UPGRADE ENERGY (PTY) LTD

Proposed Development of the Leeudoringstad 132kV Powerline and Associated Substations and Infrastructure within Maquassi Hills and City of Matlosana Local Municipality, Dr Kenneth Kaunda District Municipality in the North West Province

Draft Environmental Sensitivity Report

Issue Date:	11 November 2022
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Project No.	18087
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Date:	11 November 2022
Document Title:	Proposed Development of the Leeudoringstad 132kV Powerline and Associated Substations and Infrastructure, within Maquassi Hills and City of Matlosana Local Municipalities, Dr Kenneth Kaunda District Municipality in the North West Province: Draft Environmental Sensitivity Report (DESR)
Revision Number:	1.0
Author:	Michelle Nevette *Cert.Nat.Sci Rev No. 120356* *EAPASA Reg No. 2019/1560*
Checked by:	Natalie Pullen *EAPASA Reg No. 2018/138*
Approved by:	Natalie Pullen *EAPASA Reg No. 2018/138*
Signature:	
Client:	Upgrade Energy (Pty) Ltd

Confidentiality Statement

KEY PROJECT INFORMATION

PROJECT DESCRIPTION

The proposed Project involves the construction and operation of electricity distribution infrastructure, to connect the proposed Leeudoringstad solar plants to the Vaal reef ten Power Station, within the Maquassi Hills and City of Matlosana Local Municipalities, Northwest (NW) Province.

A new switching station will be constructed next to the existing Leeubosch Traction Substation. A new IPP substation will be built adjacent to the new switching station to step up the voltage from 33kV to 132kV. From the new switching station a 132kV powerline will run to Orkney Solar Plant (Genesis). The line will connect to the Genesis switching station and share a 132kV powerline to Vaalreef Ten.

TECHNICAL DETAILS:

Component	Description / Dimensions
Project Location	The proposed development is Located near Leeudoringstad in North West Province, within the Maquassi Hills and City of Matlosana Local Municipalities, of the Dr Kenneth Kaunda District Municipality, North West Province.
Affected Properties	• Portion 6 of the Farm Zwartlaagte No. 46 • The farm Matjiesspruit No. 145 • Portion 2 of the Farm Klerksdrift No. 16 • Portion 8 of the Farm Klerksdrift No. 16 • Portion 5 of the Farm Klerksdrift No. 16 • Remainder of the Farm Yzerspruit No. 113 • Portion 6 of the Farm Yzerspruit No. 113 • Portion 5 of the Farm Yzerspruit No. 113 • Portion 36 of the Farm Yzerspruit No. 113 • Portion 25 of the Farm Wolvehuis No. 114 • Portion 7 of the Farm Wolvehuis No. 114 • Portion 6 of the Farm Wolvehuis No. 114 • Portion 36 of the Farm Wolvehuis No. 114 • Portion 3 of the Farm Wolvehuis No. 114 • Portion 21 of the Farm Wolvehuis No. 114 • Portion 42 of the Farm Leeuwbosch No. 44 • Portion 14 of the Farm Zwartlaagte No. 46 • Portion 47 of the Farm Leeuwbosch No. 44 • Portion 38 of the Farm Leeuwbosch No. 44 • Remainder of the Farm Nevada Vaal No. 48
SG Codes	• T0HP00000000004600006 • T0HP00000000014500000 • T0HP00000000001600002 • T0HP00000000001600008 • T0HP00000000001600005 • T0HP00000000011300000

Component	Description / Dimensions
	• T0HP00000000011300006 • T0HP00000000011300005 • T0HP00000000011300036 • T0HP00000000011400025 • T0HP00000000011400007 • T0HP00000000011400006 • T0HP00000000011400036 • T0HP00000000011400003 • T0HP00000000011400021 • T0HP00000000004400042 • T0HP00000000004600014 • T0HP00000000004400047 • T0HP00000000004400038 • T0HP00000000004800000
Site Access	The 132kV powerline follows the R502. Access to the proposed development will be via an existing gravel road which connects to the tarred R502 road. Existing site roads will be used wherever possible. However, where required, new internal access roads will be constructed.
Grid Connection Information	• One (1) new 132kV overhead power line connecting the Leeuwbosch Traction Substation to the Vaal Reef Ten Substation (approx ~42km long depending on the exact route options). • Either Single or Double Circuit (Most likely a twin tern conductor) • The servitude width for a 132 kV distribution line is 31 m (15.5 m on either side of the centre line of the power line) • Power line towers being considered for this development include self-supporting suspension monopole structures for relatively straight sections of the line and angle strain towers where the route alignment bends to a significant degree. Maximum tower height is expected to be approximately 25m although structures up to 32m may be installed at crossings for railway lines and other overhead lines
Scope of work at IPP Substation	• Install a compact 132/33kV transformer substation with the associated protection equipment • Install 2x33kV containerized switchgear
The scope of work in the Lion Thorn Solar Substation	• Install 1 x 132kV feeder bays at Leeubosch substation to accommodate the IPP compact 132/33kV substation • Establish a completely new 132 kV single busbar • Build approximately 32 km of a single circuit Twin Tern line from Leeubosch substation to New 132kV Collector at Orkney Solar Farm

Component	Description / Dimensions
The scope of work at the 132 kV Collector Station close to the Orkney Solar Farm	• Establish a new 132kV single busbar collector substation • Build 2 x 132 kV feeder bays to connect the Leeudoringstad IPP and Orkney Solar Farm. • Build approximately 10 km of double circuit Twin Tern line from the new collector station to the VaalReef Ten substation
The scope of work at the VaalReef Ten substation	• Equip 1 x 132 kV feeder bay for a 10 km double circuit Twin Tern line
Area occupied by Substation	• Up to approximately 1.5 hectares.
Height of Substation	Height of substation will be confirmed during the final design stages of the substation, prior to construction commencing
Construction laydown area (to be approved in the Leeumax PV application)	One (1) construction laydown / staging area of up to approximately 0.5ha. It should be noted that no construction camps will be required in order to house workers overnight as all workers will be accommodated in the nearby town.
Control Room	One Control Room at each Substation.
Fencing	As required
IPP Substation & Eskom switching station: general	Substation consisting of combined IPP 132/33kV step-up substation and Eskom switching substation. The IPP Substation acts as a collector substation for the 33kV feeders and steps-up the voltage from 33kV to 132kV. This will be connected to an adjacent Vaal ten reef Eskom 132kV Switching Substation. The collected 33kV power will be stepped up to 132kV using a single 1 x 33/132kV 60MVA step-up substation. A new Eskom 132kV switching station will be built adjacent to the step-up substation. The substation will be demarcated into three (3) sections: the 33kV substation, 33/132kV IPP step-up substation and the 132kV Eskom Switching Station. Eskom metering and operations will take place inside the Eskom switching yard. The 33kV collector substation will consist of a prefabricated building mounted on a concrete support beams. The building shall include: • 33kV Switchgear Room • Control Room • Battery Room • The collector substation shall be air conditioned building with necessary fire and gas detectors. The cable entry to the building shall be from bottom.

COORDINATES

LEEUDORINGSDAT GRID CONNECTION				
CENTRE LINE COORDINATES (DD MM SS.sss)				
GRID	**START POINT**	**MIDDLE POINT**	**END POINT**	**APPROX LENGTH (KM)**
LEEUDORINGSTAD POWERLINE	27°12'15.40"S	27° 7'28.31"S	27° 1'36.13"S	42.00
	26°18'26.66"E	26°27'9.11"E	26°34'35.04"E	

SUPPORTING INFRASTRUCTURE		
COORDINATES AT CENTER POINT (DD MM SS.sss)		
INFRASTRUCTURE	**SOUTH**	**EAST**
Leeubosch Traction Station	27° 12' 12.752" S	26° 18' 28.503" E
VaalReef Substation	26° 59' 53.012" S	26° 36' 48.328" E
New Lion Thorn Switching Station	27° 12' 14.146" S	26° 18' 25.450" E
Orkney Solar Farm Substation	27° 1' 39.997" S	26° 34' 12.177" E

UPGRADE ENERGY (PTY) LTD

LEEUDORINGSTAD 132KV POWERLINE AND ASSOCIATED SUBSTATIONS AND INFRASTRUCTURE

DRAFT ENVIRONMENTAL SENSITIVITY REPORT

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

UPGRADE ENERGY (PTY) LTD

LEEUDORINGSTAD 132KV POWERLINE AND ASSOCIATED SUBSTATIONS AND INFRASTRUCTURE

DRAFT ENVIRONMENTAL SENSITIVITY REPORT

1. INTRODUCTION

Upgrade Energy (Pty) Ltd (The Applicant) is proposing the construction and operation of electricity distribution infrastructure, to connect the proposed Leeudoringstad solar plants to the Vaal reef ten Power Station, in the Maquassi Hills and City of Matlosana Local Municipalities, within the Dr Kenneth Kaunda District Municipality, Northwest (NW) Province (**Figure 1**). The overall objective of the proposed development is to build a dedicated 132kV line from the solar farm to connect to the 132kV network near the Mercury and Hermes Substations. This project covers the proposed 132kV line and associated infrastructure from Lion Thorn Solar to Vaalreefs Substation (approximately 42km).

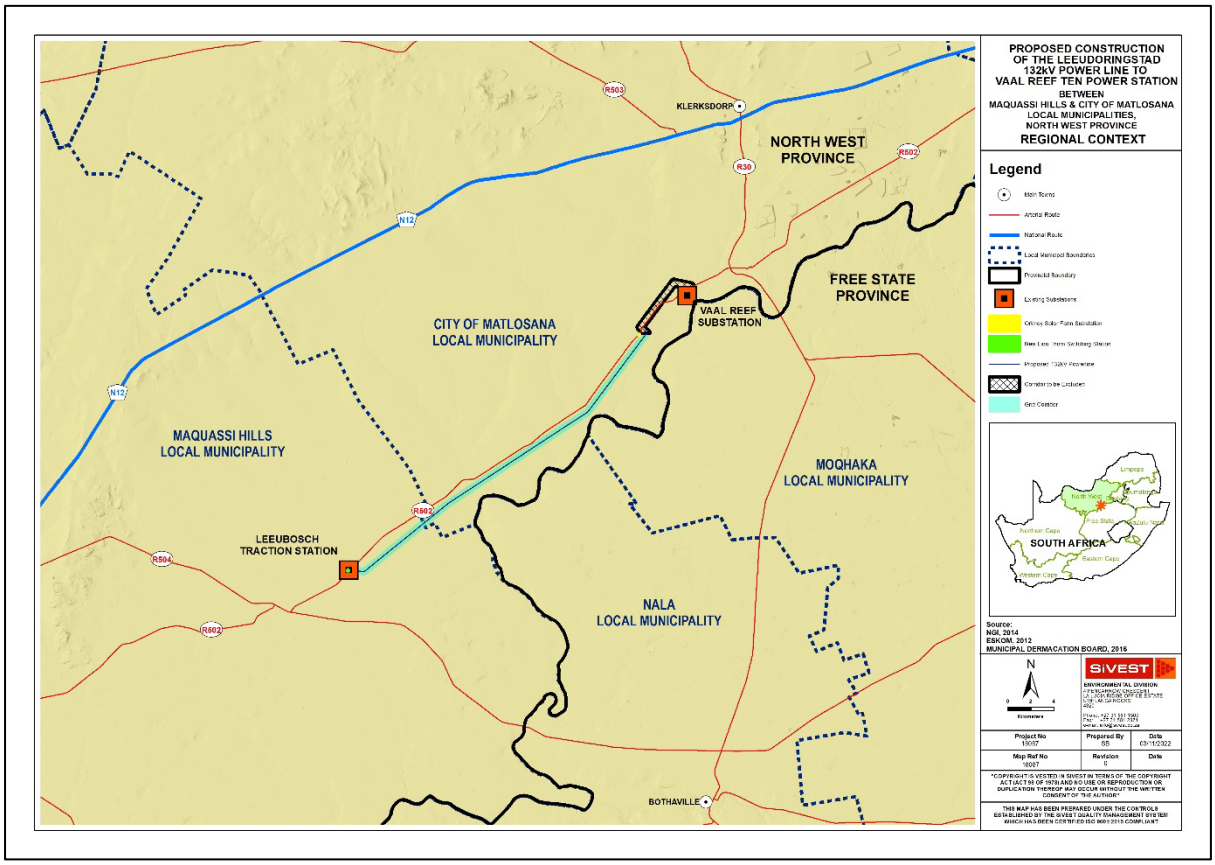

Figure 1: Leeudoringstad 132kV OHL Regional Context

SiVEST Environmental Division has subsequently been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the necessary environmental processes for the proposed Leeudoringstad 132kV power line and associated infrastructure. The proposed development requires

registration from the National Department Forestry, Fisheries and the Environment (DFFE). However, the provincial authority (i.e. the North West Department of Agriculture, Environmental Affairs, Rural Development and Land Reform) will also be consulted.

1.1 Overview and Scope of the Standard and Registration Process

Section 24(2)(c) - (e) provides the ability of the Minister, or MEC in concurrence with the Minister to identify activities and geographical areas within which activities may be excluded from the requirement to obtain environmental authorisation. Section 24(2)(d) provides the additional ability to link such exclusions with compliance with prescribed norms or standards. The "Standard for the Development and Expansion of Power lines and Substations within Identified Geographical Areas" (the Standard) has been adopted in terms of section 24(10)(a) of NEMA to allow for the exclusion, in terms of section 24(2)(d) of NEMA, of activities which relate to the development and expansion of electricity transmission and distribution infrastructure as identified in Listing Notices 1 and 2 of the Environmental Impact Assessment (EIA) Regulations, promulgated under section 24(5) of NEMA as well as any listed or specified activities necessary for the realisation of such infrastructure which includes substations, as described in the scope of this Standard.

Notice on the Adoption of the Standard for the Development and Expansion of Power Lines and Substations within Identified Geographical Areas and the Exclusion of this Infrastructure from the Requirement to obtain Environmental Authorisation was promulgated on the 27 July 2022 (GN 2313).

Objectives and Overview of the Standard and Registration Process

The purpose of this Standard is to provide rules, which must be complied with, ensuring:

- *compliance with the principles contained in section 2 of NEMA and the duty of care, in terms of section 28(1) of NEMA; and*
- *sustainable development within the strategic transmission corridors.*

This Standard has been prepared to allow a proponent to achieve planning, routing, siting and remediation objectives that will ensure the acceptability of the impacts of the development of EGI including substations on the environment, independently from the need for an assessment by the competent authority. These planning, routing, siting and remediation objectives were determined through the development of two SEAs undertaken to identify geographical areas best suited for the development of EGI infrastructure and its supporting infrastructure, including substations.

The submission of the registration form, the signing of the declaration by the proponent to commit to implementing the Standard and to comply with the Generic Environmental Management Programmes, will enable the exclusion of the development of EGI infrastructure and substations in the identified strategic transmission corridors from the need to obtain an environmental authorisation from the competent authority, as provided for in section 24(2)(d) of NEMA, for the development of transmission and distribution infrastructure within the Strategic Transmission Corridors.

The provisions of this Standard are applicable:

- *Within the strategic transmission corridors as identified in Government Notice No. 113 in Government Gazette No. 41445 of 16 February 2018 and Government Notice No. 1637 in Government Gazette No. 45690 of 24 December 2021;*

- *In areas identified by the national web based screening tool(screening tool) as being of medium or low environmental sensitivity and confirmed to be such by the EAP or the relevant specialist for the identified environmental theme; and*
- *For the following activities, including the associated activities necessary for the realisation of the infrastructure, as identified in the EIA Regulations:*
  - *Listing Notice 1: Activity 116 and 47; and*
  - *Listing Notice 2: Activity 9;*

This Standard and exclusions do not apply in the following instances:

- *Where any part of the infrastructure occurs on an area for which the environmental sensitivity for a relevant environmental theme is identified as being very high or high by the screening tool and confirmed to be such by the EAP or the relevant specialist for the identified environmental theme;*
- *Where the site verification for a specific theme identifies that the low or medium sensitivity rating of the screening tool is in fact high or very high; or*
- *Where the greater part of the proposed infrastructure falls outside of any strategic transmission corridor.*

Where this Standard does not apply, either the requirements of the EIA Regulations, or the requirements of Government Notice No. 113 in Government Gazette No. 41445 of 16 February 2018, read with the NEMA EIA Regulations, where relevant, apply to the relevant environmental theme for which the very high or high sensitivity has been identified, in respect of the portion of the development which occurs on the area where the environmental sensitivity is confirmed to be very high or high, or to the entire development where the greater part of the infrastructure falls outside of the strategic transmission corridor.

Based on the information provided, it is our understanding that since:

- The Project is located within an Electrical Grid Infrastructure (EGI) Corridor
- The site verification process has confirmed the area as being of medium or low environmental sensitivity by the relevant specialists.
- That the Standard will therefore apply and the determining authority for the proposed development will be the Department of Forestry, Fisheries and the Environment (DFFE). DFFE will be responsible for registering the proposed development.

The below shows the generic process:

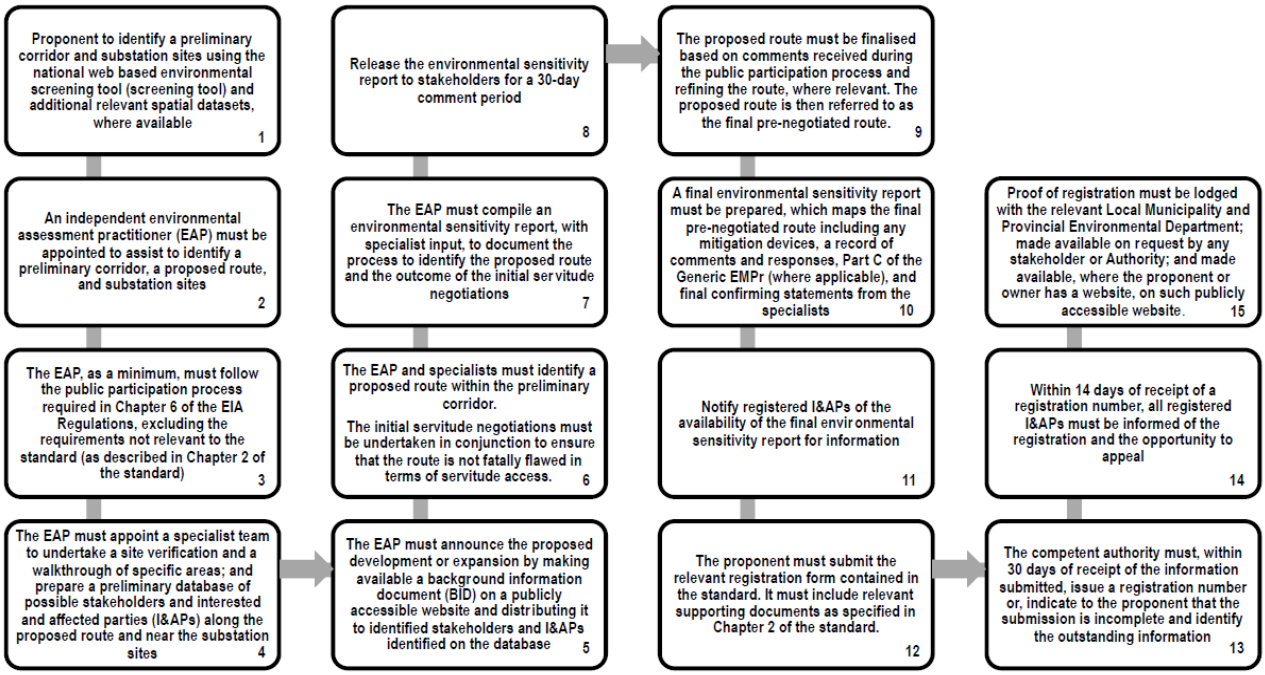

Figure 2: *Generic Process Flow Diagram*
(Source: Department of Forestry, Fisheries and the Environment, 2022)

1.2 Content Requirements for an Environmental Sensitivity Report

The process to identify the *proposed route* and/or substation location and the outcome of the initial servitude negotiations must be documented in an environmental sensitivity report. The content requirements for an Environmental Sensitivity Report (as provided in Section 9 of the EGI Standard rev2, June 2022), as well as details of which section of the report fulfils these requirements, are shown in **Table 1** below.

Table 1: Content requirements for an Environmental Sensitivity Report

Content Requirements	Applicable Section
(a) The details and relevant expertise of the EAP and specialists preparing the report;	4
(b) The outcome of the screening exercise undertaken using the screening tool, the expert knowledge of the specialists where necessary, results of the site verification[18], the adoption of the mitigation hierarchy principles and the principles contained in Chapter 3 of this Standard;	7
(c) Location map of the *proposed route* and/or proposed location of the substation at a scale not more than 1:15000 to identify environmental features;	5
(d) Details of the public participation process undertaken;	8.3
(e) A discussion by the specialists and/or EAP of the process used to confirm that the *proposed route* and/or substation location has applied the principles stipulated in Chapter 3, and the process used to confirm that the site sensitivity of the proposed route and/or substation location is of low or medium environmental sensitivity;	8

Content Requirements	Applicable Section
(f) If applicable, a site specific EMPr as per Part C of the Generic EMPr for overhead power lines and/or substations gazetted in Government Notice 435 published in Government *Gazette* No. 42323 of 22 March 2019;	9
(g) The completed generic EMPr pre-approved template which is Part B – Section 1 of the Generic EMPr for overhead power lines and/or substations, and where applicable Part C, gazetted in Government Notice 435 published in Government *Gazette* No. 42323 of 22 March 2019, for display on the websites of the proponent and the EAP; and	9 and Appendix 6
(h) The confirming statement by the various specialists in the format as identified in Appendix B.	10 and Appendix 5

2. PROJECT TITLE

Proposed Development of the Leeudoringstad 132kV power line, and associated substations and infrastructure, near Leeudoringstad within the Maquassi Hills and City of Matlosana Local Municipalities, of the Dr Kenneth Kaunda District Municipality in the North West Province.

3. DETAILS OF APPLICANT

3.1 Name and contact details of the Applicant

Table 2: Name and contact details of the applicant

Business Name of Applicant	Upgrade Energy (Pty) Ltd
Physical Address	25 The Oval, Umhlali Country Club, Ballito 4390
Postal Address	P.O. Box 1171, Umhlanga Rocks
Postal Code	4320
Email	emil@megatrade.co.za

4. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTIONER AND SPECIALISTS

4.1 Name and contact details of the Environmental Consultant

The table below provides the name and contact details of the Environmental Consultant who prepared this report:

Table 3: Name and contact details of the Environmental Consultant who prepared the report

Business Name of EAP	SiVEST SA (PTY) Ltd
Physical Address	4 Pencarrow Crescent, La Lucia Ridge Office Estate
Postal Address	PO Box 1899, Umhlanga Rocks
Postal Code	4320

Telephone	031 581 1500
Fax	031 566 2371
Email	michellen@sivest.co.za

4.2 Names and expertise of the Environmental Assessment Practitioner (EAP)

The table below provides the names of the EAP's who prepared this report:

Table 4: Names and details of the expertise of the EAP's involved in the preparation of this report

Name of representative of the EAP	Educational Qualifications	Professional Affiliations	Experience (years)
Michelle Nevette *(Cert.Sci.Nat.)*	MEnvMgt. (Environmental Management)	SACNASP Registration No. 120356 EAPASA Registration No. 2019/1560 IAIA	19
Natalie Pullen	MSc (Environmental Biotechnology)	EAPASA Registration No. 2018/138 IAIAsa	18

CV's of SiVEST personnel and the EAP declaration are attached in **Appendix 1.**

4.3 Names and expertise of the specialists

The table below provides the names of the specialists involved in the project:

Table 5: Names of specialists involved in the project

Company	Name of representative of the specialist	Specialist	Educational Qualifications	Experience (years)
Johann Lanz Consulting	Johann Lanz	Agriculture and Soils Impact Assessment (desktop)	M.Sc. (Environmental Geochemistry)	25
Eco-Assist	Wayne Jackson	Aquatic Assessment	BSc. degree in Soil Science & Hydrology SACNASP– Registration No. 119037.	13
PGS	Wouter Fourie	Heritage Impact Assessment (including Palaeo)	BA [Hons] (Cum laude) - Archaeology and Geography BA - Archaeology, Geography and Anthropology	13
SIVEST	Mark Summers	Biodiversity Impact Assessment	MSc Ecological Sciences Cand. Sci. Nat. SACNASP IAIA	6
Feathers Environmental Services	Megan Diamond	Avifaunal Impact Assessment	BSc Environmental Management | University of South Africa (UNISA)	16

Company	Name of representative of the specialist	Specialist	Educational Qualifications	Experience (years)
Gage Consulting	Duane Swart	Geotechnical Impact Assessment (desktop)	Master of Science (Engineering Geology), *Doctoral Candidate (Engineering Geology), Bachelor of Science (Hons) (Engineering Geology), Bachelor of Science (Environmental and Engineering Geology) SACNASP, PrSciNat (137543),	6
Visual Resource Management Africa (VRM)	Stephen Stead	Visual Impact Assessment and Shadow Flicker	B.A (Hons) Human Geography, 1991 (UKZN, Pietermaritzburg) Registered with the Association of Professional Heritage Practitioners since 2014.	16

5. LOCATION OF THE ACTIVITY

The proposed Leeudoringstad 132kV power line and associated infrastructure is routed across various land portions of the farms Leeubosch, Zwartlaagte, Matjiesspruit, Nevada, Klerksdrift, Yzerspruit and Wolvehuis, located between Leeudoringstad in the south-west and Orkney in the north-east, along the R502 road. The project falls within the Maquassi Hills and City of Matlosana Local Municipalities within the Dr Kenneth Kaunda District Municipality in the North West Province.

The project is located within the formally gazetted[1] Klerkdorp Renewable Energy Development Zone (REDZ) that are of strategic importance for large-scale wind and solar PV development in terms of Strategic Integrated Project 8: Green Energy in Support of the South African Economy, as well as associated strategic transmission corridors[2], including the rollout of its supporting transmission and distribution infrastructure, in terms of Strategic Integrated Project 10: Electricity Transmission and Distribution (refer Figure 3 below).

- REDZs for large-scale wind and solar photovoltaic development;
- associated Strategic Transmission Corridors which support areas where long-term electricity grid will be developed;

[1] Formally gazetted on 16 February 2018 (Government Notice 114)

[2] Formally gazetted on 16 February 2018 (Government Notice 113)

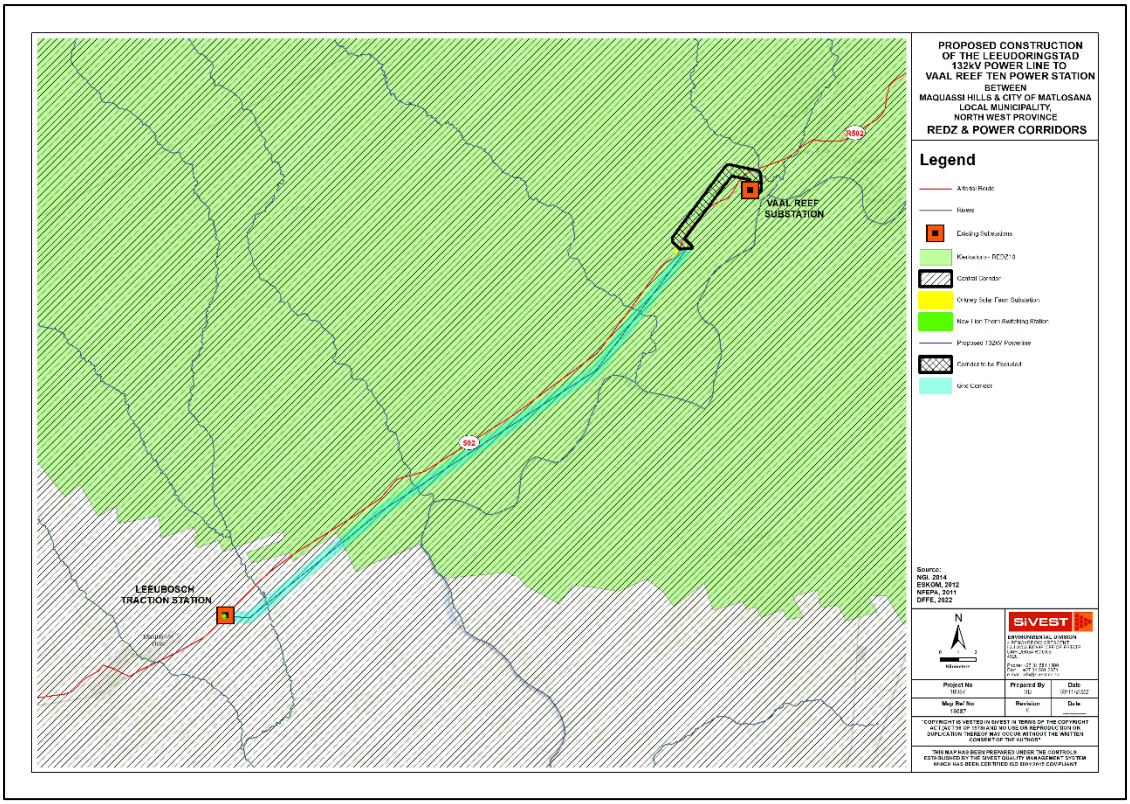

Figure 3: REDZ and Power Corridors

The site is accessible via an existing gravel road which branches off the tarred R502 Provincial Road. The powerline is proposed to start at the Leeudoringstad SPV facilities (27°12'12.4"S; 26°18'29.9"E) and end at the Vaal Reef Ten Substation (26°59'52.10"S; 26°36'55.37"E) which is approximately 42km of powerline (see **Figure 4**).

5.1 21 Digit Surveyor General Codes and Farm names of the sites

Table 6: 21 Digit Surveyor General Code

SG CODE	DESCRIPTION
T0HP00000000004600006	Portion 6 of the Farm Zwartlaagte No. 46
T0HP00000000014500000	The farm Matjiesspruit No. 145
T0HP00000000001600002	Portion 2 of the Farm Klerksdrift No. 16
T0HP00000000001600008	Portion 8 of the Farm Klerksdrift No. 16
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T0HP00000000011300000	Remainder of the Farm Yzerspruit No. 113
T0HP00000000011300006	Portion 6 of the Farm Yzerspruit No. 113
T0HP00000000011300005	Portion 5 of the Farm Yzerspruit No. 113
T0HP00000000011300036	Portion 36 of the Farm Yzerspruit No. 113
T0HP00000000011400025	Portion 25 of the Farm Wolvehuis No. 114
T0HP00000000011400007	Portion 7 of the Farm Wolvehuis No. 114
T0HP00000000011400006	Portion 6 of the Farm Wolvehuis No. 114
T0HP00000000011400036	Portion 36 of the Farm Wolvehuis No. 114
T0HP00000000011400003	Portion 3 of the Farm Wolvehuis No. 114

SG CODE	DESCRIPTION
T0HP00000000011400021	Portion 21 of the Farm Wolvehuis No. 114
T0HP00000000004400042	Portion 42 of the Farm Leeuwbosch No. 44
T0HP00000000004600014	Portion 14 of the Farm Zwartlaagte No. 46
T0HP00000000004400047	Portion 47 of the Farm Leeuwbosch No. 44
T0HP00000000004400038	Portion 38 of the Farm Leeuwbosch No. 44
T0HP00000000004800000	Remainder of the Farm Nevada Vaal No. 48

5.2 Coordinates of the site

The centre point coordinates for the sites are as follows:

- Latitude: 27° 7'28.31"S
- Longitude: 26°27'9.11"E

LEEUDORINGSDAT GRID CONNECTION				
CENTRE LINE COORDINATES (DD MM SS.sss)				
GRID	**START POINT**	**MIDDLE POINT**	**END POINT**	**APPROX LENGTH (KM)**
LEEUDORINGSTAD POWERLINE	27°12'15.40"S	27° 7'28.31"S	27° 1'36.13"S	42.00
	26°18'26.66"E	26°27'9.11"E	26°34'35.04"E	

SUPPORTING INFRASTRUCTURE		
COORDINATES AT CENTER POINT (DD MM SS.sss)		
INFRASTRUCTURE	**SOUTH**	**EAST**
Leeubosch Traction Station	27° 12' 12.752" S	26° 18' 28.503" E
VaalReef Substation	26° 59' 53.012" S	26° 36' 48.328" E
New Lion Thorn Switching Station	27° 12' 14.146" S	26° 18' 25.450" E
Orkney Solar Farm Substation	27° 1' 39.997" S	26° 34' 12.177" E

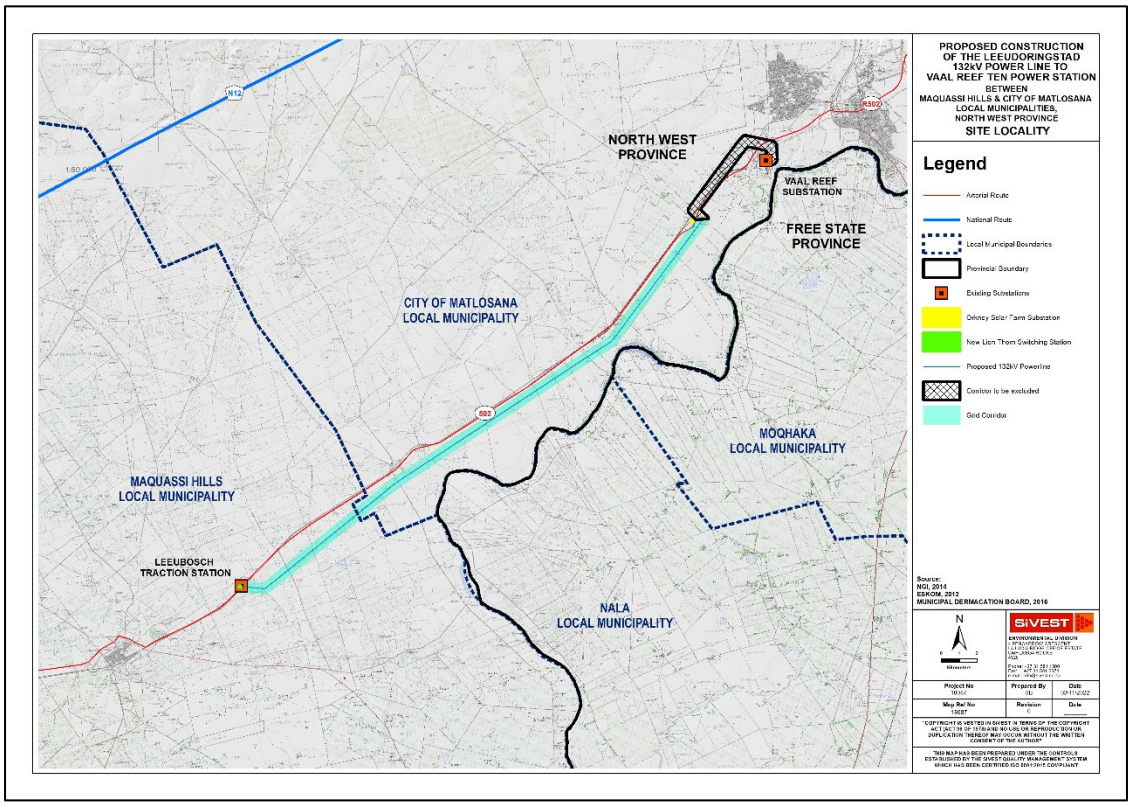

Figure 4: Site locality

6. ACTIVITY INFORMATION

The proposed Project involves the construction and operation of electricity distribution infrastructure, to connect the proposed Leeudoringstad solar plants to the Vaal reef ten Power Station, within the Maquassi Hills and City of Matlosana Local Municipalities, Northwest (NW) Province.

A new switching station will be constructed next to the existing Leeubosch Traction Substation. A new IPP substation will be built adjacent to the new switching station to step up the voltage from 33kV to 132kV. From the new switching station a 132kV powerline will run to Orkney Solar Plant (Genesis). The line will connect to the Genesis switching station and share a 132kV powerline to Vaalreef Ten.

6.1 Substation and Powerline Components

General:

- Length approx. 42km
- Tower parameters:
  - Towers/ Poles typically be 30m high.
  - Pole spacing 200 to 400m apart. No deep valleys so no super long spans.
  - Conductor attachment height (not finalised yet). There will be at least 4 attachment heights for the different phases and earth/ communications wire. Approximately 20m above ground level.
  - Minimum ground clearance 6.7m for 132kV. It will be higher at road and rail crossings.

The scope of work in IPP substation:

- Install a compact 132/33kV transformer substation with the associated protection equipment
- Install 2x33kV containerized switchgear

The scope of work at Eskom Lion Thorn Substation:

- Establish new 132 kV substation with 1 x 132kV feeder bay (and space for two additional 132kV bays) as Point of Connection for IPP
- Build approximately 33 km of a single circuit Twin Tern line from Eskom Lion Thorn Substation to New Eskom 132kV Switching Substation at Orkney Solar Farm

The scope of work at the 132 kV Switching Station close to the Orkney Solar Farm:

- Establish a new 132kV single busbar collector substation
- Build 2 x 132 kV feeder bays and 2 x 132 kV line bays to connect the Lion Thorn Solar IPP and Orkney Solar Farm.
- Build approximately 10 km of double circuit Twin Tern line from the new collector station to the VaalReef Ten substation

The scope of work at the VaalReef Ten substation:

- Equip 1 x 132 kV feeder bay for a 10 km double circuit Twin Tern line

6.2 Associated Infrastructure/Activities

- *Construction camp site and laydown area establishment;*
- *Servitude gate installation to facilitate access to the servitude;*
- *Vegetation clearing to facilitate access, construction and the safe operation of the infrastructure;*
- *Establishing of access roads on the servitude where required;*
- *Preparation for construction right-of-way and ground preparation;*
- *Pegging of tower positions for construction;*
- *Transportation of equipment, materials and personnel to site and stores;*
- *Installation of foundations for the towers;*
- *Tower assembly and erection;*
- *Conductor stringing and regulation;*
- *Transfer of the line from the Contractor for commissioning;*
- *Rehabilitation of disturbed areas;*
- *Final inspection of the line, commissioning and transfer to the Grid Line and Servitude Manager for operation;*
- *Transfer of the servitude by the Grid Environmental Manager; and*
- *Operation and maintenance of the infrastructure.*

Transmission and distribution power lines are located within a registered servitude and maintenance of this servitude is required to retain access and reduce the risk of obstruction and lightning strikes to the power line infrastructure. Servitude widths vary from 15 m – 80 m depending on the size of the power line and an access road of 4 m – 6 m in width is required. The servitude agreement with the landowner will specify the requirements of the of the power line operator. Maintenance activities will include cleaning, inspections, and repair (as required).

6.3 Site Access

Access to the facility will be via an existing gravel road which connects to the tarred R502 road. Existing site roads will be used wherever possible. However, where required, new internal access roads will be constructed.

6.4 Proposed Layout and Technical Detail Summary

The Proposed Corridor is reflected below in **Figure 5**.

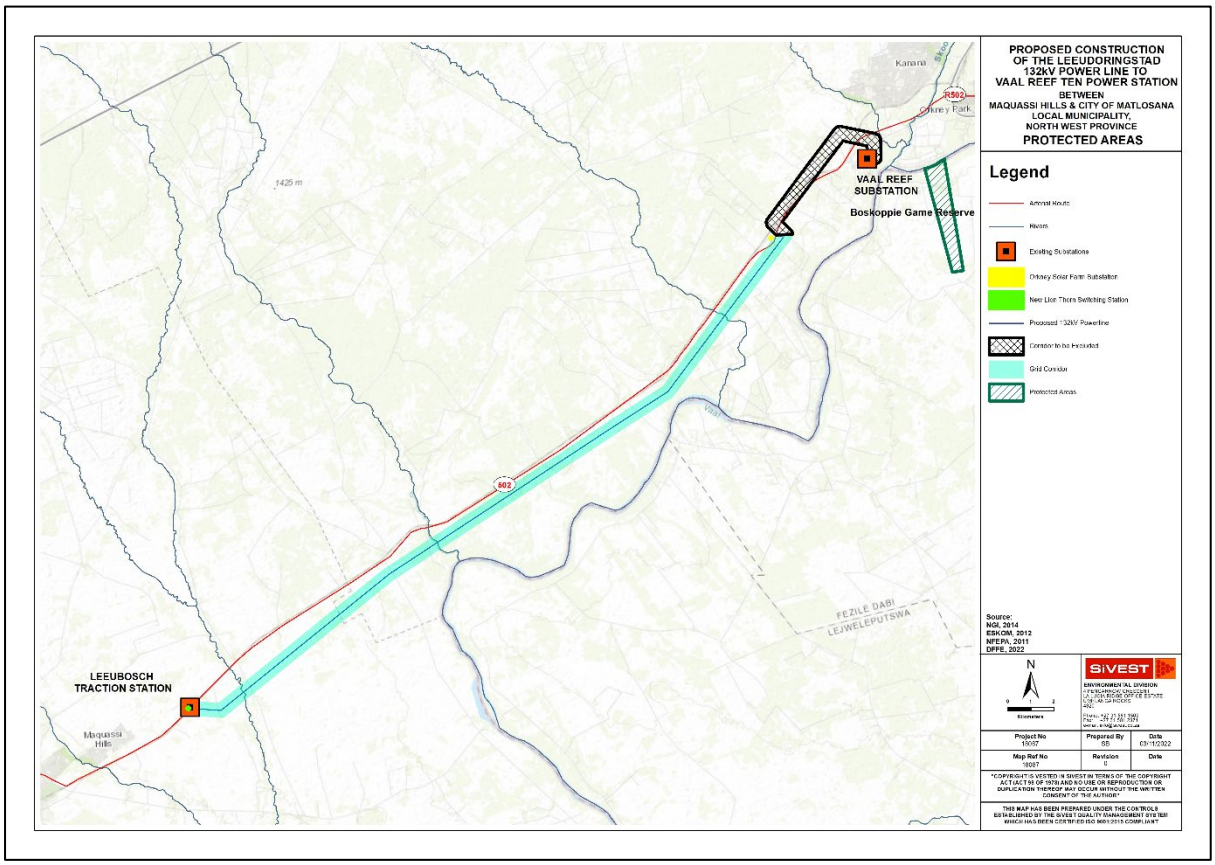

Figure 5: Proposed Corridor layout

A summary of the project technical details is provided in **Table 7** below.

Table 7: Technical Detail Summary

Component	Description / Dimensions
Project Location	The proposed development is Located near Leeudoringstad in North West Province, within the Maquassi Hills and City of Matlosana Local Municipalities, of the Dr Kenneth Kaunda District Municipality, North West Province.
Affected Properties	• Portion 6 of the Farm Zwartlaagte No. 46 • The farm Matjiesspruit No. 145 • Portion 2 of the Farm Klerksdrift No. 16 • Portion 8 of the Farm Klerksdrift No. 16 • Portion 5 of the Farm Klerksdrift No. 16 • Remainder of the Farm Yzerspruit No. 113 • Portion 6 of the Farm Yzerspruit No. 113 • Portion 5 of the Farm Yzerspruit No. 113 • Portion 36 of the Farm Yzerspruit No. 113 • Portion 25 of the Farm Wolvehuis No. 114

Component	Description / Dimensions
	• Portion 7 of the Farm Wolvehuis No. 114 • Portion 6 of the Farm Wolvehuis No. 114 • Portion 36 of the Farm Wolvehuis No. 114 • Portion 3 of the Farm Wolvehuis No. 114 • Portion 21 of the Farm Wolvehuis No. 114 • Portion 42 of the Farm Leeuwbosch No. 44 • Portion 14 of the Farm Zwartlaagte No. 46 • Portion 47 of the Farm Leeuwbosch No. 44 • Portion 38 of the Farm Leeuwbosch No. 44 • Remainder of the Farm Nevada Vaal No. 48
SG Codes	• T0HP00000000004600006 • T0HP00000000014500000 • T0HP00000000001600002 • T0HP00000000001600008 • T0HP00000000001600005 • T0HP00000000011300000 • T0HP00000000011300006 • T0HP00000000011300005 • T0HP00000000011300036 • T0HP00000000011400025 • T0HP00000000011400007 • T0HP00000000011400006 • T0HP00000000011400036 • T0HP00000000011400003 • T0HP00000000011400021 • T0HP00000000004400042 • T0HP00000000004600014 • T0HP00000000004400047 • T0HP00000000004400038 • T0HP00000000004800000
Site Access	The 132kV powerline follows the R502. Access to the proposed development will be via an existing gravel road which connects to the tarred R502 road. Existing site roads will be used wherever possible. However, where required, new internal access roads will be constructed.
Grid Connection Information	• One (1) new 132kV overhead power line connecting the Leeuwbosch Traction Substation to the Vaal Reef Ten Substation (approx ~42km long depending on the exact route options). • Either Single or Double Circuit (Most likely a twin tern conductor) • The servitude width for a 132 kV distribution line is 31 m (15.5 m on either side of the centre line of the power line) • Power line towers being considered for this development include self-supporting suspension monopole structures for relatively straight sections of the line and angle strain towers where the route alignment bends to a significant degree.

Component	Description / Dimensions
	Maximum tower height is expected to be approximately 25m although structures up to 32m may be installed at crossings for railway lines and other overhead lines
Scope of work at IPP Substation	• Install a compact 132/33kV transformer substation with the associated protection equipment • Install 2x33kV containerized switchgear
The scope of work in the Lion Thorn Solar Substation	• Install 1 x 132kV feeder bays at Leeubosch substation to accommodate the IPP compact 132/33kV substation • Establish a completely new 132 kV single busbar • Build approximately 32 km of a single circuit Twin Tern line from Leeubosch substation to New 132kV Collector at Orkney Solar Farm
The scope of work at the 132 kV Collector Station close to the Orkney Solar Farm	• Establish a new 132kV single busbar collector substation • Build 2 x 132 kV feeder bays to connect the Leeudoringstad IPP and Orkney Solar Farm. • Build approximately 10 km of double circuit Twin Tern line from the new collector station to the VaalReef Ten substation
The scope of work at the VaalReef Ten substation	• Equip 1 x 132 kV feeder bay for a 10 km double circuit Twin Tern line
Area occupied by Substation	• Up to approximately 1.5 hectares.
Height of Substation	Height of substation will be confirmed during the final design stages of the substation, prior to construction commencing
Construction laydown area (to be approved in the Leeumax PV application)	One (1) construction laydown / staging area of up to approximately 0.5ha. It should be noted that no construction camps will be required in order to house workers overnight as all workers will be accommodated in the nearby town.
Control Room	One Control Room at each Substation.
Fencing	As required
IPP Substation & Eskom switching station: general	Substation consisting of combined IPP 132/33kV step-up substation and Eskom switching substation. The IPP Substation acts as a collector substation for the 33kV feeders and steps-up the voltage from 33kV to 132kV. This will be connected to an adjacent Vaal ten reef Eskom 132kV Switching Substation. The collected 33kV power will be stepped up to 132kV using a single 1 x 33/132kV 60MVA step-up substation. A new Eskom 132kV switching station will be built adjacent to the step-up substation. The substation will be demarcated into three (3) sections: the 33kV substation, 33/132kV IPP step-up substation and the 132kV Eskom Switching Station. Eskom metering and operations will take place inside the Eskom switching yard. The 33kV collector substation will consist of a prefabricated building mounted on a concrete support beams. The building shall include:

Component	Description / Dimensions
	• 33kV Switchgear Room • Control Room • Battery Room • The collector substation shall be air conditioned building with necessary fire and gas detectors. The cable entry to the building shall be from bottom.

7. NATIONAL WEB-BASED ENVIRONMENTAL SCREENING TOOL

The National Web based Environmental Screening Tool is a geographically based web-enabled application which allows a proponent to identify a preliminary corridor and/or the proposed substation sties based on avoidance of environmental sensitivity for further assessment.

According to the DFFE Screening Tool Report (attached in **Appendix 4**), the following themes described in **Table 10** below are applicable to the proposed development:

Table 8: DFFE Screening Tool Environmental Sensitivity

Theme	Sensitivity	Comment
Agriculture Theme	The corridor is predominantly on land of medium agricultural sensitivity, but it does include patches of high agricultural sensitivity.	The Agricultural Confirming Statement is included in **Appendix 5** of the draft Environmental Sensitivity Report. All of the areas identified by the screening tool as cropland are no longer cropped and have not been cropped for at least eight years, according to the historical imagery available on Google Earth. They should not therefore still be classified as viable cropland and allocated high sensitivity because of it. There is one area of land that has been used as cropland more recently and should therefore be classified as high agricultural sensitivity. This assessment confirms that the corridor is almost entirely of medium agricultural sensitivity, except for the one small area of cropland which is avoided.
Animal Species Theme	High Species attributing to the high sensitivities of the animal theme are the Caspian Tern (*Hydroprogne caspia*) and the Spotted Necked Otter (*Hydrictis maculicollis*).	The Terrestrial Ecological Report is included **Appendix 5** of the draft Environmental Sensitivity Report. In terms of the DFFE sensitive species (Spotted Necked Otter), no major river systems or dams are being traversed by the powerline. The associated pylons of the existing 132kV and 400kV powerlines have been placed outside of wetlands, pans and rivers (i.e. spanned over sensitive aquatic

Theme	Sensitivity	Comment
	Please note that the Caspian Tern species is assessed by the Avian Specialist.	ecosystems). This species is therefore unlikely to be affected by the proposed powerlines. Considering that the landuse is likely to remain the same after construction and throughout operation, the proposed project is considered to have a low overall impact on faunal species, particularly species noted as sensitive (according to the DFFE screening tool). Therefore, the designation of High Animal Sensitivity is disputed and is revised to Low, meaning that a full faunal assessment is not required, and a confirming statement will be issued.
Avian Theme	The majority of the proposed PAOI is considered to have a LOW-MEDIUM Animal Species sensitivity, with a very small section along the Vaal River categorised as HIGH sensitivity, based on the possible occurrence of Caspian Tern *Hydroprogne caspia*	The Avifaunal Report is included in **Appendix 5** of the draft Environmental Sensitivity Report. A site sensitivity verification was conducted through the use of a desktop analysis and a field survey on 2 September 2022. Caspian Tern was not observed during the site verification survey and the proposed power line does not cross the Vaal River. The presence of suitable grassland habitat and large terrestrial power line priority species i.e. Northern Black Korhaan *Afrotis afraoides* confirm the sensitivity to be LOW-MEDIUM with regards to power line priority species.
Aquatic Biodiversity Theme	Very High	The Terrestrial Ecological Report is included in **Appendix 5** of the draft Environmental Sensitivity Report. The site sensitivity analysis indicated some areas of watercourse crossing were identified as very high by the DFFE screening tool, however the site verification assessment concluded that the risk to these features would be low if the prescribed construction methodology and mitigation measures are followed.
Archaeological and Cultural Heritage Theme	Very High	The Heritage Report is included in **Appendix 5** of the draft Environmental Sensitivity Report. The fieldwork identified: • 1 site with foundation remains (possible infant burials) • 1 burial ground close to existing powerline • Possible graves (stone concentrations) All sites could be avoided if pylon placement considers the site locations.

Theme	Sensitivity	Comment
		Both corridors are therefore considered of low heritage sensitivity even though there are some heritage resources present.
Civil Aviation Theme	High	Civil Aviation will be engaged with to identify potential hazards and obstacles to installations and conditions as described in the South African Civil Aviation Regulations of 2011.
Defence Theme	Low	The entire site has a low sensitivity in terms of the defence theme. No further engagement required.
Landscape Theme	No landscape issues were listing in the DFFE database.	***Risk to landscape features is confirmed as Low.***
Palaeontology Theme	Medium	The Heritage Report is included in **Appendix 5** of the draft Environmental Sensitivity Report. According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the Quaternary sediments and that of the Rietgat Formation is Moderate, while that of the Allanridge Formation is Low (Almond and Pether 2008, SAHRIS website). The Environmental Screening tool differs from the SAHRIS PalaeoMap by indicating that the Palaeontological Sensitivity of the proposed development is Medium. It is considered that the proposed development will not lead to detrimental impacts on the palaeontological resources of the area. The construction and operation of the project may be authorised, as the whole extent of the development footprint is not considered sensitive in terms of palaeontological heritage.
Plant Species Theme	Medium The plant species attributing the medium sensitivity to the plant theme is Sensitive Species 1261.	The Terrestrial Ecological Report is included **Appendix 5** of the draft Environmental Sensitivity Report. The species attributing the medium sensitivity to the plant theme is Sensitive Species 1261. The closest record of this species to the proposed powerlines was in Klerksdorp in 1927 (SANBI POSA, 2022). This species is known to occur in fewer than 10 locations from Lichtenburg to Wolmeransstad and Sasolburg (SANBI Redlist, 2022). Threats to this species are ongoing habitat loss and degradation due to agriculture, overgrazing, urban expansion and mining. It is highly unlikely that this species will be negatively affected by the proposed project, due to the limited known locations and rarity of the species,

Theme	Sensitivity	Comment
		therefore the Medium Sensitivity attributed to the Plant Theme is revised to Low, meaning that a full vegetation assessment is not required, and a confirming statement will be issued.
Terrestrial Biodiversity Theme	Very High Features attributed to the very high terrestrial biodiversity sensitivity are the presence of CBA 2, ESA 1, ESA 2, Protected areas Expansion strategy and Endangered Ecosystems (Vaal Vet Sandy Grassland).	The Terrestrial Ecological Report is included **Appendix 5** of the draft Environmental Sensitivity Report. SANBI's databases related to Vaal Vet Sandy Grassland triggering the DFFE Screening Tool was verified to occur on site, meaning that a Very High Sensitivity threatened Ecosystem was present, although in a secondary state and with woody plant encroachment occurring. While this is an Endangered Ecosystem, a 132kV and 400kV powerline has been constructed in the past 20 years and it was evident from the site inspection that disturbance occurred at the pylon site itself, and successful rehabilitation around the pylon was achieved. Existing land use was also retained while the existing powerlines have been in operation. Land use practices, and the threat of overgrazing is seen as a bigger threat to Vaal Vet Sandy Grassland than the construction and operation of the powerlines. Considering the above, although the presence of a Very High sensitivity and Endangered ecosystem type is present on site, the continuation of existing land use practices around existing pylons and the minimal disturbance during construction and no disturbance during operation of pylons motivates for the site sensitivity to be reduced to Low, therefore a full Terrestrial Biodiversity Assessment is not required. **CBA 2, ESA 1 and ESA 2 areas:** The triggering of these databases is focused on minimising development and protection of Vaal Vet Sandy Grassland and providing for ecological support and corridor areas for this vegetation type. The physical disturbance during construction of this vegetation type is at a minimum and the surrounding land use is unlikely to change during operation (as explained in paragraphs above), the risk of disturbance to CBA2, ESA 1 and ESA 2 areas is considered Low, and a full Terrestrial Biodiversity Assessment is not required.

8. DETAILS OF PROCESS FOLLOWED

8.1 General Environmental Principles

The implementation of the mitigation hierarchy principles has been considered in the selection of the proposed route within the preliminary corridor.

The mitigation hierarchy is a widely used tool that guides users towards limiting as far as possible the negative impacts of a development on the environment. It is based on a series of essential, sequential but iterative steps taken throughout the project's life cycle to avoid and minimise negative impacts, rehabilitate and restore, before finally considering offsetting residual impacts. These are outlined below:

1) **Avoidance**: Measures taken to avoid creating impacts from the outset during site corridor selection and project design, examples include the careful placement of infrastructure, or timing of construction to avoid disturbance of sensitive species.

   The proposed corridor has been screened via the DFFE screening tool and verified by specialists – refer section 7 and 8.2 for key findings and recommendations. The proposed route applied for is considered to have minimal impact on the environment based on its location and recommendation to avoid any sensitivities identified have been provided.

2) **Minimisation:** these are measures taken to reduce the duration, intensity and/or extent of impacts that cannot be completely avoided. Examples include measures to reduce noise and pollution, designing powerlines to reduce the likelihood of bird electrocutions.

   The Pre-Approved Generic Template of the Generic EMPrs will be applied during construction and operation of the project. The specialist assessments were conducted to provide any additional mitigation measures which may be required to be included in the site specific EMPr as per Part C of the Generic EMPr for overhead power lines and/or substations gazetted in Government Notice 43519 published in Government Gazette No. 42323 of 22 March 2019. Refer section 9 for further detail.

3) **Rehabilitation/restoration**: This involves restoration and rehabilitation of unavoidable impacts. Restoration tries to return an area to the original ecosystem that was present before impacts, whereas rehabilitation aims to restore basic ecological functions and/or ecosystem services – such as through planting trees to stabilise bare soil.

   The Pre-Approved Generic Template of the Generic EMPrs will be applied during construction and operation of the project.

Collectively, avoidance, minimisation and rehabilitation/restoration serve to reduce, as far as possible, the residual impacts that a project has on the environment.

4) **Offset:** this includes measures to compensate for significant residual impacts.

   No offsets are required or proposed for this project.

The focus of mitigation measures is to follow the mitigation hierarchy where possible.

Furthermore the principles outlined in Chapter 3 have been applied to the proposed project as applicable.

8.2 Confirmation of Environmental Sensitivity

The following specialist studies have been undertaken for the project to confirm site sensitivity of the proposed route and/or substation location:

- Agriculture and Soils Impact Assessment
- Desktop Geotechnical Investigation
- Ecological Impact Assessment
- Avifaunal Impact Assessment
- Freshwater Impact Assessment
- Heritage Impact Assessment (including Paleontology)
- Visual Impact Assessment

The specialist assessments were conducted to confirm site sensitivity of the proposed corridor, guide the preferred route alignment, as well as provide any additional mitigation measures which may be required to be included in the site specific EMPr as per Part C of the Generic EMPr for overhead power lines and/or substations gazetted in Government Notice 43519 published in Government Gazette No. 42323 of 22 March 2019.

A summary of the main findings of the specialists are included in **Table 9** below

Table 9: Summary of specialist findings and recommendations

Specialist Study	Findings	Recommendations
Agricultural	The proposed overhead power line has negligible agricultural impact, regardless of its route and the agricultural potential and sensitivity of the land it traverses. All agricultural activities can continue completely unhindered underneath the power line. This is because its direct, permanent, physical footprint that has any potential to interfere with agriculture (pylon bases and servitude track, where it is needed), is insignificantly small. In croplands, the pylons can easily be located outside of or on the edges of cropland where they do not interfere with crop production. Servitude tracks are not required in cropland. There will therefore be no reduction in future agricultural production potential underneath the power lines and therefore no agricultural impact because agricultural impact is a change to the future agricultural production potential of land. The only potential source of impact of the power line is minimal disturbance to the land (erosion and topsoil loss) during construction (and decommissioning). This impact can, however, be completely mitigated with standard, generic mitigation measures that are included in the Generic EMPr.	In terms of agricultural impact, there are no areas within the corridor that need to be avoided by the power line route and by the substations at each end of it. However, pylon placements should avoid all cropland, where possible. Pylons should be located outside of or on the edges of cropland where they do not interfere with crop production. Where avoidance of croplands is not possible, the Standard states that: 1. Any cropland disturbed by construction (excluding the land occupied by the pylon base itself), must be returned to the pre-disturbance land capability within two years of the construction. 2. Pylon placements must minimize fragmentation of and disturbance to agricultural activities. 3. Self-supporting lattice or monopole structures are to be used in crop fields.

Specialist Study	Findings	Recommendations
	The power line will have negligible agricultural impact, including on croplands, which are by definition, classified as high agricultural sensitivity. It is therefore not necessary for the power line to avoid any areas of high agricultural sensitivity. It is therefore not critical to verify agricultural sensitivity because the agricultural sensitivity will have no influence on the significance of the agricultural impact. The only thing that is of relevance is that croplands are identified and mapped so that the pylons can be located at the edges of or outside of croplands, where they do not interfere with crop production. Even if certain pylon placements cannot avoid croplands, the agricultural impact of a pylon base is very small because only a very small area of land is impacted. The confirmation of whether land is cropland or not can be done more effectively from satellite imagery than from a site inspection and a site inspection is therefore not justified.	
Geotechnical	The site area is underlain by mafic lavas of the Ventersdorp Supergroup. Residual soils are common in this climate zone and area expected to occur throughout the site. These soils are anticipated to be clayey and possesses swell-shrink behaviour with change in moisture (Brink, 1979). The thickness of this residual soil is variable but will most likely a few metres thick (Brink, 1979). The route alignment transverse streams and wetlands. Ferricrete will exist at the site but will be variable in thickness, depth and degree of development. These constraints may be mitigated via standard engineering design and construction measures. No fatal flaws or 'no-go' areas have been identified that would render any assessment areas unsuitable from a geological and geotechnical perspective. The proposed route alignment corridors are assessed to have a "Negative Low impact - the anticipated impact will have negligible negative effects and will require little to no mitigation" provided that the recommended mitigation measures are implemented. Both corridor alignments have the same impact rating and neither alignment is preferred from a geological and geotechnical perspective. From a geotechnical and geological perspective, no fatal flaws or sensitivities have been identified within or close to the powerline assessment corridors. It is	The mitigation measures provided to minimise the impacts relate to the appropriate engineering design of earthworks and site drainage, erosion control and topsoil and spoil material management. These do not exceed civil engineering and construction best practices. Further intrusive geotechnical investigations should be undertaken to confirm the engineering recommendations provided in this report at construction stage.

Specialist Study	Findings	Recommendations
	therefore recommended that the proposed activity be authorised.	
Terrestrial Ecology	Based on the site verification and assessment of the proposed 132kV powerline from Leeudoringstad SPV facilities to the Vaal Ten Substation, Terrestrial Biodiversity Theme, Animal Theme and Plant Theme are regarded as low due to the type of construction of the proposed project. This revises the themes from very high to low. This assessment is based on the following: • Plant Sensitivity Theme from the DFFE screening tool was revised from Medium to low based on the limited construction footprint of the pylons over the 42km of power lines. The absence of georeferenced records of the highlighted species at the study site or within close proximity to the site further reduces the site sensitivity. • Animal Sensitivity Theme from the DFFE screening tool was revised from High to low based on the continuation of the existing land uses during construction and operation, therefore no material changes will occur to animal species on site. • Terrestrial Biodiversity Sensitivity Theme from the DFFE screening tool was revised from Very High to low based on the limited construction footprint of the pylons and the rehabilitated state of existing pylons running adjacent to the proposed powerline. This means loss of Endangered Vaal Vet Sandy Grassland, CBA 2, ESA 1 and ESA 2 areas is limited to the pylon itself. Further to note regarding Terrestrial Biodiversity Sensitivity Themes: o Land use has continued despite existing powerlines on site, so the overall loss of terrestrial biodiversity features is noted to be low. o The present endangered vegetation type is noted to be in a secondary, and overgrazed state in many areas. Powerlines will not pose and threat to this. o Ecosystem functioning and ecological corridors for fauna are maintained with powerlines.	Standard impact management guidance by the EGI guidelines is recommended. However, the following specific recommendations were also made: • Pylons must be placed outside of pans, wetlands, drainage lines and rivers. • Pylons should be placed adjacent to existing pylons (i.e. spanned across wet areas to avoid ground level impact). • Vegetation clearance in the construction phase is to be removed in a phased approach, as and when it becomes necessary as vegetation harbours fauna. • Existing access roads must be used as far as possible. • Placement of bird flappers to deter avifauna from colliding with powerlines, particularly in the vicinity of pans and watercourses. • All open excavations need to be checked on a daily basis and any fauna that may be stranded will have to be caught and released by a qualified person. • Implement traffic control measures, including speed limits and no-go zones. • Clearance should be limited to the location of each pylon only. • Clearance for construction should be done in a phased approach, and rehabilitation should be done as soon as work has ceased along the section of routing. • Areas outside of the construction zone must be demarcated as “no-go” areas. • Manual clearance of alien and invasive vegetation should be done so as to prevent the unnecessary movement of machinery in no-go areas. • An alien and invasive control programme should be implemented, particularly in areas where soil disturbance has occurred. • Monthly ECO auditing should occur during rehabilitation of the site. Once rehabilitation is complete, one three month, and one six month follow up audit should be conducted to assess the state of rehabilitation.
Avifauna	The habitat within which the PAOI is located is low to moderately sensitive from a potential bird impact perspective. In recent years, anthropogenic impacts, mostly in the form of urbanisation, agricultural and pastoral activities have largely transformed the	It is anticipated that the Leeubosch Traction Substation, Eskom Switching Station and Leeudoringstad 132kV power line can be constructed and operated with acceptable levels

Specialist Study	Findings	Recommendations
	landscape resulting in a negative impact on avifaunal diversity and abundance with the PAOI. The construction of the Leeubosch Traction Substation, Eskom Switching Station and Leeudoringstad 132kV power line will result in impacts of MEDIUM-LOW significance to birds occurring in the vicinity of the new infrastructure, which can be reduced through the application of mitigation measures to LOW-NEGLIGIBLE levels. In accordance with the outcomes of the impact assessment, in conjunction with the baseline conditions as presented and the impact management measures recommended, the proposed Switching Station, IPP Substation, Genesis Orkney Solar Plant Substation, associated LILO power lines and Leeudoringstad 132kV power line are not deemed to present unmitigable negative environmental impacts. It is this specialist's opinion that the construction of the Switching Station, IPP Substation, Genesis Orkney Solar Plant Substation, associated LILO power lines and Leeudoringstad 132kV power line will result in acceptable levels of impact on the resident avifauna subject to the aforementioned mitigation and management measures.	of impact on the resident avifauna, subject to the following recommendations: • Construction activities (i.e. all staff, vehicle and machinery) should be restricted to the immediate footprint of the infrastructure. The recommendations of the vegetation study must be strictly implemented. • Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of avifaunal species. • Maximum use should be made of existing roads and the construction of new roads must be kept to a minimum. • The LILO power lines and 132kV power line must be constructed using a bird friendly structure (i.e. DT 7641/7649) • Additional mitigation in the form of insulating sleeves on jumpers present on strain poles and terminal poles is also required, alternatively all jumpers must be suspended below the crossarms. • Conduct a pre-construction inspection (avifaunal walk-through) of the final power line alignment, prior to construction, to identify any species that may be breeding on the site or within the immediate surrounds and to ensure that any impacts likely to affect breeding species (if any) are adequately managed and to identify the exact sections of power line requiring collision mitigation. As a minimum sections of power line that traverse across or adjacent to rivers, drainage lines, dams and cultivated lands will require collision mitigation. • Power line marking in the form of bird flight diverters must be installed on the full span length on the earthwires, according to the applicable Eskom Engineering Instruction (Eskom Unique Identifier 240 – 93563150: The utilisation of Bird Flight Diverters on Eskom Overhead Lines). Light and dark colour devices must be alternated so as to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung. • If collision or electrocution impacts are recorded once the 132kV power line is operational, it is recommended that a representative from the Eskom-Endangered Wildlife Trust Strategic Partnership investigate the mortalities and provide

Specialist Study	Findings	Recommendations
		recommendations for site-specific mitigation to be applied reactively. • The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the construction footprint (especially the removal of natural vegetation) and rehabilitation of disturbed areas is concerned. • In addition to this, the normal suite of environmental good practices should be applied, such as ensuring strict control of staff, vehicles and machinery on site and limiting the creation of new roads as far as possible.
Aquatic / Freshwater	The results of the watercourse assessment indicate the presence of both riverine and wetland ecosystems which are associated with the proposed development. The ecological status of the watercourses was assessed where modified ecosystems were derived to be present. The ecological importance and sensitivity of the watercourses were also investigated where moderate and low ratings were derived. Using the standardised risk assessment approach, the risk of the proposed project was determined to be low, where negligible impacts to watercourses can be expected. Important recommendations provided in this report include the avoidance buffers and the use of the Alternative 2 layout which avoids a sensitive depression system. *It is the opinion of the Specialist that the proposed development may proceed and that a General Authorisation will be sufficient, this is based on the above findings and recommendations.*	The following recommendations have been made to minimise threats to sensitive receptors (sub-surface flow paths) and wetland functioning; • It is recommended that an alien invasive management programme is implemented. • No vehicles will be allowed to cross any wetland or rivers to span the powerline. • Powerline sections crossing wetlands/rivers will by strung by manually without the need to alter the beds and banks of the watercourses. • Powerline pylon infrastructure must be located outside of the derived buffer zones provided in this study. • Spanning of the powerline across HGM 9 must be done during the dry season.
Heritage	The fieldwork conducted for the evaluation of the possible impact of the new Leeudoringstad power line has revealed the presence of 4 heritage resources. *Historical structures* One (1) site (**LDS-01**), the remains of a square single stone packed foundation was identified. The structure is of low heritage significance, but the possibility of infant burials close to or in the remaining foundation as per African custom cannot be excluded. The resource is thus graded as having medium local heritage significance. *Burial ground* One (1) burial ground (**LDS-02**) was identified and rated as having high heritage significance.	In the event that heritage resources are discovered during site clearance, construction activities must stop in the vicinity, and a qualified archaeologist must be appointed to evaluate and make recommendations on mitigation measures.

Specialist Study	Findings	Recommendations
	Possible graves Two (2) sites with possible graves (**LDS-03, LDS-04**) were identified and rated as having high heritage significance. **Anticipated impacts** The two alternative positions of the powerline were considered during the site visit and impact assessment. It is our opinion that no preference for either of the sites exist as both will have the same low impact as assessed on heritage resources. **The two alternatives are acceptable subject to the recommended mitigation.** The pre-construction and construction phase of the proposed development will entail surface clearance as well as excavations into the superficial sediment cover and underlying bedrock (e.g., for powerlines and new access roads). The possible pre-construction impacts calculated on the tangible cultural heritage resources is overall **MODERATE NEGATIVE** rating but with the implementation of the recommended buffers and management guidelines will be reduced to a **LOW NEGATIVE** impact.	
Heritage (Palaeontology)	As per the palaeontological desktop assessment (Butler, 2022), the proposed development is underlain by the Allanridge Formation (Ventersdorp Supergroup) and the Rietgat Formation, (Platberg Group, Ventersdorp Supergroup), while Quaternary sediments are also present in the development. Updated geology (Council for Geosciences, Pretoria) of the proposed development indicates that the development is largely underlain by the Allanridge Formation (Ventersdorp Supergroup), and Rietgat Formation (Platberg Group, Ventersdorp Supergroup), while a small portion in the west is underlain by alluvium, colluvium, eluvium and gravel. According to the PalaeoMap on the South African Heritage Resources Information System (SAHRIS) database, the Palaeontological Sensitivity of the Quaternary sediments and that of the Rietgat Formation is Moderate, while that of the Allanridge Formation is Low (Almond and Pether 2008, SAHRIS website). It is considered that the proposed development will not lead to detrimental impacts on the palaeontological resources of the area. The construction and operation of the project may be authorised, as the whole extent of the development footprint is not considered sensitive in terms of palaeontological heritage.	If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the Environmental Control Officer (ECO) in charge of these developments must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation can be carry out by a palaeontologist.

<table>
<tr><th>Specialist Study</th><th>Findings</th><th>Recommendations</th></tr>
<tr><td>Visual</td><td>Due to the lower ratings for Scenic Quality as well as Receptor Sensitivity to landscape change, a full impact assessment is not required in terms of the new Standard for Powerline Assessment (CSIR, 2020). The following impact statements pertaining to the two alternatives refers.

<u>Alternative 1 Preferred Powerline Routing LVIA Statement</u>
Alternative 1, the preferred powerline routing, is located to the north of the existing double Eskom powerlines, that align with the routing for most of the length. The exception is the northern portion that is aligned with a smaller 132kV powerline.

Due to the flatter terrain, the viewshed does extend over a greater area, but due to the higher VAC levels created by the numerous linear infrastructures along the routing, the routing ZVI is localised, and visual intrusion is unlikely to be created further than 250m from the alignment. As receptors are suitably buffered from this routing, with lower sensitivity to landscape change due to existing lower levels of scenic quality, LVIA Significance is rated Low.

<u>Alternative 2 Powerline Routing LVIA Statement</u>
Alternative 2, not the preferred powerline routing, is a variation created off Alternative 1 from the location where the alignment starts to follow the existing double Eskom powerlines. This variation is that this alignment is routing to the south of the double Eskom powerline corridor. As with Alternative 1, the flatter terrain, the viewshed does extend over a greater area, but due to the higher VAC levels created by the numerous linear infrastructure along the routing, the routing ZVI is localised, and visual intrusion is unlikely to be created further than 250m from the alignment. However, this routing is located in very close proximity to Farmstead Receptor 13, with possible proximity of 50m creating the potential for higher levels of visual intrusion. This alternative alignment is also routed closer to the Vaal River and falls within 500m from the river for a short distance. With mitigation, and a close routing to the existing Eskom powerlines, the above-mentioned issues could be averted. However, due to the potential risks to the receptors and Vaal River landscape, this alternative routing is not preferred from a Landscape and Visual Impact perspective. For this reason, the LVIA Significance is rated Medium with Mitigation.

As both expected impacts are unlikely to generate significant degradation of landscape and visual resources, detailed LVIA impact assessment is not required. Mitigations have been proposed and should be implemented if the Alternative 2 option is found to be the best development option.</td><td>The following mitigation measures are recommended:

<table>
<tr><th>Landscape Element</th><th>Mitigation</th><th>Motivation</th></tr>
<tr><td>Vaal River landscape</td><td>500m sensitivity buffer</td><td>To protect the Vaal River landscape resources, a 500m buffer from the Vaal River is proposed where not in high exposure to the existing Eskom powerlines.</td></tr>
<tr><td>Isolated Farmstead Receptors</td><td>100m No-Go buffer.</td><td>To protect Isolated Farmstead Receptors from further landscape degradation from the existing powerline corridor, a 100m No-go buffer from these receptor points is proposed.</td></tr>
</table>
</td></tr>
</table>

8.3 Details of Public Participation Process

The principles of the National Environmental Management Act (NEMA) as well as the EIA Regulations (as amended 2017) govern the public participation process, excluding the following requirements which would not be relevant to the Standard:

- Obtaining written consent from the owner or person in control of the land on which the proposed development is to be undertaken for the powerline development;
- Timeframes pertaining to comment periods for basic assessment reports, EMPr, scoping reports, EIA reports, and closure plans;
- Notification along alternative routes in the form of notice boards; and
- Giving notice of the process being applied (basic assessment or scoping and environmental impact report).

The main objective of the Public Participation Process is to:

- Inform/notify Interested and Affected Parties including Key stakeholders about the proposed project and update the stakeholder database with registered stakeholders;
- Provide opportunity to all parties to exchange information and express their views and concerns;
- Obtain contributions from stakeholders (including the client, consultants, relevant authorities and the public) and ensure that all issues, concerns and queries raised are fully documented;
- Evaluate the issues raised and identify the significant issues; and
- Confirm the most suitable route for the proposed powerline and associated infrastructure.

8.3.1 Steps taken to notify key stakeholders and potential I&APs

Notification of process to be undertaken as follows:

- Placement of site notices in English and Afrikaans (as per regulations) were placed along the proposed corridor on 11 November 2022. as required according to Regulation 41(2) (a) of the EIA Regulations (2014), as amended.
- Issuing of notifications (including affected and adjacent landowners) (to be circulated to all I&APs on 11 November 2022 respectively as part of the Draft Environmental Sensitivity Report) as required according to Regulation 41(2) (b) of the EIA Regulations (2014), as amended.
- Public notification of the EIA process will be advertised in a regional newspaper (namely *the Stellalander*) on 11 November 2022 as required according to Regulation 41(2) (c and d) of the EIA Regulations (2014), as amended.

Availability of report for review:

- The Draft Environmental Sensitivity Report will be available for a 30-day comment and review period from the 11 November to the 11 December 2022.
- The Report will be available on SiVESTs website for download.
- Electronic copies can be made available to parties via a secure digital link that will be emailed upon request for the documentation.
- CDs / Flash drive to be posted, only if requested.
- The Draft Environmental Sensitivity Report will be located and available for viewing on tablets at the following location:
    - Maquassi Hills Library, 56 Smuts Street Leeudoringstad, North West, 2891

- Kgakala Library, 415 Tladi Street, Leeudoringstad, North West.
- Orkney Library, Partmore Street, Orkney, 2620

8.3.2 Register and comments received

To be updated once the Public Comment Period has been completed.

9. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) AND ADDITIONAL CONDITIONS TO BE INCLUDED

As part of the 2016 EGI SEA, a Generic Environmental Management Programme (EMPr) was compiled for the development and expansion of: (a) overhead electricity transmission and distribution infrastructure; and (b) substation infrastructure for the transmission and distribution of electricity. The two Generic EMPrs were gazetted for implementation in Government Notice No. 435 published under Government Gazette No. 42323 of 22 March 2019. The Generic EMPrs apply within South Africa as a whole, and need to be applied for the development of all overhead and substation electricity transmission and distribution infrastructure (as contained in the EIA Regulations Listing Notices 1 – 3 published in Government Notices R9827, R9838, R9849 and R98510). These Generic EMPrs consist of the following:

- Part A - Includes definitions, acronyms, roles and responsibilities and documentation and reporting requirements.
- Part B – Section 1: Pre-Approved Generic Template that must be completed by the contractor prior to commencement of construction. This section does not need to be submitted to the competent authority.
- Part B – Section 2: Provision of preliminary infrastructure layout and a declaration that the applicant/holder of the environmental authorisation will comply with the pre-approved Generic EMPr template contained in Part B: Section 1 and understands that the impact management outcomes and impact management actions are legally binding.
- Part C – Site Specific Sensitivities and Attributes: If any specific environmental sensitivities or attributes are present on the site which require site specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1), these specific impact management outcomes and actions must be included in Part C and must be submitted to the competent authority for approval.

For the purpose of this Standard, the Pre-Approved Generic Template of the Generic EMPrs (Part B – Section 1) applies.

Part C will apply if any specific environmental sensitivities or attributes are identified which the generic pre-approved template does not cover. However, in the case of this Standard being appliable, Part C does not need to be submitted to the competent authority for approval. In this case Part C must be appended to the Pre- Approved Generic Template (Part B – Section 1).

Refer to **Appendix 6** for the Generic EMPr. The below table provides a summary of the specialists' findings and recommendations which have been included in Part C as applicable.

Table 10: Summary of specialist Mitigation Measures

Specialist Study	Mitigation Measures
Aquatic / Freshwater	Standard impact management guidance by the EGI guidelines is recommended. However, the following specific recommendations have been made to minimise threats to sensitive receptors (sub-surface flow paths) and wetland functioning:

Specialist Study	Mitigation Measures
	• It is recommended that an alien invasive management programme is implemented. • No vehicles will be allowed to cross any wetland or rivers to span the powerline. • Powerline sections crossing wetlands/rivers will by strung by manually without the need to alter the beds and banks of the watercourses. • Powerline pylon infrastructure must be located outside of the derived buffer zones provided in this study. • Spanning of the powerline across HGM 9 must be done during the dry season.
Terrestrial Ecology	Standard impact management guidance by the EGI guidelines is recommended. However, the following specific recommendations were also made: a) Pylons must be placed outside of pans, wetlands, drainage lines and rivers. b) Pylons should be placed adjacent to existing pylons (i.e. spanned across wet areas to avoid ground level impact). c) Vegetation clearance in the construction phase is to be remove in a phased approach, as and when it becomes necessary as vegetation harbours fauna. d) Existing access roads must be used as far as possible. e) Placement of bird flappers to deter avifauna from colliding with powerlines, particularly in the vicinity of pans and watercourses. f) All open excavations need to be checked on a daily basis and any fauna that may be stranded will have to be caught and released by a qualified person. g) Implement traffic control measures, including speed limits and no-go zones. h) Clearance should be limited to the location of each pylon only. i) Clearance for construction should be done in a phased approach, and rehabilitation should be done as soon as work has ceased along the section of routing. j) Areas outside of the construction zone must be demarcated as “no-go” areas. k) Manual clearance of alien and invasive vegetation should be done so as to prevent the unnecessary movement of machinery in no-go areas. l) An alien and invasive control programme should be implemented, particularly in areas where soil disturbance has occurred. m) Monthly ECO auditing should occur during rehabilitation of the site. Once rehabilitation is complete, one three month, and one six month follow up audit should be conducted to assess the state of rehabilitation.
Agricultural	Impact management actions as contained in the pre-approved Generic EMPr template are sufficient for the avoidance, management and mitigation of the impacts and risks of the proposed development to agricultural production potential. In addition, pylons, where possible, should be located outside of or on the edges of cropland, where they do not interfere with crop production.
Geotechnical	The assessment area is considered suitable for the development of the proposed infrastructure, from a geotechnical viewpoint, provided that standard engineering design and construction measures are implemented to mitigate the identified geotechnical constraints.
Avifauna	It is anticipated that the Leeubosch Traction Substation, Eskom Switching Station and Leeudoringstad 132kV power line can be constructed and operated with acceptable levels of impact on the resident avifauna, subject to the following recommendations: * Construction activities (i.e. all staff, vehicle and machinery) should be restricted to the immediate footprint of the infrastructure. The recommendations of the vegetation study must be strictly implemented. * Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of avifaunal species.

<table>
<tr><th>Specialist Study</th><th>Mitigation Measures</th></tr>
<tr><td></td><td>
* Maximum use should be made of existing roads and the construction of new roads must be kept to a minimum.
* The 132kV power line must be constructed using a bird friendly structure (i.e. DT 7641/7649).
* Additional mitigation in the form of insulating sleeves on jumpers present on strain poles and terminal poles is also required, alternatively all jumpers must be suspended below the crossarms.
* Conduct a pre-construction inspection (avifaunal walk-through) of the final power line alignment, prior to construction, to identify any species that may be breeding on the site or within the immediate surrounds and to ensure that any impacts likely to affect breeding species (if any) are adequately managed and to identify the exact sections of power line requiring collision mitigation. As a minimum sections of power line that traverse across or adjacent to rivers, drainage lines, dams and cultivated lands will require collision mitigation.
* Power line marking in the form of bird flight diverters must be installed on the full span length on the earthwires, according to the applicable Eskom Engineering Instruction (Eskom Unique Identifier 240 – 93563150: The utilisation of Bird Flight Diverters on Eskom Overhead Lines). Light and dark colour devices must be alternated so as to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung.
* If collision or electrocution impacts are recorded once the 132kV power line is operational, it is recommended that a representative from the Eskom-Endangered Wildlife Trust Strategic Partnership investigate the mortalities and provide recommendations for site-specific mitigation to be applied reactively.
* The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the construction footprint (especially the removal of natural vegetation) and rehabilitation of disturbed areas is concerned.
In addition to this, the normal suite of environmental good practices should be applied, such as ensuring strict control of staff, vehicles and machinery on site and limiting the creation of new roads as far as possible.
</td></tr>
<tr><td>Heritage</td><td>
The following mitigation measures will be required:
<table>
<tr><th>Area and site no.</th><th>Mitigation measures</th></tr>
<tr><td>General project area</td><td>▪ Implement a chance to find procedures in case where possible heritage finds are uncovered.</td></tr>
<tr><td>Burial ground (LDS-02)</td><td>▪ The site should be demarcated with a 50-meter no-go-buffer-zone and the graves should be avoided and left in situ.
▪ If the site is going to be impacted directly and the graves need to be removed a grave relocation process for these sites is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with SAHRA under the NHRA and National Health Act regulations.</td></tr>
<tr><td>Remains of a square single stone packed foundation with possible graves (LDS-01).</td><td>▪ A 20-meter buffer should be maintained.
▪ It is recommended that further consultation with local communities on the previous inhabitants of these areas be initiated to determine the possibility of infant burials. In the</td></tr>
</table>
</td></tr>
</table>

Specialist Study	Mitigation Measures	
		event that such burial is confirmed a grave relocation process must be initiated.
	Possible grave sites (**LDS-03, LDS-04**)	▪ Until such time that the presence of a grave at the site has been tested, the stone concentrations must be viewed as containing a grave. ▪ The possible graves should be demarcated with a **50-meter buffer** and should be avoided and left in situ. ▪ If the site cannot be avoided, then an application will be required for a test excavation and/or GPR permit to determine if the site contains graves. ▪ If human remains are discovered a grave relocation process is recommended as a mitigation and management measure. This will involve the necessary social consultation and public participation process before grave relocation permits can be applied for with the SAHRA BGG under the NHRA and National Health Act regulations. ▪ If, during test excavations, it is determined that the site does not contain graves, no further mitigation will be required.
	Palaeontology	▪ If fossil remains or trace fossils are discovered during any phase of construction, either on the surface or exposed by excavations the Environmental Control Officer (ECO) in charge of these developments must report to SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za) so that mitigation can be carry out by a palaeontologist.
Heritage (Palaeontology)	A Fossil Chance Find Protocol should be followed once excavations for foundations and infrastructure commence. As far as the palaeontology is concerned there are no preferred areas and NO no-go areas because the Significance Rating of the Impact is Negative low. The project should be authorised.	
Visual	As the Alternative 1 Preferred routing does not detract from landscape and visual resources, **the recommendation of the Landscape and Visual Impact Assessment is that development should be authorised with the Standard mitigation.** The Alterative 2 is located within very high visual exposure to a rural farmstead, as well as within the 500m landscape buffer of the Vaal River. While no Fatal Flaw is defined due to the existing linear infrastructure corridor precedent crated by the Eskom powerlines, authorisation is recommended with mitigation. This would require a minimum buffer of 100m from the adjacent farming receptors. With mitigation, the landscape and visual impacts would be Medium to Low, and as such should be authorised.	

10. CONFIRMING STATEMENT

Upgrade Energy (Pty) Ltd (The Applicant) is proposing the construction and operation of electricity distribution infrastructure, to connect the proposed Leeudoringstad solar plants to the Vaal reef ten Power Station, in the Maquassi Hills and City of Matlosana Local Municipalities, within the Dr Kenneth Kaunda District Municipality, Northwest (NW) Province. The overall objective of the proposed development is to build a dedicated 132kV line from the solar farm to connect to the 132kV network near the Mercury and Hermes Substations.

Two 132kV power line alternatives were proposed, located within a 300m corridor on either side of existing 132kV and 400kV power lines. The total length of proposed power line is approximately 42km in length. However, this report has assessed approximately 32km of the proposed power line alternatives, extending from the proposed substations to the south western boundary of land portion RE/21/114, as well as the respective associated substations and infrastructure. Genesis will be undertaking the required environmental approvals for the 10km section of power line extending from land portion RE/21/114 to the Vaal Reef Ten Substation. However the proposed loop in and loop out has also been reviewed here.

The following specialist studies have been undertaken for the project to confirm the site sensitivity and suitability of the proposed corridor, and guide the selection of a suitable routing:

- Agriculture and Soils Impact Assessment
- Desktop Geotechnical Investigation
- Ecological Impact Assessment
- Avifaunal Impact Assessment
- Freshwater Impact Assessment
- Heritage Impact Assessment (including Paleontology)
- Visual Impact Assessment

The agricultural specialist concluded that the proposed overhead power line has negligible agricultural impact, regardless of its route and the agricultural potential and sensitivity of the land it traverses. All agricultural activities can continue completely unhindered underneath the power line. This is because its direct, permanent, physical footprint that has any potential to interfere with agriculture (pylon bases and servitude track, where it is needed), is insignificantly small. In croplands, the pylons can easily be located outside of or on the edges of cropland where they do not interfere with crop production. Servitude tracks are not required in cropland. There will therefore be no reduction in future agricultural production potential underneath the power lines and therefore no agricultural impact because agricultural impact is a change to the future agricultural production potential of land. The only potential source of impact of the power line is minimal disturbance to the land (erosion and topsoil loss) during construction (and decommissioning). This impact can, however, be completely mitigated with standard, generic mitigation measures that are included in the Generic EMPr.

From a geotechnical and geological perspective, the specialist concluded that **no fatal flaws or sensitivities** have been identified within or close to the powerline assessment corridors. It is therefore recommended that the proposed activity be authorised.

The ecological specialist concluded that **no fatal flaws** have been identified and the Ecologist supports the proposed development provided the mitigation measures are implemented.

The avifaunal specialist concluded that the proposed Switching Station, IPP Substation, Genesis Orkney Solar Plant Substation, associated LILO power lines and Leeudoringstad 132kV power line are **not deemed**

to present unmitigable negative environmental impacts. It is this specialist's opinion that the construction of the Switching Station, IPP Substation, Genesis Orkney Solar Plant Substation, associated LILO power lines and Leeudoringstad 132kV power line will result in acceptable levels of impact on the resident avifauna subject to the aforementioned mitigation and management measures.

The aquatic specialist concluded the following: The results of the watercourse assessment indicate the presence of both riverine and wetland ecosystems which are associated with the proposed development. The ecological status of the watercourses was assessed where modified ecosystems were derived to be present. The ecological importance and sensitivity of the watercourses were also investigated where **moderate and low ratings** were derived. Using the standardised risk assessment approach, the risk of the proposed project was determined to be low, where negligible impacts to watercourses can be expected. Important recommendations provided in this report include the avoidance buffers. It is the opinion of the Specialist that the proposed development may proceed and that a General Authorisation will be sufficient, this is based on the above findings and recommendations.

The heritage specialist concluded that the overall impact of the proposed Leeudoringstad powerline, on the heritage resources, is seen as acceptably **low** after the recommendations have been implemented and therefore, impacts can be mitigated to acceptable levels allowing for the development to be authorised.

The palaeontology specialist concluded that the proposed development will not lead to detrimental impacts on the palaeontological resources of the area. The construction and operation of the project may be authorised, as the whole extent of the development footprint is not considered sensitive in terms of palaeontological heritage. **No further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils.**

The visual specialist concluded that the proposed development is acceptable from a visual and landscape perspective and there is no objection to its authorisation, provided the mitigation measures as contained in the draft EMP are implemented. As the Alternative 1 Preferred routing does not detract from landscape and visual resources, **the recommendation of the Landscape and Visual Impact Assessment is that development should be authorised with the Standard mitigation.** The Alterative 2 is located within very high visual exposure to a rural farmstead, as well as within the 500m landscape buffer of the Vaal River. While no Fatal Flaw is defined due to the existing linear infrastructure corridor precedent crated by the Eskom powerlines, authorisation is recommended with mitigation. This would require a minimum buffer of 100m from the adjacent farming receptors. With mitigation, the landscape and visual impacts would be Medium to Low, and as such should be authorised.

Confirming statements for each of the above specialists is included in **Appendix 5** together with supporting reports as applicable.

The corridor that was identified for the proposed powerline and associated substations and infrastructure has been screened and assessed by specialists to identify the most suitable routing. Based on the findings of the specialists, the potential impacts identified, a proposed route has been identified that avoids environmental sensitivities as shown in **Figure 6** below. This will be further assessed based on comments received from Interested and Affected Parties following the public participation process.

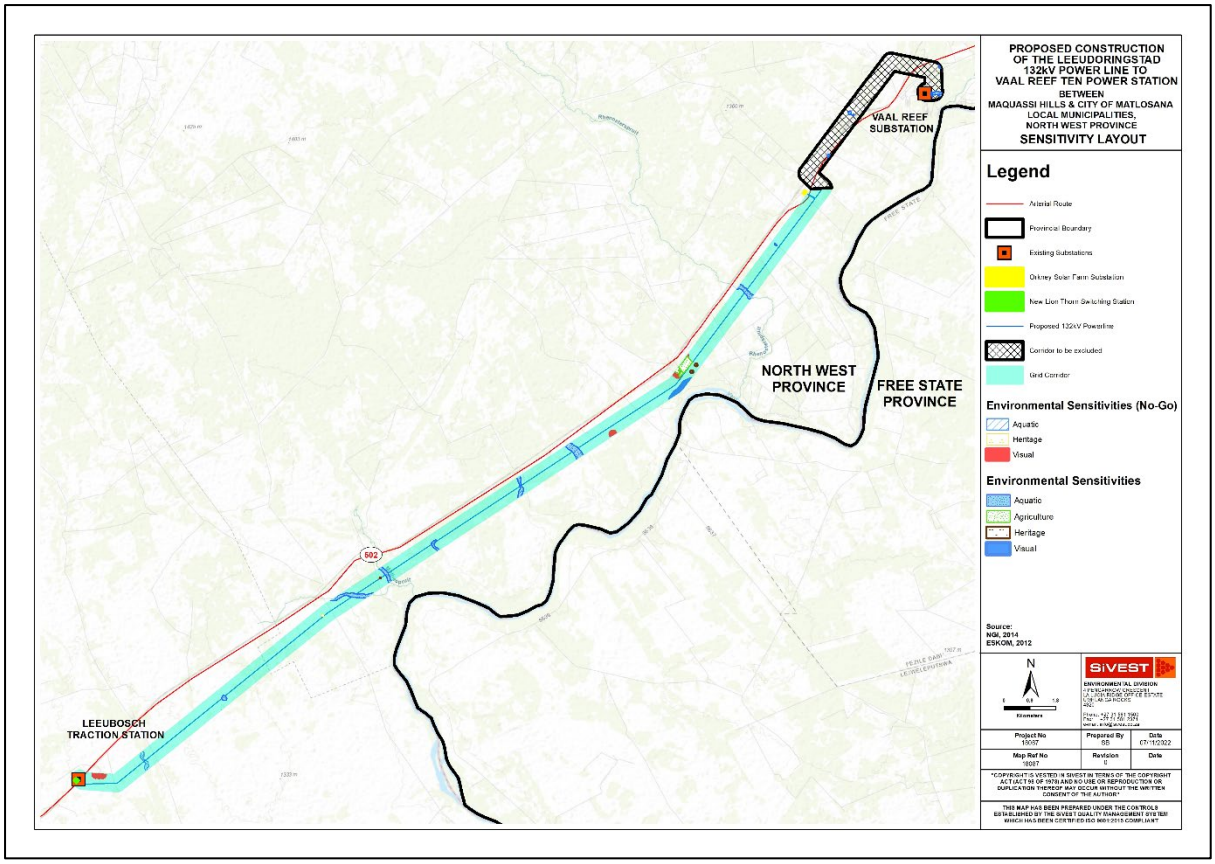

Figure 6: Final proposed route layout with site sensitivities

11. CONCLUSION

This draft Environmental Sensitivity Report has covered activities and findings related to the required registration process for the proposed Leeudoringstad 132kV power line, and associated substations and infrastructure, near Leeudoringstad within the Maquassi Hills and City of Matlosana Local Municipalities within the Dr Kenneth Kaunda District Municipality in the North West Province.

Professional experience, specialist knowledge, relevant literature and local knowledge of the area have all been used to identify the potential issues associated with the proposed project.

12. WAY FORWARD

The Draft Environmental Sensitivity Report is currently being circulated for public participation for a period of 30 days (excluding public holidays) from **11 November 2022** until **11 December 2022.**

Comments received on the draft report will be taken into consideration and incorporated into the final report (where applicable). All registered I&Aps will be notified of the availability of the final Environmental Sensitivity Report for information.

Once the Final Environmental Sensitivity Report and registration form has been submitted, a decision to either register the project or request further information will be made by the DFFE. In addition, once a decision

regarding the Registration has been received from the DFFE, all registered I&APs will be notified accordingly and provided details regarding the appeal process.

All I&APs and key stakeholders are invited to register as I&APs in order to be kept informed throughout the process. To register as an I&AP / stakeholder and/or to obtain additional information, please submit your name, contact details (telephone number, postal address and email address) and the interest which you have in the application to SiVEST Environmental Division, as per the details below:

Contact: Hlengiwe Ntuli
PO Box 2921, RIVONIA, 2128
☎ Phone: (011) 798 0600
E-mail: sivest_ppp@sivest.co.za
Fax: (011) 803 7272
Website: www.sivest.com

Please reference '*Leeudoringstad 132KV'* in your correspondence. SiVEST shall keep all registered I&APs / key stakeholders informed of the process.

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