous terrain, thus displaying a limited visual impact.

Figure 12: View from the R75 road located directly adjacent to the proposed OHPL. As is evident on the photograph, the existing overhead powerlines fades in the distance the further the structures are form the observer. The proposed OHPL will therefore not be significantly visually intrusive to motorists traveling along the R75, and it will not be noted as the visual impact is already present.

Figure 13: View from the R75 road located approximately 500 m south of the proposed OHPL. As is evident on the photograph, the existing overhead powerlines blends (red arrow) in with

the background and is barely visible from the road. The proposed OHPL will therefore not be visually intrusive to motorists traveling along the R75.

Figure 14: View from the R75 road, directly adjacent to a farmhouse, located approximately 1 km west of the proposed OHPL. As is evident on the photograph, the existing overhead powerlines blends (red arrow) in with the background and is barely visible from this vantage point. The proposed OHPL will therefore not be visible from the farmhouse and immediate surrounding area.

Figure 15: View from the MR00470 gravel road, at a gate of a farm, where the existing overhead powerline (red arrows) runs along the entrance road and past the farmhouse. The proposed OHPL is directly adjacent to the existing overhead powerline, an as seen it will not be significantly intrusive due to the permeability of the powerline.

Figure 16: View from a gravel road traversing the southern portion of the proposed OHPL. The existing overhead powerline is clearly visible from this vantage point, as such the proposed OHPL will have a higher visual impact at this point.

Figure 17: View from the R75 roadway situated approximately 400 m west of the proposed OHPL. The existing overhead powerline is visible in the distance (red arrow), as such the proposed OHPL will have a slightly higher visual impact at this point.

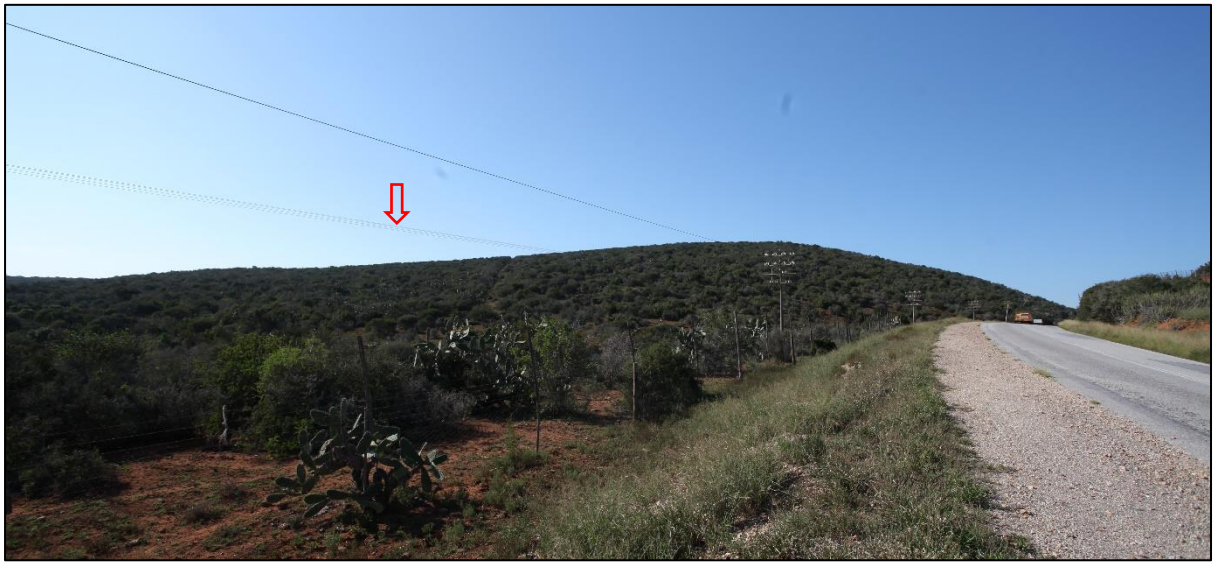


Figure 18: View from the R75 roadway situated approximately 130 m west of the proposed OHPL. The existing overhead powerlines are visible (red arrow), as such the proposed OHPL will be visible from this pint.

5 Impact Assessment

Potential impacts on the visual environment in the region as a result of the proposed OHPL and based on available information, are discussed in the sections below, according to the method outlined in Appendix B. This section presents an assessment of the significance of the impacts prior to mitigation and management measures being put in place and taking into consideration the available mitigatory measures, assuming that they are fully implemented.

After consideration of the findings of these assessments, recommendations and mitigation measures have been developed which will assist in minimising the proposed project's visual impact throughout the various development phases of the project. The mitigation measures outlined would serve to minimise the potential visual impacts identified to lower significance levels.

5.1 Impact Assessment Results

The table also provides the findings of the impact assessment undertaken with reference to the perceived impacts prior to the implementation of mitigation measures and following the implementation of mitigation measures. The mitigated results of the impact assessment have been calculated on the premise that all mitigation measures as stipulated in this report are adhered to and implemented. Should such actions not be adhered to, it is likely that post-mitigation impact scores will increase. Refer to Appendix K for the detailed impact tables.

Table 2: Summary of the visual impact of the proposed OHPL on the surrounds.

Ref:	Project phase	Impact	Without mitigation						With mitigation					
			Nature	Duration	Extent	Intensity	Probability	Significance	Nature	Duration	Extent	Intensity	Probability	Significance
1	Construction	Landscape Character and Sense of Place	Negative	Brief	Limited	Moderate	Certain / definite	Minor - negative	Negative	Brief	Limited	Low	Certain / definite	Minor - negative
2	Construction	Visual Intrusion and VAC Impacts	Negative	Brief	Limited	Moderate	Almost certain / Highly probable	Minor - negative	Negative	Brief	Limited	Low	Almost certain / Highly probable	Minor - negative
3	Construction	Visual Exposure and Visibility	Negative	Brief	Local	Moderate	Certain / definite	Minor - negative	Negative	Brief	Local	Low	Certain / definite	Minor - negative
4	Construction	Impacts due to night-time lighting	Negative	Brief	Local	High	Certain / definite	Minor - negative	Negative	Brief	Limited	Moderate	Almost certain / Highly probable	Minor - negative
5	Operation	Landscape Character and Sense of Place	Negative	Immediate	Limited	Low	Probable	Negligible - negative	Negative	Immediate	Limited	Very low	Probable	Negligible - negative
6	Operation	Visual Intrusion and VAC Impacts	Negative	Immediate	Limited	Low	Probable	Negligible - negative	Negative	Immediate	Limited	Very low	Probable	Negligible - negative
7	Operation	Visual Exposure and Visibility	Negative	Immediate	Limited	Low	Probable	Negligible - negative	Negative	Immediate	Limited	Very low	Probable	Negligible - negative
8	Operation	Impacts due to Night time Lighting	Negative	Immediate	Limited	Very low	Unlikely	Negligible - negative	Negative	Immediate	Very limited	Very low	Rare / improbable	Negligible - negative

5.2 Impact Discussion

5.2.1 Impact 1: Impact on Landscape Character and Sense of Place

The proposed project may impact to a limited degree on the existing landscape and visual character of the region and Sense of Place associated with the proposed OHPL and its immediate surroundings. The character of the landscape in the region of the proposed OHPL is currently dominated by a unique landscape of mountains and plains comprising thicket, shrubland an bushclump vegetation. With the proposed OHPL situated within a remote area, the sense of place of the area is considered tranquil and being “one with nature”. There are currently various powerlines adjacent to the proposed OHPL area as well as existing substation, wherein the proposed OHPL will feed. As such the visual impact associated with overhead powerlines are already present and in the landscape. The overall character of the landscape as well as the sense of place is therefore at low risk of being altered by the proposed activities.

A temporary change in landscape character and sense of place is likely to occur during the construction activities which will comprise clearing of vegetation, excavation activities, temporary stockpiling of material and laying of foundation and erecting the support towers. However, this area has been earmarked for transmission corridors, therefore the proposed OHPL is in keeping with the designated zonation of the area. Since there are limited human interaction involved in OHPLs during the operational phase, the proposed impact is likely to be lower during this phase.

5.2.2 Impact 2: Visual Intrusion and VAC impacts

Powerlines and associated structures are generally experienced as having a negative impact on landscape aesthetics as it will introduce an industrial aspect to a landscape. This area does however have numerous overhead powerlines present, thus the visual intrusion of the proposed OHPL will be low. The altered visual environment during the construction phase, may lead to moderate levels of visual intrusion and lead to increased visual contrast, this will however be a temporary visual impact.

The expected level of visual intrusion as a result of the proposed project is considered low during the construction and very low during the operational phase, due to the overall limited visibility of the proposed OHPL, the existing overhead powerlines and substations and the relative height of the proposed OHPL in relation to its surroundings. The VAC of the project area is determined to be high, which illustrates the ability of the project area to absorb or

conceal some visual impacts. The proposed OHPL is therefore not expected to lead to a significant level of visual intrusion on the surrounding landscape.

5.2.3 Impact 3: Visual Exposure and Visibility Impacts

The proposed OHPL may impact on visual exposure and visibility, which relates directly to the perception of sensitive visual receptors towards the project. Since the proposed OHPL is located within a remote area there are a limited number of receptors in the surrounding area. Sensitive visual receptors have been determined to primarily comprise farmers and farm workers and people visiting the Game Farms in the surrounding area. Direct visual exposure will take place as a result of the proposed OHPL being visible to road users and farmers in the immediate vicinity thereof, as well as indirectly through fugitive dust generated by construction related activities for a short period. In addition to physical infrastructure, impacts from clearing of vegetation, potential erosion as a result of bare soils, and maintenance activities will also create contrast in the landscape and may be visible to receptors. It is however important to note, that the long term, operational visual impact of the project is unlikely to be highly significant due to powerlines being common features of South African landscapes.

5.2.4 Impact 4: Impacts due to Night time Lighting

Since the proposed OHPL is located within a remote area where there very limited and scattered sources of night-time lighting, such as the farmsteads and the villages. The lighting environment of the region is therefore considered natural and intrinsically dark. The proposed OHPL support towers will not have any sources of lighting. However, should construction or emergency maintenance activities occur at night, security lights from vehicles may potentially be a source of light pollution, however for a short intermittent duration. Overall, the impact significance of potential night-time lighting is expected to be very low, of short duration and potentially only occur during the construction phase and emergency maintenance during operational phase, and will be limited to a small, direct area.

Due to the area already being intrinsically dark, the landscape is considered visually sensitive in terms of night-time lighting impacts. The proposed OHPL will not contribute towards the effects of skyglow and light trespass. It should also be noted that the proposed WEFs might contribute to night time lighting in the surrounding area.

5.3 Cumulative Impacts

Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative visual impacts resulting from landscape modifications

as a result of the proposed project in conjunction with the proposed future Wolf WEF facilities to which it will connect to, as well as any approved or future renewable energy facilities (wind and solar facilities) in the broader area, must be considered. Renewable energy facilities have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region. The cumulative impact of numerous existing powerlines and possible future powerlines may possibly lead to a more industrialised landscape, which may potentially affect the attraction of the Game Farms in the area.

According to the SA Renewable Energy EIA Application (REEA) Database, renewable energy applications have been presented for the properties in the surrounding area (± 60 km radius), where some have been approved. Although overhead powerlines are relatively small developments when compared to renewable energy facilities, they may still introduce a more industrial character into the landscape, thus altering the sense of place. The cumulative impact of additional traffic in the area on the local and regional roads will also affect the sense of place of the larger region.

5.4 Mitigation Measures

The sections below indicate the required mitigatory, management and monitoring measures required to minimise potential visual impacts.

General housekeeping

- All construction areas must be kept in a neat and orderly condition at all times;
- Any areas for material storage and other potentially intrusive activities must be screened from view as far as possible;
- An efficient removal system of waste and rubble must be ensured during the construction phase;
- All operational infrastructure should be actively maintained to avoid degradation.

Development footprint

- The duration of the construction phase should be reduced as far as possible through careful planning, and restricted to daylight hours;
- Construction activities should include concurrent rehabilitation, to prevent a large spread of disturbance in the landscape;
- The development footprint and disturbed areas associated with the construction phase of the project should be kept as small as possible, with as little indigenous vegetation being cleared as possible with specific mention tall trees which provides increased screening ability;

- Construction boundaries should be clearly demarcated to minimise areas of surface disturbance;
- Direct loss of or damage to valuable natural visual resources such as the watercourses in the area should be actively avoided;
- As far as possible, existing roads are to be utilised for construction and maintenance purpose, to limit cumulative impacts from roads and traffic, as well as to limit the extent of the vegetation cleared for the purpose of the project;
- The height of any temporary structures such as soil stockpiles should be kept as low as possible.

Infrastructure placement

- Where infrastructure is sited within view of visually sensitive receptors, in particular the Daniell Cheetah Project Farm within close proximity to the project, it must be placed as far away as possible from visual receptors and as close as possible to the existing powerline structures to consolidate visual intrusion impacts;
- As far as possible and where feasible, infrastructure should be placed in areas that have already been disturbed;
- As far as possible and where feasible, the support towers should be placed next to the existing support tower structures, where the visual impact and disturbance is already present;

Infrastructure appearance

- Although the use of lattice towers is also deemed acceptable, monopole structures are generally preferred for the proposed powerline due to these structures having a smaller development footprint and subsequent lower visual impact than lattice towers, however structural considerations may force the use of one or the other (monopole vs lattice tower), especially at corners along the line;
- The use of highly reflective material for tower structures and substations should be avoided;
- Painting or coating infrastructure components to match darker colours in the natural surroundings may reduce the distance required for effective screening but is not deemed necessary in this instance ;
- The use of permanent signage and project construction signs should be minimised and visually unobtrusive.

Screening

- It must be ensured that existing vegetation is retained as far as possible during the construction and operational phases of the project to act as visual screens where possible.

Erosion

- Erosion, which may lead to high levels of visual contrast and further detract from the visual environment, must be prevented throughout the lifetime of the project by means of putting soil stabilisation measures in place where required and through concurrent rehabilitation.

Dust

- During the construction phase all dirt and access roads, as well as other areas cleared of vegetation for construction purposes will require effective dust suppression such as regular watering;
- Access roads must be suitably maintained to limit erosion and dust pollution;
- Vehicle speed on unpaved roads must be reduced to limit dust creation.

Lighting

- As far as possible, construction and maintenance activities and should be restricted to daylight hours, in order to limit the need to bright floodlighting and the potential for skyglow and to avoid the use of additional night-time lighting for security purposes;
- Night lighting of construction sites and camps should be minimised as far as possible, taking into consideration that due to safety requirements a certain level of lighting may be necessary;
- Where security lighting is used during the construction phase at the laydown areas, the following management measures should be implemented
  - Making use of motion detectors on security lighting, at the substations, ensures that the site will remain in relative darkness, until lighting is required for security and maintenance purposes;
  - Placement of lights should consider the location of surrounding receptors and as far as possible be screened from view;
  - The use of high light masts and high pole top security lighting should be avoided. Any high lighting masts should be covered to reduce glow;
  - Up-lighting of structures must be avoided, with lighting installed at downward angles that provide precisely directed illumination beyond the immediate surroundings of the infrastructure, thereby minimising the light spill and trespass;
  - Care should be taken when selecting luminaries to ensure that appropriate units are chosen and that their location will reduce spill light and glare to a minimum;
  - Minimum wattage light fixtures should be used, with the minimum intensity necessary to accomplish the light's purpose;
  - The use of low-pressure sodium lamps, yellow LED lighting, or an equivalent should be considered to reduce skyglow (BLM, 2013).

Rehabilitation

- Concurrent/ progressive rehabilitation of temporary cleared areas, including reshaping and revegetation, must be implemented as soon as possible;
- Upon completion of construction, the project area should be left in a condition that protects the soil surface against erosion and instability;
- Indigenous and locally occurring plant species selected for use in re-vegetation should be selected taking quick growth rates into consideration in order to cover bare areas and prevent soil erosion;
- An alien vegetation control plan must be implemented, particularly around the perimeters of the foundation and access roads;
- The appearance and general upkeep of the infrastructure must be maintained to a high standard and be kept neat and orderly at all times. if possible, routine maintenance should take place, at least bi-annually.

6 CONCLUSION

Based on the findings from both the desktop and field assessments it is evident that there are limited receptors located within a 2 km radius along the entire proposed 90 km OHPL and is mostly confined to Game Farm farmhouses and associated infrastructure and a network of roads. The proposed OHPL is located in a remote area with isolated farmsteads, mostly associated with the surrounding Game Farms, and small villages. The terrain is a unique combination of mountains and plains and undulating topography, which is characterised by thickets, shrubland and scattered bushclumps. Even though the proposed OHPL is situated within a remote area, existing overhead powerlines and substations are present within the landscape, thus the landscape character has already been affected by energy transmission infrastructure. As such, the receptors within the surrounding area have grown accustomed to these structures, therefore the proposed OHPL is expected to have a low visual impact on the landscape character within the region.

With the unique landscape of mountains, hills, valleys and plains, there are significant topographical variety in the area, therefore the visual quality and viewing experience of the landscape is considered high. However, with the existing overhead powerlines and substations and other anthropogenic structures such as houses, gravel roads and fences, the proposed OHPL will not introduce discordant elements into the environment. Furthermore, during the field assessment it was evident that with the permeability of the existing support towers, the overhead powerlines were not significantly visually intrusive.

The Visual Absorption Capacity (VAC) of the area is considered high, indicating that the proposed OHPL will be absorbed in the area resulting in a low visual intrusion. The main contributing factor to the high VAC is the visual variety presented by the region in the form of undulating topography and the mountainous backdrop with plains and valley thickets, as well as the permeability of the proposed infrastructure. The existing overhead powerlines in the area serve to reduce the visual impact. As noted, the structures associated with the proposed OHPL are permeable and comprise of a smaller powerline and support tower, thus the proposed OHPL will be less visually intrusive on the receiving environment.

Given the relatively low scale of anthropogenic activities and development, the vast landscape is appealing to one's visual senses, which may fill the observer with a sense of calmness, tranquillity and wellbeing. These characteristics have led to the development of a number of lodges and conservation areas, notably the Adddo Elephant National Park (AENP) and a number of game farms and private reserves. As such this landscape offers a unique sense of place which can be described as calm, tranquil and peaceful and being one with nature. As there are already overhead powerlines, wind farms, and substations present in the landscape the proposed project will not have a highly significant effect on the sense of place of the area. To reiterate further the AENP will not be affected by the proposed OHPL due to the distance and relatively low height of the proposed support towers, as such the sense of place experienced at AENP will not be affected.

The proposed OHPL further falls within the Eastern Corridor of the Strategic Transmission Corridors, in terms of GNR 113 of 16 February 2018. When considering the landscape value of an area, one has to take into consideration the services that may be provided by the landscape, as such with the area falling within the Eastern Corridor, the landscape value of the area is considered moderately high. As the proposed project forms part of the renewable energy projects (OHPL for the Wolf Wind Energy Facility) for the region, it will not have a significantly negative impact on the landscape value of the area, as it will provide services to the receptors in the landscape. Additionally, it is likely to increase the economic growth of the municipality.

The proposed OHPL is located within a remote area where the lighting environment of the region is considered natural and intrinsically dark. Since the proposed OHPL support towers itself will not have any sources of lighting, the proposed project will not be a source of light pollution within the area. However, should construction and emergency maintenance activities occur at night, security lights from vehicles may potentially be a source of light pollution, however for a short, relatively localised and intermittent duration.

Based on the impact assessment, it was evident that the proposed OHPL will have a low visual impact during the development phases of the project, prior to mitigation measures being implemented. The main visual impact is attributed to the vegetation clearing during the construction phase and increased human activity and vehicles in a quiet area. Once operational, the proposed project will not have significant visual impacts and human activity, apart from routine maintenance of the support tower structures will be limited.

Based on the outcome of the visual assessment it is the specialist's opinion that the proposed OHPL may be considered for authorisation with the knowledge that the significance of risk to the receiving environment is limited.

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APPENDIX A – METHOD OF ASSESSMENT

Level of Assessment

The following methods of assessment for determining the level of detail of the assessment was utilised in this report (Oberholzer, 2005):

Table A1: Categories of development and impact severity.

Type of environment	Category 1 development	Category 2 development	Category 3 development	Category 4 development	Category 5 development
Protected/wild areas of international, national or regional significance	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected
Areas or routes of high scenic, cultural, historical significance	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected
Areas or routes of medium scenic, cultural, historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected
Areas or routes of low scenic, cultural, historical significance/disturbed	Little or no visual impact expected, possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected
Disturbed or degraded sites/run down areas/ wasteland	Little or no visual impact expected, possible benefits	Little or no visual impact expected, possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected

The following key provides an explanation to the categories of development:

Category 1 development:
e.g. nature reserves, nature-related recreation, camping, picnicking, trails and minimal visitor facilities.

Category 2 development:
e.g. low-key recreation / resort / residential type development, small-scale agriculture / nurseries, narrow roads and small-scale infrastructure.

Category 3 development:
e.g., low-density resort / residential type development, golf or polo estates, low to medium-scale infrastructure.

Category 4 development:
e.g. medium density residential development, sports facilities, small-scale commercial facilities / office parks, one-stop petrol stations, light industry, medium-scale infrastructure.

Category 5 development:
e.g. high density township / residential development, retail and office complexes, industrial facilities, refineries, treatment plants, power stations, wind energy farms, power lines, freeways, toll roads, large scale infrastructure generally. Large-scale development of agricultural land and commercial tree plantations. Quarrying and mining activities with related processing plants.

The following box explains the nature of the impacts:

Very high visual impact expected:
Potentially significant effect on wilderness quality or scenic resources;
Fundamental change in the visual character of the area;
Establishes a major precedent for development in the area.

High visual impact expected:
Potential intrusion on protected landscapes or scenic resources;
Noticeable change in visual character of the area;
Establishes a new precedent for development in the area.

Moderate visual impact expected:
Potentially some effect on protected landscapes or scenic resources;
Some change in the visual character of the area;
Introduces new development or adds to existing development in the area.

Minimal visual impact expected:
Potentially low level of intrusion on landscapes or scenic resources;
Limited change in the visual character of the area;
Low-key development, similar in nature to existing development.

Little or no visual impact expected:
Potentially little influence on scenic resources or visual character of the area;
Generally compatible with existing development in the area;
Possible scope for enhancement of the area.

From the above, the severity of the impact determines the level of the assessment:

Table A2: Impact assessment level of input determination.

Approach	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	Very high visual impact expected
Level of visual input recommended	Level 1	Level 2	Level 3	Level 4	

The following box explains the inputs required at each level of assessment. As indicated in Section 5.2, a Level 4 assessment is required for the proposed project (Oberholzer, 2005).

Level 1 input:
Identification of issues, and site visit;
Brief comment on visual influence of the project and an indication of the expected impacts / benefits.

Level 2 input:
Identification of issues raised in scoping phase, and site visit;
Description of the receiving environment and the proposed project;
Establishment of Receptor Site area and receptors;
Brief indication of potential visual impacts, and possible mitigation measures.

Level 3 assessment:
Identification of issues raised in scoping phase, and site visit;
Description of the receiving environment and the proposed project;
Establishment of Receptor Site area, view corridors, viewpoints and receptors;
Indication of potential visual impacts using established criteria;
Inclusion of potential lighting impacts at night;
Description of alternatives, mitigation measures and monitoring programmes.
Review by independent, experienced visual specialist (if required).

Level 4 assessment:
As per Level 3 assessment, plus complete 3D modelling and simulations, with and without mitigation.
Review by independent, experienced visual specialist (if required).

APPENDIX B – IMPACT ASSESSMENT METHODOLOGY (ZUTARI)

This section outlines the proposed method for assessing the significance of the potential environmental impacts. For each predicted impact, criteria are ascribed, and these include the intensity (size or degree scale), which also includes the type of impact, being either a positive or negative impact; the duration (temporal scale); and the extent (spatial scale), as well as the probability (likelihood). The methodology is quantitative, whereby professional judgement is used to identify a rating for each criteria based on a seven-point scale (refer to Table B1); and the significance is auto-generated using a spreadsheet through application of the calculations in FigureB1. Specialists can comment where they disagree with the auto-calculated impact significance rating.

Calculations

For each predicted impact, certain criteria are applied to establish the likely **significance** of the impact, firstly in the case of no mitigation being applied and then with the most effective mitigation measure(s) in place.

These criteria include the **intensity** *(*size or degree scale), which also includes the **type** of impact, being either a positive or negative impact; the **duration** (temporal scale); and the **extent** (spatial scale). These numerical ratings are used in an equation whereby the **consequence** of the impact can be calculated. Consequence is calculated as follows:

Consequence = type x (intensity + duration + extent)

To calculate the significance of an impact, the **probability** (or likelihood) of that impact occurring is applied to the consequence.

Significance = consequence x probability

Depending on the numerical result, the impact would fall into a significance category as negligible, minor, moderate or major, and the type would be either positive or negative.

Figure B1: Calculation of significance

Table B1: Assessment criteria for the evaluation of impacts

Criteria	Numerical Rating	Category	Description
Duration	1	Immediate	Impact will self-remedy immediately
	2	Brief	Impact will not last longer than 1 year
	3	Short term	Impact will last between 1 and 5 years
	4	Medium term	Impact will last between 5 and 10 years
	5	Long term	Impact will last between 10 and 15 years
	6	On-going	Impact will last between 15 and 20 years
	7	Permanent	Impact may be permanent, or in excess of 20 years
Extent	1	Very limited	Limited to specific isolated parts of the site
	2	Limited	Limited to the site and its immediate surroundings
	3	Local	Extending across the site and to nearby settlements
	4	Municipal area	Impacts felt at a municipal level
	5	Regional	Impacts felt at a regional level
	6	National	Impacts felt at a national level
	7	International	Impacts felt at an international level

Intensity	**1**	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
	2	Very low	Natural and/ or social functions and/ or processes are slightly altered
	3	Low	Natural and/ or social functions and/ or processes are somewhat altered
	4	Moderate	Natural and/ or social functions and/ or processes are moderately altered
	5	High	Natural and/ or social functions and/ or processes are notably altered
	6	Very high	Natural and/ or social functions and/ or processes are majorly altered
	7	Extremely high	Natural and/ or social functions and/ or processes are severely altered
Probability	**1**	Highly unlikely / None	Expected never to happen
	2	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
	3	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
	4	Probable	Has occurred here or elsewhere and could therefore occur
	5	Likely	The impact may occur
	6	Almost certain / Highly probable	It is most likely that the impact will occur
	7	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur

When assessing impacts, broader considerations are also taken into account. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in Table **B**B2, Table and Table B, respectively.

Table B2: Definition of confidence ratings

Category	Description
Low	Judgement is based on intuition
Medium	Determination is based on common sense and general knowledge
High	Substantive supportive data exists to verify the assessment

Table B3: Definition of reversibility ratings

Category	Description
Low	The affected environment will not be able to recover from the impact - permanently modified
Medium	The affected environment will only recover from the impact with significant intervention
High	The affected environmental will be able to recover from the impact

Table B4: Definition of irreplaceability ratings

Category	Description
Low	The resource is not damaged irreparably or is not scarce
Medium	The resource is damaged irreparably but is represented elsewhere
High	The resource is irreparably damaged and is not represented elsewhere

Mitigation Measure Development

The following points present the key concepts considered in the development of mitigation measures for the proposed construction.

- Mitigation and performance improvement measures and actions that address the risks and impacts[1] are identified and described in as much detail as possible;
- Measures and actions to address negative impacts will favour avoidance and prevention over minimisation, mitigation or compensation; and
- Desired outcomes are defined, and have been developed in such a way as to be measurable events with performance indicators, targets and acceptable criteria that can be tracked over defined periods, with estimates of the resources (including human resource and training requirements) and responsibilities for implementation.

Recommendations were developed to address and mitigate impacts associated with the proposed development. These recommendations also include general management measures which apply to the proposed development as a whole. Mitigation measures have been developed to address issues during all project phases throughout the life of the operation from planning, through to construction and operation through to after care and maintenance.

[1] Mitigation measures should address both positive and negative impacts

APPENDIX C – VEGETATION TYPES

<table>
<tr><th>Vegetation Types</th><th colspan="5">ALBANY ALLUVIAL VEGETATION (AZA6)</th><th colspan="5">GRASSRIDGE BONTVELD (AT39)</th></tr>
<tr><td rowspan="3">Climate</td><td colspan="5">Characterised by undifferentiated, year-round precipitation regime, with only two slight peaks in March and November. Warm-temperate climate.</td><td colspan="5">Non-seasonal rainfall dominates the region with optimal rainfall months in March and October</td></tr>
<tr><td>MAP (mm)</td><td>MAT (°C)</td><td>MFD (Days)</td><td>MAPE (mm)</td><td>MASMS (%)</td><td>MAP (mm)</td><td>MAT (°C)</td><td>MFD (Days)</td><td>MAPE (mm)</td><td>MASMS (%)</td></tr>
<tr><td>354</td><td>18.1</td><td>4</td><td>2011</td><td>Unknown</td><td>452</td><td>17.8</td><td>3</td><td>1861</td><td>76</td></tr>
<tr><td>Altitude (m)</td><td colspan="5">20 –1 000</td><td colspan="5">0 – 399</td></tr>
<tr><td>Distribution</td><td colspan="5">Eastern Cape Province:</td><td colspan="5">Eastern Cape Province.</td></tr>
<tr><td>Geology & Soils</td><td colspan="5">Underlain by Jurassic-Cretaceous sediments of the Uitenhage Group. The alluvial zones (recent alluvial deposits of various textures, but usually with high clay content) can become flooded following the west-east passage of frontal systems in autumn and winter or during intensive local storms in summer. Ia land type.</td><td colspan="5">The vegetation type predominantly occurs on shallow clay, often lime-rich soil on the Bluewater Bay, Alexandria and Nanaga Formations. The most important land types are Fc and Ae.</td></tr>
<tr><td>Conservation</td><td colspan="5">Endangered. Target 31%. Only about 6% statutorily conserved in the Greater Addo Elephant National Park, Baviaanskloof Wilderness Area, Loerie Dam, Springs, Swartkops Valley and Yellowwoods Nature Reserves and the Double Drift Reserve Complex. About 2% enjoys protection in eight private conservation areas. More than half of the area has been transformed for cultivation, urban development, road building and plantations. Alien invaders include Acacia saligna, Nerium oleander and Eucalyptus species.</td><td colspan="5">Least Concern. Target 19%. Conserved in the Addo Elephant National Park and Kaapse Grysbok Private Nature Reserve. Approximately 9.5a % of the area is transformed. Threats include: Cultivation, mining, urban sprawl, and roads. Erosion is low to medium</td></tr>
<tr><td>Vegetation & Landscape Features (Dominant Floral Taxa In Appendix D)</td><td colspan="5">Two major types of vegetation pattern are observed in these zones, namely riverine thicket and thornveld (Acacia natalitia). The riverine thicket tends to occur in the narrow floodplain zones in regions close to the coast or further inland, whereas the thornveld occurs on the wide floodplains further inland.</td><td colspan="5">On moderately undulating plains. A mosaic of low thicket (2 – 3 m) consisting of bush clumps of variable size in a matrix of low (0.2-0.8 m) grassy dwarf-shrubland. This unit is often restricted to ‘islands’ in a matrix of typical AT 51 Sundays Valley Thicket. The species present in the grassy dwarf-shrubland are a mixture of Fynbos, Grassland and Karroid elements, with Themeda triandra often dominant.</td></tr>
<tr><th>Vegetation Types</th><th colspan="5">SUNDAYS ARID THICKET (AT49)</th><th colspan="5">SUNDAYS VALLEY THICKET (AT51)</th></tr>
<tr><td rowspan="3">Climate</td><td colspan="5">Non-seasonal rainfall dominates the region. The mean monthly maximum is 30.56 °C in January and the mean monthly minimum is 3.74 °C in July.</td><td colspan="5">Non-seasonal rainfall dominates the region. The mean monthly maximum is 28.09 °C in February and the mean monthly minimum is 6.23 °C in July.</td></tr>
<tr><td>MAP (mm)</td><td>MAT (°C)</td><td>MFD (Days)</td><td>MAPE (mm)</td><td>MASMS (%)</td><td>MAP (mm)</td><td>MAT (°C)</td><td>MFD (Days)</td><td>MAPE (mm)</td><td>MASMS (%)</td></tr>
<tr><td>159 – 550</td><td>17.5</td><td>3 – 44</td><td>2134</td><td>80</td><td>210 – 631</td><td>17.5</td><td>2 – 138</td><td>2134</td><td>80</td></tr>
<tr><td>Altitude (m)</td><td colspan="5">108 – 1467</td><td colspan="5">2 – 673</td></tr>
<tr><td>Distribution</td><td colspan="5">Eastern Cape Province.</td><td colspan="5">Eastern Cape Province.</td></tr>
<tr><td>Geology & Soils</td><td colspan="5">The vegetation type typically occurs on the Koonap, Middleton and Fort Brown Formations in heavy clay soils. The main land types are Fc and Ib.</td><td colspan="5">The vegetation type typically occurs on the Kirkwood Formations, Sundays River and Enon Formations, in deep loamy-clayey soils. The main land types are Fc, Ae and Ag</td></tr>
<tr><td>Conservation</td><td colspan="5">Vulnerable. Target 19%. Conserved in Addo Elephant National Park and Noorsveld Protected Environment. Approximately 1.71% of the area is transformed. Threats include overgrazing and small stock grazing, erosion is variable.</td><td colspan="5">Least Concern. Target 19%. Conserved in Addo Elephant National Park and the Cape Floral Region Protected Areas: Baviaanskloof. Approximately 11.86% of the area has been transformed. Threats include: Cultivation and urban sprawl. Erosion is low to medium</td></tr>
<tr><td>Vegetation & Landscape Features (Dominant floral taxa in appendix D)</td><td colspan="5">Typically common on flat lowlands and undulating plains. Short (1 – 2 m) and dense succulent thicket with Portulacaria afra often dominant. Where P. afra is naturally uncommon, Euphorbia radyeri is locally dominant and the tree component (Boscia oleoides, Euclea undulata, Pappea capensis) is sparse. Pockets of karroid shrubland (Pentzia incana, Rhigozum obovatum) also occur in this thicket unit.</td><td colspan="5">The vegetation type occurs on undulating plains, low foothills and mountain slopes. Medium-sized to tall (3 - 5 m) dense thicket in which the woody tree and shrub component, and the succulent component, are well developed, with many spinescent species. There are no distinct strata in the vegetation as the lower and upper canopy species intertwine, often with a wide variety of lianas linking the understorey with the canopy. Emergents are uncommon, but Euphorbia grandidens, E. triangularis, and occasionally Cussonia gamtoosensis and C. spicata emerge above the canopy. The abundance of Portulacaria afra and other succulent shrubs (e.g. Aloe speciosa, Euphorbia caerulescens) increases in more arid sites, while local soil conditions also influence composition of the vegetation -there is thus considerable structural heterogeneity within this vegetation unit.</td></tr>
</table>

Albany Alluvial Vegetation (Aza 6)

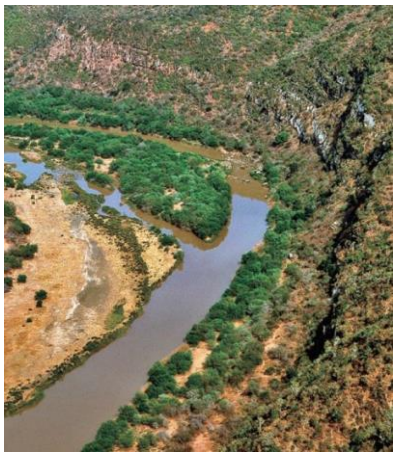

Figure C1: Albany Alluvial Vegetation: *Acacia natalitia* thickets fringing the Great Fish River in the former Double Drift Nature Reserve near Fort Beaufort (Eastern Cape). Taken by L. Mucina. Cited from Mucina and Rutherford (2006) in Inland Azonal Vegetation age 641.

Table C1: Dominant & typical floristic species of the Albany Alluvial Vegetation (Mucina & Rutherford, 2018 and SANBI 2006–2018)

GROUP	SPECIES
Woody Species (Riparian Thickets)	
Trees	*Acacia natalitia (d), Salix mucronata subsp. mucronata (d), Schotia afra var. afra (d), Acacia caffra, Rhus longispina, A. robusta (d), Boscia foetida subsp. rehmanniana (d), Combretum erythrophyllum (d), Phoenix reclinata (d), Salix mucronata subsp. woodii (d), Ziziphus mucronata (d), Acacia luederitzii, A. nebrownii, A. nigrescens, A. tortilis, A. xanthophloea, Colophospermum mopane, Aloe africana, A. ferox, Combretum hereroense, Philenoptera violacea, Pseudoscolopia polyantha (*Pondoland, sharing with *Capensis*).
Tall Shrubs	*Salvadora angustifolia (d),Commiphora glandulosa, C. pyracanthoides, Euclea divinorum, Grewia bicolor, Gymnosporia senegalensis.*
Succulent shrubs	*Amphiglossa callunoides, Lycium cinereum. Graminoids: Sporobolus nitens (d), Digitaria eriantha, Eragrostis curvula, E. obtuse, Cotyledon campanulata[B], Azima tetra-cantha, Cadaba aphylla, Glottiphyllum longum[B], Haworthia sordida var. sordida,, Orbea pulchella Malephora lutea, M. uitenhagensis[B]*
Low shrubs	*Justicia flava, Ocimum canum, Pentzia incana (d), Asparagus striatus, A. suaveolens, Carissa haematocarpa.*
Semi parasitic shrubs	*Thesium junceum.*
Herbaceous species (Riparian Thickets)	
Herbs	*Commelina benghalensis (d), Abutilon austro-africanum, Acalypha indica, Achyranthes aspera, Boerhavia erecta, Commicarpus fallacissimus, Cucumis zeyheri, Heliotropium ovalifolium, Lobelia angolensis, Oxygonum sinuatum, Pupalia lappacea, Ruellia patula.*
Geophytic herbs	*Crinum moorei.*
Succulent herbs	*Portulaca quadrifida.*
Graminoids (Riparian Thickets)	
Grasses	*Eragrostis trichophora* (d),*Panicum maximum* (d), *Setaria incrassata* (d), *Sporobolus ioclados* (d), *Chloris virgata*, *Dactyloctenium aegyptium*, *Enneapogon cenchroides*, *Urochloa mosambicensis, Sporobolus nitens (d), Cynodon dactylon Digitaria eriantha, Eragrostis curvula, E. obtusa.*
Reed-beds	*Cyperus papyrus (d), Phragmites australis (d).*
Flooded Grasslands and Herblands	
Megagraminoids	*Cyperus immensus*
Graminoids	*Cynodon dactylon (d), Cyperus articulatus (d), Echinochloa pyramidalis (d), Urochloa mosambicensis (d), Bolboschoenus glaucus, Chloris mossambicensis, C. virgata, Cyperus corymbosus, C. difformis, C. distans, C. fastigiatus, C. sexangularis, Dactyloctenium aegyptium, Hemarthria altissima, Ischaemum afrum, Paspalidium obtusifolium, Setaria sphacelata, Sporobolus consimilis, S. fimbriatus.*
Herbs	*Alternanthera sessilis, Amaranthus praetermissus, Grammatotheca bergiana (Pondoland), Marsilea ephippiocarpa, Scutellaria racemosa, and Crotalaria mollii (E).*
Geophytic Herbs	*Trachyandra saltii.*
Aquatic Herbs	*Ceratophyllum muricatum, Otteliaexserta.*

***(d) – Dominant species for the vegetation type; (E) – Endemic species for the vegetation type.**

Grassridge Bontveld (AT 39)

Table C2: Dominant & typical floristic species of the Grassridge Bontveld (Mucina & Rutherford, 2018 and SANBI 2006–2018)

GROUP	SPECIES
Woody Species	
Small trees	*Schotia afra (d), Sideroxylon inerme (d)*
Succulent trees	*Aloe africana (e), Aloe ferox (d)*
Tall shrubs	*Euclea undulata (d), Euclea racemosa (d), Carissa bispinosa subsp. bispinosa (d), Dovyalis caffra, Ehretia rigida, Euclea crispa, Gymnosporia capitata (e), Hippobromus pauciflorus, Maerua cafra, Mystroxylon aethiopicum subsp. aethiopicum (d), Pterocelastrus tricuspidatus (d), Putterlickia pyracantha (d), Scutia myrtina, Searsia lucida, Searsia pyroides, Searsia pterota (d)*
Low shrubs	*Helichrysum anomalum* (d), *Jamesbrittenia microphylla* (d, e), *Tephrosia capensis* (d), *Acmadenia obtusata* (e), *Agathosma capensis* (e), *Asparagus falcatus, Asparagus multiflorus* (e), *Asparagus striatus* (e), *Blepharis capensis* (e), *Chascanum cuneifolium* (e), *Clutia daphnoides* (e), *Dischoriste setigera, Disparago tortilis* (e), *Felicia muricata, Hermannia althaeoides* (e), *Hermannia flammea* (e), *Hermannia holosericea* (e), *Lantana rugosa, Limeum aethiopicum, Lobostemon trigonus* (e), *Muraltia squarrosa* (e), *Osteospermum polygaloides, Passerina rubra* (e), *Wahlenbergia tenella* (e), *Euryops ericifolius* (e), *Syncarpha recurvata* (d)
Succulent shrubs	*Crassula expansa (d), Ruschia uncinata (d), Carpobrotus edulis, Crassula capitella, Crassula ericoides (e), Crassula perfoliata, Crassula perforata, Crassula tetragona (e), Euphorbia globosa (e), Rhombophyllum rhomboideum (e)*
Leaf-succulent dwarf shrubs	*Zygophyllum divaricatum (e)*
Semi-parasitic shrubs	*Colpoon compressum (d)*
Woody climbers	*Asparagus aethiopicus, Jasminum angulare, Rhoiacarpos capensis (e), Rhoicissus digitata*
Woody succulent climbers	*Cynanchum viminal*
Herbaceous species	
Herbs	*Aizoon rigidum (d, e), Chaenostoma campanulata (d), Gazania krebsiana (d), Hypoestes aristata (d), Indigastrum costatum subsp. macrum (d), Senecio burchellii (d, e), Arctotheca calendula, Berkheya heterophylla (e), Hibiscus pusillus, Lotononis glabra, Monsonia emarginata (e), Scabiosa albanensis (e)*
Geophytic herbs	*Sansevieria hyacinthoides (d), Bulbine favosa, Bulbine inamarxiae, Moraea pallida, Oxalis smithiana, Ledebouria coriacea (e)*
Herbaceous climbers	*Kedrostis nana, Pelargonium peltatum (e)*
Graminoids	
Grasses	*Aristida diffusa (d), Cynodon dactylon (d), Cynodon incompletus (d), Eustachys paspaloides (d), Heteropogon contortus (d), Panicum maximum (d), Setaria sphacelata (d), Stipa dregeana (d), Tenaxia disticha (d), Themeda triandra (d), Cymbopogon marginatus, Cymbopogon pospischilii, Digitaria argyrograpta, Digitaria natalensis, Ehrharta calycina, Ehrharta erecta, Eragrostis capensis, Eragrostis curvula, Eragrostis obtusa, Ficinia truncata (e), Helictotrichon capense (e), Melica racemosa, Panicum deustum, Pentameris pallida, Sporobolus ioclados*

***(d) – Dominant species for the vegetation type; (e) – South African endemic**

Sundays Arid Thicket (AT 49)

Table C3: Dominant & typical floristic species of the Sundays Arid Thicket (Mucina & Rutherford, 2018 and SANBI 2006–2018)

GROUP	SPECIES
Woody Species	
Small trees	*Pappea capensis (d), Boscia oleoides (d), Euclea undulata, Schotia afra, Vachellia karroo*
Succulent trees	*Aloe ferox (d), Aloe speciosa (d, e)*
Epiphytic parasitic shrubs	*Viscum rotundifolium*
Tall shrubs	*Grewia robusta (d, e), Gymnosporia polyacantha (d, e), Searsia longispina (d, e) Azima tetracantha, Cadaba aphylla, Carissa bispinosa, Diospyros austroafricana, Gymnosporia capitata (e), Nymania capensis, Putterlickia pyracantha (e)*
Low shrubs	*Blepharis capensis (d, e), Lycium cinereum (d), Lycium oxycarpum (d, e), Pentzia incana (d), Rhigozum obovatum (d), Aptosimum elongatum, Asparagus burchellii (e), Asparagus crassicladus (e), Asparagus striatus (e), Asparagus suaveolens, Asparagus subulatus (e), Barleria pungens (e), Chrysocoma ciliata, Eriocephalus ericoides, Felicia filifolia (e), Felicia muricata, Flueggea verrucose,(e), Garuleum latifolium (e), Helichrysum rosum, Hermannia althaeoides, Hermannia gracilis (e), Indigofera sessilifolia, Lantana rugosa, Leonotis pentadentata, Lepidium africanum, Limeum aethiopicum, Justicia spartioides, Pelargonium aridum, Phymaspermum parvifolium (e), Rosenia humilis, Selago albida, Solanum tomentosum (e).*

Succulent shrubs	*Euphorbia radyeri (d), Crassula ovata (d, e), Portulacaria afra (d), Aloe striata (e), Cotyledon campanulata (e), Cotyledon orbiculata, Cotyledon velutina (e), Crassula corallina subsp. corallina, Delosperma frutescens (e), Drosanthemum lique (e), Euphorbia esculenta (e), Euphorbia mauritanica, Euphorbia pentagona (e), Mestoklema tuberosum (e), Pachypodium succulentum (e), Trichodiadema barbatum (e)*
Woody succulent climber	*Cynanchum viminale*
Woody climber	*Asparagus racemosus*
Herbaceous species	
Herbs	*Aizoon glinoides (d), Gazania krebsiana (d), Abutilon sonneratianum, Boerhavia diffusa, Euphorbia inaequilatera , Cucumis myriocarpus, Hermannia cernua, Hermannia pulverata (e), Hibiscus pusillus, Indigastrum costatum subsp. macrum, Indigofera disticha (e), Isoglossa ciliata, Lessertia pauciflora, Leysera tenella, Leobordea divaricata*
Succulent herbs	*Mesembryanthemum aitonis (d, e), Crassula muscosa, Curio radicans, Gasteria bicolor, Mesembryanthemum crystallinum*
Geophytic herbs	*Drimia intricata, Drimia anomala (e), Moraea polystachya, Oxalis stellata, Sansevieria aethiopica, Tritonia laxifolia*
Herbaceous climbers	*Cissampelos capensis, Cynanchum ellipticum, Cynanchum gerrardii, Cyphia sylvatica (e), Kedrostis nana (e), Rhoicissus digitata*
Graminoids	
Grasses	*Aristida adscensionis (d), Aristida congesta (d), Cenchrus ciliaris (d), Cynodon incompletus (d, e), Ehrharta erecta (d), Eragrostis obtusa (d), Tragus berteronianus (d), Aristida congesta, Aristida diffusa, Chloris virgata, Cynodon dactylon, Digitaria argyrograpta, Ehrharta calycina, Enneapogon desvauxii, Eragrostis chloromelas, Eragrostis curvula, Eragrostis lehmanniana, Fingerhuthia africana, Heteropogon contortus, Oropetium capense, Panicum coloratum, Panicum deustum, Panicum maximum, Setaria verticillata, Sporobolus fimbriatus, Tragus racemosus*

***(d) – Dominant species for the vegetation type; (e) – South African endemic**

Sundays Valley Thicket (AT 51)

Table C4: Dominant & typical floristic species of the Sundays Valley Thicket (Mucina & Rutherford, 2018 and SANBI 2006–2018)

GROUP	SPECIES
Woody Species	
Small trees	*Euclea undulata (d), Pappea capensis (d), Schotia afra (d), Cussonia gamtoosensis (e), Cussonia spicata, Encephalartos lehmannii (e), Ptaeroxylon obliquum, Sideroxylon inerme*
Succulent trees	*Aloe africana (d, e), Aloe ferox, Aloe speciosa (d), Euphorbia grandidens*
Epiphytic parasitic shrubs	*Viscum rotundifolium*
Semi-parasitic shrubs	*Colpoon compressum*
Tall shrubs	*Azima tetracantha, Brachylaena ilicifolia, Cadaba aphylla, Capparis sepiaria var. citrifolia, Carissa bispinosa, Ehretia rigida, Gymnosporia capitata (e), Gymnosporia polyacantha (e), Maerua cafra, Mystroxylon aethiopicum, Nymania capensis, Plumbago auriculata, Putterlickia pyracantha (e), Searsia longispina (e), Scutia myrtina*
Low shrubs	*Asparagus crassicladus (e), Asparagus striatus (e), Asparagus subulatus (e), Barleria obtusa, Chascanum cuneifolium (e), Chrysocoma ciliata, Felicia muricata, Hermannia althaeoides (e), Justicia cuneata, Justicia orchioides (e), Lantana rugosa, Leonotis pentadentata, Limeum aethiopicum, Osteospermum imbricatum (e), Rhoiacarpos capensi (e)s, Senecio linifolius, Solanum tomentosum (e)*
Succulent shrubs	*Portulacaria afra (d), Euphorbia caerulescens (d), Adromischus cristatus var. cristatus (e), Adromischus sphenophyllu (e)s, Bulbine frutescens, Cotyledon orbiculata, Cotyledon velutina (e), Crassula capitella subsp. capitella (e), Crassula capitella subsp. thyrsiflora (e), Crassula cordata (e), Crassula cultrata (e), Crassula mesembryanthemoides (e), Crassula ovata (e), Crassula perfoliata var. coccinea (e), Crassula rogersii (e), Delosperma echinatum (e), Delosperma uniflorum (e), Euphorbia mauritanica, Exomis microphylla (e), Gasteria bicolor, Kalanchoe rotundifolia, Lampranthus productus (e), Mestoklema tuberosum (e), Pachypodium bispinosum (e), Pachypodium succulentum (e), Pelargonium carnosum, Mesembryanthemum articulatum, Roepera foetida, Rhigozum obovatum (d)*
Woody succulent climbers	*Cynanchum viminale, Crassula perforata*
Woody climber	*Asparagus aethiopicus, Asparagus asparagoides, Asparagus multiflorus (e), Asparagus volubilis (e)*

Herbaceous species	
Herbs	*Abutilon sonneratianum, Aizoon glinoides (e), Arctotheca calendula, Commelina benghalensis, Cyanotis speciosa, Emex australis, Gazania krebsiana, Hibiscus pusillus, Hypoestes aristata, Lepidium africanum, Lotononis glabra (e), Plectranthus madagascariensis, Stachys aethiopica*
Succulent herbs	*Curio radicans (d), Crassula expansa, Crassula spathulata (e)*
Geophytic herbs	*Sansevieria hyacinthoides (d), Sansevieria aethiopica, Cyanella lutea, Cyrtanthus loddigesianus (e), Drimia altissima, Drimia anomala (e), Drimia intricata, Freesia corymbosa (e), Hypoxis argentea, Oxalis smithiana, Trachyandra affinis (e), Tritonia securigera (e)*
Herbaceous climbers	*Pelargonium peltatum (d, e), Cissampelos capensis, Cynanchum ellipticum, Cyphostemma quinatum, Jasminum angulare, Kedrostis capensis, Rhoicissus digitata, Rhoicissus tridentata*
Graminoids	
Grasses	*Cynodon dactylon (d), Eragrostis obtusa (d), Panicum maximum (d), Eragrostis curvula, Eustachys paspaloides, Panicum deustum, Sporobolus fimbriatus, Stipa dregeana, Themeda triandra*

***(d) – Dominant species for the vegetation type; (e) – South African endemic**

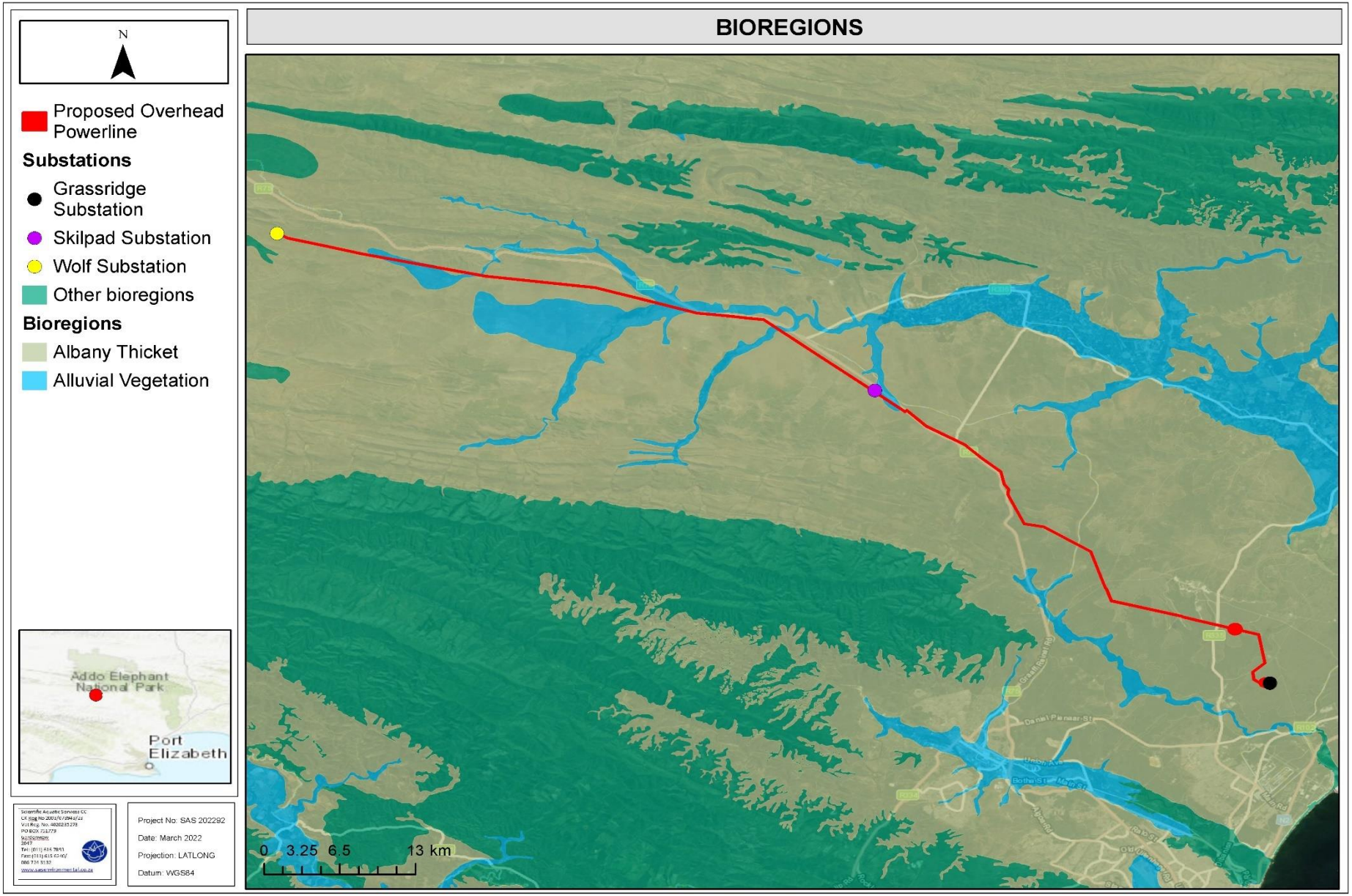

Figure C1: Bioregions applicable to the proposed OHPL (VegMap, 2018).

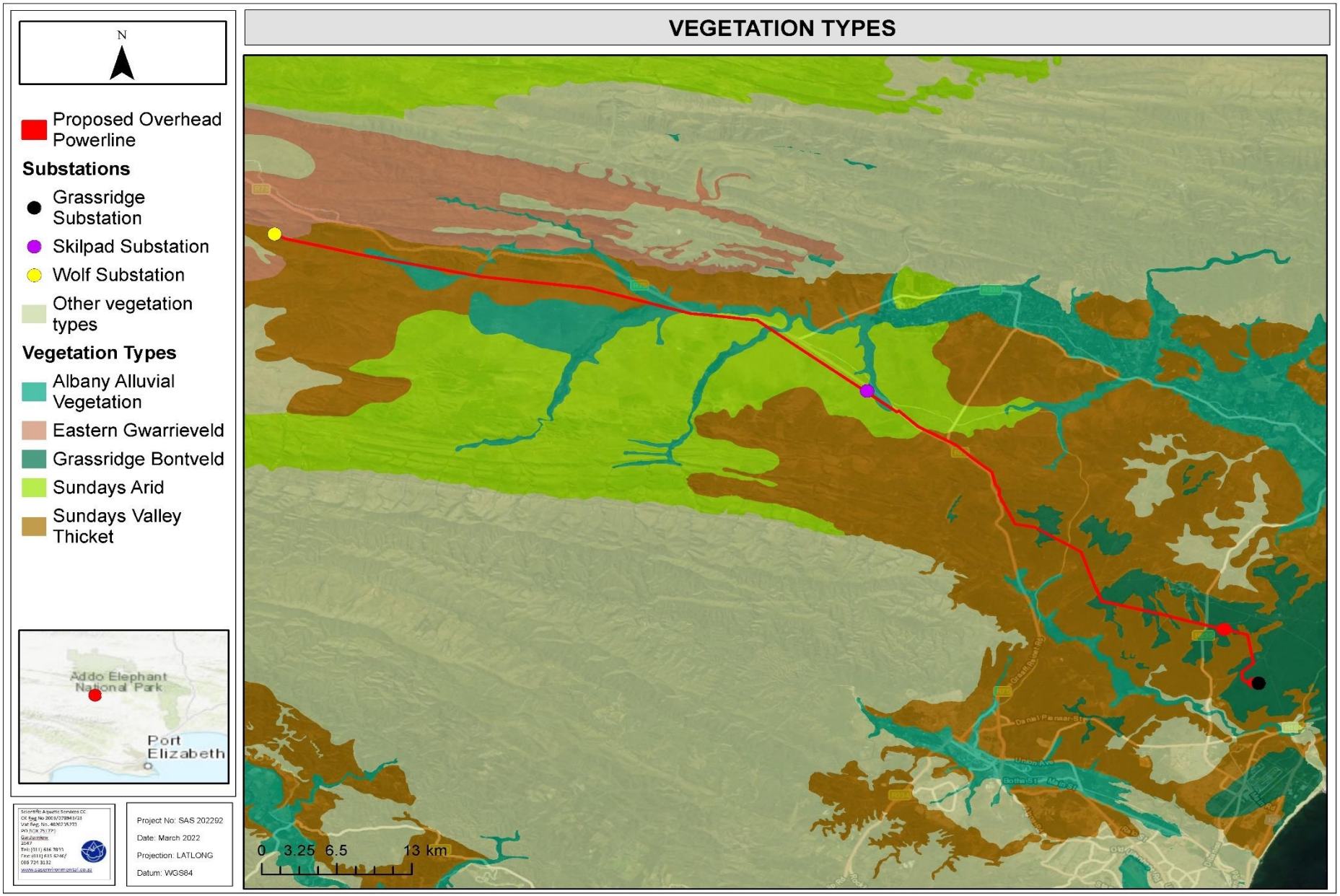

Figure C2: Vegetation types applicable to the proposed OHPL (VegMap, 2018).

APPENDIX D – VISUAL RECEPTORS

The number of observers and their perception of the proposed project will have an impact on the VIA and also on the perceived sensitivity of the landscape. The perception of viewers is difficult to determine as there are many variables to consider, such as cultural background, state of mind, reason for the sighting and how often the project is viewed within a set period. It is therefore necessary to identify areas of high viewer incidence and to classify certain areas according to the observer's visual sensitivity towards the project. It is also necessary to generalise the viewer sensitivity to the proposed project to some degree (Oberholzer, 2005).

The IEMA (2002) identifies a number of potential sensitive receptors that may be affected by a proposed development, namely:

- Users of recreational landscapes/ public footpaths and bridleways, including tourists and visitors;
- Residents;
- Users of public sports grounds and amenity open space;
- Users of public roads and railways;
- Workers; and
- Views of or from within valued landscapes.

The sensitivity of visual receptors and views will depend on:

- The location and context of the viewpoint;
- The expectation and occupation or activity of the receptor; and
- The importance of the view.

The most sensitive receptors may include:

- Users of outdoor recreational facilities, including public rights of way, whose attention or interest may be focused on the landscape;
- Communities where the development results in changes in the landscape setting or valued views enjoyed by the community; and
- Occupiers of residential properties with views affected by the development.

Other receptors include:

- People engaged in outdoor sport or recreation (other than appreciation of the landscape, as in landscape of acknowledges importance or value);
- People travelling through or past the affected landscape in cars on trains or other transport routes;
- People at their place of work.

APPENDIX E – LANDSCAPE CHARACTER

Landscape character, from an aesthetic perspective, is mainly defined by natural determinants, such as vegetation, geology and topography, as well as cultural factors including land use, settlement patterns and the manner in which humans have transformed their natural surroundings. According to Swanwick (2002), landscape character may be defined as a distinct, recognisable and consistent pattern of elements in the landscape that makes it unique and provides it with a particular sense of place. Individual "landscape elements" that contribute to landscape character include hills, rolling plains, valleys, woods, trees, water bodies, as well as buildings and roads. "Landscape features" are those elements that are prominent or eye-catching.

Landscapes may be divided into landscape character types, which are defined as distinct types of landscape that are relatively homogeneous in character. Such landscape character types are generic in nature and may occur in different areas in different parts of the country, but wherever they occur, they share broadly similar combinations of geology, topography, drainage patterns, vegetation, land use and settlement patterns (Swanwick, 2002). Key aesthetic aspects of the landscape are described in the table below, according to the method prescribed by Swanwick (2002).

Table E1: Aesthetic and perceptual aspects of landscape character.

Aspect	Characteristics				Motivation
Scale	Intimate	Small	Large	Vast	The scale of the landscape is considered to be **large** since the proposed OHPL is situated within an are dominated by thicket and shrubland in open plains surrounded by mountains.
Enclosure	Tight	Enclosed	Open	Exposed	Since the proposed OHPL is situated within open plains characterised by short thickets and shrubland vegetation the area considered to be **open**.
Diversity	Uniform	Simple	Diverse	Complex	The proposed OHPL and surrounding area is characterised by thickets, shrubland, bushclumps, and calcareous grasslands, with isolated farmsteads and villages and existing overhead powerlines and a network of roads resulting in the area being **diverse.**
Texture	Smooth	Textured	Rough	Very rough	The texture associated with the landscape is **rough** due to the area being characterised by shrubland, thickets and bushclumps.
Form	Vertical	Sloping	Rolling	Horizontal	The dominant form of the landscape is **rolling and horizontal**, due to the unique combination of mountains and plains in the region.
Line	Straight	Angular	Curved	Sinuous	The line landscape element is **curved** due to the relatively mountains and plains across the landscape.
Colour	Monochrome	Muted	Colourful	Garish	The colours associated with the landscape are **muted**, with vegetation forming the dominant colour palette of shades of green and brown. Some seasonal colour is however expected.
Balance	Harmonious	Balanced	Discordant	Chaotic	The landscape is considered to be **balanced** in terms of the relationship between the vertical and horizontal landscape elements.
Pattern	Random	Organised	Regular	Formal	The landscape is considered **regular,** with elements being even spaced and well-balanced.
Movement	Dead	Still	Calm	Busy	There is very limited movement within the area, which is mainly confined to the farmers and visitors traveling to and from the Game Farms. As such the area is considered **still**.

In addition to the above, other aspects of landscape perception, such as perception of beauty and scenic attractiveness also play a role in defining landscape character. These aspects are more subjective and responses thereto are personal and based on the experience and preference of the observer. Factors simultaneously perceived by senses other than sight, such as noisiness, tranquillity, exposure to the elements and sense of safety, further influence landscape character.

APPENDIX F – VISUAL ABSORPTION CAPACITY

Visual Absorption Capacity (VAC) refers to the inherent ability of a landscape to accommodate change without degeneration of the visual quality and without resulting in an overall change of the identified landscape character type. A high VAC rating implies a high ability to absorb visual impacts and manmade structures and the ability of natural features such as trees or higher-lying areas to screen or hide an object where it would have visible otherwise (Oberholzer, 2005), while a low VAC rating implies a low ability to absorb or conceal visual impacts.

The factors that have been considered during the VAC analysis are listed and explained in the table below, according to the methodology prescribed by the United States Bureau of Land Management (BLM, 2004) and as adapted to the South African context (Table F1). Five factors have been considered, namely vegetation, soil contrast, visual variety, topographical diversity and recovery time.

Table F1: VAC Factors and Rating table.

Factors	Rating Criteria and Score		
Vegetation	Low, uniform vegetation or sparse vegetative cover, typically less than 1m in height, lacking in variety, uniform colour, minimal screening capability, typically low scrub or grass type vegetation. **Score: 1**	Vegetation of moderate height (1 – 2m), some species variety (2 to 3 types), some variation in colour, mostly continuous vegetative cover, effectively screens low-profile projects such as low-profile surface disturbance, scrub/grass, and intermingled shrubs. **Score: 2**	Higher vegetation (>2m height), lush, continuous vegetative cover; some variety of vegetative types is typical but not mandatory, provides significant screening capability of projects up to 4 – 6m in height, woodlands. **Score: 3**
Soil contrast	Surface disturbance would expose a high degree of contrast in colour with surrounding soil, rock and vegetation. **Score: 1**	Surface disturbance would expose a medium degree of contrast in colour with surrounding soil, rock and vegetation. **Score: 2**	Surface disturbance would expose only a low degree of contrast in colour with surrounding soil, rock and vegetation. **Score: 3**
Visual variety	Rating unit exhibits a low degree of visual variety in terms of the landscape character elements of form, line and texture and may also exhibit minimal variety in landforms, vegetation, or colour. **Score: 1**	Rating unit exhibits a medium degree of visual variety in terms of the landscape character elements of form, line, and texture and may also exhibit medium variety in landforms, vegetation, or colour. **Score: 2**	Rating unit exhibits a high degree of visual variety in terms of the landscape character elements of form, line, and texture and may also exhibit high degree of variety in landforms, vegetation, or colour. **Score: 3**
Topographical diversity	Landform has low amount of topographic diversity and variety. **Score: 1**	Landform has moderate amount of topographic diversity and variety. **Score: 2**	Landform has high amount of topographic diversity and variety. **Score: 3**
Recovery time	Long-term recovery time (greater than 5 years) **Score: 1**	Medium recovery time (3 to 5 years) **Score: 2**	High (rapid) recovery time (1 to 2 years) **Score: 3**

Scores, when added, amounting to between 5 and 7 are categorised as Low, scores between 8 and 11 as Medium and between 12 and 15 as High.

VAC is further closely related to visual intrusion, which refers to the physical characteristics and nature of the contrast created by a project on the visual aspects of the receiving environment. It is also, as with VAC, a measure of the compatibility or conflict of a project with the existing landscape and surrounding land use. The visual intrusion ratings are listed in the table below.

Table F2: Visual intrusion ratings.

Rating	Explanation
High visual intrusion	Results in a noticeable change or is discordant with the surroundings.
Moderate visual intrusion	Partially fits into the surroundings, but clearly noticeable.
Low visual intrusion	Minimal change or blends in well with the surroundings.

Through applying the scoring categories as outlined above, the following scores have been calculated for the proposed project area, which have similar landscape characteristics:

Table F3: VAC Scores achieved.

Factor	Score obtained	Motivation
Vegetation	**1**	Vegetation is of low to moderate height, predominantly thickets, shrubland and scattered bushclumps, thus providing low screening capability.
Soil contrast	**3**	Surface disturbance would result in a moderately low degree of contrast in colour with the surrounding area due to bare ground patches interspersed within the vegetation, and the network of gravel roads.
Visual variety	**3**	The vegetative cover within the proposed OHPL area is diverse and rough, thus when viewed from a distance with the mountainous backdrop, there is significant visual variety present. The anthropogenic features such as the existing, powerlines and substations, fences and gravel roads, serve to create visual variety in terms of lines, colour and texture.
Topographical diversity	**3**	The topography of the proposed OHPL area is a unique combination of mountains, plains, hills and outcrops, which provides great topographical variety in the region.
Recovery time	**2**	Due to the dominant vegetation within the area comprising thickets and shrubland, recovery time is expected to be moderate.
Total	**12**	**High**

APPENDIX G – LANDSCAPE QUALITY

Landscape visual quality, integrity or 'scenery beauty' relates primarily to human impact on a landscape and the physical state of the landscape in terms of intactness from visual, functional and ecological perspectives (Swanwick, 2002). It also serves as an indication of the condition of landscape elements and features (as outlined in Section 5.3.5), which in turn depends largely on an observer's visual perception through either increasing or reducing the visual quality of a landscape. Visual quality is thus a factor of an observer's emotional response to physical landscape characteristics and therefore assigning values to visual resources is a subjective process.

According to the BLM Visual Resource Management (VRM) system (1984), a system specifically developed for minimising the visual impacts of surface-disturbing activities and maintaining scenic values for the future, landscape, visual and scenic quality evaluation may be determined based on seven key factors, as outlined in the tables below and adapted to the South African environment. It is important to note that there may be cases where a separate evaluation of each of the key factors does not give a true picture of the overall scenic quality of an area, however within the context of the proposed project, this method of assessment is deemed suitable as an indication of landscape quality.

Table G1: Landscape Quality - Explanation of Rating Criteria.

Factor	Definition
Landform	Topography becomes more interesting as it gets steeper or more massive, or more severely or universally sculptured. Outstanding landforms may be monumental or they may be exceedingly artistic and subtle.
Vegetation	Give primary consideration to the variety of patterns, forms, and textures created by plant life. Consider short-lived displays when they are known to be recurring or spectacular. Consider also smaller scale vegetation features, which add striking and intriguing detail elements to the landscape.
Water	That ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration in selecting the rating score.
Colour	Consider the overall colour(s) of the basic components of the landscape (e.g., soil, rock, vegetation, etc.) as they appear during seasons or periods of high use. Key factors to use when rating "colour" are variety, contrast, and harmony.
Adjacent Scenery	Degree to which scenery outside the scenery unit being rated enhances the overall impression of the scenery within the rating unit. The distance which adjacent scenery will influence scenery within the rating unit will normally range from 0-8 kilometres, depending upon the characteristics of the topography, the vegetative cover, and other such factors. This factor is generally applied to units that would normally rate very low in score, but the influence of the adjacent unit would enhance the visual quality and raise the score.
Scarcity	This factor provides an opportunity to give added importance to one or all of the scenic features that appear to be relatively unique or rare within one physiographic region. There may also be cases where a separate evaluation of each of the key factors does not give a true picture of the overall scenic quality of an area. Often it is a number of not so spectacular elements in the proper combination that produces the most pleasing and memorable scenery - the scarcity factor can be used to recognize this type of area and give it the added emphasis it needs.
Cultural Modifications	Cultural modifications in the landform/water, vegetation, and addition of structures should be considered and may detract from the scenery in the form of a negative intrusion or complement or improve the scenic quality of a unit. Rate accordingly.

Table G2: Scenic Quality - Rating Criteria and scoring system.

Factor	Rating Criteria and Score		
Landform	High vertical relief as expressed in prominent cliffs, spires, massive rock outcrops, areas of severe surface variation, highly eroded formations, dune systems or detail features that are dominant and exceptionally striking and intriguing. **Score: 5**	Steep canyons, mesas, buttes, interesting erosional patterns, landforms of variety in size and shape or detail features, which are interesting though not dominant or exceptional. **Score 3**	Low rolling hills, foothills, or flat valley bottoms or few or no interesting landscape features. **Score: 1**
Vegetation	A variety of vegetative types as expressed in interesting forms, textures, and patterns. **Score: 5**	Some variety of vegetation, but only one or two major types. **Score: 3**	Little or no variety or contrast in vegetation. **Score: 1**
Water	Clear and clean appearing, still, or cascading white water, any of which are a dominant factor in the landscape. **Score: 5**	Flowing, or still, but not dominant in the landscape. **Score: 3**	Absent, or present, but not noticeable. **Score: 0**
Colour	Rich colour combinations, variety or vivid colour; or pleasing contrasts in the soil, rock, vegetation, water or snowfields. **Score: 5**	Some intensity or variety in colours and contrast of the soil, rock and vegetation, but not a dominant scenic element. **Score: 3**	Subtle colour variations, contrast, or interest; generally mute tones. **Score: 1**
Adjacent Scenery	Adjacent scenery greatly enhances visual quality **Score: 5**	Adjacent scenery moderately enhances overall visual quality. **Score: 3**	Adjacent scenery has little or no influence on overall visual quality. **Score: 0**
Scarcity	One of a kind, unusually memorable or very rare within region. Consistent chance for exceptional wildlife or wildflower viewing, etc. **Score: 5**	Distinctive, though somewhat similar to others within the region. **Score: 3**	Interesting within its setting, but fairly common within the region. **Score; 1**
Cultural Modifications	Modifications add favourably to visual variety while promoting visual harmony. **Score: 2**	Modifications add little or no visual variety to the area, and introduce no discordant elements **Score: 0**	Modifications add variety but are very discordant and promote strong disharmony. **Score: -4**

Scores, when added, amounting to less than 11, are categorised as Low, scores between 12 and 18 as Medium and scores more than 19 as High.

Through applying the scoring categories as outlined above, the following scores have been calculated for the proposed project area:

Table G3: Scenic Quality – Results and motivation.

Factor	Score obtained	Motivation
Landform	**5**	The landscape associated with the proposed OHPL and surroundings provide significant topographical variety in the form of a unique combination of mountains and plains. The mountain features in the surrounding area are dominant in the landscape and are exceptionally striking.
Vegetation	**3**	The vegetation composition within the proposed OHPL comprises grassland with thickets, shrubland and bushclumps, thus there is some vegetative variety.
Water	**0**	There are watercourse associated with the proposed OHPL, however these are not noticeable in the landscape.
Colour	**3**	There is variety in colour and contrast in soil and vegetation and the mountainous silhouette, which forms a dominant scenic element.
Adjacent Scenery	**5**	The adjacent scenery which includes mountain ranges, hills and outcrops greatly enhances the visual quality and landscape viewing experience.
Scarcity	**3**	The landscape character type is interesting, and distinctive though it is somewhat similar to other areas within the region.
Cultural Modifications	**0**	Due to existing overhead powerlines and substations and other anthropogenic structures such as houses, gravel roads and fences, the proposed project will not introduce discordant elements into the environment.
Total	**19**	**High**

APPENDIX H – LANDSCAPE VALUE

Landscape value is concerned with the relative value that is attached to different landscapes. Landscape values are described as the environmental or cultural benefits, including services and functions that are derived from various landscape attributes (Department of the Environment and Local Government, Ireland (DoE, 2000). A landscape may be valued by different communities for many different reasons without any formal designation, recognising, for example, perceptual aspects such as scenic beauty, tranquillity or wildness, special cultural associations, the influence and presence of other conservation interests, or the existence of a consensus about importance, either nationally or locally (DoE, 2000). These attributes include the components and image of the landscape as already established in the assessment of landscape character, including aesthetic and ecological components, but also includes historical and socio-cultural associations, as well as religious and mythological dimensions.

In determining landscape value, the people or groups of people who could be affected by the proposed development should be considered, due to landscapes being valuable to people in different ways. In this regard, consideration is given to:

- People who live and work in an area may have a different perception of the landscape to that held by visitors because of their more regular contact with the landscape and the ongoing changes within it;
- Special interest, for example the ecological, cultural or historic value of the landscape, as knowledge of these issues can often affect people's perception and appreciation of a landscape; and
- Landscapes valued by a public wider than the local population, because they have a strong image or are well known and valued nationally and internationally.

APPENDIX I – NIGHT TIME LIGHTING

In order to understand the potential visual impacts from night lighting, it is important to understand the existing lighting levels. The Institute of Lighting Engineers (ILP) (2011) identifies five environmental zones for exterior lighting control and with which to describe the existing lighting conditions within the landscape (Table I1). These environmental zones are supported by design guidance for the reduction of light pollution, which can then inform proposed mitigation measures and techniques. Where an area to be lit lies on the boundary of two zones the obtrusive light limitation values used should be those applicable to the most rigorous zone.

Table I1: Environmental zones for night-time lighting.

Environmental Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically Dark	National Parks, Areas of Outstanding Natural Beauty etc.
E2	Rural	Low District Brightness	Village or relatively dark outer suburban locations
E3	Suburban	Medium District Brightness	Small town centres or suburban locations
E4	Urban	High District Brightness	Town/city centres with high levels of night-time activity

Stationary lights facing upward are significant contributors to light pollution and causes sky glow and glare, while light facing in a horizontal direction can be visible for long distances, lead to light trespass (light falling outside the desired area of illumination) and be disturbing to viewers and vehicles. Sky glow refers to the night-time brightening of skies, caused by the scattering and redirecting of light in the atmosphere, by water droplets and dust in the air, back towards the ground. Such stray light mostly comes from poorly designed and improperly aimed light, and from light reflected from over-lit areas (ASSA, 2012). Lighting from vehicles within rural areas will generally be more intrusive than in urban settings and, therefore, will have a potentially greater impact due the general lack of existing ambient light within areas further away from the surface infrastructure area.

The ILP (2011) recommends that, in order to maintain the night-time setting, lighting within the identified zone should have minimal illumination into the sky as well as to adjacent viewpoints.

APPENDIX J – VISUAL EXPOSURE AND VISIBILITY

Visual exposure refers to the geographic area from which the proposed project will be visible and is defined by the degree of visibility of a proposed project from various receptors sites. Visibility, in turn, is determined by distance between the components of a proposed project and the viewer.

Visual exposure is determined by the zone of visual influence or the "viewshed". A viewshed is the topographically defined area that includes all the major observation sites from where a proposed development will be visible. The boundary of the viewshed tends to connect high points in the landscape through following ridgelines and demarcates the zone of visual influence. The zone of visual influence usually fades out beyond 5km distance and the further away from an observer the project is, the less visible it would be. It is also important to note that the actual zone of visual influence of the proposed project may be smaller than indicated because of screening by existing vegetation and infrastructure, which may partially or totally obscure a view.

General visibility classes, as applicable to the proposed infrastructure are indicated in the table below.

Table J1: Visibility classes (IEMA, 2002).

Class	Description
Highly visible	Clearly noticeable within the observer's view frame within 1km
Moderately visible	Recognisable feature within observer's view frame further than 1km
Marginally visible	Not particularly noticeable within observer's view frame further than 2km
Hardly visible	Practically not visible unless pointed out to observer beyond further than 3km

Three distance zones have been identified (BLM, 1984) based on visibility from travel routes and observation points. These have been determined and confirmed through field verification.

- Foreground – includes local and sub-regional areas visible from main roads, farm houses, residential areas such as towns and villages, industrial/commercial areas and gravel farm roads, and any other viewing locations which are up to 1 kilometre away.
- Middle ground – includes local and sub-regional areas visible from main roads, residential areas such as towns and villages, isolated houses, industrial/commercial areas, accommodation at nature reserves and gravel farm roads, or other viewing locations which are up to 3 kilometres away.
- Background – includes sub-regional areas barely visible further than 3 kilometres away.

Line of Sight Analysis

A line of sight and elevation profile analysis has been conducted through drawing of a graphic line between two points on a surface that shows where along the line the view is obstructed. In Google Earth Pro a series of cross-sections have been evaluated, extending from various points of the project area, towards possible receptor sites. The visibility of each point along the cross section was calculated though the use of the Google Earth Pro Elevation Profile function. Emphasis was placed on confirming whether the proposed development areas will be visible from sensitive receptors in the vicinity. Various cross sections, selected to traverse a variety of receptor sites, were investigated to supplement information provided by the KOP analysis. The function only evaluates the topography of the area with land cover and vegetation not being taken into account. To ensure the line of sight is fully assessed the height of the proposed infrastructure have been incorporated through the use of conceptual block models based on the site layout and the heights provided by the project professional team.

Viewshed Analysis

The viewshed analysis calculates the geographical locations from where the proposed project might be visible. This potential visual exposure of the project has been modelled by creating a Digital Terrain Model (DTM) from 1m contour data, and applying a viewshed analysis using GIS software, whereby all areas with a line of sight towards the proposed project is indicated. It must be noted that the heights of existing infrastructure and vegetation are not included in the calculation of the viewshed and it is, therefore, important to bear in mind that the proposed development will not be visible from all points within the viewshed, as views may be obstructed by visual elements, whereby such intervening objects will modify the viewshed at ground level.

Key Observation Points

Key Observation Points (KOPs) were identified based on prominent viewpoints, where uninterrupted views of the proposed project and related infrastructure is expected to occur and at points where positive viewshed areas intersect with potential receptors. The KOPs were selected within 5km of the proposed project, as visual receptors beyond this distance are unlikely to be significantly affected. The KOP analyses have been conducted by investigating the visual influence of the proposed infrastructure as per the available layout, taking into account that at a distance from the project area, the visibility of the proposed infrastructure will be reduced.

APPENDIX K – IMPACT ASSESSMENT RESULTS

Table K1: Impact assessment results

Ref:	1	
Project phase	**Construction**	
Impact	**Landscape Character and Sense of Place**	
Description of impact	*** Site clearing, including the removal of topsoil and vegetation within the footprint and servitude corridor; * Excavation of foundations for towers / pylons; * Construction and placement of pylons / towers. Initially the towers and conductors are moderately reflective and can create glint and glare causing it to be obtrusive. The structure however dull with time reducing the impact; * Construction of general surface infrastructure including additional access roads and laydown areas; * Potential erosion and loss of topsoil leading to visual contrast; and * Increased amount of human activity, construction vehicles, and other equipment such as excavators and cranes.**	
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts
Potential mitigation	*** The duration of the construction phase should be reduced as far as possible through careful planning, and restricted to daylight hours; * Construction activities should take place at one pylon structure at a time with concurrent rehabilitation, to prevent a large spread of disturbed area; * All construction footprint areas must be kept in a neat and orderly condition at all times, if possible and practical contractors laydown areas must be fenced off; * The construction footprints must remain as small as possible, with as little indigenous vegetation being cleared as possible; * As far as possible, existing roads are to be utilised for construction and maintenance purpose, to limit cumulative impacts from additional roads, and to limit the extent of the vegetation cleared for the purpose of the project; * The height of any temporary structures such as soil stockpiles should be kept as low as possible; * Where infrastructure is sited within view of visually sensitive receptors, in particular the Daniell Cheetah Project Farm, it must be placed as far away as possible and as close as possible to the existing powerline structures; * As far as possible and where feasible, the pylons should be placed next to the existing pylon structures, where the visual impact is already present; * Although the use of lattice towers is also deemed acceptable, monopole structures are generally preferred for the proposed powerline due to these structures having a smaller development footprint and subsequent lower visual impact than lattice towers, however structural considerations may force the use of one or the other (monopole vs lattice tower), especially at corners along the line; * The use of highly reflective material for tower structures and substations should be avoided; * Erosion, which may lead to high levels of visual contrast and further detract from the visual environment, must be prevented throughout the lifetime of the project by means of putting soil stabilisation measures in place where required and through concurrent rehabilitation;**	

Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Brief	Impact will not last longer than 1 year	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	Medium	Determination is based on common sense and general knowledge	Low	Judgement is based on intuition
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Minor - negative**		**Minor - negative**	

Ref:	2			
Project phase	**Construction**			
Impact	**Visual Intrusion and VAC Impacts**			
Description of impact	**Same as above**			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	**Same as above**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Brief	Impact will not last longer than 1 year	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Low	Judgement is based on intuition

Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Minor - negative**		**Minor - negative**	

Ref:	3			
Project phase	**Construction**			
Impact	**Visual Exposure and Visibility**			
Description of impact	*** Same as above; * An increase in dust and vehicular movement due to construction activities, leading to increase visual exposure and potentially affecting visibiliy.**			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	*** Same as above * During the construction phase all dirt and access roads, as well as other areas cleared of vegetation for construction purposes will require effective dust suppression such as regular watering; * Access roads must be suitably maintained to limit erosion and dust pollution; * Vehicle speed on unpaved roads must be reduced to limit dust creation.**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Brief	Impact will not last longer than 1 year	Brief	Impact will not last longer than 1 year
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	Medium	Determination is based on common sense and general knowledge	Low	Judgement is based on intuition
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Minor - negative**		**Minor - negative**	

Ref:	4			
Project phase	**Construction**			
Impact	**Impacts due to night-tme lighting**			
Description of impact	*** Presence of lighting sources in an area where it has previously been dark; * Potentially contributing to night time light pollution and potential sky glow in a previously undisturbed area.**			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	*** As far as possible, restrict construction activities to daylight hours, in order to limit the need to bright floodlighting and the potential for skyglow and to avoid the use of additional night-time lighting for security purposes; * Night lighting of construction sites and camps should be minimised as far as possible, taking into consideration that due to safety requirements a certain level of lighting may be necessary; * Where security lighting is used, making use of motion detectors on security lighting, at the laydown areas, ensures that the site will remain in relative darkness, until lighting is required for security purposes; * Placement of lights should consider the location of surrounding receptors and as far as possible be screened from view; * The use of high light masts and high pole top security lighting should be avoided. Any high lighting masts should be covered to reduce glow; * Up-lighting of structures must be avoided, with lighting installed at downward angles that provide precisely directed illumination beyond the immediate surroundings of the infrastructure, thereby minimising the light spill and trespass; * Care should be taken when selecting luminaries to ensure that appropriate units are chosen and that their location will reduce spill light and glare to a minimum; * Minimum wattage light fixtures should be used, with the minimum intensity necessary to accomplish the light's purpose; * The use of low-pressure sodium lamps, yellow LED lighting, or an equivalent should be considered to reduce skyglow (BLM, 2013).**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Brief	Impact will not last longer than 1 year	Brief	Impact will not last longer than 1 year
Extent	Local	Extending across the site and to nearby settlements	Limited	Limited to the site and its immediate surroundings
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Low	Judgement is based on intuition
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	**Minor - negative**		**Minor - negative**	

Ref:	5			
Project phase	**Operation**			
Impact	**Landscape Character and Sense of Place**			
Description of impact	*** Presence of pylons structures in areas where existing pylons was not previosuly placed; * Potential increased proliferation of alien floral species and further transformation of natural habitat leading to a change in landscape character; * Potential ongoing erosion and loss of topsoil leading to high visual contrast; * Potential ongoing glint and glare from the infrastructure, provided that reflective material are used and that the conductors do not dull over time due to improved technology.**			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	*** No further clearing of vegetation may take place during the operational phase of the project; * An alien vegetation control plan must be implemented, particularly around the perimeters of the foundation and access roads; * The appearance and general upkeep of the infrastructure must be maintained to a high standard and be kept neat and orderly at all times. if possible, routine maintencance should take place, at least bi-annually; * Reflective material should not be used.**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Immediate	Impact will self-remedy immediately	Immediate	Impact will self-remedy immediately
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Probable	The impact has occurred here or elsewhere and could therefore occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	**Negligible - negative**		**Negligible - negative**	

Ref:	6	
Project phase	**Operation**	
Impact	**Visual Intrusion and VAC Impacts**	
Description of impact	**Same as above**	
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts

Potential mitigation	**Same as above**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Immediate	Impact will self-remedy immediately	Immediate	Impact will self-remedy immediately
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Probable	The impact has occurred here or elsewhere and could therefore occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	Medium	Determination is based on common sense and general knowledge	Low	Judgement is based on intuition
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	**Negligible - negative**		**Negligible - negative**	

Ref:	7			
Project phase	**Operation**			
Impact	**Visual Exposure and Visibility**			
Description of impact	*** Same as above; * Presence of additional powerline infrastructure in the area; * Presence and movement of vehicles utilising local roads.**			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	*** As far as possible, existing roads are to be utilised; * Routine maintenance should be optimised as far as possible to limit the number of additional vehicles on local roads; * The appearance and general upkeep of the infrastructure must be maintained to a high standard and be kept neat and orderly at all times.**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Immediate	Impact will self-remedy immediately	Immediate	Impact will self-remedy immediately
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Probable	The impact has occurred here or elsewhere and could therefore occur	Probable	The impact has occurred here or elsewhere and could therefore occur

Confidence	Medium	Determination is based on common sense and general knowledge	Low	Judgement is based on intuition
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Negligible - negative**		**Negligible - negative**	

Ref:	8			
Project phase	**Operation**			
Impact	**Impacts due to Night time Lighting**			
Description of impact	*** Emergency maintenance of the structures requiring light sources; * Potential lighting at night from vehicles during maintenance.**			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	*** As far as possible maintenance should take place during daylight hours, to prevent use of bright floodlights, which may lead to skyglow.**			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Immediate	Impact will self-remedy immediately	Immediate	Impact will self-remedy immediately
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site
Intensity	Very low	Natural and/ or social functions and/ or processes are slightly altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Low	Judgement is based on intuition
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Negligible - negative**		**Negligible - negative**	

APPENDIX L – INDEMNITY AND TERMS OF USE OF THIS REPORT

The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by seasonality, time and budgetary constraints relevant to the type and level of investigation undertaken as well as the project program and SAS CC and its staff reserve the right to, at their sole discretion, modify aspects of the report including the recommendations if and when new information June become available from ongoing research or further work in this field or pertaining to this investigation.

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APPENDIX M – SPECIALIST INFORMATION

Details of the specialist who prepared the report

Stephen van Staden	MSc Environmental Management (University of Johannesburg)
Sanja Erwee	BSc Zoology (University of Pretoria)

The expertise of that specialist to compile a specialist report including a curriculum vitae

Company of Specialist:	Scientific Terrestrial Services		
Name / Contact person:	Stephen van Staden		
Postal address:	29 Arterial Road West, Oriel, Bedfordview		
Postal code:	2007	Cell:	082 442 7637
Telephone:	011 616 7893	Fax:	011 615 6240/ 086 724 3132
E-mail:	stephen@sasenvgroup.co.za		
Qualifications	MSc (Environmental Management) (University of Johannesburg) BSc (Hons) Zoology (Aquatic Ecology) (University of Johannesburg) BSc (Zoology, Geography and Environmental Management) (University of Johannesburg)		
Registration / Associations	Registered Professional Scientist at South African Council for Natural Scientific Professions (SACNASP) Accredited River Health practitioner by the South African River Health Program (RHP) Member of the South African Soil Surveyors Association (SASSO) Member of the Gauteng Wetland Forum		

Specialist Declaration

I, Stephen van Staden, declare that -

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant legislation and any guidelines that have relevance to the proposed activity;
- I will comply with the applicable legislation;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct

Signature of the Specialist

SAS ENVIRONMENTAL GROUP OF COMPANIES –

SPECIALIST CONSULTANT INFORMATION

CURRICULUM VITAE OF STEPHEN VAN STADEN

PERSONAL DETAILS

Position in Company	Group CEO, Water Resource discipline lead, Managing member, Ecologist, Aquatic Ecologist
Joined SAS Environmental Group of Companies	2003 (year of establishment)

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Registered Professional Scientist at South African Council for Natural Scientific Professions (SACNASP)
Accredited River Health practitioner by the South African River Health Program (RHP)
Member of the South African Soil Surveyors Association (SASSO) Member of the Gauteng Wetland Forum
Member of the Gauteng Wetland Forum;
Member of International Association of Impact Assessors (IAIA) South Africa;
Member of the Land Rehabilitation Society of South Africa (LaRSSA)

EDUCATION

Qualifications

MSc Environmental Management (University of Johannesburg)	2003
BSc (Hons) Zoology (Aquatic Ecology) (University of Johannesburg)	2001
BSc (Zoology, Geography and Environmental Management) (University of Johannesburg)	2000
Tools for wetland assessment short course Rhodes University	2016
Legal liability training course (Legricon Pty Ltd)	2018
Hazard identification and risk assessment training course (Legricon Pty Ltd)	2013

Short Courses

Certificate – Department of Environmental Science in Legal context of Environmental Management, Compliance and Enforcement (UNISA)	2009
Introduction to Project Management - Online course by the University of Adelaide	2016
Integrated Water Resource Management, the National Water Act, and Water Use Authorisations, focusing on WULAs and IWWMPs	2017

AREAS OF WORK EXPERIENCE

South Africa – All Provinces
Southern Africa – Lesotho, Botswana, Mozambique, Zimbabwe Zambia
Eastern Africa – Tanzania Mauritius
West Africa – Ghana, Liberia, Angola, Guinea Bissau, Nigeria, Sierra Leona
Central Africa – Democratic Republic of the Congo

SELECTED PROJECT EXAMPLES OUT OF OVER 2000 PROJECTS WORKED ON

1 Mining: Coal, Chrome, PGM's, Mineral Sands, Gold, Phosphate, river sand, clay, fluorspar
2 Linear developments
3 Energy Transmission, telecommunication, pipelines, roads

4 Minerals beneficiation
5 Renewable energy (wind and solar)
6 Commercial development
7 Residential development
8 Agriculture
9 Industrial/chemical

KEY SPECIALIST DISCIPLINES

Biodiversity Assessments

- Floral Assessments
- Biodiversity Actions Plan (BAP)
- Biodiversity Management Plan (BMP)
- Alien and Invasive Control Plan (AICP)
- Ecological Scan
- Terrestrial Monitoring
- Protected Tree and Floral Marking and Reporting
- Biodiversity Offset Plan

Freshwater Assessments

- Desktop Freshwater Delineation
- Freshwater Verification Assessment
- Freshwater (wetland / riparian) Delineation and Assessment
- Freshwater Eco Service and Status Determination
- Rehabilitation Assessment / Planning
- Maintenance and Management Plans
- Plant species and Landscape Plan
- Freshwater Offset Plan
- Hydropedological Assessment
- Pit Closure Analysis

Aquatic Ecological Assessment and Water Quality Studies

- Habitat Assessment Indices (IHAS, HRC, IHIA & RHAM)
- Aquatic Macro-Invertebrates (SASS5 & MIRAI)
- Fish Assemblage Integrity Index (FRAI)
- Fish Health Assessments
- Riparian Vegetation Integrity (VEGRAI)
- Toxicological Analysis
- Water quality Monitoring
- Screening Test
- Riverine Rehabilitation Plans

Soil and Land Capability Assessment

- Soil and Land Capability Assessment
- Soil Monitoring
- Soil Mapping

Visual Impact Assessment

- Visual Baseline and Impact Assessments
- Visual Impact Peer Review Assessments
- View Shed Analyses
- Visual Modelling

Legislative Requirements, Processes and Assessments

- Water Use Applications (Water Use Licence Applications / General Authorisations)
- Environmental and Water Use Audits
- Freshwater Resource Management and Monitoring as part of EMPR and WUL conditions.

SAS ENVIRONMENTAL GROUP OF COMPANIES – SPECIALIST CONSULTANT INFORMATION CURRICULUM VITAE OF SANJA ERWEE

PERSONAL DETAILS

Position in Company	GIS Technician and Visual Specialist
Joined SAS Environmental Group of Companies	2014

EDUCATION

Qualifications

BSC Zoology (University of Pretoria)	2013

Short Courses

Global Mapper	2015
SANBI BGIS Course	2017
Global Mapper Lidar Course	2017
ESRI MOOC ARCGIS Cartography	2018

AREAS OF WORK EXPERIENCE

South Africa – Gauteng, Mpumalanga, North West, Limpopo, KwaZulu-Natal, Northern Cape, Western Cape Free State

KEY SPECIALIST DISCIPLINES

Freshwater Assessments

- Desktop Freshwater Delineation
- Plant species and Landscape Plan

Visual Impact Assessment

- Visual Baseline and Impact Assessments
- Visual Impact Peer Review Assessments
- View Shed Analyses
- Visual Modelling

GIS

- Mapping and GIS for various sectors and various disciplines (biodiversity, freshwater, aquatic, soil and land capability).