Lesaka 1 Solar Energy Facility (Pty) Ltd

Lesaka 1 Solar Energy Facility and Associated Infrastructure near Loeriesfontein, Northern Cape Province

Visual Scoping Report

DFFE Reference: **TBC**
Report Prepared by: Kelly Armstrong and Chris Dalgliesh
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Lesaka 1 Solar Energy Facility (Pty) Ltd

Lesaka 1 Solar Energy Facility and Associated Infrastructure near Loeriesfontein, Northern Cape Province

Visual Scoping Report

EXECUTIVE SUMMARY

Lesaka 1 Solar Energy Facility (Pty) Ltd propose to develop the Lesaka 1 Solar Energy Facility (SEF). The SEF will comprise a Photovoltaic (PV) array with a maximum nameplate capacity of 240 MW, Battery Energy Storage System (BESS), on-site Independent Power Producer (IPP) substation and associated grid infrastructure. Lesaka 1 SEF will occupy 795 ha and will be located on Farm Kluitjes Kraal No. 264 (the SEF property) approximately 35 km north of Loeriesfontein, in the Hantam Local Municipality, in the Northern Cape Province.

A ~ 21 km long 132 kV powerline will evacuate power produced by Lesaka 1 SEF to the grid by connecting the on-site switching stations or the centrally located collector substation to the existing Helios Main Transmission Substation (MTS).

Enertrag South Africa (Pty) Ltd (Enertrag) on behalf of Lesaka 1 Solar Energy Facility (Pty) Ltd has appointed SiVEST (SA) (Pty) Ltd (SiVEST) is undertake an Environmental Impact Assessment (EIA) processes required in terms of the National Environmental Management Act 107 of 1998 (NEMA) for Lesaka 1 SEF. SRK Consulting (South Africa) (Pty) Ltd (SRK) has been appointed by SiVEST to undertake Visual Impact Assessments (VIAs) to inform the EIA processes.

Two powerline corridor alternatives will be considered in the EIA, *viz.* Powerline Alternatives 1 and 2, as well as two alternative grid connection configurations.

The landscape character is the description of the pattern of the landscape resulting from the combinations of the natural (geology, topography and vegetation) and cultural (land use) characteristics. The property lies at an elevation of ~750 m amsl and is mostly flat. Elevation increases towards the northern and southern boundaries of the property and a fairly prominent ridge is located on the eastern boundary of the property. Regionally, elevation ranges more significantly, particularly to the south-west and south-east. Isolated koppies, ridgelines and escarpments are a feature of the surrounding landscape.

The area around the SEF property and powerline corridor is predominantly characterised by grazing lands (natural vegetation), with supporting infrastructure (roads, powerlines and a railway line). A road (AP 2972) extends northwards from Loeriesfontein and to the east of the SEF property. The Sishen-Saldanha railway line is routed adjacent to the Klein-Rooiberg River bisecting the northern portion of the SEF property. Existing large-scale powerlines are also present around the SEF property and powerline corridor, increasing in concentration nearer the existing Helios MTS. Approximately 13 approved renewable energy projects within ~5 km north of the SEF property, some of which are located on some of the 132 kV powerline corridor properties.

The visual character of the project area is provided by the topography, vegetation and land use of the area which is a rural environment characterised by the sparsely vegetated prominences and ridgelines

separated by often, wide flat expanses interspersed with farmstead and some infrastructure. The project area can therefore be defined as a natural transition landscape as it is mostly rural with few isolated farmsteads and some powerlines, roads and railway line visible in the landscape.

The visual quality of the area can be experienced through long closed views across plains of low vegetation and prominences, escarpments and ridgelines defining the horizon. Though there are limited anthropogenic features (road, fences, powerlines and railway line), they impact significantly on the visual quality of the area as they interrupt views and are discordant with the natural landscape. Though not always visible, the very long, noisy trains using the railway line bisecting the property, detract significantly from visual quality.

Based on the surrounding land uses, the receptors have been identified; *viz.* farmstead residents and motorists and tourists. The farmsteads are interspersed throughout the area surrounding the SEF and the powerline corridor properties, none, however are identified within the foreground of the project. Two roads are located in close proximity to the project site. The AP 2972 is routed to the east of the property and an unnamed gravel road branches off the AP 2972 towards the site to the west.

The region has scenic value in terms of the rugged natural landscape and large portions of agricultural land. The sense of place of the surrounding area is strongly influenced by the surrounding land use, which can generally be described as a natural agricultural area, on natural grazing land, i.e. not managed (irrigated) pastures.

The potential impacts of the proposed project on the surrounding visual environment during the construction, operational and decommissioning phases were considered. The impacts which have been assessed include the following:

- Construction phase:
    - Altered sense of place and visual intrusion caused by the construction activities associated with the SEF components and 132 kV powerline;
- Operational phase:
    - Altered sense of place and visual intrusion caused by the PV array;
    - Altered sense of place and visual intrusion caused by the BESS, IPP substation and internal grid infrastructure;
    - Altered visual quality caused by light pollution from the SEF at night;
    - Altered sense of place and visual intrusion caused by 132 kV Powerline Alternative 1 and 2;
- Decommissioning phase:
    - Altered sense of place caused by the decommissioning activities for the SEF and the 132 kV powerline.

In addition to this proposed project, there are 13 approved renewable energy provides (three SEFs and nine WEFs) listed on DFFE's list of renewable energy projects within a 35 km radius of the project. These projects will significantly the visual character, and therefore, alter the sense of place within the surrounding area.

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT REGULATIONS, 2014 (AS AMENDED) - REQUIREMENTS FOR SPECIALIST REPORTS (APPENDIX 6)

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	**Section of Report**
1. (1) A specialist report prepared in terms of these Regulations must contain- a) details of- i. the specialist who prepared the report; and ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;	1.3
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page vi
c) an indication of the scope of, and the purpose for which, the report was prepared;	1
(cA) an indication of the quality and age of base data used for the specialist report;	1.4.1
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	4
d) the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	1.4.1
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	1.4
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 identifying site alternatives;	6
g) an identification of any areas to be avoided, including buffers;	N/A
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;	N/A
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	2
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;	8
k) any mitigation measures for inclusion in the EMPr;	0

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report
l) any conditions for inclusion in the environmental authorisation;	8.1
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	0
n) a reasoned opinion- i. (as to) whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and 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;	8.1
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	N/A
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A
q) any other information requested by the competent authority.	N/A
2) Where a government notice *gazetted* by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	N/A

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Lesaka 1 Solar Energy Facility and Associated Infrastructure near Loeriesfontein, Northern Cape Province

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.environment.gov.za/documents/forms.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	SRK Consulting (South Africa) (Pty) Ltd			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	1	Percentage Procurement recognition	135%
Specialist name:	Kelly Armstrong			
Specialist Qualifications:	BSocSc (Hons) Environmental Science			
Professional affiliation/registration:	N/A			
Physical address:	183 Main Road, Albion Spring Close, Rondebosch, 7700			
Postal address:	Postnet Suite #206, P. Bag X18, Rondebosch, 7701			
Postal code:	7700	Cell:	076 114 9254	
Telephone:	021 659 3060	Fax:	086 530 7003	
E-mail:	karmstrong@srk.co.za			

2. DECLARATION BY THE SPECIALIST

I, ____Kelly Armstrong_____, 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 Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, 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; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist

SRK Consulting (South Africa) (Pty) Ltd

Name of Company:

Date:

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _____ Kelly Armstrong _____, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist

SRK Consulting (South Africa) (Pty) Ltd

Name of Company

Date

Signature of the Commissioner of Oaths

Date

Lesaka 1 Solar Energy Facility (Pty) Ltd

Lesaka 1 Solar Energy Facility and Associated Infrastructure near Loeriesfontein, Northern Cape Province

Visual Scoping Report

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Appendix A: Specialist CV

Glossary of Terms

This list contains definitions of symbols, units, abbreviations, and terminology that may be unfamiliar to the reader.

Landscape Integrity	The compatibility of the development/visual intrusion with the existing landscape.
Sense of Place	The identity of a place related to uniqueness and/or distinctiveness. Sometimes referred to as genius loci meaning 'spirit of the place'.
Visibility	The area from which the project components would actually be visible and which depends upon topography, vegetation cover, built structures and distance.
Visual Absorption Capacity	The potential for the area to conceal the proposed development.
Visual Character	The elements that make up the landscape including geology, vegetation and land-use of the area.
Visual Exposure	The zone of visual influence or viewshed. Visual exposure tends to diminish exponentially with distance.
Visual Impact	A change to the existing visual, aesthetic or scenic environment, either adverse or beneficial, that is directly or indirectly due to the development of the project and its associated activities.
Visual Intrusion	The effect of the artificial insertion (construction) of an object into a landscape, typically – but not always - reducing the visual quality of the environment, and sense of place.
Visual Obtrusion (or Obstruction)	The effect of the artificial insertion (construction) of an object into a landscape, typically blocking and/or foreshortening views.
Visual Quality	The experience of the environment with its particular natural and cultural attributes.
Visual Receptors	Potential viewers (individuals or communities) who are subjected to the visual influence of a project.

List of Abbreviations

BESS	Battery Energy Storage System
DFFE	Department of Forestry, Fisheries and the Environment
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
IPP	Independent Power Producer
MTS	Main Transmission Substation
NEMA	National Environmental Management Act 107 of 1998
PV	Photovoltaic
REDZ	Renewable Energy Development Zone
SEF	Solar Energy Facility
SiVEST	SiVEST (SA) (Pty) Ltd
SRK	SRK Consulting (South Africa) (Pty) Ltd
ToR	Terms of Reference
VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
WEF	Wind Energy Facility

Lesaka 1 Solar Energy Facility (Pty) Ltd

Lesaka 1 Solar Energy Facility and Associated Infrastructure near Loeriesfontein, Northern Cape Province

Visual Scoping Report

1. INTRODUCTION

Lesaka 1 Solar Energy Facility (Pty) Ltd and Lesaka 2 Solar Energy Facility (Pty) Ltd propose to develop one Solar Energy Facility (SEF) each: Lesaka 1 SEF and Lesaka 2 SEF. Each SEF will have a maximum nameplate capacity of 240 MW, a Battery Energy Storage System (BESS), on-site Independent Power Producer (IPP) substation and associated grid infrastructure. Both SEFs will be located on Farm Kluitjes Kraal No. 264, approximately 35 km north of Loeriesfontein, in the Hantam Local Municipality, in the Northern Cape Province (Figure 1-1). A ~ 21 km long 132 kV powerline will evacuate power produced by Lesaka 1 SEF and Lesaka 2 SEF to the grid by connecting the respective on-site switching stations or the centrally located collector substation to the existing Helios Main Transmission Substation (MTS).

Enertrag South Africa (Pty) Ltd (Enertrag) on behalf of Lesaka 1 Solar Energy Facility (Pty) Ltd and Lesaka 2 Soalr Energy Facility (Pty) Ltd has appointed SiVEST (SA) (Pty) Ltd (SiVEST) is undertake separate Environmental Impact Assessment (EIA) processes required in terms of the National Environmental Management Act 107 of 1998 (NEMA) for Lesaka 1 SEF and Lesaka 2 SEF, for which separate Environmental Authorisations (EAs) will be sought. SRK Consulting (South Africa) (Pty) Ltd (SRK) has been appointed by SiVEST to undertake Visual Impact Assessments (VIAs) to inform the EIA processes.

This Visual Scoping Report relates to the Lesaka 1 SEF and associated infrastructure (see Section 3.2).

1.1 Scope and Objectives

The primary aims of the study are to describe the visual baseline, and later to assess the potential visual impacts of the project and identify effective and practicable mitigation measures. The VIA informs the EIA process required in terms of NEMA and conducted by SiVEST.

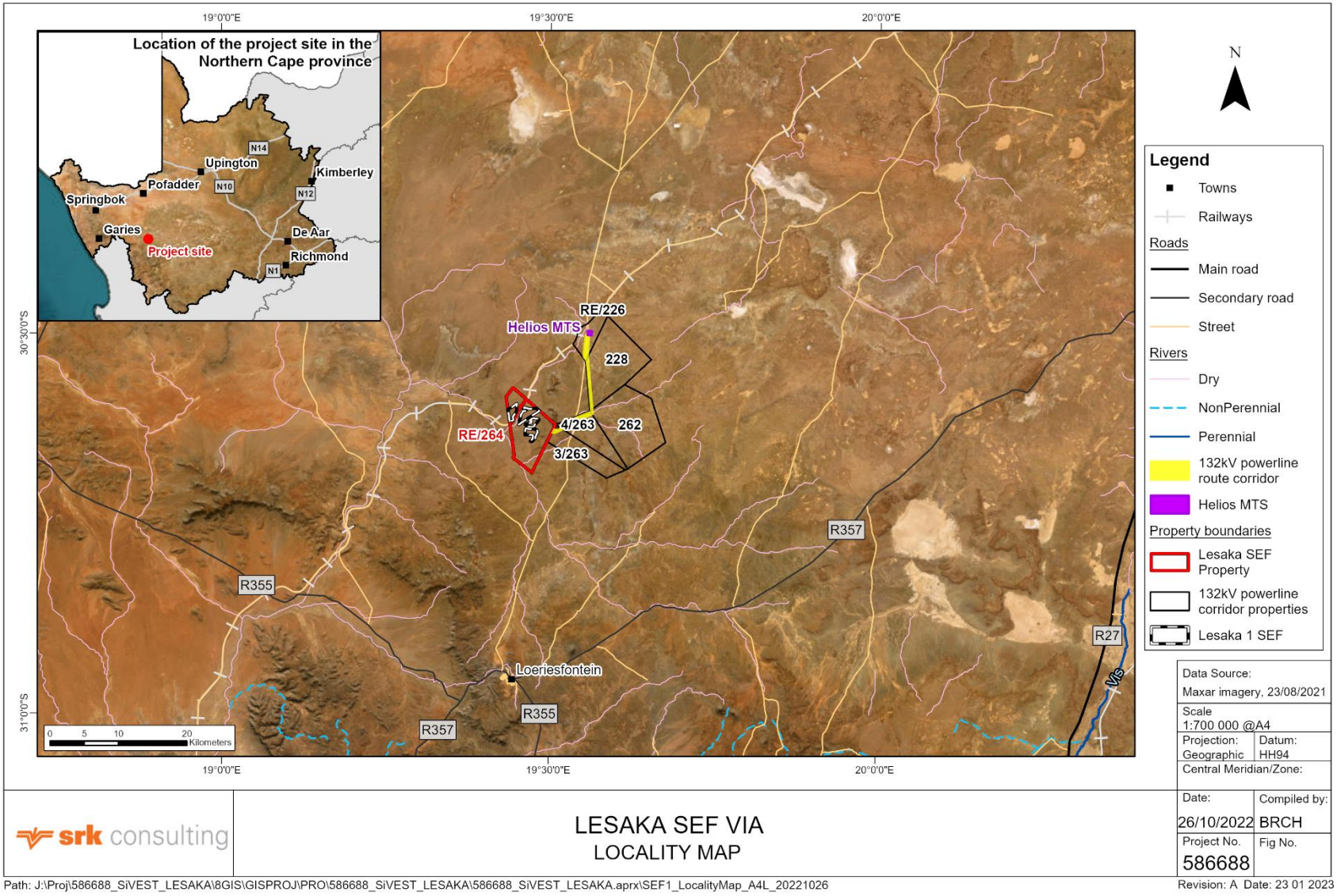


Figure 1-1: Locality map

1.2 Terms of Reference

The Terms of Reference (ToR) for the Visual Scoping Report are as follows:

- Describe the baseline visual characteristics of the study area, including landform, visual character and sense of place, and place this in a regional context;
- Identify potential impacts of the project on the visual environment through analysis and synthesis of the following factors:
    - Visual exposure;
    - Visual absorption capacity (VAC);
    - Sensitivity of viewers (visual receptors);
    - Viewing distance and visibility; and
    - Landscape integrity; and
- Map visually sensitive areas to inform the location of the SEF;
- Assess potential the impacts of the project on the visual environment and sense of place using SiVEST's impact assessment methodology;
- Identify and assess the direct, indirect and cumulative impacts (pre- and post-mitigation) of the proposed project (and alternatives, if applicable) on visual resources in relation to other proposed and existing developments in the surrounding area;
- Compile a report compliant with Appendix 6 of the EIA Regulations and any relevant legislation and guidelines; and
- Recommend practicable mitigation measures to avoid and/or minimise impacts and/or optimise benefits.

1.3 Specialist Credentials

The VIA was conducted by professional personnel listed in Table 1-1.

Table 1-1: VIA personnel

Staff	Role	Qualification
Christopher Dalgliesh	Project Review and Director	Chris Dalgliesh is a Partner and Principal Environmental Consultant with over 36 years' experience, primarily in South Africa, Southern Africa, West Africa and South America (Suriname). Chris has worked on a wide range of projects, notably in the natural resources, Oil & Gas, waste, infrastructure (including rail and ports) and industrial sectors. He has managed and regularly reviews Visual Impact Assessments. He has directed and managed numerous Environmental and Social Impact Assessments (ESIAs) and associated management plans, in accordance with international standards. He regularly provides high level review of ESIAs, frequently directs Environmental and Social Due Diligence

		studies for lenders, and also has a depth of experience in Strategic Environmental Assessment, State of Environment Reporting and Resource Economics. He holds a BBusSci (Hons) and M Phil (Env) and is a registered Environmental Assessment Practitioner.
Kelly Armstrong	Specialist Consultant	Kelly Armstrong is an Environmental Consultant at SRK Consulting. She has five years' experience in managing Basic Assessment, Environmental Impact Assessment and Water Use Authorisation processes and acting as an Environmental Control Officer in the renewable energy, residential, aquaculture, marine and mining sectors. She also manages and contributes to Visual Impact Assessments for infrastructure, renewable energy and mining projects. Kelly holds a BSocSc (Hons) in Environmental and Geographical Studies from the University of Cape Town.

1.4 Methodology

Visual impacts are a function of the physical transformation of a landscape on account of the introduced structures and the experiential perceptions of viewers. The following method was used to assess the visual context (baseline) and preliminary impacts for the project:

1. Describe the project using information supplied by the proponent (Enertrag) and EIA consultants;
2. Collect and review visual data, including data on topography, vegetation cover, land-use and other background information;
3. Undertake a mapping exercise to define the visual character of the study area;
4. Identify sensitive receptors;
5. Undertake fieldwork, comprising a reconnaissance of the study area, particularly the project site and key viewpoints. The objectives of the fieldwork are to:
    - Familiarise the specialist with the site and its surroundings;
    - Identify key viewpoints / corridors; and
    - Determine and groundtruth the existing visual character and quality in order to understand the sensitivity of the landscape

    Visual 'sampling' using photography will be undertaken to illustrate the likely zone of influence and visibility. The locations of the viewpoints will be recorded with a GPS;
6. At key viewpoints determine the likely distance at which visual impacts will become indistinguishable; and
7. Determine the visual zone of influence or exposure by superimposing the proposed upgrades on aerial imagery, and as verified during the site visit.

The following method will be used to assess the visual impact of the project, once all of the project footprints have been refined

1. Rate impacts on the visual environment and sense of place based on professional judgment and the prescribed impact rating methodology;

2. Recommend practicable mitigation measures to avoid and/or minimise impacts; and
3. Recommend environmental management measures to be included in the Environmental Management Programme (EMPr) for the project.

1.4.1 Site Visit and Data Acquisition

A site visit was undertaken on 12 January 2023. The site visit duration and timing were appropriate to provide the specialist with a representative impression of the site and surroundings.

The following information sources were used to inform the baseline and sensitivities identified:

- Maps indicating the location and layout of the project;
- Topographic data, including spatial files with 5 m contours obtained from the Department of Rural Development and Land Reform;
- Aerial images; and
- Other available data on geology, vegetation, land use, receptors etc..

The information is sufficiently recent and detailed for the purposes of this Visual Scoping Report.

2. ASSUMPTIONS AND LIMITATIONS

As is standard practice, the VIA is based on a number of assumptions and is subject to certain limitations, which should be borne in mind when considering information presented in this report. These assumptions and limitations include:

- VIA is not, by nature, a purely objective, quantitative process, and depends to some extent on subjective judgments. Where subjective judgments are required, appropriate criteria and motivations for these have been clearly stated;
- The study is based on technical information supplied to SRK, which is assumed to be accurate. This includes the proposed site and project components;
- The study area is defined as the area within a 5 km around the SEF property and powerline corridor alignments, as the visual impact beyond this distance is considered negligible; and
- This study does not provide motivation for or against the project.

The findings of the VIA are not expected to be affected by these assumptions and limitations.

3. TECHNICAL DESCRIPTION

This section provides a concise description of the proposed project as provided at the time of assessment, focusing on elements relevant to the Visual Scoping Report. The general project description may still be refined, and a more detailed description is provided in the Scoping Report and/or EIA Report for the project. The VIA will be revised upon receipt of a refined project description.

3.1 Project Location

Lesaka 1 is proposing to construct the 240 MW Lesaka 1 SEF, BESS and IPP substation on Farm Kluitjes Kraal No. 264 (the SEF property), ~35 km north of Loeriesfontein, in the Hantam Local Municipality, in the Northern Cape Province (Figure 1-1). Environmental constraints and buffers have informed the location of the proposed SEF within the SEF property. The SEF will comprise up to four parcels of PV arrays, occupying over 130 ha each, with a total combined footprint of 795 ha.

The proposed 132 kV powerline connecting the on-site switching station or the centrally located collector substation to the Helios MTS will traverse seven farms.

The affected properties and their respective extents are listed in Table 3-1 and Table 3-2.

Table 3-1: SEF farm details

Farm Name	Property Extent
Farm Kluitjes Kraal No. 264 Portion 0	4 894.93 ha

Table 3-2: Grid farm details

Farm Name	Property Extent
Farm Kluitjes Kraal No. 264 Portion 0	4 894.93 ha
Farm Sous No. 226 Portion 1	36 ha
Farm Sous No. 226 Portion 0	9 084.77 ha
Farm Narosies No. 228 Portion 0	6 764.05 ha
Farm Ras Kraal No. 262 Portion 0	7 718.32 ha
Farm Rooiberg No. 263 Portion 4	2 824.24 ha
Farm Rooiberg No. 263 Portion 3	2 824.19 ha

This project is not located within one of the 11 Renewable Energy Development Zones (REDZ). The REDZ are geographically defined areas in which the South African Government has encouraged the development of Photovoltaic (PV) and wind renewable energy projects by promulgating a streamlined authorisation approach. As such, the REDZ have become areas in which the development of PV projects is considered more acceptable.

The SEF property is located ~ 5 km south of a large cluster of approved renewable projects comprising; nine Wind Energy Facilities (WEFs) and two SEFs. Another approved SEF project is located ~15 km south of the proposed Lesaka 1 SEF property (Figure 3-1). These 12 renewable projects are situated within a 35 km radius of the Lesaka 1 SEF property and have a total generation capacity of ~2 030 MW according to the Department of Forestry, Fisheries and the Environment (DFFE) South African Renewable Energy EIA Application Database. Only two WEFs of the 13 renewable facilities are operational, while construction of one SEF has commenced.

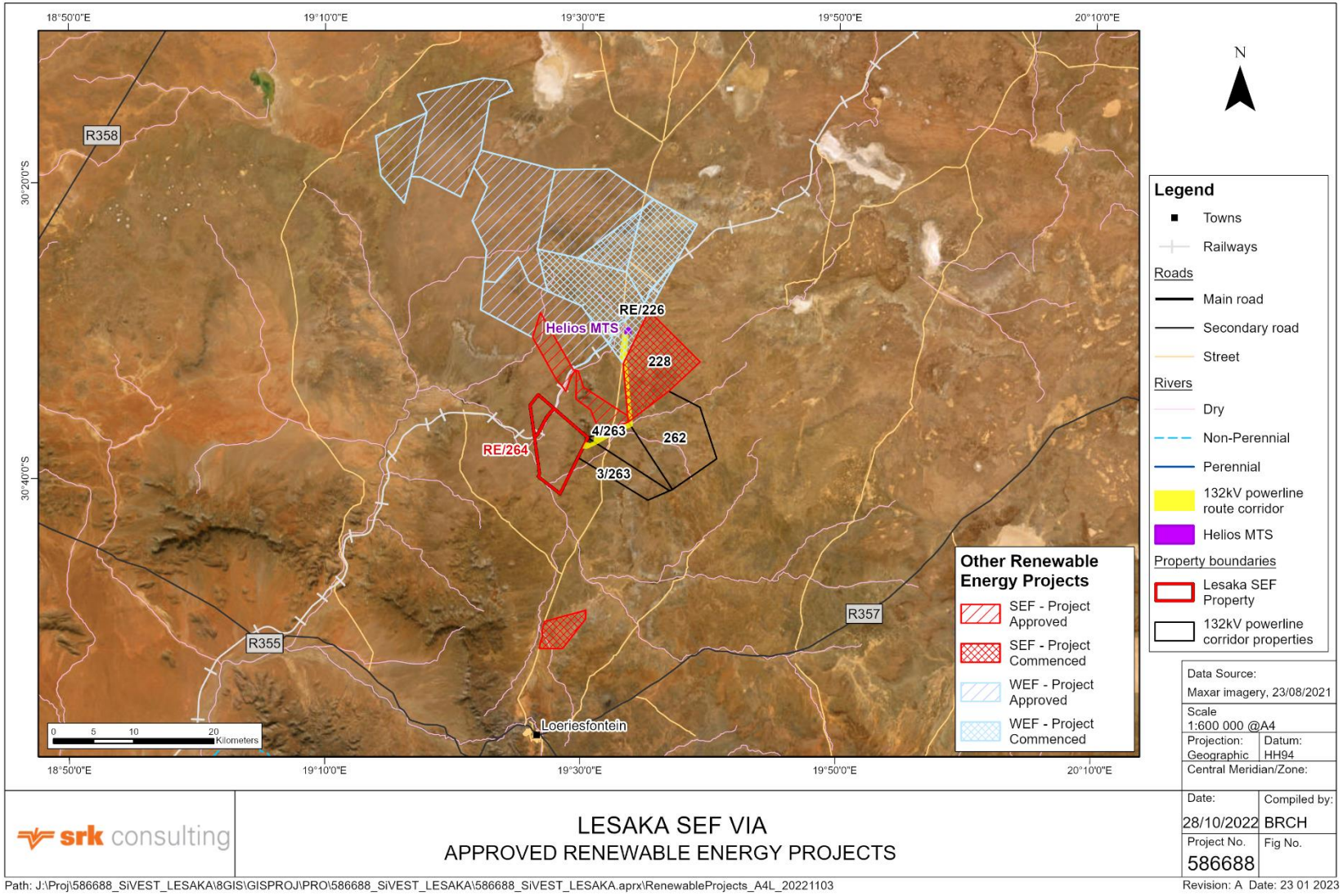


Figure 3-1: Approved renewable energy projects within 35 km of the site

3.2 Project Description

The Lesaka 1 SEF will comprise several arrays of PV panels, a BESS and associated infrastructure (Figure 3-2). Preliminary SEF components include:

- PV modules (monofacial or bifacial) and mounting structures with fixed, single or double axis tracking mounting structures;
- On-site IPP substation and BESS (combined footprint of ~6 ha);
- Associated stormwater management infrastructure;
- Site and internal access roads (up to 8 m wide);
- Temporary construction camp and laydown area (~2.2 ha) during the construction phase;
- Infrastructure including offices, operational control centre, operation and maintenance area, ablution facilities etc.;
- Grid connection infrastructure including medium-voltage cabling between the project components and the facility substation (underground cabling will be used where practical [up to 33 kV]); and
- Perimeter fencing.

A substation (including switching stations) and 132 kV powerlines to evacuate power produced will also be constructed.

Two alternative grid connection configurations are proposed and are further explained in Section 3.2.1.2 below. The grid connection configurations comprise a combination of the following components:

- Lesaka 1 IPP Substation;
- Lesaka 1 Switching Station; or
- Collector switching substation (shared with Lesaka 2); and
- 132 kV powerlines.

The IPP substation will step up power from 33 kV to 132 kV and will then be evacuated to the national grid by the proposed ~21 km long 132 kV powerline that connects the switching stations (Lesaka 1 or collector) to the existing Helios MTS. A 500 m powerline corridor (250 m on either side) will be assessed.

The powerline will be supported by pylon structures up to 40 m in height. The alignment will be refined within the proposed 500 m corridor once the environmental sensitivities are considered.

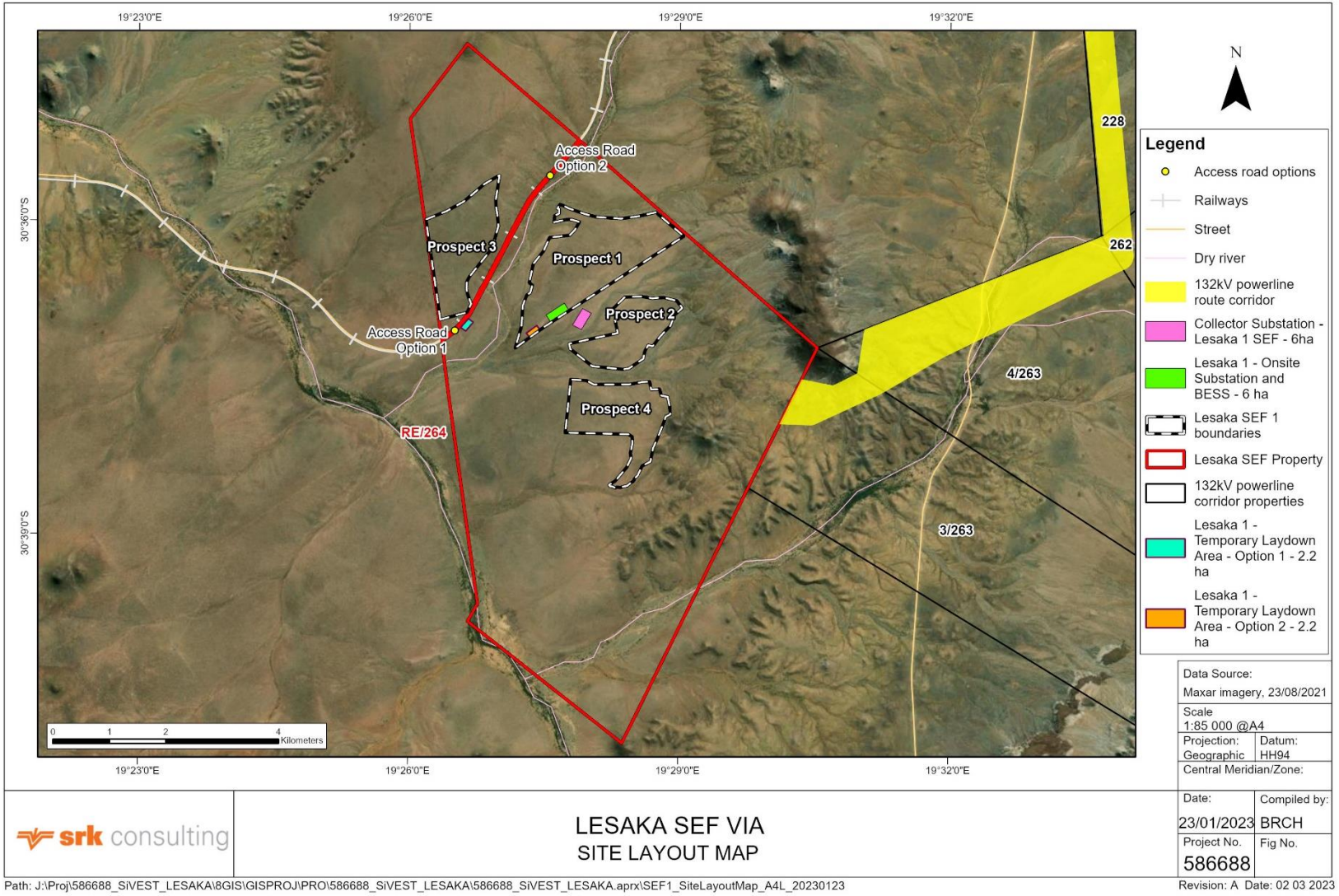


Figure 3-2: Site layout map

3.2.1 Technology and Layout Alternatives

3.2.1.1 SEF

Specialist no-go areas were avoided when refining the proposed development footprint of the SEF and, as a consequence, four clusters of PV arrays are proposed and have been assessed (Figure 3-2). The design and layout alternatives will be considered and assessed as part of the EIA.

3.2.1.2 Temporary Laydown Area

Two location alternatives for the ~2.2 ha temporary laydown area are being considered for the storage of construction materials during the construction phase. Option 1 is located to the south of the Sishen-Saldanha Railway line, while Option 2 is located within the footprint of the Prospect 1 PV cluster (Figure 3-2).

3.2.1.3 Grid Connection

Two grid connection configurations are considered and are described below:

1. Lesaka 1 IPP substation and Lesaka 1 Switching Station will be located adjacent to one another (within the same yard) with a 132 kV powerline connecting Lesaka 1 switching station to Lesaka 2 switching station. Lesaka 2 switching station will be connected to the existing Helios MTS by a ~21 km long 132 kV powerline. This is the preferred alternative.
2. Lesaka 1 IPP Substation will be connected to the collector switching station (shared switching station with Lesaka 2) by a 132 kV powerline. The collector switching station will be connected to the existing Helios MTS by a ~21 km long 132 kV powerline.

3.2.1.4 132 kV Powerline

Two alternative ~21 km 132 kV powerline corridors will be assessed as part of the Scoping Report and the VIA. The ~21 km powerline connecting either Lesaka 2 switching station or the collector switching station to the existing Helios MTS are largely the same, but differ in their routing within 5 km of the Helios MTS. Both powerline corridors are routed over the ridge (to the east of the SEF property) and across AP 2972 road in a north-easterly direction for ~6.5 km from the SEF, before being routed northwards for a further ~7.5 km. At km 14 the powerline corridor alternatives differ; Powerline Alternative 1 (preferred) continues northwards to the Helios MTS and Powerline Alternative 2 diverts slightly to the west, across AP 2972, before extending northwards to the Helios MTS (Figure 3-3 and Figure 3-4).

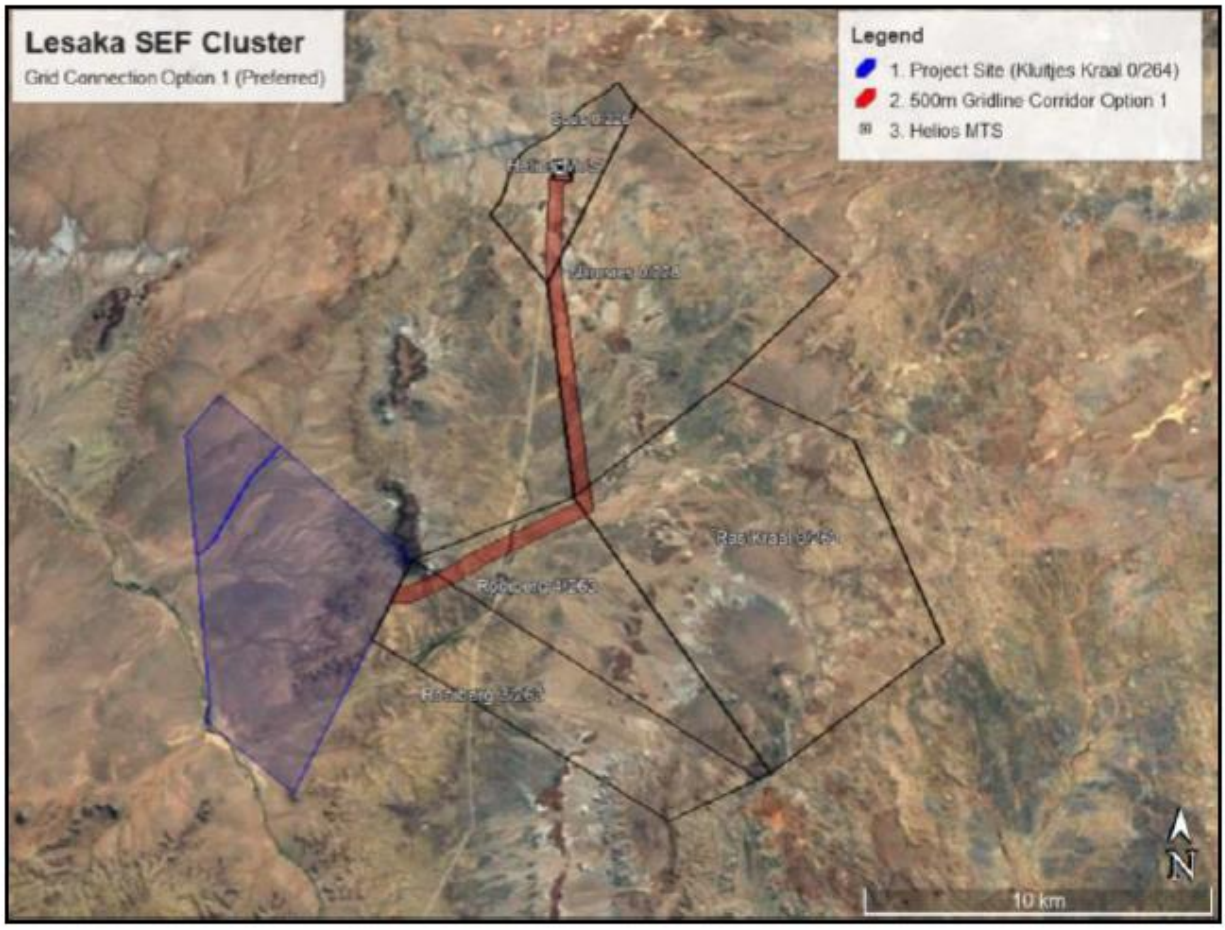


Figure 3-3: 132 kV powerline route 1 (preferred)

Source: SiVEST, 2022

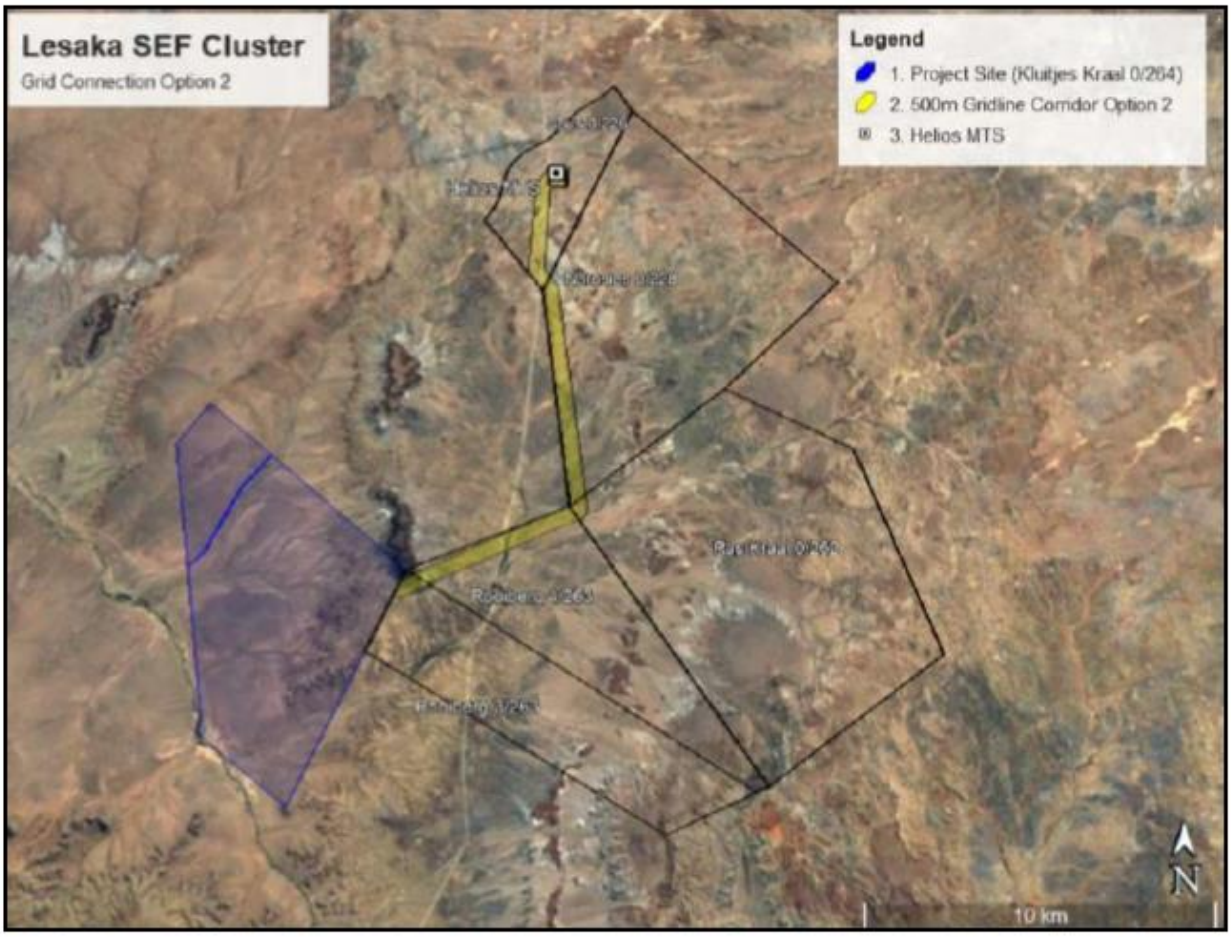


Figure 3-4: 132 kV powerline route 2

Source: SiVEST, 2022

3.2.2 No Go Alternative

The 'no-go' alternative is the option of not undertaking the development of the proposed SEF and / or grid infrastructure projects. Hence, if the 'no-go' option is implemented, there would be no development. This alternative would result in no environmental impacts from the proposed project on the site or the surrounding local area. It provides the baseline against which other alternatives are compared and will be considered throughout the report.

4. LEGAL REQUIREMENTS AND GUIDELINES

Relevant guidelines that provide direction for visual assessment include the Department of Environmental Affairs and Development Planning's (DEA&DP) "Guideline for Involving Visual and Aesthetic Specialists in EIA Processes" (DEA&DP, 2005), the Landscape Institute's "Guidelines for Landscape and Visual Impact Assessments" (2013) and Pager Power's "Solar Photovoltaic Development – Glint and Glare Guidance" (2018) , which have been considered in this VIA.

DEA&DP's Guideline (2005) identifies typical components of a visual study:

- Identification of issues and values relating to visual, aesthetic and scenic resources through involvement of stakeholders;
- Identification of landscape types, landscape character and sense of place, generally based on geology, landforms, vegetation cover and land use patterns;
- Identification of viewsheds, view catchment area and the zone of visual influence, generally based on topography;
- Identification of important viewpoints and view corridors within the affected environment, including sensitive receptors;
- Indication of distance radii from the proposed project to the various viewpoints and receptors;
- Determination of the VAC of the landscape, usually based on topography, vegetation cover or urban fabric in the area;
- Determination of the relative visibility, or visual intrusion, of the proposed project;
- Determination of the relative compatibility or conflict of the project with the surroundings; and
- A comparison of the existing situation with the probable effect of the proposed project.

Projects that warrant a visual specialist study include those:

- Located in a receiving environment with:
    - Protection status, such as national parks or nature reserves;
    - Proclaimed heritage sites or scenic routes;
    - Intact wilderness qualities, or pristine ecosystems;
    - Intact or outstanding rural or townscape qualities;
    - A recognized special character or sense of place;
    - Outside a defined urban edge line;
    - Sites of cultural or religious significance;
    - Important tourism or recreation value;
    - Important vistas or scenic corridors;
    - Visually prominent ridgelines or skylines; and/or
- Where the project is:
    - High intensity, including large-scale infrastructure;
    - A change in land use from the prevailing use;
    - In conflict with an adopted plan or vision;
    - A significant change to the fabric and character of the area;
    - A significant change to the townscape or streetscape;
    - A possible visual intrusion in the landscape; or
    - Obstructing views of others in the area.

In terms of the guideline the proposed SEF and associated infrastructure can be classified as a Category 5 development, which includes powerlines and large-scale infrastructure. As the project is situated in a medium scenic, cultural, and historical significance. Based on the site visit it became evident that the high visual impact expected in terms of the guideline (see Table 4-1) can be reduced to a moderate visual impact, which introduces:

- A potential effect on protected landscapes or scenic resources;
- Some change in the visual character of the area; and
- Introduction of new development or adds to existing development in the area.

Table 4-1: Expected visual impact significance

Type of environment	**Type of development**				
	Cat 1	**Cat 2**	**Cat 3**	**Cat 4**	**Cat 5**
Protected / wild areas	Moderate	High	High	Very high	Very high
High scenic, cultural, historical value	Minimal	Moderate	High	High	Very high
Medium scenic, cultural, historical value	Little or none	Minimal	**Moderate**	High	High
Low scenic, cultural, historical value / disturbed	Little or none Possible benefits	Little or none	Minimal	Moderate	High
Disturbed or degraded sites	Little or none Possible benefits	Little or none Possible benefits	Little or none	Minimal	Moderate

Such a project typically warrants a Level 3 assessment (see Table 4-2), which includes the following generic steps:

- Identification of issues and site visit;
- Description of receiving environment and proposed project;
- Establishment of view catchment area, view corridors, viewpoints and receptors;
- Indication of potential visual impacts using established criteria;
- Inclusion of potential lighting impacts at night; and
- Description of alternatives, mitigation measures and monitoring programmes.

Table 4-2: Recommended approach for visual assessment

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

5. DESCRIPTION OF THE RECEIVING ENVIRONMENT – VISUAL CONTEXT

The following description of the affected environment focuses on the Visual Character of the area surrounding and including the project (the study area) and discusses the Visual Quality and Sense of Place[1]. This baseline information provides the context for the visual analysis.

5.1 Landscape Character

Landscape character is the description of the pattern of the landscape, resulting from particular combinations of natural (physical and biological) and cultural (land use) characteristics. It focuses on the inherent nature of the land rather than the response of a viewer (Young, 2000).

5.1.1 Geology and Topography

The geology and topography of the area, together with the arid climate, provide the framework for the basic landscape features and visual elements of the study area.

The property lies at an elevation of ~750 m amsl and is mostly flat. Elevation increases towards the northern and southern boundaries of the property to ~900 m and ~815 m respectively. A fairly prominent ridge, rising to ~ 1 000 m amsl is located on the eastern boundary of the property (Figure 5-2). This relief in the north-western, eastern and south-eastern areas of the property has resulted in a network of ephemeral rivers across the property, many of which drain into the Krom River to the west and the rest draining into Klein-Rooiberg and Rooiberg Rivers bisecting the northern and southern portions of the property respectively (Figure 5-2).

Figure 5-1: Generally flat site, flanked by a ridge on the north-eastern boundary (centre) and small hill on the south-eastern boundary (left of centre)

Regionally, elevation to the north continues to rise gradually to ~1 000 m amsl at ~35 km north of the SEF property. To the south the land rises gradually to ~950 m amsl at a distance of ~35 km. The study area essentially forms an extension of the Krom River valley and is at the foot of higher-lying ground to the south-east. Isolated koppies, ridgelines and escarpments, characteristic of the Karoo, are present throughout the region.

The Krom River valley lies to the west of the SEF property where elevation decreases to ~300 m amsl. The valley is flanked by range of ridgelines that rise up to ~1 300m amsl south-east of the SEF property. A network

[1] These terms are explained in the relevant sections below.

of ephemeral watercourses drains the region, particularly to the south of the SEF property, where the topography varies more significantly than to the north and east of the SEF property. Flash floods can be experienced in this area.

The project is underlain by the sandstones of the Prince Albert and Whitehill Formation, of the Ecca Group. Dolerite sills often result in the presentation of koppies, flat topped hills and ridgelines across the landscape.

5.1.2 Vegetation

The project is located within the original extent of two vegetation types; Hantam Karoo and Bushmanland Basin Shrubland, with the Hantam Karoo vegetation type dominating the property and the region.

The region experiences hot, dry summers and cold, dry winters.

Hantam Karoo vegetation type includes succulent elements and low Karoo shrubs. Bushmanland Basin Shrubland also includes succulent shrubs, as well as white grasses. The Hantam Karoo is characterized by a rich display of spring annuals, which attract many tourists each spring. There are very few (taller) shrubs and/or trees though some are present in the riparian zone of watercourses.

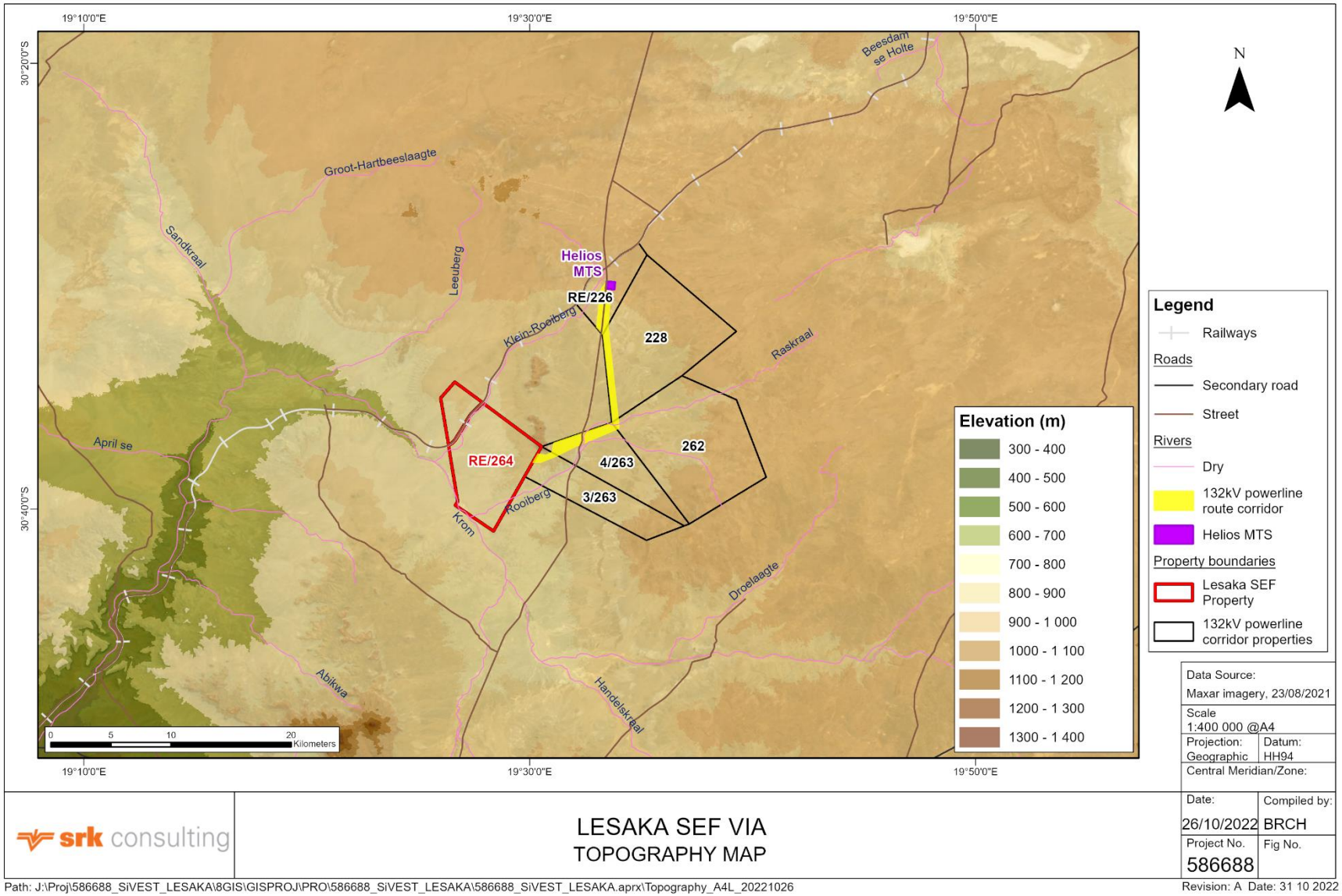


Figure 5-2: Topography map

5.1.3 Land Use

The main economic sectors in the Hantam Local Municipality are agriculture, tourism, mining and renewable energy. Agriculture is largely confined to livestock (sheep and goat) farming, with some rooibos cultivation in the south-west of the local municipality.

The area surrounding the SEF property and powerline corridor is predominantly characterised by grazing lands (natural vegetation), with supporting infrastructure (roads, powerlines and a railway line). Livestock farming, is the predominant land use surrounding the site, with farmsteads interspersed throughout the area. A road (AP 2972) extends northwards from Loeriesfontein and to the east of the SEF property. The proposed 500 m 132 kV powerline corridor crosses over the AP 2972 road ~ 4 km east of the SEF property, thereafter is routed to the east of the road, northwards towards the Helios MTS (Figure 1-1). The Sishen-Saldanha railway line is routed adjacent to the Klein-Rooiberg River bisecting the northern portion of the SEF property.

Existing large-scale powerlines are also present in the area surrounding the SEF property and the powerline corridor, increasing in concentration nearer the existing Helios MTS (Figure 5-3). Radiating

Figure 5-3: Existing network of powerlines converging at the Helios MTS. Photograph is taken looking north.

The seven farms that constitute the project site (SEF property and powerline corridor) are largely undeveloped (i.e. not cultivated) and appear to be used for used for agricultural grazing.

As described in Section 3.1, there are a large number (~ 12) approved renewable energy projects within ~5 km north of the SEF property, some of which are located on some of the 132 kV powerline corridor properties (Figure 3-1). From examination of aerial imagery and desktop research, only two WEFs (Khobab WEF and Loeriesfontein 2 WEF) of the 13 facilities appear to be operational (Figure 5-4), with one other under construction.

Figure 5-4: Khobab WEF

5.2 Visual Character

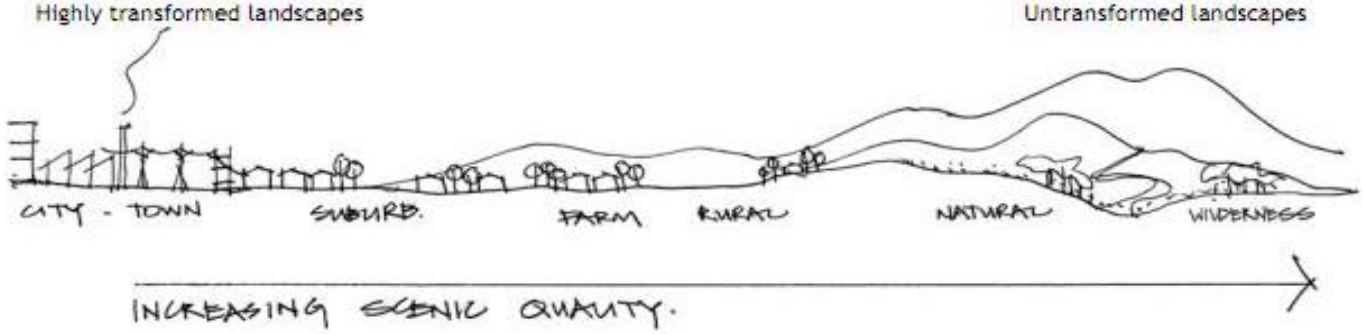
Visual character is descriptive and non-evaluative, which implies that it is based on defined attributes that are neither positive nor negative. It refers to the overall experience and impression of the landscape, such as natural or transformed.

A change in visual character cannot be described as having positive or negative attributes until the viewer's response to that change has been taken into consideration. The probable change caused by the project is assessed against the existing degree of change caused by previous development.

The basis for the visual character is provided by the topography, vegetation and land use of the area, which is a rural environment characterised by the sparsely vegetated prominences and ridgelines separated by often, wide flat expanses interspersed with farmsteads and some infrastructure (i.e. the road routed to the east of the site and the Sishen-Saldanha railway line bisecting the northern portion of the SEF property). The expanse of vegetated landscape surrounding the property evokes a rural, undeveloped and fairly inhospitable environment, representative of the Karoo (Figure 5-5). The project area can therefore be defined as a natural transition landscape as it is mostly rural with few isolated farmsteads and some powerlines, roads and a railway line visible in the landscape (Figure 5-6).

Figure 5-5: Landscape of the area surrounding the project site

Highly Transformed Landscape – Urban/Industrial	Transition Landscape	Modified Rural Landscape	Natural Transition Landscape	Untransformed Landscape – Natural
Substantially developed landscape. High levels of visual impact associated with buildings, factories, roads and other related infrastructure (e.g. powerlines).	Transitional landscape associated with the interface between, rural, agricultural area and more developed suburban or urban zones.	Typical character is rural landscape, defined by field patterns, forestry plantations and agricultural areas and associated small-scale roads and buildings.	A changing landscape character associated with the interface between natural areas and modified rural / pastoral or agricultural zones.	No / minimal impact associated with the actions of man. National parks, coastlines, pristine forest areas.



Source: (CNDV, 2006)

(Shan Ding Lu, 2009)

(Night Jar Travel South Africa, 2012)

(Boschkloof, 2012)

Figure 5-6: Typical visual character attributes

5.3 Visual Quality

Aesthetic value is an emotional response derived from our experience and perceptions. As such, it is subjective and difficult to quantify in absolute terms. Studies in perceptual psychology have shown that humans prefer landscapes with higher complexity (Crawford, 1994). Landscape quality can be said to increase when:

- Topographic ruggedness and relative relief increases;
- Water forms are present;
- Diverse patterns of grasslands, shrubs and trees occur;
- Natural landscape increases and man-made landscape decreases; and
- Where land use compatibility increases.

The visual quality of the area can be experienced through long closed views across plains of low, vegetation and prominences, escarpments and ridgelines defining the horizon (Figure 5-7). The arid, sparsely populated and vegetated region which can be experienced visually as a somewhat sterile environment. Though there are limited anthropogenic features (road, fences, powerlines and railway line), they impact significantly on the visual quality of the area as they interrupt views and are discordant with the natural landscape. Though not always visible, the very long, noisy trains using the railway line bisecting the property, detract significantly from visual quality. The ephemeral rivers and the rugged topography comprising open plains interrupted by koppies, ridges or mountains add to visual quality.

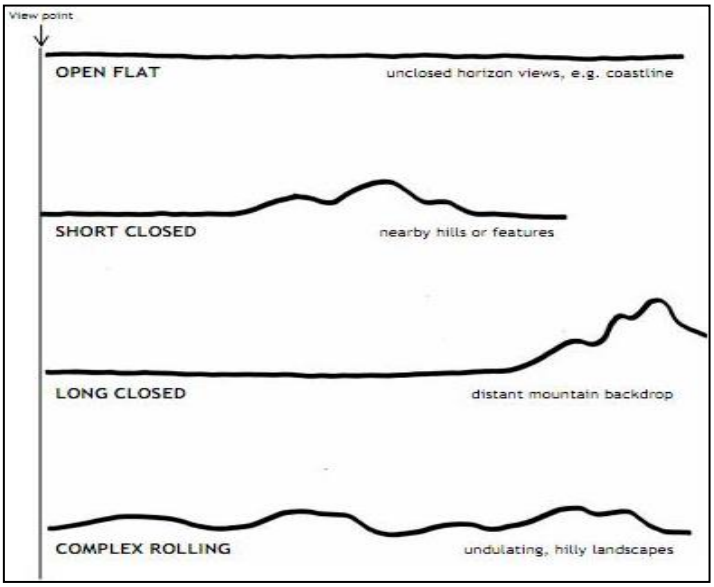


Figure 5-7: Typical views in the landscape

Sources: (CNDV, 2006)

5.4 Visual Receptors

Visual receptors have been identified based on surrounding land uses, including the isolated farmsteads and motorists. The visual receptors are briefly described below:

- **Farmstead Residents:** Isolated farmsteads are interspersed throughout the area surrounding the SEF and the powerline corridor properties; and
- **Motorists and tourists:** A gravel road, AP 2972, is routed to the east of the property. The proposed ~21 km long powerline extends over the AP2972 and then is routed to the east of the road.

5.5 Sense of Place

Our sense of a place depends not only on spatial form and quality, but also on culture, temperament, status, experience and the current purpose of the observer (Lynch, 1992). Central to the idea of 'sense of place' or Genius Loci is identity. An area will have a stronger sense of place if it can easily be identified, that is to say if it is unique and distinct from other places. Lynch defines 'sense of place' as "the extent to which a person can recognise or recall a place as being distinct from other places – as having a vivid or unique, or at least a particular, character of its own" (Lynch, 1992).

It is often the case that sense of place is linked directly to visual quality and that areas / spaces with high visual quality have a strong sense of place. However, this is not an inviolate relationship, and it is plausible that areas of low visual quality may have a strong sense of place or – more commonly – that areas of high visual quality have a weak sense of place. The defining feature of sense of place is uniqueness, generally real or biophysical (e.g. trees in an otherwise treeless expanse), but sometimes perceived (e.g. visible but unspectacular sacred sites and places which evoke defined responses in receptors). In this context Cross (2001) identified six categories of relationships with place: biographical, spiritual, ideological, narrative, cognitive and dependent (Table 5-1).

The region has scenic value in terms of the rugged natural landscape and large portions of agricultural land.

Table 5-1: Relationship to place

Type of Relationship	Process
Biographical (historical and familial)	Being born in and living in a place. Develops over time
Spiritual (emotional, intangible)	Feeling a sense of belonging
Ideological (moral and ethical)	Living according to moral guidelines for human responsibility to place Guidelines may be religious or secular
Narrative (mythical)	Learning about a place through stories, family histories, political accounts and fictional accounts
Cognitive (based on choice and desirability)	Choosing a place based on a list of desirable traits and lifestyle preferences
Dependent (material)	Constrained by lack of choice, dependency on another person or economic opportunity

Sources: Adapted from Cross (2001)

The sense of place of the surrounding area is strongly influenced by the surrounding land use, which can generally be described as a natural agricultural area, on natural grazing land, i.e. not managed (irrigated) pastures. The sense of place is not particularly distinct from the rest of the wider region and is not overly memorable.

The relationship of receptors in the study area (Section 5.4) to place may be predominantly biographical, cognitive, dependent and in some instances, spiritual. A family, for example, whose has farmed in this area

for a few generations will have a biographical, dependent and spiritual (sense of belonging) and in some cases cognitive attachment to the area. A farm worker living on a farm in the area will likely have a dependent relationship with the area.

6. ANALYSIS OF THE MAGNITUDE OF THE VISUAL IMPACT

The following section outlines the analysis that was undertaken to determine the **magnitude or intensity** of the overall visual impact resulting from the project. Various factors were considered in the assessment, including:

- Visual exposure;
- Visual absorption capacity;
- Sensitivity of visual receptors;
- Visibility and viewing distance; and
- Integrity with existing landscape / townscape.

The analysis of the magnitude or intensity of the visual impact, as described in this section, is summarized and integrated in Table 6-6 and forms the basis for the assessment and rating of the impact as documented in Section 6.

6.1 Visual Exposure

Visual exposure is determined by the zone of visual influence or viewshed. The viewshed is the topographically defined area that includes all the major observation sites from which the project *could* be visible; it is a function of topography and the dimensions of the project *only*, but not the location of visual receptors. The viewshed analysis assumes maximum visibility of the project in an environment stripped bare of vegetation and structures. The viewshed indicates the visibility of the project, accounting for the decrease in visibility as distance from the project increases (Figure 6-1).

The viewshed indicates that beyond the SEF property the SEF cluster is moderately visible in the background to the north and west. The SEF cluster will also be visible to railway passengers to the north, and from the western bank of the Krom River, although there are no / few receptors located to the west (Figure 6-1). The SEF is highly visible from within the property, within 2 km of the SEFs. Beyond 5 km, the SEF will not be visible to receptors.

The visual exposure of proposed infrastructure is thus deemed ***moderate.***

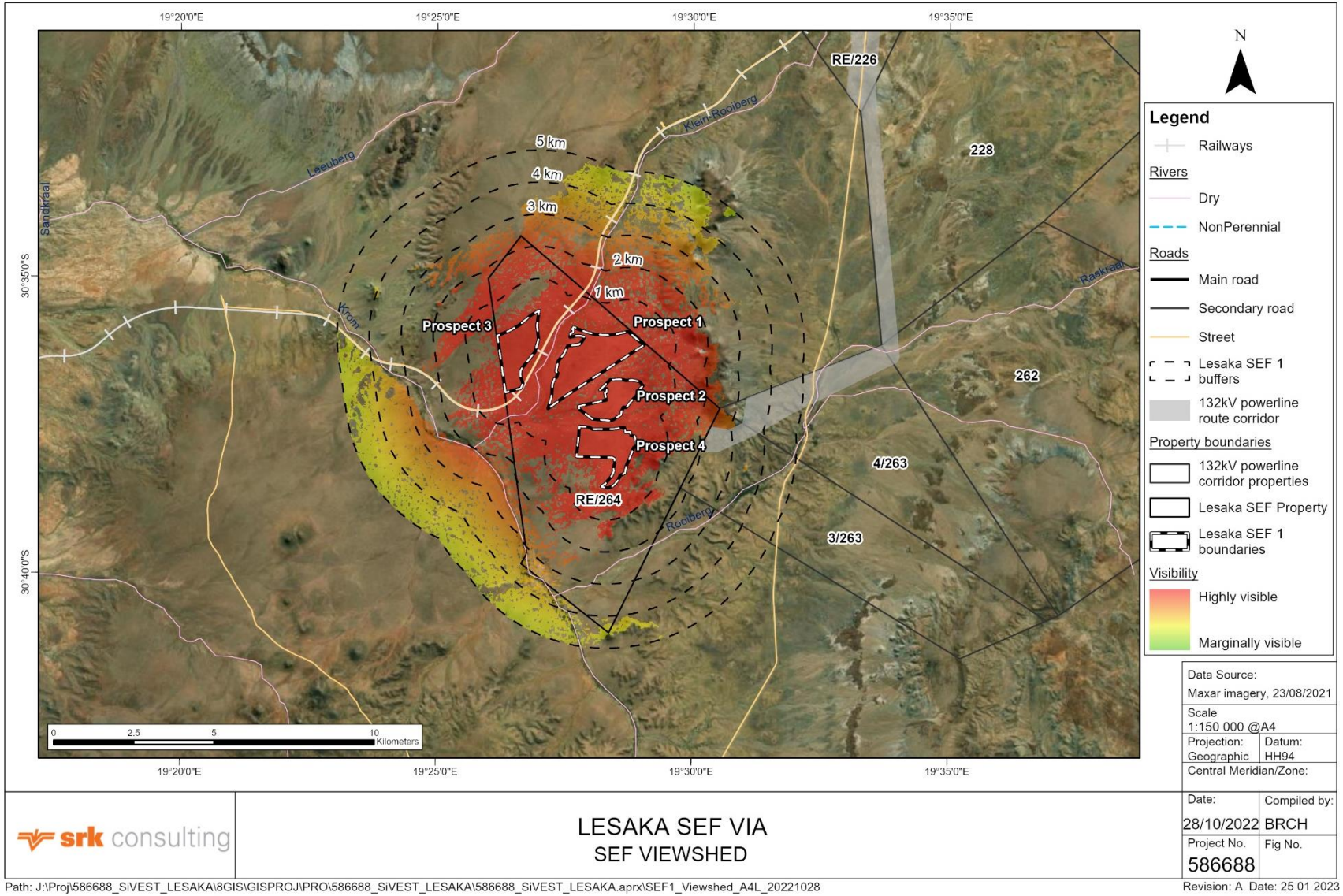


Figure 6-1: Viewshed of the SEF

6.2 Visual Absorption Capacity

The VAC is the potential for an area to conceal and assimilate the proposed project. Criteria used to determine the VAC of the affected area are defined in Table 6-1. The VAC of an area is increased by:

1. Topography and vegetation that is able to provide screening and increase the VAC of a landscape;
2. The degree of urbanisation compared to open space. A highly urbanised landscape is better able to absorb the visual impacts of similar developments, whereas an undeveloped rural landscape will have a lower VAC; and
3. The scale and density of surrounding development.

These factors frequently apply at different scales, by influencing the VAC in the foreground (e.g. dense bush, existing roads and bridges, small structures), middleground and background (e.g. tall forests, hills, cityscapes).

Rural areas generally have a low VAC. The low VAC of the surrounding area is reduced by the wide flat, undeveloped, expanse between isolated ridges for both the powerline and SEF. The vertical profile of the pylons further reduces the VAC of the surrounding area. The vegetation of the surrounding area is not expected to screen the SEF, powerline and pylons from receptors.

The study area has a ***low*** VAC for the proposed project.

Table 6-1: Visual absorption capacity criteria

High	Moderate	Low
The area is able to absorb the visual impact as it has: ■ Undulating topography and relief ■ Good screening vegetation (high and dense) ■ Is highly urbanised in character (existing development is of a scale and density to absorb the visual impact).	The area is moderately able to absorb the visual impact, as it has: ■ Moderately undulating topography and relief ■ Some or partial screening vegetation ■ A relatively urbanised character (existing development is of a scale and density to absorb the visual impact to some extent.	The area is not able to absorb the visual impact as it has: ■ Flat topography ■ Low growing or sparse vegetation ■ Is not urbanised (existing development is not of a scale and density to absorb the visual impact to some extent.)
 http://www.franschhoek.co.za	 http://wikipedia.org	 http://www.butbn.cas.cz
 http://commons.wikimedia.org	 http://blogs.agu.org	 http://fortheinterim.com

6.3 Sensitivity of Visual Receptors

Receptors are important insofar as they inform visual sensitivity. The sensitivity of viewers is determined by the number and nature of viewers.

Viewers can be deemed to have:

1. High sensitivity if they view the project from e.g. residential areas, nature reserves and scenic routes or trails;
2. Moderate sensitivity if they view the project from e.g. sporting or recreational areas or places of work; and
3. Low sensitivity if they view the project from or within e.g. industrial, mining or degraded areas, or motorists with fleeting views.

The sensitivity of potential viewers identified in Section 5.4 is described below:

- **Farmstead receptors:** There is a limited number of isolated farmsteads surrounding the site, none of them located within 1 km of the proposed SEF. Therefore, the residents of these farmstead are not considered highly sensitive receptors, since they are some distance from the project, therefore with limited visibility. The powerline route alignment alternatives are located in close proximity to two farmsteads. The remaining farmsteads are located over three km from the powerline route, and are not considered highly sensitive.
- **Motorists and tourists:** The AP 2972 road is routed to the east of the SEF property. Both powerline alternatives cross the road and are also routed to the east of the road. This road is largely used by farmers and construction and maintenance staff employed on other renewable energy projects and to maintain the railway line. Motorists are considered to have relatively low sensitivity as they are transient receptors with fleeting views of the project. Furthermore, it is anticipated that these motorists, particularly the construction and maintenance staff, are inured to renewable energy projects and powerlines in the landscape as an existing network of powerlines is a characteristic of the area around the Helios MTS.

The limited number of highly sensitive visual receptors is further moderated by the large number of motorists with fleeting views, as well as receptors' familiarity with and acceptance of views of renewable energy projects and powerlines in the surrounding landscape. The sensitivity of the viewers or visual receptors potentially affected by the visual impact of the project is considered to be ***low.***

6.4 Viewing Distance and Visibility

The distance of a viewer from an object is an important determinant of the magnitude of the visual impact. This is because the visual impact of an object diminishes / attenuates as the distance between the viewer and the object increases. Thus, the visual impact at 1 000 m would, nominally, be 25% of the impact as viewed from 500 m (Figure 6-2). At 2 000 m it would be 10% of the impact at 500 m (Hull and Bishop, 1988 in (Young, 2000)).

Three basic distance categories can be defined for a project of this scale (as discussed and represented in Table 6-2): foreground, middleground and background.

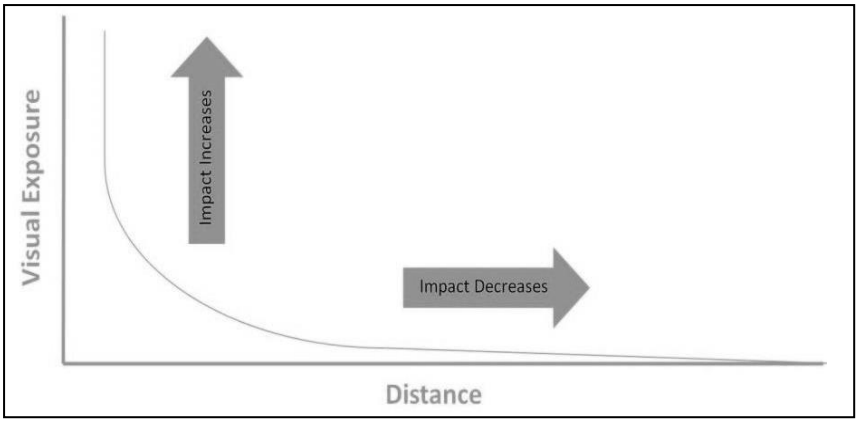


Figure 6-2: Visual exposure vis-à-vis distance

Table 6-2: Distance categories

FOREGROUND (0 – 1 km)	The zone where the proposed project will dominate the frame of view. The project will be *highly visible* unless obscured.
MIDDLEGROUND (1 - 2 km)	The zone where colour and line are still readily discernible. The project will be *moderately visible* but will still be easily recognisable.
BACKGROUND (2 - 5 km)	This zone stretches from 2 km to 5 km. Objects in this zone can be classified as *marginally visible* to *not visible*.

A number of viewpoints were selected to indicate locations from where receptors may (or may not) view the project. The viewpoints are listed in Table 6-4. Current views from these points are shown in Appendix C.

The predicted visibility of (any element of the project) from each viewpoint is described in Table 6-4, based on the visibility categories in Table 6-2. Note that unlike visual exposure (Section 6.1) which describes areas from which the project may be visible without taking local screening into account (i.e. the viewshed), visibility describes predicted, actual visibility. The visibility of the project can be summarised as follows:

- Receptors will have limited visibility of the Lesaka SEF in general, with no viewpoints to the north of the site (VP 5, 6, 7 and 8) having a view of the proposed SEF; and
- Motorists travelling on the AP 2972 may have a limited view of the SEF in the background along sections of the road (VP 3).

Overall, the proposed SEF is marginally visible in the background to receptors. The proposed powerline alignment is to be confirmed. As such the visibility of the project is ***low***.

Table 6-3: Visibility criteria

NOT VISIBLE	Project cannot be seen	
MARGINALLY VISIBLE	Project is only just visible / partially visible (usually in the background zone)	
VISIBLE	Project is visible although parts may be partially obscured (usually in middleground zone)	
HIGHLY VISIBLE	Project is clearly visible (usually in foreground or middleground zone)	

Table 6-4: Visibility from viewpoints

Viewpoint #	Location	Co-ordinates	Direction of view	Potential Receptors	Visibility
VP 1	Krom River and Farmstead	30° 44' 35.87" S 19° 29' 32.89" E	Looking north	Residents of farmstead and motorists travelling on AP 2972.	**Lesaka 1 SEF: Not visible** The SEF is not visible due to distance and screening by intervening topography. **Powerline: To be confirmed**
VP 2	AP 2972 Road 1	30° 42' 59.06" S 19° 30' 40.57" E	Looking north-west	Motorists travelling on AP 2972.	**Lesaka 1 SEF: Not Visible** The SEF is not visible due to distance and screening by intervening topography. **Powerline: To be confirmed**
VP 3	AP 2972 Road 2	30° 41' 13.24" S 19° 31' 38.75" E	Looking west	Motorists travelling on AP 2972.	**Lesaka 1 SEF: Marginally Visible** The SEF will be marginally visible due to distance and screening by intervening topography. **Powerline: To be confirmed**
VP 4	AP 2972 Road 3	30° 39' 19.18" S 19° 31' 40.20" E	Looking north and west	Motorists travelling on AP 2972.	**Lesaka 1 SEF: Marginally Visible** The SEF will be marginally visible due to distance and screening by intervening topography. **Powerline: To be confirmed**
VP 5	Farmsteads	30° 37' 20.06" S 19° 32' 11.83" E	Looking west and north.	Residents of farmstead and motorist travelling on the AP 2972.	**Lesaka 1 SEF: Not Visible** The SEF will not be visible due to screening by intervening topography. **Powerline: To be confirmed**
VP 6	Helios MTS	30° 30' 15.66" S 19° 33' 24.01" E	Looking east and south	Motorists travelling on the AP 2972.	**Lesaka 1 SEF: Not Visible** The SEF will not be visible due to distance and screening by intervening topography. **Powerline: To be confirmed**
VP 7	Khobab WEF	30° 28' 11.84" S 19° 33' 19.87" E	Looking east, south and west.	Motorists travelling on the AP 2972.	**Lesaka 1 SEF: Not Visible** The SEF will not be visible due to distance and screening by intervening topography. **Powerline: To be confirmed**
VP 8	Klein Rooiberg River Road	30° 34' 2.01" S 19° 32' 29.55" E	Looking east and south	Motorists travelling on the Klein Rooiberg River Road.	**Lesaka 1 SEF: Not Visible** The SEF will not be visible due to distance and screening by intervening topography. **Powerline: To be confirmed**

6.5 Compatibility with Landscape Integrity

Landscape (or townscape) integrity refers to the compatibility of the development / visual intrusion with the existing landscape. The landscape integrity of the project is rated based on the relevant criteria listed in Table 6-5.

Table 6-5: Landscape integrity criteria

Criterion	Landscape integrity		
	High	**Moderate**	**Low**
	The project is:		
Consistency with existing land use of the area	Consistent	Moderately consistent	Not consistent / very different
Sensitivity to natural environment	Highly sensitive	Moderately sensitive	Not sensitive
Consistency with urban texture and layout	Consistent	Moderately consistent	Not consistent / very different
Congruence of buildings / structures with / sensitivity to existing architecture / buildings	Congruent / sensitive	Moderately congruent / sensitive	Not congruent / sensitive
Scale and size relative to nearby existing development	Similar	Moderately similar	Different

The proposed project is located within a rural area comprising large, undeveloped farms with natural vegetation predominantly used for grazing. The vast, undeveloped expanse of arid landscape can be experienced by receptors as desolate. Existing powerlines converge on the Helios MTS to the north of the proposed SEF. The two existing WEFs (Khobab and Loeriesfontein 2) are visible in the background, to the north of the proposed SEF. Another SEF located between the proposed Lesaka 1 SEF site and the Helios MTS is under construction.

Given the number of approved renewable energy projects in the area, it is likely that these will burgeon around the proposed project property. Therefore, currently the proposed infrastructure will be consistent with the size, type and scale of the existing and approved development.

Grid infrastructure such as substations and powerlines are and will become increasingly more common in the area around the proposed project, with existing small and large powerlines traversing the landscape throughout the project area. As such, the proposed powerline infrastructure is consistent with type, scale and size of the existing infrastructure in the landscape.

The project is deemed to have a ***moderate*** integrity with the surrounding landscape.

6.6 Magnitude of Overall Visual Impact

Based on the above criteria, the magnitude or intensity of the overall visual impact that is expected to result from the project has been rated. Table 6-6 provides a summary of the criteria, a descriptor summarising the status of the criteria and projected impact magnitude ratings.

The overall magnitude of the visual impact that is expected to result from the project is rated as ***low***. The moderate visual exposure and landscape integrity and low VAC are moderated by the low viewer sensitivity and visibility.

Table 6-6: Magnitude of overall visual impact

Criteria	Rating	Comments
Visual Exposure (Viewshed)	Moderate	The viewshed indicates that beyond the SEF property the SEF cluster is moderately visible in the background to the north and west. The SEF cluster will also be visible to railway passengers to the north, and from the western bank of the Krom River, although there are no / few receptors located to the west.
Visual Absorption Capacity	Low	The low VAC of the surrounding area is reduced by the wide flat, undeveloped, expanse between isolated ridges for both the powerline and SEF for the powerline. The high vertical profile of the pylons further reduces the VAC of the surrounding area. The vegetation of the surrounding area is not expected to screen the SEF or powerline and pylons from receptors.
Viewer Sensitivity (Receptors)	Low	The limited number of highly sensitive visual receptors is further moderated by the large number of transient motorists, as well as receptors' familiarity with and acceptance of views of renewable energy projects and powerlines in the surrounding landscape.
Viewing Distance and Visibility	Low	The proposed SEF is marginally visible in the background to receptors. The proposed powerline alignment is to be confirmed.
Landscape Integrity	Moderate	Renewable energy facilities currently exist within the landscape, albeit WEFs, and it is expected, from the number of approved projects in the area, that these will burgeon around the proposed project property. Grid infrastructure such as substations and powerlines are and will become increasingly more common in the area surrounding the proposed project. As such, the proposed powerline infrastructure is consistent with type, scale and size of the existing infrastructure within the landscape.

7. IDENTIFICATION OF IMPACTS

The following section describes the visual impacts anticipated during the construction, operational and decommissioning phases. Possible measures to avoid, mitigate or compensate visual impacts will be considered and recommended in the VIA report, depending on the severity of impacts and the feasibility of measures.

The project relates to the greenfield development of a SEF, associated infrastructure (i.e. on-site substation and BESS) and a ~21 km long 132 kV powerline and the range of potential visual impacts is thus larger than it would be for a brownfield project (e.g rooftop or urban SEF).

Direct visual and aesthetic impacts are likely to result from the following project interventions and/or activities:

- Earthworks and construction activities (including clearing of vegetation and associated generation of dust);
- Altered sense of place;

- Visual intrusion compromising vistas across the project area; and
- Increased light pollution.

The visual and aesthetic impacts generated by the project are likely to be associated with visual intrusion and visual quality.

Impacts of the SEF components[2] and the 132 kV powerline alternatives are assessed separately, where necessary.

7.1 Construction Phase – SEF Components and 132 kV Powerline

7.1.1 Altered Sense of Place and Visual Intrusion caused by Construction Activities associated with the SEF Components and 132 kV Powerline Alternatives

Visual impacts will be generated by construction activities such as earthworks, which can generate dust, and from construction infrastructure, plant and materials on site (e.g. site camp, plant and machinery, and stockpiles of excavated material). Dust generated during construction will be visually unappealing and may detract from the visual quality (and sense of place) of the area. These impacts are typically limited to the immediate area surrounding the construction site and development footprint, during the construction period.

Construction activities will have a greater impact within the foreground (< 200 m) as sensitive receptors in close proximity to these activities will be particularly exposed to these visual impacts. However, very few farmsteads are evident from aerial imagery and the site visit, and none were identified to be within the foreground.

Laydown location alternatives do not affect the significance rating.

The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low*** (Table 7-2 and Table 7-3).

7.2 Operational Phase – SEF Components

7.2.1 Altered Sense of Place and Visual Intrusion caused by the PV Array

The total combined development footprint of the SEF is ~ 795 ha. The development of this PV array may be perceived as conflicting with the current undeveloped, inhospitable agricultural landscape. Across the landscape there is evidence of anthropogenic influence such as the Sishen-Saldanha railway line, fence lines, AP 2972, operational WEFs and construction of a SEF. Nevertheless, the proposed PV array is expected to degrade views, and negatively impact the sense of place and present as a visual intrusion across the landscape.

Receptors, identified through examination of aerial imagery and during the site visit, are located to the east and south of the proposed SEF, but due to their distance from the property the receptors are not expected to experience the PV array as a significant transformation in the landscape.

[2] As noted in Section 3.2, the SEF components include the PV array, BESS, on-site IPP substation and internal grid connection infrastructure.

Motorists on the AP 2972 may also be exposed to the project, however due to their fleeting views and transient exposure to the area, motorists are not considered sensitivity receptors. An exception is the seasonal tourists (to renowned springtime Namaqualand floral displays/landscapes) who may be affected.

The impact is assessed to be of ***medium*** significance with and without the implementation of mitigation (Table 7-2).

7.2.2 Altered Sense of Place and Visual Intrusion caused by the BESS, IPP substation and Internal Grid Infrastructure

The SEF will include a BESS, IPP substation and internal grid connections (up to 33 kV powerlines). Where possible, the powerlines will be installed underground. This associated infrastructure, particularly the BESS, is not congruent with the current landscape integrity, and will contribute to visual clutter: however, few receptors are expected to be exposed.

Stationary receptors (in farmsteads) are located to the south and south-west of the proposed SEF, but due to their distance from the property are not expected to experience the BESS, internal grid infrastructure and IPP substation as a significant transformation in the landscape.

The impact is assessed to be of ***low*** significance with and without the implementation of mitigation (Table 7-2).

7.2.3 Altered Visual Quality caused by Light Pollution at Night

It is anticipated that lighting will be installed along the perimeter of the PV array and / or around the BESS and IPP substation to improve security.

The installation of lighting on the site perimeter and / or around the BESS will generate nightglow that currently does not emanate from the natural, undeveloped property or surrounds. As such, the introduction of lighting on the site alters the sense of place and visual quality to surrounding receptors.

Lighting is not easily screened by vegetation or topography, and the proposed lighting will contribute any existing nightglow from the surrounding areas and significantly alter visual quality of the surrounding area.

The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low*** (Table 7-2).

7.3 Operational Phase – 132 kV Powerline

7.3.1 Altered Sense of Place and Visual Intrusion caused by the 132 kV Powerline Alternative 1 and 2

Powerline Alternative 1 is ~21 km in length and is routed over a ridge and the AP 2972 in a north-easterly direction for ~6.5 km. At km 6.5, Powerline Alternative 1 is routed northwards for ~12 km directly to the existing Helios MTS.

Powerline Alternative 2 follows the same routing as Powerline Alternative 1, but at km 14 diverts slightly westwards over the AP 2972 and continues northwards to the Helios MTS.

Due to the very similar routing of these powerlines, the visual impacts are likely to be very similar.

Although the proposed Powerline Alternative 1 and 2 are not known to be routed directly adjacent / parallel to an existing powerline, the concentration of powerlines increases near the Helios MTS. The proposed powerline will therefore be somewhat consistent with the current use and scale of infrastructure within the surrounding area, but may also increase visual clutter.

Motorists will experience views of the powerline in the foreground, while some farmsteads, located further away, may have views degraded to a degree due to potential visibility of the powerline in the background.

The impact is assessed to be of ***low*** significance with and without the implementation of mitigation (Table 7-3).

7.3.2 Altered Visual Quality caused by Light Pollution at Night

Lighting is not anticipated on the pylons, and therefore is not anticipated to generate nightglow.

7.4 Decommissioning Phase – SEF Components and 132 kV Powerline

7.4.1 Altered Sense of Place caused by the Decommissioning Activities for the SEF and 132 kV Powerline

While the proposed PV Facility and associated infrastructure and the 132 kV powerline are anticipated to operate in the long-term, when decommissioning is required visual impacts will be generated.

Decommissioning will include earthworks, the presence and movement of plant and equipment on site, and stockpiles of excavated material. Dust generated during decommissioning will be visually unappealing and may detract from the visual quality (and sense of place) of the area. These impacts are typically limited to the immediate area surrounding the site, during the decommissioning period.

Decommissioning activities will have a greater impact within the foreground (< 200 m) as sensitive receptors in close proximity to these activities will be particularly exposed to these visual impacts. However, very few farmsteads are evident from aerial imagery, and none were identified to be within the foreground.

The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low*** (Table 7-2 and Table 7-3).

7.5 Cumulative Impacts

7.5.1 Introduction

For the purposes of this report, cumulative impacts are defined as ‘direct and indirect impacts that act together with existing or future potential impacts of other activities or proposed activities in the area / region that affect the same resources and / or receptors’.

For the most part, cumulative effects or aspects thereof are too uncertain to be quantifiable, due mainly to a lack of data availability and accuracy. This is particularly true of cumulative effects arising from potential or future projects, the design or details of which may not be finalised or available and the direct and indirect impacts of which have not yet been assessed.

For practical reasons, the identification and management of cumulative impacts are limited to those effects generally recognised as important on the basis of scientific concerns and/or concerns of affected communities, in this case effects of other renewable energy facilities and large-scale infrastructure projects.

7.5.2 Cumulative Impacts Analysis

In addition to the project, other past, present and future activities have taken place or are proposed within a 35 km radius of the project site that might have caused or may cause impacts and may interact with impacts caused by the project. These are briefly discussed in this section.

Four approved SEFs and nine proposed WEFs within a 35 km radius of the proposed project site are listed on the DFFE South African Renewable Energy EIA Application Database (DFFE, 2022). These projects are listed in Table 7-1 and their location shown in Figure 3-1.

Table 7-1: Renewable projects within a 35 km radius of the project site

	Facility Name / Description	**Status**	**MW**
1	Orlight SA SEF	Approved	22 MW
2	Mainstream SEF	Approved	50 MW
3	Solar Capital Orange 80 MW SEF	Approved and in construction phase	80 MW
4	Loeriesfontein 3 SEF	Approved	100 MW
5	Kokerboom 1 WEF	Approved	256 MW
6	Kokerboom 2 WEF	Approved	240 MW
7	Kokerboom 3 WEF	Approved	240 MW
8	Ithemba WEF	Approved	235 MW
9	Graskoppies WEF	Approved	235 MW
10	!XHA Boom WEF	Approved	235 MW
11	Dwarsrug WEF	Approved	140 MW
12	Loeriesfontein 2 WEF	Approved and in operational phase	138 MW
13	Khobab WEF	Approved and in operational phase	138 MW
			2 109 MW

WEFs are generally more visually intrusive structures within the landscape due to their height and form. SEFs have a lower visual impact to the surrounding region due to their low vertical profile and therefore, lower visibility across vistas in the landscape, when compared to projects such as WEFs or power stations. Nevertheless, both WEFs and SEFs result in change to the visual character of a large footprint / area, and therefore can alter the sense of place to visual receptors near the site. Powerlines, BESS's and substations are typical components of renewable energy facilities. Despite the rural location of the project and surrounding area the region has a high concentration of approved renewable energy projects located around the Helios MTS. Only two WEFs of the 13 facilities appear to be operational, while another SEF is under construction. As more of these facilities are constructed and enter their operational phase, the visual landscape is expected to be significantly transformed detracting from the visual quality of the region. As SEFs and WEFs proliferate, impacts will accumulate towards an unknowable threshold.

SiVEST's Impact Assessment methodology has been used to evaluate the cumulative visual impacts of the project on the sense of place within a 35 km radius. The cumulative impact of the PV Facility and the 132 kV powerline is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low*** (Table 7-2 and Table 7-3).

7.6 Overall Impact Rating

The impact assessment and ratings for the PV Facility and 132 kV powerline are summarised in Table 7-2 and Table 7-3 below.

Table 7-2: Rating of impacts – PV Facility Components

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ /-)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ / -)	S
Construction Phase																				
Altered Sense of Place and Visual Intrusion caused by Construction Activities	Dust generated during construction will be visually unappealing and may detract from the visual quality (and sense of place) of the area. These impacts are typically limited to the immediate area surrounding the construction site, during the construction period.	2	4	1	2	1	3	30	-	Medium	• Limit vegetation clearance and the footprint of construction to what is absolutely essential. • Consolidate the footprint of the construction camp to a functional minimum. • Avoid excavation, handling and transport of materials which may generate dust under very windy conditions. • Keep stockpiled aggregate and sand covered to minimise dust generation. • Keep construction site tidy.	2	3	1	2	1	2	18	-	Low
Operational Phase																				
Altered Sense of Place and Visual Intrusion caused by the PV Array	The development of this PV array may be perceived as conflicting with the current landscape of the grassland and treescapes. The proposed PV Facility is anticipated to interrupt and/or degrade views, affecting the sense of place and presenting as a visual intrusion across the landscape.	2	4	2	3	3	3	26	-	Medium	• None	2	4	2	3	3	3	26	-	Medium

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ /-)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ / -)	S
Altered Sense of Place and Visual Intrusion caused by the BESS, Substation and Internal Grid Infrastructure	Associated infrastructure, particularly the BESS, is not congruent with the current landscape integrity, and will contribute to visual clutter: however, few receptors are expected to be exposed.	2	4	1	1	3	2	22	-	Low	• Install powerlines underground, where possible. • Fence the perimeter of the site with green or black fencing. • Ensure that the roof colour of the proposed buildings blends into the landscape.	2	3	1	1	3	2	20	-	Low
Altered Visual Quality caused by Light Pollution at Night	The installation of lighting on the site perimeter and / or around the BESS is anticipated to generate nightglow which currently does not emanate from the natural, undeveloped site. The introduction of lighting on the site will alter the sense of place and visual quality to surrounding receptors.	2	4	1	1	3	3	33	-	Medium	• Reduce the height of lighting masts to a workable minimum. • Direct lighting inwards and downwards to limit light pollution.	2	3	1	1	3	2	20	-	Low
Decommissioning Phase																				
Altered Sense of Place caused by the decommissioning activities	Dust generated during decommissioning activities will be visually unappealing and may detract from the visual quality (and sense of place) of the area. These impacts are typically limited to the immediate area surrounding the site, during the decommissioning period.	2	4	1	2	1	3	30	-	Medium	• Limit vegetation clearance and the footprint of decommissioning to what is absolutely essential. • Avoid excavation, handling and transport of materials which may generate dust under very windy conditions. • Keep stockpiled aggregate and sand covered to minimise dust generation. • Keep site tidy.	2	3	1	2	1	2	18	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ /-)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ / -)	S
Cumulative Impact																				
Altered sense of place caused by the PV Facility	The site and surrounds are rural in character, there is a high concentration of approved renewable energy projects located around the Helios MTS. Only two WEFs of the 13 facilities appear to be operational, while another SEF is under construction. As more of these facilities commence operating , the visual landscape is expected to be significantly transformed detracting from the visual quality of the region. As SEFs and WEFs proliferate, impacts will accumulate towards an unknowable threshold.	2	4	1	3	3	2	26	-	Medium	• Encourage other project owners to implement measures to mitigate the impact of these projects on visual intrusion and altered sense of place, such as screening (vegetation and/or berms) and limit the light pollution generated by these facilities.	2	3	1	2	3	2	22	-	Low

Table 7-3: Rating of impacts – grid connection

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ /-)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ / -)	S
Construction Phase																				
Altered Sense of Place and Visual Intrusion caused by Construction Activities	Dust generated during construction will be visually unappealing and may detract from the visual quality (and sense of place) of the area. These impacts are typically limited to the immediate area surrounding the construction site, during the construction period.	2	4	1	2	1	3	30	-	Medium	• Limit vegetation clearance and the footprint of construction to what is absolutely essential. • Consolidate the footprint of the construction camp to a functional minimum. • Avoid excavation, handling and transport of materials which may generate dust under very windy conditions. • Keep stockpiled aggregate and sand covered to minimise dust generation. • Keep construction site tidy.	2	3	1	2	1	2	18	-	Low
Operational Phase																				
Altered Sense of Place and Visual Intrusion caused by the Grid Connection	The proposed powerline and substation may be perceived as conflicting with the current landscape of the grassland and treescapes. This infrastructure is anticipated to contribute to visual clutter on the site and affect the sense of place,presenting as a visual intrusion across the landscape.	2	4	1	1	3	2	22	-	Low	• Do not install or affix lights on pylons.	2	2	1	1	3	2	18	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ /-)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ / -)	S
Decommissioning Phase																				
Altered Sense of Place caused by the Decommissioning Activities	Decommissioning will include earthworks, the presence and movement of plant and equipment on site, and stockpiles of excavated material. Dust generated during decommissioning will be visually unappealing and may detract from the visual quality (and sense of place) of the area. These impacts are typically limited to the immediate area surrounding the site, during the decommissioning period.	2	4	1	2	1	3	30	-	Medium	• Limit vegetation clearance and the footprint of decommissioning to what is absolutely essential. • Avoid excavation, handling and transport of materials which may generate dust under very windy conditions. • Keep stockpiled aggregate and sand covered to minimise dust generation. • Keep site tidy.	2	3	1	2	1	2	18	-	Low
Cumulative Impact																				
Altered Sense of Place caused by the Grid Connection	Additional powerlines and substations installed across the surrounding area will interrupt views and result in visual intrusion and altered sense of place.	2	4	1	3	3	2	26	-	Medium	• Implement measures to mitigate impacts of the powerlines and substations on the visual intrusion and altered sense of place, such as no affixing lights to powerlines and routing the powerlines within corridors.	2	3	1	2	3	2	22	-	Low

7.7 Input into the EMPr

Table 7-4 provides a description of the key monitoring recommendations for each mitigation measure identified for each phase of the project for inclusion in the EMPr or Environmental Authorisation (EA).

Table 7-4: EMPr measures

Impact / Aspect	Mitigation / Management Actions	Responsibility	Methodology	Mitigation / Management Objectives and Outcomes	Frequency
Construction Phase					
Visual Quality (PV Facility and Grid Connection)	• Limit vegetation clearance and the footprint of construction to what is absolutely essential.	Contractor	• Plan which areas require the clearance of vegetation. • Only clear vegetation when works in the area will be undertaken.	• Limited dust generation.	Throughout construction
	• Consolidate the footprint of the construction camp to a functional minimum.		• Ensure that the construction camp is consolidated (in size) during the design phase	• Small construction camp footprint.	
	• Avoid excavation, handling and transport of materials which may generate dust under very windy conditions.		• During very windy conditions cease excavation, handling and transportation of materials which may generate dust.	• No dust generated by activities undertaken during very windy conditions.	
	• Keep stockpiled aggregates and sand covered to minimise dust generation.		• Stockpile all aggregate and sand. • Keep stockpiles covered when not in use.	• No airborne dust entrained from stockpiles.	
	• Keep construction site tidy.		• Implement measures to keep the site tidy.	• No wind-blown litter originating from the site.	

Impact / Aspect	Mitigation / Management Actions	Responsibility	Methodology	Mitigation / Management Objectives and Outcomes	Frequency
Operational Phase					
Altered Sense of Place and Visual Intrusion (PV Facility)	• Install the powerlines underground, where possible.	Developer	• Incorporate underground powerlines in the design.	• Reduced visual clutter interrupting views.	On completion of construction activities. Throughout operation.
	• Fence the perimeter of the site with green or black fencing.	Developer	• Install a perimeter fence.	• The site is screened by the fence.	
	• Ensure that the roof colour of the proposed buildings blends into the landscape.	Developer	• Incorporate colour requirements in the design.	• The roof visibly blends into the landscape.	
Altered Sense of Place and Visual Intrusion (Grid Connection)	• Do not install or affix lights on pylons.	Contractor	• Prohibit installation of lighting on pylons in the design.	• Limited light pollution from lights on the powerline.	Once the powerline is installed. Throughout operation.
Altered Visual Quality (PV Facility and Grid Connection)	• Reduce the height of lighting masts to a workable minimum.	Developer and Contractor	• Incorporate lighting requirements in the design.	• Limited light pollution caused by the PV Facility.	Once construction activities have concluded. Throughout operation
	• Direct lighting inwards and downwards to limit light pollution.				

Impact / Aspect	Mitigation / Management Actions	Responsibility	Methodology	Mitigation / Management Objectives and Outcomes	Frequency
Decommissioning Phase					
Visual Quality (PV Facility and Grid Connection)	• Limit vegetation clearance and the footprint of decommissioning to what is absolutely essential.	Contractor	• Plan which areas require the clearance of vegetation. • Only clear the vegetation when works in the area will be undertaken.	• Limited clearance of exposed ground.	Throughout decommissioning
	• Consolidate the footprint of the decommissioning camp to a functional minimum.		• Ensure that the decommissioning camp footprint is consolidated where possible.	• Reduced project footprint.	
	• Avoid excavation, handling and transport of materials which may generate dust under very windy conditions.		• During very windy conditions cease excavation, handling and transportation of materials which may generate dust.	• No dust generated by activities during very windy conditions.	
	• Keep stockpiled aggregates and sand covered to minimise dust generation.		• Stockpile all aggregates and sand. • Keep stockpiles covered when not in use.	• No airborne dust ntrained from stockpiles.	
	• Keep site tidy.		• Implement measures to keep the site tidy.	• No wind-blown litter originating from the site.	

7.8 No-Go Alternative

The No Go alternative entails no change to the status quo, in other words, no SEF and / or 132 kV powerline (see Section 3.2.2).

Should the application for the Lesaka 1 SEF and 132 kV powerline be refused the visual impacts will not be realised.

8. CONCLUSION

The Visual Scoping Report describes and interprets the visual context or affected environment in which the project is located: this provides a visual baseline or template and aims to ascertain the aesthetic uniqueness of the project area.

The following findings are pertinent:

- Lesaka 1 SEF (Pty) Ltd proposes to develop the 240 MW Lesaka 1 SEF on Farm Kluitjes Kraal No. 264 approximately 35 km north of Loeriesfontein, in the Hantam Local Municipality, in the Northern Cape Province. The project comprises PV arrays, a BESS, an IPP substation and internal grid infrastructure on a 795 ha footprint.
- The proposed 132 kV powerline to connect the SEF to the existing Helios MTS is ~21 km long and will traverse seven farms. Where possible the powerlines will be installed underground. Two powerline alternatives are proposed and will be considered in VIA.
- Laydown Option 1 and Option 2 are considered as location alternatives for the temporary laydown area during the construction phase. The visual impacts of both alternatives are the same.
- The basis for the visual character of the region is provided by the topography, vegetation and land use of the area, which is predominantly a rural environment characterised by vegetated prominences and ridgelines undulating interspersed with farmsteads and limited infrastructure (i.e. the regional road routed to the east of the site and the Sishen-Saldanha railway line) bisecting the northern portion of the SEF property. The project is defined as a natural transition landscape.
- The visual quality of the area can be experienced through long closed views across plains of low vegetation and prominences, escarpments and ridgelines defining the horizon and is experienced visually as a somewhat sterile environment.
- The region has scenic value in terms of its rugged natural landscape and large portions of natural grazing land.
- Visual receptors have been identified and include; residents of isolated farmsteads and motorists and tourists on the nearby AP 2972 gravel road.
- The SEF cluster will also be visible to railway passengers to the north, and from the western bank of the Krom River, although there are no / few receptors located to the west. The SEF is highly visible from within the property, within 2 km of the SEFs. The visual exposure of the proposed infrastructure is deemed moderate.
- The low VAC of the surrounding area is reduced by the wide flat, undeveloped, expanse between isolated ridges for both the powerline and SEF. The vertical profile of the pylons further reduces the

VAC of the surrounding area. The vegetation of the surrounding area is not expected to screen the SEF, powerline and pylons from receptors. The study area has a low VAC.

- The limited number of highly sensitive visual receptors is further moderate by the large number of transient motorists with fleeting views, as well as receptors' familiarity with and acceptance of views of renewable energy projects and powerlines in the surrounding landscape. The sensitivity of the visual receptors are considered to be low.
- The proposed SEF is marginally visible in the background to receptors, and therefore the visibility of the project is low.
- Given the number of approved renewable energy projects in the area, it is likely that these will burgeon around the proposed project property. Grid infrastructure such as substations and powerlines are and will become increasingly more common in the area around the proposed project, with existing small and large powerlines traversing the landscape throughout the project area. Therefore, currently the proposed infrastructure will be consistent with the size, type and scale of the existing and approved development. The project is deemed to have a moderate integrity with the surrounding landscape.
- Construction activities associated with the SEF and 132 kV powerline will generate visual impacts related to earthworks and construction infrastructure, plant and materials on site. These activities are visually intrusive and will have a greater impact within the foreground (<200 m); however, very few farmsteads were identified around the site, and none were identified in the foreground. The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low*** for both laydown location alternatives.
- The PV array may be perceived as conflicting with the current undeveloped, natural agricultural (grazing land) landscape. The PV array may also degrade views, and therefore negatively impact the sense of place and present as a visual intrusion across the landscape. The impact is assessed to be of ***medium*** significance with and without the implementation of mitigation.
- The associated infrastructure, particularly the BESS, is not congruent with the current landscape integrity. This infrastructure will contribute to visual clutter; however, few receptors are expected to be exposed. The impact is assessed to be of ***low*** significance with and without the implementation of mitigation.
- Installation of lighting along the perimeter of the PV array and / or the BESS and IPP substation to improve security will expose sensitive receptors (e.g. residents) to light pollution, i.e. nightglow, that currently does not emanate from the natural, undeveloped property. The impact is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low***.
- Powerline Alternatives 1 and 2 follow the same route and only differ from km 14 (from the SEF), where Powerline Alternative 2 diverts westwards and crosses over the AP 2972 and continues northwards to the Helios MTS. Due to the very similar alignment of these powerlines, the visual impacts are likely to be similar.
- Existing powerlines start to cluster near the Helios MTS. The proposed powerline will therefore be somewhat consistent with the current use and scale of infrastructure within the area surrounding the Helios MTS, but may also increase visual clutter. The impact is assessed to be of ***low*** significance with and without the implementation of mitigation.

- Decommissioning activities associated with the SEF and associated infrastructure will generate visual impacts related to earthworks and construction infrastructure, plant and materials on site. These activities are visually intrusive and would mostly impact receptors in the foreground (<200 m), of which there are none. The impact is assessed to be of ***medium*** significance and with the implementation of mitigation reduced to ***low***.
- In addition to this proposed project, there are 13 approved renewable energy provides (three SEFs and nine WEFs) listed on DFFE's list of renewable energy projects within a 35 km radius of the project. If constructed, these projects would significantly alter the visual character, and therefore, alter the sense of place within the surrounding area. The cumulative impact of the PV Facility and the 132 kV powerline is assessed to be of ***medium*** significance and with the implementation of mitigation is reduced to ***low***.

8.1 Impact Statement

The proposed project comprises the development of a PV facility and 132 kV powerline, further altering the visual landscape of the project area. This project is moderately congruent with and marginally affects the integrity of the landscape, as there are a number of approved renewable energy facilities around or near the proposed site, with two operational WEFs and a SEF under construction. A highly concentrated network of powerlines exists within the project area and the wider region due to the nearby Helios MTS and approved renewable projects. Due to the open, flat and intact topography, the VAC of the project area is considered low.

This project will alter visual quality during the construction and decommissioning phases, as well as alter sense of place, visual quality and result in visual intrusion during the operational phase. These impacts are deemed to be acceptable on the assumption that the mitigation measures listed in Section 0 are implemented.

Based on the assessment and the assumption that the mitigation measures will be implemented, the specialist is of the opinion that the visual impacts of the project, and all alternatives proposed (Powerline Alternatives 1 and 2 and laydown location alternatives) are acceptable, and there is no reason not to authorise the project.

9. REFERENCES

Boschkloof. (2012). *Cederberg Farm Experience*. Retrieved October 2012, from http://www.boschkloof.com/cederberg-guest-farm-citrusdal.htm

CNDV. (2006). *Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape: Towards a Regional Methodology for Wind Energsanbiy Site Selection. Reports 1 – 6.*

Crawford, D. (1994). Using remotely sensed data in landscape visual quality assessment. *Landscape and Urban Planning 30*, 17-81.

Cross, J. E. (2001). What is Sense of Place? *Prepared for the 12th Headwaters Conference, November 2-4, 2001.* Retrieved July 2020, from https://www.researchgate.net/publication/282980896_What_is_Sense_of_Place/link/56256fbf08aeabddac91cd62/download

DEA&DP. (2005). *Guideline for Involving Visual and Aesthetic Specialists in EIA Processes.* Retrieved June 2020, from http://asapa.co.za/wp-content/uploads/2016/06/5_deadp_visual_guideline_june05.pdf

DFFE. (2022). *Department of Forestry, Fisheries and the Environment: egis*. Retrieved from https://egis.environment.gov.za/gis_data_downloads

Landscape Institute. (2013). *Guideline for Landscape and Visual Impact Assessment.* Routledge.

Lynch, K. (1992). *Good City Form.* London: The MIT Press.

Night Jar Travel South Africa. (2012). Retrieved August 2012, from http://www.nightjartravel.com

Pager Power. (2018). *Solar Photovoltaic Development - Glint and Glare Guidance.*

Shan Ding Lu. (2009). Retrieved August 2012, from http://www.shandinglu.org

Young, G. (2000). *First Draft Gamsberg Zinc Project: Specialist Study Report: Visual Environment. Newtown Landscape Architects, 10 March 2000.*

Appendix A: Specialist CV