PROPOSED SEELO ALPHA 240MW SOLAR PHOTOVOLTAIC (PV) AND BATTERY ENERGY STORAGE SYSTEM (BESS) PROJECT NEAR THE TOWN OF CARLETONVILLE, NORTH WEST PROVINCE

SCOPING REPORT

DFFE REFERENCE NO.: 14/12/16/3/3/2/2343

DRAFT

APRIL 2023

APPLICANT: SEELO ALPHA SOLAR PV (RF) (PTY) LTD

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TITLE AND APPROVAL PAGE

Project Name:	Proposed Seelo Alpha 240MW Solar Photovoltaic (PV) and Battery Energy Storage System (BESS) Project near the town of Carletonville, North West Province
Report Title:	Scoping Report
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Applicant:	Seelo Alpha Solar PV (RF) (Pty) Ltd

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EXECUTIVE SUMMARY

A. PROJECT BACKGROUND AND MOTIVATION

Electricity generation sources need to be diversified to ensure security of supply and reduction in the carbon footprint created by the current heavy reliance of South Africa (SA), via Eskom, on coal to produce electricity. The electricity demand is increasing in SA, and in order to match that demand there is a need to supply a diversified power generation that includes renewable energy technologies. These technologies include solar, wind, small utility scale hydro, biomass, biogas and Battery Energy Storage Systems (BESS) that the Department of Mineral Resources and Energy (DMRE) intends to develop and implement as identified in the approved Integrated Resource Plan (IRP) 2019.

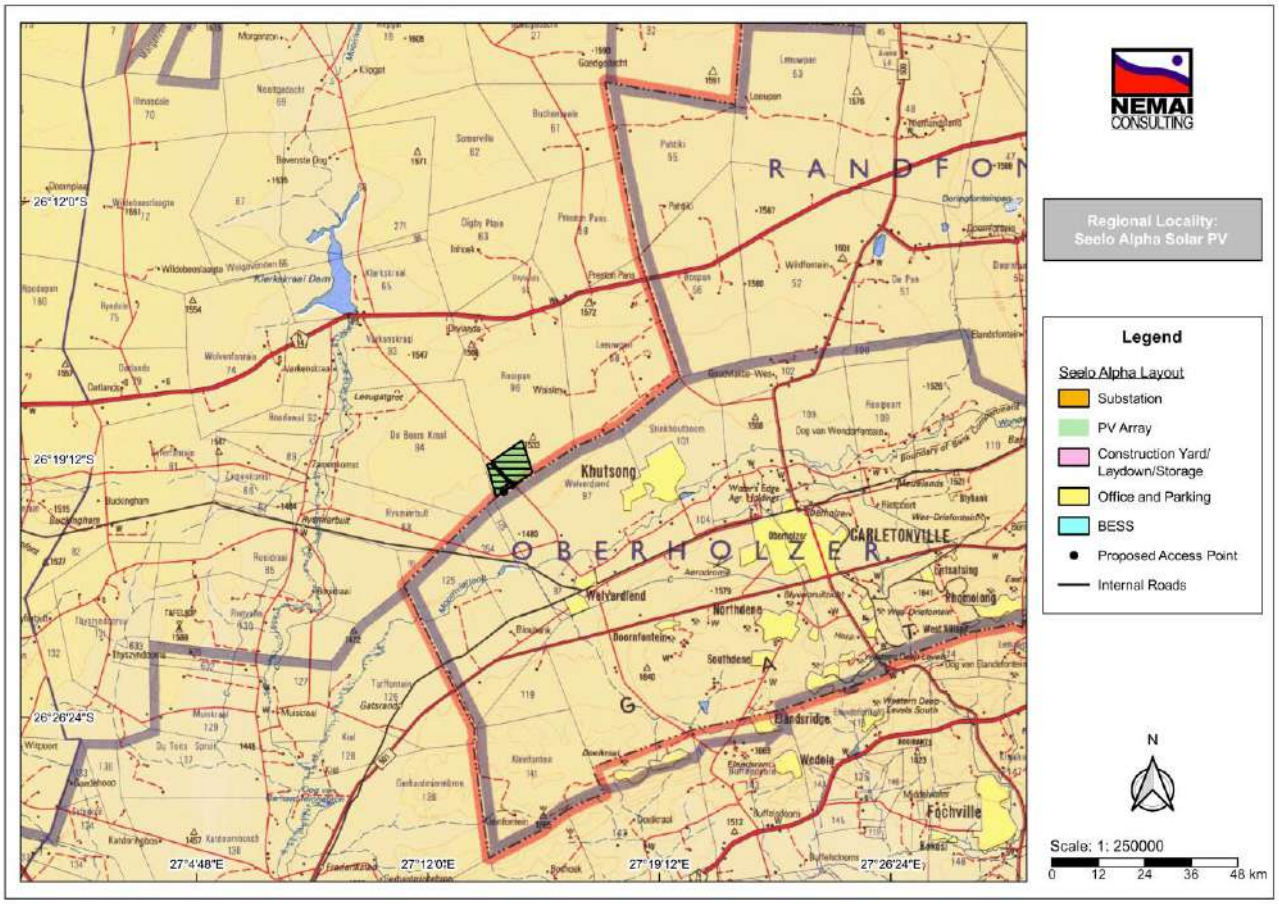
Seelo Alpha Solar PV (RF) (Pty) Ltd (the Applicant) has proposed the development of the Seelo Alpha 240MW Solar PV Project and BESS near the town of Carletonville, in the North West Province (the “Project”). The electricity generated by the Project will be injected into the existing Eskom 132 kV distribution system. The Applicant intends to bid for the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid windows.

This document serves as the draft Scoping Report for the proposed Project.

B. PROJECT LOCATION

The Project is located in the most eastern part of the North West Province (at the boundary between North West and Gauteng) and falls within the Dr Kenneth Kaunda District Municipality and the JB Marks Local Municipality. The site is located approximately 13km to the north-west of the town of Carletonville and is bisected by the D331 road.

The property earmarked for the Project [Portion 2 of Farm 96 (Rooipan)] covers a combined area of approximately 898 ha, of which the buildable area determined by the engineering team is approximately 355 ha.

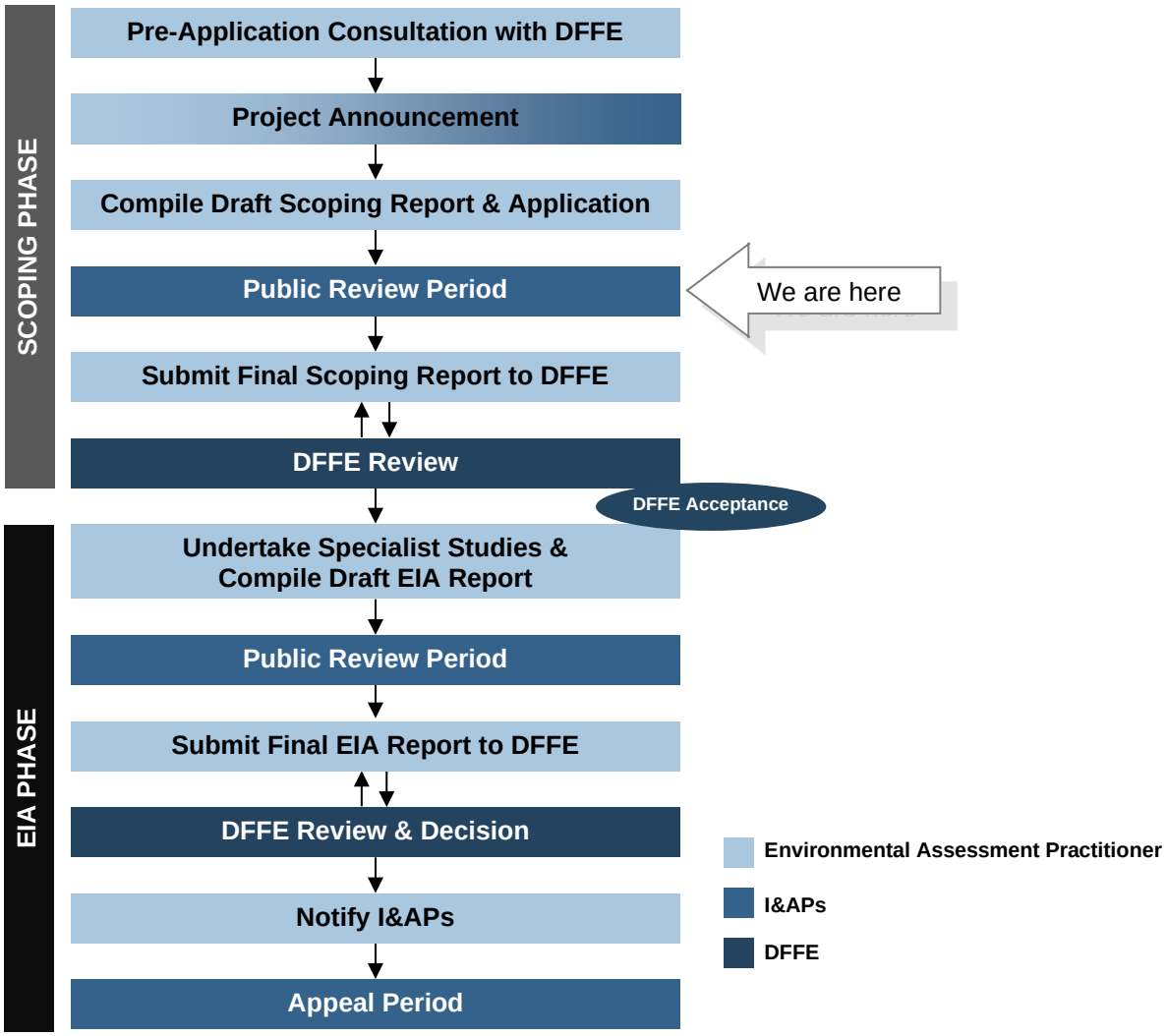


Regional locality map

C. SCOPING AND EIA PROCESS

The process for seeking Environmental Authorisation (EA) for the Project under the National Environmental Management Act (Act No. 107 of 1998) (NEMA) is being undertaken in accordance with the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended). In terms of NEMA, the lead decision-making authority for the environmental assessment is the Department of Forestry, Fisheries and the Environment (DFFE).

Based on the types of activities involved the requisite environmental assessment for the Project is a Scoping and Environmental Impact Reporting (S&EIR) process. An outline of the process is provided in the diagram below.



Overview of S&EIR Process

D. PROJECT'S TECHNICAL DESCRIPTION

The Project consists of the following systems, sub-systems or components (amongst others):

- ❑ PV panel arrays, which are the subsystems which convert incoming sunlight into electrical energy;
- ❑ Mounting structures to support the PV panels;
- ❑ On-site inverters to convert direct current (DC) to facilitate alternating current (AC) connection between the solar energy facility and electricity grid;
- ❑ BESS to store electrical energy and discharge electrical energy when required;
- ❑ IPP substation;
- ❑ Eskom switching substation[1];
- ❑ Cabling between the Project's components, to be laid underground (where practical);
- ❑ Administration Buildings (Offices);
- ❑ Workshop areas for maintenance and storage;

[1] The dedicated grid connection for the proposed Project which include a 132 kV switching substation does not form part of the current application for EA.

- Temporary and permanent laydown areas;
- Internal access roads and perimeter fencing of the footprint;
- High Voltage (HV) Transformers; and
- Security Infrastructure.

An overview of the project life-cycle, as well as the resources required to execute the Project, is provided in the Scoping Report.

The alternatives under consideration for the Project include technology alternatives and the no-go option. The EIA phase will include a detailed comparative analysis of the Project's feasible alternatives that emanate from the Scoping exercise, which will include environmental (with specialist input) and technical evaluations.

E. PROFILE OF THE RECEIVING ENVIRONMENT

The Scoping Report provides a general description of the status quo of the receiving environment in the Project Area. This serves to provide the context within which the Scoping exercise is being undertaken. It also allows for an appreciation of sensitive environmental features and possible receptors of the effects of the proposed Project. A brief overview is also provided of the manner in which the environmental features may be affected (positively or negatively) by the proposed Project.

The receiving environment is explained in terms of the following:

- Land Use
- Climate
- Geology and Soil
- Hydrogeology
- Topography
- Surface Water
- Flora & Fauna
- Socio-Economic Environment
- Agriculture
- Air quality
- Noise
- Historical and Cultural Features
- Planning
- Existing Structures and Infrastructure
- Transportation
- Health

F. PUBLIC PARTICIPATION

The Scoping Report explains the public participation tasks undertaken during the Scoping Phase, including the following:

- Compiling the database of Interested and Affected Parties (I&APs);
- Obtaining landowner consent;
- Period to review the draft Scoping Report;
- Notification of review of the draft Scoping Report;
- Providing access to the draft Scoping Report; and
- Addressing comments received on the draft Scoping Report.

G. ENVIRONMENTAL ISSUES

Pertinent environmental issues, which will receive specific attention during the EIA Phase through a detailed quantitative assessment and relevant specialist studies (where deemed necessary), are listed below.

Potentially significant environmental issues for prioritisation during the EIA Phase

Environmental Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts
Land Use	▪ Sterilisation of land for other land use types. ▪ Setbacks / conditions associated with surrounding land and infrastructure.	▪ Sterilisation of land for other land use types up to the decommissioning of the Project. ▪ Servitude restrictions.
Geology	▪ Suitability of geological conditions to support the Solar PV Plant.	▪ Suitability of geological conditions to support the Solar PV Plant.
Geohydrology	▪ Groundwater pollution due to spillages and poor construction practices. ▪ Utilisation of boreholes, if required.	▪ Groundwater pollution due to poor operation and maintenance practices. ▪ Utilisation of boreholes, if required.
Topography	▪ Visual impacts. ▪ Erosion of areas cleared for construction purposes. ▪ Crossing topographic features (watercourses).	▪ Crossing topographic features (watercourses). ▪ Visual impact caused by proposed Project infrastructure and landscape transformation. ▪ Glint and glare from solar panels.
Soil	▪ Soil erosion due to clearance and inadequate stormwater management. ▪ Soil compaction. ▪ Soil contamination due to spillages and poor construction practices. ▪ Loss of topsoil.	▪ Soil erosion due to inadequate stormwater management. ▪ Soil contamination due to poor operation and maintenance practices.
Surface Water	▪ Alteration of drainage over the PV Site. ▪ Surface water pollution due to spillages and poor construction practices. ▪ Impacts where access roads and ancillary infrastructure cross / are in close proximity to watercourses (e.g., sedimentation, loss of vegetation, destabilisation of watercourse structure).	▪ Sedimentation through silt-laden runoff, caused by inadequate stormwater management. ▪ Damage to the PV facility and towers of the power line from major flood events. ▪ Water resources could be contaminated through inadequate storage and handling of hazardous materials, leaks from the BESS and poor management of waste and wastewater. ▪ Water use requirements of the Project need to be satisfied.
Flora & Fauna	▪ Habitat loss / fragmentation. ▪ Potential loss, disturbance or displacement of protected fauna and flora species. ▪ Human - animal conflicts. ▪ Noise and vibration impacts to fauna. ▪ Nights lights may affect nocturnal faunal species. ▪ Illegal harvesting and poaching of faunal and floral species by construction workers. ▪ Pollution of the biophysical environment from poor construction practices. ▪ Proliferation of invasive alien species in disturbed areas.	▪ Habitat fragmentation (e.g., barriers to animal movement). ▪ Shading out of plants by solar panels. ▪ Reflection of sunlight from the solar panels could adversely affect birds. ▪ Risk to birds from collision with infrastructure and from electrocution. ▪ Electrical faulting from birds. ▪ Chemical pollution associated with cleaning the PV panels. ▪ Proliferation of invasive alien species in disturbed areas.
Socio-economic Environment	▪ Influx of people seeking employment and associated impacts (e.g., foreign workforce, cultural conflicts, squatting, demographic changes). ▪ Safety and security. ▪ Use of local road network. ▪ Nuisance from dust and noise.	▪ Direct and indirect economic opportunities as a result of the Project. ▪ Threats to human and animal health from electromagnetic field (power line and on-site substation).

Environmental Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts
	▪ Consideration of local labourers and suppliers in area – stimulation of local economy (positive impact). ▪ Transfer of skills (positive impact).	
Air Quality	▪ Dust from the use of dirt roads by construction vehicles. ▪ Dust from bare areas that have been cleared for construction purposes. ▪ Emissions from construction equipment and machinery. ▪ Tailpipe emissions from construction vehicles.	▪ The efficiency of the solar plant could be reduced if the modules are soiled (covered) by particulates/dust. ▪ Impacts to air quality caused by the operation and maintenance of the facility include dust from the use of dirt roads and tailpipe emissions from vehicles.
Noise	▪ Localised increases in noise may be caused by construction activities.	N/A
Agriculture	▪ Loss of fertile soil through land clearance. ▪ Soil erosion. ▪ Loss of topsoil. ▪ Risk of harm to livestock from construction activities.	▪ Loss of possible future agricultural land use due to direct occupation by the development footprint. ▪ Soil erosion due to inadequate stormwater management.
Historical and Cultural Features	▪ Possible direct impacts on below-ground archaeological deposits and fossils as a result of ground disturbance.	Possible impacts to the cultural landscape as a result of the introduction of incompatible structures and infrastructure to the rural landscape.
Existing Structures & Infrastructure	▪ Setbacks / conditions associated with surrounding land and infrastructure. ▪ Crossing of existing infrastructure by power line.	▪ Setbacks / conditions associated with surrounding land and infrastructure. ▪ Disturbances to infrastructure traversed by power line during maintenance activities.
Transportation	▪ Increase in traffic on the local road network. ▪ Transportation of materials and construction personnel to site. ▪ Impacts to road conditions. ▪ Speeding and reckless driving by construction personnel. ▪ Construction vehicles accessing and leaving the sites via main access road. ▪ Use of oversized vehicles/abnormal loads, as required. ▪ Risks to other road users.	▪ Transportation of maintenance materials, as well as operational and maintenance personnel, to site. ▪ Safe access to and from site. ▪ Sun glare off PV panels.
Aesthetics	▪ Landscape transformation. ▪ Visual impacts associated with construction activities.	▪ Landscape transformation. ▪ Inadequate reinstatement and rehabilitation of construction footprint. ▪ Light pollution. ▪ Glint and glare from PV facility. ▪ High visibility of power lines to visual receptors.
Health	▪ Hazards related to construction work. ▪ Increased levels of dust and particulate matter. ▪ Increased levels of noise. ▪ Water (surface and ground) contamination. ▪ Poor water and sanitation. ▪ Communicable diseases. ▪ Psychosocial disorder (e.g. social disruptions). ▪ Safety and security. ▪ Lack of suitable health services.	▪ Hazards related to operation and maintenance work. ▪ Fire and explosion risks during BESS operation.

Cumulative impacts are identified in the Scoping Report by combining the potential environmental implications of the proposed Project with the impacts of other projects and activities that have occurred in the past, are currently occurring, or are proposed in the future within the Project Area.

A methodology to quantitatively assess the potential impacts is also provided in the Scoping Report, which will be employed during the EIA Phase.

H. PLAN OF STUDY FOR EIA

The Scoping Report is concluded with a Plan of Study, which explains the approach to be adopted to conduct the EIA for the proposed Project in accordance with the following pertinent tasks and considerations:

- Potentially significant environmental issues identified during the Scoping Phase;
- Feasible alternatives to be assessed during Environmental Impact Assessment Phase;
- Specialist studies;
- Public Participation process to be undertaken for the EIA Phase;
- Contents of the EIA Report;
- Consultation with authorities; and
- EIA process timeframes.

I. CONCLUSION

Key outcomes of the Scoping Phase for the proposed Solar PV Plant are as follows:

- Alternatives for achieving the objectives of the proposed activity were considered;
- Potentially significant issues pertaining specifically to the pre-construction, construction and operational phases of the Project were identified;
- Sensitive features of the environment that may be affected by the Project were identified;
- Stakeholders were identified and notified of the review of the draft Scoping Report;
- A Plan of Study was developed to explain the approach to be adopted during the EIA Phase; and
- The scoping exercise set the priorities for the ensuing EIA Phase.

No fatal flaws were identified in terms of the proposed activities and the receiving environment that would prevent the environmental assessment from proceeding beyond the Scoping Phase. It is the opinion of the EIA team that Scoping was executed in an objective manner and that the process and report conform to the requirements of Regulation 21 and Appendix 2 of the EIA Regulations of 2014 (as amended), respectively. It is also believed that the Plan of Study for EIA is comprehensive and will be adequate to address the significant issues identified during Scoping, to select the Best Practicable Environmental Option (BPEO), and to ultimately allow for informed decision-making.

AMENDMENTS PAGE

Date	Nature of Amendment	Amendment No.
April 2023	Draft for Review by Authorities and the Public	00

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LIST OF ACRONYMS & ABBREVIATIONS

AC	Alternating Current
AEL	Atmospheric Emission Licence
ASAPA	Association for Southern African Professional Archaeologists
BESS	Battery Energy Storage System
BPEO	Best Practicable Environmental Option
CBA	Critical Biodiversity Area
CBD	Central Business District
COD	Commercial Operation Date
CPV	Concentrated Photovoltaics
CR	Critically Endangered
DARD	Department of Agriculture and Rural Development
DEA	Department of Environmental Affairs
DEA&DP	Department of Environmental Affairs and Development Planning
DEAT	Department of Environmental Affairs and Tourism
DEL	Department of Employment and Labour
DEDECT	Department of Economic Development, Environment, Conservation and Tourism
DFFE	Department of Forestry, Fisheries and the Environment
DC	Direct Current
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EHS	Environmental, Health, and Safety
EMPr	Environmental Management Programme
EN	Endangered
ESA	Ecological Support Area
GHG	Greenhouse Gas
GIS	Geographical Information System
GN	Government Notice
GVA	Gross Value Added
HV	High Voltage
I&APs	Interested and Affected Parties
IBA	Important Bird & Biodiversity Area
IDP	Integrated Development Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
IRP	Integrated Resource Plan
KZN	KwaZulu-Natal
Na	Sodium
NaS	Sodium-Sulphur
NEMA	National Environmental Management Act (No. 107 of 1998)

NEM:AQA	National Environmental Management: Air Quality Act (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NEM:PAA	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
NEM:WA	National Environmental Management: Waste Act (Act No. 59 of 2008)
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
NWA	National Water Act (Act No. 36 of 1998)
OHS	Occupational Health and Safety
PS	Performance Standards
PV	Photovoltaic
REDZ	Renewable Energy Development Zones
REEA	Renewable Energy EIA Application
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
RFI	Radio Frequency Interference
S	Sulphur
S&EIR	Scoping and Environmental Impact Reporting
SA	South Africa
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency
SANS	South African National Standard
SAPAD	South African Protected Areas Database
SARAO	South African Radio Astronomy Observatory
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
SIP	Strategic Integrated Projects
SOTER	Soil and Terrain
ToR	Terms of Reference
VFB	Vanadium Flow Battery
VRB	Vanadium Redox Battery
VU	Vulnerable
WMA	Water Management Area

UNITS OF MEASUREMENT

°C	Degrees Celsius
ha	Hectare
km	Kilometre
kV	Kilovolt
l/s	Litres per Second
m	Metre
m^2	Square metre
mm	Millimetre
MW	Megawatt
MWh	Megawatt hour
%	Percentage

1 PURPOSE OF THIS DOCUMENT

Nemai Consulting (Pty) Ltd was appointed by Seelo Alpha Solar PV (RV) (Pty) Ltd (the "Applicant") to conduct the Environmental Impact Assessment (EIA) for the **Proposed Seelo Alpha 240MW Solar Photovoltaic (PV) and Battery Energy Storage Systems (BESS) Project near Carletonville, in the North West Province** (the "Project").

The EIA is being undertaken according to the process prescribed in the EIA Regulations of 2014, published under Government Notice (GN) No. 982 in Gazette No. 38282 of 4 December 2014 and amended by GN 326 of 7 April 2017 published in Gazette No. 40772 (the "EIA Regulations"). The EIA Regulations were promulgated in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA).

This document serves as the **draft Scoping Report** for the proposed Project. The purpose of the Scoping phase, which constitutes the first phase of the overall EIA process, includes the following (but not limited to):

- Identify the legal framework in terms of the proposed Project;
- Identify and engage with Interested and Affected Parties (I&APs) and allow for adequate participation in the EIA process;
- Assess the receiving environment in terms of current state and potential positive or negative impacts;
- Consider alternatives for achieving the Project's objectives;
- Identify significant issues to be investigated further during the execution of the EIA Phase;
- Determine the scope of the ensuing EIA Phase, in terms of specialist studies, public participation, assessment of impacts and appraisal of alternatives; and
- Allow for informed decision-making with regard to the EIA process.

The final Scoping Report and Plan of Study for the EIA will be submitted to the Department of Forestry, Fisheries and the Environment (DFFE), which is the competent authority to decide on the application in terms of NEMA.

2 DOCUMENT ROADMAP

As a minimum, this Scoping Report aims to satisfy the requirements stipulated in Appendix 2 of the EIA Regulations. **Table 1** presents the document's composition in terms of the aforementioned regulatory requirements.

Table 1: Scoping Report Roadmap

Chapter	Title	Correlation with GN No. R 982, Appendix 2	Description of content of GN No. R 982, Appendix 2
1	Purpose of this Document	–	–
2	Document Roadmap	–	–
3	Project Background and Motivation	2(1)(f)	A motivation for the need and desirability for the proposed development.
4	Project Location	2(1)(b) & 2(1)(c)	A description of the location of the activity.
5	Legislation and Guidelines Considered	2(1)(e)	A description of the policy and legislative context within which the development is proposed.
6	Scoping and EIA Process	2(1)(a)	Details of Environmental Assessment Practitioner (EAP) who prepared the report and the expertise of the EAP.
7	Assumptions and Limitations	–	–
8	Need and Desirability	2(1)(f)	A motivation for the need and desirability for the proposed development.
9	Project Description	2(1)(c) & 2(1)(d)	A description of the scope of the proposed activity.
10	Alternatives	2(1)(g)(i)	Details of all the alternatives considered.
		2(1)(g)(vii)	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected.
11	Profile of the Receiving Environment	2(1)(g)(iv)	Environmental attributes associated with the alternatives.
		2(1)(g)(vii)	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected.
12	Public Participation	2(1)(g)(ii)	Details of the public participation process.
		2(1)(g)(iii)	A summary of the issues raised by I&APs.
13	Potentially Significant Environmental Issues	2(1)(g)(v)	Impacts and risks identified for each alternative.
		2(1)(g)(vii)	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected.
		2(1)(g)(vi)	The methodology used in identifying and ranking the potential environmental impacts and risks associated with the alternatives.
14	Plan of Study for EIA	2(1)(h)	A plan of study for undertaking the environmental impact assessment process.

Chapter	Title	Correlation with GN No. R 982, Appendix 2	Description of content of GN No. R 982, Appendix 2
Appendix F		2(1)(i) and 2(1)(j)	An undertaking under oath or affirmation by the EAP.
N/A		2(1)(k)	Where applicable, any specific information required by the competent authority.
N/A		2(1)(l)	Any other matter required in terms of section 24(4)(a) and (b) of the Act.

Note that the following sections of Appendix 2 of the EIA Regulations will be investigated further and reported on in the EIA Report, following the execution of the relevant specialist studies and targeted public participation:

- ❑ Section 2(1)(g)(v) - *The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-*
  (a) can be reversed;
  (b) may cause irreplaceable loss of resources; and
  (c) can be avoided, managed or mitigated.

  The impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts -
  (a) can be reversed;
  (b) may cause irreplaceable loss of resources; and
  (c) can be avoided, managed or mitigated.
- ❑ Section 2(1)(g)(vii) - *Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.*
- ❑ Section 2(1)(g)(viii) - *The possible mitigation measures that could be applied and level of residual risk.*
- ❑ Section 2(1)(g)(ix) - *The outcome of the site selection matrix.*
- ❑ Section 2(1)(g)(xi) - *A concluding statement indicating the preferred alternatives, including preferred location of the activity.*

3 PROJECT BACKGROUND AND MOTIVATION

The South African Government ratified the Paris Agreement in 2016, and thereby showed the country's commitment to contribute to the global effort to address the challenge of climate change. Electricity generation sources need to be diversified to ensure security of supply and reduction in the carbon footprint created by the current heavy reliance of South Africa (SA) on coal to produce electricity. The electricity demand is increasing in SA, and in order to match that demand there is a need to supply a diversified power generation that includes renewable energy technologies. These technologies include solar, wind, small utility scale hydro, biomass, biogas and energy storage that the Department of Mineral Resources and Energy (DMRE) intends to develop and implement as identified in the approved Integrated Resource Plan (IRP) 2019.

The Applicant has proposed the development of the Seelo Alpha 240MW Solar PV with BESS Project near Carletonville, in the North West Province. The electricity generated by the Project will be injected into the existing Eskom 132 kV distribution system.

The Applicant intends to bid for the current and future Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid windows.

4 PROJECT LOCATION

4.1 Location of the Project relative to Solar Yield Area

The location of the Project in relation to SA's PV power potential is shown in **Figure 1** below. The Project Area is considered to have favourable solar irradiation levels, which makes it ideal for the production of solar power via PV Panels.

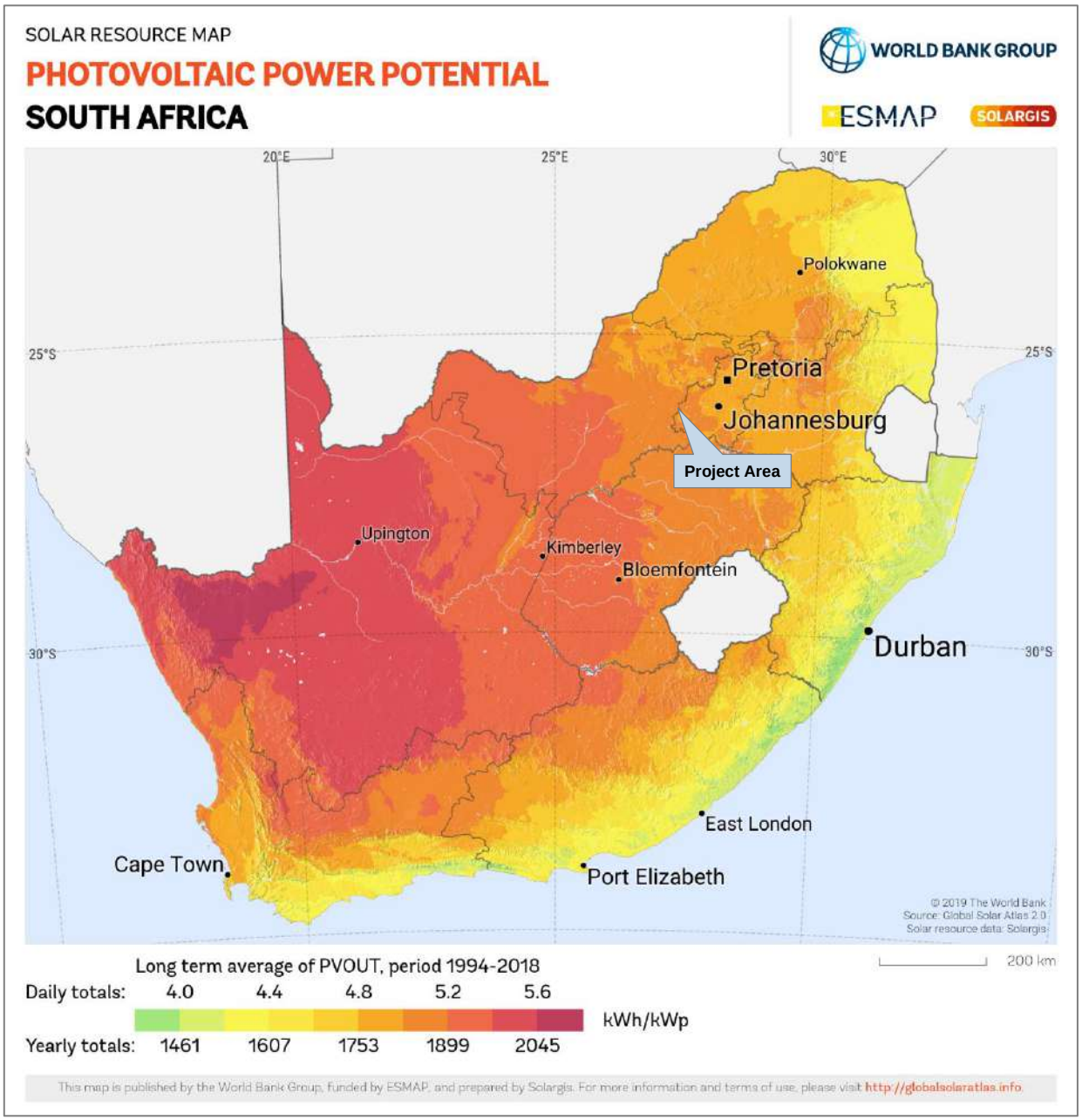


Figure 1: Location of the Project relative to PV Power Potential
(© 2019 The World Bank, Source: Global Solar Atlas 2.0, Solar resource data: Solargis)

4.2 Geographical Context

The Project is located in the most eastern part of the North West Province (at the boundary between North West and Gauteng) and falls within the Dr Kenneth Kaunda District Municipality (DKKDM) and the JB Marks Local Municipality (JBMLM). The site is located approximately 13km to the north-west of the town of Carletonville. The D331 road bisects the site. The locality maps are provided in **Figure 2** and **Figure 3** below, and are also contained in **Appendix A**. For the location of the PV array and associated infrastructure within the Project, refer to **Figure 8** in **Section 9.3.2** below. Sensitivity maps are included under **Appendix A**.

The property earmarked for the Project covers a combined area of approximately 898 ha. The details of the affected properties are provided in **Table 2** below.

Table 2: Details of the affected properties

Farm Details	21-digit Surveyor General No.
Portion 2 of Farm 96 (Rooipan)	T0IQ00000000009600002

The Project's coordinates are as follows (shown in **Table 3 and 4** below):

- **PV Site Boundaries** –

Table 3: PV Site Coordinates

Description	Coordinates
PV Area 1 (East of Road D331)	
Corner and Bend Coordinates of buildable area	26°19'54.28"S; 27°14'40.22"E
	26°19'18.59"S; 27°14'1.73"E
	26°19'16.32"S; 27°13'59.49"E
	26°19'14.83"S; 27°13'59.48"E
	26°18'41.55"S; 27°14'53.09"E
	26°18'41.56"S; 27°14'55.95"E
	26°19'32.34"S; 27°15'14.44"E
	26°19'33.72"S; 27°15'14.44"E
	26°19'34.77"S; 27°15'14.06"E
	26°19'54.28"S; 27°14'41.19"E
PV Area 2 (West of Road D331)	
Corner and Bend Coordinates of buildable area	26°20'14.27"S; 27°14'7.47"E
	26°20'14.28"S; 27°14'6.46"E
	26°19'22.15"S; 27°13'50.60"E
	26°19'20.64"S; 27°13'50.59"E
	26°19'18.60"S; 27°13'53.73"E
	26°19'18.62"S; 27°13'56.20"E
	26°19'56.75"S; 27°14'37.56"E

- **Proposed access road location** (access points) –

Table 4: Access Road Coordinates

Description	Coordinates
PV Area 1 (north-east of Road D331) access road	
Access point (at PV area)	26°19'53.09"S; 27°14'38.87"E
PV Area 2 (south-west of Road D331) access road	
Access point (at PV area)	26°20'6.44"S; 27°14'20.76"E

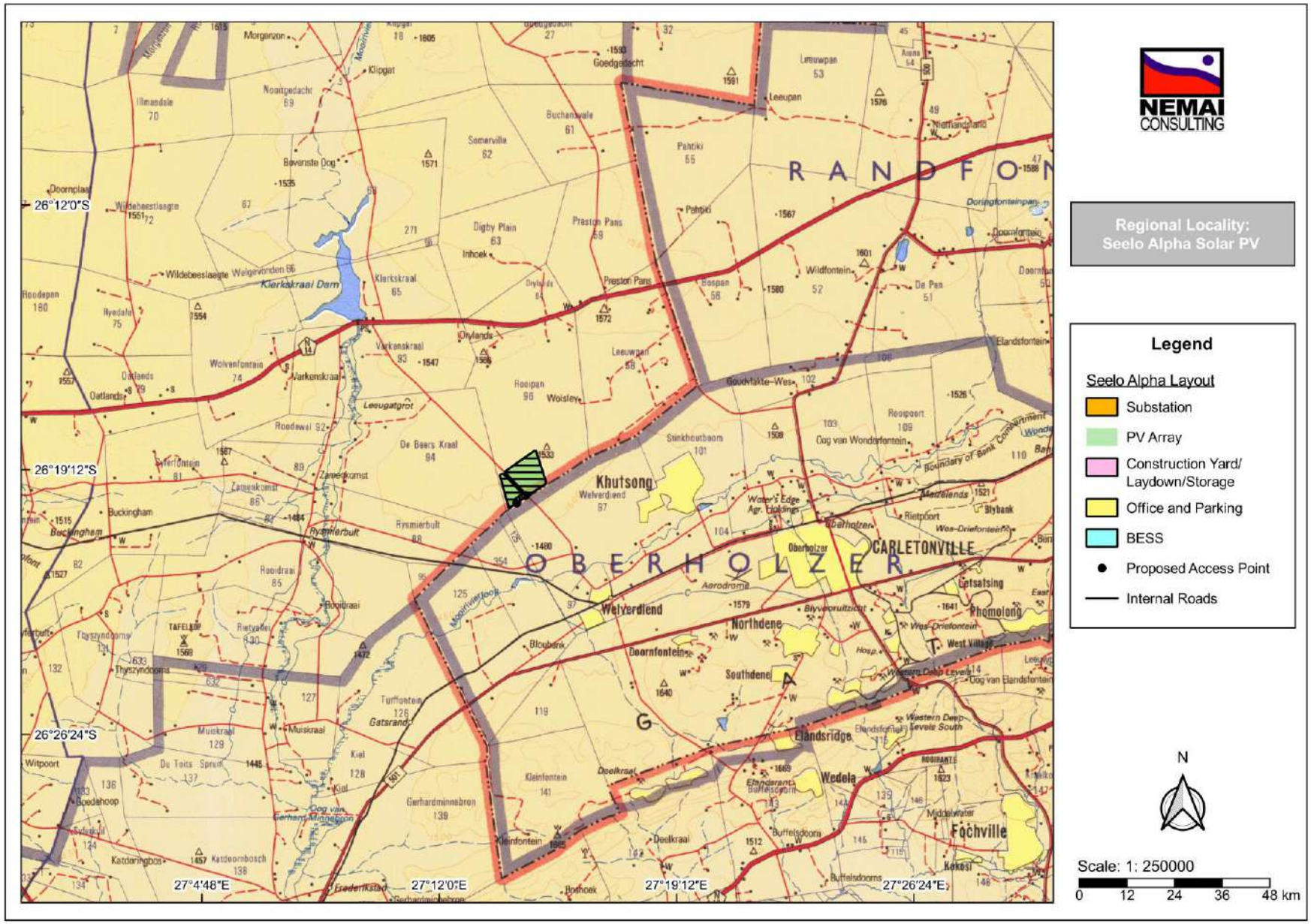


Figure 2: Regional locality map

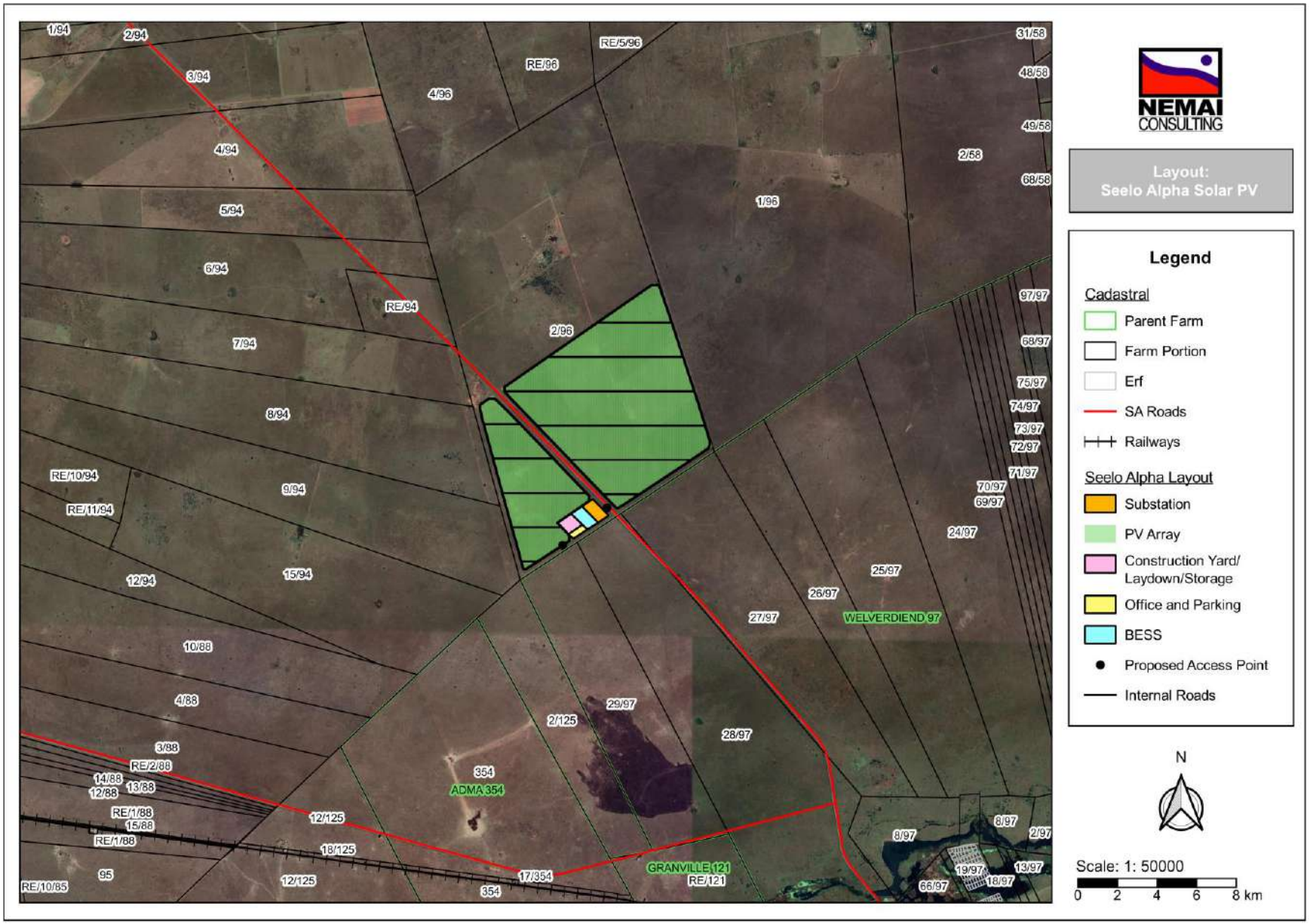


Figure 3: Locality map (topographical map)

5 LEGISLATION AND GUIDELINES CONSIDERED

5.1 International Finance Corporation - Performance Standards & Guidelines

Where relevant, the Project would strive to satisfy and incorporate the International Finance Corporation (IFC) Performance Standards (PS), which serve as an international benchmark for identifying and managing environmental and social risks.

The IFC PS offer a framework for understanding and managing environmental and social risks for high profile, complex, international and potentially high impact projects. The IFC PS encompass the following eight topics:

- Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts;
- Performance Standard 2: Labour and Working Conditions;
- Performance Standard 3: Resource Efficiency and Pollution Prevention;
- Performance Standard 4: Community Health, Safety, and Security;
- Performance Standard 5: Land Acquisition and Involuntary Resettlement;
- Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;
- Performance Standard 7: Indigenous Peoples; and
- Performance Standard 8: Cultural Heritage.

IFC's Environmental, Health, and Safety (EHS) Guidelines provide technical guidelines with general and industry-specific examples of good international industry practice to meet IFC PS.

5.2 Legislation

5.2.1 Environmental Statutory Framework

The legislation that has possible bearing on the proposed Project from an environmental perspective is captured in **Table 5** below. **Note:** *this list does not attempt to provide an exhaustive explanation, but rather represents an identification of some of the most appropriate sections from pertinent pieces of legislation*.

Table 5: Environmental Statutory Framework

Legislation	Description and Relevance
Constitution of the Republic of South Africa (No. 108 of 1996)	▪ Chapter 2 – Bill of Rights. ▪ Section 24 – Environmental Rights.
National Environmental Management Act (Act No. 107 of 1998)	▪ Key sections (amongst others): ○ Section 24 – Environmental Authorisation (control of activities which may have a detrimental effect on the environment).

<table>
<tr><th>Legislation</th><th colspan="2">Description and Relevance</th></tr>
<tr><td></td><td colspan="2">

Section 28 – Duty of care and remediation of environmental damage.

Environmental management principles.
Authorisation type – Environmental Authorisation.
Authorities – DFFE (national) (competent authority for this application) and the North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT) (provincial).

</td></tr>
<tr><td>EIA Regulations</td><td colspan="2">

Purpose - regulate the procedure and criteria as contemplated in Chapter 5 of NEMA relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to EIA, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto.

</td></tr>
<tr><td rowspan="3">GN No. R. 983 of 4 December 2014 (as amended) (Listing Notice 1)</td><td colspan="2">

Purpose - identify activities that would require environmental authorisations prior to commencement of that activity and to identify competent authorities in terms of sections 24(2) and 24D of NEMA.
The investigation, assessment and communication of potential impact of activities must follow a Basic Assessment process, as prescribed in regulations 19 and 20 of the EIA Regulations. However, according to Regulation 15(3) of the EIA Regulations, Scoping and Environmental Impact Reporting (S&EIR) must be applied to an application if the application is for two or more activities as part of the same development for which S&EIR must already be applied in respect of any of the activities.
The following activities under Listing Notice 1 are relevant to this Project:

</td></tr>
<tr><td>GN No. R.983 – Activity 11(i)

The development of facilities or infrastructure for the transmission and distribution of electricity—
<u>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or</u>
(ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more;
excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is —
(a) temporarily required to allow for maintenance of existing infrastructure;
(b) 2 kilometres or shorter in length;
(c) within an existing transmission line servitude; and
(d) will be removed within 18 months of the commencement of development.</td><td>The Project will require 132 kV electrical infrastructure.</td></tr>
<tr><td>GN No. R.983 – Activity 12(ii)(a) & (c):

The development of -
(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or
<u>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</u>
where such development occurs -
(a) within a watercourse;
(b) in front of a development setback; or
(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; -

excluding -
(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;
(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;
(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</td><td>Crossing of watercourses by infrastructure associated with the Project., as well as Solar PV infrastructure within 32m of watercourses.

To be confirmed following watercourse delineation by the specialist.</td></tr>
</table>

Legislation	Description and Relevance	
	(dd) where such development occurs within an urban area; *(ee) where such development occurs within existing roads, road reserves or railway line reserves; or* *(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.*	
	GN No. R.983 – Activity 14: *The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.*	*Installation of BESS (lithium ion technology).*
	GN No. R.983 – Activity 19: *The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;* *but excluding where such infilling, depositing, dredging, excavation, removal or moving -* *(a) will occur behind a development setback;* *(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;* *(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;* *(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or* *(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.*	*Crossing of watercourses by infrastructure associated with the Project. To be confirmed following watercourse delineation by the specialist.*
	GN No. R.983 – Activity 24(ii): *The development of a road -* *(i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or* *(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;* *but excluding a road -* *(a) which is identified and included in activity 27 in Listing Notice 2 of 2014;* *(b) where the entire road falls within an urban area; or* *(c) which is 1 kilometre or shorter.*	*New roads required for the Project (construction and operational phases).* *With regard to the roads, the internal roads will be up to 6m wide.* *The entrance road to the project site will be up to 8m wide.*
	GN No. R.983 – Activity 27: *The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-* *(i) the undertaking of a linear activity; or* *(ii) maintenance purposes undertaken in accordance with a maintenance management plan.*	*Clearance of areas associated with the construction footprint.* *Status of vegetation to be confirmed as part of the Terrestrial Biodiversity Assessment.*
	GN No. R.983 – Activity 28(ii): *Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or*	*Footprint of Project on land that was previously used for agricultural purposes and game farming, outside of an urban area.*

Legislation	Description and Relevance	
	afforestation on or after 01 April 1998 and where such development: *(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or* *(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;* *excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.*	
	GN No. R.983 – Activity 56: *The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre-* *(i) where the existing reserve is wider than 13,5 meters; or* *(ii) where no reserve exists, where the existing road is wider than 8 metres;* *excluding where widening or lengthening occur inside urban areas.*	*The existing access road/access point may potentially be widened by more than 6m to accommodate heavy vehicle turning.*
GN No. R. 984 of 4 December 2014 (as amended) (Listing Notice 2)	▪ Purpose - identify activities that would require environmental authorisations prior to commencement of that activity and to identify competent authorities in terms of sections 24(2) and 24D of NEMA. ▪ The investigation, assessment and communication of potential impact of activities must follow a S&EIR process, as prescribed in regulations 21 to 24 of the EIA Regulations. ▪ The following activities under Listing Notice 2 are relevant to this Project:	
	GN No. R.984 – Activity 1: *1. The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs -* *(a) within an urban area; or* *(b) on existing infrastructure.*	*The proposed Project involves the development of a PV facility with a total generation capacity of 240MW renewable solar energy.*
	GN No. R.984 – Activity 15: *The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for-* *(i) the undertaking of a linear activity; or* *(ii) maintenance purposes undertaken in accordance with a maintenance management plan.*	*Cumulative area to be cleared for entire Project will exceed 20 hectares.* *Status of vegetation to be confirmed as part of the Terrestrial Biodiversity Assessment.*
GN No. R. 985 of 4 December 2014 (as amended) (Listing Notice 3)	▪ Purpose - list activities and identify competent authorities under sections 24(2), 24(5) and 24D of NEMA, where environmental authorisation is required prior to commencement of that activity in specific identified geographical areas only. ▪ The investigation, assessment and communication of potential impact of activities must follow a Basic Assessment process, as prescribed in regulations 19 and 20 of the EIA Regulations. However, according to Regulation 15(3) of the EIA Regulations, S&EIR must be applied to an application if the application is for two or more activities as part of the same development for which S&EIR must already be applied in respect of any of the activities. ▪ The following activities under Listing Notice 3 are relevant to this Project:	
	GN No. R.985 – Activity 4 - (h)(vi): *The development of a road wider than 4 metres with a reserve less than 13,5 metres.* *h. North West* *vi. Areas within 5 kilometres from protected areas identified in terms of NEMPAA or from a biosphere reserve.*	*The access and internal roads for the PV Facility are located within 5 kilometres from a protected area (Abe Bailey Nature Reserve) identified in terms of the National Environmental Management: Protected Areas Act, 2003 (NEMPAA).*

Legislation	Description and Relevance	
	GN No. R.985 – Activity 12 - (h)(vi): *The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.*	*Clearance of areas of indigenous vegetation as part of the development footprint within the following sensitive areas:* • *Within a watercourse or wetland or within100m from the edge of a watercourse or wetland.* ▪ *To be confirmed following watercourse delineation by the specialist.*
	GN No. R.985 – Activity 14(ii)(a) & (c) - (h)(vi): *The development of—* *(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or* *(ii) infrastructure or structures with a physical footprint of 10 square metres or more;* *where such development occurs—* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;* *excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.*	*Development footprint within watercourse(s) / within 32 m from watercourse(s) which are located within 5 kilometres from a protected area (Abe Bailey Nature Reserve) identified in terms of the National Environmental Management: Protected Areas Act, 2003 (NEMPAA).*
	GN No. R.985 – Activity 18 - (h)(ii) & (ix): *The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.* *h. North West* *ii. Areas within 5 kilometres from protected areas identified in terms of NEMPAA or from a biosphere reserve.*	*The widening of existing access road/access point (by more than 6m to accommodate heavy vehicle turning) which are located:* • *Within 5 kilometres from a protected area (Abe Bailey Nature Reserve) identified in terms of the National Environmental Management: Protected Areas Act, 2003 (NEMPAA)* • *Within a watercourse or wetland or within 100 meters from the edge of a watercourse or wetland (To be confirmed following watercourse delineation by specialist).*
National Water Act (Act No. 36 of 1998)	▪ Sustainable and equitable management of water resources. ▪ Key sections (amongst others): o Chapter 3 – Protection of water resources. o Section 19 – Prevention and remedying effects of pollution. o Section 20 – Control of emergency incidents. o Chapter 4 – Water use. ▪ Authorisation type – General Authorisation / Water Use Licence. ▪ Authority – Department of Water and Sanitation (DWS).	
National Environmental Management: Waste Act (Act No. 59 of 2008)	▪ Management of waste. ▪ Key sections (amongst others): o Section 16 – General duty in respect of waste management. o Chapter 5 – licensing of waste management activities listed in GN No. R. 921 of 29 November 2013 (as amended). ▪ Authorisation type – Waste Management Licence (*not required for the Project*). ▪ Authority – DFFE (national) and DEDECT (provincial).	

Legislation	Description and Relevance
National Environmental Management Air Quality Act (Act No. 39 of 2004)	▪ Air quality management. ▪ Key sections (amongst others): o Section 32 – Dust control. o Section 34 – Noise control. ▪ Authorisation type – Atmospheric Emission License (*not required for the Project*). ▪ Authority – DFFE (national), DEDECT (provincial) and municipality.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	▪ Management and conservation of the country's biodiversity. ▪ Protection of species and ecosystems. ▪ Authorisation type – Permit (*relevance to the Project to be confirmed*). ▪ Authority – DFFE (national) and DEDECT (provincial).
National Forests Act (Act No. 84 of 1998)	▪ Supports sustainable forest management and the restructuring of the forestry sector, as well as protection of indigenous trees in general. ▪ Section 15 – Authorisation required for impacts to protected trees. ▪ Authorisation type – Licence (*relevance to the Project to be confirmed*). ▪ Authority – DFFE.
National Environmental Management: Protected Areas Act (Act No. 57 of 2003)	▪ Protection and conservation of ecologically viable areas representative of SA's biological diversity and natural landscapes.
Minerals and Petroleum Resources Development Act (Act No. 28 of 2002)	▪ Equitable access to and sustainable development of the nation's mineral and petroleum resources and to provide for matters related thereto. ▪ Key sections (amongst others): o Section 22 – Application for mining right. o Section 27 – Application for, issuing and duration of mining permit. o Section 53 – Use of land surface rights contrary to objects of Act. ▪ Authorisation type – Mining Permit / Mining Right (*not required for the Project*). ▪ Authority – Department of Mineral Resources and Energy (DMRE).
National Heritage Resources Act (Act No. 25 of 1999)	▪ Key sections: o Section 34 – protection of structure older than 60 years. o Section 35 – protection of heritage resources. o Section 36 – protection of graves and burial grounds. o Section 38 – Heritage Impact Assessment for linear development exceeding 300m in length; development exceeding 5 000m^2 in extent, etc. ▪ Authorisation type – Permit (*relevance to the Project to be confirmed*). ▪ Authority – South African Heritage Resources Agency (SAHRA) and North West Provincial Heritage Resources Authority NWPHRA).
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	▪ Control measures for erosion. ▪ Control measures for alien and invasive plant species. ▪ Authority – North West Department of Agriculture and Rural Development (DARD).
Free State Province Nature Conservation Ordinance 8 of 1969	▪ Provides for the listing of certain protected plant species.
Occupational Health & Safety Act (Act No. 85 of 1993)	▪ Provisions for Occupational Health & Safety. ▪ Authority – Department of Employment and Labour (DEL). ▪ Relevant regulations, such as Electrical Installation Regulations, Construction Regulations, etc.
Hazardous Substance Act (No 15 of 1973) and Regulations	▪ Provides for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances, and for the control of certain electronic products ▪ Provides for the division of such substances or products into groups in relation to the degree of danger. ▪ Provides for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products.

The relationship between the Project and certain key pieces of environmental legislation is discussed in the subsections to follow.

5.2.2 National Environmental Management Act

NEMA is the framework legislation regulating the environment in SA. According to Section 2(3) of NEMA, "*development must be socially, environmentally and economically sustainable*", which means the integration of these three factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.

The proposed Project requires authorisation in terms of NEMA and the EIA is being undertaken in accordance the EIA Regulations, which consist of the following:

- EIA procedure - GN No. R 982 (4 December 2014), as amended;
- Listing Notice 1 - GN No. R 983 (4 December 2014), as amended;
- Listing Notice 2 - GN No. R 984 (4 December 2014), as amended; and
- Listing Notice 3 - GN No. R 985 (4 December 2014), as amended.

The Project triggers activities under Listing Notices 1, 2 and 3, and thus needs to be subjected to a Scoping and Environmental Impact Reporting (S&EIR) process. The listed activities are explained within the context of the Project in **Table 5** above.

Note that the dimensions of the Project's proposed infrastructure and components should be regarded as approximates due to the dynamic nature of the planning and design process. As a conservative approach, all possible activities that could possibly be triggered by the Project were included in the Application Form (contained in **Appendix B**) that will be submitted to the DFFE with the draft Scoping Report. A refinement of these activities will take place as the EIA process unfolds, if necessary.

5.2.3 National Environmental Management: Waste Act

Amongst others, the purpose of the National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM:WA) includes the following:

1. To reform the law regulating waste management in the country by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development;
2. To provide for institutional arrangements and planning matters;
3. To provide for specific waste management measures;
4. To provide for the licensing and control of waste management activities;
5. To provide for the remediation of contaminated land; and
6. To provide for compliance and enforcement.

"Waste" is defined in NEM:WA as "*any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act*".

Schedule 3 of the NEM:WA groups waste into two categories, namely hazardous waste and general waste. The classification of waste determines the associated management and licencing requirements. ‘‘Hazardous waste’’ is defined as “*any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles*”.

GN No. R. 921 of 29 November 2013 (as amended) contains a list of waste management activities that have, or are likely to have, a detrimental impact on the environment. If any of the waste management activities are triggered in Category A and Category B, a Waste Management Licence is required. Activities listed in Category C need to comply with the relevant National Norms and Standards.

No authorisation will be required in terms of NEM:WA, as the Project will not include any listed waste management activities. The following is noted with regards to waste management for the Project:

- Construction phase –
  - Temporary waste storage facilities will remain below the thresholds contained in the listed activities under Schedule 1 of NEM:WA; and
  - The Environmental Management Programme (EMPr) will make suitable provisions for waste management, including the storage, handling and disposal of waste.
- Operational phase –
  - Minimum waste will be generated during the operational phase;
  - Waste from the on-site office and workshop will be sent to licenced municipal waste disposal sites; and
  - Waste generated during maintenance or replacement of panels and inverters will be sent to suitable disposal sites.

5.2.4 National Water Act

The purpose of the National Water Act (Act No. 36 of 1998) (NWA) is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors:

- Meeting the basic human needs of present and future generations;
- Promoting equitable access to water;
- Redressing the results of past racial and gender discrimination;
- Promoting the efficient, sustainable and beneficial use of water in the public interest;
- Facilitating social and economic development;
- Providing for growing demand for water use; protecting aquatic and associated ecosystems and their biological diversity;

- ❑ Reducing and preventing pollution and degradation of water resources;
- ❑ Meeting international obligations;
- ❑ Promoting dam safety; and
- ❑ Managing floods and droughts.

The Department of Water and Sanitation (DWS) is the custodian of South Africa's water resources.

Some key definitions from this Act include:

- "*Pollution*" – the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it (a) less fit for any beneficial purpose for which it may reasonably be expected to be used; or (b) harmful or potentially harmful;
- "*Waste*" – includes any solid material or material that is suspended, dissolved or transported in water (including sediment) and which is spilled or deposited on land or into a water resource in such volume, composition or manner as to cause, or to be reasonably likely to cause, the water resource to be polluted; and
- "*Water resource*" – includes a watercourse, surface water, estuary, or aquifer.

The Project may entail the following activities that constitute water uses in terms of Section 21 of the NWA, which will be confirmed in consultation with DWS and following the completion of the delineation of the watercourses:

- ❑ Section 21(c) - Impeding or diverting the flow of water in a watercourse; and
- ❑ Section 21(i) - Altering the bed, banks, course or characteristics of a watercourse.

If the above water uses are triggered a Water Use Licence Application will be submitted to DWS to seek authorisation in terms of the NWA.

5.2.5 National Environmental Management: Air Quality Act

The purpose of the National Environmental Management: Air Quality Act (Act No. 39 of 2004) (NEM:AQA) is to reform the law regulating air quality by providing measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. This Act aims to promote justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government, and for specific air quality measures.

Some key definitions from this Act include:

- ❑ "*Air pollution*" – any change in the composition of the air caused by smoke, soot, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, aerosols and odorous substances.
- ❑ "*Atmospheric emission*" or "*emission*" – any emission or entrainment process emanating from a point, non-point or mobile source that results in air pollution.

- "*Non-point source*" – a source of atmospheric emissions which cannot be identified as having emanated from a single identifiable source or fixed location, and includes veld, forest and open fires, mining activities, agricultural activities and stockpiles.
- "*Point source*" – single identifiable source and fixed location of atmospheric emission, and includes smoke stacks and residential chimneys.

This Act provides for the listing of activities which result in atmospheric emissions that pose a threat to health or the environment. No person may without an Atmospheric Emission Licence (AEL) conduct any such listed activity. No AEL is required for the Project. Provision is made in the EMPr to manage impacts to air quality as a result of the Project during the construction phase.

5.2.6 National Environmental Management: Biodiversity Act

The purpose of the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEM:BA) is to provide for the management and conservation of SA's biodiversity within the framework of NEMA.

The Act allows for the publication of provincial and national lists of ecosystems that are threatened and in need of protection. The list should include:

- *Critically Endangered Ecosystems*, which are ecosystems that have undergone severe ecological degradation as a result of human activity and are at extremely high risk of irreversible transformation.
- *Endangered Ecosystems*, which are ecosystems that, although they are not critically endangered, have nevertheless undergone ecological degradation as a result of human activity.
- *Vulnerable Ecosystems*, which are ecosystems that have a high risk of undergoing significant ecological degradation.
- *Protected Ecosystems*, which are ecosystems that are of a high conservation value or contain indigenous species at high risk of extinction in the wild in the near future.

Similarly, the Act allows for the listing of endangered species, including critically endangered species, endangered species, vulnerable species and protected species. A person may not carry out a restricted activity (including trade) involving listed threatened or protected species without a permit.

The Regulations on the management of Listed Alien and Invasive Species were promulgated on 1 August 2014. The Listed Invasive Species were also published on this date and were subsequently amended in GN 864 of 29 July 2016.

Some key definitions from this Act include:

- "*Alien species*" –
    - A species that is not an indigenous species; or

- An indigenous species translocated or intended to be translocated to a place outside its natural distribution range in nature, but not an indigenous species that has extended its natural distribution range by natural means of migration or dispersal without human intervention.

- "*Biological diversity*" or "*biodiversity*" – the variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and also includes diversity within species, between species, and of ecosystems.
- "*Indigenous* species" – a species that occurs, or has historically occurred, naturally in a free state in nature within the borders of the Republic, but excludes a species that has been introduced in the Republic as a result of human activity.
- "*Invasive species*" – any species whose establishment and spread outside of its natural distribution range -
  - Threaten ecosystems, habitats or other species or have demonstrable potential; and
  - May result in economic or environmental harm or harm to human health.
- "*Species*" – a kind of animal, plant or other organism that does not normally interbreed with individuals of another kind, and includes any sub-species, cultivar, variety, geographic race, strain, hybrid or geographically separate population.

The Regulations on the management of Listed Alien and Invasive Species were promulgated on 1 August 2014. The Listed Invasive Species were also published on this date and were subsequently amended in GN 864 of 29 July 2016.

The implications of NEM:BA for the Project *inter alia* include the requirements for managing invasive and alien species, protecting threatened ecosystems and species, as well as for rehabilitating the areas affected by the Project (outside of the development footprint).

Terrestrial and Aquatic Biodiversity Compliance Statements will be undertaken for the Project, which will be included in the EIA Report.

5.2.7 National Heritage Resources Act

The purpose of the National Heritage Resources Act (Act No. 25 of 1999) (NHRA) is to protect and promote good management of SA's heritage resources, and to encourage and enable communities to nurture and conserve their legacy so it is available to future generations.

In terms of Section 38 of the NHRA, certain listed activities require authorisation from provincial agencies, which include the following:

- The construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- The construction of a bridge or similar structure exceeding 50 m in length;
- Any development or other activity which will change the character of a site -

- Exceeding 5 000 m^2 in extent; or
- Involving three or more existing erven or subdivisions thereof; and

❑ The re-zoning of a site exceeding 10 000 m^2 in extent.

A Heritage Impact Assessment will be undertaken for the Project, which will be included in the EIA Report. The Project will need to apply for a permit if any heritage sites or graves are to be affected.

5.3 Governance of Energy in SA

SA has expressed and entrenched its commitment to promoting the use of renewable energy and implementing Energy Efficiency through the following (amongst others):

❑ SA is a signatory to various international treaties and conventions relating to climate change and greenhouse gas (GHG), such as –
- United Nations Framework Convention on Climate Change;
- Kyoto Protocol; and
- Paris Agreement.

❑ SA has developed the following related policy frameworks –
- White Paper on Energy Policy (1998);
- White Paper on Renewable Energy (2003);
- Integrated Energy Plan (2003);
- IRP 2010;
- IRP 2019
- National Climate Change Response White Paper (2011);
- Post-2015 National Energy Efficiency Strategy;
- The National Development Plan (2030);
- Climate Change Bill (2018); and
- Carbon Tax Bill (2019).

❑ SA has developed the following related legal frameworks –
- Electricity Regulation Act (Act No. 4 of 2006);
- National Energy Act (Act No. 34 of 2008); and
- Income Tax Act (1962) - tax incentive provided for Section 12L.

❑ The former Department of Environmental Affairs (DEA), which is now known as DFFE, developed EIA Guideline for Renewable Energy Projects (2015).

❑ SA's related voluntary instruments include –
- South African National Standard (SANS) 941 energy-efficiency of electrical and electronic equipment; and
- SANS 50001 energy management standard.

5.4 Guidelines

The following guidelines were considered during the preparation of the Scoping Report:

- Integrated Environmental Management Information Series, in particular Series 2 – Scoping (DEAT, 2002);
- Guideline on Alternatives, EIA Guideline and Information Document Series (DEA&DP, 2010a);
- Guideline on Need and Desirability (DEA, 2017);
- Integrated Environmental Management Guideline Series 7: Public Participation in the EIA Process (DEA, 2010);
- EIA Guideline for Renewable Energy Projects (Department of Environmental Affairs (DEA, 2015); and
- Guidelines for Involving Specialists in the EIA Processes Series (Brownlie, 2005).

5.5 National and Regional Plans

The following regional plans were considered during the execution of the Scoping Phase (amongst others):

- Dr Kenneth Kaunda District Municipality Integrated Development Plan (IDP) and Spatial Development Framework (SDF);
- JB Mark Local Municipality IDP and SDF;
- North West Biodiversity Plan; and
- Relevant national, provincial and local policies, strategies, plans and programmes.

5.6 Renewable Energy Development Zones

A Strategic Environmental Assessment (SEA) was undertaken by the former DEA, which is now known as DFFE, in order to identify geographical areas most suitable for the rollout of wind and solar PV energy projects and the supporting electricity grid network. These areas are referred to as Renewable Energy Development Zones (REDZs), in which development will be incentivised and streamlined. The proposed Project footprint in relation to the REDZs are shown in **Figure 4** below.

As shown in **Figure 4** below, the Project is not located in a REDZ but falls within the Central Strategic Transmission Corridor. According to GNR 114 of 16 February 2018, where an Application for Environmental Authorisation for large scale wind or solar PV facilities is being made and these facilities fall outside of the REDZs then these applications will be considered in terms of the requirements of the EIA Regulations.

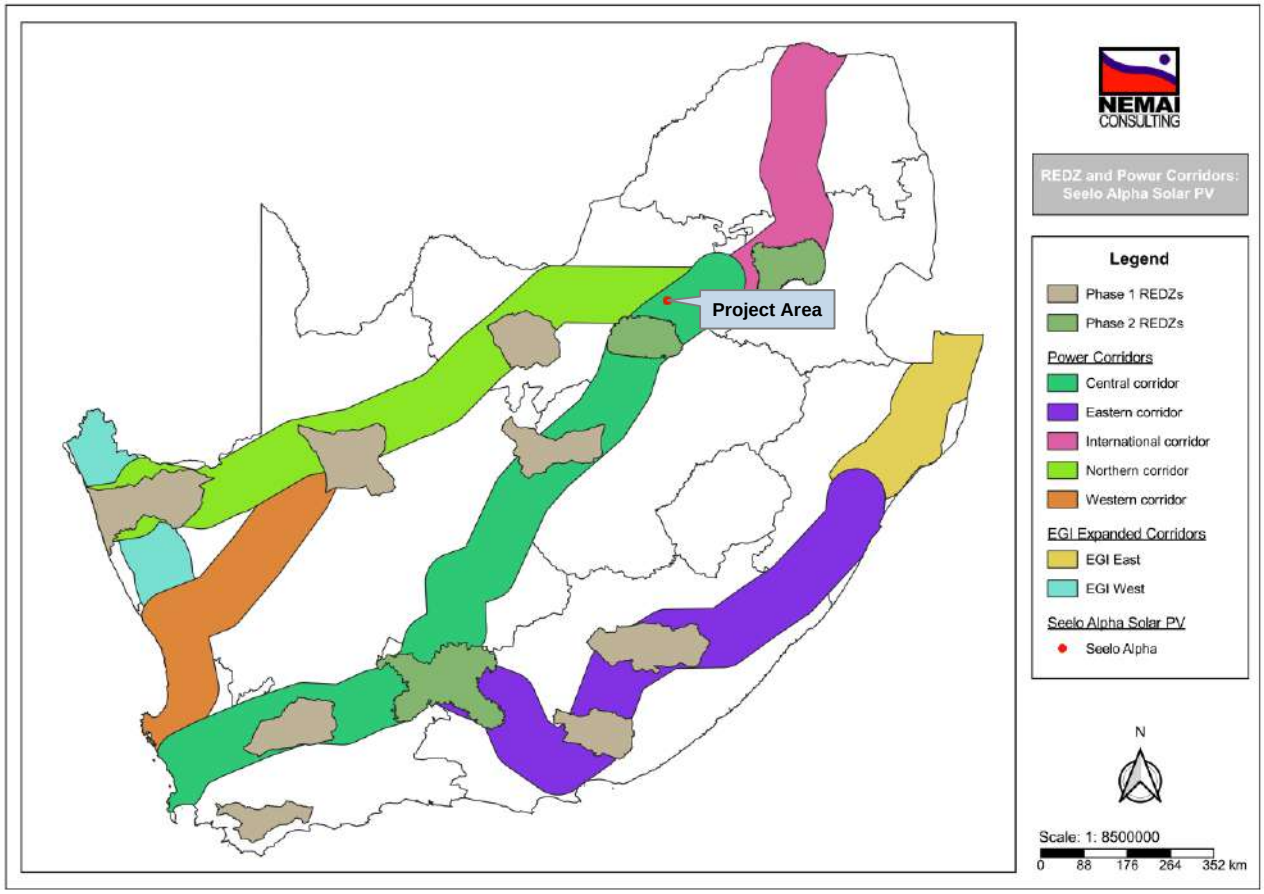


Figure 4: The Project in relation to REDZs

6 SCOPING AND EIA PROCESS

6.1 Environmental Assessment Authorities

In terms of NEMA the lead decision-making authority for the environmental assessment is DFFE, as the competent authority for renewable energy related applications. Due to the geographic location of the Project, DEDECT is regarded as one of the key commenting authorities in terms of NEMA during the execution of the EIA, and all documentation will thus be copied to this Department (amongst others).

Various other authorities with jurisdiction over elements of the receiving environment or project activities (refer to **Section 5.2** above) will also be consulted during the course of the EIA. Refer to the database of Interested and Affected Parties (I&APs) contained in **Appendix D** for a list of the government departments.

6.2 Environmental Assessment Practitioner

Nemai Consulting (Pty) Ltd was appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the environmental assessment for the proposed Project.

In accordance with Appendix 2, Section 2(1)(a) of the EIA Regulations, this section provides an overview of Nemai Consulting (Pty) Ltd and the company's experience with EIA's, as well as the details and experience of the EAP's that form part of the Scoping and EIA team.

Nemai Consulting (Pty) Ltd is an independent, specialist environmental, social development and Occupational Health and Safety (OHS) consultancy. The company is a 100% black female owned company, with a level 1 BBBEE rating. The company is directed by a team of experienced and capable environmental engineers, scientists, ecologists, sociologists, economists and analysts. The company has offices in Randburg (Gauteng) and Durban (KZN).

The core members of Nemai Consulting (Pty) Ltd that are involved with the S&EIR process for the Project are captured in **Table 6** below, and their respective Curricula Vitae are contained in **Appendix C**. The oath of the EAP is contained in **Appendix F**.

Table 6: Scoping and EIA Core Team Members

Name	Qualifications	Selected Experience - Renewable Energy & Bulk Power Projects
D. Henning (20 years' experience)	MSc (River Ecology)	▪ Matjhabeng 400 MW Solar PV Power Plant with 80 MW (320 MWh) Battery Energy Storage Systems, Free State Province, SA. ▪ Extraction of Gas and Electric Power Production Plant in the Rubavu District, Rwanda. ▪ Impompomo Hydropower Plant, Mpumalanga, SA.

Name	Qualifications	Selected Experience - Renewable Energy & Bulk Power Projects
		▪ Hydropower Plant within Hydraulic Network at Rand Water's Zoekfontein Site, Gauteng Province, SA. ▪ uMkhomazi Water Project Phase 1 with hydropower facilities, KwaZulu-Natal, SA. ▪ Neptune-Poseidon Transmission Line, including 200km of 400 kV transmission line, Eastern Cape, SA. ▪ Makalu B (Igesi) Substation and Associated Transmission Loop-In Lines, Free State Province, SA. ▪ Anderson Dinaledi Transmission Line, including 80km of 132 kV transmission line with substations, North-West Province, SA.
D. Naidoo (25 years' experience)	BSc Eng (Chem)	▪ Bronkhorstspruit Biogas Plant, Gauteng Province, SA. ▪ Construction of the Xina Solar One Parabolic Trough Technology 100MW Solar Plant, Northern Cape Province, SA. ▪ Construction of the Biotherm Solar Photovoltaic Power Plants, Northern Cape, SA. ▪ Construction of the Roodeplaat Wind Farm, Eastern Cape, SA. ▪ North-South Strengthening Scheme, including 300km of 400 kV transmission line with substations, Mpumalanga, SA. ▪ Mookodi-Mahikeng 400 kV Transmission Line, North-West Province, SA. ▪ Watershed 275/88/132 kV Substation, North-West Province, SA.

6.3 Environmental Screening

According to GN 960 of 5 July 2019, an application for Environmental Authorisation must be accompanied by the report generated by the National Web Based Environmental Screening Tool, as contemplated in Regulation 16(1)(b)(v) of the EIA Regulations.

The aims of the National Web Based Environmental Screening Tool include the following:

- ❑ To screen a proposed site for any environmental sensitivity;
- ❑ To provide site specific EIA process and review information;
- ❑ To identify related exclusions and/or specific requirements including specialist studies applicable to the proposed site and/or development, based on the national sector classification and the environmental sensitivity of the site; and
- ❑ To allow for a Screening Report to be generated.

The Screening Report for the proposed Project is appended to the Application Form, which is included in **Appendix B**. The property boundary was used to generate the report, which encompasses all the proposed infrastructure within the footprint.

6.4 Environmental Assessment Triggers

The process for seeking authorisation under NEMA is undertaken in accordance with the EIA Regulations, promulgated in terms of Chapter 5 of NEMA. Based on the types of activities involved the requisite environmental assessment for the project is a S&EIR process. Refer to **Section 5** above for the Project's legal framework and specifically the activities triggered in terms of Listing

Notices 1, 2 and 3 of the EIA Regulations. A copy of the Application Form is contained in **Appendix B**.

6.5 S&EIR Process

6.5.1 Formal Process

An outline of the S&EIR process for the proposed Project is provided in **Figure 5** below. The objectives of the Scoping phase, based on the EIA Regulations, are captured in **Section 1** above.

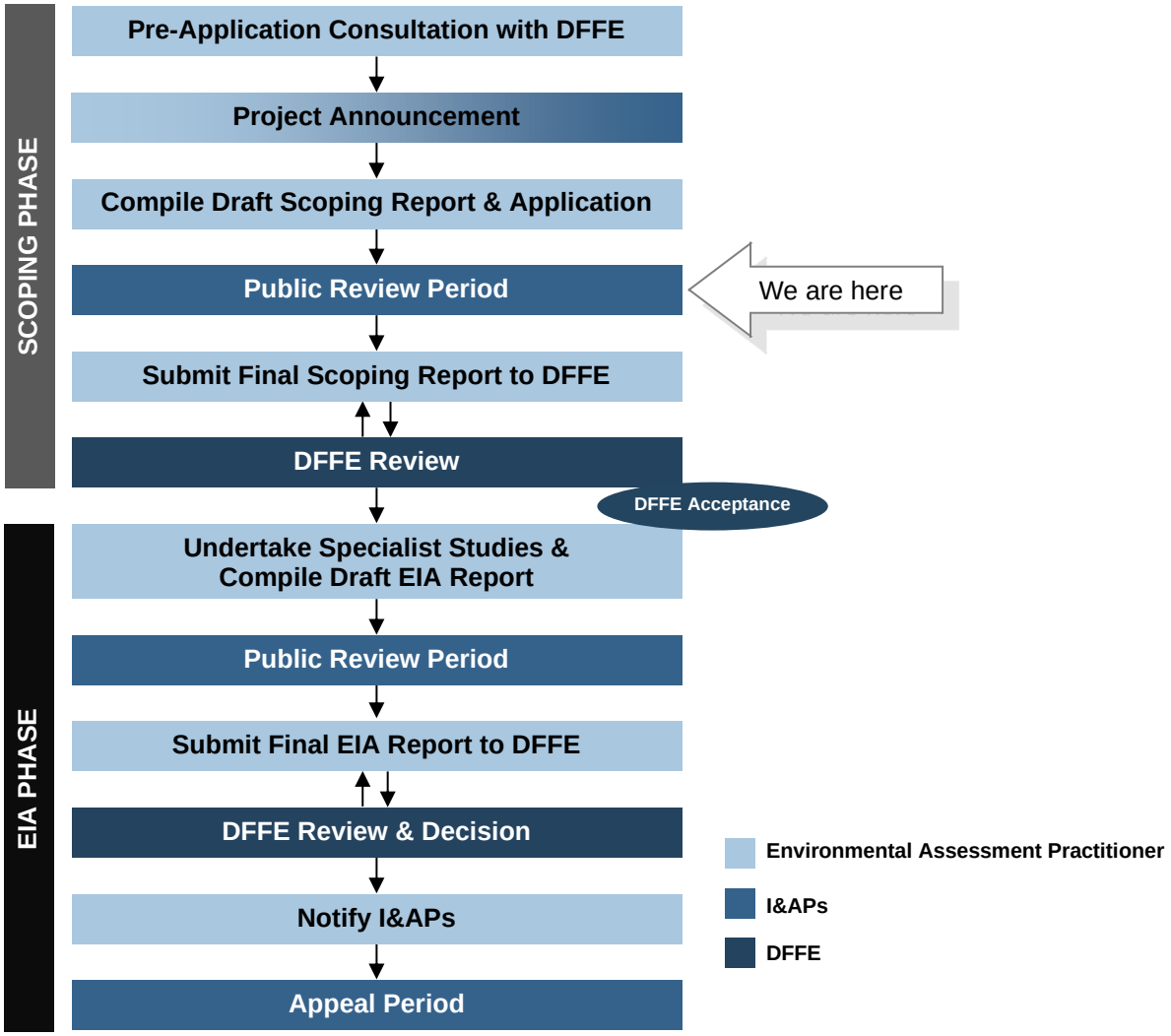


Figure 5: S&EIR process outline

6.5.2 DFFE Pre-application Consultation

A Pre-Application Meeting was held with DFFE on 28 February 2023 (refer to the minutes of the meeting appended to the Application Form in **Appendix B**). The purpose of the meeting included the following:

- To present an overview of the Project to DFFE;

- To seek clarification regarding certain matters that pertain to the S&EIR process; and
- To determine DFFE's requirements.

6.5.3 Landowner Consent & Landowner Notification

According to Regulation 39(1) of the EIA Regulations, if the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an Environmental Authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land. This requirement does not apply *inter alia* for linear developments (e.g. pipelines, power lines, roads) or if it is a Strategic Integrated Project (SIP) as contemplated in the Infrastructure Development Act, 2014.

The written consent of the landowner for the property where the PV Site is proposed is appended to the Application Form, which is included in **Appendix B**.

6.5.4 Application Form

A copy of the Application Form, which will be submitted to DFFE together with the draft Scoping Report, is provided in **Appendix B**.

The Application Form makes provision for all the activities associated with the Project's life-cycle. The activities triggered in terms of Listing Notices 1, 2 and 3 were confirmed based on the following:

- An understanding of the project description and the receiving environment;
- The findings from the National Web Based Environmental Screening Tool;
- Discussions held with DFFE during the pre-application meeting; and
- Technical input received from the Applicant and project team.

6.5.5 Screening of Alternatives

Alternatives are the different ways in which a Project can be executed to ultimately achieve its objectives. Examples could include carrying out a different type of action, choosing an alternative location or adopting a different technology or design for a project.

A write-up on alternatives is provided in **Section 10** below. A motivation for the Best Practicable Environmental Option (BPEO) will be provided in the EIA Report.

6.5.6 Impact Prediction

The potential environmental impacts associated with the proposed Project were identified during the Scoping Phase through an appraisal of the following (amongst others):

- Proposed footprint of the project infrastructure and components in relation to the receiving environment;

- Activities associated with the project life-cycle (i.e. pre-construction, construction, operation and decommissioning);
- Profile of the receiving environment and the potential sensitive environmental features and attributes; and
- Legal and policy context.

The Scoping exercise aimed to identify and qualitatively predict potentially significant environmental issues for further consideration and prioritisation during the EIA stage (see **Section 13** below). Note that "significance" relates to whether the effect (i.e. change to the environmental feature / attribute) is of sufficient importance that it ought to be considered and have an influence on decision-making.

During the EIA stage a detailed quantitative impact assessment will be conducted via contributions from the project team and requisite specialist studies, and through the application of the impact assessment methodology contained in **Section 13.4** below. Suitable mitigation measures will be identified to manage (i.e., prevent, reduce, rehabilitate and/or compensate) the environmental impacts, and will be included in the EMPr.

6.6 Other Applications in Project Area

DFFE has created the SA Renewable Energy EIA Application (REEA) Database, which contains spatial data for renewable energy applications for Environmental Authorisation. It includes spatial and attribute information for both active (in process and with valid authorisations) and non-active (lapsed or replaced by amendments) applications.

According to the REEA Database, no renewable energy applications have been made for properties that are located within a 30km radius of the PV Site (refer to **Figure 6** below). The closest renewable energy application, which is located approximately 34km east of the proposed site, is the following:

1. 200MW PV facility for Sibanye Gold Limited on Portion 1, 2, 4, 5 and 6 of the Farm Uitval 280 within the Westonaria Local Municipality in the Gauteng Province (application 14/12/16/3/3/2/919), (status: Approved).

The cumulative impact of renewable energy applications within 30 km will thus not be considered in this application.

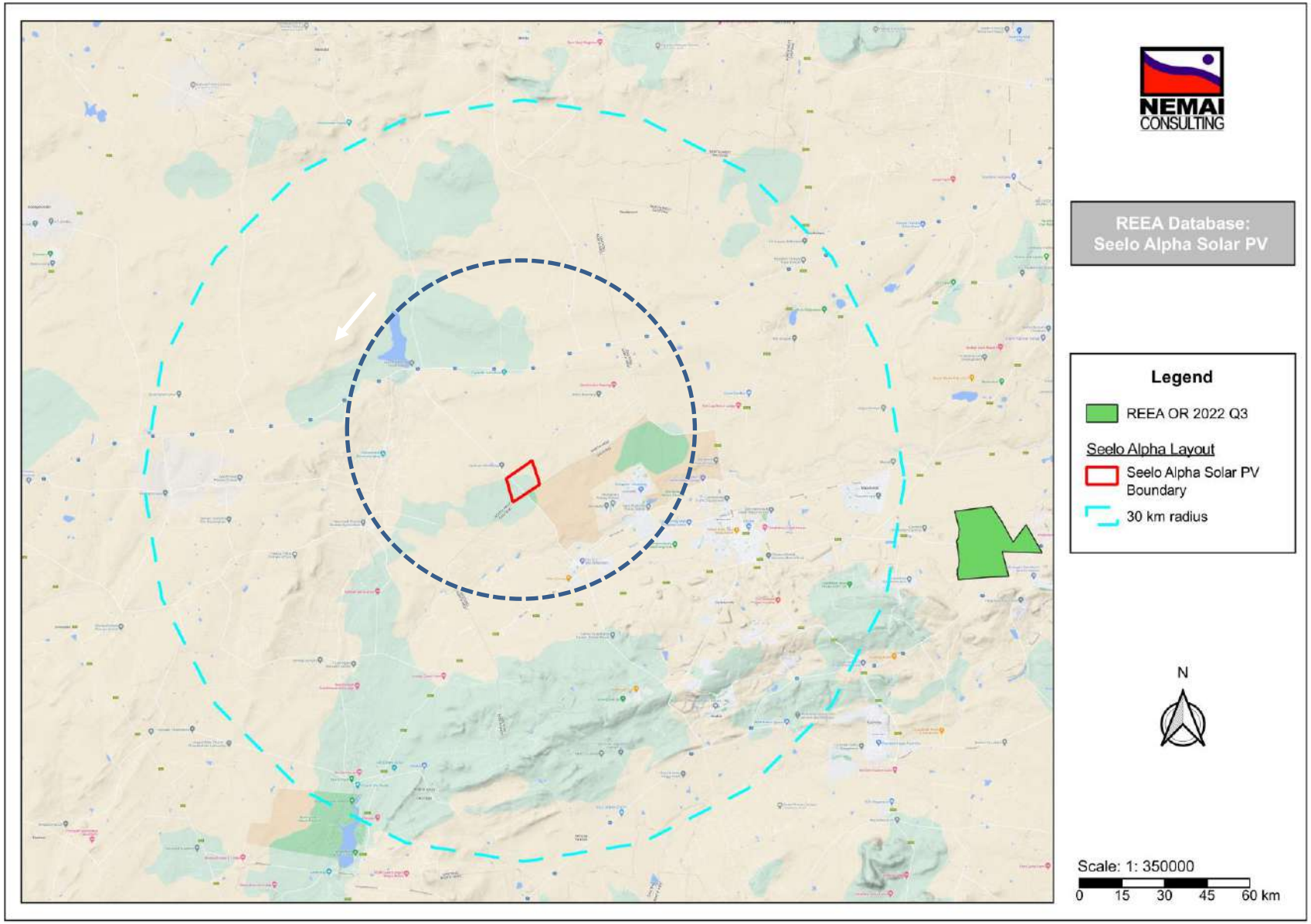


Figure 6: Renewable energy applications in relation to the Project (within a 30km radius). Nearest application indicated by arrow.

7 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations accompany the Scoping exercise:

- In accordance with the purpose of Scoping, the report does not include detailed specialist investigations on the receiving environment, which will only form part of the EIA Phase. The environment in the Project Area was primarily assessed in the Scoping Phase through site visits and appraisals, desktop screening, incorporating information from other studies, and input received from authorities and I&APs. A refinement of all maps will also be undertaken in the EIA Phase, if necessary.
- As the design of the Project's components and technical information, provided by the Applicant, is still in feasibility stage, and due to the dynamic nature of the planning environment, the dimensions and layout of the infrastructure may change during the detailed design phase. Subsequent project modifications that emanate from discussions with the I&APs, findings from specialist studies and technical considerations will be conveyed during the public participation of the EIA Phase and will be incorporated into the draft EIA Report, which will be lodged in the public domain.

8 NEED AND DESIRABILITY

This section serves to expand on the motivation for the proposed Project that is provided in **Section 3** above. The format contained in the Guideline on Need and Desirability (DEA, 2017) was used in **Table 7** below.

With the development of the proposed project, secondary social benefits can be expected in terms of the additional spend in the nearby towns due to the increased demands for goods and services. Furthermore, the following are considered motivation for the need and desirability of the Project:

- Training and upskilling of the local economic sector;
- The project is highly desirable for the development of a PV facility due to its suitable topography (slope and local topography);
- Site Access is sufficient to facilitate the movement of machinery during the construction phase and operations staff in the long term;
- Land availability which is the land that has been secured and agreed upon with the Landowner for the intention of the development of a solar facility;
- The site extent is large enough to accommodate all infrastructure;
- Infrastructure can be optimised to produce the maximum amount of clean energy available, and the layout can be optimised, as far as possible, to avoid sensitive areas;
- There are very few technical constraints;
- There is relatively easy access to the national grid.

Table 7: Need for and desirability of the proposed Project

Question No.	Response
1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area? *1.1. How were the following ecological integrity considerations taken into account?:* *1.1.1. Threatened Ecosystems.* *1.1.2. Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.* *1.1.3. Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs").* *1.1.4. Conservation targets.* *1.1.5. Ecological drivers of the ecosystem.* *1.1.6. Environmental Management Framework.* *1.1.7. Spatial Development Framework.* *1.1.8. Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).*	The following specialist studies will be undertaken to assess the impacts of the Project on the ecological integrity of the area: ▪ Aquatic Assessment; ▪ Terrestrial Ecological Assessment; and ▪ Avifaunal Assessment. The findings of the above studies will be presented in the EIA Report. Management objectives will be included in the EIA Report and EMPr to safeguard the sensitive ecological features.

Question No.	Response
1.2. How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Potential disturbances to ecosystems may include the following: ▪ Clearance of large areas of indigenous vegetation associated with the construction footprint of the PV Site and associated infrastructure; ▪ Potential loss of sensitive environmental features; ▪ Pollution of water resources; ▪ Soil destabilisation and subsequent erosion; and ▪ Proliferation of alien and invasive species. The following specialist studies will be undertaken to assess the impacts of the Project on the ecological integrity of the area: ▪ Aquatic Assessment; ▪ Terrestrial Ecological Assessment; and ▪ Avifaunal Assessment. The findings of the above studies will be presented in the EIA Report. Mitigation measures will be included in the EIA Report and EMPr to disturbances to ecosystems, according to the mitigation hierarchy.
1.3. How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The Project may cause surface water, groundwater, soil, air, noise and light pollution during the construction and operational phases. The above impacts will be assessed during the EIA Phase. Mitigation measures will be included in the EIA Report and EMPr to manage these impacts.
1.4. What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	The waste to be generated by the Project includes the following: ▪ Construction – o Waste generated from site preparations (e.g. plant material), domestic waste, surplus and used building material, and hazardous waste (e.g. chemicals, oils, soil contaminated by spillages, diesel rags). Solid waste generated during the construction phase will be temporarily stored at suitable locations (e.g. at the construction camp) and will be removed at regular intervals and disposed of at approved waste disposal sites. All the waste disposed of will be recorded. o Wastewater will include sewage, water used for washing purposes and drainage over contaminated areas. ▪ Operation – o Refuse (domestic waste) generated during the operational phase will be removed on a weekly basis and will be disposed of at a permitted waste disposal facility. Mitigation measures to manage all waste and wastewater generated during the construction and operational phases will be included in the EMPr.

Question No.	Response
1.5. How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Potential disturbances to cultural heritage may include the following: ▪ Possible direct impacts to graves, heritage resources and on below-ground archaeological deposits and fossils as a result of ground disturbance. ▪ Possible impacts to the cultural landscape as a result of the introduction of incompatible structures and infrastructure to the rural landscape A Heritage Impact Assessment will be undertaken during the EIA Phase and the findings will be presented in the EIA Report.
1.6. How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	During the construction phase electricity will be obtained from diesel generators and / or temporary supply via cables from the site power grid. No alternative energy sources were considered. During the operational phase electricity will be sourced from the energy-generation facility itself and/or from the existing electrical infrastructure on the property.
1.7. How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts? *1.7.1. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life).* *1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources this the proposed development alternative?)* *1.7.3. Do the proposed location, type and scale of development promote a reduced dependency on resources?*	The Solar PV Plant proposes to generate electricity from a renewable resource. The total generation capacity of the Project will be 240MW renewable solar energy. Impacts to the receiving environment will be assessed during the EIA Phase and will be presented in the EIA Report. Opportunity costs are associated with the net benefits forgone for the development alternative. This will be assessed further during the EIA Phase.

Question No.	Response
1.8. How were a risk-averse and cautious approach applied in terms of ecological impacts? *1.8.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?* *1.8.2. What is the level of risk associated with the limits of current knowledge?* *1.8.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?*	The following specialist studies will be undertaken to assess the impacts of the Project on the ecological integrity of the area: ▪ Aquatic Assessment; ▪ Terrestrial Ecological Assessment; and ▪ Avifaunal Assessment. The findings of the above studies will be presented in the EIA Report.
1.9. How will the ecological impacts resulting from this development impact on people's environmental right in terms following: *1.9.1. Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?* *1.9.2. Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?*	Potential impacts to the social environment include the following: ▪ Construction phase – o Influx of people seeking employment and associated impacts (e.g. foreign workforce, cultural conflicts, squatting, demographic changes) o Safety and security o Use of local road network o Nuisance from dust and noise o Consideration of local labourers and suppliers in area – stimulation of local economy (positive impact) o Transfer of skills (positive impact) ▪ Operational phase – o Direct and indirect economic opportunities as a result of the Project. o Threats to human and animal health from electromagnetic field. A Social Impact Assessment will be undertaken during the EIA Phase and the findings will be presented in the EIA Report. Mitigation measures to manage impacts to the social environment will be included in the EMPr.
1.10. Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	The areas affected by the proposed Project footprint are rural in nature. The Project is located approximately 15km northwest of Carletonville's CBD. There is evidence that the PV Site was previously used for agricultural purposes, which will be assessed further as part of the Agricultural Impact Assessment.
1.11. Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	Refer to the response to question no. 1 above.
1.12. Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	There were no site alternatives considered. The layout will be assessed by the respective specialists during the EIA Phase and will be adjusted to avoid sensitive features, as necessary. Options under consideration are presented in **Section 10** below. The BPEO will be identified in the EIA Report, taking into consideration of the specialists' findings.

Question No.	Response
1.13. Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	No other renewable energy applications have been made within a 30km radius of the PV Site, according to DFFE's REEA Database, are discussed in **Section 6.6** above. The cumulative impact of renewable energy applications within a 30km radius will thus not be considered in this application. Cumulative impacts are discussed in **Section 13.3** below. The EIA Report will provide an assessment of the potential cumulative impacts.
2.1. What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?: *2.1.1. The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,* *2.1.2. Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),* *2.1.3. Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and* *2.1.4. Municipal Economic Development Strategy ("LED Strategy").*	The socio-economic environment is discussed in **Section 11.9** below.
2.2. Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area? *2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?*	Refer to the response to question no. 1.9 above.
2.3. How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	
2.4. Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	
2.5. In terms of location, describe how the placement of the proposed development will: *2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other,* *2.5.2. reduce the need for transport of people and goods,* *2.5.3. result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),* *2.5.4. compliment other uses in the area,* *2.5.5. be in line with the planning for the area,* *2.5.6. for urban related development, make use of underutilised land available with the urban edge,* *2.5.7. optimise the use of existing resources and infrastructure,* *2.5.8. opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),* *2.5.9. discourage "urban sprawl" and contribute to compaction/densification,*	2.5.1. The Project will result in increased economic activity, as well as increased opportunities for employment and for SMMEs. 2.5.2. Not deemed to be relevant, due to the nature of the development. 2.5.3. Not deemed to be relevant, due to the nature of the development. 2.5.4. Impacts on surrounding land uses will be assessed as part of the Agricultural Impact Assessment, Social Impact Assessment and Visual Impact Assessment (amongst others). 2.5.5. Refer to the response to question no. 2.1 regarding planning. 2.5.6. The PV Site and power line are located outside of the urban edge and should not impact on future urban expansion. 2.5.7. The resources and services required for construction and operation are discussed in **Section 5.7** below. 2.5.8. The Project does not include the expansion of any bulk infrastructure. 2.5.9. Not deemed to be relevant, due to the nature of the development. 2.5.10. Not deemed to be relevant, due to the nature of the development.

Question No.	Response
2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs, *2.5.11. encourage environmentally sustainable land development practices and processes,* *2.5.12. take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),* *2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential),* *2.5.14. impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and* *2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?*	2.5.11. Provision will be made in the EMPr to manage the impacts associated with the Project. 2.5.12. Locational factors that favour the proposed site include the favourable solar irradiation levels, short distance to grid connection point, flat topography, suitable site access and availability of land. 2.5.13. The socio-economic benefits associated with the Project will be further identified in the EIA Report. 2.5.14. Refer to the response to question no. 1.5 above. 2.5.15. Refer to the response to question no. 2.1 above regarding planning.
2.6. How were a risk-averse and cautious approach applied in terms of socio-economic impacts? *2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?* *2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?* *2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?*	The findings of the Social Impact Assessment will be included in the EIA Report.
2.7. How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following: *2.7.1. Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?* *2.7.2. Positive impacts. What measures were taken to enhance positive impacts?*	Refer to the responses to questions no. 1.9 and 2.1 above. These impacts will be assessed as part of the Agricultural Impact Assessment, Social Impact Assessment and Visual Impact Assessment (amongst others).
2.8. Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	Refer to the responses to questions no. 1.7 and 1.10 above.
2.9. What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	The BPEO will only be identified in the EIA Report, taking into consideration of the specialists' findings.
2.10. What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? *Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?*	

Question No.	Response
2.11. What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	The areas affected by the proposed Project footprint are rural in nature. The PV Site is vacant. Consent has been provided by the landowner for the proposed development.
2.12. What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	The findings of the Social Impact Assessment will be included in the EIA Report. Mitigation measures to manage these impacts will be included in the EMPr. Also refer to the response to question no. 1.9 above.
2.13. What measures were taken to: *2.13.1. ensure the participation of all interested and affected parties,* *2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,* *2.13.3. ensure participation by vulnerable and disadvantaged persons,* *2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,* *2.13.5. ensure openness and transparency, and access to information in terms of the process,* *2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and* *2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were be promoted?*	**Section 12** below provides an overview of the public participation process to date, which includes the following: ▪ Compiling the database of I&APs; ▪ Notification of review of the draft Scoping Report; ▪ Means of accessing the draft Scoping Report; ▪ Supplying copies of the draft Scoping Report to authorities; and ▪ Commenting on the draft Scoping Report.
2.14. Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g.. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	The findings of the Social Impact Assessment will be included in the EIA Report. Also refer to the responses to questions no. 1.9 and 2.5 above.
2.15. What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	Health and safety related risks associated with the Project during the construction and operational phases will be assessed in the EIA Report. These risks will be addressed through mitigation measures that will be included in the EMPr. Additional management requirements will be included in the Project's Occupational Health and Safety system.
2.16. Describe how the development will impact on job creation in terms of, amongst other aspects: *2.16.1. the number of temporary versus permanent jobs that will be created,* *2.16.2. whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area),* *2.16.3. the distance from where labourers will have to travel,* *2.16.4. the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and* *2.16.5. the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).*	The Project will have a beneficial impact on local employment during the construction and operational phases. Further information will be included in the EIA Report.

Question No.	Response
2.17. What measures were taken to ensure: *2.17.1. that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and* *2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?*	SA's commitment to renewable energy is reflected in its ratification of the Paris Agreement and the country's long-term energy planning iterations. Solar power represents a large component of the needed diversification of SA's electricity system. According to the Department of Energy (2017), energy is by nature an intergovernmental issue, cutting across energy security, economic prosperity, employment and environment, among others. In recognising these benefits, clean energy has been incorporated into the broader policy framework. The White Paper on Renewable Energy of 2003 is one of SA's policy documents that laid the foundation for the promotion of renewable energy technologies such as solar, hydro, biomass and wind (http://www.energy.gov.za/files/renewables_frame.html). Through this policy document, a ten year target of how renewable energy technologies could diversify the country's energy mix and secure cleaner energy was set.
2.18. What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	The Solar PV Plant proposes to generate electricity from a renewable resource. The total generation capacity of the Project will be 240MW renewable solar energy. Impacts to the receiving environment will be assessed through various specialist studies that will be included in the EIA Report.
2.19. Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	The intention is for the mitigation measures that will be included in the EIA Report and EMPr to be realistic and for the residual risks to be managed to an acceptable level.
2.20. What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	A rehabilitation fund is setup for the project to provide for any potential remedial work. This is also supported by a sound EMPr to address any foreseeable risks throughout the life cycle of the project.
2.21. Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	The BPEO will only be identified in the EIA Report, taking into consideration of the specialists' findings.
2.22. Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	No other renewable energy applications have been made within a 30km radius of the PV Site, according to DFFE's REEA Database, are discussed in Section 6.6 above. The cumulative impact of renewable energy applications within a 30km radius will thus not be considered in this application. Cumulative impacts are discussed in **Section 13.3** below. The EIA Report will provide an assessment of the potential cumulative impacts.

9 PROJECT DESCRIPTION

9.1 Solar Technology

Solar energy facilities operate by converting solar energy into a useful form (i.e. electricity). The use of solar energy for electricity generation is a non-consumptive use of a natural resource and consumes no fuel for continuing operation. Solar power produces an insignificant quantity of greenhouse gases over its lifecycle as compared to conventional coal-fired power stations. The operational phase of a solar facility does not produce carbon dioxide, sulphur dioxide, mercury, particulates, or any other type of air pollution, as fossil fuel power generation technologies do.

9.2 PV Technology Overview

PV technology produces direct current (DC) which is then converted to alternating current (AC) via power electronic inverters. The main technology categories are crystalline modules (mono or poly), thin film, and concentrated photovoltaics (CPV). **Figure 7** below provides an overview of a typical Solar PV Power Plant.

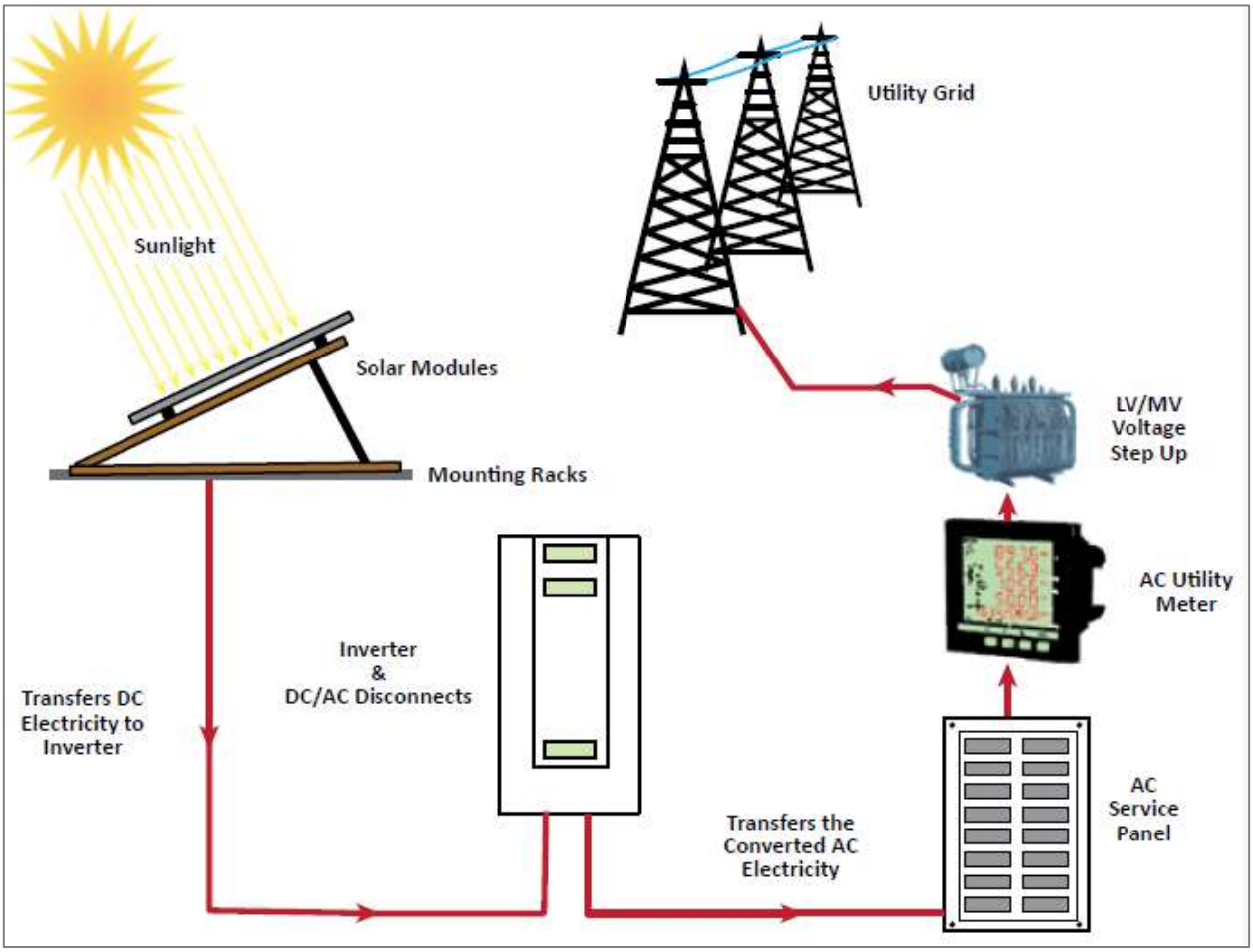


Figure 7: Overview of Solar PV Power Plant (IFC, 2015)

9.3 Project Overview

9.3.1 Overview of Technical Details

The technical details of the proposed Solar PV Plant are captured in **Table 8** below.

Table 8: Technical details of the proposed PV Plant

No.	Component	Description / Dimensions
1.	Height of PV panels	± 1 – 6 m
2.	Area of Project (excl. access roads)	Total area of ± 355 ha
3.	Area of PV Arrays only	Total area of ± 345 ha
4.	No of PV Modules	±525 000
5.	Number of inverters required	Approximately 70
6.	Area occupied by inverter / transformer stations / substations	▪ Area occupied by inverter stations (± 70 inverter stations) = ± 0.5 ha ▪ Area occupied by the facility transformer stations = ± 0.5 ha ▪ Area occupied by facility (step-up/switching) substation = ± 3 ha
7.	Capacity of on-site substation	132 kV/33kV
8.	Area occupied by both permanent and construction laydown areas	▪ Construction laydown areas = ± 2 ha ▪ Operation & Maintenance infrastructure = ± 1 ha ▪ Total combined = ± 3 ha
9.	BESS Footprint	▪ BESS = ± 3 ha
10.	Buildings	▪ ± 3 ha Including Operational Control Centre, Operation and Maintenance Area / Warehouse / Workshop and Office, Ablution Facilities and Substation Building
11.	Length of internal roads	± 21 km
12.	Width of roads	▪ The internal roads = 12 m reserve and road width of 6 m. ▪ Access roads = 14 m reserve and road width of 8 m.
13.	Proximity to grid connection	Approximately 12.5 km 132 kV transmission line from PV Site to existing Eskom's Carmel Main Transmission Substation
14.	Height of fencing	± 3.5 m
15.	Type of fencing	Type will vary (e.g., welded mesh, palisade and electric fencing).

9.3.2 Project Layout

The overall layout of the Solar PV Plant is shown in **Figure 8** below. The desirability of the earmarked site for the development of the proposed Solar PV Plant is due to the following key characteristics:

- **Solar Irradiation**: The feasibility of a solar facility, is dependent on the direct solar irradiation levels (refer to **Section 4.1** above).
- **Topography**: The suitability of the surface area is an important characteristic for the construction and operation of solar facilities. Most of the site has a low gradient slope and is suitable for this development.
- **Grid connection**: The electricity generated by the Solar PV Plant will be injected into the existing Eskom 132 kV distribution system (refer to **Section 9.5** below). The PV Site is located relatively close to the Eskom grid.
- **Extent of site**: The overall extent of the site is sufficient for the installation of the PV facility.

- **Site access**: The site can be accessed via the District Road D331, which bisects the site:

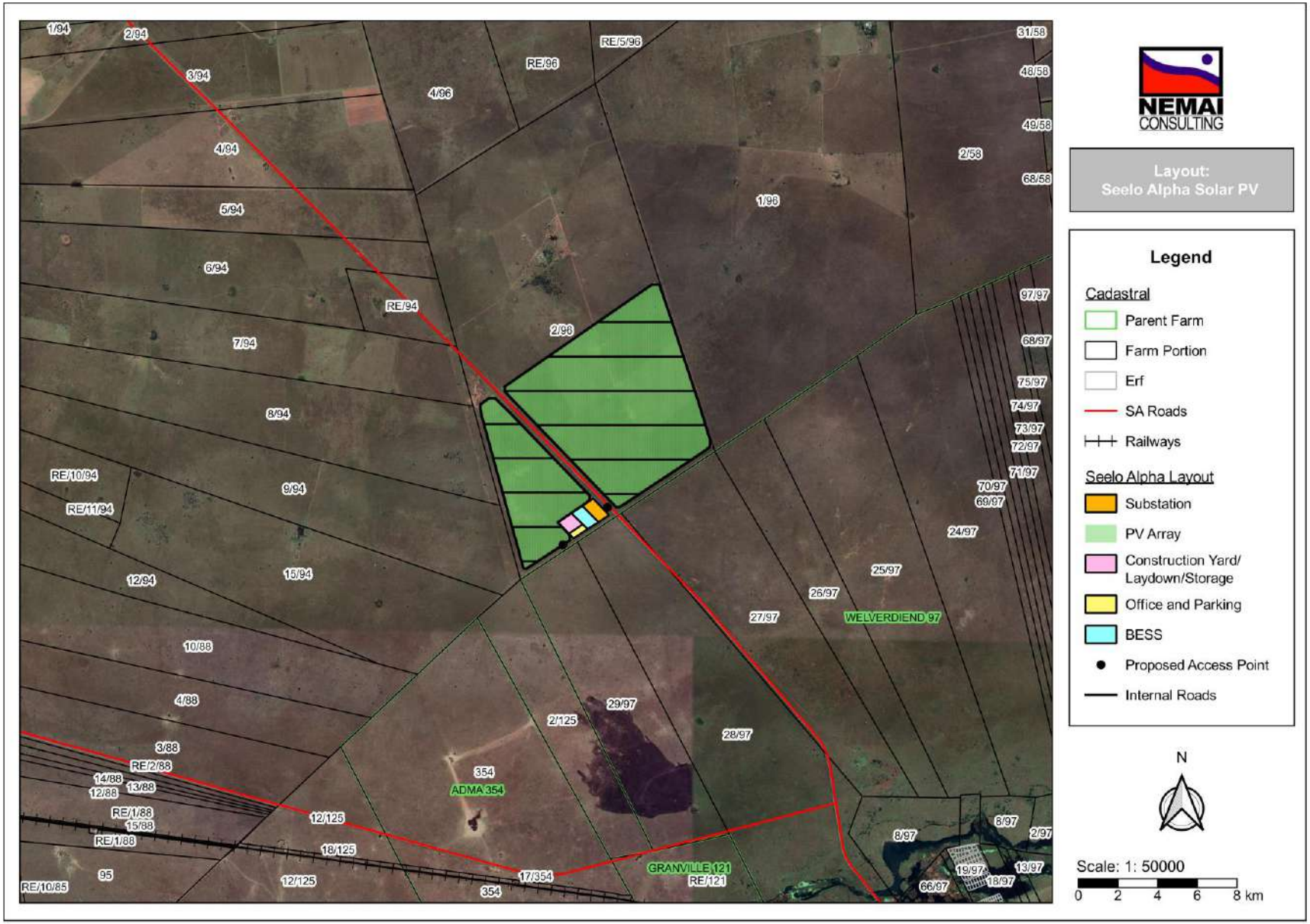


Figure 8: Proposed Layout of the Solar PV Plant (Orthophotograph)

The following factors were considered in determining the layouts (amongst others):

- Requirements of the PV Plant;
- Preliminary understanding of sensitive features on the site (e.g., watercourses). This will be refined based on the findings from the specialist studies during the EIA Phase; and
- Existing servitudes and infrastructure.

9.3.3 Components of the Proposed Solar PV Plant

The Project consists of the following systems, sub-systems or components (amongst others):

- PV panel arrays, which are the subsystems which convert incoming sunlight into electrical energy;
- Mounting structures to support the PV panels;
- On-site inverters to convert DC to facilitate AC connection between the solar energy facility and electricity grid;
- BESS;
- IPP substation;
- Eskom switching substation[2];
- Cabling between the Project's components, to be laid underground (where practical);
- Administration Buildings (Offices);
- Workshop areas for maintenance and storage;
- Temporary and permanent laydown areas;
- Internal access roads and perimeter fencing of the footprint;
- High Voltage (HV) Transformers; and
- Security Infrastructure.

The components of the proposed Solar PV Facility are discussed below.

9.3.4 Solar PV Panels/Modules

It is anticipated that the PV modules will be connected in series and parallel to form an array of modules, thus increasing total available power output to the needed voltage and current for a particular application. A PV module will be composed of interconnected solar cells that are encapsulated between a glass cover and weatherproof backing. The modules will be typically framed in aluminium frames suitable for mounting.

The PV modules will be mounted on high-rise or elevated structures that are either fixed, at a defined angle, or mounted to a single or double axis tracker to optimise electricity yield. The technology alternatives for the PV modules at this stage are under consideration. Figure 9 below depicts the typical layout of a PV Facility.

[2] The dedicated grid connection for the proposed Project which includes a 132/33 kV switching substation which does not form part of the current application for EA.

Figure 9: Typical layout of a Solar PV Facility (PV Magazine, 2018)

9.3.5 Mounting Structures

Various options exist for mounting structure foundations, which include cast/pre-cast concrete foundations, driven/rammed piles, or ground/earth screws/augured piles. The foundation design will be governed by the supporting conditions and the applied loads: i.e., the site specific geotechnical and groundwater conditions, the PV module support structure and the selected PV technology (fixed or tracking).

9.3.6 Inverters

The inverter converts the direct current (DC) to alternating current (AC). The inverter and transformer are anticipated to be housed within the same inverter station housing (typically an insulated, steel-framed 6 m shipping container or small brick building). The transformers transform the low voltage AC from the inverter to medium voltage. The actual number of the required inverter stations for the proposed project will be determined prior to the commencement of the construction phase of the project. The inverters will vary in size and frequency depending on technology. Inverter stations will be installed in between the PV panel rows in a line inside the layout area at the end of each row, located on a concrete plinth. The proposed project will utilise either central inverter stations, string inverters or power transformers.

9.3.7 Cabling

The proposed facility grid connection infrastructure will include underground medium-voltage cabling between the project components and the facility substation. It is envisaged that the electrical cables will be installed using trenches that are excavated adjacent to the internal roads. The depth

of the cabling will typically be approximately 1000 mm below the ground but the exact depth should be established at the detailed design stage. The exact placement of the grid connection infrastructure will be available at the detailed design phase. A detailed layout map will be submitted to DFFE before construction commences, indicating the position of this infrastructure.

9.3.8 Substation

The IPP portion of the on-site 33 / 132 kV substation comprises an inverter (step-up facility) which converts power from DC to AC and will step up electrical current from 33 kV to 132 kV. The substation will consist of at least one (1) small building, outdoor electrical plant, equipment, and transformers. An ESKOM Switching Station will be constructed adjacent to the IPP Substation. The Switching Station will be permitted separately in a BA process that will be undertaken for the grid connection infrastructure associated with the solar PV facility. The combined development footprint of the IPP and Switching Substation will be approximately 3 ha. The Seelo Alpha substation may serve the purpose of a collector substation should additional Solar PV facilities be constructed in the area.

9.3.9 Guardhouses, Operation, Maintenance

Additional infrastructure is required in order to support the operations of a solar energy facility, as well as to provide services to personnel tasked with the operations and maintenance of a facility. Operations & Maintenance (O&M) Buildings typically include Offices, Operational and Control Centre, Workshop, Warehouse and Ablution Facilities.

9.3.10 Roads

District Road D331 bisects the site and will be used to provide access to the solar PV facility on both sides and thereafter internal access. Access to the portion of Seelo Alpha north-east of road D331 is proposed approximately 150 m north of the southernmost border of Portion 2 of the Farm Rooipan No. 96. The exact location of the access point is to be determined together with the road authority, ensuring that adequate sight distance and access spacing are adhered to. The proposed access point for the portion of the Seelo Alpha facility that lies south-west of road D331 is positioned at the same location on the western side of the D331.

The internal road layout is dependent on the PV module layout, however, it is anticipated that a network of gravel internal access roads (each with a width of up to 6m) will be required to access the PV modules for cleaning and maintenance that may be required during operational phase.

It is proposed that cut-off trenches and side drains along roads be constructed to intercept the surface flow and redirect it away from the project infrastructure. In addition, infiltration trenches and retention areas may be required to attenuate the surface flow and recharge groundwater on the project site.

9.3.11 Fencing, Security and Lighting

It is planned that the site will be cordoned off and fenced during both the construction and operational phases. This is likely to entail the establishment of an electrified fence which will remain in situ for the lifetime of the project (i.e. for the operational phase). For the construction phase, the construction area and construction site camp may also be cordoned off with temporary fencing. The fencing is expected to be approximately3,5m in height.

9.3.12 Stormwater Infrastructure

Cut-off trenches and side drains along roads will be required to intercept the surface flow and redirect it away from the project infrastructure. Infiltration trenches and retention areas may be required to attenuate the surface flow and recharge groundwater on the project site.

9.4 Battery Energy Storage System (BESS)

The Battery Energy Storage System (BESS) allows for the storage of surplus energy generated by the solar PV facility for later use. The BESS enables a balance between supply and demand of electricity during the day and uses the stored energy during peak demand periods (i.e., morning and evenings). Energy generated from the PV panel array is a DC and is converted to an AC by the inverters and then transferred to the onsite substation where it is determined if the energy should be stored or evacuated. When the energy is required, it is evacuated into the grid network. Should the energy not be required, it is transferred to the BESS and stored for later use. A BESS typically either consists of stacked containers or a multistorey building with a maximum height of 8 m and will have a footprint of up to 3 ha.

9.5 Grid Connection

It is proposed that a 33/132 kV substation is constructed, hereafter referred to as the IPP substation, which will include inverter-stations, transformers, switchgear and internal electrical reticulation. It is estimated that the maximum size of the facility substation will not exceed 1.5 hectare (ha). The transmitted to the Eskom switching substation located immediately adjacent to the IPP substation. Thereafter, the generated electricity is to be transmitted with a 132 kV Overhead Power Line to connect to the existing Carmel Main Transmission Substation. The location and installation of the 132 kV line is subject to a separate EIA process.

9.6 Project Life-Cycle

The project life-cycle for a typical Solar PV Plant includes the following primary activities (high level outline only):

- Feasibility phase - This phase includes confirming the feasibility of the Project by evaluating and addressing the following (amongst others) –
  - Solar resource assessment;
  - Site selection;
  - Project land allocation;
  - Project yield assessment;
  - Permitting and licensing;
  - Legal agreements;
  - Socio economic development;
  - Industrialisation and localisation;
  - Project cost determination;
  - Project financing; and
  - Risk analysis.
- Design phase - This phase includes the following (amongst others) –
  - Confirming key design features such as the type of PV module to be used, tilting angle, mounting and tracking systems, inverters, and module arrangement;
  - Confirming specifications for the components of the Solar PV Plant and BESS;
  - Preparing detailed designs (layout, civil, electrical);
  - Preparing construction plans;
  - Preparing the Project schedule; and
  - Preparing the commissioning plans.
- Construction phase – During the implementation of the Project, the following construction activities will be undertaken –
  - Pegging the footprint of the development;
  - Establishing access roads;
  - Preparing the site (fencing, clearing, levelling and grading, etc.);
  - Establishing the site office;
  - Establishing laydown areas and storage facilities;
  - Transporting equipment to site;
  - Undertaking civil, mechanical and electrical work; and
  - Reinstating and rehabilitating working areas outside of permanent development footprint.
- Operational phase - Once the solar park is up and running the facility will be largely self-sufficient. Operational activities associated with the maintenance and control of the Solar PV Plant will include the following (amongst others) –
  - Testing and commissioning the facility's components;

- Cleaning of PV modules;
- Controlling vegetation;
- Managing stormwater and waste;
- Conducting preventative and corrective maintenance; and
- Monitoring of the facility's performance.

❑ Decommissioning –

PV panels are guaranteed to produce at least 80% of their rated power for 20 to 30 years. In practice, PV panels will perform satisfactorily well beyond this timeframe. At the end of the 20-30 year lifespan, two scenarios exist for the PV panels:

- The old, redundant panels can be disposed of (at a registered disposal facility designated for this purpose); or
- The panels can be recycled, by either using their components to fix or make new panels, or be donated for use elsewhere (e.g., for the electrification of rural schools and clinics).

It is unlikely that the solar PV facility will be decommissioned after 30 years. Instead, the facility will continually be reconditioned as the PV panels are recycled and replaced with more advanced technology as it becomes available. In the event that the Plant must be decommissioned, the decommissioning phase will include measures for complying with the prevailing regulatory requirements, rehabilitation and managing environmental impacts in order to render the affected area suitable for a future desirable use.

9.7 Resources and Services required for Construction and Operation

This section briefly outlines the resources that will be required to execute the Project. Note that provision will be made in the EMPr to manage impacts associated with aspects listed below, as relevant.

9.7.1 Raw Materials

Construction

Material required for construction purposes, including fencing and construction material (e.g., cement, sand, aggregate, etc.), will be sourced from suitable suppliers. The PV modules and other components of the facility will also be sourced from accredited suppliers.

Operation

During the operational phase, few raw materials will be required. Material such as consumable spares will be used for the operation of the facility.

9.7.2 Water

Construction

During construction, the Contractor will require water for potable use by construction workers and water will also be used in the construction of the foundations and other components of the Project. The necessary negotiations will be undertaken with the landowners or the Municipality to obtain water from approved sources.

Operation

Water use requirements for a Solar PV Plant during the operational phase depends on the technology and climate conditions at the site. In general, solar power technologies use relatively low volumes of water for cleaning solar collection and reflection surfaces like PV panels, as well as for domestic consumption by the staff.

Water for use during the operational phase will either be sourced from the local Municipality, a third-part supplier or from an onsite borehole.

9.7.3 Sanitation

Construction

Sanitation services will be required for construction workers in the form of chemical toilets, which will be serviced at regular intervals by the supplier.

Operation

Sewage from the buildings and toilets across the site will be discharged into various septic tank systems. The soakaway systems will be designed with sufficient spare capacity to accommodate the possibility of excessive usage above the anticipated average. This option is the most cost-effective system for this Project. It is to be considered that a well-constructed and maintained septic tank should be odourless and problem free.

Should the receiving environment be regarded as sensitive, then the use of honey sucker services from an independent contractor will be considered.

9.7.4 Waste

Construction

Solid waste generated during the construction phase will be temporarily stored at suitable locations (e.g., at the construction camp) and will be removed at regular intervals and disposed of at licenced waste disposal sites.

Wastewater, which refers to any water adversely affected in quality through construction-related activities and human influence, will include the following:

- Sewage;

- Water used for washing purposes (e.g., equipment, staff); and
- Drainage over contaminated areas (e.g., workshop, equipment storage areas).

Suitable measures will be implemented to manage all wastewater generated during the construction period.

Operation

General and hazardous waste generated during the operational phase will be removed by an appointed registered waste management company and will be disposed of at licenced waste disposal sites.

9.7.5 Roads

Construction

There will be no temporary access roads during construction.

Operation

District Road D331 bisects the site and will be used to provide access to the solar PV facility on both sides and thereafter internal access. Access to the portion of Seelo Alpha north-east of road D331 is proposed approximately 150 m north of the southernmost border of Portion 2 of the Farm Rooipan No. 96. The exact location of the access point is to be determined together with the road authority, ensuring that adequate sight distance and access spacing are adhered to. The proposed access point for the portion of the Seelo Alpha facility that lies south-west of road D331 is positioned at the same location on the western side of the D331.

9.7.6 Stormwater

Construction

Best environmental practices will be implemented during construction to manage stormwater. These measures will be included in the EMPr.

Operation

The stormwater run-off along the main access road will be controlled by side swales and dispersed in a controlled manner at regular intervals. Stormwater run-off from the buildings will be disposed of through soakaways. A formal piped stormwater system is not envisaged for the wider site. Water will be managed on the surface and dispersed into natural drainage routes.

9.7.7 Electricity

Construction

The EPC Contractor will be responsible for the supply of electricity during construction. The electricity supply will be obtained from either a small-scale solar system, diesel generators or temporary supply via cables from the existing Eskom supply that is available on the site.

Operation

The electricity will be supplied by the plant during daylight hours (off-peak times – 07:00 to 17:00). The BESS will supply electricity during early morning and early night hours (peak times – 05:00 to 07:00 and 17:00 to 19:00). During other times electricity will be supplied from the power grid.

9.7.8 Laydown Areas

Construction

A laydown area for the PV footprint will be required during the construction phase and is demarcated in the layout drawing (refer to **Figure 8** above).

9.7.9 Construction Workers

Construction

The appointed Contractor will mostly make use of skilled labour for the construction of the facility and its associated infrastructure. In those instances where casual labour is required, the Applicant will request that such persons are sourced from local communities, as far as possible.

10 ALTERNATIVES

10.1 Introduction

Alternatives are the different ways in which the Project can be executed to ultimately achieve its objectives. Examples could include carrying out a different type of action, choosing an alternative location or adopting a different technology or design for a project.

The sub-sections to follow discuss the Project's alternatives considered during the Scoping process. The EIA process will provide a detailed comparative analysis of feasible alternatives from environmental (including specialist input) and technical perspectives.

By conducting the comparative analysis, the BPEO can be selected with technical and environmental justification. Münster (2005) defines BPEO as the alternative that "*provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term*".

10.2 Site Alternatives

The selected PV Site was identified through a prefeasibility study/screening process which took into consideration a set of location factors. The location factors which favour the selected PV site include:

- Suitable solar irradiation levels;
- Proximity to and availability of grid connection point. Many areas in South Africa do not have available generation connection capacity of the transmission network. The site is located approximately 13km from a grid connection point that has confirmed capacity to evacuate the electricity generated;
- Flat topography;
- Low agricultural sensitivity;
- Suitable site access; and
- Availability of the particular property for the development of a PV facility.

As a process was followed to identify the site for the proposed PV facility based on the application of the above location factors, alternative sites are not proposed for this project.

10.3 Layout / Design Alternatives

It is anticipated that the space available at the PV Site will be adequate to position the facility and its associated infrastructure to avoid areas of sensitive environmental features, which will be determined in the EIA Phase through the specialist studies.

An initial layout is proposed by the Applicant (see **Figure 10** below), however, through the environmental screening process and with input from specialists, the layout will be refined to take sensitive environmental features into consideration.

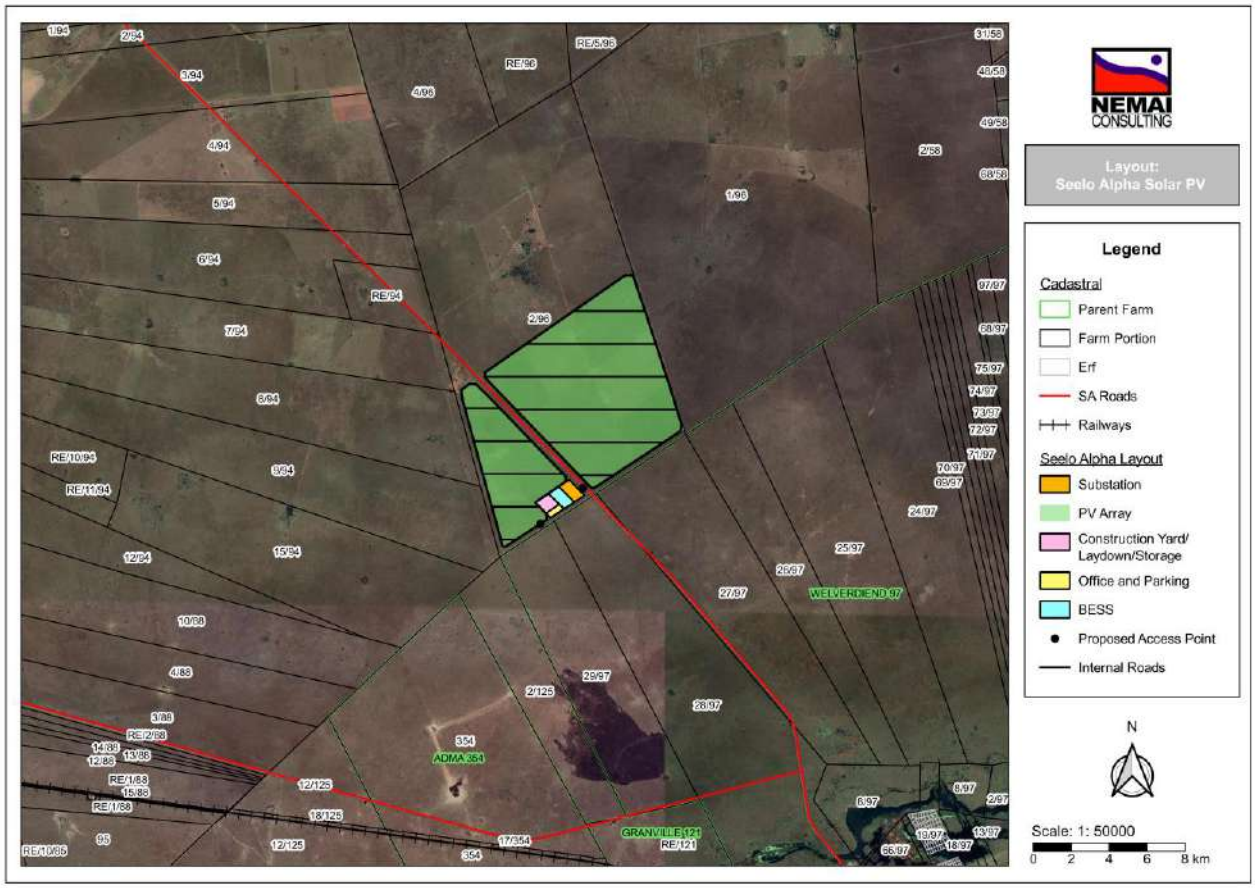


Figure 10: Current Proposed Layout of the Solar PV Plant (Orthophotograph)

10.4 Technology Alternatives

10.4.1 PV Technology

Very few technological options exist as far as PV technologies are concerned; those that are available are usually differentiated by climatic conditions that prevail. The impacts of the different PV technologies on the environment are very similar. The construction, operation and decommissioning activities associated with the facility will all be the same, irrespective of the chosen technology. Both technology alternatives are considered reasonable and relevant to this

application, based on the current technology available and potential engineered simplification of solar tracking systems in the coming years.

The Fixed and Tracking PV panel technologies are both considered for the proposed Solar PV Facility. The different solar PV panel technologies are briefly discussed in the following sub-headings:

- Fixed / mounted PV panels; and,
- Tracking PV panels (these solar panels rotate to follow the sun's movement/trajectory).

10.4.1.1 Fixed Mounted PV System

In a fixed mounted PV System (**Figure 11**), the PV panels are installed at a pre-determined angle from which they will not move during the lifetime of the plant's operation. The limitations imposed on this system due to its static placement are countered by the fact that the PV panels are able to absorb incident radiation reflected from surrounding objects. In addition, the misalignment of the angle of the PV panels have been shown to only marginally affect the efficiency of energy collection. There are advantages which are gained from fixed mounted systems, and includes the following:

- The maintenance and installation costs of a fixed mounted PV system are lower than that of a tracking system, which is mechanically more complex given that these PV mountings include moving panels;
- Fixed mounted PV systems are an established technology with a proven track record in terms of reliable functioning. In addition, replacement parts are able to be sourced more economically and with greater ease than with alternative systems; and,
- Fixed mounted systems are robustly designed and able to withstand greater exposure to winds than tracking systems.

A typical fixed structure will have two rows of twenty (20) modules (2 strings). The modules are placed in portrait arrangement. The foundation technology is usually a direct-driven (rammed) installation, with a ramming depth subject to the soil characteristics, or reinforced concrete strip footings.

Figure 11: Fixed Solar PV Panels

10.4.1.2 Dual Axis Tracking System

In a dual axis tracking system, PV panels are fixed to mountings which track the sun's trajectory. There are various tracking systems namely a single axis tracker or a dual axis tracker. A 'single axis tracker' will track the sun from east to west, while a 'dual axis tracker' will in addition be equipped to account for the seasonal waning of the sun. These systems utilise moving parts and complex technology, including solar irradiation sensors to optimise the exposure of PV panels to sunlight. Tracking systems are a new technology and, as such, are more complex to operate in South Africa. This is due to:

- A high degree of maintenance is required due to the nature of the machinery used in the system, which consists of numerous components and moving parts. A qualified technician is required to carry out regular servicing of these tracking systems, which are normally located in remote areas.
- The cost of the system is necessarily higher than a fixed mounted system due to the maintenance required for this system and given that separate mountings need to be placed apart from one another to allow for their tracking movement; and,
- A power source is needed to mechanically drive the tracking system and this would offset a certain portion of the net energy produced by the plant.

However, the additional improvements in capacity factor and efficiency may make a tracking system attractive despite these challenges. This can only be determined with a financial model during the more detailed design phase of the project.

10.4.2 BESS Technology

As technological advances within battery energy storage systems (BESS) are frequent, two BESS technology alternatives are considered namely, solid state battery electrolytes and redox-flow technology.

10.4.2.1 Solid State Batteries

Solid state battery electrolytes, such as lithium-ion (Li-ion), zinc hybrid cathode, sodium ion, flow (e.g. zinc iron or zinc bromine), sodium sulphur (NaS), zinc air and lead acid batteries, can be used for grid applications. Compared to other battery options, Li-ion batteries are highly efficient, have a high energy density and are lightweight. As a result of the declining costs, Li-ion technology now accounts for more than 90% of battery storage additions globally (IRENA, 2019).

These energy storage units come in a range of containerised systems with size categories from 500 kWh to 4 MW. The total footprint area required for the containerised systems to accommodate the 240 MW project with this type of battery is approximately 3 ha.

Solid state batteries consist of multiple battery cells that collectively form modules. Each cell contains an anode, cathode and a solid electrolyte. Modules are usually assembled within shipping containers and delivered to the site. Multiple containers will be required. The container unit dimensions are approximately 17 m long, 3.5 m wide, and 4 m high. Containers will be placed on a raised concrete plinth (300 mm) and may be stacked on top of each other to a maximum height of approximately 8 m. Additional instrumentation, including inverters and temperature control equipment, may be positioned between the battery containers (see **Figure 12** below).

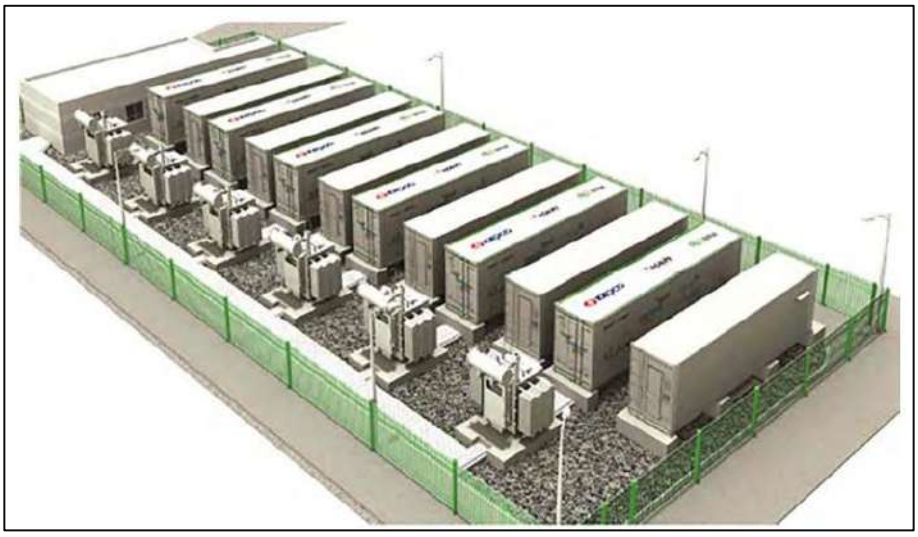


Figure 12: Typical illustration of a Battery Energy Storage System Technology

Considering the nature of the project, a solid-state technology type is envisaged for the proposed technology. The technology includes batteries housed within containers which are fully enclosed

and self-contained. Therefore, the assessment proposes all solid-state technologies for authorisation to allow the precise technology to be selected when the project is implemented, on the understanding that further investigation into the specific technologies available at the time of being awarded preferred bidder status will allow for one of two to be selected and ultimately developed.

A lithium-ion (Li-ion) battery is a rechargeable electrochemical battery operating on a wide array of chemistries where lithium ions are transferred between the electrodes during the charge and discharge reactions (Parsons, 2017).

A Li-ion cell is comprised of three main components; cathode and anodes electrodes, and an electrolyte that allows lithium ions to move from the negative electrode to the positive electrode during discharge and back when charging (**Figure 13**) (Parsons, 2017). While charging, lithium ions flow from the positive metal oxide electrode to the negative graphite electrode which is reversed during discharge (i.e. ion flow is in the opposite direction).

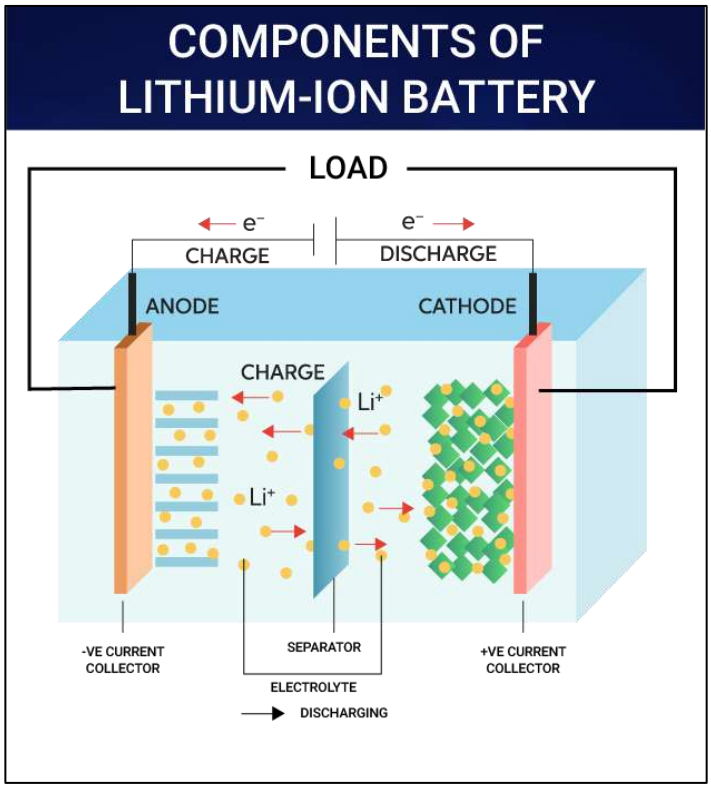


Figure 13: An example of a LI-ION Cell and its components
(https://esmito.com/blog/lithium-ion-batteries.html)

Li-ion battery cells contain two reactive materials which are capable of electron transfer chemical reactions (commonly a lithium source cathode and a graphite anode). A Li-ion battery comprises one or more power generating blocks called cells. A battery has the following main components: cathode (positive electrode), anode (negative electrode), electrolyte, separator, positive terminal (positive current collector) and negative terminal (negative current collector). The anode and cathode store the lithium and the electrolyte carries positively charged lithium ions from the anode

to the cathode and vice versa through the separator. The movement of the lithium ions creates free electrons in the anode which creates a charge at the positive terminal. The electrical current then flows from the current collector through a device being powered to the negative terminal. The separator blocks the flow of electrons inside the battery.

While the battery is discharging and providing an electric current, the anode releases lithium ions to the cathode, generating a flow of electrons from one side to the other. When plugging in the device, the opposite happens: Lithium ions are released by the cathode and received by the anode. Li-ion batteries initially got popular in consumer electronics industry because of their rechargeable quality. Today, they have become a standard for any device that needs a rechargeable battery. With their high energy density feature, they are revolutionizing the electrical vehicles as well. Li-ion batteries can work under different conditions that include very low as well as very high temperature, high as well as low drain, and for shock and vibration tolerant environments. First, Li-ion batteries are capable of packing huge amounts of power. They have one of the highest energy densities among different battery types, in the range of 100 – 200 Watt-hour / kg (Estimo, 2021).

Li-ion batteries utilise both lithium and a heavy metal (commonly cobalt or manganese) in the reactions required for energy storage, resulting in environmental impacts during the preconstruction phases of the technology (i.e. supply chain impacts). Lithium can however be recycled, adding the future potential use of this battery technology, however the recycling process is difficult and expensive.

The high round-trip efficiency (the fraction of energy put into the storage that can be retrieved), high power and energy density of this technology provide a significant advantage where a small footprint and available space are an issue. A significant disadvantage to Li-ion has been the high initial cost, as well as the limited cycle lives produced by earlier (historical) chemistries used in the battery (Parsons, 2017). Regardless, recent technological advances and large-scale manufacturing have reduced the price drastically and increased performance, with the result that Li-ion batteries are expected to be an important BESS through to 2030 in both small- and large-scale applications.

10.4.2.2 Flow Batteries

Flow-battery technologies provide alternative means for power smoothing through on-site battery storage. For this technology, energy is stored as an electrolyte in the flow cells. Options include Sodium polysulfide/bromine (PSB) flow batteries, Vanadium Redox (VRB) flow batteries, and Zinc-Bromine (ZNBR) flow batteries which would be contained in small bunded areas. The footprint of a Redox Flow Battery (RFB) system is approximately 150 m x 100 m, with a height of 8 m. For this technology, energy is stored as an electrolyte in the flow cells. The system consists of two electrolyte storage tanks that are contained within a 2.5 m high berm wall, which prevents leakage of the electrolyte chemical into the surrounding environment.

With a simple flow battery, it is straightforward to increase the energy storage capacity by increasing the quantity of electrolyte stored in the tanks. The electrochemical cells can be electrically connected in series or parallel, so determining the power of the flow battery system. They store and release energy through a reversible electrochemical reaction between two electrolytes (chemical reactants), which are separated by a membrane through which charging, and discharging occurs. These batteries provide an energy output greater than or equal to lead acid batteries, and their storage capacity is dependent upon the size of the electrolyte tanks while the power output is dependent on the size of the reaction stack (Parsons, 2017).

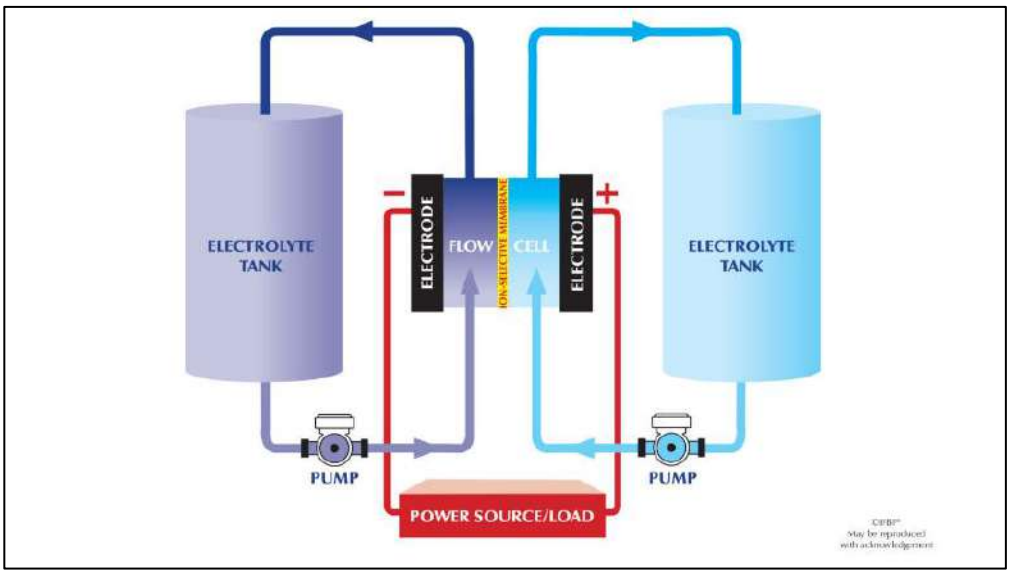


Figure 14: An example of a Flow Battery and its components
(https://flowbatteryforum.com/what-is-a-flow-battery/)

Flow batteries (**Figure 14**) are a technology of battery which requires mechanical systems (pumps, pipes, and tanks) and are therefore inherently more complex than a solid-state battery (for example, lithium-ion, lead or advanced lead acid batteries discussed above). The greatest advantage these batteries exhibit is their scalability and their longer duration discharge cycles which are more cost efficient when compared to solid-state batteries (Parsons, 2017). The most successful and widespread of these batteries use vanadium and zinc-bromine chemistries.

Redox Flow Batteries (RFB) are a class of electrochemical energy storage technology which entail a chemical reduction and oxidation reaction that stores energy in liquid electrolyte solution flowing through a battery of electrochemical cells during charge and discharge. They are therefore a subset (or one variant) of flow batteries and essentially work by two separate containers of dissolved chemical components, separated by a membrane, which facilitate ion exchange (and thus the resulting flow of electric current) across the membrane when an electrical load is applied to the system. These batteries may act as a fuel cell, where spent electrolyte solution is exchanged once no longer effective, or rechargeable, where regeneration may be achieved by applying a source of electricity to the electrolyte). The energy capacity of this battery is a function of the volume of the electrolyte solution, allowing for a high degree of scalability.

10.5 No-Go Option

As standard practice and to satisfy regulatory requirements, the option of not proceeding with the Project is included in the evaluation of the alternatives.

The no-go alternative can be regarded as the baseline scenario against which the impacts of the Project are evaluated. This implies that the current status and conditions associated with the proposed Project footprint will be used as the benchmark against which to assess the possible changes (impacts) associated with the Project.

In contrast, should the proposed Project not go ahead, any potentially significant environmental issues would be irrelevant, and the status quo of the local receiving environment would not be affected by the project-related activities. The objectives of the Project, including the benefits (such as the exploitation of SA's renewable energy resources, potential economic development and related job creation, and increased security of electricity supply), will not materialise.

The no-go alternative will be assessed during the EIA Phase, taking into consideration the findings of the specialist studies and the outcomes of public participation (amongst others).

11 PROFILE OF THE RECEIVING ENVIRONMENT

11.1 Introduction

This section provides a general description of the status quo of the receiving environment in the Project Area. This serves to provide the context within which the Scoping exercise was conducted. It also allows for an appreciation of sensitive environmental features and possible receptors of the effects of the proposed Project and provides a baseline against which impacts can be determined. The study area includes the entire footprint of the Project, including the proposed Solar PV Plant.

A brief overview is also provided of the manner in which the environmental features may be affected (positively or negatively) by the proposed Project. Significant environmental issues are discussed further in **Section 13** below. These preliminary impacts are only discussed concisely on a qualitative level, as part of the Scoping Phase. The EIA Report will provide a comprehensive evaluation of the potential impacts and will quantify the effects to the environment based on the methodology presented in **Section 13.4** below.

11.2 Land Use

Status Quo

The Project is located approximately 15km north-west of the town of Carletonville's business district (CBD) and falls within Ward 28 of the JB Marks Local Municipality (JBMLM), in the North West Province. District Road D331 bisects the site. The Project's PV Site is vacant and was historically used for agricultural purposes.

Agriculture is the dominant land use in the Project area. The following land uses are encountered around the Project's PV Site:

- Farming activities on the property and surrounding properties;
- The Abe Bailey Provincial Nature Reserve is located immediately south-east of the site; and
- The National Road (N14) is located approximately 10km north of the site which provides regional access to the area.

Potential Impacts / Implications

- Solar power is regarded as one of the most land-intensive power generation technologies. However, layouts can be flexible as the systems are modular and the PV modules can be arranged to fit within most footprints. The land is suitable for the scale and requirements of the proposed Project.
- The Project has a limited life span. Following decommissioning and rehabilitation, alternative land uses, such as returning the land to agriculture, can be pursued.

- Requirements and restrictions associated with servitudes on the properties need to be adhered to.
- The restrictions associated with the provincial nature reserve located directly adjacent the site need to be determined.

Specialist Study Triggered / Additional Investigations

Specialist studies to be included in the EIA Report that will consider land use and land cover include the following:

- Agricultural Compliance Statement;
- Terrestrial Biodiversity Compliance Statement;
- Visual Impact Assessment; and
- Heritage Impact Assessment.

The layout will incorporate the findings of the specialist studies and will attempt to avoid environmentally sensitive areas, which will be presented in the EIA Report.

11.3 Climate

Status Quo

Carletonville's climate is classified as warm and temperate. When compared with winter, the summers have much more rainfall. According to Köppen and Geiger, this climate is classified as Cwb (https://en.climate-data.org/africa/south-africa/gauteng/carletonville-1029/).

The mean minimum and maximum temperatures for Carletonville over the year are shown in **Figure 15** below. The warmest month, on average, is January with an average high of 27°C and low of 16°C. The coolest month on average is July, with an average low of 2°C and high of 18°C.

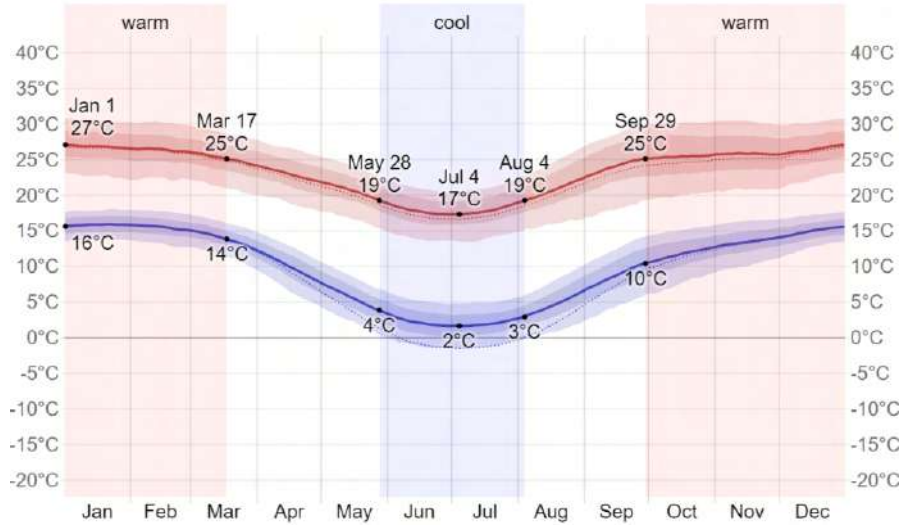


Figure 15: Average minimum and maximum temperatures in Carletonville
(https://weatherspark.com/y/94205/Average-Weather-in-Carletonville-South-Africa-Year-Round)

The mean monthly precipitation over the year is shown in **Figure 16** below. The average annual precipitation 531 mm.

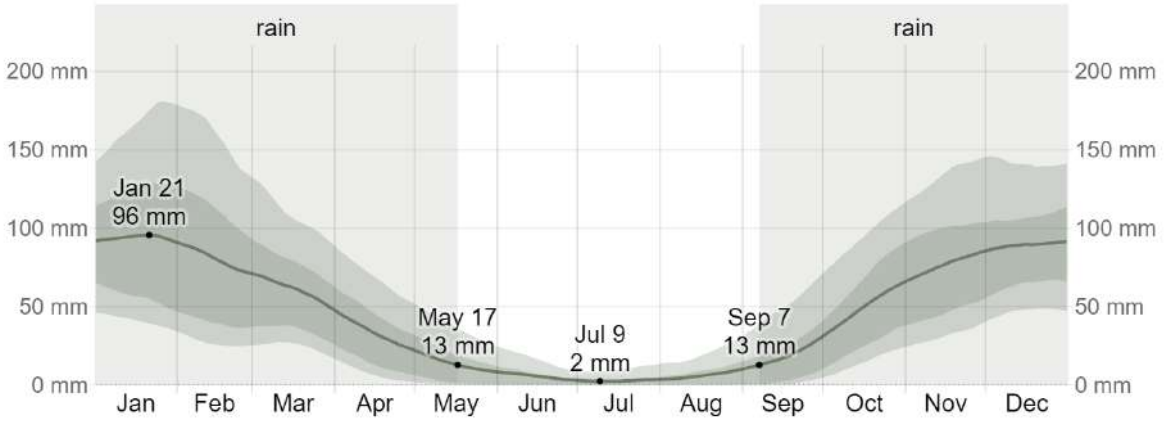


Figure 16: Average monthly precipitation in Carletonville
(https://weatherspark.com/y/94205/Average-Weather-in-Carletonville-South-Africa-Year-Round)

Potential Impacts / Implications

- The Project proposes to generate energy from a renewable resource, by harnessing solar energy. Renewable energy sources play a role in providing energy services in a sustainable manner and, in particular, in mitigating climate change.
- The proposed site was found to be suitable for the development of the Solar PV Plant due to the local climate and good solar resource (irradiation) (amongst others).
- High wind speeds will need to be factored into the plant specifications and the operation of the tracking systems.
- The efficiency of the facility could be adversely affected if the modules are soiled (covered) by particulates/dust. Soiling of modules will require an appropriate maintenance and cleaning plan.

Specialist Study Triggered / Additional Investigations

- The EMPr will make provision for the maintenance of the facility.

11.4 Geology and Soil

Status Quo

The Project Area is underlain by the Malmani dolomites (see **Figure 17** below). The lithology for the Malmani dolomites is predominately calcareous rocks which consist of limestone, dolomite and calcarenite and forms part of the Chuniespoort Group and the Transvaal Supergroup. The Malmani dolomites comprise a succession of stromatolitic carbonate rocks, with interbedded chert and subordinate shale and quartzite, occurring throughout the Transvaal basin.

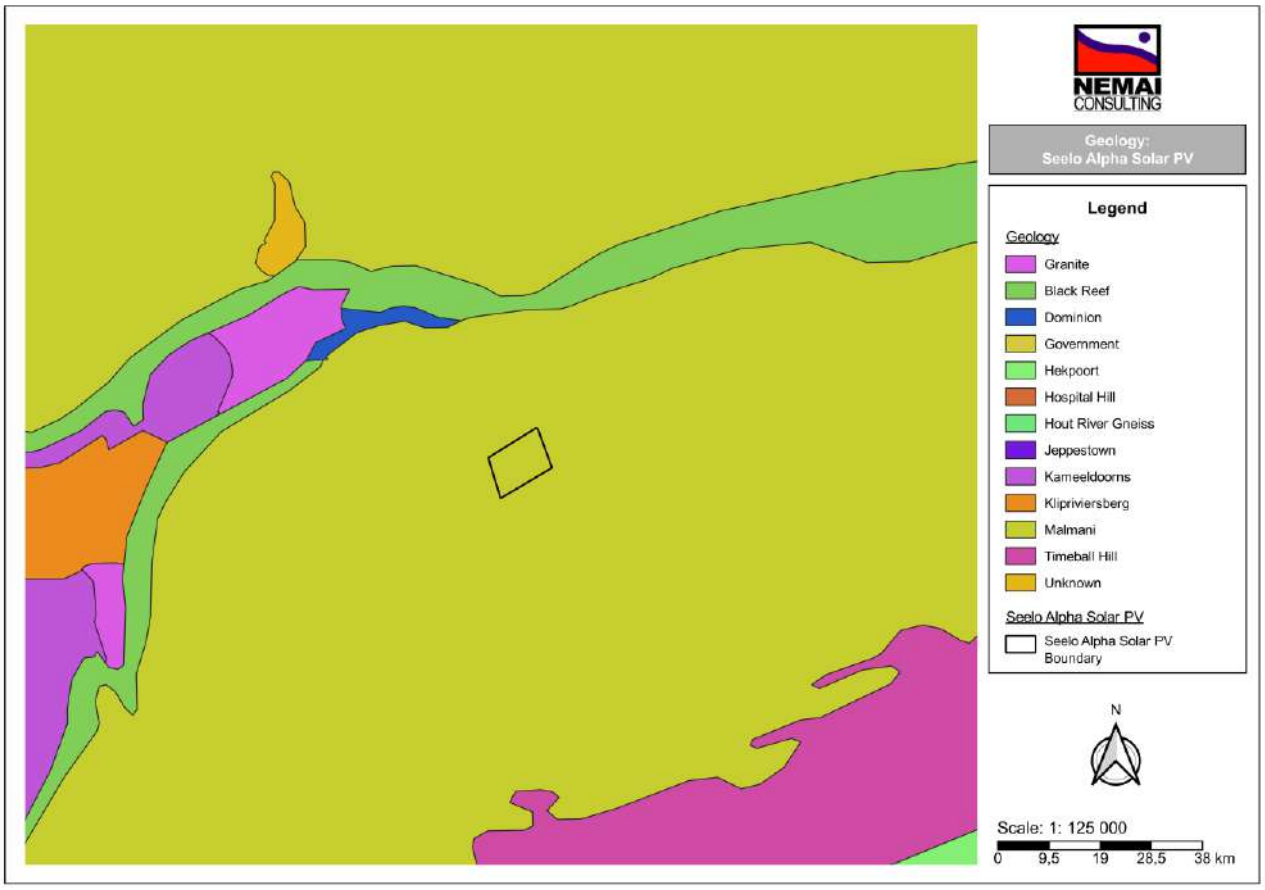


Figure 17: Simplified geology map

As shown in **Figure 18** below, the PV Site is characterised by lithosoils (S13) (shallow soils on hard or weathering rock). This soil type may have restricted soil depth, excessive drainage, high erodibility and low natural fertility.

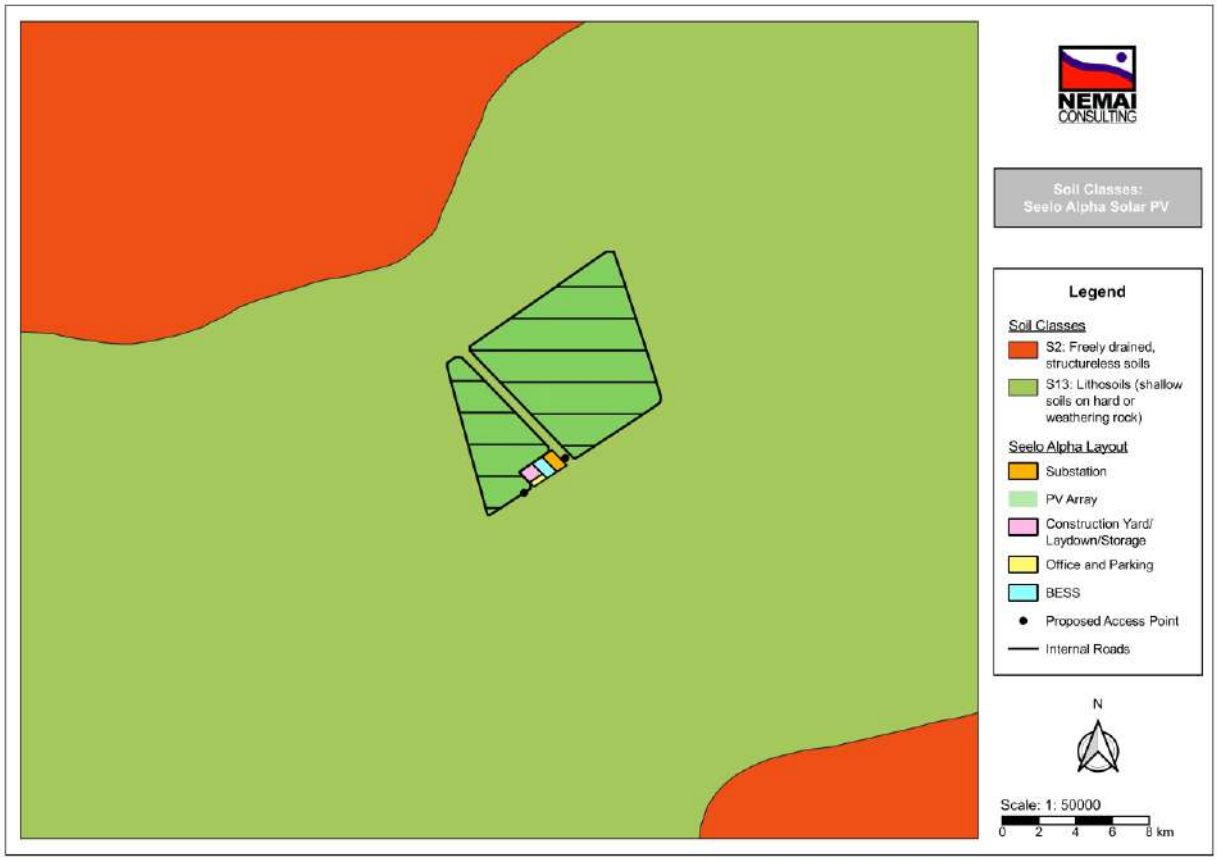


Figure 18: Soil classes

Potential Impacts / Implications

- ❑ The geotechnical characteristics determine the suitability of the PV Site in terms of foundations for structures and infrastructure. Rocky conditions were encountered on site.
- ❑ Construction phase:
  - Loss of soil suitable to agriculture.
  - Establish need to rehabilitate eroded areas.
  - Use of heavy equipment during the construction phase could lead to soil compaction.
  - Soil could be contaminated through inadequate storage and handling of hazardous materials, spillages from equipment and plant and poor management of waste, wastewater and cement mixing.
  - Topsoil may be lost if not properly stripped and stockpiled for use during rehabilitation.
  - Erosion may take place if stormwater is not adequately managed.
- ❑ Operational phase:
  - Erosion may take place if stormwater is not adequately managed.
  - Soil could be contaminated through inadequate storage and handling of hazardous materials, leaks from the BESS and poor management of waste and wastewater.

Specialist Study Triggered / Additional Investigations

- ❑ The findings from geotechnical investigations need to be considered during the Project design phase.
- ❑ An Agricultural Compliance Statement will be undertaken, and the findings will be included in the EIA Report. The layout will take into consideration the agricultural potential of the area.
- ❑ The EMPr will contain measures to mitigate against impacts to soil, for example the management of topsoil, preventing soil contamination during construction, etc.

11.5 Topography

Status Quo

In terms of the terrain morphology, the PV Site is characterised by plains with low relief. In terms of the SOTER database (see **Figure 19** below), the landform encountered over the PV Site is characterised as a plain at a medium level.

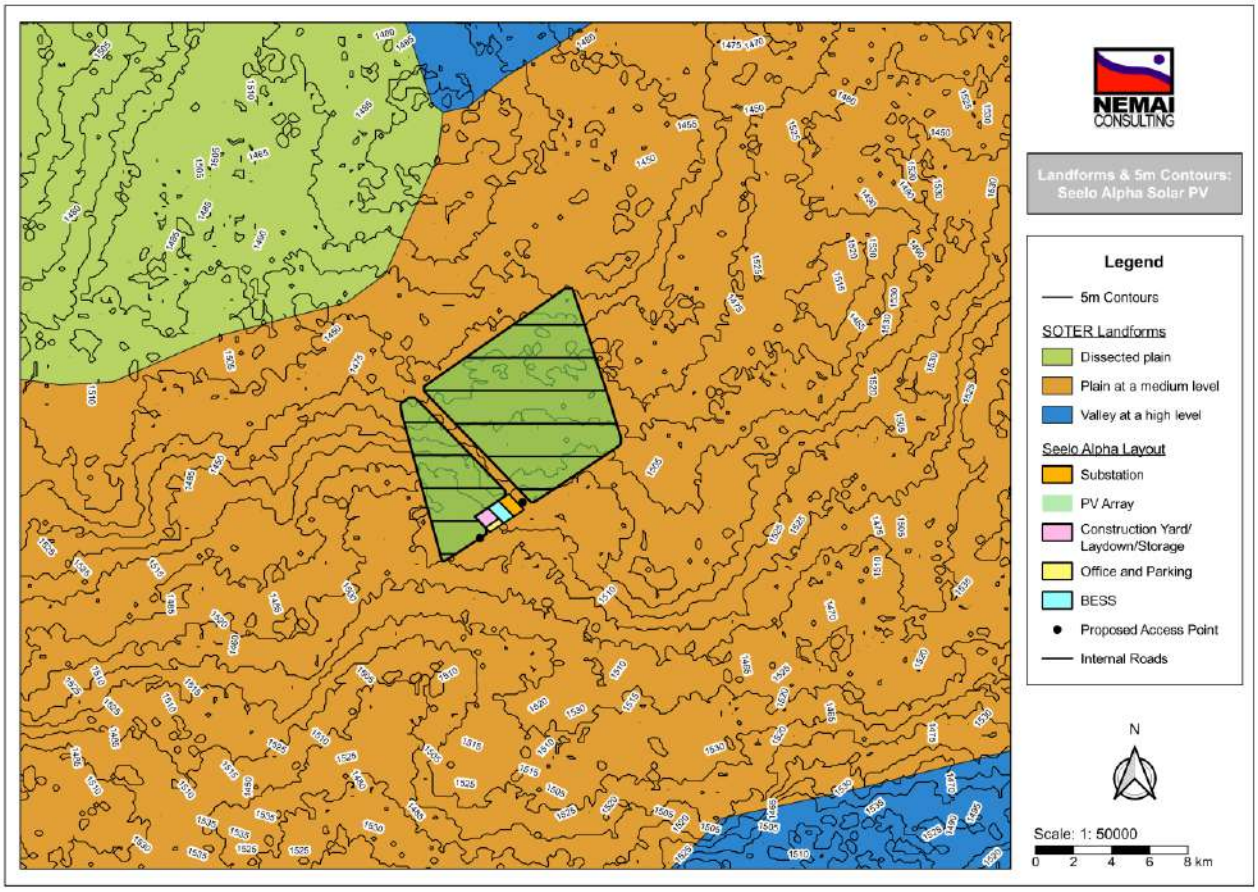


Figure 19: SOTER Landforms

The elevation profiles of the PV Site are as follows (see **Figure 20** below):

- From west to east the elevation drops from 1514m to 1511m above sea level over a distance of approximately 2.2km; and
- From north to south the elevation drops from 1520m to 1494m above sea level over a distance of approximately 2km.

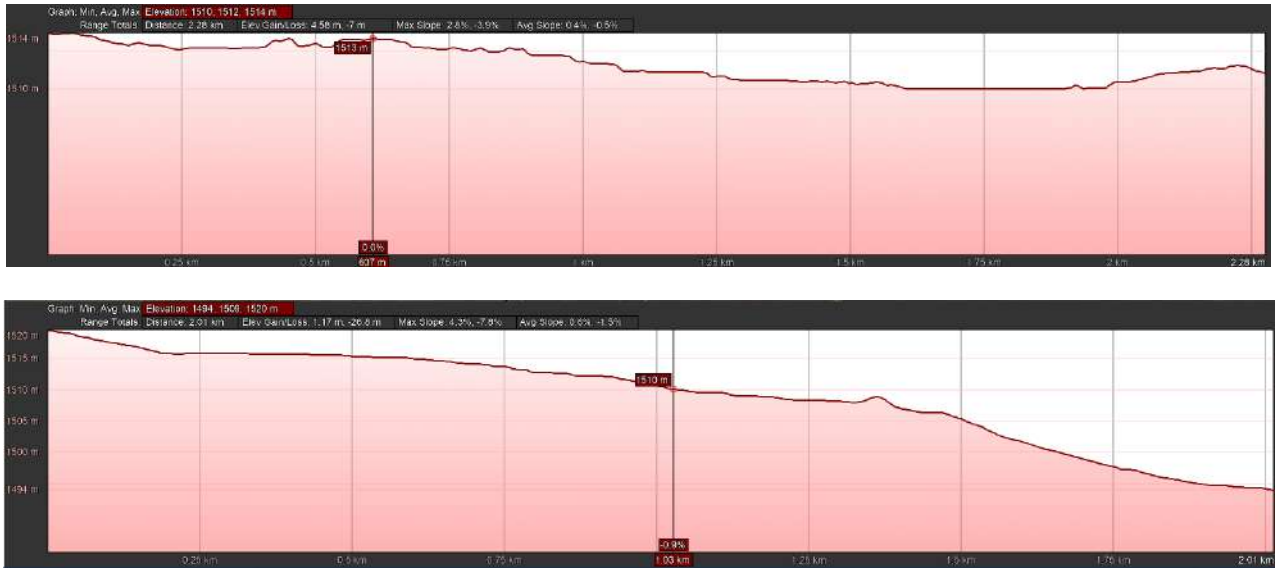


Figure 20: Map of site profiles – Top: west to east; and Bottom: north to south

Potential Impacts / Implications

- The topography is relatively flat which makes it suitable for the development of a large-scale Solar PV Plant.
- Visual impacts may be caused by the transformation of the landscape.
- Erosion of areas cleared for construction purposes.
- From a glint and glare perspective, it is noted that the solar panels are designed to absorb, not reflect, irradiation.

Specialist Study Triggered / Additional Investigations

- The findings of the Visual Impact Assessment will be included in the EIA Report.
- The EMPr will make provision for managing visual impacts and stormwater during the construction and operational phases of the Project.

11.6 Surface Water

Status Quo

The Project Area is situated in the C23G Quaternary Catchment, which falls within the Upper Vaal Water Management Area (WMA). The Project Area drains into the Mooirivierloop, which are located south-east of the site. The Mooirivierloop joins the Mooiriver before flowing into the Vaal River.

According to the National Wetland Map 5 spatial data (Van Deventer *et al*., 2018), no wetlands occur on the PV Site (see **Figure 22** below). This will be confirmed as part of the wetland delineations in the EIA Phase. No other watercourses furthermore occur on the proposed development site.

According to the findings from the National Web Based Environmental Screening Tool, an area of very high sensitivity in terms of aquatic biodiversity occurs in the PV Site (see **Figure 23** below). A Site Sensitivity Verification (SSV) undertaken by the appointed Freshwater Specialist disputed the very high sensitivity designated and confirmed the site having a low aquatic biodiversity sensitivity.

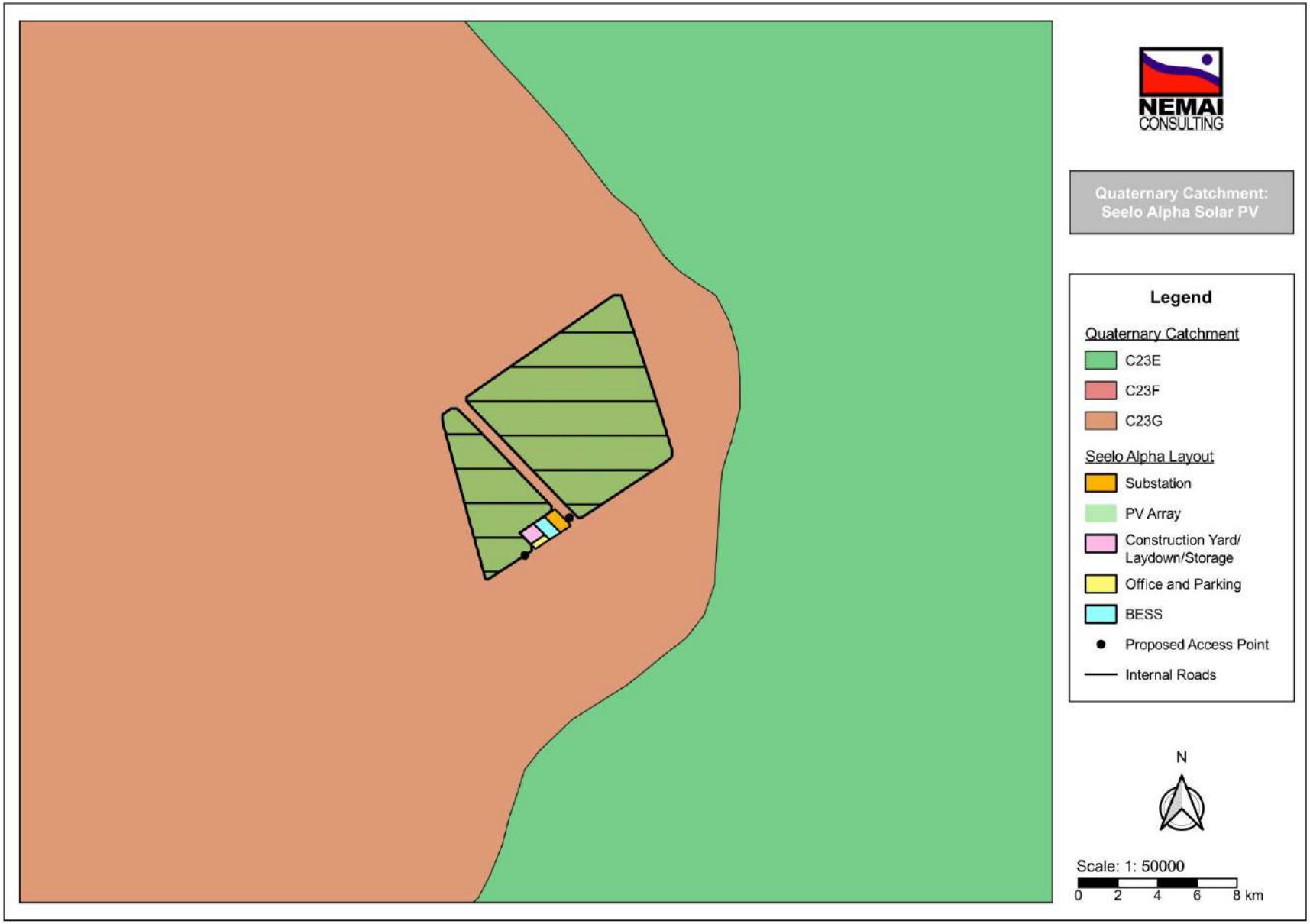


Figure 21: Quaternary catchment map

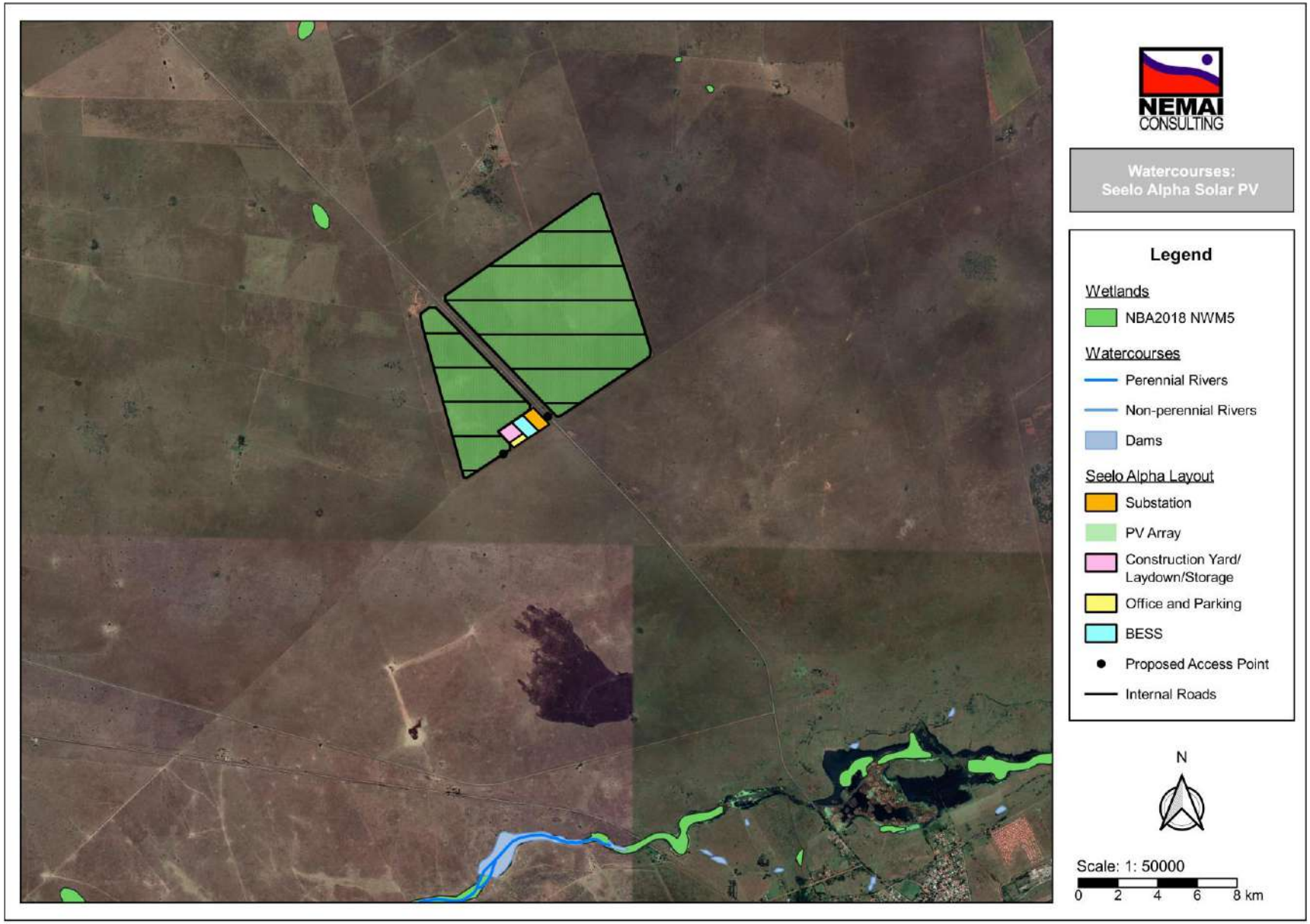


Figure 22: Watercourses in Project Area

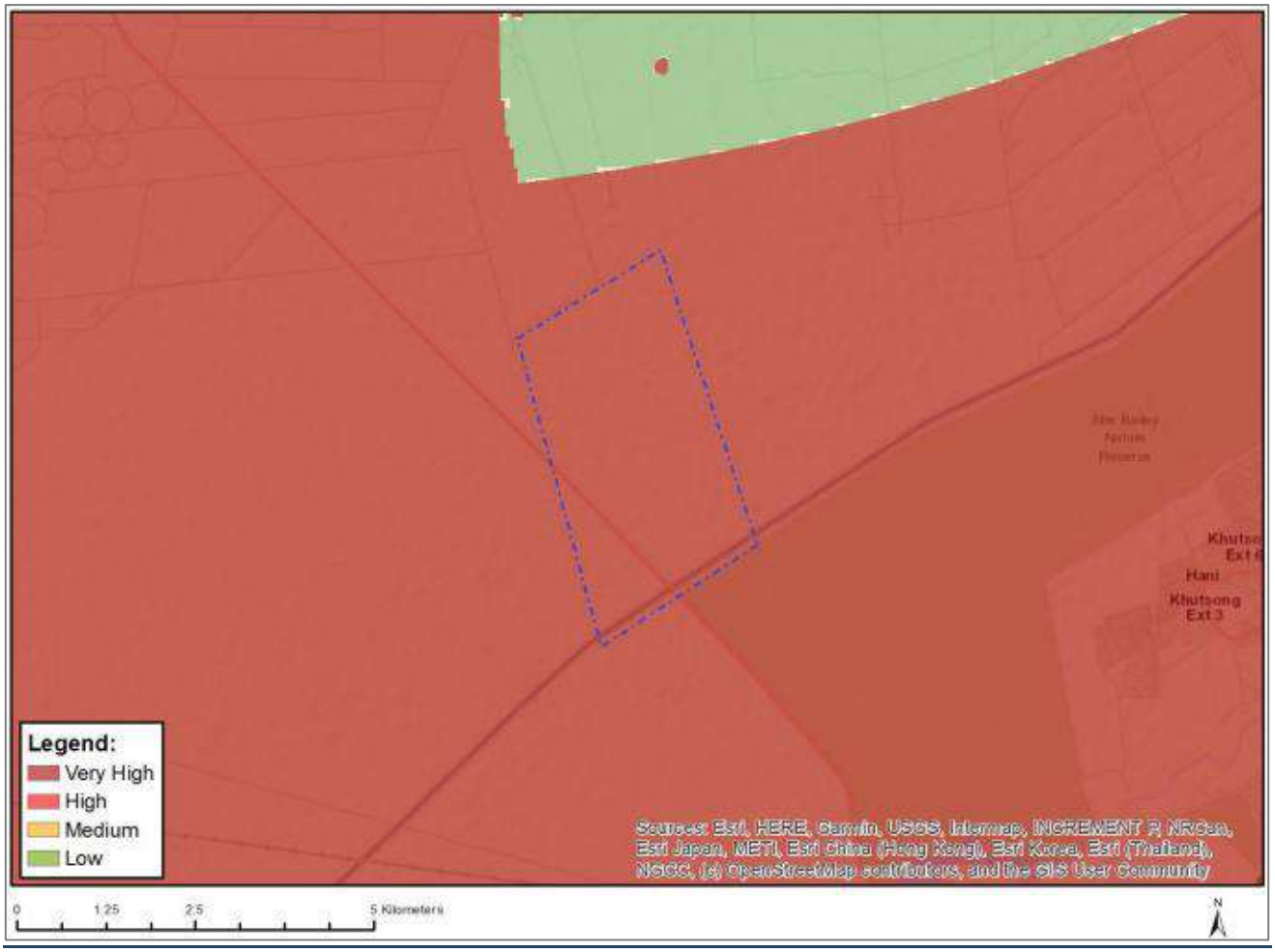


Figure 23: Map of Relative Aquatic Biodiversity Theme Sensitivity

Potential Impacts / Implications

- Construction phase:
  - Reduction of water quality through sedimentation (e.g., silt from the construction site transported via runoff) and poor construction practices (e.g., improper management of wastewater, incorrect storage of material, spillages, etc.).
  - Alteration of site drainage.

- Operational phase:
  - Sedimentation through silt-laden runoff, caused by inadequate stormwater management.
  - Water resources could be contaminated through inadequate storage and handling of hazardous materials, leaks from the BESS and poor management of waste and wastewater.
  - Water use requirements of the Project need to be satisfied.
  - Alteration of site drainage.

Specialist Study Triggered / Additional Investigations

- ❑ The findings of the Aquatic Biodiversity Compliance Statement will be included in the EIA Report.
- ❑ The layout will take into consideration delineated watercourses and their buffers.
- ❑ Best practices to mitigate impacts to watercourses and to manage stormwater will be included in the EMPr.
- ❑ Should construction activities encroach into the regulated area of a watercourse (i.e. 1:100 year floodline / delineated riparian habitat, or 500 m of a wetland habitat) water use authorisation will be required in terms of Section 21 of the NWA.

11.7 Flora & Fauna

Status Quo

11.7.1 Biomes and Vegetation Types

The proposed PV Site falls in the Grassland Biome and the vegetation type found in the Project Area is the Carletonville Dolomite Grassland (Gh 15) (Mucina and Rutherford, 2006) (see **Figure 24** below). The Carletonville Dolomite Grassland is listed as a Least Threatened (LT) vegetation type.

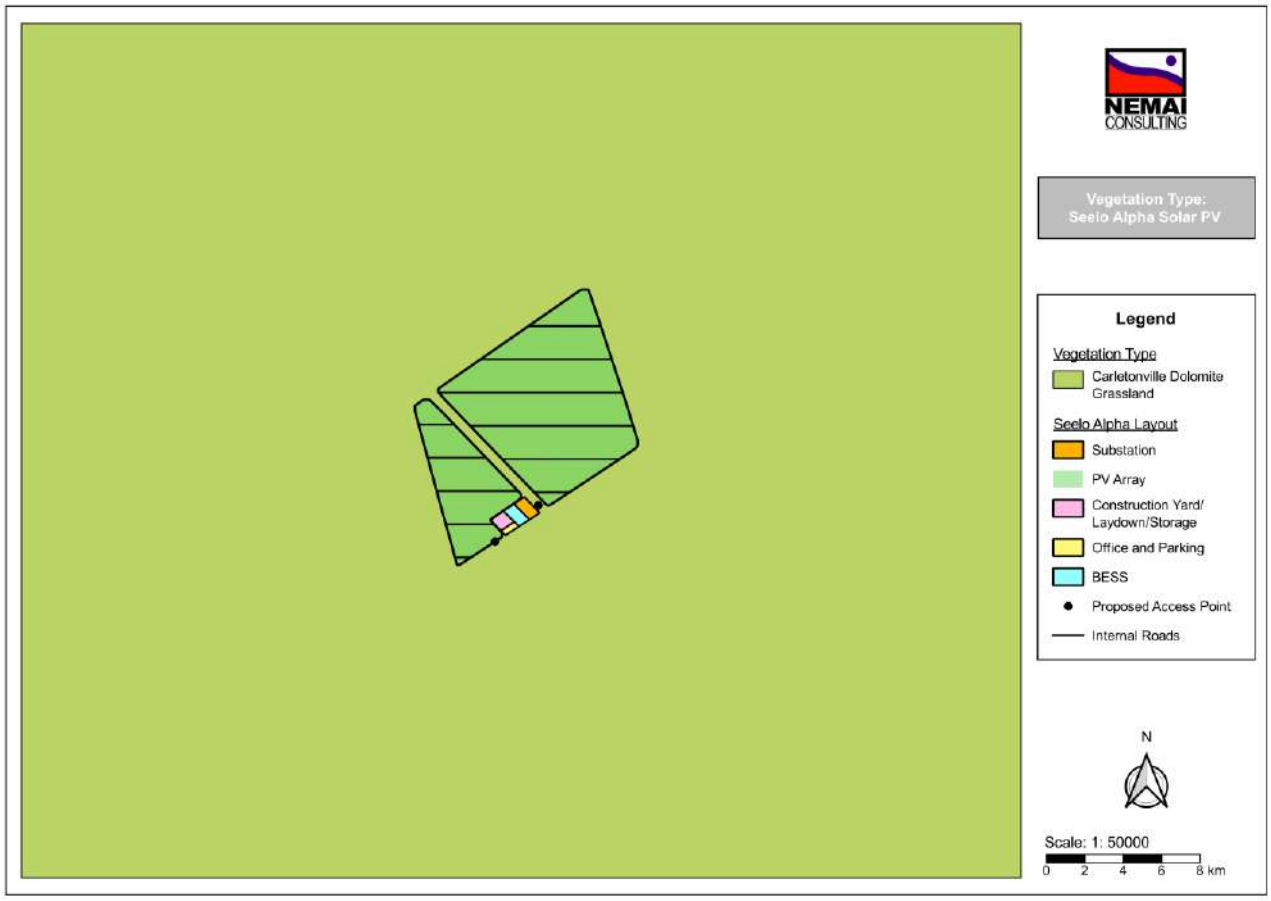


Figure 24: Vegetation types in relation to the Project Area

According to the findings from the National Web Based Environmental Screening Tool, the Project Area has a medium sensitivity in terms of the relative plant species theme. A SSV undertaken by the appointed Terrestrial Ecologist disputed the medium sensitivity designated and confirmed the site having a low sensitivity.

11.7.2 Threatened Terrestrial Ecosystems

In terms of Section 52(1)(a) of NEM:BA, a national list of ecosystems that are threatened and in need of protection was gazetted on 9 December 2011. The list classified all threatened or protected ecosystems in South Africa in terms of four categories; Critically Endangered (CR), Endangered (EN), Vulnerable (VU), or Protected. The purpose of categorising these ecosystems is to prioritise conservation areas in order to reduce the rates of ecosystem and species extinction, as well as preventing further degradation and loss of structure, function, and composition of these ecosystems. According to the South African National Biodiversity Institute (SANBI), the Project Area does not fall within a threatened ecosystem.

'Ecosystem protection level' is an indicator of how adequately an ecosystem is protected or not. Ecosystems can be classified as not protected, poorly protected, moderately protected or well protected depending on the proportion of each ecosystem that is under conservation management within a protected area, as recognized in the National Environmental Management: Protected Areas Act (Act No. 57 of 2003) (NEM:PAA). These protected areas include state or privately-owned protected areas as well a land under biodiversity stewardship agreements. According to the National Biodiversity Assessment (2018), the project area falls within the area listed as **Poorly Protected** on a national scale.

According to the findings from the National Web Based Environmental Screening Tool (**Figure 25**), the relative terrestrial biodiversity theme sensitivity for the PV Site is low. An SSV undertaken confirmed the low sensitivity designated. The relative Plant Species and Animal Species themes both showed a medium sensitivity for the entire site (Refer to **Appendix B** for the Screening Tool Report included in the Application Form). An SSV undertaken by the appointed Terrestrial Ecologist disputed the medium sensitivity designated and confirmed the site having a low sensitivity for both the plant and animal species themes.

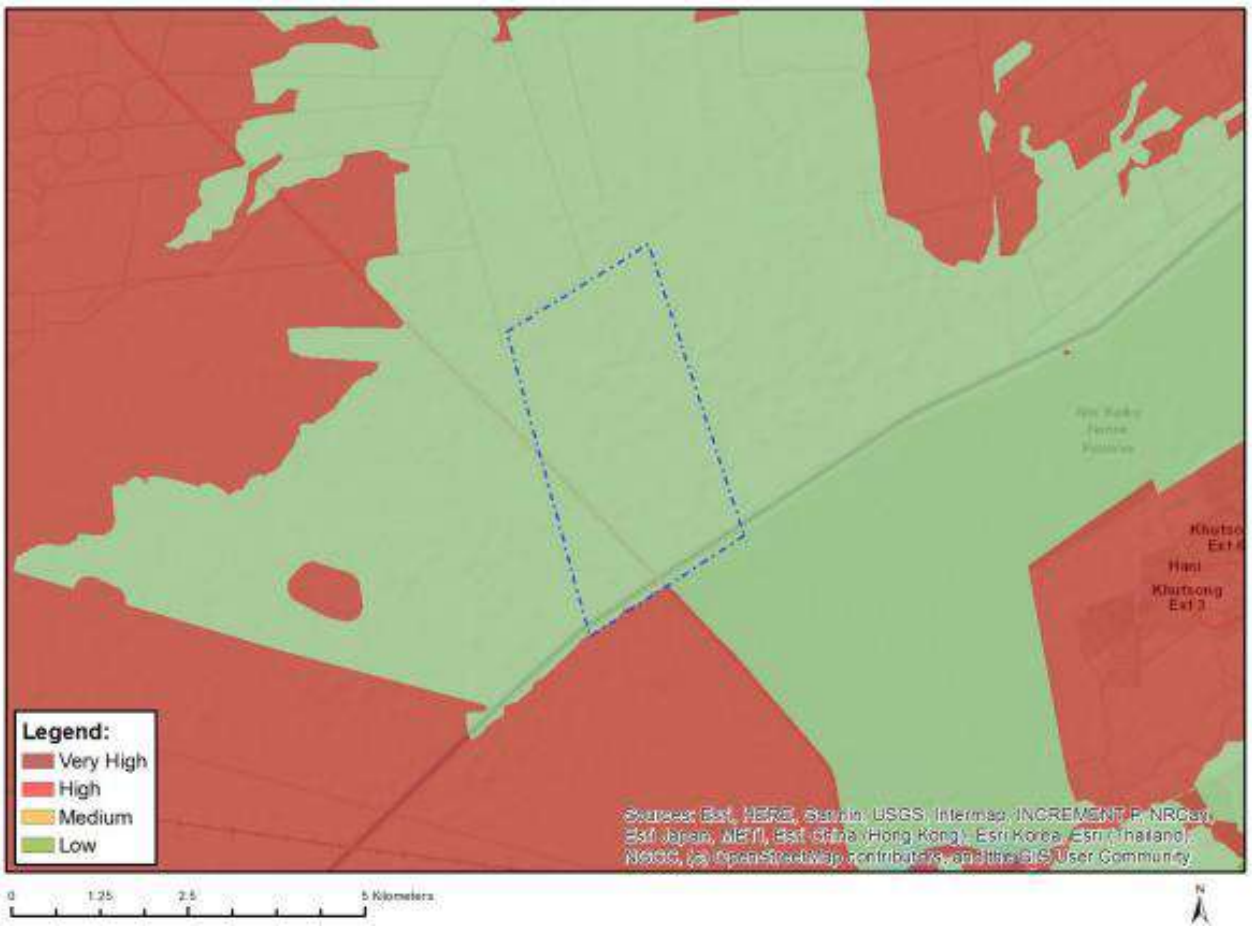


Figure 25: Map of Relative Terrestrial Biodiversity Theme Sensitivity

11.7.3 Protected Areas

The nearest formally protected area to the Project Area is the Abe Bailey Provincial Nature Reserve which is located immediately adjacent the project site (refer to **Figure 26** below), to the south-east.

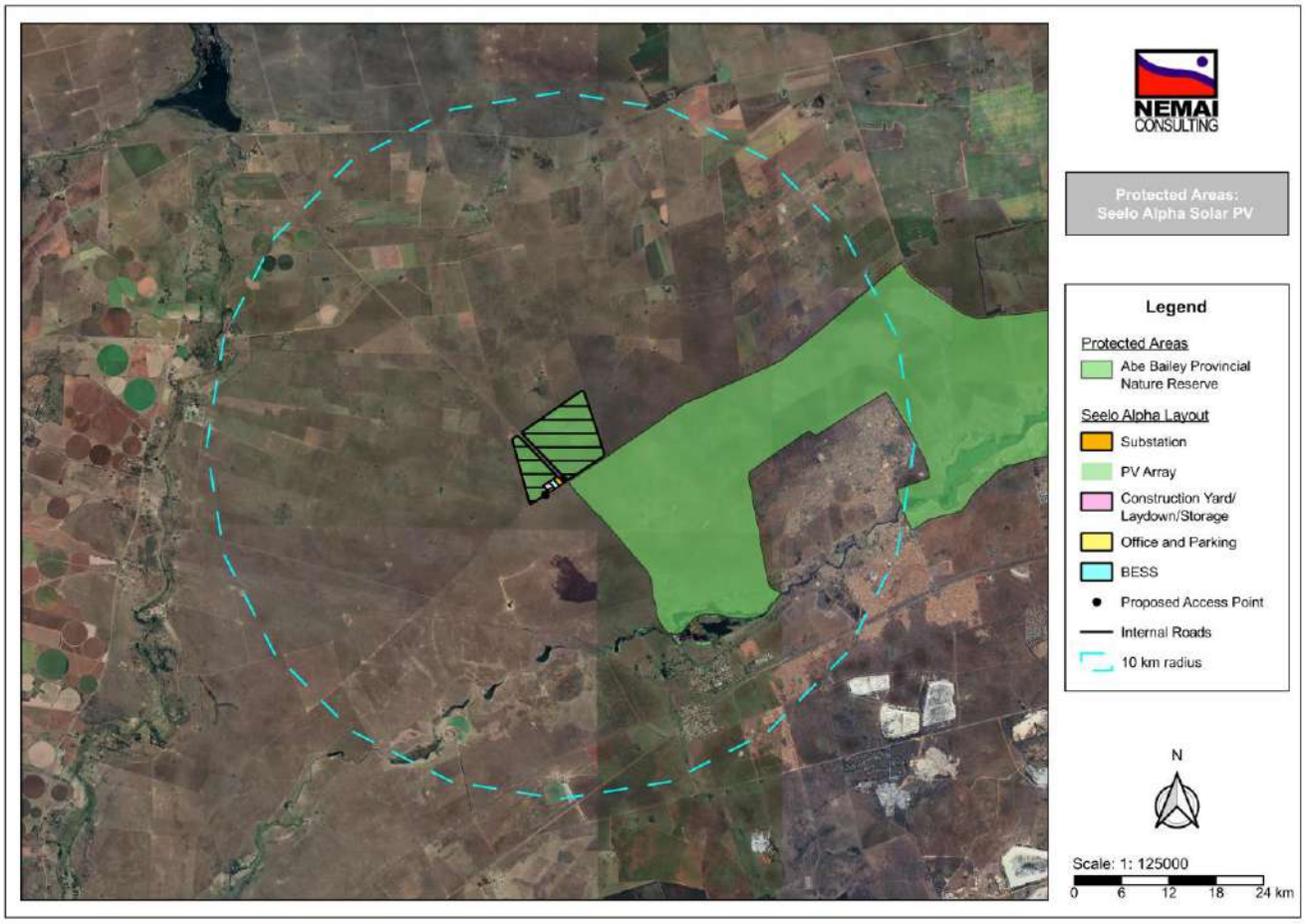


Figure 26: Protected areas in relation to the Project Area

11.7.4 North West Terrestrial Biodiversity Plan

The North West Terrestrial Biodiversity Plan (2015) shows Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). CBAs are important for conserving biodiversity while ESAs are important to ensure the long-term persistence of species or functioning of other important ecosystems. Degradation of CBAs or ESAs could potentially result in the loss of important biodiversity features and/or their supporting ecosystems.

The location of the Project Area in relation to the North West Terrestrial Biodiversity Plan is shown in **Figure 27** below. The Project does not fall within any CBAs or ESAs. Ground truthing of these areas, in terms of their actual status, will be undertaken as part of the Terrestrial Biodiversity Assessment in the EIA Phase.

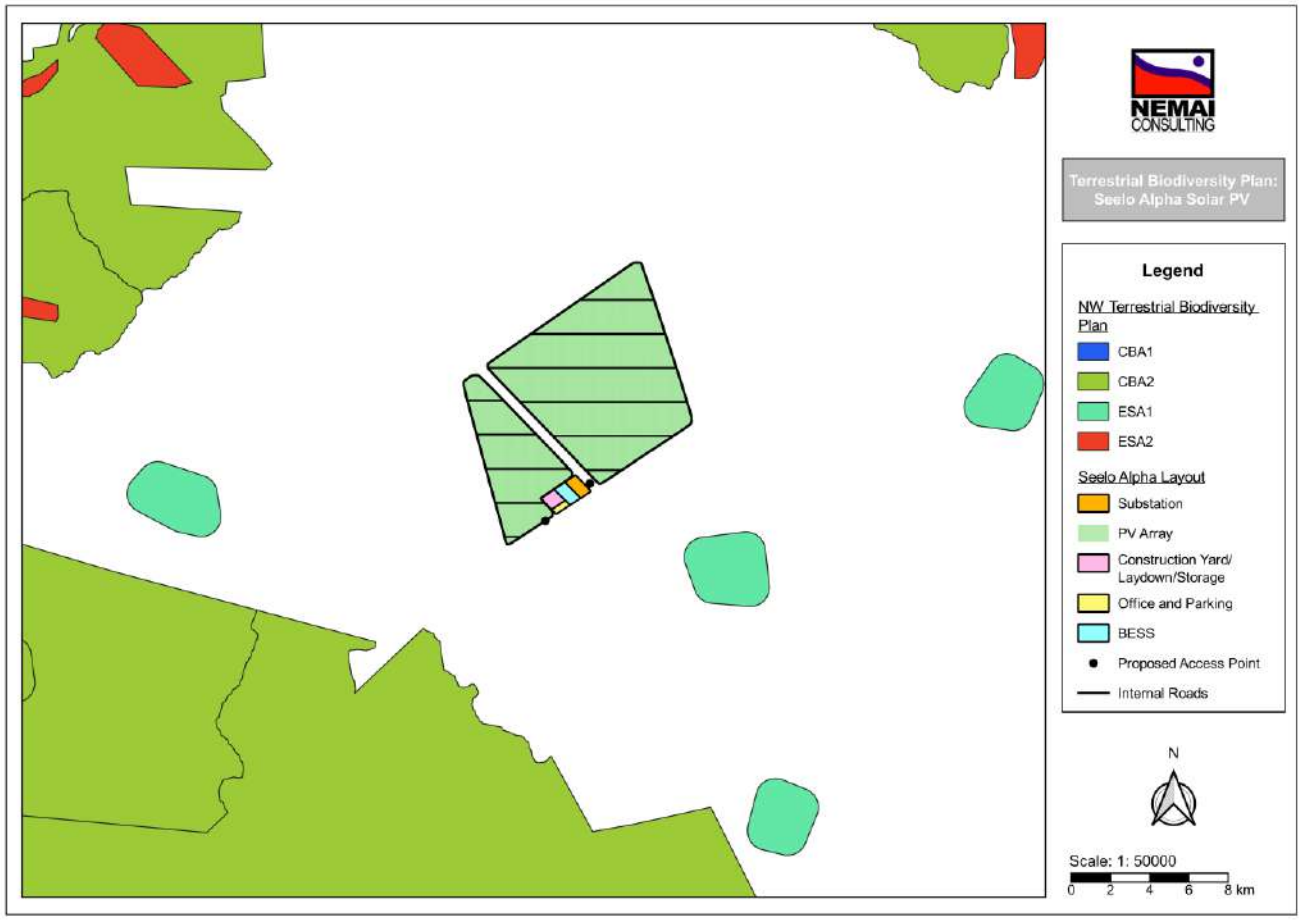


Figure 27: Project Area in relation to the North West Terrestrial Biodiversity Plan

11.7.5 Important Bird & Biodiversity Area

The Important Bird & Biodiversity Area (IBA) programme of southern Africa (Barnes, 1998) identifies 124 IBAs in South Africa. IBAs are places of international significance for the conservation of birds and other biodiversity and are sites that together form part of a wider, integrated approach to the conservation and sustainable use of the natural environment. There are no IBA's within a 20km radius of the Project Area. The closest IBA is the Magaliesberg, which is located 37km north from the site.

According to the findings from the National Web Based Environmental Screening Tool, the PV Site has a high sensitivity in terms of the relative avian theme (**Figure 28**). A SSV undertaken by the appointed Avifaunal Specialist disputed the high sensitivity designated and confirmed the site having a medium avifaunal sensitivity.

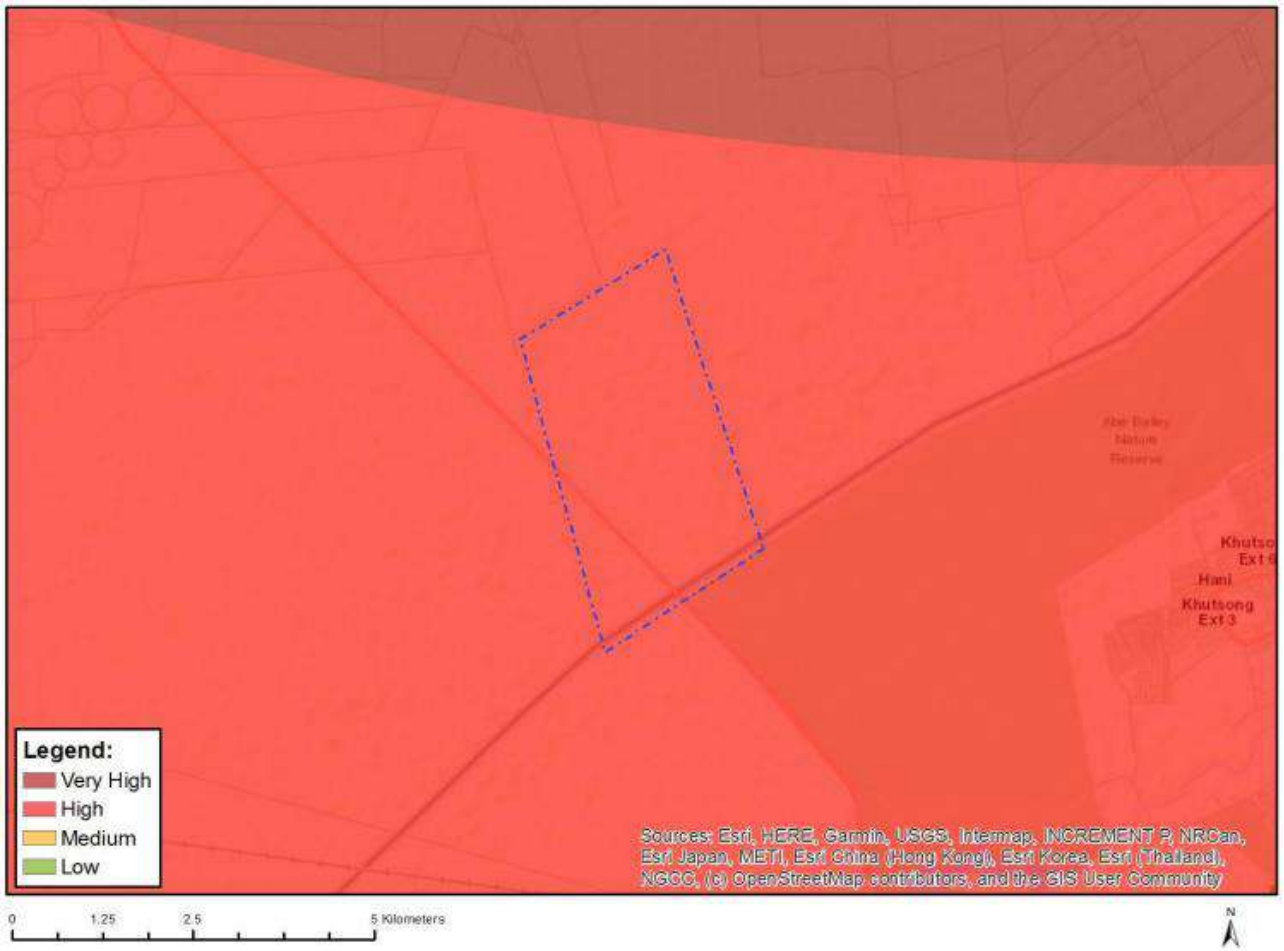


Figure 28: Map of Relative Avian Theme Sensitivity

Potential Impacts / Implications

- Construction phase –
  - Clearance of vegetation for site preparation, along access roads and other areas to be disturbed. This could result in habitat loss / fragmentation. The significance of habitat loss will need to consider the total area of habitat affected, the uniqueness of the habitat and the sensitivity and conservation status of the habitat and its associated species.
  - Potential loss, disturbance or displacement of protected fauna and flora species.
  - Human - animal conflicts.
  - Noise and vibration.
  - Nights lights may affect nocturnal faunal species.
  - Illegal harvesting and poaching of faunal and floral species by construction workers.
  - Pollution of the biophysical environment from poor construction practices.
  - Proliferation of invasive alien species in disturbed areas.
- Operational phase –
  - Habitat fragmentation (e.g., barriers to animal movement).
  - Reflection of sunlight from the solar panels could adversely affect birds, including those species that use the watercourses on the site and surrounding areas.

- Landscaping, re-seeding and vegetation control is required to remove the risk of vegetation shading modules and reducing performance of the facility.
- Chemical pollution associated with cleaning the PV panels.
- Shading out of plants by solar panels.
- Proliferation of invasive alien species in disturbed areas.

Specialist Study Triggered / Additional Investigations

- ❑ The compatibility of the project with the North West Terrestrial Biodiversity Plan and other environmental management and planning tools will be considered further during the EIA Phase.
- ❑ The Terrestrial Biodiversity Compliance Statement in the EIA Phase will assess the status of the sensitive ecological features. Suitable mitigation measures will be identified, and recommendations will be made to address potential impacts.
- ❑ The layout will be refined to incorporate the findings of the Terrestrial Biodiversity Compliance Statement and will take into consideration sensitive ecological features.
- ❑ Best practices to mitigate impacts to flora and fauna will be included in the EMPr.

11.8 Socio-Economic Environment

Status Quo

The following information was sourced from the JB Marks LM IDP.

- ❑ **Demographic Profile –**
  - The JB Marks LM experienced a positive population growth from 2007 to 2017 with an average growth of 2.28% per annum. Based on age-gender structure, fertility, mortality and migration rates, the JB Marks's population was projected to grow at an average rate of 1.5% from 2017 to 2022.
  - The majority of the municipality consists of a black African population (194 000 people) and white population (36 600) with smaller numbers representing coloured and Indian/Asian populations (13 100 and 2 430 respectively).
  - Gender was recorded as relatively equal between male and female.
  - The JB Marks LM consists of a relatively young population, with the most numerous age group between 5 – 9 years old.
  - The number of people who have completed grade 12 increased from 2007 to 2017, and the number of people who have no schooling has decreased over the same period.
  - The average number of households has increased from 2007 to 2017, but the average household size has decreased.
- ❑ **Economic and Employment Profile –**
  - According to the JB Marks LM IDP, the unemployment rate in 2007 was 19.4% which decreased overtime to 18.5% in 2017.

- The number of households connected to electricity infrastructure increased from 2006 to 2016.
- The JB Marks LM had a total number of 34 700 (46.96%) of households with piped water inside the dwelling in 2016.
- Carletonville with its strong service character and prominent commercial and industrial components, will remain the main town and growth point of the region and will continue to render various services to the surrounding smaller towns and rural areas.
- The primary sector consists of two broad economic sectors namely the mining and agricultural sector. Between 2007 and 2017, the agricultural sector experienced the highest positive growth in 2017 with an average growth rate of 37.1%. The mining sector reached its highest point of growth of 8.3% in 2015. Both the agriculture and mining sectors are generally characterised by volatility in growth over the period.

Potential Impacts / Implications

- ❑ Status of land claims to be verified.
- ❑ Construction phase:
  - Influx of people seeking employment and associated impacts (e.g. foreign workforce, cultural conflicts, squatting, demographic changes).
  - Safety and security.
  - Use of local road network.
  - Nuisance from dust and noise.
  - Consideration of local labourers and suppliers in area – stimulation of local economy (positive impact).
  - Transfer of skills (positive impact).
- ❑ Operational phase:
  - Once established, the operation of the Solar PV Plant would result in direct and indirect economic opportunities.
  - Visual impacts to surrounding communities.

Specialist Study Triggered / Additional Investigations

- ❑ A Social Impact Assessment will be undertaken and mitigation measures will need to be identified to manage impacts to the local social environment. The findings will be included in the EIA Report.

11.9 Agriculture

Status Quo

The Project's PV Site is used currently for livestock and game farming and was historically used for agricultural purposes.

According to the findings from the National Web Based Environmental Screening Tool, areas of high and medium sensitivity in terms of the relative agriculture theme occur in the Project Area (see **Figure 29** below). A SSV undertaken by the appointed Agricultural Specialist disputed the high and medium sensitivity designated and confirmed the site having a low agricultural sensitivity.

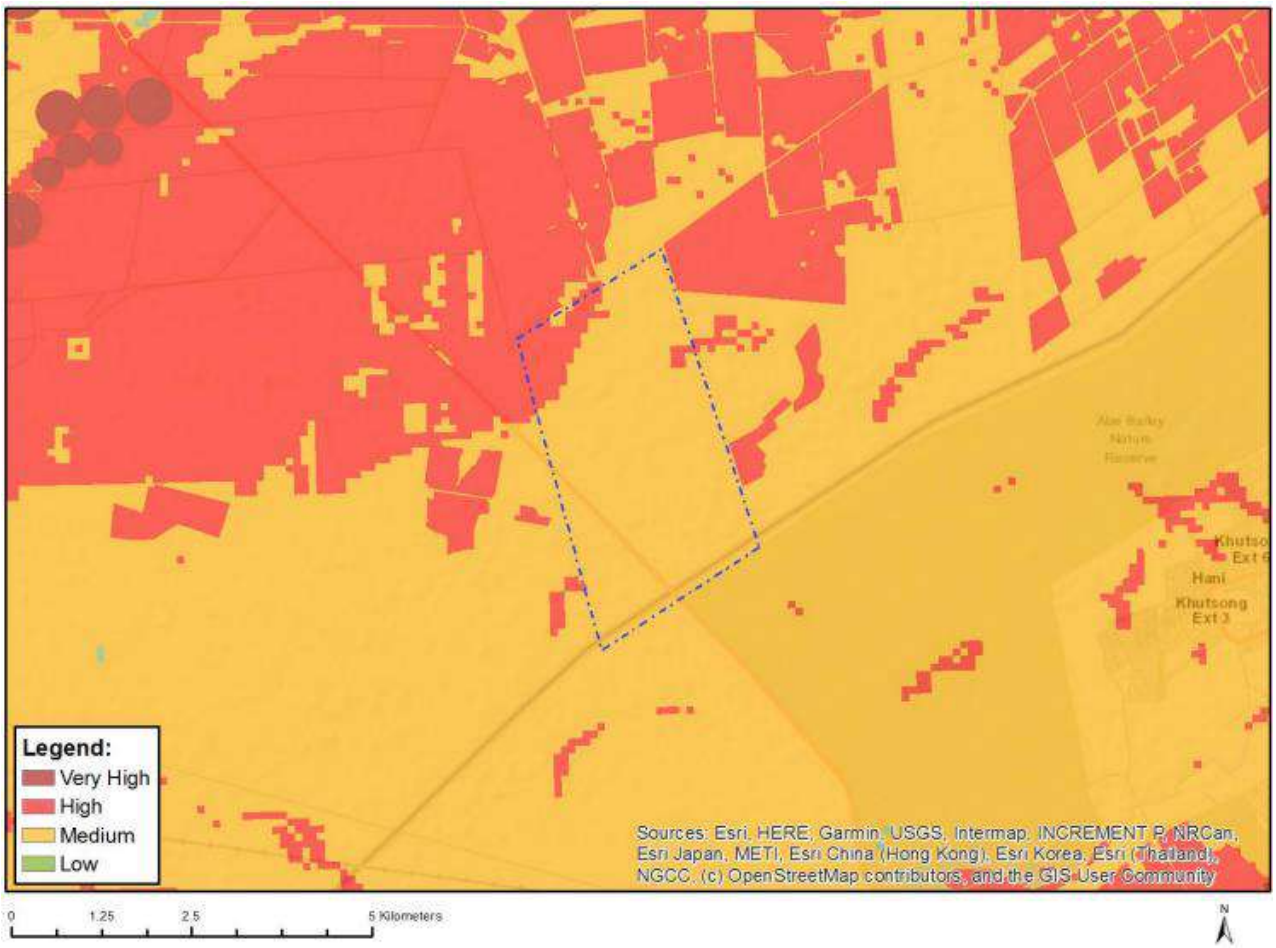


Figure 29: Map of Relative Agriculture Theme Sensitivity

Potential Impacts / Implications

- ❑ Construction phase:
  - Loss of agricultural land use due to direct occupation by the development footprint. This will take affected portions of land out of agricultural production.
  - Soil erosion by wind or water due to alteration of the land surface characteristics.

- Alteration of surface characteristics may be caused by construction related land surface disturbance, vegetation removal, panel surfaces and the establishment of hard standing areas, surfaces and roads. Erosion will cause loss and deterioration of soil resources.
- Loss of topsoil due to poor topsoil management (burial, erosion, etc.) during construction related soil profile disturbance (levelling, excavations, road surfacing etc.) and resultant decrease in that soil's capability for supporting vegetation.
- Risk of harm to livestock from construction activities (e.g., open excavations).

❑ Operational phase:

- Loss of agricultural land use due to direct occupation by the development footprint. This will take affected portions of land out of agricultural production.
- Soil erosion by wind or water due to alteration of the land surface characteristics.

Specialist Study Triggered / Additional Investigations

An Agricultural Compliance Statement will be undertaken and the findings will be included in the EIA Report.

11.10 Air quality

Status Quo

Potential sources of air pollution in the region include the following:

❑ Fugitive dust emissions from agricultural activities and vehicles travelling on unpaved roads;
❑ Vehicle exhaust emissions from vehicles travelling on paved and unpaved roads, including on surrounding roads such as N14 and in the town of Carletonville;
❑ Biomass burning (veld fires);
❑ Domestic fuel burning;
❑ Waste treatment and disposal; and
❑ Other fugitive dust sources such as wind erosion from exposed areas.

Potential Impacts / Implications

❑ The Project proposes the use of a renewable resource (solar), which is a cleaner form of energy generation than using fossil fuels, with environmental benefits.
❑ Construction phase:

- Dust from the use of dirt roads by construction vehicles;
- Dust from bare areas that have been cleared for construction purposes;
- Emissions from construction equipment and machinery; and
- Tailpipe emissions from construction vehicles.

❑ Operational phase:

- The efficiency of the solar plant could be reduced if the modules are soiled (covered) by particulates/dust.

- Impacts to air quality caused by the operation and maintenance of the facility include dust from the use of dirt roads and tailpipe emissions from vehicles.

Specialist Study Triggered / Additional Investigations

- ❑ Mitigation measures will be included in the EMPr to ensure that the air quality impacts during the construction phase are suitably managed and that regulated thresholds are not exceeded.
- ❑ Soiling of modules will require an appropriate maintenance and cleaning plan.

11.11 Noise

Status Quo

In terms of the local acoustical environment, the background noise levels are expected to be typical of a rural area. Noise in the greater area emanates primarily from farming operations (e.g., use of farming equipment) and vehicles on the surrounding road network.

Potential Impacts / Implications

- ❑ Construction phase:
  - Localised increases in noise may be caused by –
    - Construction equipment, machinery and vehicles;
    - Construction material delivery vehicles; and
    - General activities at the construction camp.
- ❑ Operational phase:
  - Solar PV facilities produce electricity during the daytime hours, when the sun's rays are collected by the panels. When there is little to no irradiance, noise emitted by the equipment is significantly reduced. The main sources of noise from the Project will be the rack mounted inverters and the central step-up transformer, which are only expected to be audible to operational staff who will come in close proximity to these components.
  - Localised noise from operation and maintenance vehicles and activities.

Specialist Study Triggered / Additional Investigations

- ❑ Noise that emanates from construction and operational activities will be addressed through targeted best practices for noise monitoring and management in the EMPr. The associated regulated standards need to be adhered to.

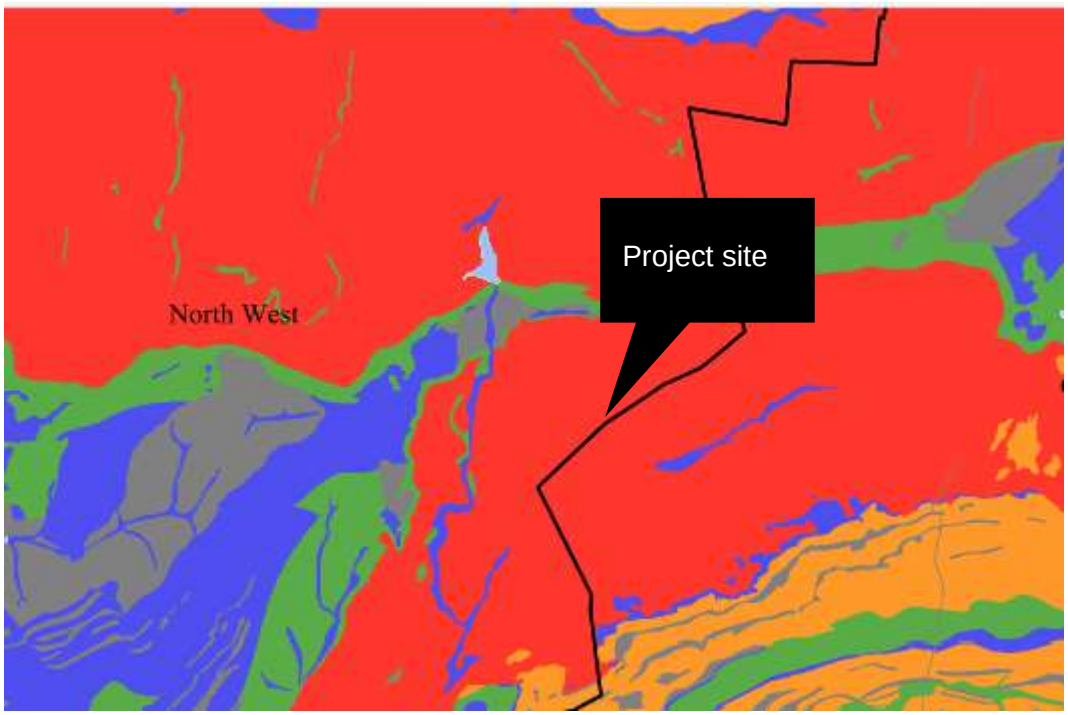
11.12 Historical and Cultural Features

Status Quo

According to the Screening Tool's relative archaeological and cultural heritage theme, the site has a low sensitivity (see **Figure 30** below). A SSV undertaken by the appointed Heritage Specialist confirmed the low sensitivity designated.

According to the PalaeoMap of the South African Heritage Resources Information System (SAHRIS), the Palaeontological Sensitivity of the site is very high which triggers the requirement for a field-based palaeontological assessment and protocol for finds (see **Figure 31** below). The Screening Tool relative palaeontology theme corresponds with the PalaeoMap of SAHRIS which designate the site as having a very high sensitivity (**Figure 32**). (Refer to **Appendix B** for the Screening Tool Report included in the Application Form). A SSV undertaken by the appointed Paleontologist confirmed the very high sensitivity designated.

Figure 30: Map of Relative Archaeological and Cultural Heritage Theme Sensitivity



Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 31: SAHRIS PalaeoSensitivity Map

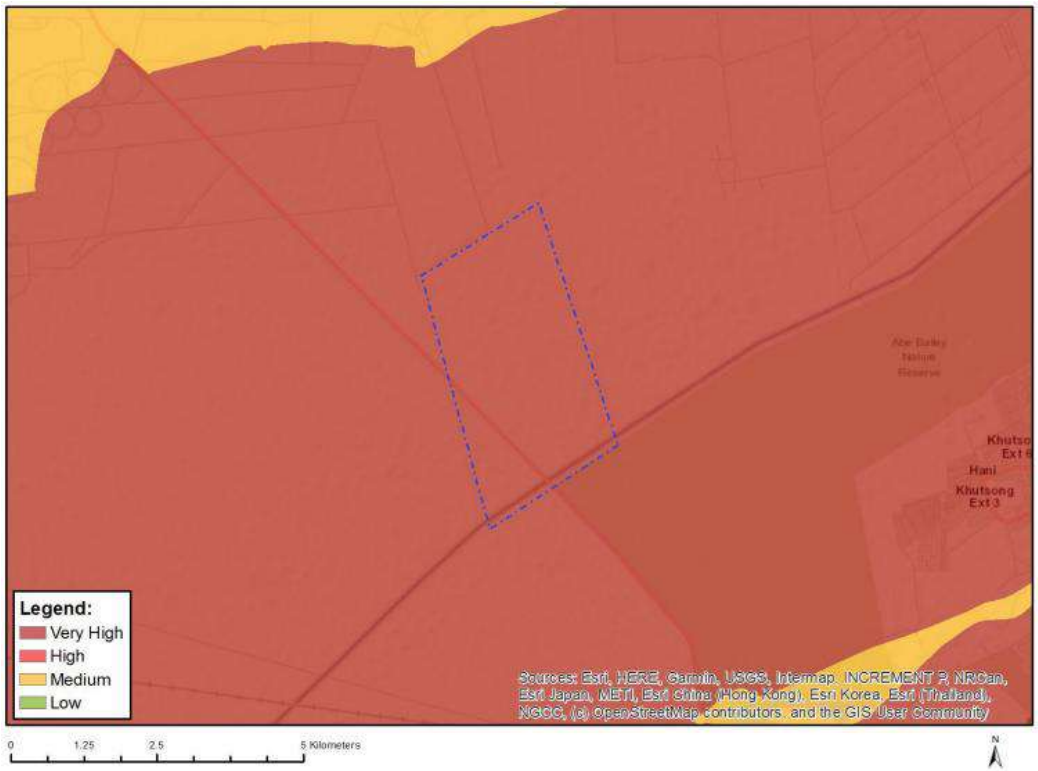


Figure 32: Map of Relative Palaeontology Theme Sensitivity

Potential Impacts / Implications

- ❑ Construction phase:
  - Possible impacts on below-ground archaeological deposits and fossils as a result of ground disturbance.
  - Possible impacts to the cultural landscape as a result of the introduction of incompatible structures and infrastructure to the rural landscape.

Specialist Study Triggered / Additional Investigations

- ❑ The findings of the Heritage Impact Assessment and Palaeontological Impact Assessment will be incorporated into the EIA Report.

11.13 Planning

Status Quo

The following is noted from a planning perspective:

- ❑ The proposed PV Site are located outside of the urban edge and should not impact on future urban expansion.
- ❑ In the event that the Solar PV Plant must be decommissioned, the decommissioning phase will include measures for complying with the prevailing regulatory requirements, rehabilitation and managing environmental impacts in order to render the affected area suitable for a future desirable use.
- ❑ No other renewable energy applications have been made within a 30km radius of the PV Site, according to DFFE's REEA Database (refer to **Section 6.6** above).
- ❑ The proposed PV Site is located approximately 11km to the north-west of a civil aviation aerodrome. According to the findings from the National Web Based Environmental Screening Tool, the PV Site has a low sensitivity in terms of the relative civil aviation theme.

Potential Impacts / Implications

- ❑ Potential incompatibility with planning frameworks to be assessed further during the EIA Phase.

Specialist Study Triggered / Additional Investigations

- ❑ The Applicant will adhere to the regulatory planning requirements pertaining to the Project, as well as to the setbacks and conditions required by authorities.

11.14 Existing Structures and Infrastructure

Status Quo

Existing structures and infrastructure at the PV site include narrow unsurfaced roads and fencing which is associated with the current game and livestock farming operations. The D331 road bisects the entire PV site. The setbacks / conditions required by the custodians of infrastructure on the PV Site will need to be adhered to.

Potential Impacts / Implications

- The Project will need to comply with the requirements of the custodians of infrastructure that traverses the PV Site or run along the boundaries of the sites.

Specialist Study Triggered / Additional Investigations

- Engage further with the owners, custodians and authorities associated with existing infrastructure.
- Mitigation measures to be included in the EMPr to manage potential impacts to existing structures and infrastructure.

11.15 Transportation

Status Quo

The Project area is rural in nature. The transportation network in the Project Area is shown in **Figure 33** below.

The D331 road bisects the Site. The Site falls midway between the N14 (approx. 11km to the north) and the R501 (approx. 8km to the south). A railway line runs south-west of the site. All other roads in the immediate area are unsurfaced farm roads.

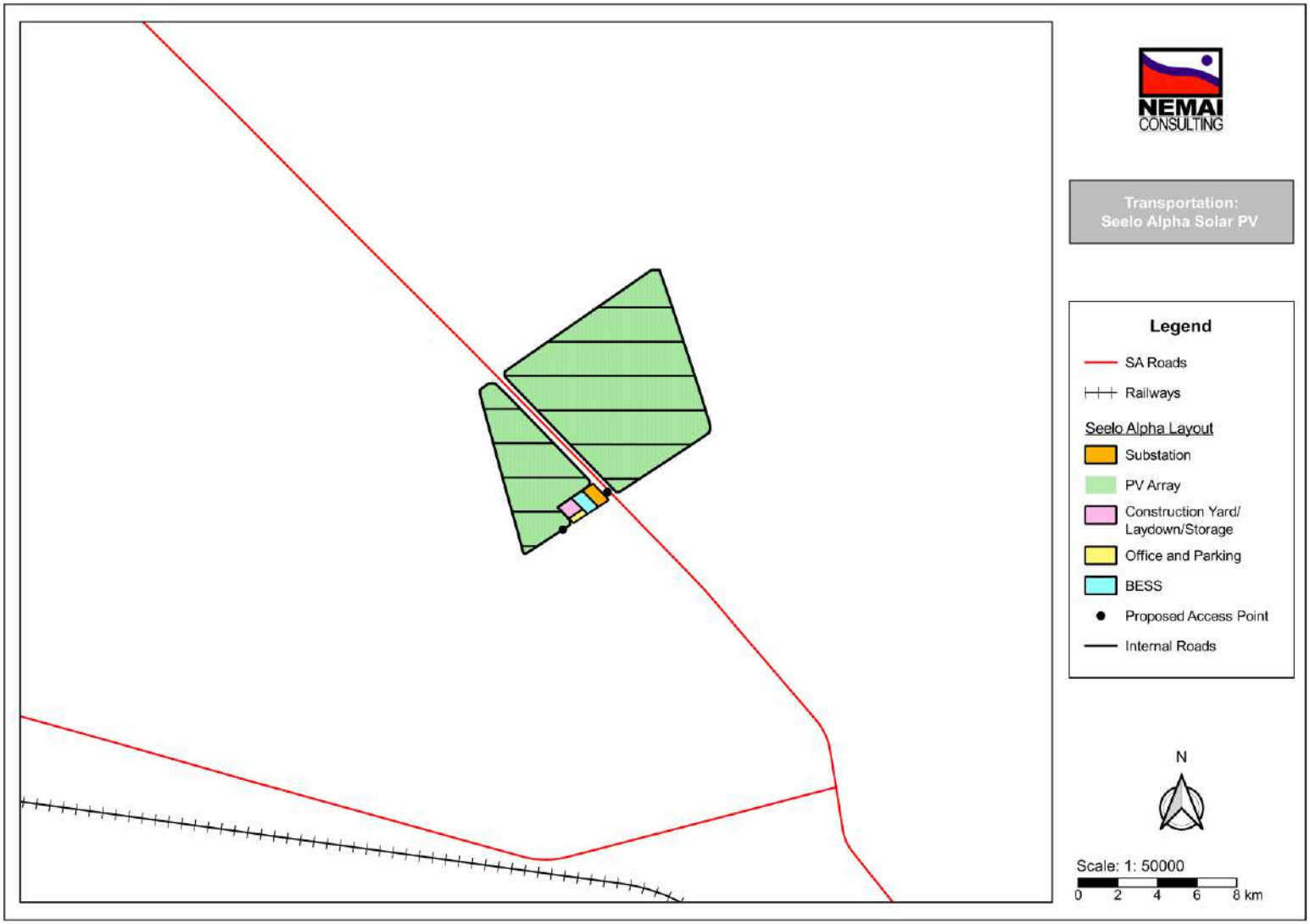


Figure 33: Transportation network

Potential Impacts / Implications

- ❑ One of the factors considered in determining the suitability of the Project sites was its accessibility in terms of the existing road network.
- ❑ Construction phase:
  - Transportation of materials and construction personnel to site.
  - Impacts to road conditions.
  - Speeding and reckless driving by construction personnel.
  - Construction vehicles accessing and leaving the site via the D331
  - Use of oversized vehicles/abnormal loads, as required.
- ❑ Operational phase:
  - Safe access, taking into consideration the high speed environment along the D331 road.
  - Transportation of maintenance materials, and operational and maintenance staff, to site.

Specialist Study Triggered / Additional Investigations

- ❑ The Project will need to comply with the requirements of provincial and national road and transport departments/institutes as necessary for site access.
- ❑ Suitable mitigation measures in terms of traffic and the use of roads will be included in the EMPr.

11.16 Health

Status Quo

All health care services are located within the municipal urban nodes of the surrounding areas, most predominantly in Carletonville. The nearest hospital is the Carletonville District Hospital to the south-east of the Project Area. The site is largely unserviced, and provision would need to be made for sanitation and water supply.

Potential Impacts / Implications

- ❑ Construction phase:
  - Hazards related to construction work.
  - Increased levels of dust and particulate matter.
  - Increased levels of noise.
  - Poor water and sanitation.
  - Communicable diseases.
  - Psychosocial disorder (e.g. social disruptions).
  - Safety and security.
  - Lack of suitable health services.
- ❑ Operational Phase:

- Hazards related to operation and maintenance work.
- Fire and explosion risks during BESS operation.

Specialist Study Triggered / Additional Investigations

- ❑ The Project is to comply with the necessary design standards, with appropriate safety considerations taking into consideration factors such as placement criteria, access control to containers, fire and explosion preventative measures, emergency response requirements, etc.
- ❑ Health-related risks will be addressed through mitigation measures that will be identified under other environmental features, such as socio-economic environment, surface water, air quality, noise and vibration, climate, as well as best practices included in the EMPr.
- ❑ Additional management requirements associated with health will form part of the Project's Occupational Health and Safety System.

12 PUBLIC PARTICIPATION

12.1 Introduction

The purpose of public participation includes the following:

- To provide I&APs with an opportunity to obtain information about the Project;
- To allow I&APs to express their views, issues, and concerns with regard to the Project;
- To grant I&APs an opportunity to recommend measures to avoid or reduce adverse impacts and enhance positive impacts associated with the Project; and
- To enable the Applicant to incorporate the needs, concerns, and recommendations of I&APs into the Project, where feasible.

12.2 Database of I&APs

A database of I&APs, which includes authorities, different spheres of government (national, provincial and local), parastatals, the Ward Councillor, stakeholders, landowners, interest groups and members of the general public, was prepared for the Project and is contained in **Appendix D**. This database will be updated and maintained during the course of the EIA.

12.3 Landowner Consent

According to Regulation 39(1) of the EIA Regulations, if the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an Environmental Authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land. This requirement does not apply *inter alia* for linear developments (e.g. pipelines, power lines, roads) or if it is a SIP as contemplated in the Infrastructure Development Act, 2014.

The written consent of the landowner for the property where the PV Site is proposed is appended to the Application Form, which is included in **Appendix B**.

12.4 Review of Draft Scoping Report

12.4.1 Period to Review the Draft Scoping Report

In accordance with Regulation 43(1) of the EIA Regulations, I&APs will be granted an opportunity to review and comment on the draft Scoping Report from 14 April 2023 until 15 May 2023.

12.4.2 Notification of Review of Draft Scoping Report

The following notification of the Project and of the review of the draft Scoping Report will be provided:

- Notices will be placed in newspapers;
- Site notices will be placed at strategic points within the Project Area; and
- Authorities and I&APs contained in the database will be notified via email of the details of the review process.

Proof of notification will be included in the final Scoping Report.

12.4.3 Accessing the Draft Scoping Report

A hardcopy of the draft Scoping Report will be placed at the Carletonville Library (Beryl Street, Carletonville).

The draft Scoping Report will also uploaded to the following website, for downloading purposes - https://nemai.co.za/environmental/downloadable-documents/

Copies of the draft Scoping Report will be provided to the following parties, which include key regulatory and commenting authorities with jurisdiction over the receiving environment:

- DFFE (including Biodiversity Conservation Unit);
- DEDECT;
- DWS: North West Region;
- DMRE;
- North West Department of Public Works and Roads (DPWR);
- NWPHRA;
- JB Marks LM; and
- Dr Kenneth Kaunda DM.

A Comment Sheet is provided with the draft Scoping Report, which could be used to provide comments on the draft Scoping Report.

12.4.4 Public Meeting to Present the Draft Scoping Report

Anyone that has an interest in attending a public meeting will need to inform Nemai Consulting in writing by 24 April 2023. Only preregistered parties that confirmed interest will receive an invitation to the public meeting.

12.4.5 Comments Received on the Draft Scoping Report

The Scoping Phase serves to identify and prioritise issues for further assessment during the EIA Phase. Accordingly, the comments received from authorities and I&APs during public participation

as part of Scoping will be afforded due consideration and further investigation during the pending EIA stage. A Comments and Responses Report (CRR) will be included in the final Scoping Report, which will record comments received from I&APs and the responses from the project and environmental teams.

13 POTENTIALLY SIGNIFICANT ENVIRONMENTAL ISSUES

In accordance with the purpose of the Scoping exercise as part of the overall environmental assessment, this section aims to identify potentially significant environmental issues for further consideration and prioritisation during the EIA stage. This allows for a more efficient and focused impact assessment in the ensuing EIA Phase, where the analysis is largely limited to significant issues and reasonable alternatives. The EMPr that will accompany the EIA Report will, however, provide a comprehensive list of mitigation measures to manage the Project's overall impact to the receiving environment.

13.1 Approach

13.1.1 Predicting Significant Environmental Issues

The potential environmental issues associated with the proposed Project were identified during the Scoping Phase through an appraisal of the following:

- Project-related components and infrastructure;
- Activities associated with the project life-cycle;
- Resources required for construction and operational purposes;
- Nature and profile of the receiving environment and potential sensitive environmental features and attributes (see **Section 11** above);
- Input received during public participation from authorities and I&APs; and
- Legal and policy context (see **Section 5** above).

Apart from explaining the receiving environment, **Section 11** above succinctly discusses possible impacts during primarily the construction and operational phases of the Project. The significant environmental issues were distilled from this information and are summarised in **Section 13.2** below. Cumulative impacts that were identified during the Scoping Phase are presented in **Section 13.3** below.

13.1.2 Mitigation of Impacts

During the EIA Phase a detailed assessment will be conducted to evaluate potentially significant impacts, with input from the project team, requisite specialist studies and I&APs and through the application of the impact assessment methodology contained in **Section 13.4** below.

Suitable mitigation measures will be identified to manage the environmental impacts according to the following hierarchy:

1. Initial efforts will strive to **prevent** the occurrence of the impact;
2. If this is not possible, mitigation will include measures that reduce or **minimise** the significance of the impact to an acceptable level;

3. **Remediation** and **rehabilitation** will take place if measures cannot suitably prevent or reduce the impacts, or to address the residual impacts; and
4. As a last measure, **compensation** will be employed as a form of mitigating the impacts associated with the Project.

The mitigation measures will be incorporated into the EMPr, which will form part of the EIA Report. The EMPr, together with the Environmental Authorisation (if issued), can act as a standalone document that can be used to *inter alia* monitor against compliance of the Project with its pre-determined objectives, targets and management actions.

13.2 Summary of Potentially Significant Environmental Issues

Pertinent environmental issues, which will receive specific attention during the EIA Phase through a detailed quantitative assessment and relevant specialist studies (where deemed necessary), are listed in **Table 9** below.

Table 9: Potentially Significant Environmental Issues for prioritisation during the EIA Phase

Environmental Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts	Investigations / EIA Provisions
Land Use	▪ Sterilisation of land for other land use types. ▪ Setbacks / conditions associated with surrounding land and infrastructure.	▪ Sterilisation of land for other land use types up to the decommissioning of the Project (if applicable). ▪ Servitude restrictions.	▪ Agricultural Impact Assessment. ▪ Social Impact Assessment. ▪ Optimisation of layout to account for land use restrictions. ▪ EMPr.
Geology	▪ Suitability of geological conditions to support the Solar PV Plant. Rocky conditions exist on the site.	▪ Suitability of geological conditions to support the Solar PV Plant.	▪ Geotechnical Study. ▪ EMPr.
Geohydrology	▪ Groundwater pollution due to spillages and poor construction practices. ▪ Utilisation of boreholes, if required.	▪ Groundwater pollution due to poor operation and maintenance practices. ▪ Utilisation of boreholes, if required.	▪ EMPr
Topography	▪ Visual impacts. ▪ Erosion of areas cleared for construction purposes.	▪ Visual impact caused by proposed Project infrastructure and landscape transformation. ▪ Glint and glare from solar panels.	▪ Optimisation of layouts to account for topographical features. ▪ EMPr.
Soil	▪ Soil erosion due to clearance and inadequate stormwater management. ▪ Soil compaction. ▪ Soil contamination due to spillages and poor construction practices. ▪ Loss of topsoil.	▪ Soil erosion due to inadequate stormwater management. ▪ Soil contamination due to poor operation and maintenance practices.	▪ EMPr.
Surface Water	▪ Alteration of drainage over the PV Site. ▪ Surface water pollution due to spillages and poor construction practices. ▪	▪ Sedimentation through silt-laden runoff, caused by inadequate stormwater management. ▪ Water resources could be contaminated through	▪ Aquatic Impact Assessment and Delineation ▪ Optimisation of layout to avoid delineated

Environmental Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts	Investigations / EIA Provisions
		inadequate storage and handling of hazardous materials, leaks from the BESS and poor management of waste and wastewater. ▪ Water use requirements of the Project need to be satisfied.	watercourses and their buffers zones. ▪ EMPr.
Flora & Fauna	▪ Habitat loss / fragmentation. ▪ Potential loss, disturbance or displacement of protected fauna and flora species. ▪ Human - animal conflicts. ▪ Noise and vibration impacts to fauna. ▪ Nights lights may affect nocturnal faunal species. ▪ Illegal harvesting and poaching of faunal and floral species by construction workers. ▪ Pollution of the biophysical environment from poor construction practices. ▪ Proliferation of invasive alien species in disturbed areas.	▪ Habitat fragmentation (e.g., barriers to animal movement). ▪ Shading out of plants by solar panels. ▪ Reflection of sunlight from the solar panels could adversely affect birds. ▪ Risk to birds from collision with infrastructure and from electrocution. ▪ Electrical faulting from birds. ▪ Chemical pollution associated with cleaning the PV panels. ▪ Proliferation of invasive alien species in disturbed areas.	▪ Terrestrial Biodiversity Assessment. ▪ Avifaunal Impact Assessment. ▪ Optimisation of layout to avoid sensitive ecological features ▪ EMPr.
Socio-economic Environment	▪ Influx of people seeking employment and associated impacts (e.g., foreign workforce, cultural conflicts, squatting, demographic changes). ▪ Safety and security. ▪ Use of local road network. ▪ Nuisance from dust and noise. ▪ Consideration of local labourers and suppliers in area – stimulation of local economy (positive impact). ▪ Transfer of skills (positive impact).	▪ Direct and indirect economic opportunities as a result of the Project. ▪ Threats to human and animal health from electromagnetic field (power line and on-site substation).	▪ EMPr.
Air Quality	▪ Dust from the use of dirt roads by construction vehicles. ▪ Dust from bare areas that have been cleared for construction purposes. ▪ Emissions from construction equipment and machinery. ▪ Tailpipe emissions from construction vehicles.	▪ The efficiency of the solar plant could be reduced if the modules are soiled (covered) by particulates/dust. ▪ Impacts to air quality caused by the operation and maintenance of the facility include dust from the use of dirt roads and tailpipe emissions from vehicles.	▪ EMPr.
Noise	▪ Localised increases in noise may be caused by construction activities.	N/A	▪ EMPr.
Agriculture	▪ Loss of fertile soil through land clearance. ▪ Soil erosion. ▪ Loss of topsoil. ▪ Risk of harm to livestock from construction activities.	▪ Loss of possible future agricultural land use due to direct occupation by the development footprint. ▪ Soil erosion due to inadequate stormwater management.	▪ Agricultural Impact Assessment. ▪ EMPr.
Historical and Cultural Features	▪ Possible direct impacts on below-ground archaeological deposits as a result of ground disturbance.	Possible impacts to the cultural landscape as a result of the introduction of incompatible structures and infrastructure to the rural landscape.	▪ Heritage Impact Assessment. ▪ EMPr.

Environmental Factor	Construction Phase Potential Issues / Impacts	Operational Phase Potential Issues / Impacts	Investigations / EIA Provisions
Existing Structures & Infrastructure	▪ Setbacks / conditions associated with surrounding land and infrastructure. ▪ Crossing of existing infrastructure by power line.	▪ Setbacks / conditions associated with surrounding land and infrastructure. ▪ Disturbances to infrastructure traversed by power line during maintenance activities.	▪ Satisfy requirements of infrastructure owners. ▪ EMPr.
Transportation	▪ Increase in traffic on the local road network. ▪ Transportation of materials and construction personnel to site. ▪ Impacts to road conditions. ▪ Speeding and reckless driving by construction personnel. ▪ Construction vehicles accessing and leaving the site via main access road. ▪ Use of oversized vehicles/abnormal loads, as required. ▪ Risks to other road users.	▪ Transportation of maintenance materials, as well as operational and maintenance personnel, to site. ▪ Safe access. ▪ Sun glare off PV panels.	▪ EMPr
Aesthetics	▪ Landscape transformation. ▪ Visual impacts associated with construction activities.	▪ Landscape transformation. ▪ Inadequate reinstatement and rehabilitation of construction footprint. ▪ Light pollution. ▪ Glint and glare from PV facility. ▪ High visibility of power lines to visual receptors.	▪ Visual Impact Assessment. ▪ EMPr.
Health	▪ Hazards related to construction work. ▪ Increased levels of dust and particulate matter. ▪ Increased levels of noise. ▪ Water (surface and ground) contamination. ▪ Poor water and sanitation. ▪ Communicable diseases. ▪ Psychosocial disorder (e.g. social disruptions). ▪ Safety and security. ▪ Lack of suitable health services.	▪ Hazards related to operation and maintenance work. ▪ Fire and explosion risks during BESS operation.	▪ EMPr.

13.3 Cumulative Impacts

13.3.1 Introduction

A cumulative impact, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

13.3.2 Other Renewable Energy Projects in Proximity to the Proposed PV Site

Cumulative impacts can be identified by combining the potential environmental implications of the Project with the impacts of projects and activities that have occurred in the past, are currently occurring, or are proposed in the future within the Project Area.

Other renewable energy applications within a 30km radius of the Project are discussed in **Section 6.6** above. According to the REEA Database, renewable energy applications have been made for various properties, with the closest located approximately 34km east of the PV Site. Cumulative impacts associated with existing PV facilities is thus not anticipated. However, should further PV developments, or other large-scale developments take place in the area in future, cumulative impacts may be caused by these various developments, including loss of biodiversity and habitat fragmentation, visual and landscape character impacts, traffic disruptions, impacts to civil aviation, as well as pressures on local facilities, goods and services. These impacts in relation to the Project will be assessed in the EIA Report.

13.3.3 The Proposed Project's contribution towards Cumulative Impacts

The following is noted in terms of the Project's potential contribution towards cumulative impacts, which will be assess further during the EIA phase:

- The construction period may cause traffic-related impacts in terms of the local road network, which will be associated with heavy vehicle construction traffic for the delivery of material, transportation of construction workers and general construction-related traffic. This may compound traffic impacts if other large-scale projects are planned during the same period.
- The clearance of vegetative cover for the Project's development footprint will exacerbate erosion.
- Cumulative impacts with regards to habitat loss and fragmentation, as well as cumulative risks to protected fauna and flora species.
- The clearance and disturbances associated with the construction phase could lead to cumulative impacts in terms of the proliferation of invasive alien species.
- There will be an increase in the dust levels during the construction phase, as a result of earthworks, use of haul roads and other gravel roads, stockpiles, material crushing, etc.
- Although the water use associated with the operation of a Solar PV Plant is relatively low, it could contribute towards cumulative impacts on water demand for developments in the area.
- Any developments that may be enabled by the proposed Project may place a strain on local infrastructure and services.
- Changes in demographics in the region due to the influx of employment seekers may cause problems such as crime, STDs, conflicts with local communities, etc.
- There is a potential for positive cumulative economic effects from the construction of multiple developments in the area. The increased creation of jobs and economic input into local businesses would provide a benefit to local communities.

13.4 Methodology to Assess the Identified Impacts

The EIA quantitative impact assessment will further focus on the direct and indirect impacts associated with the Project. All impacts will be analysed with regard to their nature, extent, magnitude, duration, probability and significance. The following definitions and criteria apply:

Nature (/Status)
The project could have a positive, negative or neutral impact on the environment.

Extent
- Local - extend to the site and its immediate surroundings.
- Regional - impact on the region but within the province.
- National - impact on an interprovincial scale.
- International - impact outside of South Africa.

Magnitude
Degree to which impact may cause irreplaceable loss of resources.
- Low - natural and social functions and processes are not affected or minimally affected.
- Medium - affected environment is notably altered; natural and social functions and processes continue albeit in a modified way.
- High - natural or social functions or processes could be substantially affected or altered to the extent that they could temporarily or permanently cease.

Duration
- Short term - 0-5 years.
- Medium term - 5-11 years.
- Long term - impact ceases after the operational life cycle of the activity either because of natural processes or by human intervention.
- Permanent - mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.

Probability
- Almost certain - the event is expected to occur in most circumstances.
- Likely - the event will probably occur in most circumstances.
- Moderate - the event should occur at some time.
- Unlikely - the event could occur at some time.
- Rare/Remote - the event may occur only in exceptional circumstances.

Significance
Provides an overall impression of an impact's importance, and the degree to which it can be mitigated. The range for significance ratings is as follows-
0 – Impact will not affect the environment. No mitigation necessary.
1 – No impact after mitigation.
2 – Residual impact after mitigation.
3 – Impact cannot be mitigated.

14 PLAN OF STUDY FOR EIA

14.1 General

This Plan of Study, which explains the approach to be adopted to conduct the EIA for the proposed Project, was prepared in accordance with Appendix 2 of the EIA Regulations.

14.2 Potentially Significant Environmental Issues identified during Scoping Phase

The Scoping exercise aimed to identify and qualitatively predict potentially significant environmental issues for further consideration and prioritisation. During the EIA stage a detailed quantitative impact assessment will be conducted via contributions from the project team and requisite specialist studies, and through the application of the impact assessment methodology contained in **Section 13.4** above. Suitable mitigation measures will be identified to manage (i.e., prevent, reduce, rehabilitate and/or compensate) the environmental impacts, and will be incorporated into an EMPr.

Pertinent environmental issues identified during Scoping, which will receive specific attention during the EIA Phase, are listed in **Section 13.2** above (construction and operational phases).

14.3 Feasible Alternatives to be assessed during EIA Phase

The EIA Phase will include a detailed comparative analysis of the Project's feasible alternatives that emanated from the Scoping exercise, which will include environmental (with specialist input) and technical evaluations. This will ultimately result in the selection of a BPEO. The feasible alternatives to be assessed in the EIA Phase will include design/layout alternatives (based on the findings of the specialist studies) as well as technology alternatives.

14.4 Specialist Studies

14.4.1 Overview

According to Münster (2005), a 'trigger' is "*a particular characteristic of either the receiving environment or the proposed project which indicates that there is likely to be an issue and/or potentially significant impact associated with that proposed development that may require specialist input*".

The specialist studies 'triggered' by the nature of the proposed development and its receiving environment and confirmed through site sensitivity verifications (refer to **Appendix E)** include the following:

1. Terrestrial Biodiversity Compliance Statement;

2. Aquatic Biodiversity Compliance Statement & Delineation;
3. Avifaunal Impact Assessment;
4. Heritage Impact Assessment;
5. Agricultural Compliance Statement;
6. Social Impact Assessment;
7. Visual Impact Assessment; and
8. Palaeontological Impact Assessment.

For the inclusion of the findings of the specialist studies into the EIA Report, the following guideline will be used: *Guideline for the review of specialist input in EIA processes* (Keatimilwe & Ashton, 2005). Key considerations will include:

- ❑ Ensuring that the specialists have adequately addressed I&APs' issues and specific requirements prescribed by environmental authorities;
- ❑ Ensuring that the specialists' input is relevant, appropriate and unambiguous; and
- ❑ Verifying that information regarding the receiving ecological, social and economic environments has been accurately reflected and considered.

14.4.2 Exclusion of Certain Specialist Studies identified during Environmental Screening

As mentioned in **Section 6.3** above, a Screening Report for the proposed Project was compiled by means of the National Web Based Environmental Screening Tool, which is appended to the Application Form (contained in **Appendix B**). **Table 10** below lists the specialist studies that were identified in the Screening Report, but which were not deemed to be necessary. It should be noted that all other specialist studies recommended by the Screening Report have been included in the Plan of Study for the EIA and are listed above in **14.4.1** (these studies have thus been excluded from the table below).

Table 10: Specialist studies identified in the Screening Report that are deemed unnecessary

Specialist Study identified in Screening Report	Reason for not undertaking the Specialist Study
Civil Aviation Assessment	The map that was created by the Environmental Screening Tool showed low civil aviation sensitivity in terms of the PV Sites (**Figure 34**). The closest civil aviation aerodrome is located 10km south-east of the Project Area. The Johannesburg Skydiving Club, located at the aerodrome, was included in the I&AP database. In addition, the South African Civil Aviation Authority (SACAA) was included in the Authorities database and notified of the project. It was not deemed necessary to undertake this study since the Project, including all PV arrays, falls outside of the 8 km buffer.

Specialist Study identified in Screening Report	Reason for not undertaking the Specialist Study
	 **Figure 34: Civil Aviation Theme Sensitivity**
Defence Assessment	The map that was created by the Environmental Screening Tool showed that the Project Area has low sensitivity in terms of the relative defence theme (**Figure 35**). Upon interrogation of the surrounding environment, through the site visit, desktop review and satellite imagery, no evidence was found of any military or defence operations or installations. It was thus not deemed necessary to undertake this study.  **Figure 35: Defence Theme Sensitivity**

Specialist Study identified in Screening Report	Reason for not undertaking the Specialist Study
Radio Frequency Interference (RFI) Assessment	The map that was created by the Environmental Screening Tool showed that the Project Area having a low sensitivity in terms of the relative RFI theme (**Figure 36**). Medium sensitivity areas were identified to the north of the Project Site. It was not deemed necessary to undertake this study for the following reasons: • The remoteness of the proposed site; • Research (e.g. United States Federal Aviation Admiration, 2010) suggests that RFI from PV installations is low risk. PV systems equipment such as step-up transformers and electrical cables are not sources of electromagnetic interference because of their low frequency of operation and PV panels themselves do not emit EMI. The only component of a PV array that may be capable of emitting EMI is the inverter. Inverters, however, produce extremely low frequency EMI similar to electrical appliances and at a distance of 46 m from the inverters the EM field is at or below background levels. Standard engineering mitigations will be implemented to address RFI at the PV site, as necessary.  **Figure 36: RFI Theme Sensitivity**

14.4.3 Terms of Reference

The following general ToR apply to all the EIA specialist studies to be undertaken for the proposed Project:

1. Address all triggers for the specialist studies, based on the findings of the Scoping Phase.
2. Consider the findings of other specialist studies undertaken in the area, as relevant.
3. Address issues raised by I&APs.
4. Ensure that the requirements of the environmental authorities that have specific jurisdiction over the various disciplines and environmental features are satisfied.

5. Approach to include desktop study and site visits, as deemed necessary, to understand the affected environment and to adequately investigate and evaluate salient issues. Indigenous knowledge (i.e., targeted consultation) should also be regarded as a potential information resource.
6. Assess the impacts (direct, indirect and cumulative) in terms of their significance (using suitable evaluation criteria) and suggest suitable mitigation measures. In accordance with the mitigation hierarchy, negative impacts should be avoided, minimised, rehabilitated (or reinstated) or compensated for, whereas positive impacts should be enhanced. A risk-averse and cautious approach should be adopted under conditions of uncertainty.
7. Consider time boundaries, including short to long-term implications of impacts for project life-cycle (i.e. pre-construction, construction, operation and decommissioning).
8. Consider spatial boundaries, including:
    a. Broad context of the proposed project (i.e., beyond the boundaries of the specific site);
    b. Off-site impacts; and
    c. Local, regional, national or global context.
9. The provision of a statement of impact significance for each issue, which specifies whether or not a pre-determined threshold of significance (i.e., changes in effects to the environment which would change a significance rating) has been exceeded, and whether or not the impact presents a potential fatal flaw or not. This statement of significance should be provided for anticipated project impacts both before and after application of impact management actions.
10. Recommend a monitoring programme to implement mitigation measures and measure performance. List indicators to be used during monitoring.
11. Appraisal of alternatives (including the no-go option) by identifying the BPEO with suitable justification.
12. Engage with other specialists whose studies may have bearing on your specific investigation.
13. Present findings and participate at public meetings, as necessary.
14. Information provided to the EAP needs to be signed off.
15. Sign a declaration stating independence.
16. The appointed specialists must take into account the policy framework and legislation relevant to their particular studies.
17. All specialist reports must adhere to Appendix 6 of the EIA Regulations or to the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes (GN No. 1150 in Government Gazette No. 43855 of 30 October 2020), as relevant.

14.4.4 Terms of Reference – Specific

14.4.4.1 Aquatic Biodiversity Compliance Statement and Delineation

Summary of Key Issues & Triggers Identified During Scoping

- Impacts posed by the Project's infrastructure to surface water.

Approach

- Undertake desktop study (literature review, topographical maps and aerial photographs) and baseline aquatic survey and describe affected aquatic environments/watercourses within the Project Area.
- Determine ecological status of the receiving aquatic environment, including the identification of endangered or protected species.
- Delineate riparian habitat and all wetlands in accordance with the guideline: *A practical field procedure for identification and delineation of wetlands and riparian areas* (DWAF, 2005) (or any prevailing guidelines prescribed by DWS). This includes assessing terrain, soil form, soil wetness and vegetation unit indicators to delineate permanent, seasonal and temporary zones of the wetlands. Allocate conservation buffers from the outer edge of the temporary zones of the wetlands.
- Provide a concise description of the importance of the affected aquatic environments/watercourses in terms of pattern and process, ecosystem goods and services, as appropriate.
- Assess impacts of proposed Project to aquatic environments/watercourses.
- Provide suitable mitigation measures to protect the aquatic ecosystems during the project life-cycle.
- Recommend monitoring programme and indicators for the project life-cycle, where findings from the survey would serve as baseline data.

Nominated Specialist (to be reviewed by an external specialist)

Organisation:	Nitai Consulting
Name:	Divan van Rooyen
Qualifications:	Ph.D. in Environmental Science (Aquatic Ecosystem Health)
No. of years' experience:	1
Affiliation (if applicable):	Can. Nat. Sci. (151272); IAIAsa (7063); SASAqS

Nominated external review specialist

Organisation:	Independent
Name:	Antoinette Bootsma
Qualifications:	M.Sc. Environmental Science
No. of years' experience:	17

14.4.4.2 Terrestrial Biodiversity Compliance Statement

Summary of Key Issues & Triggers Identified During Scoping

- The potential loss of significant flora and fauna species, as well as habitat loss and fragmentation.
- Proliferation of invasive alien species, which could spread beyond the construction domain.

Approach

- Undertake baseline survey and describe affected environment within the Project's footprint from a biodiversity perspective.
- Take into consideration the provincial conservation goals and targets.
- Assess the current ecological status and the conservation priority of the Project Area. Provide a concise description of the importance of the affected area to biodiversity in terms of pattern and process, ecosystem goods and services, as appropriate.
- Identify protected and conservation-worthy species. Prepare a terrestrial ecological sensitivity map with the use of GIS, based on the findings of the study.
- Assess impacts to fauna and flora. Consider cause-effect-impact pathways for assessing impacts to biodiversity related to the Project.
- Comply with specific requirements and guidelines of DFFE and DEDECT.
- Consider the North West Terrestrial Biodiversity Plan (2015) and other relevant policies, strategies, plans and programmes.

Nominated Specialist

Organisation:	Nitai Consulting
Name:	Elzet Human
Qualifications:	NDip Nature Conservation, BTech Nature Conservation, MTech Nature Conservation
No. of years' experience:	9
Affiliation (if applicable):	Pr. Sci. Nat 147031 SACNASP

14.4.4.3 Avifaunal Impact Assessment

Summary of Key Issues & Triggers Identified During Scoping

- Potential impacts to avifaunal species of conservation concern.

Approach

- Comply with the Birdlife SA Guideline: "Birds and Solar Energy Best Practice Guidelines, 2017".
- Undertake baseline survey and describe affected environment within the Project's footprint from an avifauna biodiversity perspective.
- Identify protected and conservation-worthy avifaunal species. Prepare an avifaunal sensitivity map with the use of GIS, based on the findings of the study.

- Assess impacts to avifauna. Consider cause-effect-impact pathways for assessing impacts to avifauna related to the Project.
- Comply with specific requirements and guidelines of DFFE and DEDECT.
- Consider the NW Terrestrial Biodiversity Plan (2015) and other relevant policies, strategies, plans and programmes.

Nominated Specialist

Organisation:	The Biodiversity Company
Name:	T. Clark
Qualifications:	MSc Zoology
No. of years' experience:	10
Affiliation (if applicable):	SACNASP Professional Natural Scientist (Registration No.: 121338)

14.4.4.4 Heritage Impact Assessment

Summary of Key Issues & Triggers Identified During Scoping

- Potential occurrence of heritage resources, graves and structures older than 60 years within the Project's footprint.

Approach

- Undertake a Heritage Impact Assessment in accordance with the NHRA.
- Identify and map all heritage resources in the area affected, as defined in Section 2 of the NHRA, including archaeological sites on or close (within 100 m) of the proposed developments.
- Assess the significance of such resources in terms of the heritage assessment criteria as set out in the regulations.
- Assess the impacts of the Project on such heritage resources.
- Prepare a heritage sensitivity map (GIS-based), based on the findings of the study.
- Identify heritage resources to be monitored.
- Comply with specific requirements and guidelines of NWPHRA and SAHRA.

Nominated Specialist

Organisation:	Nitai Consulting
Name:	Jennifer Kitto
Qualifications:	BA Archaeology and Social Anthropology; BA (Hons) Social Anthropology
No. of years' experience:	24
Affiliation (if applicable):	Association of Southern African Professional Archaeologists (ASAPA) - Technical member No.444 International Association for Impact Assessment (IAIAsa) – Member No. 1715

14.4.4.5 Palaeontological Impact Assessment

Summary of Key Issues & Triggers Identified During Scoping

- ❑ According to the PalaeoMap of the SAHRIS, the Palaeontological Sensitivity of the Project Area is very high.

Approach

- ❑ Detect the presence of fossil material within the proposed development footprint.
- ❑ Evaluate the impact of the development on palaeontological resources.
- ❑ Identify mitigation measures to safeguard palaeontological resources, as relevant.

Nominated Specialist

Organisation:	Banzai Environmental (Pty) Ltd
Name:	E. Butler
Qualifications:	MSc Palaeontology
No. of years' experience:	24
Affiliation (if applicable):	Palaeontological Society of South Africa

14.4.4.6 Agricultural Compliance Statement

Summary of Key Issues & Triggers Identified During Scoping

- ❑ Loss of agricultural land with high land capability due to direct occupation by the development footprint.
- ❑ Loss of fertile soil.
- ❑ Soil erosion due to inadequate stormwater management.

Approach

- ❑ Determine agricultural potential in the Project's footprint.
- ❑ Determine impacts of the Project from an agricultural perspective.
- ❑ Suggest suitable mitigation measures to address the identified impacts.

Nominated Specialist

Name:	Dr A. Gouws
Qualifications:	PhD Integrated Land Use Modelling
No. of years' experience:	29
Affiliation (if applicable):	❑ Council of Natural Sciences.No:400036/93, Category: Agricultural sciences. ❑ Member of the Soil Science Society of South Africa

14.4.4.7 Social Impact Assessment

Summary of Key Issues & Triggers Identified During Scoping

- ❑ Social impacts associated with the Project.

Approach

- ❑ Collect baseline data on the current socio-economic environment.
- ❑ Assess social impacts (positive and negative) of the Project.
- ❑ Undertake a thorough review of the minutes of public meetings and the Comments and Responses Report.
- ❑ Suggest suitable mitigation measures to address the identified social impacts.
- ❑ Make recommendations on preferred options from a social perspective.

Nominated Specialist

Organisation:	Nemai Consulting (Pty) Ltd
Name:	C. Chidley
Qualifications:	BA (Economics); BSc Eng (Civil); MBA
No. of years' experience:	12
Affiliation (if applicable):	N/A

14.4.4.8 Visual Impact Assessment

Summary of Key Issues & Triggers Identified During Scoping

- ❑ Visual impacts associated with landscape transformation and the proposed Solar PV Plant.
- ❑ Potential impacts during operational phase:

Approach

- ❑ Determine the visibility of the proposed Project's components. This analysis should also take into account the existing visual characteristics of the Project Area in relation to the surrounding areas as well as whether or not the Project is compatible with the visual characteristics of the area.
- ❑ Determine the specific aesthetic implications of the project, by considering:
  - Visual distance/observer proximity to the facility;
  - Viewer incidence/viewer perception;
  - Visual Absorption Capacity of the landscape; and
  - Visual Impact Index.
- ❑ Suggest suitable mitigation measures to address the identified impacts.

Nominated Specialist

Organisation:	Eco Elementum (Pty) Ltd
Name:	N. Naidoo

Qualifications:	B.Sc. Hons. Environmental Science
Affiliation (if applicable):	SACNASP

14.5 Public Participation – EIA Phase

14.5.1 Updating the Database of I&APs

The database of I&APs will be updated as and when necessary during the course of the EIA.

14.5.2 Review of Draft EIA Report

A 30-day period will be provided to authorities and I&APs to review the draft EIA Report. A hardcopy of the document will be lodged for public review at the Carletonville Library. An electronic copy will be uploaded to the following website for downloading purposes https://nemai.co.za/environmental/downloadable-documents/.

Copies of the draft EIA Report will be provided to the regulatory and commenting authorities listed in **Section 12.5.3** above.

All parties on the I&APs database will be notified via email, post or SMS of the opportunity to review the draft EIA Report, how to access the report, the review period and the process for submitting comments.

All comments received from authorities and I&APs and the responses thereto will be included in the final EIA Report, which will be submitted to DFFE.

14.5.3 Public Meeting

It will be determined whether a public meeting based on the feedback received from I&APs.

14.5.4 Comments and Responses Report

A Comments and Responses Report will be compiled and included in the EIA Report, which will record the date that issues were raised, a summary of each issue, and the response of the team to address the issue.

In addition, any unattended comments from the Scoping Phase or where the status of the previous responses has changed, will also be addressed in the Comments and Responses Report for the EIA Phase.

14.5.5 Notification of DFFE's Decision

Registered I&APs will be notified in writing of DFFE's decision and of the appeal process, in accordance with the National Appeal Regulations, 2014.

14.6 EIA Report

The EIA Report will contain the information that is necessary for DFFE to consider and come to a decision on the application. As a minimum, the EIA Report will contain the information stipulated in Appendix 3 of the EIA Regulations.

The following critical components of the EIA Report are highlighted:

- A description of the policy and legislative context;
- A detailed description of the proposed development (full scope of activities);
- A detailed description of the proposed development site, which will include a plan that locates the proposed activities applied for as well as the associated structures and infrastructure;
- A description of the environment that may be affected by the activity and the manner in which physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed development;
- The methodology of the stakeholder engagement process;
- The Comments and Responses Report and I&APs Database will be appended to the EIA Report;
- A description of the need and desirability of the proposed development and the identified potential alternatives to the proposed activity;
- A summary of the methodology used in determining the significance of potential impacts;
- A description and comparative assessment of the project alternatives;
- A summary of the findings of the specialist studies;
- A detailed assessment of all identified potential impacts;
- A list of the assumptions, uncertainties and gaps in knowledge;
- An Environmental Impact Statement;
- Any aspects which were conditional to the findings of the assessment either by the EAP or specialists which are to be included as conditions of authorisation;
- A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;
- An EMPr that complies with Appendix 4 of the EIA Regulations;
- Copies of all specialist reports will be appended to the EIA Report; and
- Any further information that will assist DFFE during decision making.

14.7 Authority Consultation

The EIA Phase will only commence if DFFE accepts the Scoping Report and the Plan of Study for the EIA. If relevant, the necessary revisions will be made if requested by this Department.

An authorities meeting will be scheduled during the EIA public participation process to present the draft EIA Report and salient findings from the EIA Phase. In addition, copies of the draft EIA Report will be provided to the regulatory and commenting authorities listed in **Section 12.5.3** above.

The final EIA Report will be submitted to DFFE. Any requested amendments will be discussed with the Department to ensure that their queries are adequately and timeously attended to.

For the remainder of the Scoping and EIA process, DFFE will be engaged with as follows:

- ❑ Submit the final Scoping Report to the Department;
- ❑ Meet with designated DFFE Environmental Officer to explain the Project and arrange a site visit (if required by DFFE);
- ❑ Address comments on the final Scoping Report;
- ❑ Arrange an authorities' meeting during the EIA Phase;
- ❑ Submit the draft EIA Report to the Department;
- ❑ Address comments on the draft EIA Report;
- ❑ Submit the final EIA Report to the Department
- ❑ Obtain a decision; and
- ❑ Notify I&APs of the appeal process through DFFE's Appeals Unit.

14.8 EIA Timeframes

Table 11 below presents the proposed timeframes for the EIA process. *Note that these dates are subject to change as the EIA process unfolds*.

Table 11: EIA Timeframes
(Note: dates may change during the course of the EIA)

EIA Milestone	Start	Finish
Submit Application Form and Draft Scoping Report to DFFE	31/03/2023	
Review of Draft Scoping Report by Authorities & I&APs	14/04/2023	15/05/2023
DFFE Review and Decision	17/05/2023	20/06/2023
Review of Draft EIA Report by Authorities & I&APs	28/06/2023	28/07/2023
Submit Final EIA Report & EMPr to DFFE	03/08/2023	
DFFE Review and Decision	04/08/2023	21/11/2023

15 CONCLUSION

The scope of an environmental assessment is defined by the range of issues and alternatives it considers, the nature of the receiving environment, and the approach towards the assessment.

Key outcomes of the Scoping Phase for the proposed Solar PV Plant are as follows:

- Alternatives for achieving the objectives of the proposed activity were considered;
- Potentially significant issues pertaining specifically to the pre-construction, construction and operational phases of the Project were identified;
- Sensitive features of the environment that may be affected by the Project were identified;
- Stakeholders were identified and notified of the review of the draft Scoping Report;
- A Plan of Study was developed to explain the approach to be adopted during the EIA Phase; and
- The scoping exercise set the priorities for the ensuing EIA Phase.

No fatal flaws were identified in terms of the proposed activities and the receiving environment that would prevent the environmental assessment from proceeding beyond the Scoping Phase. It is the opinion of the EIA team that Scoping was executed in an objective manner and that the process and report conform to the requirements of Regulation 21 and Appendix 2 of the EIA Regulations, respectively. It is also believed that the Plan of Study for EIA is comprehensive and will be adequate to address the significant issues identified during Scoping, to select the BPEO, and to ultimately allow for informed decision-making.

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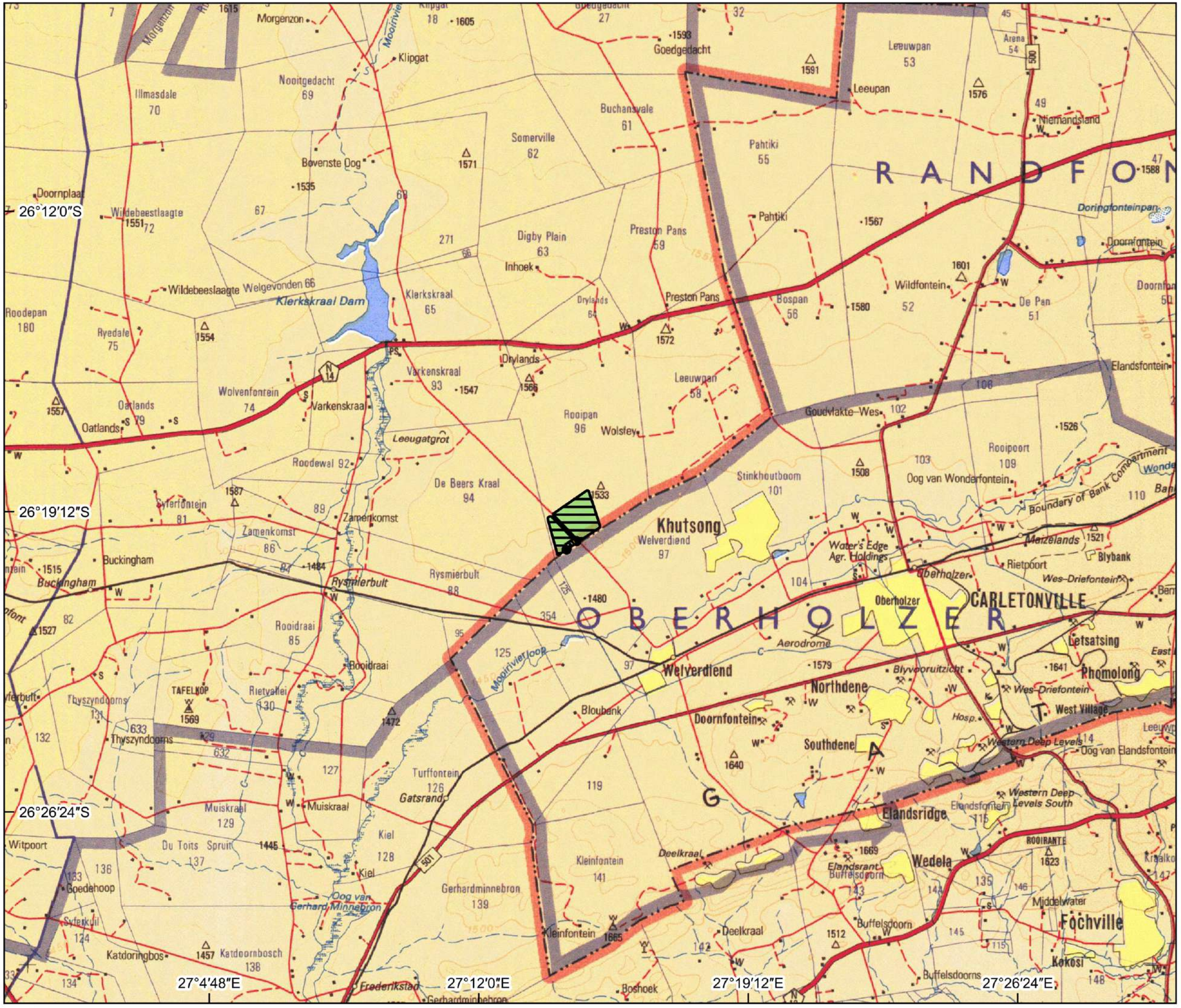
APPENDICES

APPENDIX A

LOCALITY MAPS



NEMAI CONSULTING

Regional Locality: Seelo Alpha Solar PV

Legend

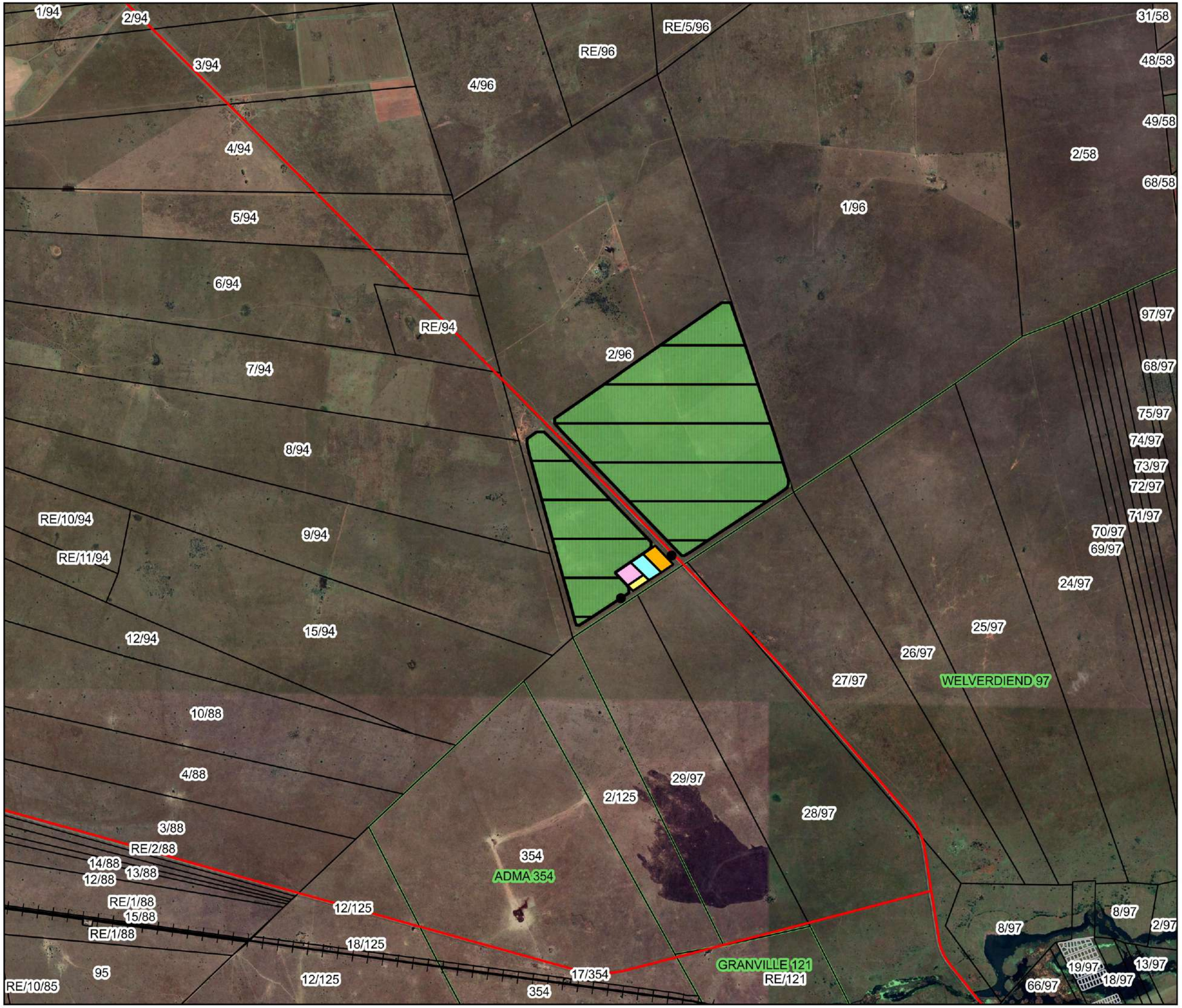
Seelo Alpha Layout

- Substation
- PV Array
- Construction Yard/ Laydown/Storage
- Office and Parking
- BESS
- Proposed Access Point
- Internal Roads

N

Scale: 1: 250000

0 12 24 36 48 km



NEMAI CONSULTING

Layout:
Seelo Alpha Solar PV

Legend

Cadastral

- Parent Farm
- Farm Portion
- Erf
- SA Roads
- Railways

Seelo Alpha Layout

- Substation
- PV Array
- Construction Yard/ Laydown/Storage
- Office and Parking
- BESS
- Proposed Access Point
- Internal Roads

N

Scale: 1: 50000

0 2 4 6 8 km

APPENDIX B

APPLICATION FORM

forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

APPLICATION FORM FOR ENVIRONMENTAL AUTHORISATION

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

PROJECT TITLE

Proposed Seelo Alpha 240 MW Solar Photovoltaic (PV) & Battery Energy Storage Systems (BESS) Project near the town of Carletonville, North West Province

Indicate if the **DRAFT** report accompanies the application

Yes ☑
No ☐

PRE-APPLICATION CONSULTATION

Was a pre-application meeting held	Yes	✓	No	
Date of the pre-application meeting	28 February 2023			
Reference number of pre-application meeting held	2023-01-0036			
Was minutes compiled and submitted to the Department for approval	Yes	✓	No	

A copy of the pre-application meeting minutes must be appended to this application as **APPENDIX 1**.

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This application form is current as of **April 2021**. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.environment.gov.za/documents/forms.
3. The onus is on the Applicant/EAP to determine all applicable listed activities that would require Environmental Authorisation prior to the commencement of the construction activities. Should any revision of your development comprise any other activities that constitute a listed activity/ies as defined in Listing Notice 1, 2, or 3 of the EIA Regulations, 2014 as amended, it must also form part of the Application for Environmental Authorisation.
4. An application fee is applicable (refer to **Section 2**). Proof of payment must accompany this application. The application will not be processed without proof of payment unless one of the exclusions provided for in the Fee Regulations is applicable AND such information in the exclusion section of this application form has been confirmed by this Department.
5. A cover letter on your company letterhead indicating the nature of this application must be appended to this form i.e. new application for Environmental Authorisation, updated application for Environmental Authorisation.
6. An electronic copy of the signed application form must be submitted of both the Applicant and EAP.
7. This form must be marked ***"for Attention: Chief Director: Integrated Environmental Authorisations"*** and submitted to the Department at the format as prescribed in the process to upload documents form.
8. The required information must be typed within the spaces provided in the form. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. Spaces are provided in tabular format and will extend automatically when each space is filled with typing. A legible font type and size must be used when completing the form. The font size should not be smaller than 10pt (e.g. Arial 10).

9. Where applicable black out the boxes that are not applicable in the form.
10. The use of the phrase "not applicable" in the form must be done with circumspection. Where it is used in respect of material information that is required by the Competent Authority for assessing the application, this may result in the rejection of the application as provided for in the Regulations.
11. Unless protected by law, all information contained in and attached to this application, will become public information on receipt by the Competent Authority. Upon request during any stage of the application process, the Applicant / EAP must provide any registered interested and affected party with the information contained in and attached to this application.
12. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report and declaration of interest of the specialist must also be submitted.
13. Please note that this form must be copied to the relevant Provincial Environmental Department(s)
14. An application for Environmental Authorisation lapses if the applicant fails to meet any of the timeframes prescribed in terms of the EIA Regulations, 2014, as amended.
15. An application for environmental authorisation must be accompanied by a report generated by the web based environmental screening tool (in Appendix 11). This has been stipulated as a requirement for the submission of applications for environmental assessment in the Environmental Impact Assessment Regulations. The Screening Tool allows for the generation of a Screening Report referred to in Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended, whereby a Screening Report is required to accompany any application for Environmental Authorisation.

Departmental Details

Online Submission:
EIAapplications@environment.gov.za or https://sfiler.environment.gov.za:8443/.

Please read the process for uploading files to determine how files are to submitted to this Department.

Postal address:
Department of Forestry, Fisheries and the Environment
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:
Department of Forestry, Fisheries and the Environment
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

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

1. COMPETENT AUTHORITY

Identified Competent Authority to consider the application:	Department of Forestry, Fisheries and the Environment (DFFE).
Reason(s) in terms of S24C of NEMA:	This Application is for a Renewable Energy Hybrid Project (Large Scale Solar PV with BESS Energy Development). The Applicant intends to bid the project in either a future Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid window or generate electricity for private off-take. The REIPPPP programme was designed to respond to the call by the NDP & the IRP 2010 via renewable energy Sources. In line with GN 779 of July 2016, the Competent Authority for the consideration and processing of Environmental Authorisations for activities related to the IRP 2010-2030 is the Minister of the DFFE. Therefore, the DFFE is the Competent Authority in terms of S24C(2)(a)(i).

2. FEES

Applicants are required to tick the appropriate box below to indicate that either proof of payment is attached or that, in the applicant's view, an exclusion applies. Proof of payment or a motivation for exclusions must be attached as **APPENDIX 2** of this application form.

Proof of payment attached	Yes	[redacted]
Payment Reference Number	-26.324711/27.242265	
Exclusion in terms of Regulation 2(a) or 2(b) of GNR 141 of 28 February 2014	[redacted]	No

An applicant is excluded from paying fees if:

- The activity is a community based project funded by a government grant; or
- The applicant is an organ of state.

TYPE OF EXCLUSION	Tick where applicable. Proper motivation must be attached to the application
The activity is a community based project funded by a government Grant	[redacted]
The applicant is an organ of state	

FEE AMOUNT	Fee
Application for an environmental authorisation for which basic assessment is required in terms of the Environmental Impact Assessment Regulations	[redacted]
Application for an environmental authorisation, for which S&EIR is required in terms of the Environmental Impact Assessment Regulations	R 10 000

Department of Forestry, Fisheries and the Environment banking details for the payment of application fees:

Payment Enquiries:
Email: eiafee@environment.gov.za

Banking details:
ABSA Bank
Branch code: 632005
Account number: 1044 2400 72
Current account

Reference number: Reference number to be provided in the specific format indicating centre point coordinates of site in decimal degrees to 5 or 6 decimal places: latitude/longitude
e.g. -33.918861/18.423300

Status: Tax exempted

3. GENERAL INFORMATION

Name of the Applicant:	Seelo Alpha Solar PV (RF) Proprietary Limited		
RSA Identity/ Passport Number:	-		
Name of contact person for applicant (if other):	Michael Mangnall		
RSA Identity/ Passport Number:	7211245134081		
Responsible position, e.g. Director, CEO, etc.:	Managing Director		
Company/ Trading name (if any):	WKN Windcurrent SA (Pty) Ltd		
Company Registration Number:	2010/022616/07		
BBBEE status:	Level 4		
Physical address:	Third Floor, Sunclare Building, 21 Dreyer Street, Claremont, Cape Town		
Postal address:	PO Box 762, Wilderness		
Postal code:	6560	Cell:	083 785 1492
Telephone:		Fax:	
E-mail:	mangnall@wkn-windcurrent.com		

Name of the landowner:	Adrian Vermaak (landowner for PV Site)		
Name of contact person for landowner (if other):	Adrian Vermaak		
Postal address:	Doringfontein Farm, Kameeldrift-East, Pretoria		
Postal code:	0039	Cell:	082 540 7931
Telephone:	082 540 7931	Fax:	-
E-mail:	vermaak.boedery@vodamail.co.za		

Name of Person in control of the land:	*Same as above for PV Site.*		
Name of contact person for person in control of the land:	[redacted]		
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	
E-mail:			

In instances where there is more than one landowner, please attach a list of those landowners with their contact details as **APPENDIX 3**.

Unless the application is in respect of linear activities or Strategic Infrastructure Projects as contemplated in the Infrastructure Development Act (Act No. 23 of 2014), written consent of landowner/s must be submitted in **APPENDIX 3**.

The originally signed declaration undertaking by the applicant must be submitted as **APPENDIX 9**.

Provincial Environmental Authority:	North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT)		
Name of contact person:	Lufuno Tshikovhi		
Postal address:	Private Bag X15, Mmabatho		
Postal code:	2735	Cell:	
Telephone:	018 389 5666	Fax:	018 294 6008
E-mail:	Ltshikovhi@nwpg.gov.za		

Local Municipality:	JB Marks Local Municipality		
Name of contact person in (Environmental Section)	Ishmael Moilwa		
Postal address:	35 Wolmarans Street, Potchefstroom,		
Postal code:	2531	Cell:	
Telephone:	018 299 5444 / 018 299 5111	Fax:	018 297 0477
E-mail:	elicityj@jbmarks.gov.za		

In instances where there is more than one Local/Provincial Authority involved, please attach a list of those Local/ Provincial Authorities with their contact details as **APPENDIX 4**.

4. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) INFORMATION

Company of Environmental Assessment Practitioner:	Nemai Consulting (Pty) Ltd			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	1	Percentage Procurement recognition	
EAP name:	Donavan Henning			
EAP Qualifications:	MSc Freshwater Ecology			
Professional affiliation/registration:	• Registered EAP (EAPASA Reg. no. 2020/1217) • Registered Professional Natural Scientist (SACNASP Reg no: 400108/17)			
Physical address:	No. 147 Bram Fischer Drive, Ferndale, 2194			
Postal address:	P.O. Box 1673, SUNNINGHILL			
Postal code:	2157	Cell:	082 891 0604	
Telephone:	011 781 1730	Fax:	011 781 1731	
E-mail:	donavanh@nemai.co.za			

The appointed EAP must meet the requirements of Regulation 13 of the EIA Regulations, 2014 as amended. The declaration of independence of the EAP and undertaking under oath or affirmation that all the information submitted or to be submitted for the purposes of the application is true and correct must be submitted as **APPENDIX 10**.

5. PROJECT DESCRIPTION

Please provide a **detailed** description of the project.

A. Introduction

Electricity generation sources need to be diversified to ensure security of supply and reduction in the carbon footprint created by the current heavy reliance of South Africa (SA) on coal to produce electricity. The electricity demand is increasing in SA, and in order to match that demand there is a need to supply a diversified power generation that includes renewable energy technologies. These technologies include solar, wind, small utility scale hydro, biomass, biogas and energy storage that the Department of Mineral Resources and Energy (DMRE) intends to develop and implement as identified in the approved Integrated Resource Plan (IRP) 2019.

Seelo Alpha Solar PV (RF) (Pty) Ltd (the Applicant) has proposed the development of the Seelo Alpha 240MW Solar PV with 1140 MWh BESS Project near the town of Carletonville, in the North West Province. The complete extent of the study area is located in the Central Corridor of the Strategic Transmission Corridors. The electricity generated by the Project will be injected into the existing Eskom 132 kV distribution system.

The Applicant intends to bid for the current and future Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid windows.

B. Project Overview

PV technology produces direct current (DC) which is then converted to alternating current (AC) via power electronic inverters. **Figure 1** below provides an overview of a typical Solar PV Power Plant project.

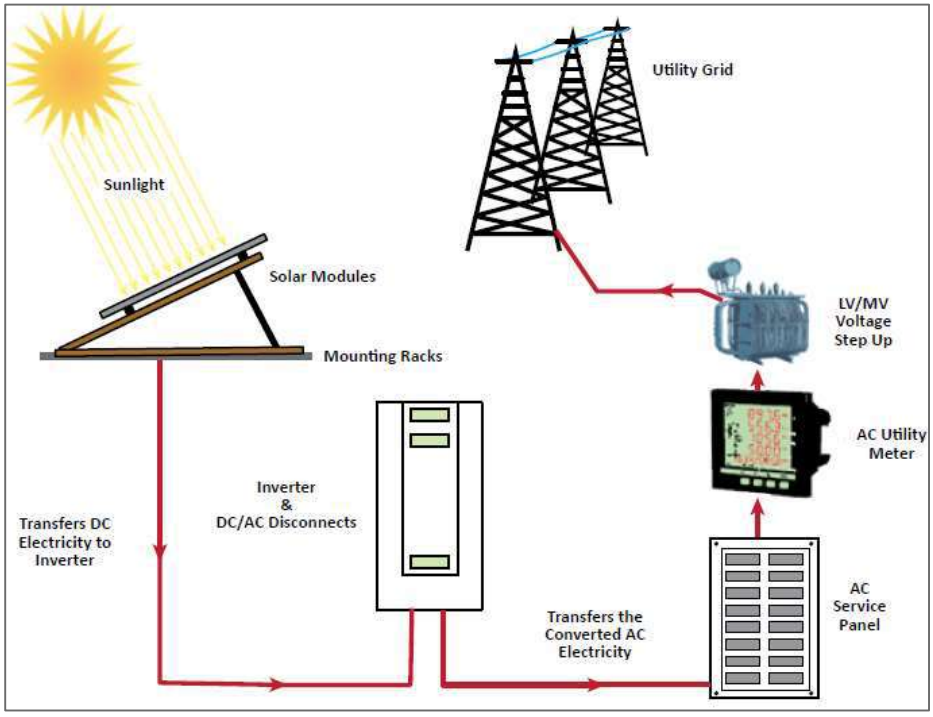


Figure 1: Overview of Solar PV Power Plant
(*International Finance Corporation, 2015. Utility-Scale Solar Photovoltaic Power Plants*)

The Project is located in the most eastern part of the North West Province (at the boundary between North West and Gauteng) and falls within the Dr Kenneth Kaunda District Municipality and JB Marks Local Municipality. The site is located approximately 13km north-west of the town of Carletonville.

The proposed Project consists of the following systems, sub-systems or components (amongst others) (refer to layout provided in **Figure 2** below):

- PV panel arrays, which are the subsystems which convert incoming sunlight into electrical energy;
- Mounting structures to support the PV panels;
- IPP substation;

- On-site inverters to convert DC to facilitate AC connection between the solar energy facility and electricity grid;
- BESS (preferred solution is Lithium Ion);
- Cabling between the Project's components, to be laid underground (where practical);
- Administration Buildings (Offices);
- Workshop areas for maintenance and storage;
- Temporary and permanent laydown areas;
- Internal access roads and perimeter fencing of the footprint;
- High Voltage (HV) Transformers; and
- Security Infrastructure.

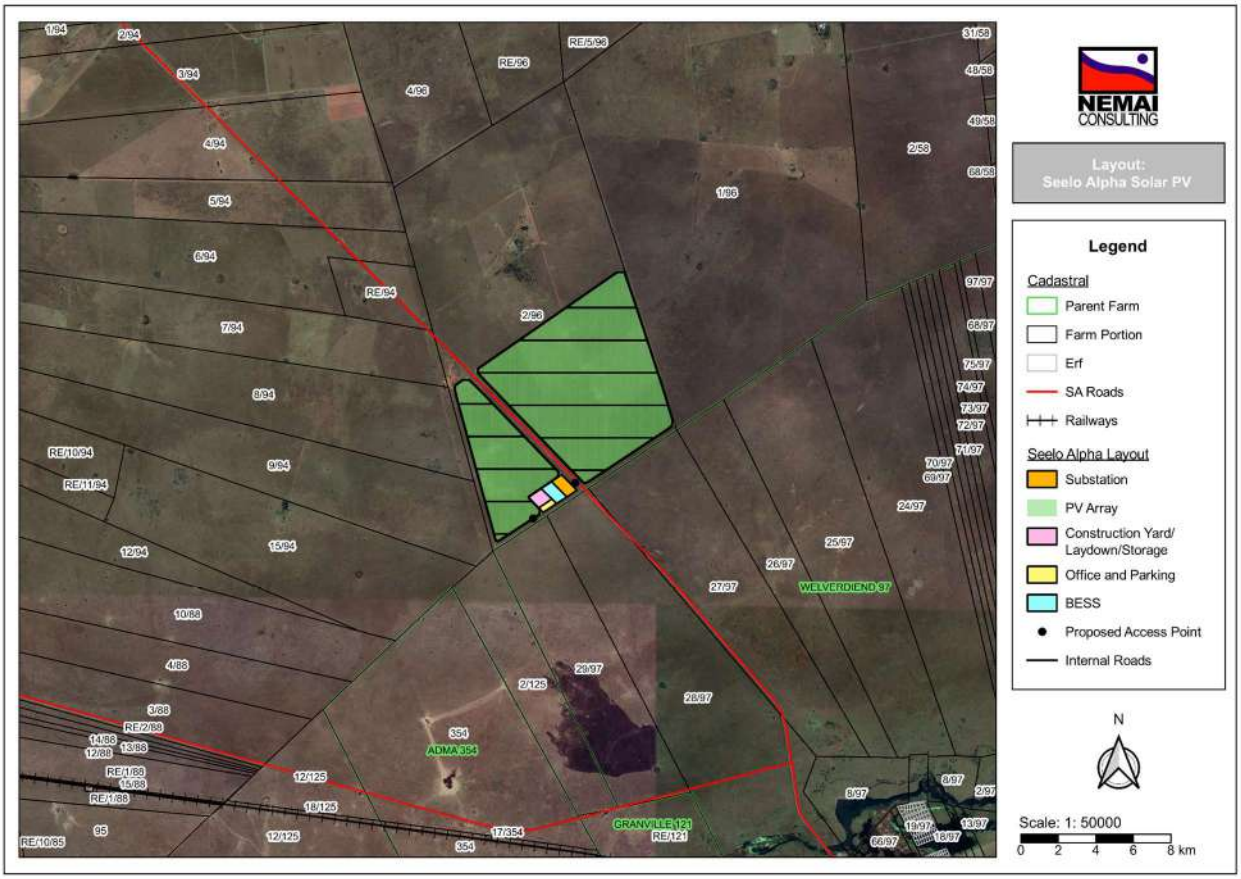


Figure 2: Layout of proposed Project

The electricity generated by the proposed PV facility will be transferred to the existing Eskom 132 kV distribution system. To connect the proposed PV facility to the national distribution system, a dedicated grid connection will be required which will include the development of a 132/33 kV switching substation and a 132 kV powerline to a point of connection at the existing Carmel Major Transmission Substation. The existing substation is located approximately 12.5km south of the site. This grid connection will be subject to a separate application process for Environmental Authorisation (EA).

Does the project form part of a Renewable Energy Development Zone (REDZ) as per GN 114?	NO
Does the project form part of an Electricity Grid Infrastructure (EGI) as per GN 113?	N/A
Does the project form part of any of the Strategic Infrastructure Projects (SIPs) as described in the National Development Plan, 2011?	NO
Did you attached the confirmation of SIP obtained from the relevant sector representative (SIP Coordinators) and not a motivation from an EAP	

If **YES**, is selected:

- For an application in terms of GN 113 and/or 114, then a map confirming this must be attached;
- For a SIP project, kindly indicate which SIPs are applicable in **APPENDIX 5 and attach the** confirmation of SIP applications from the relevant sector representative in **APPENDIX 5**. Should no proof be provided, the application will be considered as a normal EIA Application.

Please indicate which sector the project falls under by ticking the relevant block in the table below:

Table 1: National Sector Classification in terms of Regulation 9 of the EIA Regulations, 2014 as amended

1	Infrastructure /Transport Services/Roads – Public		42	Services/Waste Management Services/Disposal facilities - General	
2	Infrastructure /Transport Services/Roads – Private		43	Services/Waste Management Services/Treatment facilities - Hazardous	
3	Infrastructure /Transport Services/Rail – Public		44	Services/Waste Management Services/Treatment facilities - General	
4	Infrastructure /Transport Services/Rail – Private		45	Services/Waste Management Services/Storage Facilities - General	
5	Infrastructure /Transport Services/Airport/Runways/Landing Strip/Helipad - Commercial		46	Services/Waste Management Services/Storage Facilities - Hazardous	
6	Infrastructure /Transport Services/Airport/Runways/Landing Strip/Helipad - Private		47	Services/Waste Management Services/Storage Facilities - Nuclear	
7	Infrastructure /Transport Services/Airport/Runways/Landing Strip/Helipad - Public Services		48	Services/Burial and cemeteries - Cemeteries	
8	Infrastructure /Transport Services - Ports		49	Services/Burial and cemeteries - Cremators	
9	Infrastructure /Transport Services - Inland Waterways		50	Services/Water services/Storage - Dams	
10	Infrastructure /Transport Services - Marina		51	Services/Water services/Storage - Reservoirs	
11	Infrastructure /Transport Services - Canal		52	Services/Water services - Desalination	
12	Infrastructure /Localised infrastructure - Infrastructure in the Sea/Estuary/Littoral Active Zone/Development Setback/100M Inland/or coastal public property.		53	Services/Water services - Treatment & Waste Water	
13	Infrastructure /Localised infrastructure - Zip Lines & Foefie Slides		54	Services - Hospitality	
14	Infrastructure /Localised infrastructure - Cableway or Funiculars		55	Mining - Prospecting rights	

15	Infrastructure /Localised infrastructure – Billboards		56	Mining - Mining Permit	
16	Infrastructure /Localised infrastructure/Storage/Dangerous Goods/Hydrocarbon - Gas		57	Mining - Mining Right	
17	Infrastructure /Localised infrastructure/Storage/Dangerous Goods/Hydrocarbon - Petroleum		58	Mining/Exploration Right - Gas or Oil Marine	
18	Infrastructure /Localised infrastructure/Storage/Dangerous good – Chemicals	✓	59	Mining/Exploration Right - Gas or Oil Terrestrial	
19	Utilities Infrastructure/Pipelines/water - Fresh/Storm Water		60	Mining/Production Right - Gas or Oil Marine	
20	Utilities Infrastructure/Pipelines/water - Waste Water		61	Mining/Production Right - Gas or Oil Terrestrial	
21	Utilities Infrastructure/Pipelines/Dangerous Goods - Chemicals		62	Mining/Underground gasification of coal - Oil	
22	Utilities Infrastructure/Pipelines/Hydrocarbon – Petroleum		63	Mining/Beneficiation - Hydrocarbon	
23	Utilities Infrastructure/Pipelines/Hydrocarbon - Gas		64	Mining/Beneficiation - Mineral	
24	Utilities Infrastructure/Telecommunications/ Radio Broadcasting - Tower		65	Agriculture/Forestry/ Fisheries - Crop Production	
25	Utilities Infrastructure/Telecommunications/ Radio Broadcasting - Mast		66	Agriculture/Forestry/ Fisheries - Animal Production	
26	Utilities Infrastructure/Telecommunications/ Radio Broadcasting - Receivers		67	Agriculture/Forestry/ Fisheries - Afforestation	
27	Utilities Infrastructure - Marine Cables		68	Agriculture/Forestry/ Fisheries/Aquaculture/Inland- Alien	
28	Utilities Infrastructure/Electricity /Generation/Non Renewable/Hydrocarbon – Petroleum		69	Agriculture/Forestry/ Fisheries/Aquaculture/Inland- Indigenous	

29	Utilities Infrastructure/Electricity /Generation/Non Renewable/Hydrocarbon – Coal		70	Agriculture/Forestry/ Fisheries/Aquaculture/Marine - Alien	
30	Utilities Infrastructure/Electricity /Generation/Non Renewable - Nuclear		71	Agriculture/Forestry/ Fisheries/Aquaculture/Marine - Indigenous	
31	Utilities Infrastructure/Electricity /Generation/Renewable - Hydro		72	Agriculture/Forestry/ Fisheries - Agro-Processing	
32	Utilities Infrastructure/Electricity /Generation/Renewable/Solar - PV	✓	73	Transformation of land - Indigenous vegetation	✓
33	Utilities Infrastructure/Electricity /Generation/Renewable/Solar - CSP		74	Transformation of land - From open space or Conservation	
34	Utilities Infrastructure/Electricity /Generation/Renewable - Wind		75	Transformation of land - From agriculture or afforestation	
35	Utilities Infrastructure/Electricity /Generation/Renewable - Biomass/ biofuels		76	Transformation of land - From mining or heavy industrial areas	
36	Utilities Infrastructure/Electricity /Generation/Renewable - Wave		77	Any activities within or close to a watercourse	✓
37	Utilities Infrastructure/Electricity /Distribution and Transmission - Power line		78	Any activity in an estuary, on the seashore, in the littoral active zone, or in the sea.	
38	Utilities Infrastructure/Electricity /Distribution and Transmission – Substation		79	Activity requiring permit or licence in terms of National or Provincial legislation governing the release or generation of emissions - Emissions	
39	Utilities Infrastructure/Gas /Distribution and Transmission – Compressor Station		80	Activity requiring permit or licence - Marine Effluent	
40	Services/Waste Management Services/Disposal facilities - Hazardous		81	Activity requiring permit or licence - Fresh Water Effluent	
82	Release of Genetically Modified Organisms				

Table 1

Does the listed activity/ies applied for form part of a larger project which is not a listed activity itself e.g. a road that is a listed activity that is needed to access a drilling site where the drilling does not constitute a listed activity.		NO
If indicated yes above, please provide a brief description on how the activity/ies relate to the larger project that forms part there of: Not applicable.		

6. SITE DESCRIPTION

Provide a detailed description of the site involved in the application.

Province/s	North West
District Municipality/ies	Dr Kenneth Kaunda District Municipality
Local Municipality/ies	JB Marks Local Municipality
Ward number/s	Ward 64005028
Nearest town/s	Carletonville
Farm name/s and number/s	Portion 2 of the Farm 96 (Rooipan)
Portion number/s	

Surveyor General 21 digit code:
(If there are more than 4, please attach a list with the rest of the codes as **APPENDIX 6**. Where the 21 digit SGID and farm name are not available, the coordinates of the boundary of the property or properties must be provided in **APPENDIX 6**.

T	0	I	Q	0	0	0	0	0	0	0	0	0	0	9	6	0	0	0	0	2

Locality map:	A locality map must be attached to the application form, as **APPENDIX 7**. The scale of the locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map. The map must include the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; • the prevailing wind direction; • site sensitivities, including but not limited to vegetation, wetlands, watercourses, heritage sites, critical biodiversity area/s, World Heritage Site, etc. and it must be overlaid by the study area; and • GPS co-ordinates (Indicate the position of the proposed activity with the latitude and longitude at the centre point for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should be to at least three decimal places. The projection that must be used in all cases is the WGS-84 spheroid in a national or local projection)
Project Plan (e.g. Gantt chart)	A project schedule must be submitted as **APPENDIX 8**, and must include milestones for: • public participation (dates for advertisements, workshops and other meetings, obtaining comment from organs of state including state departments); • the commencement of parallel application processes required in terms of other statutes and where relevant, the alignment of these application processes with the EIA process;

	• the submission of the key documents (e.g. Basic Assessment Report, Scoping Reports, EIA Reports and Environmental Management Programmes). Note: All the above dates must take into account the statutory timeframes for authority responses that are stipulated in the 2014 NEMA EIA Regulations. Possible appeals may impact on project timeframes/milestones. Regulation 45 states that "An application in terms of these Regulations lapses, and a competent authority will deem the application as having lapsed, if the applicant fails to meet any of the time-frames prescribed in terms of these Regulations, unless extension has been granted in terms of regulation 3(7)." It is recommended that the Department be approached for guidance on the process to be followed, prior to submitting an application.

7. ACTIVITIES APPLIED FOR

For an application for authorisation that involves more than one listed activity that, together, make up one development proposal, all the listed activities pertaining to this application must be provided below.

Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 1** of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
GN No. R.983 – Activity 11(i)	The development of facilities or infrastructure for the transmission and distribution of electricity— (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more; excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is — (a) temporarily required to allow for maintenance of existing infrastructure; (b) 2 kilometres or shorter in length; (c) within an existing transmission line servitude; and (d) will be removed within 18 months of the commencement of development.	The Project will require 132 kV electrical infrastructure.
GN No. R.983 – Activity 12(ii)(a) & (c):	The development of - (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs - (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; - excluding - (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;	Crossing of watercourses by infrastructure associated with the Project., as well as Solar PV infrastructure within 32m of watercourses. To be confirmed following watercourse delineation by the specialist.

	(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.	
GN No. R.983 – Activity 14:	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	Installation of BESS (lithium ion technology).
GN No. R.983 – Activity 19:	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving - (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	Crossing of watercourses by infrastructure associated with the Project. To be confirmed following watercourse delineation by the specialist.
GN No. R.983 – Activity 24(ii):	The development of a road - (i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road - (a) which is identified and included in activity 27 in Listing Notice 2 of 2014; (b) where the entire road falls within an urban area; or (c) which is 1 kilometre or shorter.	New roads required for the Project (construction and operational phases). With regard to the roads, the internal roads will be up to 6m wide. The entrance road to the project site from the regional road will be up to 8m wide.
GN No. R.983 – Activity 27:	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	Clearance of areas associated with the construction footprint. Status of vegetation to be confirmed as part of the Terrestrial Ecological Impact Assessment.

GN No. R.983 – Activity 28(ii):	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.	Footprint of Project on land that was previously used for agricultural purposes, outside of an urban area.
GN No. R.983 – Activity 56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres; excluding where widening or lengthening occur inside urban areas.	The existing access road/access point would need to be widened by more than 6m to accommodate heavy vehicle turning.
Activity No(s):	Provide the relevant **Scoping and EIA Activity(ies**) as set out in **Listing Notice 2** of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
GN No. R.984 – Activity 1:	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs - (a) within an urban area; or (b) on existing infrastructure.	The proposed Project involves the development of a PV facility with a total generation capacity of up to 240MW renewable solar energy.
GN No. R.984 – Activity 15:	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	Cumulative area to be cleared for entire Project will exceed 20 hectares. Status of vegetation to be confirmed as part of the Terrestrial Ecological Impact Assessment.
Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 3** of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
GN No. R.985 – Activity 4 - (h)(vi):	The development of a road wider than 4 metres with a reserve less than 13,5 metres.	The access and internal roads for the PV Facility are located within 5 kilometres from a protected area (Abe Bailey Nature Reserve) identified in terms of the National Environmental Management: Protected Areas Act, 2003 (NEMPAA).
GN No. R.985 – Activity 12 - (h)(vi):	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.	Clearance of areas of indigenous vegetation as part of the development footprint within the following sensitive areas: ▪ Within a watercourse or wetland or within100m from the edge of a watercourse or wetland. To be confirmed following watercourse delineation by the specialist.

GN No. R.985 – Activity 14(ii)(a) & (c) - (h)(vi):	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.	Development footprint within watercourse(s) / within 32 m from watercourse(s) which are located within 5 kilometres from a protected area (Abe Bailey Nature Reserve) identified in terms of the National Environmental Management: Protected Areas Act, 2003 (NEMPAA).
GN No. R.985 – Activity 18(h)(ii) & (ix)	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.	The widening of existing access road/access point (by more than 6m to accommodate heavy vehicle turning) which are located: • Within 5 kilometres from a protected area (Abe Bailey Nature Reserve) identified in terms of the National Environmental Management: Protected Areas Act, 2003 (NEMPAA) • Within a watercourse or wetland or within 100 meters from the edge of a watercourse or wetland (To be confirmed following watercourse delineation by specialist).

Please note that any authorisation that may result from this application will only cover activities specifically applied for. Only those activities listed above shall be considered for authorisation. The onus is on the applicant to ensure that all applicable listed activities are included in the application. Environmental Authorisation must be obtained prior to commencement with each applicable listed activity.
Coordinate points indicating the location of each listed activity must be provided as part of **APPENDIX 6** as well part of the reports to be submitted. Coordinates must be provided in degrees, minutes and seconds using the Hartebeesthoek94 WGS84 co-ordinate system.

8. PUBLIC PARTICIPATION

Provide details of the public participation process proposed for the application as required by Regulation 41(2) of the EIA Regulations, 2014 as amended.

A. REVIEW OF DRAFT SCOPING REPORT

1) Access to the Draft Scoping Report

The draft Scoping Report will be uploaded to Nemai Consulting's website and a hardcopy will be placed at public places such as the public library in Carletonville.

Copies of the draft Scoping Report will also be distributed to key authorities with jurisdiction, including the following:

- DFFE (including Biodiversity Conservation Unit);
- North West Department of Economic, Environment, Conservation and Tourism (DEDECT);
- Department of Water and Sanitation (DWS): North West Region;
- Department of Mineral Resources and Energy (DMRE);
- North West Department of Public Works and Roads (DPWR);

- North West Provincial Heritage Resources Agency (NWPHRA);
- Dr Kenneth Kaunda District Municipality; and
- JB Marks Local Municipality.

2) Notification of Review

Authorities and registered I&APs will be notified in writing of the review of the draft Scoping Report. All notifications will be sent via email and/or as registered mail, and a notice will be placed in a local newspaper. Authorities and I&APs will be provided 30 days to comment on the draft Scoping Report.

B. REVIEW OF DRAFT EIA REPORT

1) Access to the Draft EIA Report

The draft EIA Report will be uploaded to Nemai's website and a hardcopy will be placed at a public place such as the public library in Carletonville.

Copies of the draft EIA Report will also be distributed to key authorities with jurisdiction, including the following:

- DFFE (including Biodiversity Conservation Unit);
- DEDECT;
- DWS: North West Region;
- DMRE;
- DPWR;
- NWPHRA;
- Dr Kenneth Kaunda District Municipality; and
- JB Marks Local Municipality.

2) Notification of Review

Authorities and registered I&APs will be notified in writing of the review of the draft EIA Report. All notifications will be sent via email and/or as registered mail. Authorities and I&APs will be provided 30 days to comment on the draft EIA Report.

3) Authorities Meeting

An authorities meeting will be conducted virtually via Microsoft Teams during the review period. Authorities will be notified separately of the review of the draft EIA Report and of the authorities meeting. In the notification, we will request authorities to confirm their interest in partaking in the authorities meeting in writing prior to the date of notification. Participants will thus be pre-registered. Only the pre-registered parties that confirmed interest will receive a meeting invitation to the virtual meeting, with the link to join. Depending on the interest shown, and to manage the number of participants, an additional authorities' meeting may need to be scheduled.

4) Public Meeting

A public meeting will be convened at a suitable venue (e.g. community hall/virtually) during the review period. I&APs will be notified separately of the review of the draft EIA Report and of the public meeting. In the notification, we will request I&APs to confirm their interest in attending the public meeting in writing. Attendees will thus be pre-registered. Only the pre-registered parties that confirmed interest will receive a meeting invitation to the public meeting. Depending on the interest shown, and to manage the number of participants, an additional public meeting may need to be scheduled.

C. NOTIFICATION OF DECISION

Registered I&APs will be notified in writing of DFFE's decision and of the appeal process, in accordance with the National Appeal Regulations, 2014.

9. OTHER AUTHORISATIONS REQUIRED

Are there any other applications for Environmental Authorisation on the same property?		NO
If YES, please indicate the following:		
Competent Authority		
Application Reference Number		
Project Name		
Please provide details of the steps taken to ascertain this information: According to the SA Renewable Energy EIA Application (REEA) Database, no previous applications were made on the property in question.		

IF YES IS SELECTED, PLEASE ATTACH OTHER AUTHORISATIONS ISSUED.

Applications in terms of the National Environmental Management Act ("NEMA") & specific environmental management Acts ("SEMAs"):

LEGISLATION	**AUTHORISATION REQUIRED**		**APPLICATION SUBMITTED**	
Is Section 50(5) of the National Environmental Management: Protected Areas Act applicable to your proposed development? (The proposed development is within a proclaimed protected area as defined the Act.)		NO		
National Water Act (Act No. 36 of 1998)	*To be confirmed*			NO
National Environmental Management: Air Quality Act (Act No. 39 of 2004)		NO		
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	*To be confirmed*			NO
National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008)		NO		
National Environmental Management: Protected Areas Act (Act No. 57 of 2003)		NO		
National Environmental Management: Waste Act (Act No. 59 of 2008)		NO		
Others: Please specify	YES	NO	YES	NO
National Heritage Resources Act (Act No. 25 of 1999)	*To be confirmed*			NO

Please be advised that:

- If a Waste Management license is required in terms of the National Environmental Management: Waste Act, please contact the Department for guidance on the **Integrated Permitting System**. **An IPS application can only be lodged with this Department in the event that this Department is the Competent Authority for both the EIA and Waste related activities**;
- If Sections 7B and 7C of the National Environmental Management: Integrated Coastal Management Act is applicable to your proposed development, you are required to obtain pre-approval for a reclamation application prior to an Application for Environmental Authorisation being lodged with the Competent Authority;
- If Section 50(5) of the National Environmental Management: Protected Areas Act is applicable to your proposed development, you are required to obtain approval from the Management Authority prior to an Application for Environmental Authorisation being lodged with the Competent Authority; and
- If Section 38 of the National Heritage Resources Act (Act No. 25 of 1999) is applicable to your proposed development, you are requested to submit the Notice of Intent form to the relevant SAHRA or a Provincial Heritage Resources Authority and attach a copy to this form. If it is indicated that a Heritage Impact Assessment will be required, the Heritage Impact Assessment must be undertaken as one of the specialist studies of the EIA process to be undertaken in terms of the NEMA EIA Regulations, 2014, as amended.

10. LIST OF APPENDICES

		SUBMITTED	
APPENDIX 1	Copy of the pre-application meeting minutes	YES	[redacted]
APPENDIX 2	Proof of Payment / Motivation for exclusion	YES	
APPENDIX 3	List of land owners (with contact details) and written consent of land owners.	YES	
APPENDIX 4	List of Local/Provincial Authority involved (with contact details)	YES	
APPENDIX 5	Strategic Infrastructure Projects	[redacted]	NO
APPENDIX 6	List of SGIDs and coordinates	YES	[redacted]
APPENDIX 7	Locality map	YES	
APPENDIX 8	Project schedule	YES	
APPENDIX 9	Declaration of Applicant	YES	
APPENDIX 10	Declaration of EAP and undertaking under oath or affirmation	YES	
APPENDIX 11	Screening Tool Report	YES	
APPENDIX 12	Undertaking under Oath / Affirmation	YES	

APPENDIX 1
COPY OF THE PRE-APPLICATION MEETING MINUTES

NEMAI CONSULTING	**DRAFT MINUTES** **Pre-Application Meeting with the Department of Forestry, Fisheries and the Environment (DFFE)**	**Queries:**	Donavan Henning ☎ 011 781 1730 🖷 011 781 1731 ✉ donavanh@nemai.co.za
Applicant:	WKN Windcurrent PNE GROUP	**Project Name:**	Proposed Seelo Solar Photovoltaic Facilities and Associated Infrastructure near Carletonville, North West Province
Date:	28 February 2023	**Time:**	09:00 AM - 10:30 AM
Facilitator:	D. Henning	**Venue:**	Microsoft Teams Meeting

A. Attendance

Present

Attendees	Organisation	Email
Muhammad Essop	DFFE	messop@dffe.gov.za
Coenrad Agenbach	DFFE	cagenbach@dffe.gov.za
Trisha Rene Pillay	DFFE	tpillay@dffe.gov.za
Kernick Gordon	WKN Windcurrent SA (Pty) Ltd	kernick@wkn-windcurrent.com
Marshall Mabin	WKN Windcurrent SA (Pty) Ltd	mabin@wkn-windcurrent.com
Donavan Henning	Nemai Consulting (Pty) Ltd	donavanh@nemai.co.za
Niel Brink	GIBB Environmental (Pty) Ltd	nbrink@gibbenvironmental.co.za

Apologies

1. Mmamohale Kabasa (DFFE).

B. Discussion

Note: These minutes are not intended as a verbatim transcript of the meeting, but rather as a summary of the salient discussions which took place.

Item.	Description	Action	Target Date
1.	**WELCOME AND INTRODUCTION**		
1.1	The Pre-Application Meeting with the DFFE for the proposed Seelo Solar Photovoltaic (PV) Cluster Projects in the North West Province commenced at approximately 09:00 AM. D. Henning acted as the facilitator for the meeting and requested a round of introductions.	-	-
2.	**PURPOSE OF THE MEETING**		
2.1	D. Henning indicated that the objectives of the meeting included the following: • To present an overview of the proposed projects to DFFE; • To seek clarification regarding certain matters that pertain to the Environmental Impact Assessment (EIA) processes; • To determine DFFE's requirements; and	-	-

Item.	Description	Action	Target Date
	• To confirm the processes and timeframes.		
3	**CONFIRMATION OF AGENDA**		
3.1	The agenda was accepted without any amendments.	-	-
4.	**PROJECT OVERVIEW**		
4.1	The Applicant (M. Mabin) provided an overview of the proposed Projects (refer to the presentation contained in Appendix A).	-	-
4.2	M. Essop queried with the Applicant what the intensions are with the Environmental Authorisations (EAs). M. Mabin responded that the aim is to either bid for the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) or to engage with private off-takers. M. Essop indicated that to identify the Competent Authority (CA), the Applicant will need to first confirm whether the projects will follow the REIPPPP route or will be made available to private off-takers. He explained that as of May 2022, the National Department became the CA for projects under REIPPPP and the relevant Provincial Department the CA for projects related to private off-takers. M. Mabin queried what the process would entail if the EAs will be used to bid for the REIPPPP but at a later stage it is decided that private off-taking would be more suitable. M. Essop responded that an EA will not mention or specify whether it is a project under REIPPPP or related to private off-taking. M. Mabin confirmed that as the Applicant they would prefer to have the Applications submitted the DFFE and would thus follow the REIPPPP route for now.	-	-
4.3	D. Henning noted that DFFE previously confirmed that for a Battery Energy Storage System (BESS) it was not required to apply for the listed activity related to the storage of dangerous goods. He asked if it was necessary to identify the preferred alternative for BESS technology. C. Agenbach responded that it depends on the technology that will be used. He distinguished between solid- and liquid-state batteries, and noted that the storage of dangerous goods was related to the latter. D. Henning indicated that it will be confirmed with the Applicant which battery type will be used.	-	-
5.	**ENVIRONMENTAL IMPACT ASSESSMENT PROCESSES**		
5.1	**Process Outline & Timeframes**		
5.1.1	D. Henning indicated that the following applications will be submitted for the respective projects:	-	-

Item.	Description	Action	Target Date
	1. Scoping and Environmental Impact Reporting (S&EIR) Processes – a. Seelo Alpha Solar PV Facility; b. Seelo Beta Solar PV Facility; and c. Seelo Charlie Solar PV Facility. 2. Basic Assessment Processes – a. Seelo Alpha Grid Connection; b. Seelo Beta Grid Connection; and c. Seelo Charlie Grid Connection. D. Henning noted that the CA for the Solar PV facilities and grid connections was DFFE. He indicated that in the case of the gird connections, the proposed power lines will traverse two provinces, namely the North West and Gauteng Provinces.		
5.1.2	D. Henning presented the approaches to the S&EIR and Basic Assessment Processes for the PV facilities and grid connections, respectively (refer to the diagram in the presentation contained in Appendix A). D. Henning confirmed that three (3) separate Applications will be submitted for the PV Facilities and three (3) separate Applications for the grid connections.	-	-
5.2	**Public Participation**		
5.2.1	D. Henning indicated the following: • Public Participation will be undertaken in terms of Chapter 6 of the EIA Regulations; and • Proof of notifications and comments will be included in the final Scoping, EIA and Basic Assessment Reports that will be submitted to DFFE.	-	-
5.3	**Listed Activities**		
5.3.1	D. Henning indicated that the approach is to include all potential listed activities in the Applications and to link them to the project components, which will be refined as the respective processes progress.	-	-
5.4	**Alternatives**		
5.4.1	D. Henning noted that the following alternatives will be considered: 1. Layout Alternatives; 2. Technology Alternatives; and 3. No-Go Alternative.	-	-
5.5	**Specialist Studies**		
5.5.1	D. Henning noted that the DFFE Screening Tool was used to determine site sensitivity.	-	-
5.5.2	D. Henning indicated that the following specialist studies were identified to assess the projects: • Terrestrial Ecological Assessment; • Freshwater Ecological Assessment and Delineation; • Avifaunal Impact Assessment; • Agricultural Impact Assessment; • Visual Impact Assessment; • Social Impact Assessment; • Phase 1 Heritage Impact Assessment; and	-	-

Item.	Description	Action	Target Date
	• Desktop Palaeontological Impact Assessment.		
5.5.3	D. Henning indicated that the specialist studies will adhere to Appendix 6 of the EIA Regulations, or to the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes, as relevant.	-	-
5.6	**Scoping & EIA Reports**		
5.6.1	D. Henning indicated that the draft Scoping Reports will be submitted to DFFE together with the Application Forms to facilitate adherence to the regulated timeframes. He noted that copies of draft reports will be provided to the authorities with jurisdiction. He further stated that Generic Environmental Management Programmes will be prepared for the Power Line and Substation for the grid connections.	-	-
5.7	**Comments & Responses Report**		
5.7.1	D. Henning mentioned that DFFE's format for the Comments and Responses Report (CRR) will be used. He indicated that the comments received during the review of draft reports will be included in the final Scoping and EIA Reports and will be included verbatim in the CRR.	-	-
6.	**DFFE'S REQUIREMENTS / GENERAL**		
6.1	C. Agenbach conveyed the following requirements from DFFE: • Public Participation: Provision should be made for the local dominant language spoken in the area. • Specialist Studies: Specialists should be registered with the South African Council for Natural Scientific Professions (SACNASP).	-	-
6.2	M. Essop indicated that regarding the Screening Tool Report and protocols, the Scoping Reports should include site sensitivity verification confirming or disputing the findings of each of the themes specified.		
6.3	M. Mabin queried with the Department regarding 132kV infrastructure located inside the Strategic Transmission Corridors whether it is compulsory to follow GNR 113 (i.e. submit application with a pre-negotiated route). M. Essop responded that if your powerline route falls within the Strategic Transmission Corridors it is compulsory to follow the requirements of GNR 113 (as amended).		
7.	**CLOSE**		
7.1	The meeting was concluded at approximately 09h50.	-	-

Minutes Complied By:

Nemai Consulting

	6 March 2023
D. Henning	Date

Minutes Accepted By:

DFFE

	Date

APPENDIX A

PRESENTATION

PROPOSED SOLAR PV FACILITIES AND ASSOCIATED INFRASTRUCTURE NEAR CARLETONVILLE, NORTH WEST PROVINCE

DFFE Pre-Application Meeting

28 February 2023

(Reference No.: 2023-01-0036)

NEMAI CONSULTING

Environmental, Social and OHS Consultants

P.O. Box 1673
Sunninghill
2157

147 Bram Fisher Drive
Ferndale
2194

Tel: 011 781 1730
Fax: 011 781 1731
Email: info@nemai.co.za

AGENDA

AGENDA ITEMS
1) Welcome & Introduction
2) Apologies
3) Purpose of the Meeting
4) Project Overview
5) EIA Processes
5.1 - Process Outline & Timeframes
5.2 - Public Participation
5.3 - Listed Activities
5.4 - Alternatives
5.5 - Specialist Studies
5.6 - Scoping, EIA & Basic Assessment Reports
5.7 - Comments & Responses Report
6) DFFE Requirements
7) Way Forward & Close

(3) PURPOSE OF THE MEETING

- To present an overview of the Projects to DFFE.
- To seek clarification regarding certain matters that pertain to the Environmental Assessment processes.
- To determine DFFE's requirements.
- To confirm the process and timeframes.

(4) PROJECT OVERVIEW

(5) EIA PROCESSES

(5) EIA PROCESSES

5.1 – Process Outline & Timeframes

- Applications:

1) **Scoping & Environmental Impact Reporting Processes –**
   a) Seelo Alpha Solar PV Facility
   b) Seelo Beta Solar PV Facility
   c) Seelo Charlie Solar PV Facility
2) **Basic Assessment Processes –**
   a) Seelo Alpha Grid Connection
   b) Seelo Beta Grid Connection
   c) Seelo Charlie Grid Connection

(5) EIA PROCESSES

5.1 – Process Outline & Timeframes

- Applications:

1) **Scoping & Environmental Impact Reporting Processes –**
   a) Seelo Alpha Solar PV Facility
   b) Seelo Beta Solar PV Facility
   c) Seelo Charlie Solar PV Facility

   } Competent Authority: DFFE

2) **Basic Assessment Processes –**
   a) Seelo Alpha Grid Connection
   b) Seelo Beta Grid Connection
   c) Seelo Charlie Grid Connection

(5) EIA PROCESSES

5.1 – Process Outline & Timeframes

- Applications:

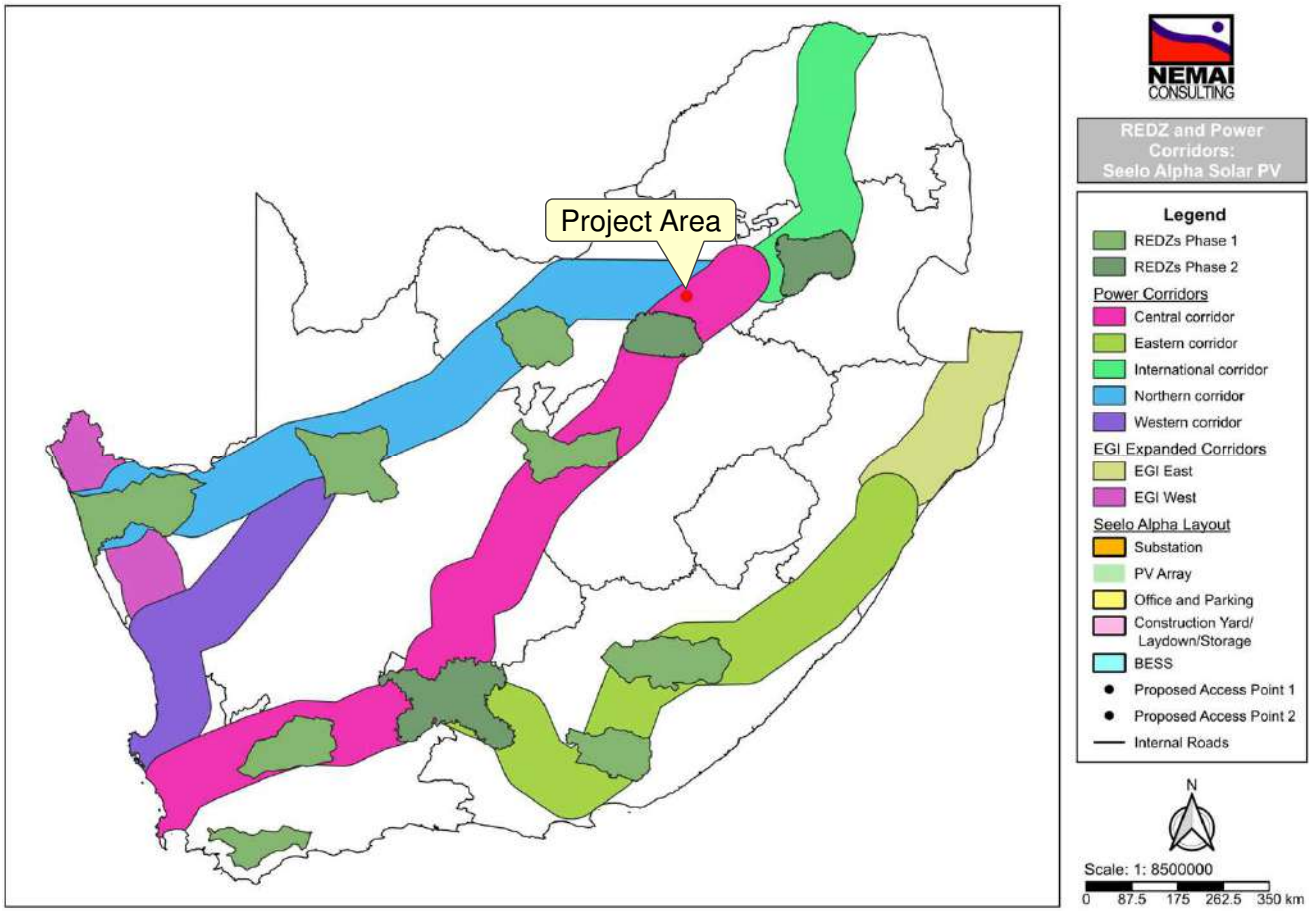
1) **Scoping & Environmental Impact Reporting Processes –**
   a) Seelo Alpha Solar PV Facility
   b) Seelo Beta Solar PV Facility
   c) Seelo Charlie Solar PV Facility
2) **Basic Assessment Processes –**
   a) Seelo Alpha Grid Connection
   b) Seelo Beta Grid Connection
   c) Seelo Charlie Grid Connection

Competent Authority: DFFE
(*NEMA S24C: development footprint within boundaries of more than one province*)

(5) EIA PROCESSES

5.1 – Process Outline & Timeframes

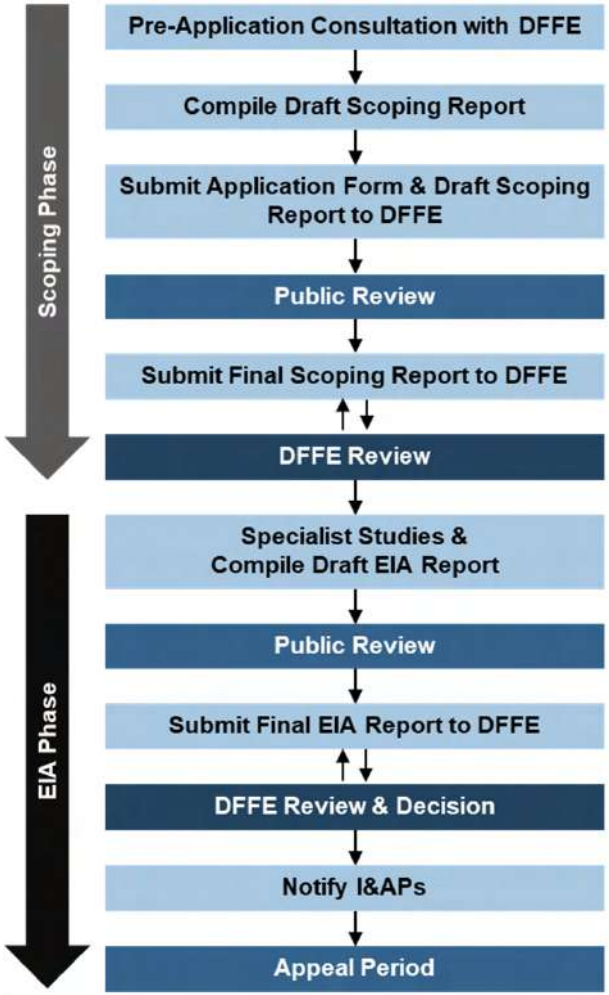
- REDZs & Strategic Transmission Corridors:



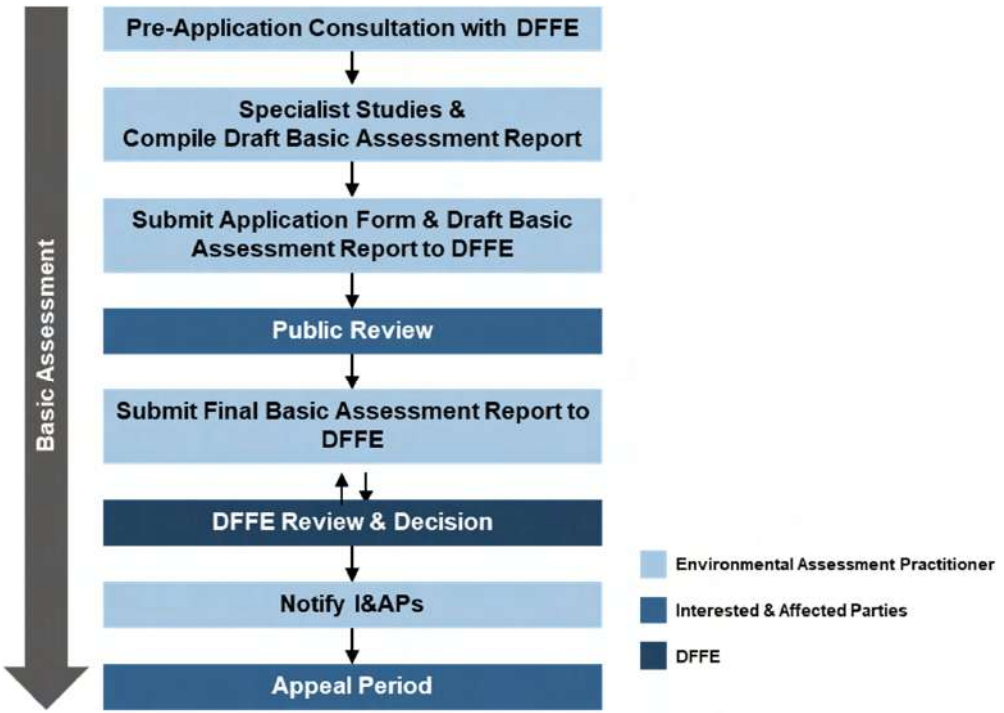
(5) EIA PROCESSES

5.1 – Process Outline & Timeframes

Solar PV Facilities



Grid Connections



(5) EIA PROCESSES

5.2 - PUBLIC PARTICIPATION

- Public Participation in terms of Chapter 6 of the EIA Regulations of 2014, as amended.
- Proof of notifications and comments to be included in the Final Scoping and EIA Reports.

(5) EIA PROCESSES

5.3 - LISTED ACTIVITIES

❑ Listing Notice 1:

Activity 11(i)	The development of facilities or infrastructure for the transmission and distribution of electricity— (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.
Activity 12(ii)(a) & (c):	The development of - (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs - (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse…
Activity 19:	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse…
Activity 24(ii):	The development of a road - (i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres…
Activity 27:	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
Activity 28(ii):	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare…
Activity 56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres…

(5) EIA PROCESSES

5.3 - LISTED ACTIVITIES

❑ Listing Notice 2:

Activity 1:	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs - (a) within an urban area; or (b) on existing infrastructure.
Activity 15:	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.

❑ Listing Notice 3:

Activity 4 - (h)(vi):	The development of a road wider than 4 metres with a reserve less than 13,5 metres.
Activity 12 - (h)(vi):	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.
Activity 14(ii)(a) & (c) - (h)(vi):	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.
Activity 18(h)(ii) & (ix)	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.

(5) EIA PROCESSES

5.4 - ALTERNATIVES

- Layout Alternatives.
- Technology Alternatives.
- No-Go Alternative.

(5) EIA PROCESSES

5.5 - SPECIALIST STUDIES

- DFFE Screening Tool.
- Specialist Studies triggered:
  1. Terrestrial Ecological Assessment
  2. Freshwater Ecological Assessment & Delineation
  3. Avifaunal Impact Assessment
  4. Agricultural Impact Assessment
  5. Visual Impact Assessment
  6. Social Impact Assessment
  7. Phase 1 Heritage Impact Assessment
  8. Desktop Palaeontological Impact Assessment

- Environmental Theme Protocols / Appendix 6 of EIA Regulations.

(5) EIA PROCESSES

5.6 - SCOPING, EIA & BASIC ASSESSMENT REPORTS

- The Draft Scoping Reports will be submitted to DFFE together with the Application Forms to facilitate adherence to the regulated timeframes.

- Copies of draft reports to be provided to authorities with jurisdiction, including –
  - DFFE (including Biodiversity Conservation Unit)
  - DEDECT
  - DWS: North West Region
  - DMRE
  - North West Department of Public Works and Roads
  - NWPHRA
  - JB Marks LM and Dr Kenneth Kaunda DM

- Generic EMPr's (Power Line & Substation) for Grid Connections.

(5) EIA PROCESSES

5.7 COMMENTS & RESPONSES REPORT

- DFFE's format to be used.
- Comments from review of draft reports to be included final Scoping, EIA and Basic Assessment Reports.
- All comments received will be included verbatim in the CRR.
- Responses from Applicant, EAP and environmental specialists.

(6) DFFE's Requirements

(7) Way Forward & Close

Thank you

Company:	**Nemai Consulting**
Contact Person:	**Donavan Henning**
Tel:	**(011) 781 1730**
Fax:	**(011) 781 1731**
Email:	**donavanh@nemai.co.za**
Postal Address:	**PO Box 1673, Sunninghill, 2157**

PNE
pure new energy

Seelo Alpha, Beta and Charlie PV Facilities

FEBRUARY 2023

WKN Windcurrent
PNE GROUP

Project Description

- Alpha Seelo Solar PV and BESS– 240MW
- Beta Seelo Solar PV and BESS – 240MW
- Charlie Seelo Solar PV and BESS – 140MW

- 13km northwest of town of Carletonville in North West Province

- Three projects located across three land parcels owned by two private landowners:
  - Portion 2 of 96 – 851 ha
  - Portion 1 of 96 – 1131 ha
  - Portion 2 of 58 – 730

- Land use: livestock and game farming

- Total project Area footprint approximately – 935ha

- Separate132kV OHL applications from IPP substation to Carmel MTS circa 13km south of site and located in GP.

Project Components

- **Facility**
  - PV Panels
  - Mounting structures
  - On-site inverters
  - Cabling
  - Admin building, control room, workshop
  - Temp and permanent laydown areas
  - IPP substation
  - Battery Energy Storage System
  - Access roads and internal road system

- **Overhead line**
  - Eskom substation
  - Overhead 132kV line to Carmel MTS

APPENDIX 2
PROOF OF PAYMENT/ MOTIVATION FOR EXCLUSION

Standard Bank of South Africa

ComputerGeneratedCopy

The Standard Bank of South Africa Limited Registered Bank Reg. No. 1962/000738/06

CUSTOMER ALL PAYMENTS FINAL AUDIT REPORT

Customer No	996621523		
User ID	QMI54	**User Name**	NEMAI CONSULTING CC
Sub Module	SSVS	**Reference**	2023073003
Description	EFT6	**Action date**	20230314
Finalreleasingoperators	EA505 C CHIDLEY		N/A

Sub-batch 001 **From Account no** 0000220037515 **From Account Name** NEMAI CONSULTING CC

Trans No	1
Acc No / CDI	1044240072
Branch No	632005
Statement Ref	-26.304069/27.273972
Account Name	DEPARTMENT OF FORESTRY, FISHER
Creditor Code	
Amount	10,000.00
StatusDescription	FINAL AUDIT TO BE DOWNLOADED
RTGS/RTC	
ISN/Bus Ref	0
Pay Alert	N

NEMAI CONSULTING

Department of Fisheries, Forestry and the Environm

Attention :

P.O. Box 1673
SUNNINGHILL
2157

Tel : 011 781 1730
Fax : 011 781 1731

Remittance Advice

Account Number	Remittance Advice No.	Remittance Advice Date		Page
DFFE	09063	14/03/2023		Page 1 of 1

Transaction Type	Transaction Date	Transaction Reference	Transaction Description	Original Amount	Discount Allowed	Payment Amount
INV - Invoice	14/03/2023	DFFE PMT 1	RFP - Seelo Alpha DFFE	10,000.00	0.00	10,000.00

Total Paid: 10,000.00

Payment to be made into your bank account on 14/03/2023

If you have any queries with regards this Remittance Advice, or believe that any invoices due for payment have not been paid, please email Creditors@nemai.co.za

APPENDIX 3
LIST OF LAND OWNERS
WRITTEN CONSENT OF LAND OWNERS

3A. LIST OF DIRECTLY AFFECTED PROPERTIES

Farm Name	Portion / Erf	Landowner
FARM 96 (ROOIPAN)	2	ADRIAN VERMAAK

3B. WRITTEN CONSENT OF LAND OWNER (PV SITE)

SPECIAL POWER OF ATTORNEY

We the undersigned, **Adriaan Jakobus Vermaak ID nr 6007255068081 and Sandra Jacomina Vermaak ID nr 6504210004086** do hereby nominate, constitute, and appoint:

Michael Mangnall (ID No. 7211245134081) or other employee as designated by WKN Windcurrent SA (Pty) Limited (Reg nr: 2010/022616/07)

with power of substitution, to be our lawful attorney(s) and agent(s) in our name, place and stead to sign and lodge with all competent authorities on behalf of the Registered Owner any forms and applications whatsoever on my behalf in order for WKN Windcurrent SA (Pty) Limited or any other juristic person to obtain all necessary consents and approvals as may be required by law to operate a wind facility and/or solar facility on the following properties:

Portion 2 of Farm 96 (Rooipan) in extent 898.29ha held by Title Deed T26854/2017 in the Ventersdorp Local Municipality, IQ Division, North West Province.

which includes but is not limited to Subdivision of Agricultural Land Act 70 of 1970 , Rezoning, Environmental Authorisations and Amendments as required, Building Plan Approval, WULA, Grid Connection and Civil Aviation Authority Approval, as well as generally, for effecting the purposes aforesaid, to do or cause to be done whatsoever shall be requisite as fully and effectually for all intents and purposes as we might or could do if personally present and acting herein - hereby ratifying, allowing and confirming all and whatsoever our said agents shall lawfully do, or cause to be done, by virtue of these presents.

SIGNED at Kragersdorp on this the 28 day of September 2022, in the presence of the undersigned witnesses.

AS WITNESSES :

1. _____

2. _____

Name: Adriaan Jakobus Vermaak

Sign: _____

duly authorised hereto

Name: Sandra Jacomina Vermaak

Sign: _____

duly authorised hereto

APPENDIX 4
LIST OF LOCAL/PROVINCIAL AUTHORITY INVOLVED

Note: See details in Section 3 above.

APPENDIX 5
STRATEGIC INFRASTRUCTURE PROJECTS

SIP 1: Unlocking the northern mineral belt with Waterberg as the catalyst

- Unlock mineral resources
- Rail, water pipelines, energy generation and transmission infrastructure
- Thousands of direct jobs across the areas unlocked
- Urban development in Waterberg - first major post-apartheid new urban centre will be a "green" development project
- Rail capacity to Mpumalanga and Richards Bay
- Shift from road to rail in Mpumalanga
- Logistics corridor to connect Mpumalanga and Gauteng.

SIP 2: Durban-Free State-Gauteng logistics and industrial corridor

- Strengthen the logistics and transport corridor between SA's main industrial hubs
- Improve access to Durban's export and import facilities
- Integrate Free State Industrial Strategy activities into the corridor
- New port in Durban
- Aerotropolis around OR Tambo International Airport.

SIP 3: South-Eastern node & corridor development

- New dam at Mzimvubu with irrigation systems
- N2-Wild Coast Highway which improves access into KwaZulu-Natal and national supply chains
- Strengthen economic development in Port Elizabeth through a manganese rail capacity from Northern Cape
- A manganese sinter (Northern Cape) and smelter (Eastern Cape)
- Possible Mthombo refinery (Coega) and transhipment hub at Ngqura and port and rail upgrades to improve industrial capacity and performance of the automotive sector.

SIP 4: Unlocking the economic opportunities in North West Province

- Acceleration of investments in road, rail, bulk water, water treatment and transmission infrastructure
- Enabling reliable supply and basic service delivery
- Facilitate development of mining, agricultural activities and tourism opportunities
- Open up beneficiation opportunities in North West Province.

SIP 5: Saldanha-Northern Cape development corridor

- Integrated rail and port expansion
- Back-of-port industrial capacity (including an IDZ)
- Strengthening maritime support capacity for oil and gas along African West Coast
- Expansion of iron ore mining production and beneficiation.

SIP 6: Integrated municipal infrastructure project

Develop national capacity to assist the 23 least resourced districts (19 million people) to address all the maintenance backlogs and upgrades required in water, electricity and sanitation bulk infrastructure. The road maintenance programme will enhance service delivery capacity thereby impacting positively on the population.

SIP 7: Integrated urban space and public transport programme

Coordinate planning and implementation of public transport, human settlement, economic and social infrastructure and location decisions into sustainable urban settlements connected by densified transport corridors. This will focus on the 12 largest urban centres of the country, including all the metros in South Africa. Significant work is underway on urban transport integration.

SIP 8: Green energy in support of the South African economy

Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP2010) and support bio-fuel production facilities.

Indicate capacity in MW:
SIP 9: Electricity generation to support socioeconomic development Accelerate the construction of new electricity generation capacity in accordance with the IRP2010 to meet the needs of the economy and address historical imbalances. Monitor implementation of major projects such as new power stations: Medupi, Kusile and Ingula. ***Indicate capacity in MW:***
SIP 10: Electricity transmission and distribution for all Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.
SIP 11: Agri-logistics and rural infrastructure Improve investment in agricultural and rural infrastructure that supports expansion of production and employment, small-scale farming and rural development, including facilities for storage (silos, fresh-produce facilities, packing houses); transport links to main networks (rural roads, branch train-line, ports), fencing of farms, irrigation schemes to poor areas, improved R&D on rural issues (including expansion of agricultural colleges), processing facilities (abattoirs, dairy infrastructure), aquaculture incubation schemes and rural tourism infrastructure.
SIP 12: Revitalisation of public hospitals and other health facilities Build and refurbish hospitals, other public health facilities and revamp 122 nursing colleges. Extensive capital expenditure to prepare the public healthcare system to meet the requirements of the National Health Insurance (NHI) system. The SIP contains major builds for 6 hospitals.
SIP 13: National school build programme A national school build programme driven by uniformity in planning, procurement, contract management and provision of basic services. Replace inappropriate school structures and address basic service backlog and provision of basic services under the Accelerated School Infrastructure Delivery Initiative (ASIDI). In addition, address national backlogs in classrooms, libraries, computer labs and admin buildings. Improving the learning environment will strengthen outcomes especially in rural schools, as well as reduce overcrowding.
SIP 14: Higher education infrastructure Infrastructure development for higher education, focusing on lecture rooms, student accommodation, libraries and laboratories, as well as ICT connectivity. Development of university towns with a combination of facilities from residence, retail to recreation and transport. Potential to ensure shared infrastructure such as libraries by universities, FETs and other educational institutions. Two new universities will be built - in Northern Cape and Mpumalanga.
SIP 15: Expanding access to communication technology Provide for broadband coverage to all households by 2020 by establishing core Points of Presence (POPs) in district municipalities, extend new Infraco fibre networks across provinces linking districts, establish POPs and fibre connectivity at local level, and further penetrate the network into deep rural areas. While the private sector will invest in ICT infrastructure for urban and corporate networks, government will co-invest for township and rural access, as well as for e-government, school and health connectivity. The school roll-out focus is initially on the 125 Dinaledi (science and maths-focussed) schools and 1525 district schools. Part of digital access to all South Africans includes TV migration nationally from analogue to digital broadcasting.
SIP 16: SKA & Meerkat SKA is a global mega-science project, building an advanced radio-telescope facility linked to research infrastructure and high-speed ICT capacity and provides an opportunity for Africa and South Africa to contribute towards global advanced science projects.
SIP 17: Regional integration for African cooperation and development Participate in mutually beneficial infrastructure projects to unlock long-term socio-economic benefits by partnering with fast growing African economies with projected growth ranging between 3% and 10%.

The projects involving transport, water and energy also provide competitively-priced, diversified, short and medium to long-term options for the South African economy where, for example, electricity transmission in Mozambique (Cesul) could assist in providing cheap, clean power in the short-term whilst Grand Inga in the DRC is long-term. All these projects complement the Free Trade Area (FTA) discussions to create a market of 600 million people in South, Central and East Africa.

SIP 18: Water and sanitation infrastructure

A 10-year plan to address the estimated backlog of adequate water to supply 1.4m households and 2.1m households to basic sanitation.

The project will involve provision of sustainable supply of water to meet social needs and support economic growth. Projects will provide for new infrastructure, rehabilitation and upgrading of existing infrastructure, as well as improve management of water infrastructure.

SIP 19: Water and Sanitation

a. Vaal River System including Phase 2 of the Lesotho Highlands Water Project: Gauteng
b. Phase 2A of the Mokolo Crocodile River (West) Augmentation Project: Limpopo
c. uMkhomazi Water Project: KwaZulu Natal
d. Olifants River Water Resource Development Project - Phase 2: Limpopo
e. Vaal-Gamagara: Northern Cape
f. Mzimvubu Water Project: Eastern Cape
g. Rehabilitation of the Vaalharts-Taung Irrigation Scheme: Northern Cape & North West
h. Groot Letaba River Water Development Project - Nwamitwa Dam: Limpopo
i. Berg River Voëlvlei Augmentation Scheme: Western Cape
j. Rustfontein Water Treatment Works: Free State
k. Orange-Riet Canal Increase of Bulk Raw Water Supply: Free State

SIP 20: Energy

a. Emergency/Risk Mitigation Power Purchase Procurement Programme (2000MW): National
b. Small IPP Power Purchase Procurement Programme (100MW): National
c. Embedded Generation Investment Programme (EGIP)-400MW: National

SIP 21: Transport

a. N1 Windburg Interchange to Windburg Station: Free State
b. N1 Musina Ring Road: Limpopo
c. N1 Polokwane Eastern Ring Rd Phase 2: Limpopo
d. N1 Ventersburg to Kroonstad: Free State (2 projects in One)
e. N2 Mtunzini Toll Plaza to Empangeni T-Junction: KwaZulu Natalf. N3 Cato Ridge to Dardanelles: KwaZulu Natal
g. N3 Dardenelles to Lynnfield Park: KwaZulu Natal
h. N3 Paradise Valley to Mariannhill Toll Plaza: KwaZulu Natal
i. N2 Edwin Swales to South of EB Cloete Interchange: KwaZulu Natal
j. N3 Ashburton Interchange to Murray Road: KwaZulu Natal
k. N3 Mariannhill Toll Plaza to Key Ridge: KwaZulu Natal
l. N2 EB Cloete Interchange: KwaZulu Natal
m. Small Harbours Development: National
n. N3 New alignment via De Beers Pass: Free State
o. Boegoebaai Port and Rail Infrastructure Project: Northern Cape

SIP 22: Digital Infrastructure

a. National Spatial Infrastructure Hub

SIP 23: Agriculture and Agro-processing

a. Marine Tilapia Industry: Eastern Cape
b. Natural Dehydrated Foods: Mpumalanga

SIP 24: Human Settlements

a. Greater Cornubia: KwaZulu-Natal
b. Vista Park II & III: Free State

c. Lufhereng: Gauteng d. Malibongwe Ridge: Gauteng e. N2 Nodal Development: Eastern Cape f. Matlosana N12 West: North West g. Green Creek: Gauteng h. Mooikloof Mega Residential City: Gauteng i. Fochville Extension 11: Gauteng j. Germiston Ext 4 Social Housing Project: Gauteng k. Newcastle Hospital Street Social Housing Project: KwaZulu Natal l. Hull Street Social Housing Project Phase 1: Northern Cape m. Kwandokuhle Social Housing Project: Mpumalanga n. Phola Heights - Tembisa Social Housing Project: Gauteng o. Sondela Phase 2: Gauteng p. Willow Creek Estate: Mpumalanga q. Joe's Place Social Housing: Gauteng r. Jeppestown Social Housing Project (Unity House): Gauteng
SIP 25: Rural Bridges "Welisizwe" Programme
SIP 26: Rural Roads Upgrade Programme
SIP 27: Upgrading and Repair of Township Roads in Municipalities Programme
SIP 28: PV and Water Savings on Government Buildings Programme
SIP 29: Comprehensive Urban Management Programme
SIP 30: Digitising of Government Information Programme
SIP 31: Removal of Alien Vegetation and Innovative Building Materials Programme
SIP 32: National Upgrading Support Programme (NUSP)
SIP 33: Solar Water Initiatives Programme
SIP 34: Student Accommodation
SIP 35: SA Connect Phase 1B Programme
SIP 36: Salvokop Precinct

PLEASE ATTACH PROOF FROM THE RELEVANT SIP CO-ORDINATOR FOR EACH OF THE SIP PROJECT SELECTED.

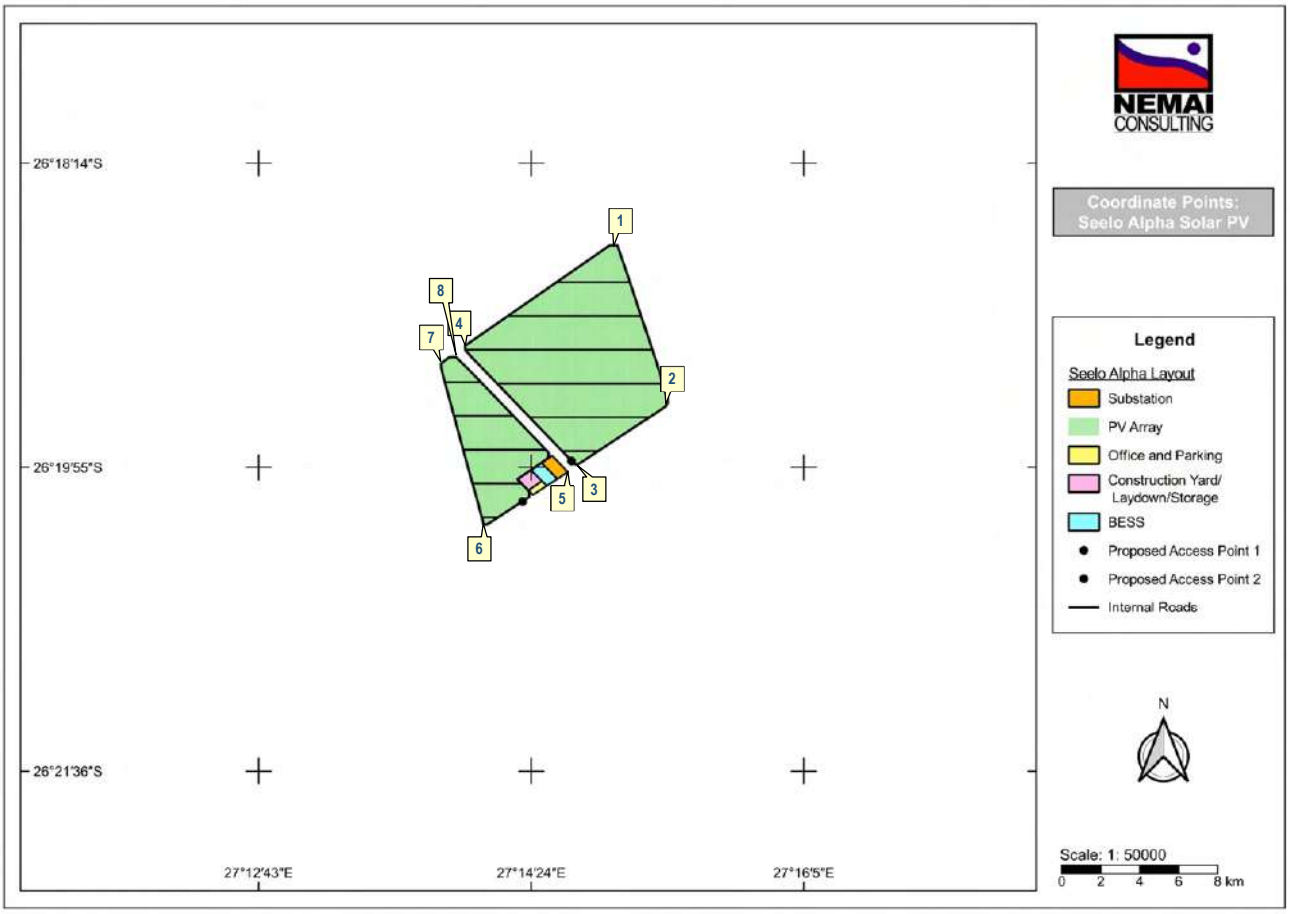
APPENDIX 6
LIST OF SGIDS / COORDINATES OF THE BOUNDARY OF THE PROPERTY OR PROPERTIES / COORDINATES OF LISTED ACTIVITIES

6A. LIST OF SGIDS OF DIRECTLY AFFECTED PROPERTIES

Farm Name	Portion / Erf	21-digit Surveyor General No.
FARM 96 (ROOIPAN)	2	T0IQ00000000009600002

Coordinates of PV Site Boundaries (buildable area) (refer to figure below)

No.	Coordinates
1	26°18'41.46"S; 27°14'54.66"E
2	26°19'34.38"S; 27°15'15.48"E
3	26°19'54.81"S; 27°14'40.70"E
4	26°19'15.69"S; 27°13'58.53"E
5	26°19'56.71"S; 27°14'37.52"E
6	26°20'14.90"S; 27°14'6.65"E
7	26°19'21.04"S; 27°13'50.12"E
8	26°19'17.61"S; 27°13'55.36"E



6C. COORDINATES OF LISTED ACTIVITIES

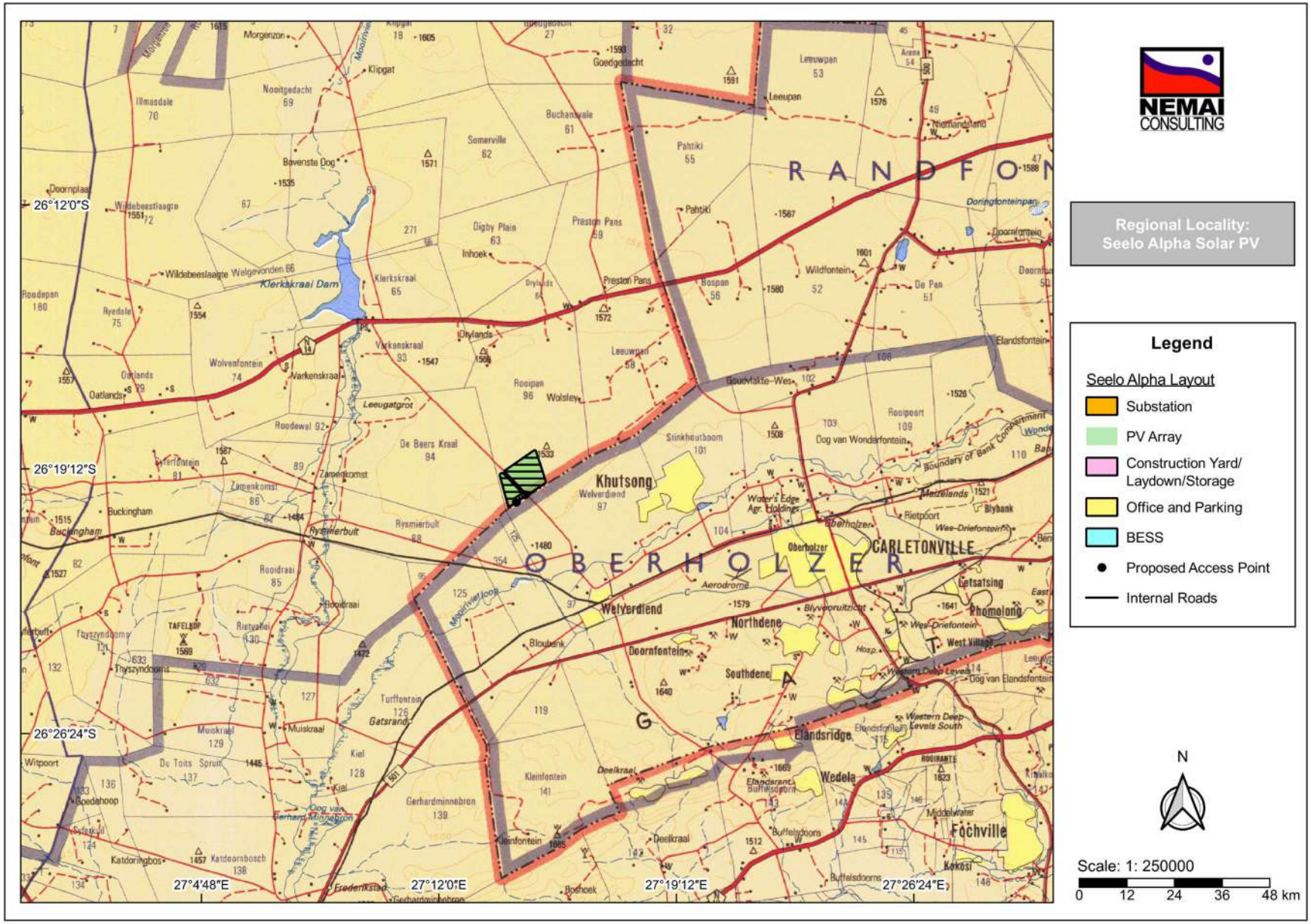
Note: The coordinates of the listed activities will be confirmed during the course of the EIA process, as the layout may be adjusted to respond to the findings of the specialist studies (as required).

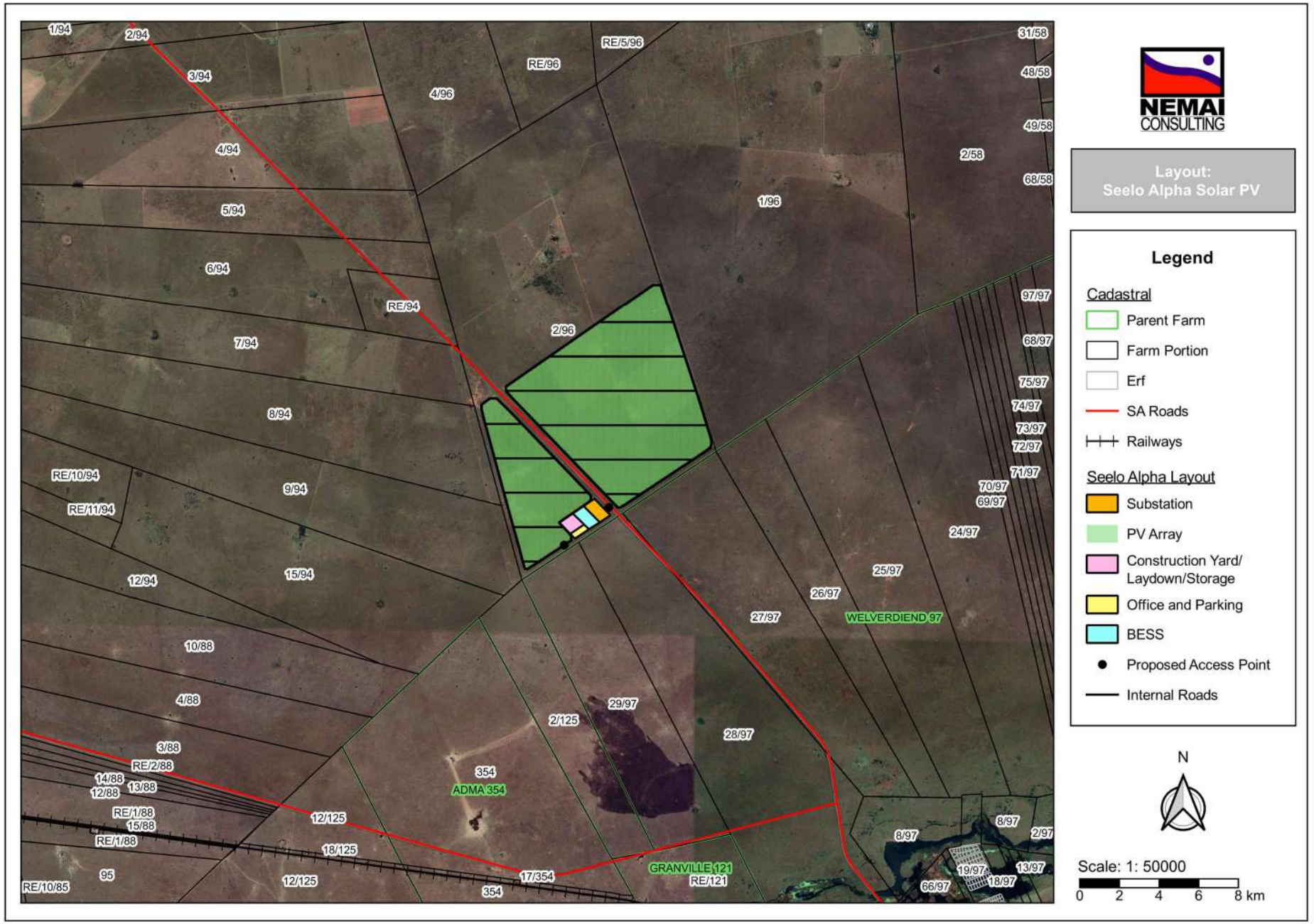
A table and map are provided below showing the listed activities in relation to the current project layout. Coordinates will be provided in the EIA phase once the layout is confirmed.

No.	Activity
1	GN No. R.983 – Activity 11(i)
2	GN No. R.983 – Activity 12(ii)(a) & (c) GN No. R.983 – Activity 19 GN No. R.983 – Activity 27 GN No. R.983 – Activity 28(ii) GN No. R.984 – Activity 1 GN No. R.984 – Activity 15 GN No. R.985 – Activity 12 - (h)(vi) GN No. R.985 – Activity 14(ii)(a) & (c) - (h)(vi)
3	GN No. R.983 – Activity 14
4	GN No. R.983 – Activity 24(ii) GN No. R.983 – Activity 56 GN No. R.985 – Activity 4 - (h)(vi) GN No. R.985 – Activity 18(h)(ii) & (ix)


4
2
4
Proposed Access Point
1
Seelo Alpha Substation
3
Seelo Alpha BESS
Seelo Alpha Construction Yard/ Laydown/ Storage
Seelo Alpha Office and Parking
Proposed Access Point
4
Image © 2023 Maxar Technologies
Google Earth

APPENDIX 7
LOCALITY MAP


NEMAI CONSULTING
Regional Locality:
Seelo Alpha Solar PV
Legend
Seelo Alpha Layout
Substation
PV Array
Construction Yard/ Laydown/Storage
Office and Parking
BESS
Proposed Access Point
Internal Roads
N
Scale: 1: 250000
0 12 24 36 48 km
26°12'0"S
26°19'12"S
26°26'24"S
27°4'48"E
27°12'0"E
27°19'12"E
27°26'24"E
RANDFON
OBERHOLZER
CARLETONVILLE
Khutsong
Welverdiend
Northdene
Doornfontein
Southdene
Elandsridge
Wedela
Fochville
Oberholzer
Rhomolong
Letsatsing
Klerkskraal Dam
Wildebeeslaagte Welgevonden 66
Leeugatgrot
Gatsrand
Mooirivierloop
Aerodrome
Western Deep Levels South
Boundary of Bank Concessionaire
Water's Edge Agr. Holdings
Oog van Wonderfontein
Oog van Elandsfontein
Oog van Gerhard Minnebron


1/94
2/94
3/94
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RE/10/85
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18/125
12/125
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ADMA 354
354
2/125
29/97
28/97
GRANVILLE 121
RE/121
WELVERDIEND 97
27/97
26/97
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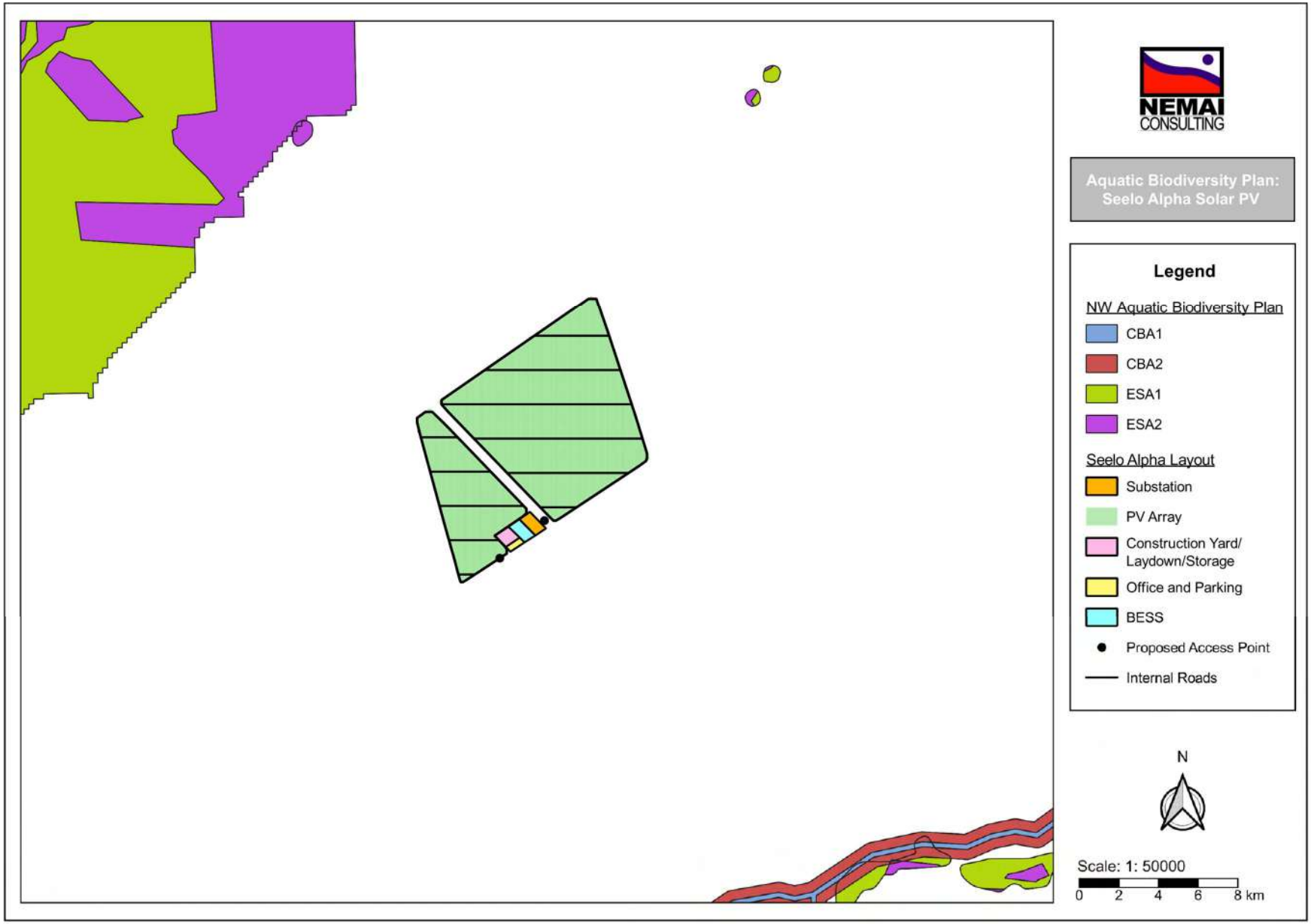
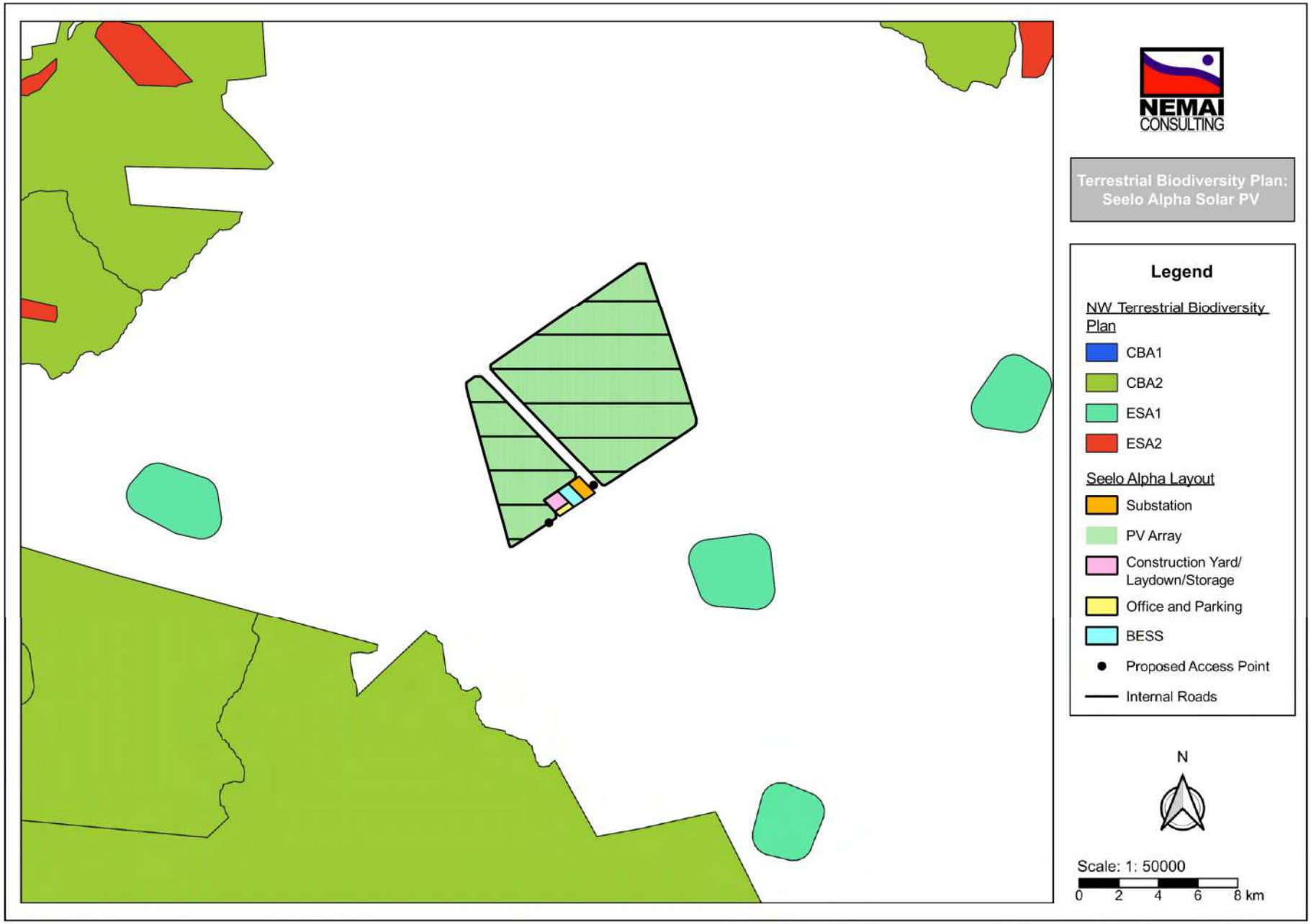
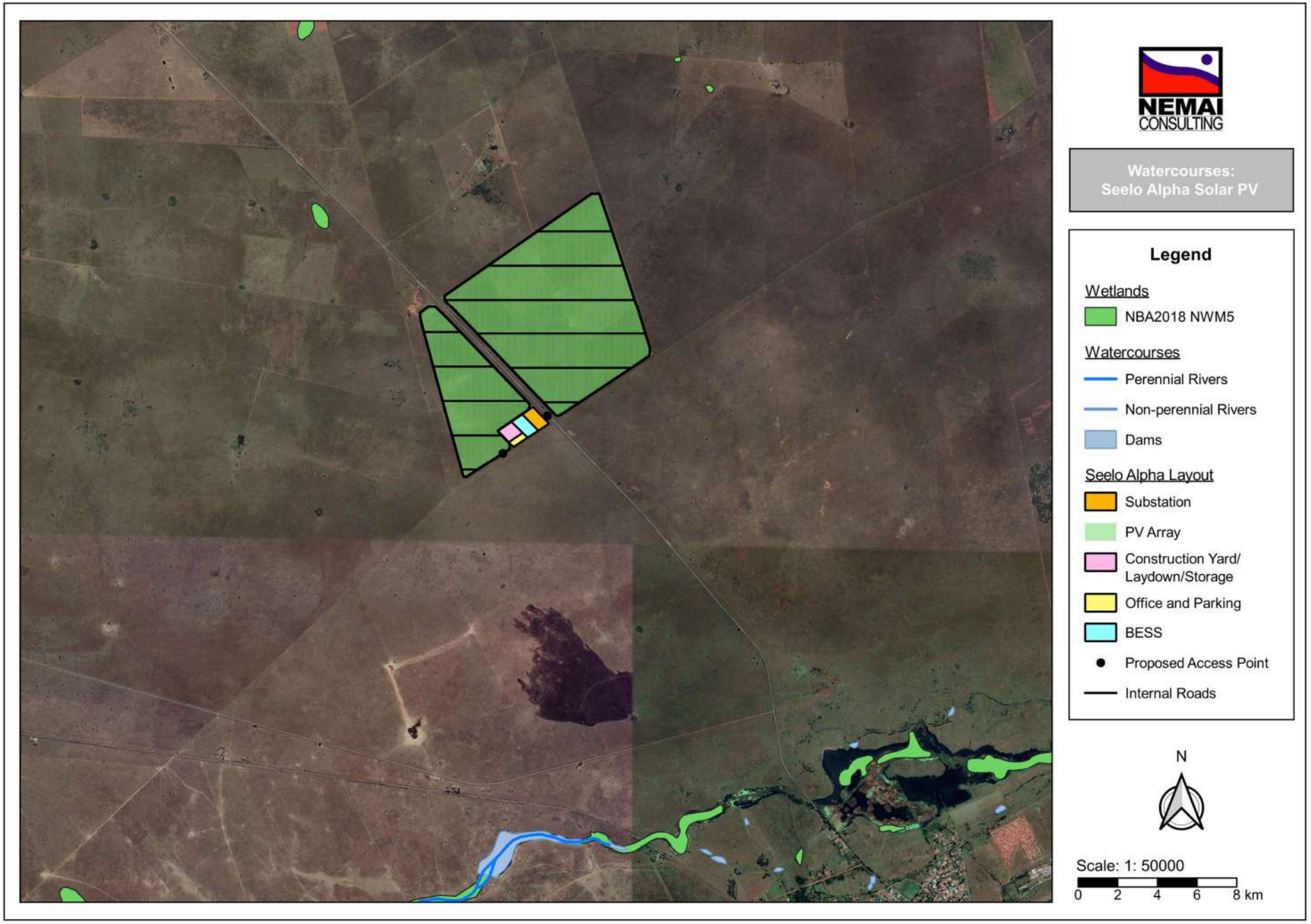
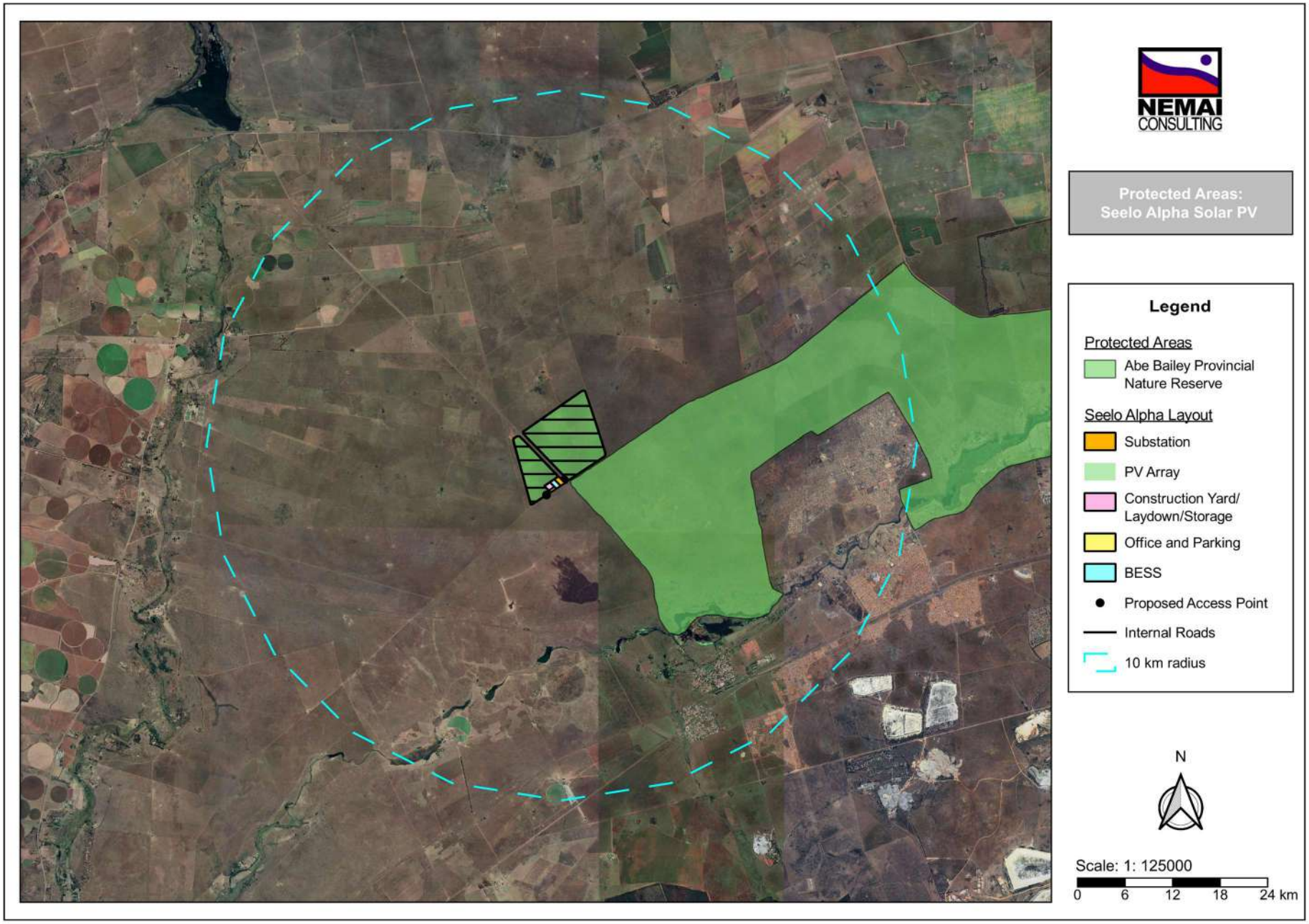
31/58
48/58
49/58
2/58
68/58
8/97
8/97
2/97
19/97
18/97
13/97
66/97
NEMAI CONSULTING
Layout:
Seelo Alpha Solar PV
Legend
Cadastral
Parent Farm
Farm Portion
Erf
SA Roads
Railways
Seelo Alpha Layout
Substation
PV Array
Construction Yard/ Laydown/Storage
Office and Parking
BESS
Proposed Access Point
Internal Roads
N
Scale: 1: 50000
0 2 4 6 8 km


NEMAI CONSULTING
Aquatic Biodiversity Plan: Seelo Alpha Solar PV
Legend
NW Aquatic Biodiversity Plan
CBA1
CBA2
ESA1
ESA2
Seelo Alpha Layout
Substation
PV Array
Construction Yard/ Laydown/Storage
Office and Parking
BESS
Proposed Access Point
Internal Roads
N
Scale: 1: 50000
0 2 4 6 8 km


NEMAI CONSULTING
Terrestrial Biodiversity Plan: Seelo Alpha Solar PV
Legend
NW Terrestrial Biodiversity Plan
CBA1
CBA2
ESA1
ESA2
Seelo Alpha Layout
Substation
PV Array
Construction Yard/ Laydown/Storage
Office and Parking
BESS
Proposed Access Point
Internal Roads
N
Scale: 1: 50000
0 2 4 6 8 km


NEMAI CONSULTING
Watercourses:
Seelo Alpha Solar PV
Legend
Wetlands
NBA2018 NWM5
Watercourses
Perennial Rivers
Non-perennial Rivers
Dams
Seelo Alpha Layout
Substation
PV Array
Construction Yard/ Laydown/Storage
Office and Parking
BESS
Proposed Access Point
Internal Roads
N
Scale: 1: 50000
0 2 4 6 8 km

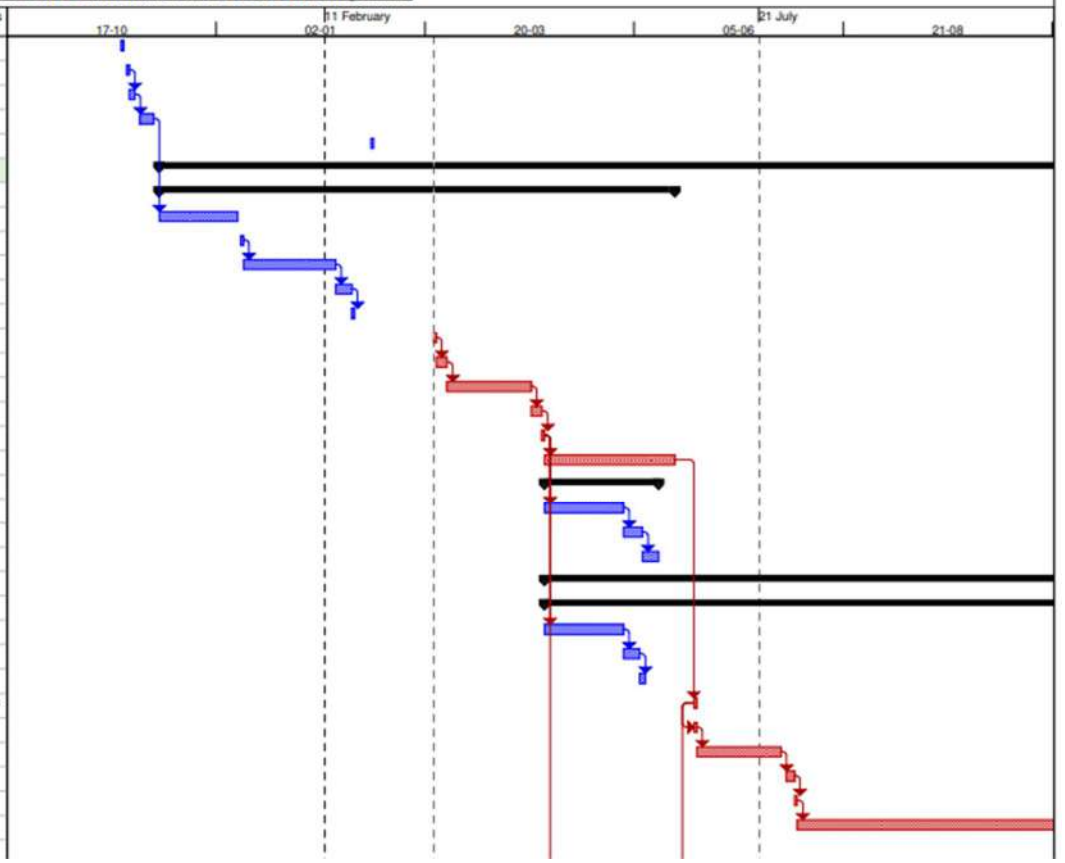

NEMAI CONSULTING
Protected Areas:
Seelo Alpha Solar PV
Legend
Protected Areas
Abe Bailey Provincial Nature Reserve
Seelo Alpha Layout
Substation
PV Array
Construction Yard/ Laydown/Storage
Office and Parking
BESS
Proposed Access Point
Internal Roads
10 km radius
N
Scale: 1: 125000
0 6 12 18 24 km

APPENDIX 8
PROJECT SCHEDULE

8A. PROJECT SCHEDULE

Seelo Alpha, Beta & Charlie Solar PV & Grid Connection - SEIR & BA Programme

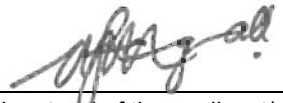
ID	Task Name	Duration	Start	Finish	Predecessors
1	Inception Meeting	1 day	Mon 28-11-22	Mon 28-11-22	
2	Request for Information	1 day	Wed 30-11-22	Wed 30-11-22	
3	Client Provide Information	2 days	Thu 01-12-22	Fri 02-12-22	2
4	Review Existing Information	5 days	Mon 05-12-22	Fri 09-12-22	3
5	DFFE Pre-application Meeting	1 day	Tue 28-02-23	Tue 28-02-23	
6	**S&EIR PROCESSES (x3)**	**234 days**	**Mon 12-12-22**	**Mon 27-11-23**	
7	**Scoping Phase**	**119 days**	**Mon 12-12-22**	**Mon 19-06-23**	
8	Confirm Listed Activities & Complete Application Form & Screening	5 days	Mon 12-12-22	Mon 09-01-23	4
9	Confirm Additional Scope	1 day	Wed 11-01-23	Wed 11-01-23	
10	Compile Draft Scoping Report	24 days	Thu 12-01-23	Tue 14-02-23	9
11	Client Review	4 days	Wed 15-02-23	Mon 20-02-23	10
12	Amend Draft Scoping Report	1 day	Tue 21-02-23	Tue 21-02-23	11
13	Submit Application Form & Draft Scoping Report to DFFE	1 day	Thu 23-03-23	Thu 23-03-23	
14	Notification of Review	2 days	Fri 24-03-23	Mon 27-03-23	13
15	Authorities & Public Review	23 days	Tue 28-03-23	Thu 27-04-23	14
16	Finalise Scoping Report	2 days	Fri 28-04-23	Mon 01-05-23	15
17	Submit Final Scoping Report to DFFE (within 44d from submission of Application)	1 day	Tue 02-05-23	Tue 02-05-23	16
18	DFFE Review and Acceptance	34 days	Wed 03-05-23	Mon 19-06-23	17
19	**Specialist Studies**	**30 days**	**Wed 03-05-23**	**Tue 13-06-23**	
20	Undertake Specialist Studies	21 days	Wed 03-05-23	Wed 31-05-23	17
21	Review Specialists' Reports	5 days	Thu 01-06-23	Wed 07-06-23	20
22	Specialists Update Reports	4 days	Thu 08-06-23	Tue 13-06-23	21
23	**EIA Phase**	**149 days**	**Wed 03-05-23**	**Mon 27-11-23**	
24	**EIA Report**	**149 days**	**Wed 03-05-23**	**Mon 27-11-23**	
25	Compile Draft EIA Report	21 days	Wed 03-05-23	Wed 31-05-23	17
26	Client Review	4 days	Thu 01-06-23	Tue 06-06-23	25
27	Amend Draft EIA Report	2 days	Wed 07-06-23	Thu 08-06-23	26
28	Submit Draft EIA Report to DFFE	1 day	Tue 27-06-23	Tue 27-06-23	18FS+5 days
29	Notification of Review	1 day	Tue 27-06-23	Tue 27-06-23	28SS
30	Authorities and I&APs Review of Draft EIA Report	23 days	Wed 28-06-23	Fri 28-07-23	29
31	Finalise EIA Report	3 days	Mon 31-07-23	Wed 02-08-23	30
32	Submit Final EIA Report to DFFE (within 106d from DFFE acceptance of SR)	1 day	Thu 03-08-23	Thu 03-08-23	31
33	DFFE Review and Decision	78 days	Fri 04-08-23	Tue 21-11-23	32
34	Notify I&APs of Decisions	4 days	Wed 22-11-23	Mon 27-11-23	33



APPENDIX 1
DECLARATION OF THE APPLICANT

I, _____Mike Mangnall___, declare that –

- I am, or represent[1], the applicant in this application;
- I have appointed an Environmental Assessment Practitioner (EAP) to act as the independent EAP for this application / have obtained exemption from the requirement to obtain an EAP[2];
- I will take all reasonable steps to verify whether the EAP and specialist/s appointed are independent and have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, the EIA Regulations and any guidelines that have relevance to the proposed activity;
- I will provide the EAP and the Competent Authority with access to all information at my disposal that is relevant to the application;
- I will be responsible for the costs incurred in complying with the Regulations, including but not limited to –
  - costs incurred in connection with the appointment of the EAP or any person contracted by the EAP;
  - costs incurred in respect of the undertaking of any process required in terms of the Regulations;
  - costs in respect of any fee prescribed by the Minister or MEC in respect of the Regulations;
  - costs in respect of specialist reviews, if the Competent Authority decides to recover costs; and
  - the provision of security to ensure compliance with conditions attached to an environmental authorisation, should it be required by the Competent Authority;
- I will inform all registered interested and affected parties of any suspension of the application as well as of any decisions taken by the Competent Authority in this regard;
- I am responsible for complying with the conditions of any environmental authorisation issued by the Competent Authority;
- I hereby indemnify the Government of the Republic of South Africa, the Competent Authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action which the applicant or EAP is responsible for in terms of these Regulations;
- I will not hold the Competent Authority responsible for any costs that may be incurred by the applicant in proceeding with an activity prior to obtaining an environmental authorisation or prior to an appeal being decided in terms of these Regulations;
- I will perform all obligations as expected from an applicant in terms of the Regulations;
- all the particulars furnished by me in this form are true and correct; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in section 49B of the Act.
- I am aware that in terms of Section 24F of the National Environmental Management Act, as amended (Act No. 107 of 1998) that no listed activity may commence prior to an environmental authorisation being granted by the Competent Authority.



Signature[3] of the applicant/ Signature on behalf of the applicant

WKN Windcurrent SA

Name of company (if applicable)

12/02/23

Date:

[1] If this is signed on behalf of the applicant, proof of such authority from the applicant must be attached. If the applicant is a juristic person, a signature on behalf of the applicant is required as well as proof of such authority.
[2] If exemption is obtained from appointing an EAP, the responsibilities of an EAP will automatically apply to the person conducting the environmental impact assessment in terms of the Regulations.
[3] Only original signatures will be accepted. No scanned, copied or faxed signatures will be accepted. An EAP may not sign on behalf of an applicant.

APPENDIX 1
DECLARATION OF THE EAP

I, Donavan Henning, declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

_____

_____

_____

_____

Signature of the environmental assessment practitioner

Nemai Consulting
Name of company:

01/03/2023
Date

APPENDIX 11
SCREENING TOOL REPORT

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number:

Project name: Seelo Solar PV Cluster

Project title: Alpha Solar PV

Date screening report generated: 30/01/2023 10:26:20

Applicant: Seelo Alpha Solar (RF) (PTY) Ltd

Compiler: Divan van Rooyen

Compiler signature:

.....

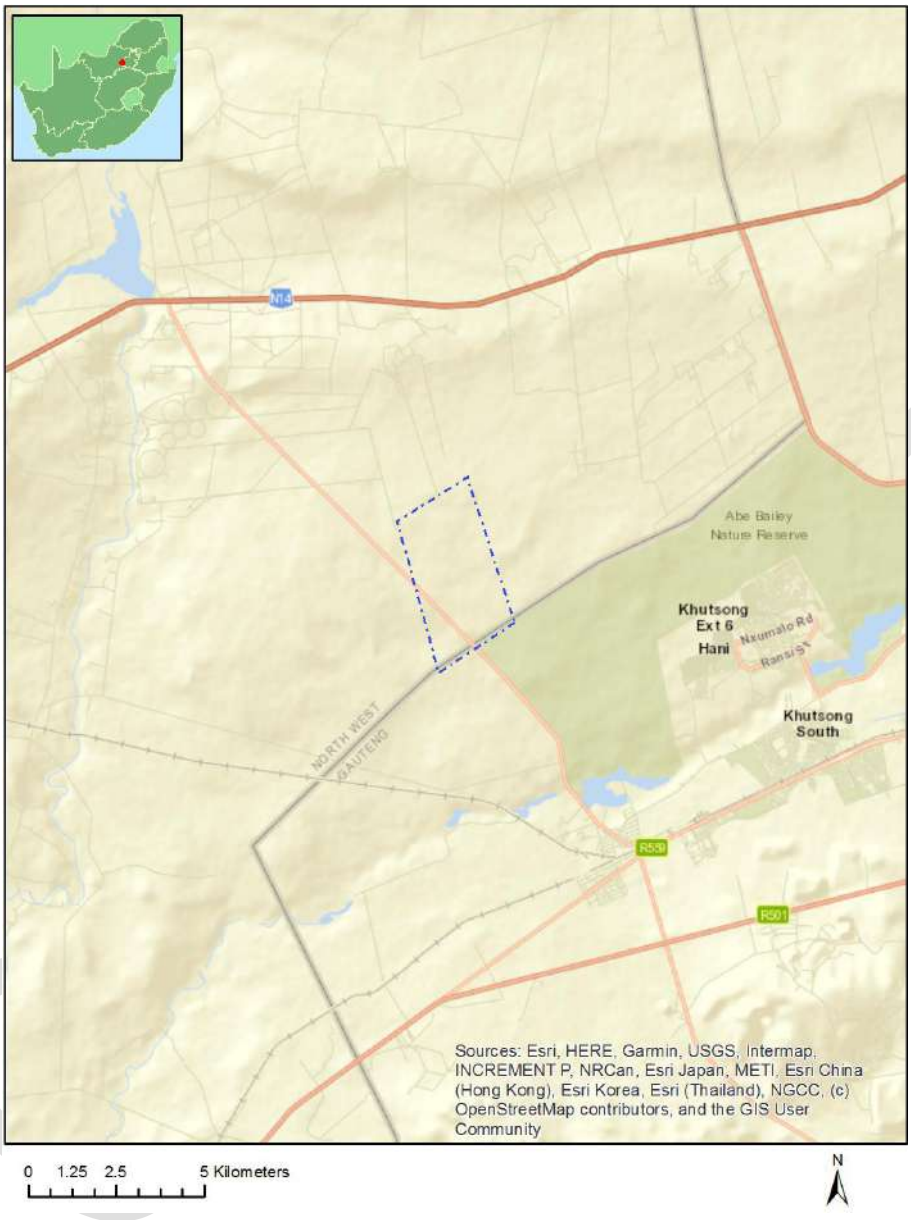
Application Category: Utilities Infrastructure|Electricity|Generation|Renewable|Solar|PV

Table of Contents

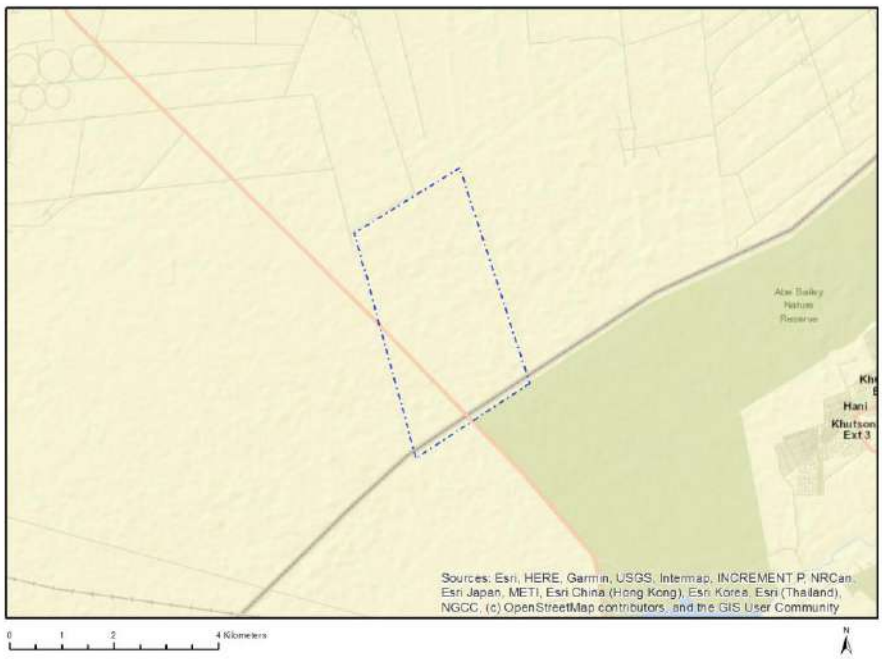
Proposed Project Location

Orientation map 1: General location

General Orientation: Seelo Solar PV Cluster



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1		96	0	26°17'13.96S	27°14'54.06E	Farm
2		96	2	26°18'56.48S	27°14'20.44E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is: **Utilities Infrastructure|Electricity|Generation|Renewable|Solar|PV**.

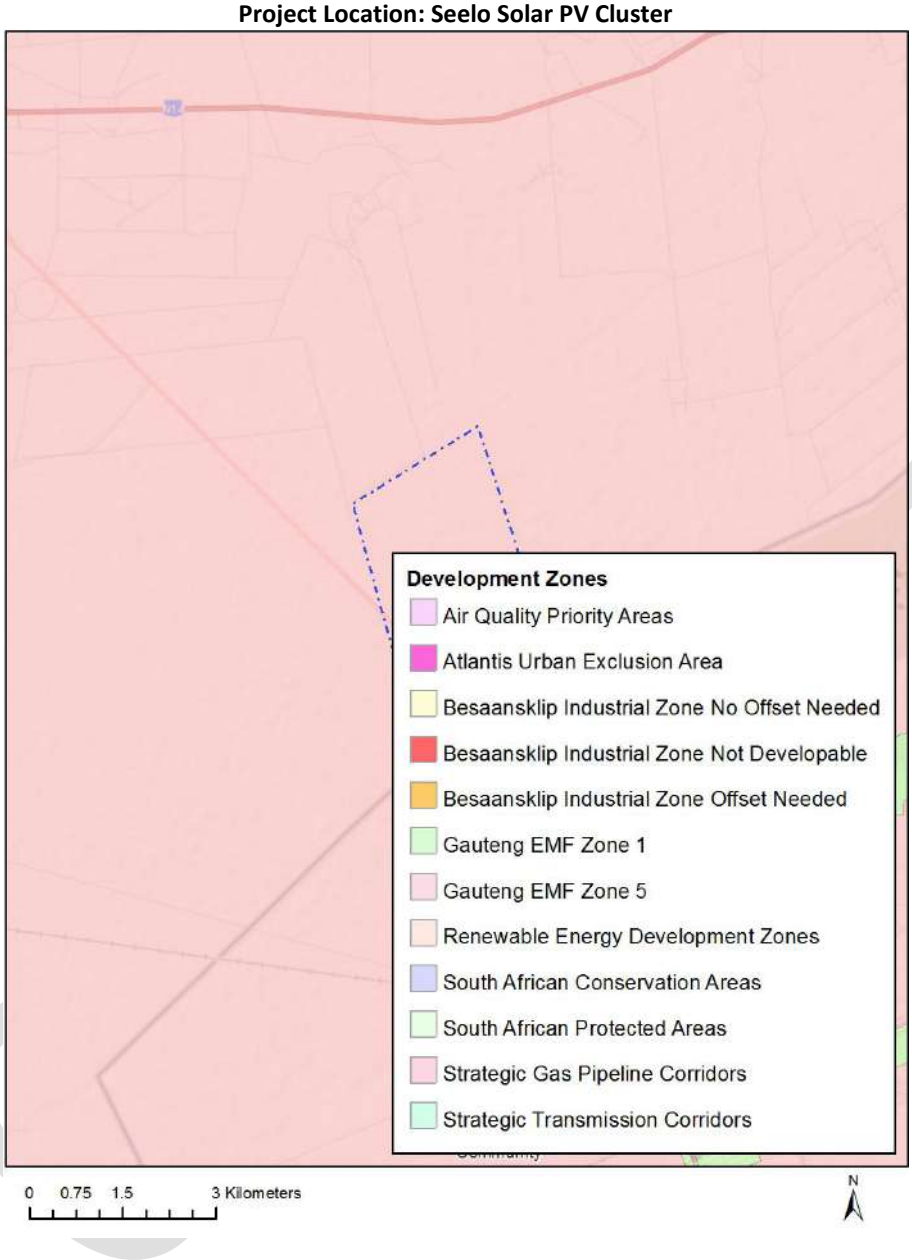
Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Strategic Transmission Corridor-Central corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_EGI.pdf
Strategic Gas Pipeline Corridors-Phase 3: Richards Bay to Gauteng	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_GAS.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones

Project Location: Seelo Solar PV Cluster



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme			X	

Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Avian Theme		X		
Civil Aviation (Solar PV) Theme				X
Defence Theme				X
Landscape (Solar) Theme	X			
Paleontology Theme	X			
Plant Species Theme			X	
RFI Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

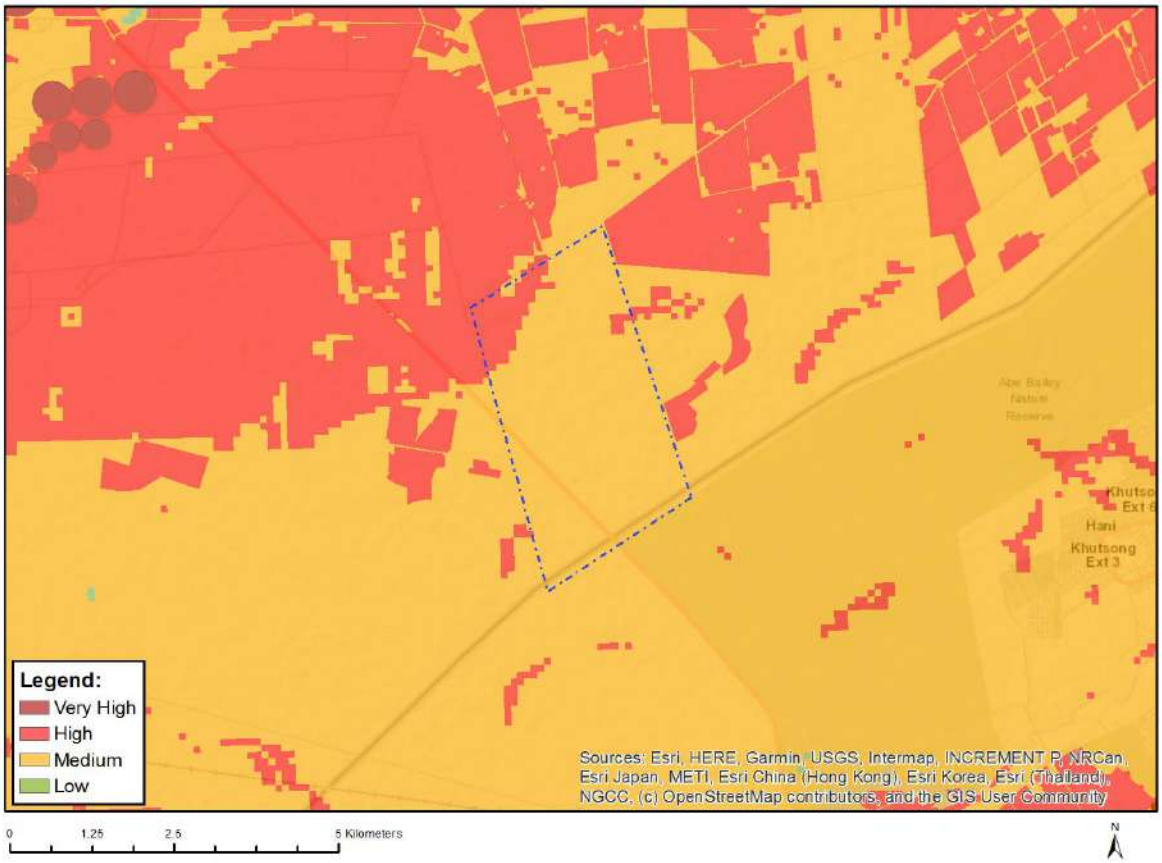
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_WindAndSolar_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiversity	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf

	Impact Assessment	
7	Civil Aviation Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Civil_Aviation_Installations_Assessment_Protocols.pdf
8	Defense Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Defence_Installations_Assessment_Protocols.pdf
9	RFI Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
12	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
13	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

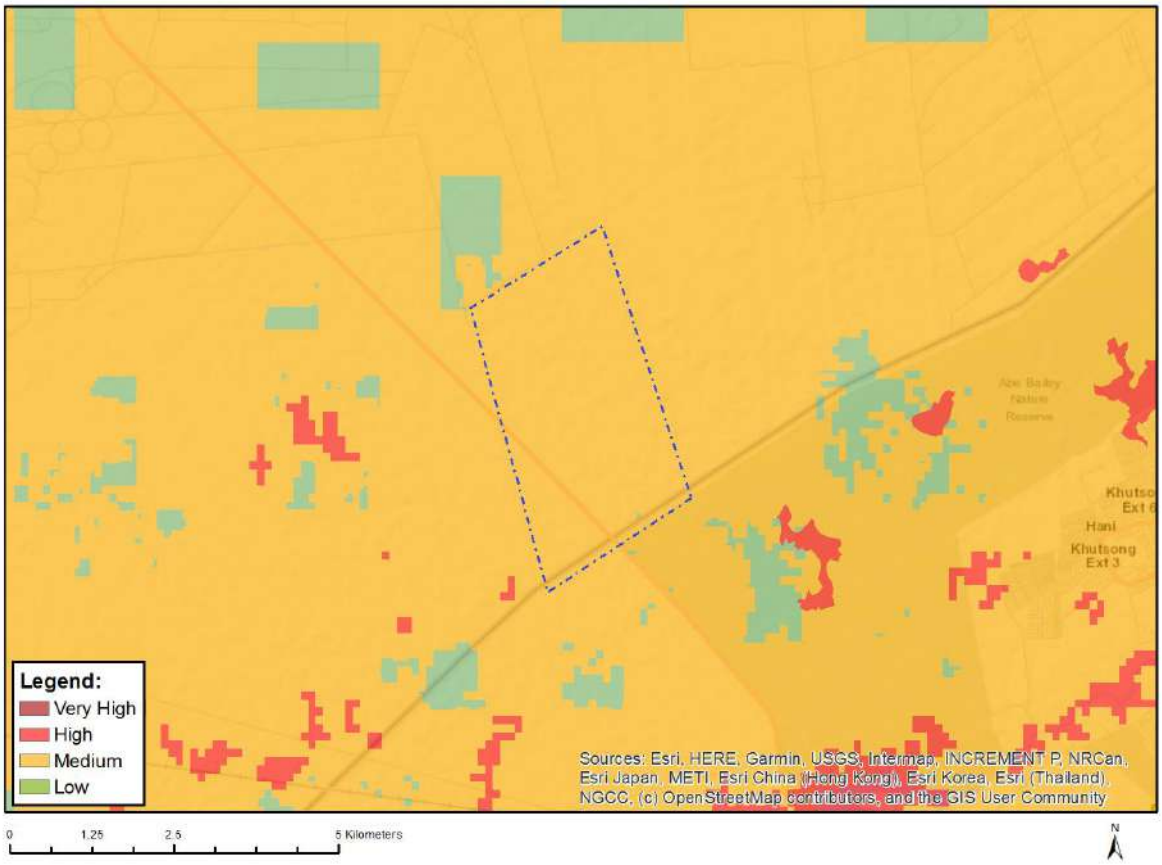


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



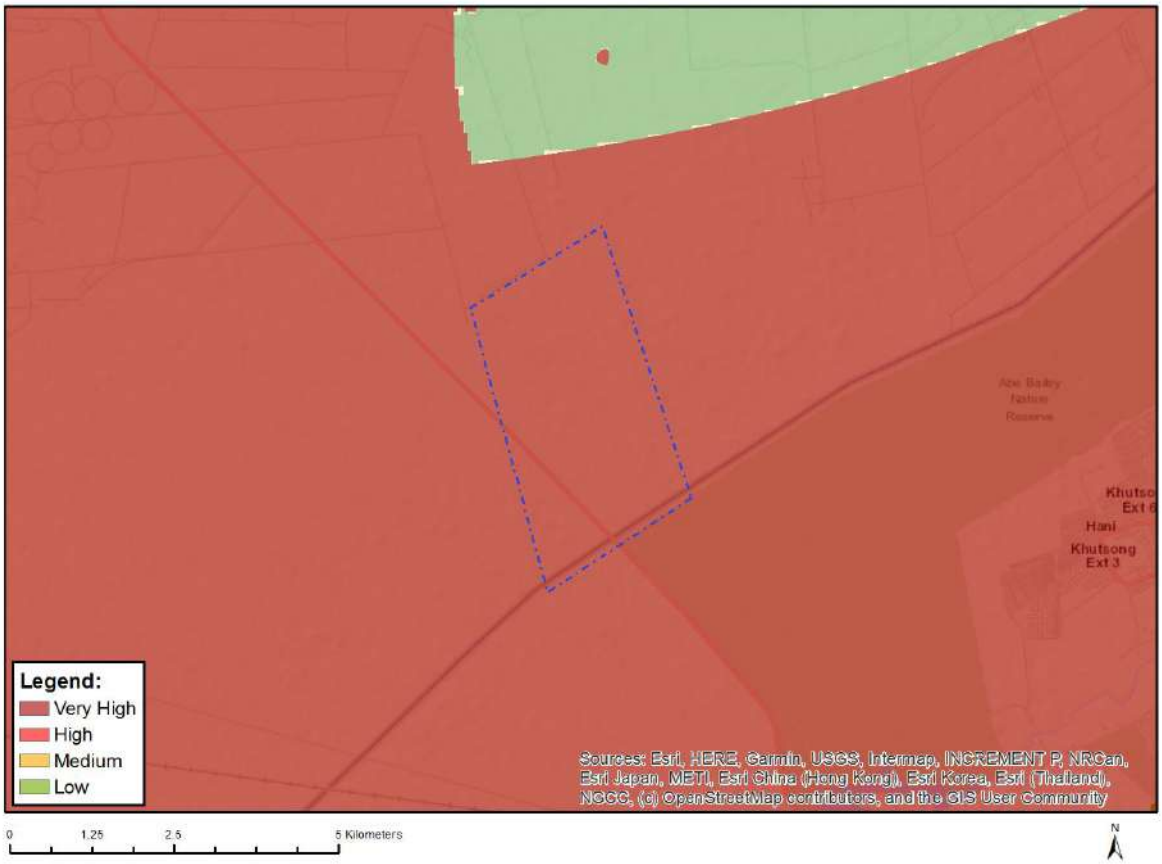
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Subject to confirmation
Medium	Aves-Tyto capensis
Medium	Aves-Circus ranivorus
Medium	Aves-Eupodotis senegalensis
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Hydrictis maculicollis

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Strategic water source area

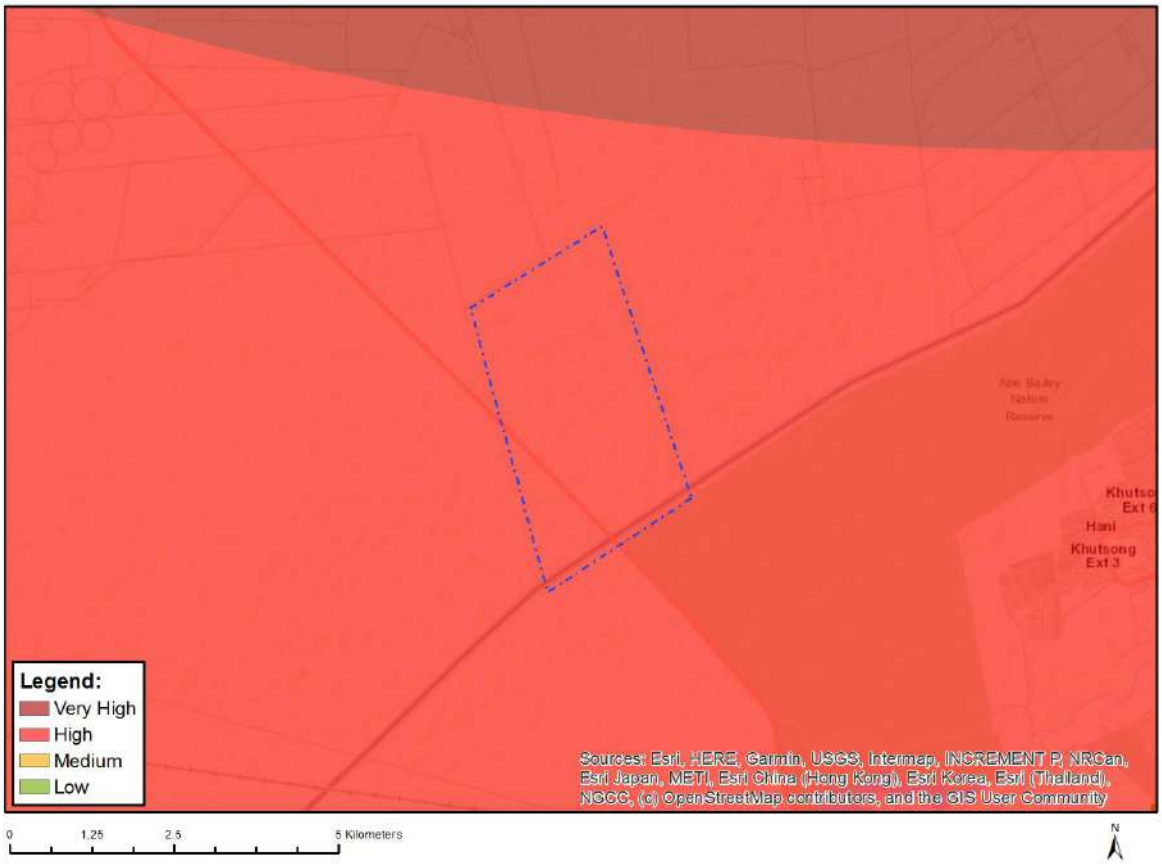
MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE AVIAN THEME SENSITIVITY

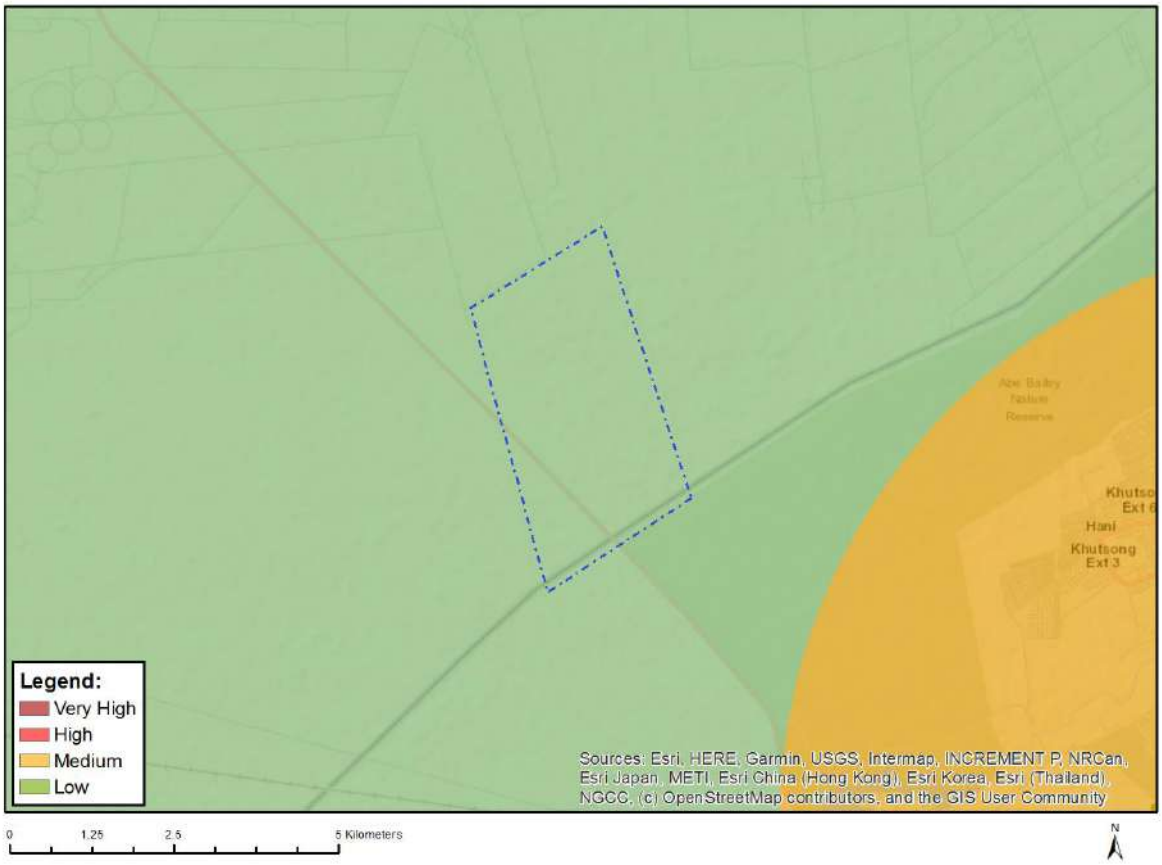


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	within 20 km of known Cape Vulturerestuarants sites

MAP OF RELATIVE CIVIL AVIATION (SOLAR PV) THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	No major or other types of civil aviation aerodromes

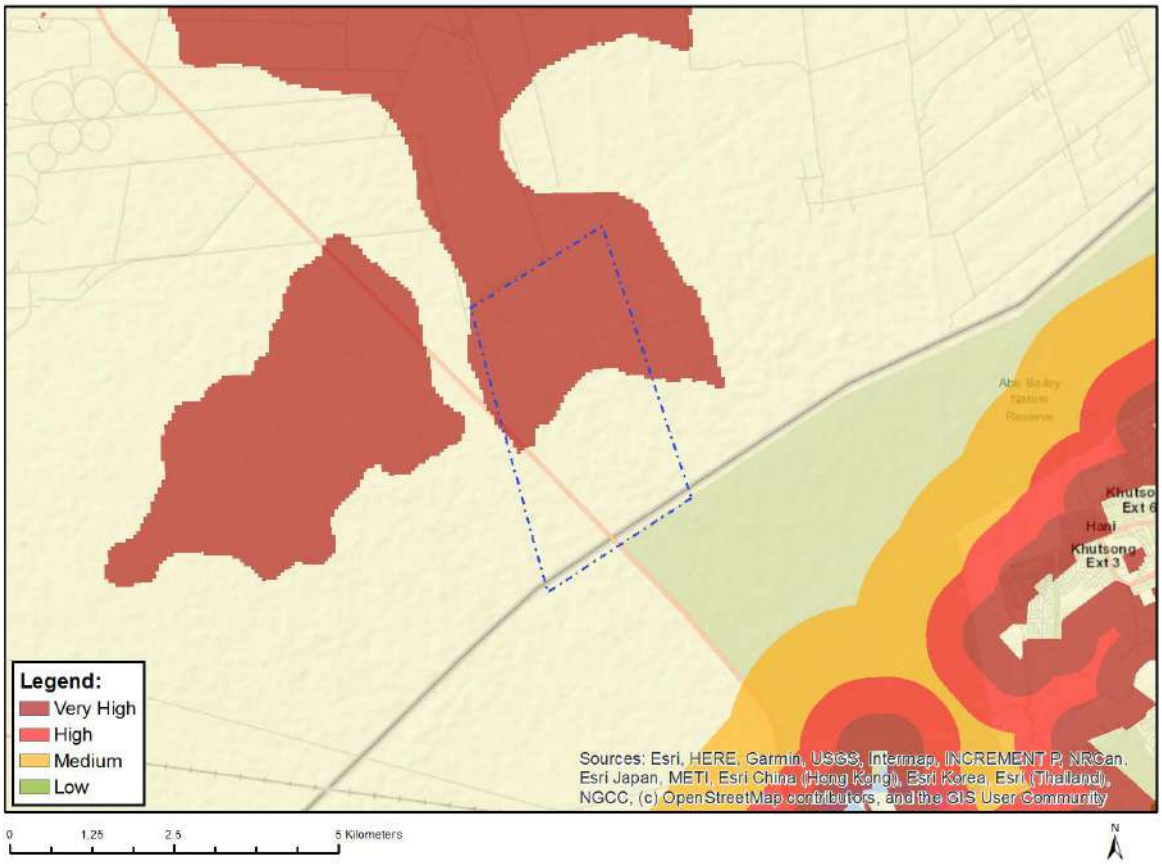
MAP OF RELATIVE DEFENCE THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE LANDSCAPE (SOLAR) THEME SENSITIVITY

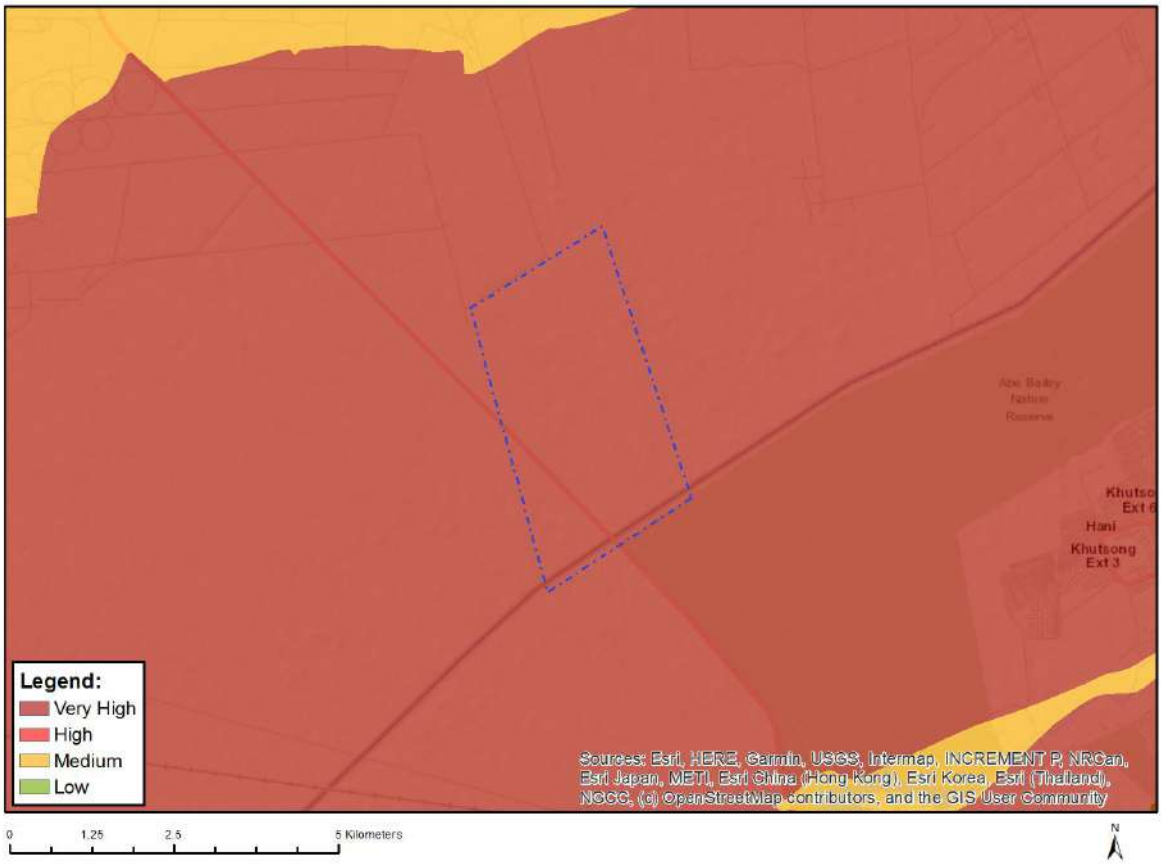


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Mountain tops and high ridges

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

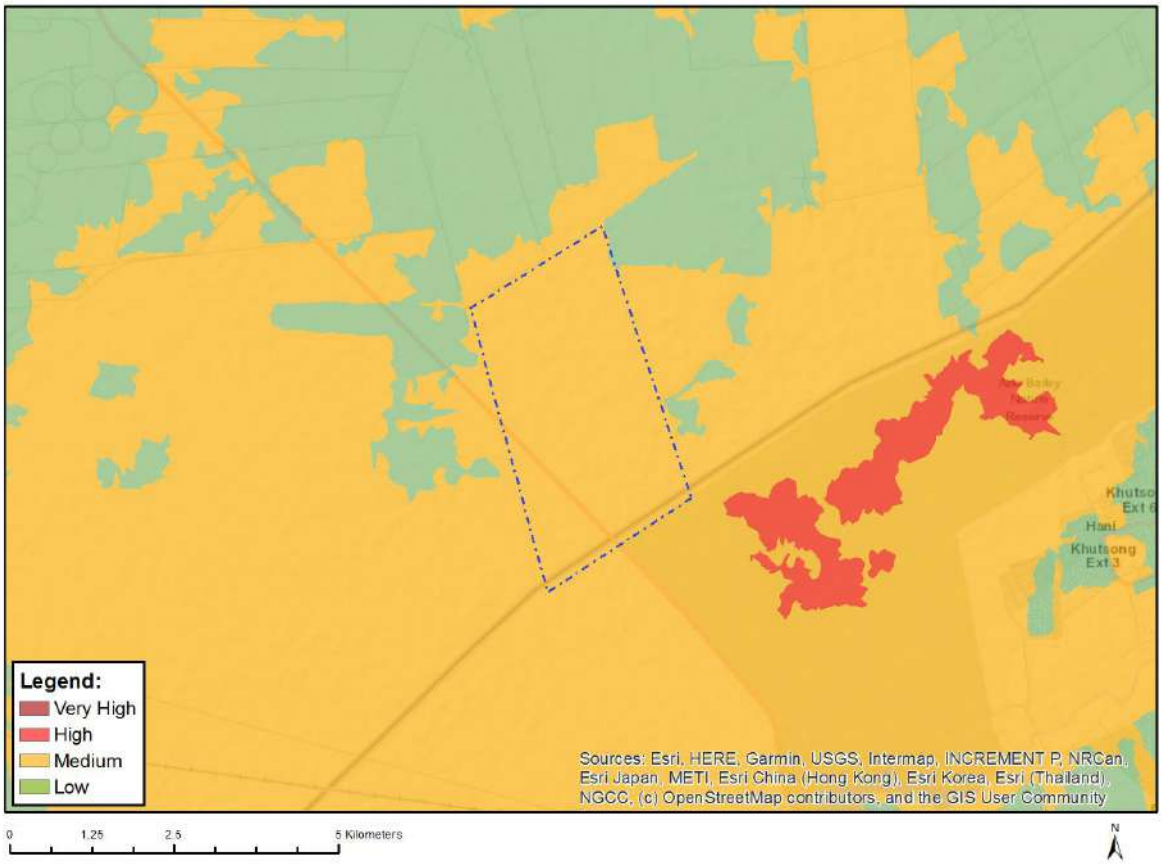


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Sensitive species 1147

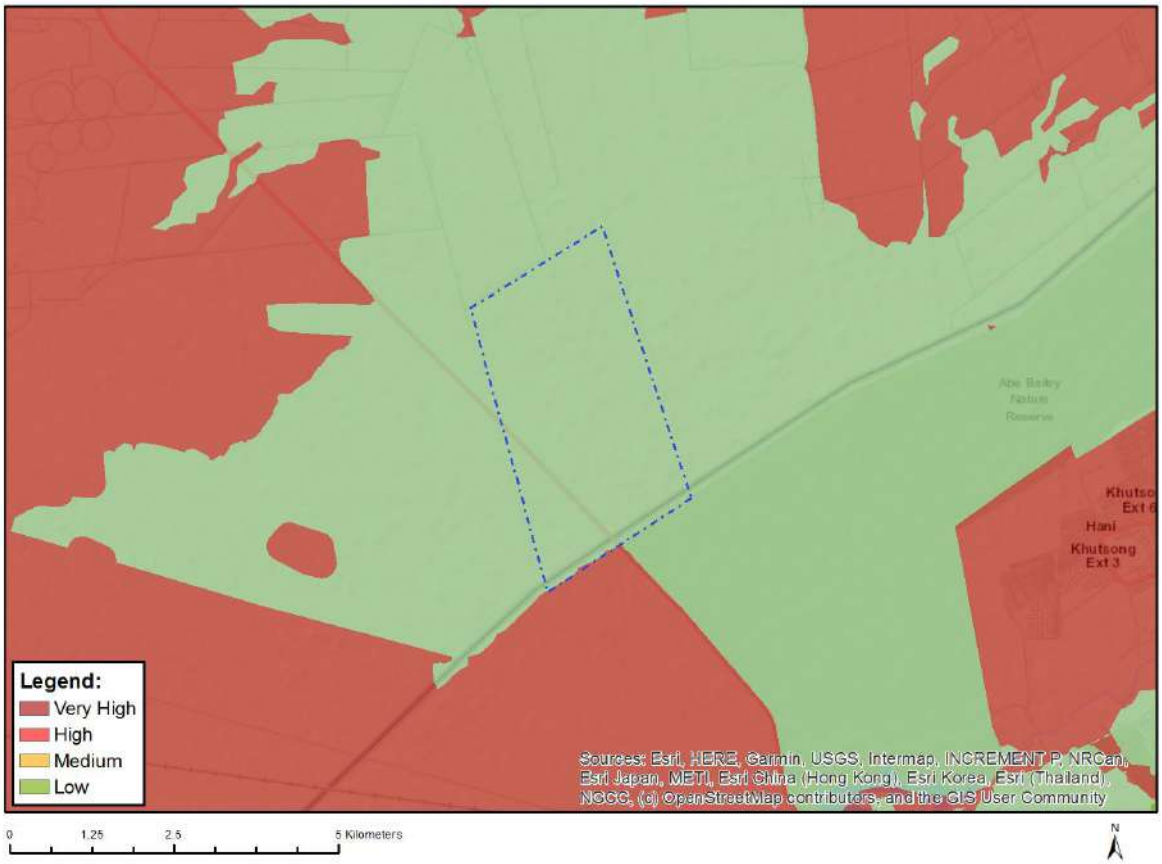
MAP OF RELATIVE RFI THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	Protected Areas Expansion Strategy

APPENDIX 12
UNDERTAKING UNDER OATH/ AFFIRMATION

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

Signature of the Environmental Assessment Practitioner

Nemai Consulting
Name of Company

01/03/2023
Date

Signature of the Commissioner of Oaths

2023-03-01
Date

SOUTH AFRICAN POLICE SERVICE
FINANCE
2023 -03- 01
LINDEN
SUID-AFRIKAANSE POLISIEDIENS

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

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

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

PROJECT TITLE

Proposed Seelo Alpha 240 MW Solar Photovoltaic (PV) & Battery Energy Storage Systems (BESS) Project near the town of Carletonville, North West Province

Kindly note the following:

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

Departmental Details

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

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

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

1. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) INFORMATION

EAP Company Name:	Nemai Consulting (Pty) Ltd			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	1	Percentage Procurement recognition	
EAP name:	Donavan Henning			
EAP Qualifications:	MSc Freshwater Ecology			
Professional affiliation/registration:	Registered EAP (EAPASA Reg. no. 2020/1217) Registered Professional Natural Scientist (SACNASP Reg no: 400108/17)			
Physical address:	No. 147 Bram Fischer Drive, Ferndale, 2194			
Postal address:	P.O. Box 1673, SUNNINGHILL			
Postal code:	2157	Cell:	082 891 0604	
Telephone:	011 781 1730	Fax:	011 781 1731	
E-mail:	donavanh@nemai.co.za			

The appointed EAP must meet the requirements of Regulation 13 of GN R982 of 04 December 2014, as amended.

2. DECLARATION BY THE EAP

I, Donavan Henning, declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

- I have a vested interest in the proposed activity proceeding, such vested interest being:

Signature of the Environmental Assessment Practitioner

Nemai Consulting

Name of Company:

01/03/2023

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

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

Signature of the Environmental Assessment Practitioner

Nemai Consulting

Name of Company

01/03/2023

Date

2183369-8991

Signature of the Commissioner of Oaths

2023-03-01

Date

SOUTH AFRICAN POLICE SERVICE
FINANCE
2023 -03- 01
LINDEN
SUID-AFRIKAANSE POLISIEDIENS

APPENDIX C

CURRICULA VITAE OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

Curriculum Vitae

Queries: Donavan Henning
☎ +27 11 781 1730
+27 82 891 0604
🖷 +27 11 781 1731
✉ donavanh@nemai.co.za

1 Personal Particulars

Date of Birth:	1976-12-06
Name of Staff:	Donavan Henning
Years of Experience:	20
Nationality:	RSA

2 Position in the firm and within the organization of this assignment

Registered Environmental Assessment Practitioner.

3 Education

Institution (Date from – Date to)	Degree(s) or Diploma(s) obtained
RAU (1995 – 1997)	B.Sc. Zoology and Biochemistry
RAU (1998)	B. Sc. Hons. Zoology
RAU (1999 – 2000)	M. Sc. Freshwater Ecology

4 Membership of professional bodies

- Environmental Assessment Practitioners Association of South Africa (EAPASA) (2020/1217).
- South African Council for Natural Scientific Professions (SACNASP) (400108/17).

5 Relevant Experience - Energy

1.	**Project Name:**	**KIVU56**
	Client:	Symbion Power Lake Kivu LTD
	Location of Project:	Rubavu District, Western Province, Rwanda
	Duration (Start & Completion Dates):	Feb 2020 – Nov 2020
	Brief Description of work:	
	The KIVU56 project is located on the eastern shores of Lake Kivu, Rwanda. Methane gas is extracted from the waters of Lake Kivu and used to run engines that generate electricity. The electricity is passed onto the Rwandan national grid and used throughout the country. Nemai Consulting was appointed to ensure that the project conforms to the International Finance Corporation's 2012 Performance Standards on Environmental and Social Sustainability.	

2.	**Project Name:**	**Matjhabeng Solar PV Project**
	Client:	SunElex Energy (Pty) Ltd
	Location of Project:	Odendaalsrus, Free State Province, RSA
	Duration (Start & Completion Dates):	Jul – Nov 2018
	Brief Description of work:	
	SunElex Energy (Pty) Ltd has proposed the development of the Matjhabeng 400 MW Solar Photovoltaic Plant with 80 MW (320 MWh) Battery Energy Storage System, which is located north and south of the town of Odendaalsrus in the Free State Province. The proposed Solar Photovoltaic Plant will be developed to serve the Matjhabeng Local Municipality's energy requirements and will generate power for delivery to the local/national grid. The electricity generated by the Solar Photovoltaic Plant will be injected into the existing Eskom 132kV distribution system.	

3.	**Project Name:**	**75MW Beaufort West Photovoltaic Project**
	Client:	Beaufort West Photovoltaic (Pty) Ltd
	Location of Project:	Beaufort West, Western Cape, RSA
	Duration (Start & Completion Dates):	Nov 2020 – Jul 2021
	Brief Description of work:	

	Beaufort West Photovoltaic (Pty) Ltd has proposed the development of the Beaufort West Photovoltaic (PV) Project in the Western Cape, with a total generation capacity of not exceeding 75MW renewable solar energy. The associated infrastructure includes access roads, overhead power lines, substation and control building(s). The electricity generated by the PV Park will be transferred to the national Eskom grid. The Project will connect to existing Droërivier Substation beside the N12 through a ±14.9km single circuit twin conductor 132 kV line.

4.	**Project Name:**	**uMkhomazi Water Project Phase 1**
	Client:	Department of Water and Sanitation
	Location of Project:	Bulwer, KwaZulu-Natal Province, RSA
	Duration (Start & Completion Dates):	Aug 2013 - Present
	Brief Description of work:	
	EIA as part of Feasibility Study for the uMkhomazi Water Project Phase 1. Project components include large storage dam, tunnel, balancing dam, raw water pipeline and **hydropower facilities** (Baynesfield HPP - 3 MW power potential; Smithfield Dam HPP- 2.6 MW power potential).	

5.	**Project Name:**	**Hydropower Plant within Hydraulic Network at Zoekfontein Site**
	Client:	Rand Water
	Location of Project:	Zoekfontein, Gauteng Province, RSA
	Duration (Start & Completion Dates):	Feb 2012 – April 2014
	Brief Description of work:	
	Environmental Impact Assessment for the construction of an 8 MW hydropower station alongside the Zoekfontein Control Works downstream of the Vaal Dam.	

6.	**Project Name:**	**Impompomo Hydropower Plant**
	Client:	Blue World Power & Energy
	Location of Project:	Mpumalanga, RSA
	Duration (Start & Completion Dates):	2018
	Brief Description of work:	
	Environmental Screening for a hydropower plant on the Mpompomo Falls in Mpumalanga. The scope of works include the Impompomo powerhouse (hydropower plant), powerlines from Impompomo hydropower plant to Barberton, penstock from Mpompomo Top Weir and Mpompomo Top Weir.	

7.	**Project Name:**	**Neptune-Poseidon Transmission Line**
	Client:	Eskom
	Location of Project:	Eastern Cape, RSA
	Duration (Start & Completion Dates):	2009 - 2011
	Brief Description of work:	
	EIA and public participation for a 200 km transmission line, with alternatives, with 3000 affected parties and landowners.	

8.	**Project Name:**	**Anderson Dinaledi Transmission Line**
	Client:	Eskom
	Location of Project:	North-West, RSA
	Duration (Start & Completion Dates):	2011 - 2013
	Brief Description of work:	
	EIA and public participation for an 80 km transmission line, with alternatives, through a the Magaliesburg Nature Conservation Area.	

9.	**Project Name:**	**Makalu B (Igesi) Substation and Associated Transmission Loop-In Lines**
	Client:	Eskom
	Location of Project:	Free State, RSA
	Duration (Start & Completion Dates):	2016 - 2018
	Brief Description of work:	
	EIA and public participation for a new substation and 2 x 275 kV line loop-ins from the Lethabo – Makalu Lines.	

PERSONAL DATA

Name	Dhanashree (Nicky) Naidoo
Date of Birth	1973-03-27
Nationality	South African
Qualification	BSc Chemical Eng International Accredited Auditor
Years of Experience	22
Profession	Environmental Engineer
Professional Registration	IAIA, ECSA, South African Monitoring and Evaluation Association

EMPLOYMENT RECORD

1995-1998 Eskom
1998-1999 Bergman Ingerop
1999- To Date Nemai Consulting

EXPERIENCE RECORD PERTINTENT TO REQUIRED SERVICE

(A) EIA's, SIA's and EMPs'

1) Development of the ESMF and SEP for the Public and Private Sector Energy Efficiency Programme for Application to the Green Climate Fund.
2) Environmental and Social Due Diligence for the Extraction of Gas and Electric Power Production Plant in the Rubavu District, Rwanda.
3) Project Managed and facilitated Public Participation on the Berths 203 to 205 EIA Expansion Programme. This is the only infill project in the Port of Durban in the last 10 years.
4) The uMkhomazi Water Project Phase 1 - Raw Water Component. Project Manager of the EIA for the proposed uMkhomazi Water Project. This includes a dam and associated infrastructure on the raw water side.
5) nCwabeni Dam - Project Manager of the EIA for the construction of a new raw water supply dam in Ugu in southern KwaZulu Natal.
6) Mhlabatshane Dam EIA - Project Manager of the EIA which covered the construction of a new 20m high bulk rural water supply dam in southern KwaZulu Natal. The project included the EIA for the associated Water Treatment Works.
7) The uMkhomazi Water Project Phase 1 - Raw Water Component - Project Manager of the EIA for the proposed uMkhomazi Water Project. This includes a Water Treatment Works and associated infrastructure on for the potable water side.
8) Mokolo Crocodile Water Augmentation Project, Project Manager of the EIA for the heavy engineering pipelines and water transfer scheme, Limpopo Province
9) Anderson Dinaledi Transmission Line - Project Manager of the EIA and public participation for a 80 km transmission line, with alternatives, through a the Magaliesburg Nature Conservation Area.
10) High Altitude Training Facility – Project Manager of the EIA and public participation for an international high altitude training facility in Mpumalanga. The project included

access roads, WTW, WWTW and relocation of protected species. The development was designed around Green Building principles.

11) FET Colleges – Project Manager for the EIA and public participation for 16 FET Colleges around the country. This is a SIP and is a fast tracked project hence the company understands the pressure and need of presidential projects. Included are many waste licences and WULA's.
12) Resource Management Plans for 15 governement water works. Project Manager for the development of these RMPs which covered reservoirs such as the Vaal, Midmar, Loskop, Craigieburn and Hazelemere Dams.
13) Neptune Poseidon Transmission Line, Eastern Cape - Project Manager of the EIA and public participation for a 320 km transmission line, with alternatives, from East London to Fort Beaufort in the Eastern Cape
14) Performed all EIAs and prepared EMPs for Johannesburg Water sanitation and water supply capital projects for 2003-2007 financial years. Projects for which authorization was sought include expansions to Waste Water Treatment Works, outfall sewer pipelines, bulk and reticulation pipelines and pump stations. Over 50 EIA completed over this period.
15) Boksburg Cason Pipeline –Completed detailed EIA for the construction of a 53 km pipeline.
16) EIA for the Northern Waste Water Treatments Works, Unit 5, 50 Ml/day capacity.
17) Total Gas holding facilities, Senegal – Completed Environmental Impact Assessment Study for the existing infrastructure as well as a new gas sphere.
18) EIA and SIA for 180km transmission line for Eskom.
19) EIA, SIA and EMP for 280km long transmission line for Eskom.
20) EIA for Casino Development in Queenstown. Involved details Social Impact Assessment study of the project on the community and EIA because the casino is to be located in the De Lange Nature Reserve.
21) EIA for Cast Iron Pipe Factory in Pretoria. Was successful in getting the Client, Stanton from the UK, an exemption on the project.
22) EIA and EMP for pipeline for Hartbeespoortdam Local Town Council
23) EIA, EMP and SIA for Maputo Corridor
24) EIA and EMP for water reticulation project in Piet Gouws.
25) I was employed by the Inspectorate Division in Gauteng for the period from January 2000 to March 2000 as a Senior Environmental Officer.
26) EMP and social survey for the Witbank to Maputo Toll road on the Mozambican side.
27) EIA and EMP for R600 000 000 project funded by the DBSA for a 1000km long Fibre Optic Communication Line in Mozambique. The Client is TDM and the project starts in Beira in the North and runs to Maputo in the South. The entire project is in accordance to ISO 14001 standards. This was the first project of its kind in Mozambique.

(B) ENVIRONMENTAL MANAGEMENT FRAMEWORKS

(1) Project Manager for the Frances Baard District Municipality Environmental Management Framework.
(2) Project Manager for the Integrated Environmental Management Plan for the Sol Plaatje Local Municipality.
(3) Project Manager for the Project Management and planning for the development of the Namakwa District Municipality Environmental Management Framework.

(4) Project Manager for the Umzinyathi District Municipality Environmental Management Framework.
(5) EMF for the Jukskei River.
(6) EMF for the Great Ellis Park development.
(7) EMF for the Mapungubwe World Heritage Site for DEA.

(C) WASTE SECTOR

1) Construction of a 50 Ml/day treatment unit (Unit 5) including sedimentation tanks, BNR activated sludge treatment and chemical dosing facility at Northern WWTW, for Johannesburg Water.
2) Remediation of Fine Ash 1 and 2 /Coarse Ash Dump/ Venco Capillary Break for Infrachem, a division of Sasol
3) Scoping/EA and IWWMP for the disposal, treatment and re-use of Fine Ash 3, 4 and 5 at Sasol.
4) IWWMP for the disposal of gypsum for Infrachem.
5) EIA and IWWMP for the storage of Hazardous Waste Material for Merisol.
6) BA and IWWMP for the storage of Chlor Vinyls Brine Sludge for Sasol Polymers.
7) BA and IWWMP for the storage of Wax Catalyst Storage for Sasal Wax.
8) BA and IWWMP for the storage of Solvents Catalyst Store for Sasol Solvents.
9) BA and IWWMP for the disposal of asbestos waste for Transnet.
10) Increase in sludge treatment capacity including new lime dosing plant at Northern Works WWTW, for Johannesburg Water.
11) Construction of sewerage pump station in Alveda Park, for Inframax.
12) Construction of thickeners at the Goudkoppies WWTW, for Johannesburg Water.
13) Expansion of the maturation ponds at the Bushkoppies WWTW, for Johannesburg Water.
14) Expansion of the Olifantsvlei WWTW, for Johannesburg Water, for Johannesburg Water.
15) Emergency dam and pump station at the Olifantsvlei WWTW, for Johannesburg Water.
16) Bruma Lake Desilting combined waste licence.
17) Henley on Klip landfill application
18) Walkeville landfill closure application.
19) Groethoek Hospital medical waste storage
20) Transwerk asbestos removal and disposal application
21) Rehabilitation of Transnet rail infrastructure of asbestos waste
22) Kwa Themba landfill closure application
23) IWMP for the Bojanala Platinum District Municipality
24) Frances Baard IWMP
25) Thabo Mofutsanyane District Municipality IWMP
26) Motheo District Municipality IWMP
27) Lejweleputswa District Municipality IWMP
28) Naledi Local Municipality IWMP
29) Mantsopa Local Municipality IWMP
30) North West Provincial IWMP
31) Illegal Waste Minimisation Implementation Strategy
32) EPWP Waste Management Strategy
33) Generic Waste Management Contract for Municipalities

34) Soweto Waste Clean-up Programmes

(B) WATER SECTOR RELATED PROJECTS

1) Developed Provincial Water Sector Plan Guideline.
2) Developed concept paper on Water for Growth and Development.
3) Developed checklists for EDSS.
4) Developed monitoring and auditing guidelines.
5) Compile on SDMS.
6) Compile on 2nd Edition CEIMP.
7) Compiled Resource Management Plans for 17 Dams

(D) ENVIRONMENTAL AUDITING AND REPORTING

1) Completed an environmental and safety audit for the decommissioning of the Grootvlei Power Station.
2) Completed an environmental and safety audit for the decommissioning of the Camden Power Station.
3) Completed an environmental audit for the decommissioning of the Komati Power Station.
4) Completed an environmental and safety audit for the Total Bottling Plant in Dakar, Senegal.
5) Completed the verification of the Rand Water Environmental Report for 2001.
6) Completed an environmental report for the Pindamondagaba development in Brazil.
7) Completed environmental auditing of all landfills in Gauteng for the provincial government.

(E) ENVIRONMENTAL ENGINEERING

1) Environmental design review of the Naphta Tar Extraction Plant at Sasol.
2) Environmental design review of the upgrade of certain process at Sapref plant.
3) Environmental design of the Total Gas Bottling Plant in Senegal.

(F) AIR, WATER AND SOIL MONITORING AND CONTROL

1) Catchment Study. Determine the impact of raw sewage in the Elands River Catchment area on the Valkopdam.
2) Catchment Study: Impact of defunct mines on water quality in the Loskopdam catchment.
3) Water quality analysis for the Jukskei and the Klipspruit Catchment.
4) Soil and Ground water monitoring, quality control and remediation measures for Collect-a-can site in Vanderbylpark. The soil was highly contaminated with various inorganic chemicals.
5) Soil, water and air quality analysis for chemical spill at the Eskom Phalaborwa sub-station site. The polluting agents were essentially phosphates.
6) Air emission control management at Eskom Power Stations. Monitoring plans were implemented to assess air emission from the stacks. Various cleaning technologies were investigated.
7) Air emission analysis at the Cast Iron Pipe Factory in Pretoria. Review and compared smelter technologies. This formed part of the EIA study for the construction of a new plant; however, the study did include review of air emission monitoring on the existing plant. This was a requirement from CAPCO.

8) Scale Inhibitors: Study done in conjunction with the CSIR to determine the impact of the use of scale inhibitors at Eskom Power Stations on water quality.
9) Air, water and soil analysis at the Total Senegal Plant. Did trial studies of dispersion tests at the plant in order to satisfy the French Environmental Legislation.
8) Kendal Power Station Water Balance – Prepared software package to monitor water usage and effluent use at the station.
10) Simunye Return to Service (RTS) Report – Performed feasibility and environmental study and made recommendations on process water, effluent and stormwater management, cooling water system, chemical dosing systems, and air emission control and sewerage treatment system for Grootvlei Power Station.
11) Environmental Review – Responsible for interpreting ground and surface water analysis in accordance with the drinking water standards as set out by the DWAF within Eskom

(E) RESEARCH PROJECTS (in conjunction with various institutions)

1) Hydrogen Research – Engaged in research associated with the novel approach of handling and venting contaminated hydrogen mixtures.
2) Scale Inhibitors – Used regressional test analysis to determine whether the generic approach to scale prevention within Eskom was possible and the environmental effect on the ash dams of dosing scale inhibitors.
3) Hydrogen Venting – Responsible for performing all calculations associated with the venting of hydrogen air mixtures. Reviewed and commented on hydrogen handling specification/standard. Completed extensive literature surveys locally and internationally.
4) Fire Protection – Part of design team responsible for novel approach to conveyor belt protection. Wrote software package to predict effects of water droplet sizes on extinguishing fires. Completed extensive literature surveys locally and internationally.
5) Crystallisation Modelling – Extensively involved in the modelling of the growth of calcium sulphate crystals, optimisation of crystallisation processes and investigating the effects of various parameters on the growth of crystals.
6) Completed literature search on public participation in water related projects in third and first world countries.

(G) RISK ASSESSMENTS

1) Total Gas holding facilities, Senegal – Completed Risk Assessment Study for the existing infrastructure as well as a new gas sphere and bottling plant. The study was done in accordance to the French Legislation.
2) Contingency Plans for Simunye Power Station – Compiled document presenting the various contingency plans, in the event of an environmental disaster, for the different decommissioned stations. The report was aimed at satisfying the needs and requirements set by the DWAF and DEAT. Focused on HAZOP analysis and pollution control from a design point of view.
3) Risk and Environmental Impact Assessment and Integrated Environmental Management – Reviewed and commented on numerous RIA's, EIA's and IEM's for the various Eskom stations.
4) Prepared oil spill contingency plans for Eskom wide power stations.

(H) CLIMATE CHANGE

1) Climate change adaptation strategy for the City of Johannesburg with special focus on water infrastructure.

2) Berths 203 – 205 expansion – Climate Change Study to determine the impacts of sea level rise and extreme weather conditions on the design of the new berths in the Port of Durban.
3) Climate Change Study to determine the impacts on the water sector for DWS Study included in the Growth and Development Programme.
4) Factored in climate change implications on 10 EIA Studies.

APPENDIX D

DATABASE OF AUTHORITIES, STAKEHOLDERS AND I & APS

Organisation	Name
NATIONAL GOVERNMENT	
Department of Forestry, Fisheries and the Environment (DFFE)	Lerato Mokoena
DFFE: Directorate: Priority Infrastructure Projects	Mmamohale Kabasa
DFFE: Directorate: Priority Infrastructure Projects	Constance Musemburi
DFFE: Directorate: Priority Infrastructure Projects	Jay-Jay Mpelane
DFFE: Directorate: Priority Infrastructure Projects	Wayne Hector
DFFE: Directorate: Priority Infrastructure Projects	Coenrad Agenbach
DFFE: Directorate: Priority Infrastructure Projects	Trisha Rene Pillay
DFFE: Directorate: Priority Infrastructure Projects	Muhammad Essop
DFFE: Biodiversity Conservation	Mmatlala Rabothata
DFFE: Biodiversity Conservation	Aulicia Maifo
DFFE: Biodiversity Conservation	Portia Makitla
DFFE: Biodiversity Conservation	Seoka Lekota
Department of Water & Sanitation (DWS)	Piet Ackerman
DWS	Roets Wietsche
DWS	Sipho Skosana
DWS	Thokozani Mazibuko
DWS	Siboniso Mkhaliphi
Department of Energy	Ompi Aphane
Department of Energy	Mokgadi Mathekgana
Department of Energy	Pheladi Masipa
Department of Energy	Mthetheleli Maphinda
Department of Agriculture, Land Reform and Rural Development (DALRRD)	Anneliza Collett
DALRRD	Lesley Shadung
DALRRD	Mr. S. Ogunronbi
DALRRD	Lesley Shadung
DALRRD	Annette Geertsema
South African Heritage Resource Agency (SAHRA)	Dr Ragna Redelstorff
SAHRA	Natasha Higgitt
SAHRA	Sityhilelo Ngcatsha
National Dept of Finance	Malcolm Pautz
National Dept of Tourism	Palesa Kadi
National Dept of Tourism	Kingsley Makhubela
National Dept of Public Enterprises	Caroline Richardson / Joan Arrikum
South African Chamber of Commerce and Industry	
Dept of Land Affairs	Eddie Mohoebi
Department of Cooperative Governance	Elroy Africa
South African Local Government Association (SALGA)	William Moraka
SALGA	I Chauke
National Energy Regulator of South Africa	Andile Gxasheka
National Energy Regulator of South Africa	Bongi Masemola
South African Civil Aviation Authority (SACAA)	Lizell Stroh
SACAA	Cecile Marié Pretorius
SACAA	Gugulethu Khanyile
SACAA	Windfarm and Power Plants
Air Traffic and Navigation Services (ATNS)	Windfarm and Power Plants
PROVINCIAL GOVERNMENT	
Department of Economic Development, Environment, Conservation and Tourism (DEDECT)	Palesa Kadi
DEDECT	Kingsley Makhubela
DEDECT	Khumoetsile Molatlhegi
DEDECT	Lufuno Tshikovhi
DEDECT	Abbey Tlaletsi
DEDECT	Lufuno Tshikovhi
Department of Water and Sanitation: North-West (DWS)	Dr TP Ntili
North West Provincial Heritage Resources Authority (NWPHRA)	Mosiane Mothlabane
Department of Mineral Resources and Energy (DMRE)	Pumudzo Nethwadzi
DMRE	Wesi
Department of Infrastructure Development	Brian Setswambung
Department of Infrastructure Development	Sello Tatai
Department of Public Works and Roads	Pakiso Mothupi
Department of Public Works and Roads	Moatlhodi Sediti
Department of Public Works and Roads	Collette Anthony
Department of Public Works and Roads	Dintle Brenda Tumagole
Department of Social Development	Dikeledi Mothobi
Department of Culture, Arts and Traditional Affairs	Nono Bapela
Department of Agriculture and Rural Development	Poncho Mokaila
Department of Agriculture and Rural Development	Harry Maphutha
Department of Agriculture and Rural Development	Linda Page
Department of Agriculture and Rural Development	Joel Mamabolo
LOCAL GOVERNMENT	
JB Marks Local Municipality	Ishmael Moilwa
JB Marks Local Municipality	Ishmae M
JB Marks Local Municipality	Lunkile Linky
JB Marks Local Municipality	Kopanelo.M
JB Marks Local Municipality	K.B
JB Marks Local Municipality	Modise Molefe
JB Marks Local Municipality	Israel N
JB Marks Local Municipality	D.S
JB Marks Local Municipality	Gideon Moremedi
Dr Kenneth Kaunda District Municipality	Ms Madillo Maria
Dr Kenneth Kaunda District Municipality	T Tshukudu
Dr Kenneth Kaunda District Municipality	Mr Tebogo Chanda
Dr Kenneth Kaunda District Municipality	Ronnie Masopha
Dr Kenneth Kaunda District Municipality	Flora
Dr Kenneth Kaunda District Municipality	Ms Matlakala Irene Matthews

Organisation	Name
PARASTATAL, BUSINESS & COMMERCE	
Eskom	John Geeringh
Eskom	Earl Daniels
Eskom	Rene De Bruin
Eskom	Lungile Motsisi
Eskom	Jacob Madumo
Eskom	Linda van Deventer
Eskom	Lebohang Motoai
Eskom	Jacob Madumo
Eskom	Dimakatso Monatisa
Eskom	Belinda Jonasi
Transnet	Sarie Lombard
Transnet	Andre Bodenstein
Transnet Pipelines	Thami Hadebe
Transnet	Raymond Lehloma
Transnet Corporate	Vincent Matabane
Transnet Property BLM	Keneuwe Mabe
Transnet Freight Rail	Maureen Kunene
Transnet Freight Rail	Gideon Ackermann
Transnet Freight Rail	Nsumbulana Mtsenga
Transnet Freight Rail	Maureen Kunene
Transnet Freight Rail	Nsumbulana Mtsenga
Transnet Freight Rail	Yolanda Potgieter
Transnet Freight Rail	Zanele Manyathi
Transnet	Andiswa Njonga
Transnet: Radio Communication	Herman Coetzee
South African National Roads Agency SOC Ltd	C Landman
South African National Roads Agency SOC Ltd	Thobile Duma
South African National Roads Agency SOC Ltd	Nicole Abrahams
South African National Roads Agency SOC Ltd	Nelis Brink
South African National Roads Agency SOC Ltd	Judy Marx
South African National Roads Agency SOC Ltd	Thobile Duma
Telkom	
Openserve	Greg Green
Telkom	Ben Roestof
Telkom	Mantwa Aletta Gabaitumele
MTN	Justice Molebatsi
MTN	Dennis Govender
Vodacom	Hennie Barnard
Altech Netstar	Frans Swart
Sentech	Johan Koegelenberg
Sentech	Serame Motlhake
SA Weater Service	Rydall Jardine
AGRICULTURAL SECTOR	
Agri SA	Janse Rabie
Agri NW	Boeta du Toit
Grain SA	Jaap van der Westhuizen
ENERGY SECTOR	
Sustainable Energy Society of Southern Africa	Christoph Kausch
Southern African Alternative Energy Association	Alwyn Smith
South African Photovoltaic Industry Association (SAPVIA)	Niveshen Govender
SAPVIA	Wido Schnabel
SAPVIA	Kim Thomas
SAPVIA	Pierre Nothard
ENVIRONMENTAL & TOURISM SECTOR	
The Endangered Wildlife Trust (EWT)	Dr Ian Little
EWT	Constant Hoogstad
WESSA	Delana Eksteen
WESSA	Morgan Griffiths
WESSA	Suzanne Erasmus
Birdlife South Africa	Hanneline Smit-Robinson
Birdlife South Africa	Daniel Marnewick
Birdlife South Africa	Simon Gear
Birdlife South Africa	Samantha Ralston
SANBI	John Dini
SANBI	Kristal Maze
South African Bat Assessment Association	Kate MacEwan
Project Vulture	
GENERAL	
Square Kilometre Array	Dr Adrian Tiplady
Square Kilometre Array	Selaelo Matlhane
Square Kilometre Array	Tshegofatso Monama
Square Kilometre Array	Vivienne Rowland
Square Kilometre Array	Alice Pienaar-Marais
Square Kilometre Array	Angelo Syce
South African Radio Astronomy Observatory (SARAO)	Rob Adam
Johannesburg Skydiving Club	

Project Component	Farm Name / Township	Portion	Owner
Alpha			
PV Site	Farm 96 (Rooipan)	Portion 2	Adrian and Sandra Vermaak
Adjacent	Farm 96 (Rooipan)	Portion 1	Lightfoot Family Trust
Adjacent	Farm 97 Welverdiend	Portion 29	FAR WEST RAND DOLOMITIC WATER ASSOC
Adjacent	Farm 97 Welverdiend	Portion 28	FAR WEST RAND DOLOMITIC WATER ASSOC
Adjacent	Farm 97 Welverdiend	Portion 27	FAR WEST RAND DOLOMITIC WATER ASSOC
Adjacent	Farm 97 Welverdiend	Portion 26	FAR WEST RAND DOLOMITIC WATER ASSOC
Adjacent	Farm 125 Blaauwbank	Portion 2	FAR WEST RAND DOLOMITIC WATER ASSOC
Adjacent	Farm 94 De Beers Kraal	Portion 9	NATIONAL GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA
Adjacent	Farm 94 De Beers Kraal	Portion 8	HARTZER JACOBA HENDRIKA
Adjacent	Farm 94 De Beers Kraal	RE	HOLMES REUBEN CLEMENT
Adjacent	Farm 94 De Beers Kraal	Portion 8	G F OOSTHUIZEN BOERDERY EIENDOMS LTD
Adjacent	Farm 94 De Beers Kraal	Portion 7	BERNHARD PETER URS
Adjacent	Farm 94 De Beers Kraal	Portion 6	BERNHARD PETER URS
Adjacent	Farm 94 De Beers Kraal	Portion 5	VAN ZYL PETRUS ARNOLDUS BERNARDUS VAN ZYL RITA KATHLEEN
Adjacent	Farm 94 De Beers Kraal	Portion 4	RITA KATHLEEN VAN ZYL PETRUS ARNOLDUS BERNARDUS VAN ZYL
Adjacent	Farm 96 Rooipan	Portion 4	NATIONAL GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA
Adjacent	Farm 96 Rooipan	RE	NDITSHENI HERMAN NETSHIDZIVHANI
Adjacent	Farm 96 Rooipan	Portion 5	MEYER CORNELIUS HERMANUS

APPENDIX E

SITE SENSITIVITY VERIFICATION REPORTS

APPENDIX E1: Aquatic Biodiversity

Seelo Alpha Solar (RF) (PTY) Ltd.

Aquatic Biodiversity site verification report for the proposed Seelo Alpha Solar PV, JB Marks Local Municipality, North West

01 MARCH 2023

Prepared by:

Dr. Divan van Rooyen

Nitai Consulting (PTY) Ltd.

147 Bram Fischer Drive

Ferndale

2194

And:

Denisha Ponnusamy

Nitai Consulting (PTY) Ltd.

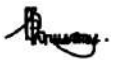
147 Bram Fischer Drive

Ferndale

2194

NITAI CONSULTING

SPECIALIST ENVIRONMENTAL CONSULTING

Authors	Qualification	Date	Signature	Version No.
Dr. Divan van Rooyen	Ph.D. Environmental Science (NWU) (Can. Nat. Sci. Aquatic Science 151272)	01 March 2023		1.0
Denisha Ponnusamy	M.Sc. Hydrology (UniZulu) (Can. Nat. Sci. Environmental Science 155319)	01 March 2023		2.0
Reviewed by	**Qualification**	**Date**	**Signature**	**Version No.**
Antoinette Bootsma	M.Sc. Environmental Science (UNISA) (Pri. Sci. Nat. Ecology & Botany 400222-09)	02 March 2023		3.0
Prepared for	Nemai Consulting (PTY) Ltd. 147 Bram Fischer Drive, Ferndale Randburg, 2194 NEMAI CONSULTING			

1 INTRODUCTION & PROJECT DESCRIPTION

1.1 Background

Seelo Alpha Solar PV (RF) (PTY) Ltd. proposes the construction of a Solar PV facility (known as Seelo Alpha) located on Portion 2 of the farm Rooipan No. 96, approximately 13km north west of the town Carletonville, in the North West Province. The Solar PV will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 240 MW. The proposed development will include PV modules, mounting structures, a substation, Batter Energy Storage System (BESS), site and internal roads, office/parking and a temporary and permanent laydown area.

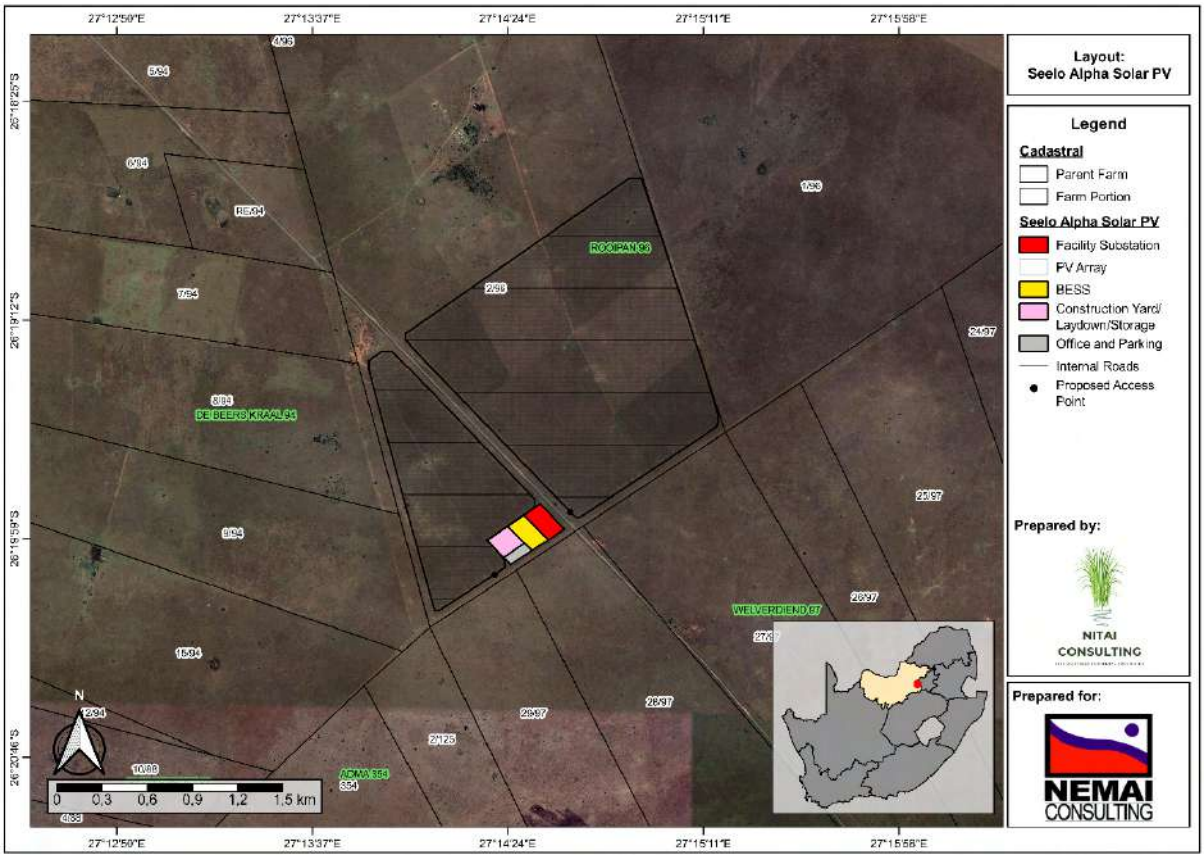


Figure 1: Layout of the Seelo Alpha Solar PV Facility

2 SITE VERIFICATION REPORT: AQUATIC BIODIVERSITY THEME

During the Desktop study for the proposed Seelo Alpha Solar PV development the Environmental Screening tool from Department of Forestry, Fisheries & the Environment (DFFE) was queried. The Screening Tool allows for the generation of a Screening Report referred to in Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended, whereby a Screening Report is required to accompany any application for Environmental Authorisation.

The report identified that Aquatic Biodiversity Theme for the proposed study area is of very high sensitivity (Figure 2). Although no watercourses were identified during the site visit, the area is still classified as very high sensitivity due to the area being within a Strategic Water Source Area (SWSA) (groundwater SWSA, i.e. Westrand Karst Belt) with potentially sensitive groundwater interactions.

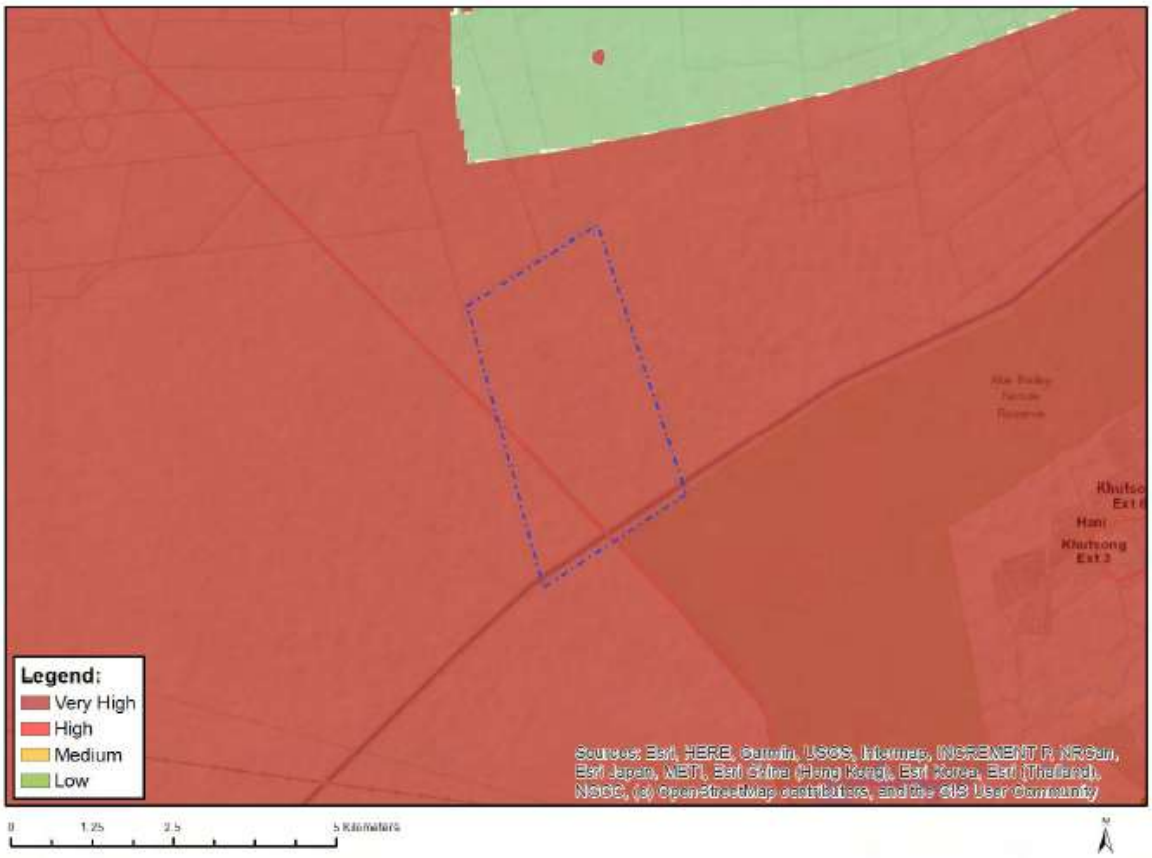


Figure 2: Aquatic Biodiversity Sensitivity Theme from the Department of Forestry, Fisheries & the Environment Screening Tool

3 CURRENT STATUS OF THE SURROUNDING ENVIRONMENT

The proposed site is situated in an agricultural landscape (small and large livestock). The site does not contain any sensitive features in terms of watercourses. The proposed site is overgrazed, and vegetation suggests a disturbed area but not transformed. See Figure 3 below for an overview of the environment within the proposed footprint.

Furthermore, the soil samples collected at sampled areas did not indicate the presence of gleyed wetland soil (Figure 4). The colour (5YR), values (3), and chroma (3) indicated well-drained soil. Soil was mainly composed of Orthic red apedal B Hutton soils.

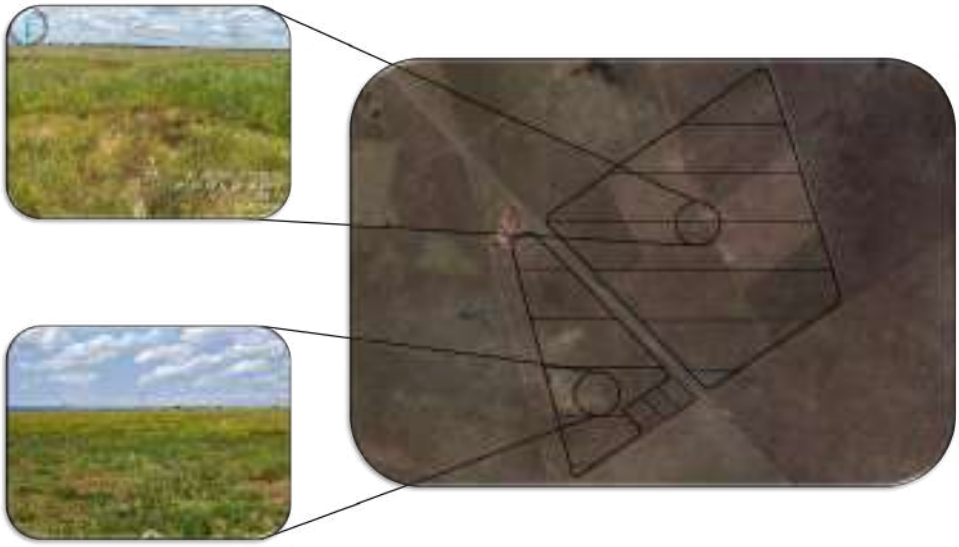


Figure 3: Photographs indicating the general environment within the proposed footprint of Seelo Alpha Solar PV

Figure 4: Orthic, red apedal B, unspecified, Hutton soils sampled within the proposed footprint of Seelo Alpha Solar PV

4 CONCLUSION AND RECOMMENDATIONS

The proposed Seelo Alpha Solar PV facility is situated in the JB Marks Local Municipality within the North West Province. No watercourses were identified to be within the proposed footprint of the PV facility and was validated by the absence of wetland vegetation indicators as well as the absence of wetland soil indicators present. The area was mostly characterised as Hutton soils which was confirmed by soil samples taken with an auger. The soil samples did not conform to the definition of a gleyed wetland soil. In fact, the soil is rather comprised of red apedal Hutton structureless soil and does not fall within the wetland soil category according to the DWS guidelines. The hue (5YR), values (3) and chroma (3) rather reflects well drained soil. The vegetation recorded throughout the site is not associated with wetlands and rather with terrestrial vegetation. Therefore, we can conclude that no wetland or riparian habitat exists within the footprint of the proposed PV facility and that no wetlands or riparian habitat watercourses will be affected.

Although the DFFE Screening report identified the area as a very high sensitivity from an Aquatic Biodiversity Theme perspective, this is due to the area being a SWSA, under the groundwater category. However, it is of the opinion of the specialist that the area does not hold very high sensitivity features (no indication of links between the soil and groundwater could be found) and that the underground aquifers would not be significantly negatively influenced by the proposed development of the Seelo Alpha Solar PV facility since the groundwater recharge is between 26 m and 30 m. Thus, groundwater pollution would be low for the proposed Solar PV development, given that best practice pollution control is implemented as specified in the Geohydrological report.

Since no sensitive hydrological features were recorded on this site, the revised aquatic biodiversity sensitivity is therefore low. More importantly, the specialist recommends that the PV facility may proceed without impact to regional watercourses, given that best practise mitigation measures, particularly in terms of pollution control, are implemented.

APPENDIX 1: REVIEWER LETTER

278 Kei Avenue,

Sinoville Pretoria, 0182

02 March 2023

Dr Divan van Rooyen

Nitai Consulting (PTY) Ltd, 147 Bram Fischer Drive

Ferndale, 2194

Dear Dr van Rooyen,

Aquatic Biodiversity site verification report for the proposed Seelo Alpha Solar PV, JB Marks Local Municipality, North West

This letter serves to confirm that I have completed an external review of the Aquatic Biodiversity assessment for this project. A site visit, undertaken by myself and Dr van Rooyen, on the 30th of January, 2023. The focus of the site visit was to investigate soil and vegetation conditions on focus areas identified as potential wetlands. These focus areas were identified on Google Earth by Dr van Rooyen, based on potential moisture gradients, and were reviewed by myself prior to the site visit.

No wetland plants, or soil wetland indicators, as confirmed by a Munsell soil chart, were recorded on the study site and I therefore support the conclusion that no wetlands or riparian habitat occur on the site earmarked for development.

A review of the written Aquatic Biodiversity assessment report was undertaken on the 2nd March, 2023. I support your conclusion that the proposed PV facility will not impact on watercourses on the study site and recommend that reference to best practice mitigation measures, with a particular focus on pollution control be made.

Please do not hesitate to contact us should any further information be required.

Antoinette Bootsma

Ecologist/Botanist

Pri Sci Nat # 400222-09

APPENDIX E2: Terrestrial Biodiversity

Seelo Alpha Solar (RF) (PTY) Ltd.

Terrestrial Biodiversity site verification report for the proposed Seelo Alpha Solar PV, JB Marks Local Municipality, North West

16 MARCH 2023

Prepared by:

Ms. E. Human

Nitai Consulting (PTY) Ltd.

147 Bram Fischer Drive

Ferndale

2194

NITAI CONSULTING

SPECIALIST ENVIRONMENTAL CONSULTING

Authors	Qualification	Date	Signature	Version No.
Ms. Elzet Human	M-Tech Nature Conservation (TUT) (Pr. Sci. Nat Conservation Science 147031)	16 March 2023		1.0

Reviewed by	Qualification	Date	Signature	Version No.

Nemai Consulting (PTY) Ltd.

147 Bram Fischer Drive, Ferndale

Randburg, 2194

Prepared for

Introduction & Project Description

Background

SeeloAlpha Solar PV (RF) (PTY) Ltd. proposes the construction of a Solar PV facility (known as Seelo Alpha) located on Portion 2 of the farm Rooipan No. 96, approximately 13km north west of the town Carletonville, in the North West Province. The Solar PV will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 240 MW. The proposed development will include PV modules, mounting structures, a substation, Batter Energy Storage System (BESS), site and internal roads, office/parking and a temporary and permanent laydown area.

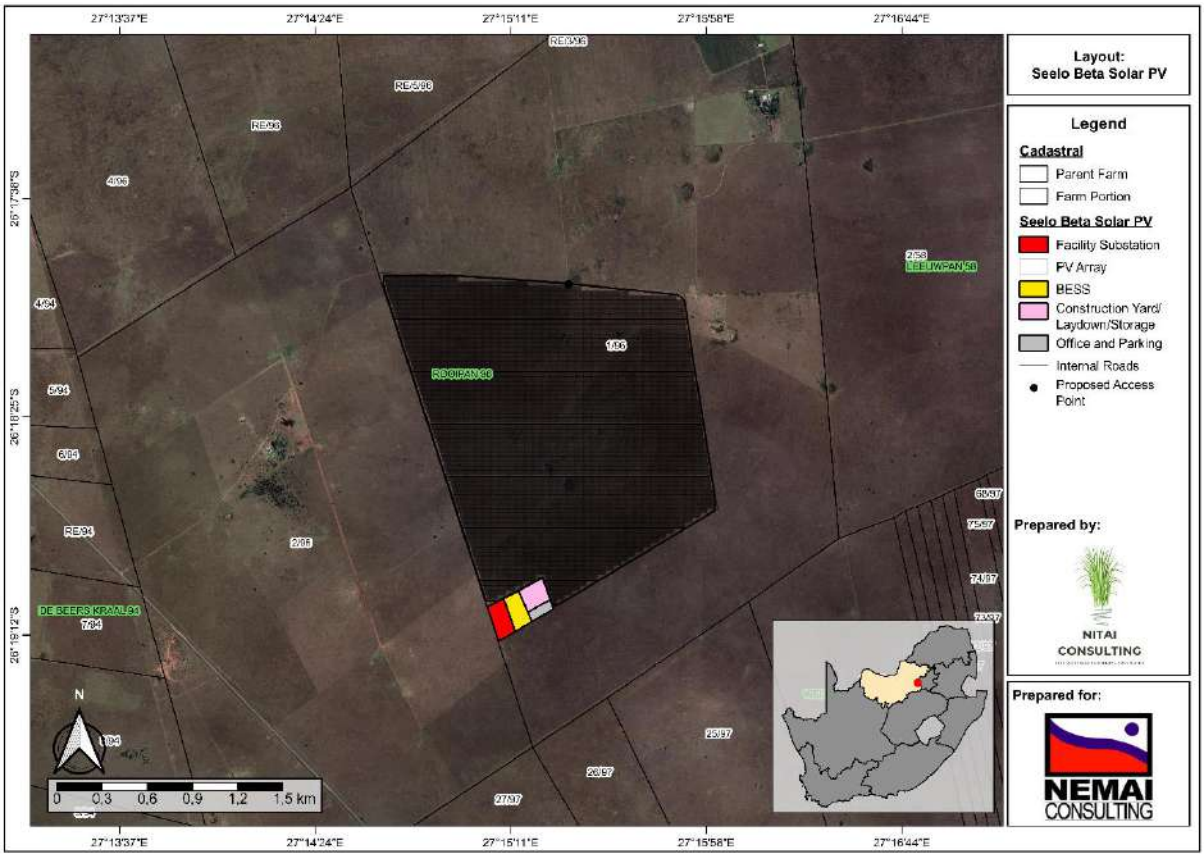


Figure 1: Layout of the Seelo Alpha Solar PV Facility

Site Verification Report: Terrestrial Biodiversity Theme

During the Desktop study for the proposed Seelo Alpha Solar PV development the Environmental Screening tool from Department of Forestry, Fisheries & the Environment (DFFE) was queried. The Screening Tool allows for the generation of a Screening Report referred to in Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended, whereby a Screening Report is required to accompany any application for Environmental Authorisation.

The report identified that Terrestrial Biodiversity Theme for the proposed study area is of low sensitivity (Figure 2).

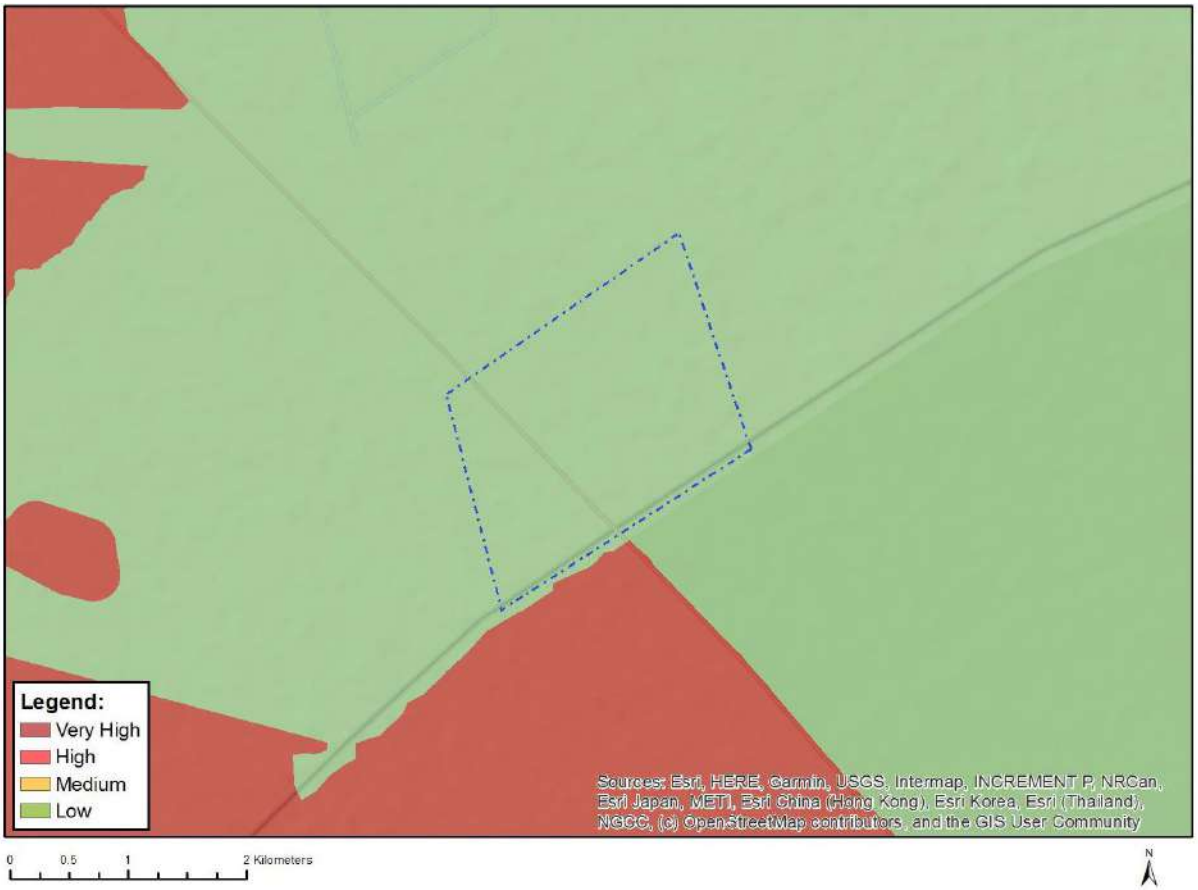


Figure 2: Terrestrial Biodiversity Sensitivity Theme from the Department of Forestry, Fisheries & the Environment Screening Tool

Current Status of the Surrounding Environment

The proposed site is situated in an agricultural landscape (small and large livestock). The site does not contain any sensitive features in ecological corridors. The proposed site is overgrazed, and vegetation suggests a disturbed area but not transformed. See Figure 3 below for an overview of the environment within the proposed footprint.

Figure 3: Photographs indicating the general environment within the proposed footprint of Seelo Alpha Solar PV

Conclusion and Recommendations

The proposed Seelo Alpha Solar PV facility is situated in the JB Marks Local Municipality within the North West Province. No sensitive features were identified to be within the proposed footprint of the PV facility and was validated by the absence of proper ecological functioning. The area was mostly characterised by pioneer vegetation and opportunistic forbs species with low cover.

It is of the opinion of the specialist that the area is indeed of low sensitivity as the DFFE screening tool suggests.

Since no sensitive biodiversity features were recorded on this site, the specialist recommends that the PV facility may proceed without impact to regional watercourses, given that best practise mitigation measures, particularly in terms of rehabilitation, spread of alien invasives and erosion control measures, are implemented.

Introduction & Project Description

Background

Seelo Alpha Solar PV (RF) (PTY) Ltd. proposes the construction of a Solar PV facility (known as Seelo Alpha) located on Portion 2 of the farm Rooipan No. 96, approximately 13km north west of the town Carletonville, in the North West Province. The Solar PV will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 240 MW. The proposed development will include PV modules, mounting structures, a substation, Batter Energy Storage System (BESS), site and internal roads, office/parking and a temporary and permanent laydown area.

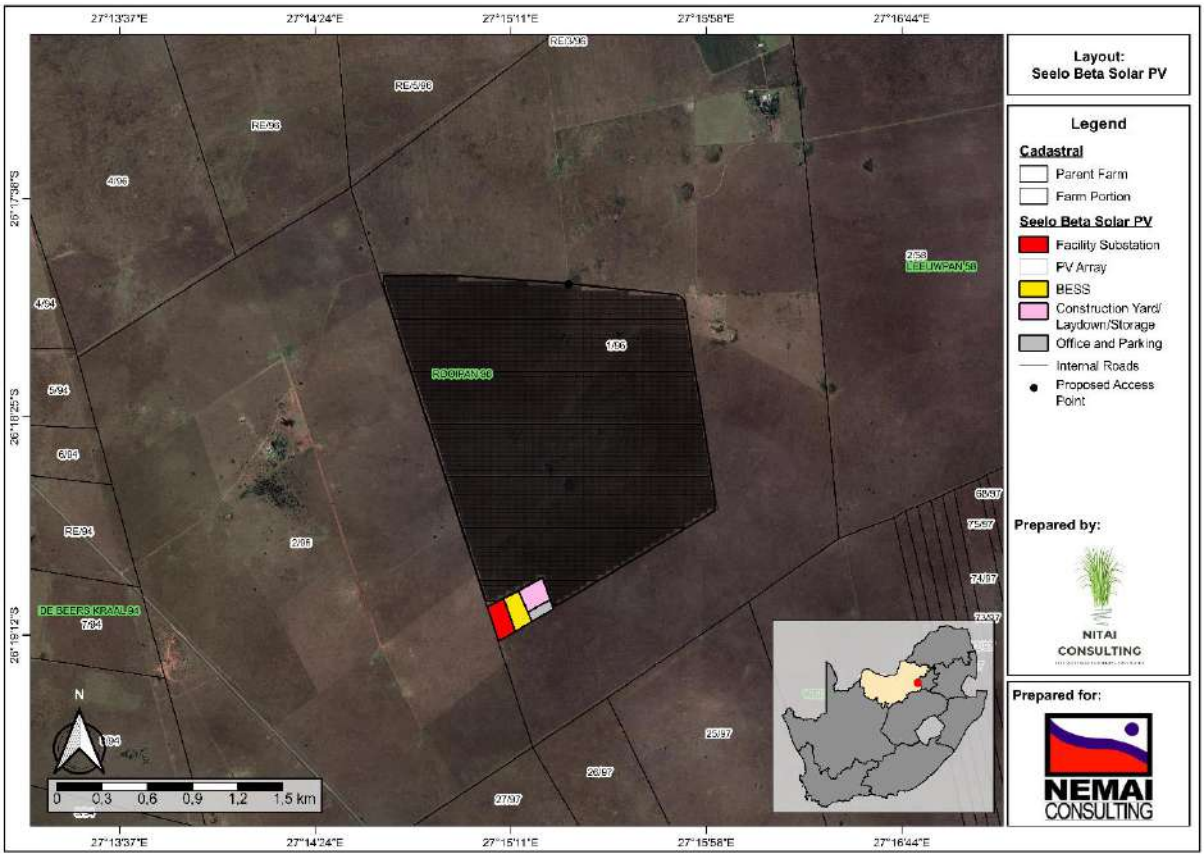


Figure 4: Layout of the Seelo Alpha Solar PV Facility

Site Verification Report: Plant sensitivity Theme

During the Desktop study for the proposed Seelo Alpha Solar PV development the Environmental Screening tool from Department of Forestry, Fisheries & the Environment (DFFE) was queried. The Screening Tool allows for the generation of a Screening Report referred to in Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended, whereby a Screening Report is required to accompany any application for Environmental Authorisation.

The report identified that Plant Sensitivity Theme for the proposed study area is of medium sensitivity due to the potential presence of a sensitive plant species (Figure 2).

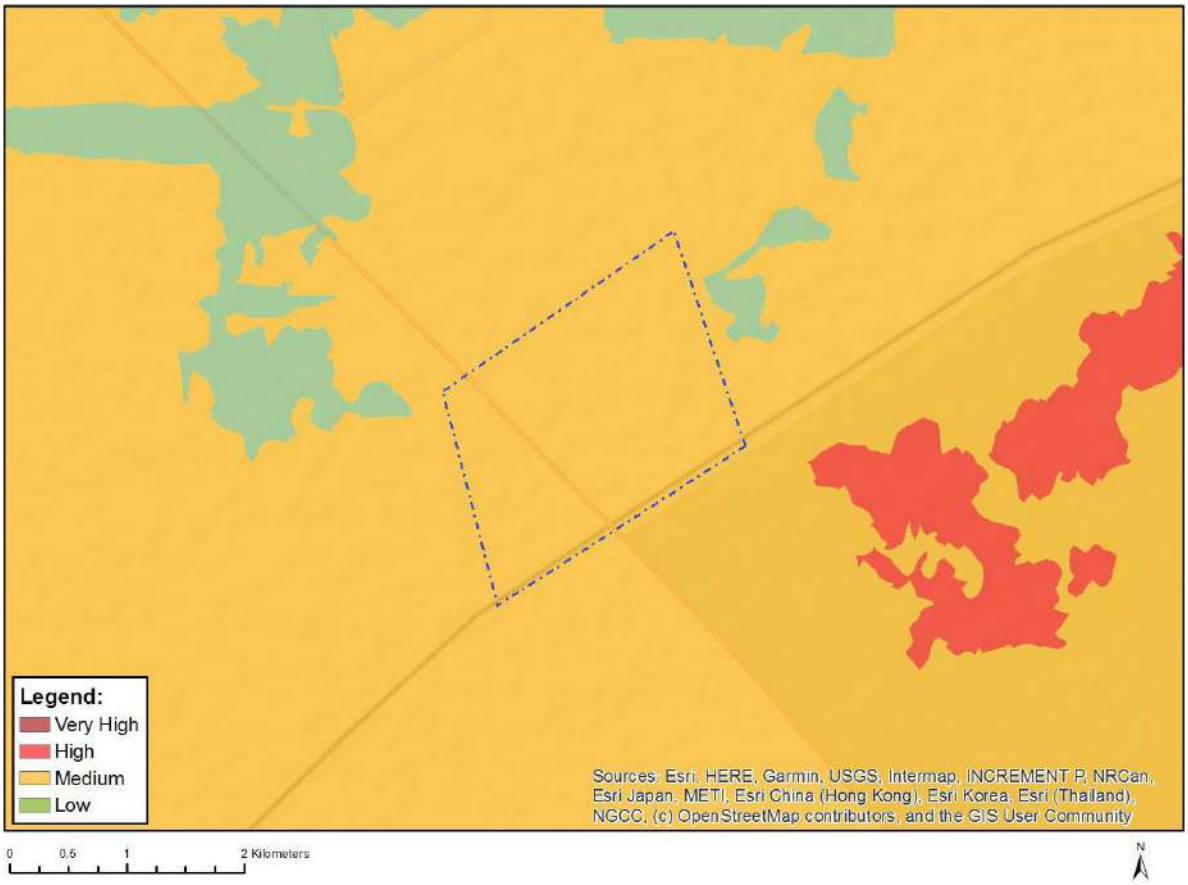


Figure 5: Plant Sensitivity Theme from the Department of Forestry, Fisheries & the Environment Screening Tool

Current Status of the Surrounding Environment

The proposed site is situated in an agricultural landscape (small and large livestock). The site does not contain any sensitive features in ecological corridors. The proposed site is overgrazed, and vegetation suggests a disturbed area but not transformed. See Figure 3 below for an overview of the environment within the proposed footprint.

Figure 6: Photographs indicating the general environment within the proposed footprint of Seelo Alpha Solar PV

Conclusion and Recommendations

The proposed Seelo Alpha Solar PV facility is situated in the JB Marks Local Municipality within the North West Province. No sensitive features were identified to be within the proposed footprint of the PV facility and was validated by the absence of proper ecological functioning, The area was mostly characterised by pioneer vegetation and opportunistic forbs species with low cover.

It is of the opinion of the specialist that the area is low sensitivity and not as the DFFE screening tool suggests as medium.

Since no sensitive biodiversity features were recorded on this site, the specialist recommends that the PV facility may proceed without impact to regional watercourses, given that best practise mitigation measures, particularly in terms of rehabilitation, spread of alien invasives and erosion control measures, are implemented.

Introduction & Project Description

Background

Seelo Alpha Solar PV (RF) (PTY) Ltd. proposes the construction of a Solar PV facility (known as Seelo Alpha) located on Portion 2 of the farm Rooipan No. 96, approximately 13km north west of the town Carletonville, in the North West Province. The Solar PV will comprise several arrays of PV panels and associated infrastructure and will have a contracted capacity of up to 240 MW. The proposed development will include PV modules, mounting structures, a substation, Batter Energy Storage System (BESS), site and internal roads, office/parking and a temporary and permanent laydown area.

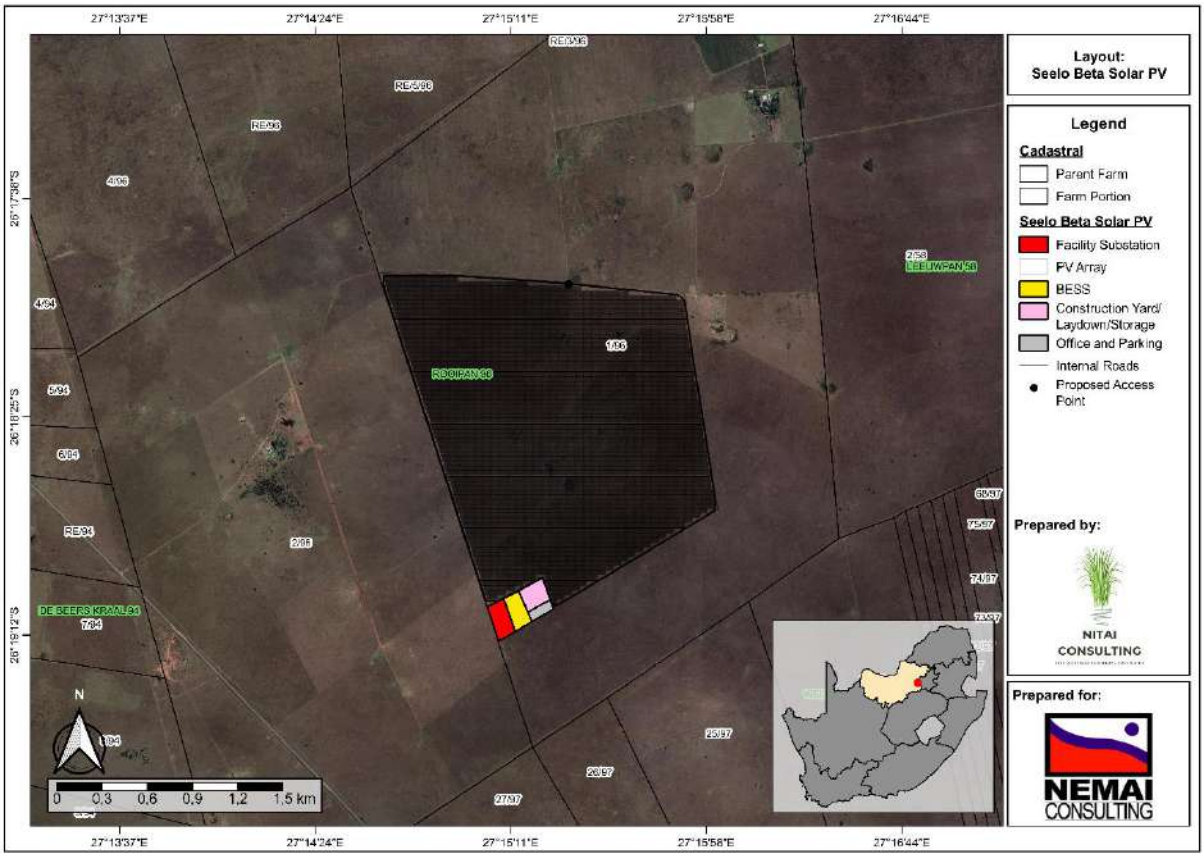


Figure 7: Layout of the Seelo Alpha Solar PV Facility

Site Verification Report: Animal Sensitivity Theme

During the Desktop study for the proposed Seelo Alpha Solar PV development the Environmental Screening tool from Department of Forestry, Fisheries & the Environment (DFFE) was queried. The Screening Tool allows for the generation of a Screening Report referred to in Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended, whereby a Screening Report is required to accompany any application for Environmental Authorisation.

The report identified that the Animal Sensitivity Theme for the proposed study area is of medium sensitivity (Figure 2) due to the potential presence of the following species:

- Aves-Tyto capensis
- Aves-Circus ranivorus
- Aves-Eupodotis senegalensis
- Mammalia-Crocidura maquassiensis
- Mammalia-Hydrictis maculicollis

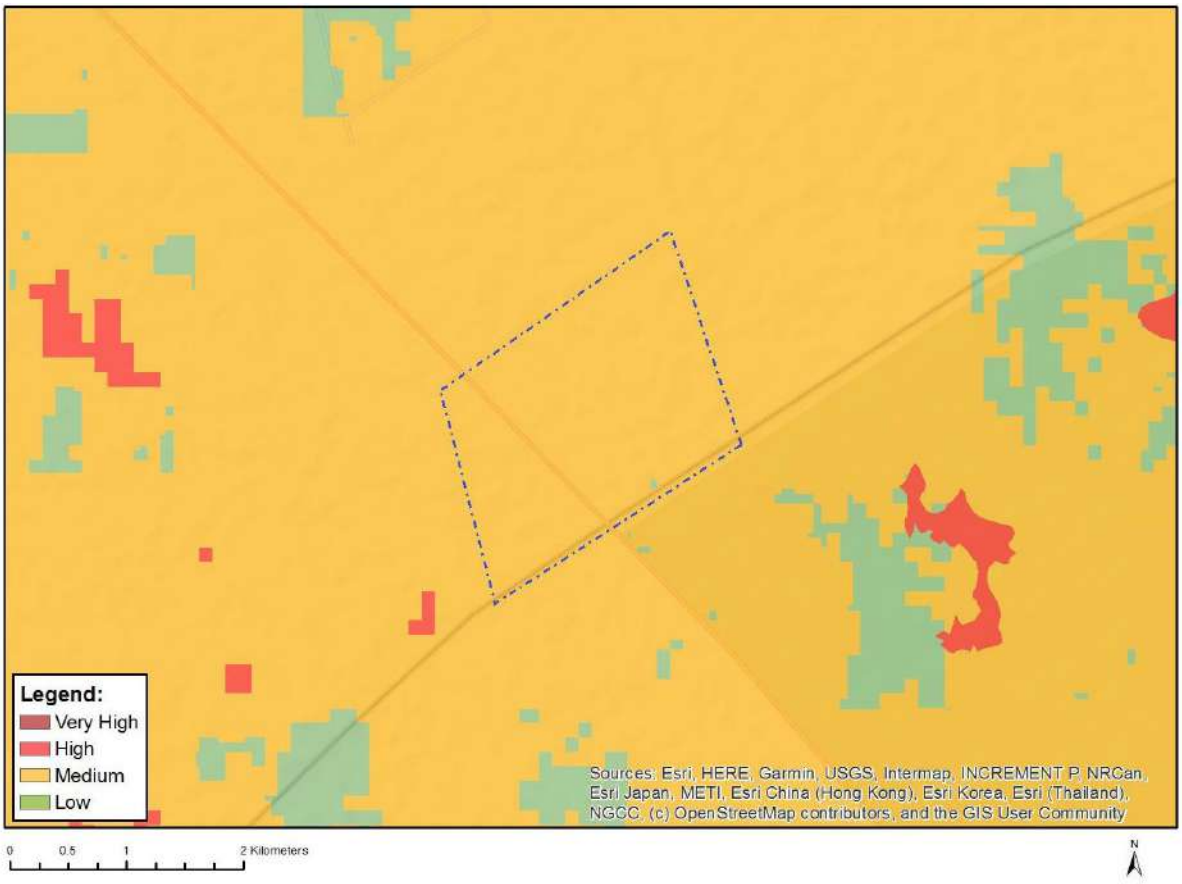


Figure 8: Animal Sensitivity Theme from the Department of Forestry, Fisheries & the Environment Screening Tool

Current Status of the Surrounding Environment

The proposed site is situated in an agricultural landscape (small and large livestock). The site does not contain any sensitive features in ecological corridors. The proposed site is overgrazed, and vegetation suggests a disturbed area but not transformed. See Figure 3 below for an overview of the environment within the proposed footprint.

Figure 9: Photographs indicating the general environment within the proposed footprint of Seelo Alpha Solar PV

Conclusion and Recommendations

The proposed Seelo Alpha Solar PV facility is situated in the JB Marks Local Municipality within the North West Province. No sensitive features were identified to be within the proposed footprint of the PV facility and was validated by the absence of proper ecological functioning, The area was mostly characterised by pioneer vegetation and opportunistic forbs species with low cover.

It is of the opinion of the specialist that the area is low sensitivity and not as the DFFE screening tool suggests as medium.

Since no sensitive biodiversity features were recorded on this site, the specialist recommends that the PV facility may proceed without impact to regional watercourses, given that best practise mitigation measures, particularly in terms of rehabilitation, spread of alien invasives and erosion control measures, are implemented.

APPENDIX E3: Avifauna

Avifauna Site Sensitivity Verification report for the proposed Seelo Alpha Solar Energy Facilities

North West, South Africa

March 2023

CLIENT

Prepared by:

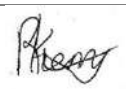
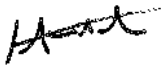
The Biodiversity Company

Cell: +27 81 319 1225

Fax: +27 86 527 1965

info@thebiodiversitycompany.com

wwww.thebiodiversitycompany.com

Report Name	**Avifauna Site Sensitivity Verification report for the Proposed Seelo Alpha Solar Energy Facilities**
Submitted to	NEMAI CONSULTING
Report Writer	**Ryno Kemp** 
	Ryno Kemp is Pr Sci Nat registered (117462/17) in Zoological Science and is finalising his PhD in Zoology from the University of Pretoria. Ryno is a qualified Avifauna specialist with just over a year's experience, three years of experience in conservation and more than eight years of scientific research experience across South Africa.
Report Reviewer	**Andrew Husted** 
	Andrew Husted is Pr Sci Nat registered (400213/11) in the following fields of practice: Ecological Science, Environmental Science and Aquatic Science. Andrew is an Aquatic, Wetland and Biodiversity Specialist with more than 13 years' experience in the environmental consulting field.
Declaration	The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, 2017. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principals of science.

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1 Introduction

1.1 Background

The Biodiversity Company was appointed to undertake an Avifauna Site Sensitivity Verification for the proposed development of the Seelo Alpha 240MW Solar PV and Battery Energy Storage Systems (BESS) project near the town of Carletonville, in the North West Province (the "Project"). The electricity generated by the project will be injected into the existing Eskom 132 kV distribution system. The Applicant intends to bid for the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid windows. The Project Area of Influence (PAOI) has been defined (or delineated) as per the proposed development area.

The project is located in the eastern part of the North West Province (at the boundary between North West and Gauteng). It falls within the Dr Kenneth Kaunda District Municipality (DKKDM) and the JB Marks Local Municipality (JBMLM). The site is located approximately 13km north-west of the town of Carletonville. The D331 road bisects the site.

The property earmarked for the Project covers a combined area of approximately 898 ha, of which the buildable area determined by the engineering team is approximately 355 ha.

Table 1-1 Details of the affected properties

Farm Details	21-digit Surveyor General No.
Portion 2 of Farm 96 (Rooipan)	T0IQ00000000009600002

Components of the Proposed Solar PV Plant

The Project consists of the following systems, sub-systems or components (amongst others):

- PV panel arrays, which are the subsystems which convert incoming sunlight into electrical energy;
- Mounting structures to support the PV panels;
- On-site inverters to convert DC to facilitate AC connection between the solar energy facility and electricity grid;
- BESS);
- IPP substation;
- Eskom switching substation1;
- Cabling between the Project's components, to be laid underground (where practical);
- Administration Buildings (Offices);
- Workshop areas for maintenance and storage;
- Temporary and permanent laydown areas;
- Internal access roads and perimeter fencing of the footprint;
- High Voltage (HV) Transformers; and
- Security Infrastructure.

The approach was informed by the Environmental Impact Assessment Regulations. 2014 (GNR 326, 7 April 2017) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The approach has taken cognisance of the recently published Government Notices 320 (20 March 2020) in

terms of NEMA, dated 20 March and 30 October 2020: "*Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation*" (Reporting Criteria).

After considering the findings and recommendations provided by the specialist herein, this report should inform and guide the Environmental Assessment Practitioner (EAP) and regulatory authorities, enabling informed decision making regarding the proposed project's ecological viability.

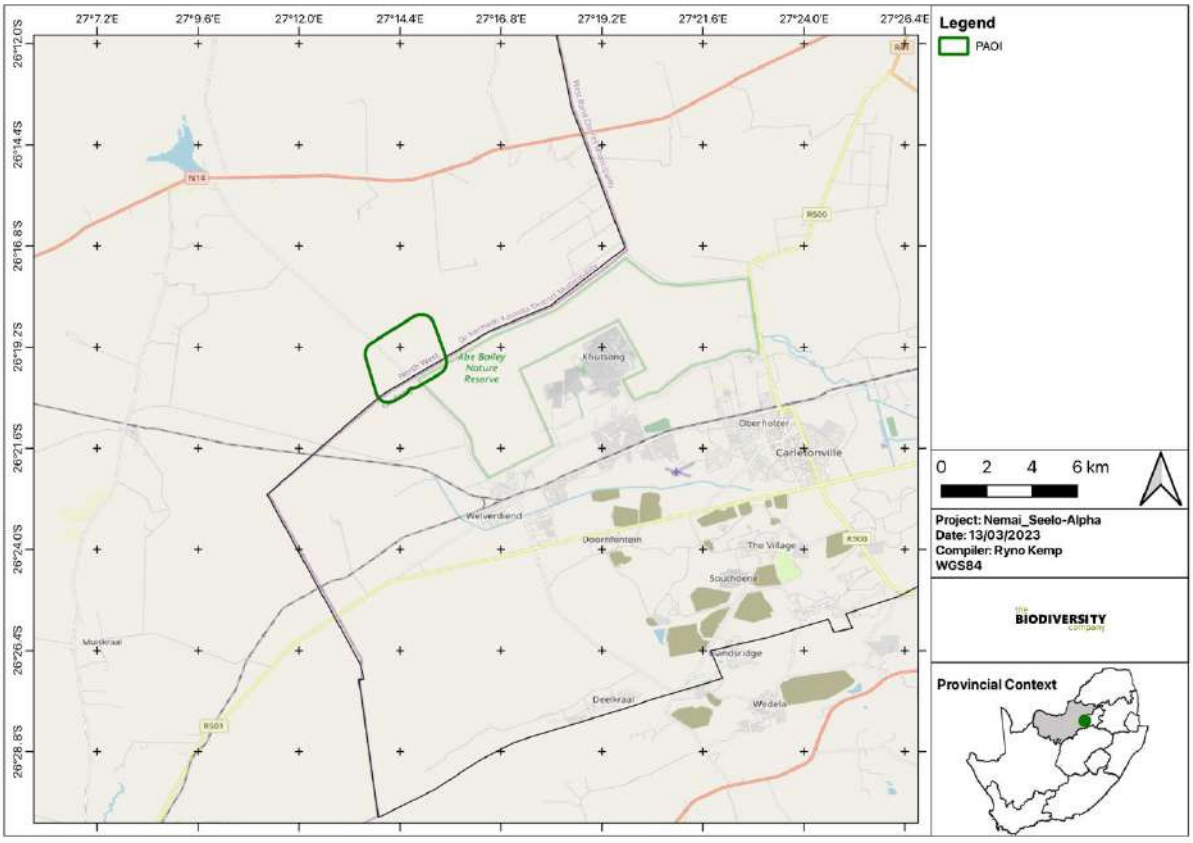


Figure 1-1 Proposed location of the project area in relation to the nearby towns

1.2 Scope of Work

The principal aim of the assessment was to provide information to guide the risk of the proposed activity to the ecological communities of the associated ecosystems and the potential impact of the proposed infrastructure within the project area. This was achieved through the following:

- Desktop assessment to identify the relevant ecologically important geographical features within the project area;
- Desktop assessment to compile an expected species list and identify possible threatened avifauna species that occur within the project area;
- Identify how the proposed project impacts based on the site assessment and desktop information and evaluate the level of risk of these potential impacts;
- Identify specific regions and avian habitats in and outside the study area that could be regarded as sensitive or which may harbour Species of Conservation Concern (SCC); and
- Identify significant bird breeding, roosting or feeding sites and possible avian flight paths or migratory routes.

1.3 Assumptions and Limitations

The following assumptions and limitations are applicable to this assessment:

- The assessment area was based on the area provided by the client. Any alterations to the footprint and/or missing GIS information pertaining to the assessment area would have affected the area surveyed;
- The PAOI was based on the project footprint area as provided by the client, as well as a 500 m assessment area around the proposed SEF;
- The findings expressed in this report are based on a three-day field survey during February 2023. The site visit was conducted during summer; all seasonal and nomadic movements or altitudinal migrations would likely be present during the field study;
- Bird behaviour and ecology are unpredictable, like any other organisms;
- The impact assessment included is for a site verification report alone and is based on desktop information as well as the information from the screening assessment and a 3-day site visit;
- The SEI included in the field summary section is preliminary; and
- Whilst every effort is made to cover as much of the site as possible, representative sampling is completed. By its nature, it is possible that some bird species present on site were not recorded during the field investigations.

1.4 Key Legislative Requirements

The legislation, policies and guidelines listed below in Table 1-2Table 1-2 A list of key legislative requirements relevant to biodiversity and conservation in the North West Province apply to the current project regarding biodiversity and ecological support systems. The list below, although extensive, may not be complete, and other legislation, policies and guidelines may apply in addition to those listed below.

Table 1-2 A list of key legislative requirements relevant to biodiversity and conservation in the North West Province

Region	Legislation
International	Convention on Biological Diversity (CBD, 1993)
	The Convention on Wetlands (RAMSAR Convention, 1971)
	The United Nations Framework Convention on Climate Change (UNFCC,1994)
	The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 1973)
	The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention, 1979)
National	Constitution of the Republic of South Africa (Act No. 108 of 2006)
	The National Environmental Management Act (NEMA) (Act No. 107 of 1998)
	The National Environmental Management Act (NEMA) (Act No. 107 of 1998) Section 24, No 42946 (January 2020)
	The National Environmental Management Act (NEMA) (Act No. 107 of 1998) Section 24, No 43110 (March 2020)
	The National Environmental Management Protected Areas Act (Act No. 57 of 2003)
	The National Environmental Management Biodiversity Act (Act No. 10 of 2004)
	The National Environmental Management: Waste Act, 2008 (Act 59 of 2008);
	The Environment Conservation Act (Act No. 73 of 1989) and associated EIA Regulations
	National Environmental Management Air Quality Act (No. 39 of 2004)
	National Protected Areas Expansion Strategy (NPAES)

	Environmental Conservation Act (Act No. 73 of 1983)
	Natural Scientific Professions Act (Act No. 27 of 2003)
	National Biodiversity Framework (NBF, 2009)
	National Forest Act (Act No. 84 of 1998)
	National Veld and Forest Fire Act (101 of 1998)
	National Spatial Biodiversity Assessment (NSBA)
	World Heritage Convention Act (Act No. 49 of 1999)
	National Heritage Resources Act, 1999 (Act 25 of 1999)
	Municipal Systems Act (Act No. 32 of 2000)
	Alien and Invasive Species Regulations, 2014
	South Africa's National Biodiversity Strategy and Action Plan (NBSAP)
	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)
	Sustainable Utilisation of Agricultural Resources (Draft Legislation).
	White Paper on Biodiversity
	National Water Act (NWA, 1998)
Provincial	North-West Biodiversity Sector Plan of 2015 (READ, 2015)

2 Methods

2.1 Desktop Assessment

The desktop assessment was principally undertaken using a Geographic Information System (GIS) to access the latest available spatial datasets in order to develop digital cartographs and species lists. These datasets and their date of publishing are provided below.

2.1.1 Ecologically Important Landscape Features

Existing ecologically relevant data layers were incorporated into a GIS to establish how the proposed project might interact with any ecologically important entities. Emphasis was placed around the following spatial datasets:

- National Biodiversity Assessment 2018 (Skowno et al, 2019) (NBA) – The purpose of the NBA is to assess the state of South Africa's biodiversity based on the best available science, to understand trends over time and inform policy and decision-making across a range of sectors. The NBA deals with all three components of biodiversity: genes, species and ecosystems, and assesses biodiversity and ecosystems across terrestrial, freshwater, estuarine and marine environments. The two headline indicators assessed in the NBA are:
    - Ecosystem Threat Status – an indicator of an ecosystem's wellbeing based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition.
    - Ecosystem Protection Level – an indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP), or Not Protected (NP) based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. NP, PP or MP ecosystem types are collectively called under-protected ecosystems.
- Protected areas:

- South Africa Protected Areas Database (SAPAD) (DFFE, 2022) – The (SAPAD) Database contains spatial data for the conservation of South Africa. It includes spatial and attribute information for formally protected areas and areas with less formal protection. SAPAD is updated continuously and forms the basis for the Register of Protected Areas, a legislative requirement under the National Environmental Management: Protected Areas Act, Act 57 of 2003.
- National Protected Areas Expansion Strategy (NPAES) (DFFE, 2021) – The NPAES provides spatial information on areas suitable for terrestrial ecosystem protection. These focus areas are large, intact and unfragmented and therefore highly important for biodiversity, climate resilience and freshwater protection.

- North West Biodiversity Sector Plan - The spatial component of the Biodiversity Sector Plan is based on systematic biodiversity planning undertaken by READ. The purpose of a Biodiversity Sector Plan is to inform land use planning, environmental assessments, land and water use authorisations, and natural resource management, undertaken by a range of sectors whose policies and decisions impact biodiversity. This is done by providing a map of biodiversity priority areas, referred to as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), with accompanying land use planning and decision-making guidelines (READ, 2015).

- This is done by providing a map of biodiversity priority areas, referred to as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), with accompanying land-use planning and decision-making guidelines (WCDEAP, 2017).

- Important Bird and Biodiversity Areas (IBAs) (BirdLife South Africa, 2015) – IBAs constitute a global network of over 13 500 sites, of which 112 are found in South Africa. IBAs are sites of global significance for bird conservation, identified through multi-stakeholder processes using globally standardised, quantitative and scientifically agreed criteria; and

- Hydrological Setting:

  - South African Inventory of Inland Aquatic Ecosystems (SAIIAE) (Van Deventer *et al,* 2018) – A South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was established during the National Biodiversity Impact Assessment of 2018. It is a collection of data layers that represent the extent of the river and inland wetland ecosystem types and pressures on these systems.

  - Strategic Water Source Areas (SWSAs) (Lotter *et al*, 2021) – SWSAs are defined as areas of land that supply a quantity of mean annual surface water runoff in relation to their size and, therefore, contribute considerably to the overall water supply of the country. These are key ecological infrastructure assets, and the adequate protection of surface water SWSAs areas is vital for national security because a lack of water security will compromise national security and human wellbeing.

  - National Freshwater Ecosystem Priority Area (NFEPA) (Nel *et al.,* 2011) – The NFEPA database provides strategic spatial priorities for conserving the country's freshwater ecosystems and associated biodiversity and supporting sustainable use of water resources.

2.1.2 Expected Avifauna Species

The following resources were considered during the desktop assessment and for the compilation of the expected species list:

- South African Bird Atlas Project 2 (SABAP2). Full protocol data from 9 relevant pentads (2610_2710, 2610_2715, 2610_2720, 2615_2710, 2615_2715, 2615_2720, 2620_2710, 2620_2715, 2620_2720) were used to compile the expected species list.
- Coordinated Water Bird Counts (CWAC) – The Animal Demography Unit (ADU) launched the Coordinated Waterbird Counts (CWAC) project in 1992 as part of South Africa's commitment to international waterbird conservation. The primary aim of CWAC is to act as an effective long-term waterbird monitoring tool. This is done through a programme of regular mid-summer and mid-winter censuses at several wetlands. The database is located at https://cwac.birdmap.africa/index.php.
- Coordinated Avifaunal Roadcounts (CAR) – The Coordinated Avifaunal Roadcounts (CAR) were pioneered in July 1993 in a joint Cape Bird Club/ADU project to monitor the populations of two threatened species: *Anthropoides paradiseus* (Blue Crane) and *Neotis denhamii* (Denham's Bustard). It monitors 36 species of large terrestrial birds along 350 fixed routes covering over 19 000 km using a standardised method.
- Important Bird and Biodiversity Areas (BirdLife South Africa, 2015) – Important Bird and Biodiversity Areas (IBAs) constitute a global network of over 13 500 sites, of which 112 are found in South Africa. IBAs are sites of global significance for bird conservation, identified through multi-stakeholder processes using globally standardised, quantitative and scientifically agreed criteria.
- Hockey *et al*. (2005), Roberts Birds of Southern Africa (7th edition). The primary source for species identification, geographic range, and life history information.
- Sinclair and Ryan (2010), Birds of Africa. Secondary source for identification.
- Taylor *et al*. (2015), Eskom Red Data Book of Birds of South Africa, Lesotho, and Swaziland. They are used for conservation status, nomenclature, and taxonomical ordering.

2.1.3 Field Survey

The fieldwork component comprised a single summer (wet season) survey conducted between the 17th and 19th of February, 2023. Sampling consisted of standardised point counts within the PAOI around the property boundary and random diurnal incidental surveys. Standardised point counts (Buckland *et al*, 1993) were conducted to gather data on the species composition and relative abundance of species within the broad habitat types identified. The standardised point count technique was utilised (Cumming & Henry, 2019). Each point count was run over a 10 min period. The horizontal detection limit was set at 100 m. At each point, the observer would document the date, start time, and end time, habitat, numbers of each species, detection method (seen or heard), behaviour (perched or flying) and general notes on habitat and nesting suitability for important conservation species (**Error! Reference source not found.**). Diurnal incidental searches were conducted to supplement the species inventory with cryptic and elusive species that may not be detected during the rigid point count protocol. This involved opportunistic species sampling between point count periods, random meandering, and road cruising.

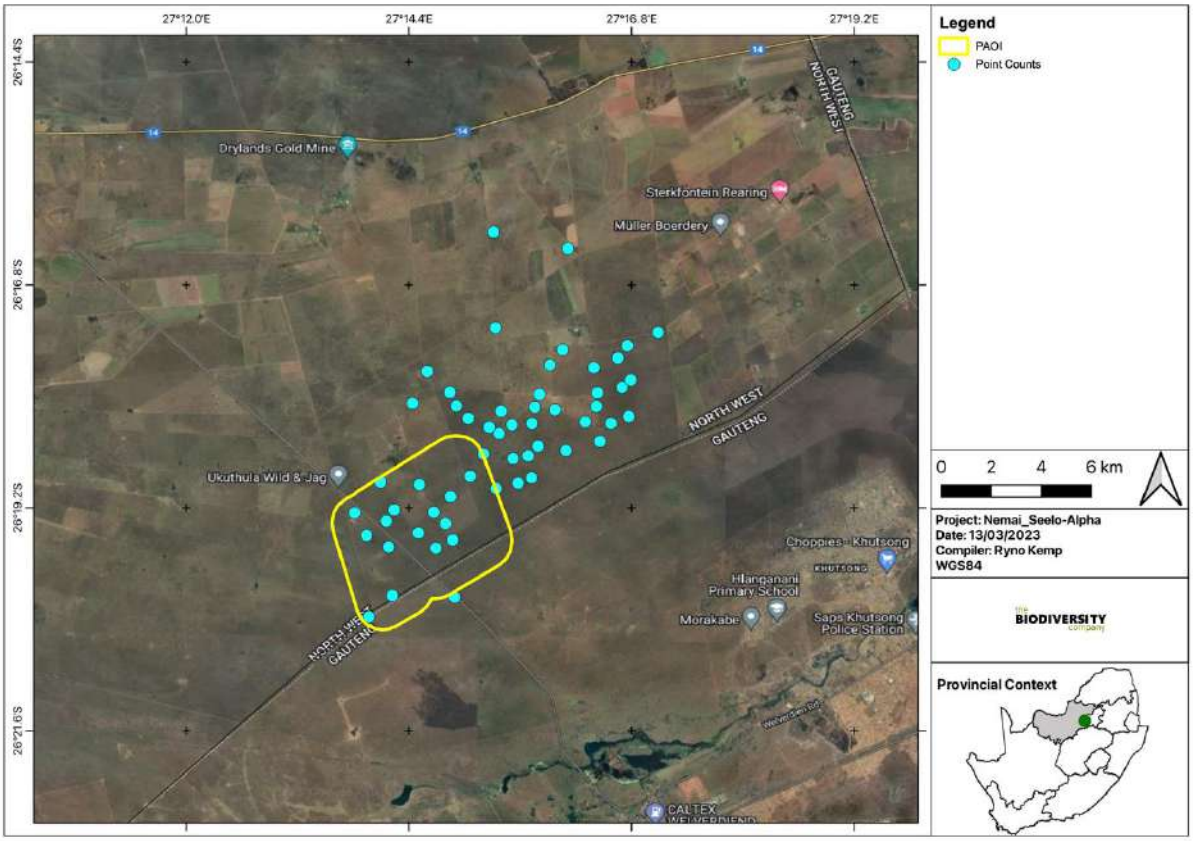


Figure 2-1 Map illustrating the points visited during the field surveys

2.2 Avifauna Site Ecological Importance (SEI)

The different habitat types within the assessment area were delineated and identified based on observations during the field assessment and available satellite imagery. These habitat types were assigned Ecological Importance (EI) categories based on their ecological integrity, conservation value, the presence of species of conservation concern and their ecosystem processes.

Site Ecological Importance (SEI) is a function of the Biodiversity Importance (BI) of the receptor (e.g., SCC, the vegetation/fauna community or habitat type present on the site) and Receptor Resilience (RR) (its resilience to impacts) as follows.

BI is a function of Conservation Importance (CI) and the receptor's Functional Integrity (FI). The CI and FI ratings criteria are provided in Table 2-1 and Table 2-2, respectively.

Table 2-1 Summary of Conservation Importance criteria

Conservation Importance	Fulfilling Criteria
Very High	Confirmed or highly likely occurrence of Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Extremely Rare or CR species that have a global extent of occurrence (EOO) of < 10 km^2. Any area of natural habitat of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent) of natural habitat of an EN ecosystem type. Globally significant populations of congregatory species (> 10% of global population).
High	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km^2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A. If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining.

Conservation Importance	Fulfilling Criteria
	Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (> 0.1%) of natural habitat of VU ecosystem type. Presence of Rare species. Globally significant populations of congregatory species (> 1% but < 10% of global population).
Medium	Confirmed or highly likely occurrence of populations of Near Threatened (NT) species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals. Any area of natural habitat of threatened ecosystem type with status of VU. Presence of range-restricted species. > 50% of receptor contains natural habitat with potential to support SCC.
Low	No confirmed or highly likely populations of SCC. No confirmed or highly likely populations of range-restricted species. < 50% of receptor contains natural habitat with limited potential to support SCC.
Very Low	No confirmed and highly unlikely populations of SCC. No confirmed and highly unlikely populations of range-restricted species. No natural habitat remaining.

Table 2-2 Summary of Functional Integrity criteria

Functional Integrity	Fulfilling Criteria
Very High	Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types. High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. No or minimal current negative ecological impacts, with no signs of major past disturbance.
High	Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types. Good habitat connectivity, with potentially functional ecological corridors and a regularly used road network between intact habitat patches. Only minor current negative ecological impacts, with no signs of major past disturbance and good rehabilitation potential.
Medium	Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type or > 20 ha for VU ecosystem types. Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches. Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.
Low	Small (> 1 ha but < 5 ha) area. Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy used road network surrounds the area. Low rehabilitation potential. Several minor and major current negative ecological impacts.
Very Low	Very small (< 1 ha) area. No habitat connectivity except for flying species or flora with wind-dispersed seeds. Several major current negative ecological impacts.

BI can be derived from a simple matrix of CI and FI as provided in Table 2-3.

Table 2-3 Matrix used to derive Biodiversity Importance from Functional Integrity and Conservation Importance

Biodiversity Importance (BI)		Conservation Importance (CI)				
		Very high	High	Medium	Low	Very low
Functional Integrity (FI)	Very high	Very high	Very high	High	Medium	Low
	High	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	Low	Medium	Medium	Low	Low	Very low
	Very low	Medium	Low	Very low	Very low	Very low

The fulfilling criteria to evaluate RR are based on the estimated recovery time required to restore an appreciable portion of functionality to the receptor, as summarised in Table 2-4.

Table 2-4 Summary of Receptor Resilience criteria

Resilience	Fulfilling Criteria
Very High	Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.
High	Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.
Medium	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.
Low	Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.
Very Low	Habitat that is unable to recover from major impacts, or species that are unlikely to: (i) remain at a site even when a disturbance or impact is occurring, or (ii) return to a site once the disturbance or impact has been removed.

After the BI and RR determination, the SEI can be ascertained using the matrix provided in Table 2-5.

Table 2-5 Matrix used to derive Site Ecological Importance from Receptor Resilience and Biodiversity Importance

Site Ecological Importance		Biodiversity Importance				
		Very high	High	Medium	Low	Very low
Receptor Resilience (RR)	Very Low	Very high	Very high	High	Medium	Low
	Low	Very high	Very high	High	Medium	Very low
	Medium	Very high	High	Medium	Low	Very low
	High	High	Medium	Low	Very low	Very low
	Very High	Medium	Low	Very low	Very low	Very low

Interpretation of the SEI in the context of the proposed development activities is provided in Table 2-6.

Table 2-6 Guidelines for interpreting Site Ecological Importance in the context of the proposed development activities

Site Ecological Importance	Interpretation in relation to proposed development activities
Very High	Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e., last remaining populations of species, last remaining good condition patches of ecosystems/unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
High	Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted, limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.
Medium	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Low	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Very Low	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

3 Results

3.1 Desktop Baseline

3.1.1 Ecologically Important Landscape Features

The following features describe the general area and habitat. This assessment is based on spatial data from various sources, such as the provincial environmental authority and SANBI. The desktop analysis and its relevance to this project are listed in **Error! Reference source not found.**.

Table 3-1 Summary of the relevance of the Project Area of Influence (PAOI) to ecologically important landscape features

Desktop Information Considered	Relevant/Irrelevant
North West Biodiversity Sector Plan	Irrelevant – The PAOI does not overlap with the North West Biodiversity Sector Plan
Ecosystem Threat Status	Relevant – Overlaps with Least Concern Ecosystems
Ecosystem Protection Level	Relevant – The PAOI overlaps with Poorly Protected Ecosystem
Protected Areas	Relevant – The PAOI are next to Abe Bailey Provincial Nature Reserve
National Protected Areas Expansion Strategy	Irrelevant – Does not overlap with any Protected Areas Expansion Strategy
Important Bird and Biodiversity Areas	Irrelevant – The PAOI is located approximately 30km from the IBA
Coordinated Avifaunal Road Count	Relevant - The PAOI is located next to a Coordinated Avifaunal Road Count
Coordinated Waterbird Count	Relevant – The PAOI is in close proximity to 3 Coordinated Water Count Sites
Strategic Water Source Areas	Irrelevant - The PAOI does not overlap any SWSA
South African Inventory of Inland Aquatic Ecosystems	Irrelevant - The PAOI does not overlap any CR Inland Aquatic Ecosystem, only a non-perennial river
National Freshwater Priority Area	Irrelevant – The PAOI does not overlap with FEPA wetlands and FEPA rivers
Powerline Corridor	Relevant – The PAOI overlaps with the Strategic Transmission Corridors
Renewable Energy Development Zone (REDZ)	Irrelevant – The PAOI is not situated within any of the Renewable Energy Development Zone
Renewable Energy EIA Application Database (REEA)	Relevant – Only a few approved projects occur within 30 km of the boundary of the PAOI.

3.2 Avifauna Species of Conservation Concern

Based on the South African Bird Atlas Project 2 (SABAP2) database, 320 bird species have the potential to occur in the vicinity of the assessment area, with 20 species listed as SCC on a regional or global scale (Table 3-2). Only one SCC was observed during the field investigation; however, three other species have a high likelihood of occurring, and five have a medium likelihood of occurring at the proposed development.

Table 3-2 Avifauna species of conservation concern that are expected to occur within the proposed project area and vicinity. EN = Endangered, NT = Near Threatened, LC = Least Concern, and VU = Vulnerable.

Common Name	Scientific Name	Conservation Status		Likelihood of Occurrence
		Regional	Global (IUCN)	
Secretarybird	*Sagittarius serpentarius*	VU	EN	High
Blue Crane	*Anthropoides paradiseus*	NT	VU	Confirmed
Maccoa Duck	*Oxyura maccoa*	NT	EN	Low
Verreaux's Eagle	*Aquila verreauxii*	NA	LC	Low

Lanner Falcon	*Falco biarmicus*	VU	LC	Medium
Red-footed Falcon	*Falco vespertinus*	NT	VU	Low
Greater Flamingo	*Phoenicopterus roseus*	NT	LC	Medium
Lesser Flamingo	*Phoeniconaias minor*	NT	NT	Medium
African Marsh Harrier	*Circus ranivorus*	EN	LC	High
Pallid Harrier	*Circus macrourus*	NT	NT	Low
Half-collared Kingfisher	*Alcedo semitorquata*	NT	LC	Low
African Grass Owl	*Tyto capensis*	VU	LC	Medium
Black-winged Pratincole	*Glareola nordmanni*	NT	NT	Low
Curlew Sandpiper	*Calidris ferruginea*	LC	NT	Low
Abdim's Stork	*Ciconia abdimii*	NT	LC	Low
Yellow-billed Stork	*Mycteria ibis*	EN	LC	Medium
Caspian Tern	*Hydropogne caspia*	VU	LC	Low
Cape Vulture	*Gyps coprotheres*	EN	VU	High
Lappet-faced Vulture	*Torgos tracheliotos*	EN	EN	Low
White-backed Vulture	*Gyps africanus*	CR	CR	Low

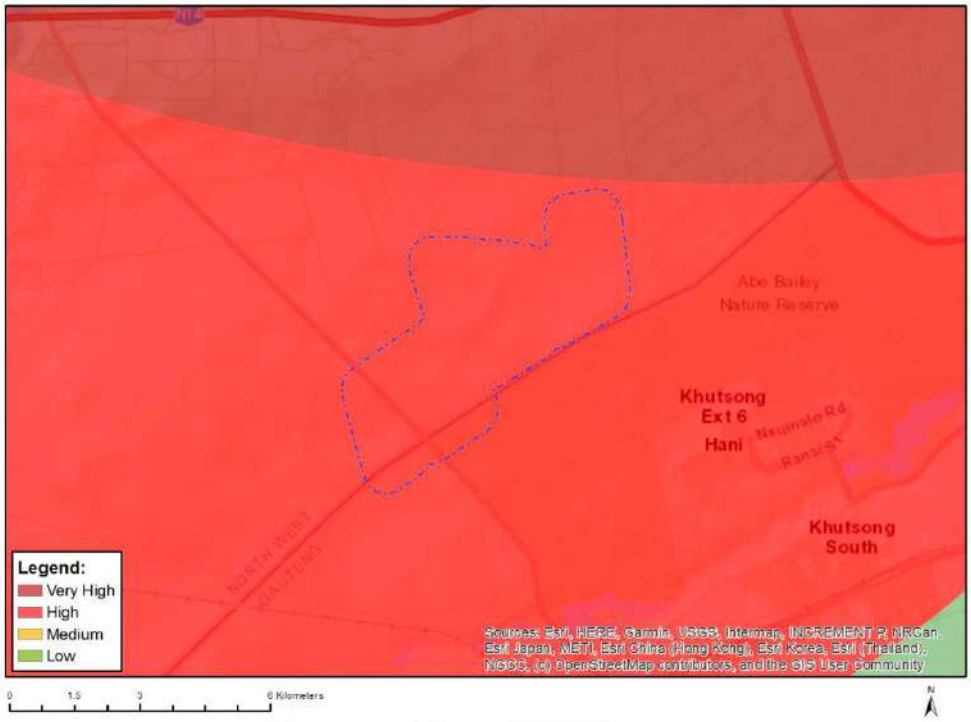
3.3 Site Sensitivity

This section provides the sensitivity of the PAOI within an avifauna community context. The section is divided into the National Web-based Environmental Screening Tool Report outputs and the Site Ecological Importance, as determined using the Species Environmental Assessment guidelines (SANBI, 2020).

3.3.1 Environmental Screening Tool

As indicated by the screening tool report for the project area, the avian theme was derived to be “High” sensitivity due to the proximity of a Vulture restaurant. However, the avian theme is mainly used for wind farm developments (Figure 3-1). Therefore, the animal species and terrestrial biodiversity themes should be used for PV projects (Figure 3-2 and Figure 3-3). As indicated in the screening report, the Animal Species Theme sensitivity was derived to be ‘medium’ sensitivity due to the likely presence of the African Marsh Harrier (Circus ranivorous) and African Grass Owl (*Tyto capensis*). The screening tool also highlights White-bellied Bustard (*Eupodotis senegalensis*) as a potential species to occur at the site, but it is unlikely for the species to be observed in the wider area of the project area. As indicated by the screening tool report for the project area, the terrestrial biodiversity theme sensitivity was derived to be ‘Low’ with a small portion as “Very High” sensitivity.

MAP OF RELATIVE AVIAN THEME SENSITIVITY



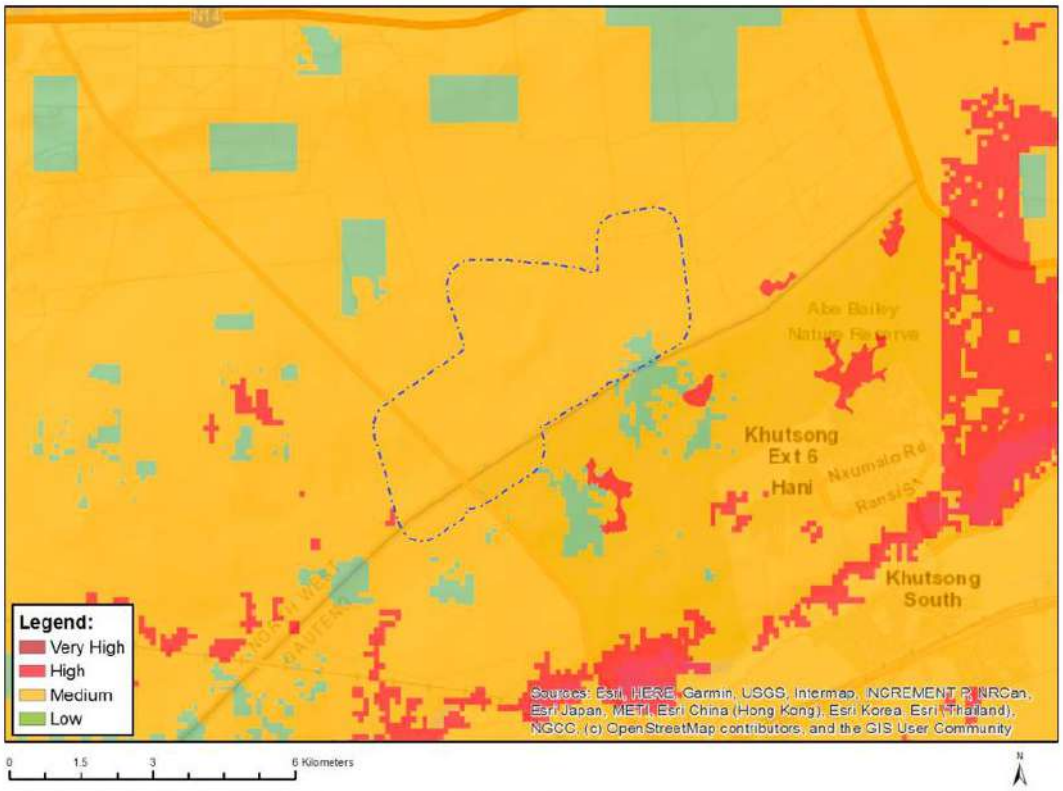
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	within 20 km of known Cape Vulturerestuarants sites

Figure 3-1 Avian Theme Sensitivity for the Proposed Development, National Web based Environmental Screening Tool.

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Circus ranivorus
Low	Subject to confirmation
Medium	Aves-Tyto capensis
Medium	Aves-Circus ranivorus
Medium	Aves-Eupodotis senegalensis
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Hydrictis maculicollis

Figure 3-2 Animal Theme Sensitivity for the Proposed Development, National Web based Environmental Screening Tool.

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	Critical biodiveristy area 2
Very High	Protected Areas Expansion Strategy

Figure 3-3 Terrestrial Biodiversity Theme Sensitivity for the Proposed Development, National Web based Environmental Screening Tool.

3.3.2 Avifauna Site Ecological Importance (SEI)

Based on the criteria provided in Section **Error! Reference source not found.** of this report, all habitats within the assessment area of the proposed project were allocated a sensitivity or SEI category (Table 3-3). The SEI of the PAOI within an avifauna context was based on the field results and desktop information. The SEI of the habitat types delineated is illustrated in Figure 3-4. The non-perennial river was given a 50m buffer with a "High" sensitivity rating. Blue Cranes (Antropoides paradiseus) were observed during the survey with the POAI. The grasslands are well managed but are mainly used for grazing by livestock, and without any confirmed nest sites, the grasslands were rated as medium sensitivity. The transformed habitat, like secondary agricultural fields, human settlements, etc., were given a very low sensitivity.

Table 3-3 SEI Summary of habitat types delineated within field assessment area of project area

Habitat	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance
Non-perennial river and water sources	High	Medium	**Medium**	Low	**High**
	Confirmed or highly likely occurrence of CR, EN, VU species. Presence of Rare species.	Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity		Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality	
Modified Grasslands	Medium	Medium	**Medium**	Medium	**Medium**
	Confirmed or highly likely occurrence of populations of NT species	Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	
Transformed	Very Low	Very Low	**Very Low**	Very High	**Very Low**
	No confirmed and highly unlikely populations of SCC. No confirmed and highly unlikely populations of range-restricted species. No natural habitat remaining.	Several major current negative ecological impacts.		Habitat that can recover rapidly	

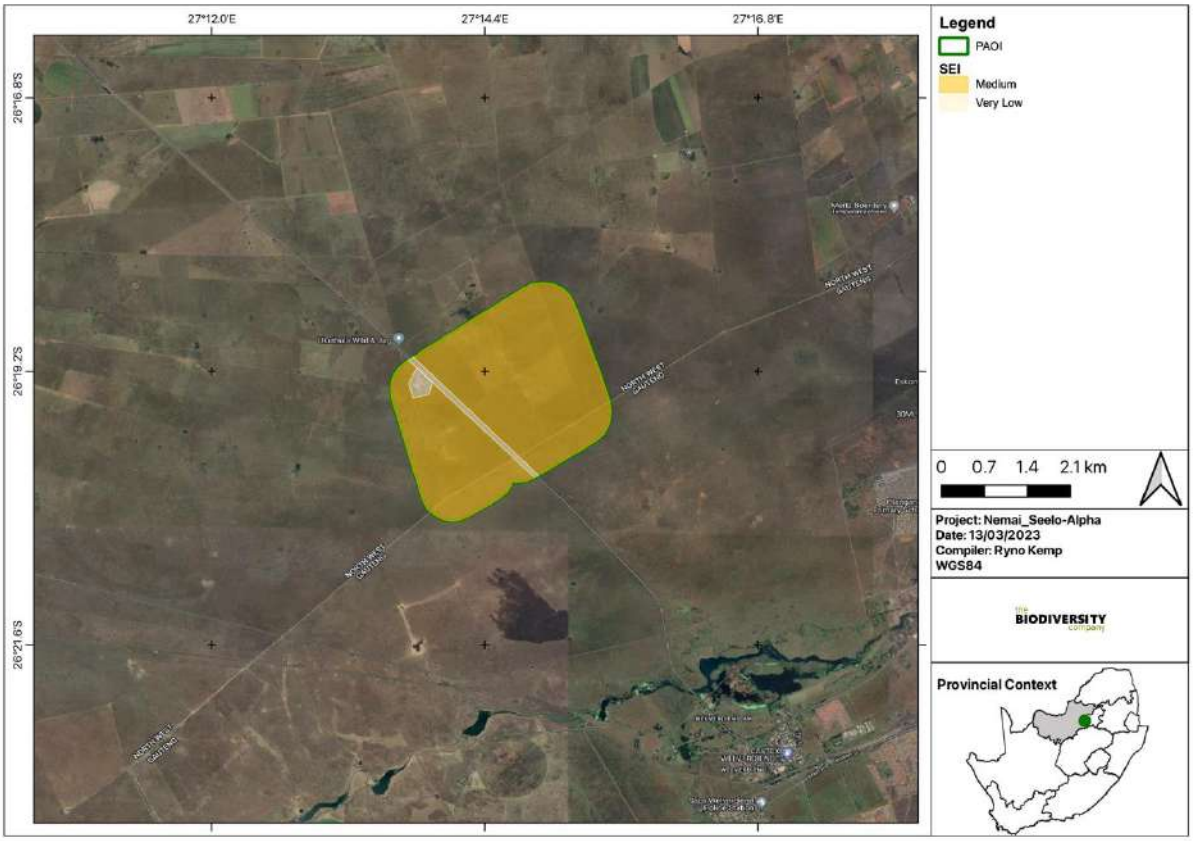


Figure 3-4 Map illustrating the Site Ecological Importance of the proposed development within the PAOI

4 Conclusion

Based on a desktop analysis and a three-day field investigation, the proposed Solar Park development is associated with medium sensitivity as the area is dominated by modified grassland. In the sensitivity verification report prepared by the Avifaunal specialist, it has been recommended that an Avifauna Impact Assessment should be conducted during the impact assessment phase of the proposed project.

5 References

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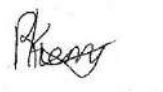
6 Appendix Item – Specialist Declaration of Independence

I, Ryno Kemp, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.



Ryno Kemp

Ecologist/Avifauna Specialist

The Biodiversity Company

March 2023

APPENDIX E4: Agricultural

SITE VERIFICATION REPORT

SEELO ALPHA SOLAR PV CLUSTER

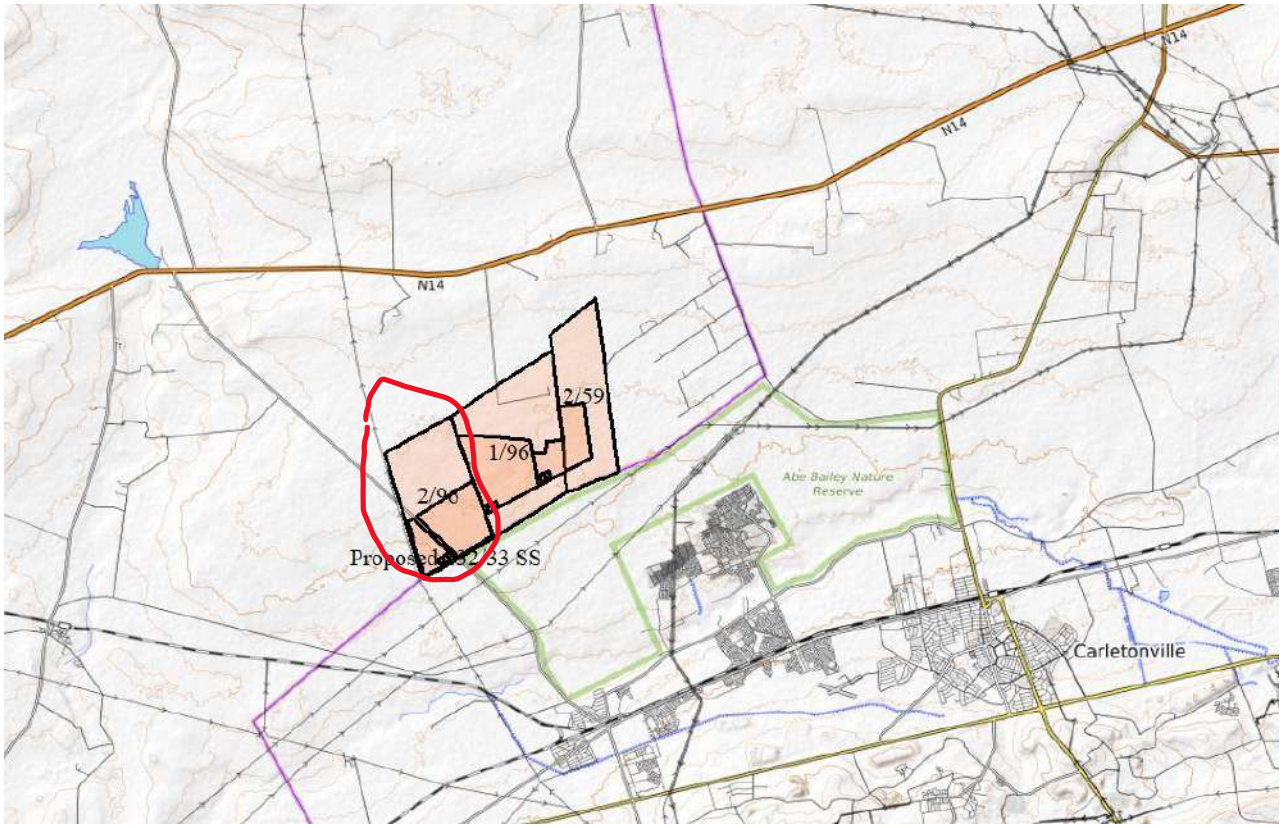
Compiled by Dr A Gouws

INDEX

March 2023

1. BACKGROUND

Nemai Consulting was appointed as Environmental Assessment Practitioner (EAP) to facilitate the application process for Environmental Authorisation (EA) for the proposed Seelo PV cluster, located on the boundary between North-West and Gauteng Province, approximately 13km north-west of the town of Carletonville.



The solar facilities are proposed in three sections. This site verification deals with Portion 2 of Farm 96.

2. SITE VERIFICATION

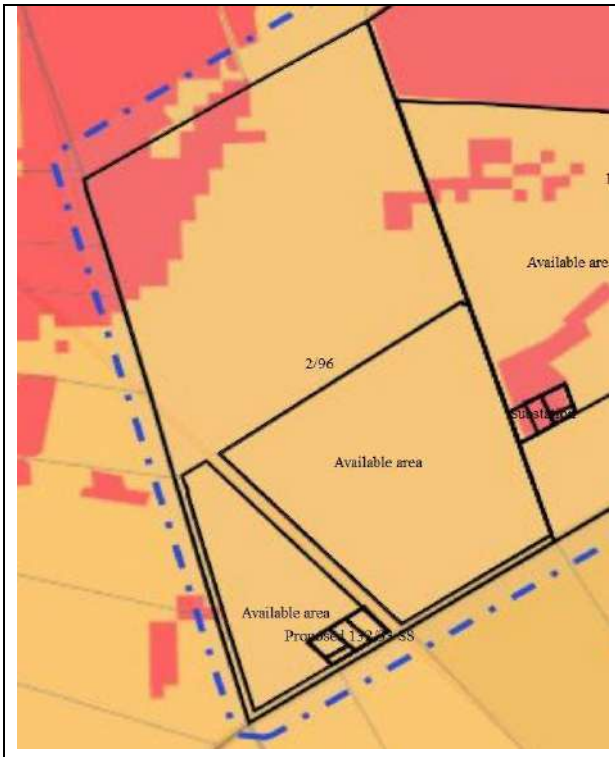


Figure 1. Results of the Sensitivity tool

Government Notice No. 320, Government Gazette 43110 of 20 March 2020. Protocol for specialist assessment and minimum report content requirements for environmental impacts on agricultural resources indicates that the site is moderately sensitive. Sensitive areas have been excluded by micro siting.

Sensitivity verification was undertaken by desk top analysis using satellite imagery.

The outcome of the site sensitivity verification record that:

- It confirms the current use of the land;
- The survey of the adjoining farms found that the soils are shallow and rocky and not suitable for cropping;
- Sensitive areas have been excluded by micro siting.

Figure 2. Development area

Bing satellite images indicate that the land is used for animal grazing.

The area that will be developed is approximately 300 ha. At a grazing capacity of 5 ha/large livestock unit (LSU), the carrying capacity of the proposed development is 60 LSU.

The remaining land is 454ha, which is still a viable farming unit.

According to guidelines of CARA and HUAL (DALRRD), the land has low arable potential and is only suitable as grazing.

3. FINDING AND RECOMMENDATIONS

The land on which the development is proposed in low potential farming land that is suitable as grazing. It has never been cultivated.

It has moderate/low sensitivity.

According to the minimum standards of the protocol, a compliance statement is required for the development to be approved.

APPENDIX E5: Archaeological and Cultural Heritage

SEELO SOLAR PV – ALPHA

ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME: SITE SENSITIVITY VERIFICATION REPORT

The National Web-based Environmental Screening Tool identified a Site Environmental sensitivity of **Low** for Archaeological Cultural Sensitivity for the proposed development site (see **Figure 1**, below). The proposed project site was first examined at a desktop level using early edition historical topographic maps (for the Archaeological Cultural heritage theme). This was followed by an on-site inspection.

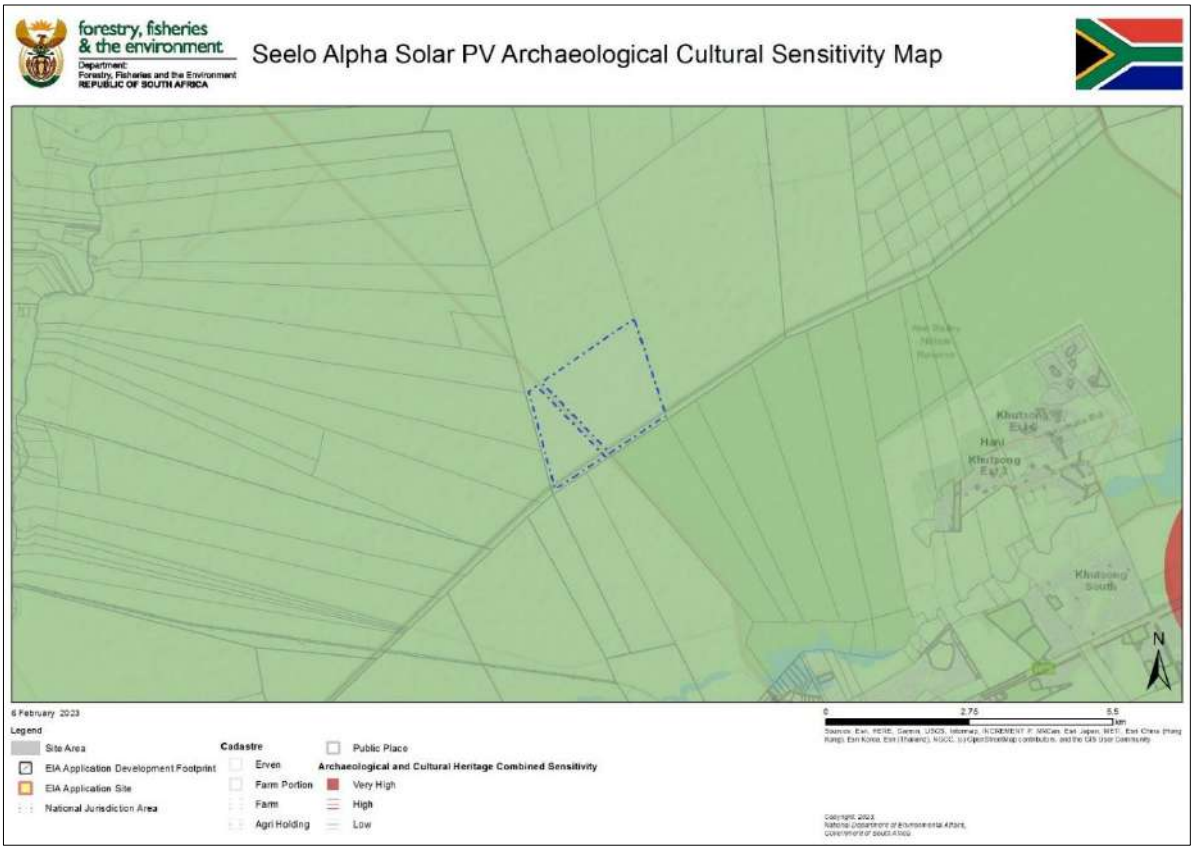


Figure 1: Archaeological Cultural Sensitivity map indicating that the project footprint is located within a region of low archaeological and cultural heritage sensitivity (DFFE Screening Tool).

Desktop Assessment

An assessment of available historical topographical maps was undertaken to establish a historic layering for the study area. Overlays of the maps were made on Google Earth. These historic maps are valuable resources in identifying possible heritage sites and features located within the study area. It should be noted that the earliest edition of the map sheets for this area dates to the 1950s (see **Figure 2** Error! Reference source not found.below). As the first edition of the two sheets utilised dates to 1953

and 1958, it was not considered necessary to examine the later edition map sheets. Any heritage resources that are 60 years or older would be depicted on the 1953 and 1958 edition sheets. The topographical maps were obtained from the Department of Agriculture, Land Reform and Rural Development (DALRRD) in Cape Town.

The following 1:50 000 map sheets were assessed for the Seelo Alpha Solar PV footprint: 2627AC Rysmierbult Edition 1 1953 and 2627AD Carletonville Edition 1 1958. The 2627AC map was surveyed in 1953 and drawn in 1955 by the Trigonometrical Survey Office of the Union of South Africa from aerial photographs taken in 1948. The 2627AD map was surveyed in 1958 and drawn in 1959 by the Trigonometrical Survey Office of the Union of South Africa from aerial photographs taken in 1948.

As can be seen in **Figure 2,** which is a composite of the 1953 and 1958 1st edition maps, no heritage features are depicted within the Seelo Alpha Solar PV footprint. The only man-made feature depicted is a quarry located just outside (south) of the southern boundary of the footprint area.

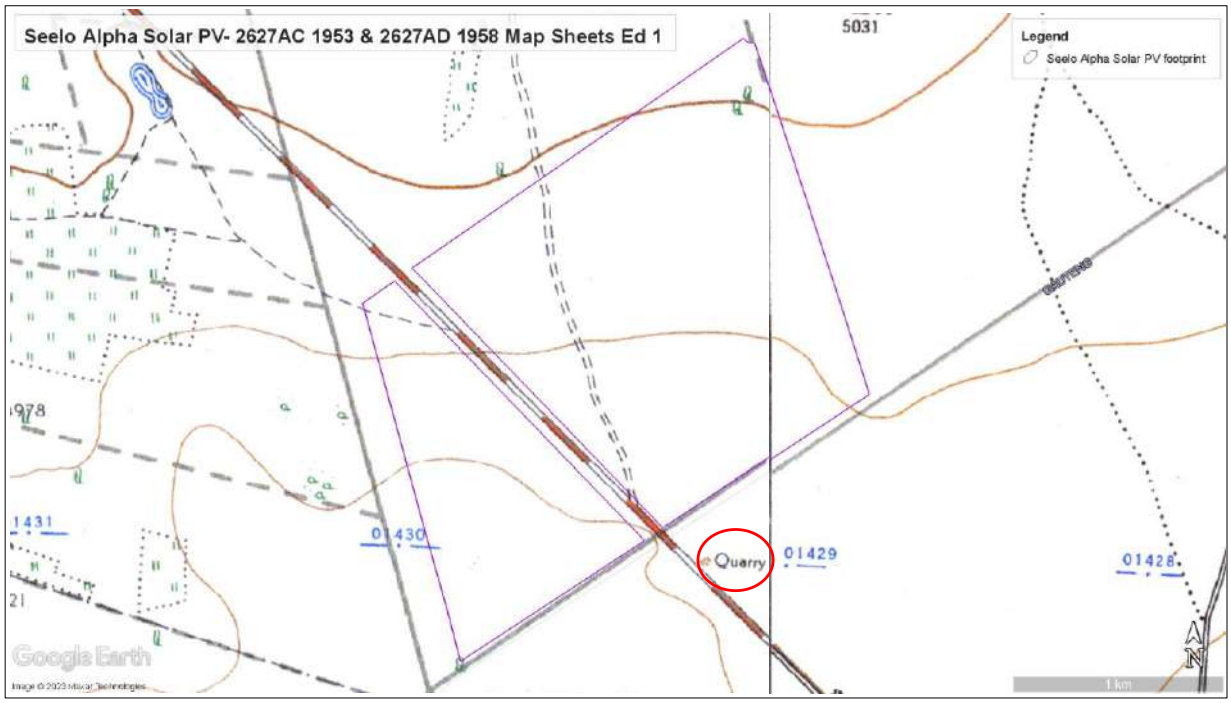


Figure 2: Enlarged view of Ed 1 topographic map sheets 2627AC 1953 and 2627AD 1958, depicting no heritage features within the Seelo Alpha Solar PV footprint. The only man-made feature depicted is a quarry located just outside(south) of the southern boundary of the footprint area (red polygon)

On-site Inspection

The project area terrain is situated on the southern section of Portion 2 of Farm 96 (Rooipan). The general area is covered mostly with a grassland which varies from shorter to long and dense. The terrain is mostly flat, however, there are signs of previous and recent disturbance, e.g. several dumps

of soil and rock were scattered all over the property, and there was a minor sinkhole which contained an animal burrow. The current use of the property is cattle and game farming (grazing).

The on-site inspection (conducted on 19 January 2023) of the study area identified no visible archaeological or cultural heritage resources within or close to the Seelo Alpha Solar PV footprint area.

It was noted that the project area is dominated by dolomite outcrops as well as quartzite/sandstone outcrops. Several sinkholes and subsidences were also noted in the area.

Conclusion/Recommendations

1. Based on the Site Sensitivity Verification, the environmental sensitivity of Low for the Archaeological and Cultural Heritage Theme is confirmed.
2. However, although no visible archaeological or cultural heritage resources were identified within or close to the Seelo Alpha Solar PV project footprint, since the extent of the study area is larger than 5000m^2, a Heritage Impact Assessment is required in terms of section 38(1)(a) of the National Heritage Resources Act (No 25 of 1999).

Status Quo/Baseline Receiving Environment photographs

Figure 3: View of the footprint area, showing the short dense grass and isolated acacia bushes, as well as one of the soil dumps

Figure 4: View showing excavation for livestock waterhole on the west section of the project footprint

Figure 5: View of sinkhole with animal burrow in the west section of the project footprint

Figure 6: View of a few of the soil and rock dumps in the east section of the project footprint

Figure 7: : View of the grass cover and a large soil and rock dump in the east section of the project footprint

APPENDIX E6: Palaeontological

PALAEONTOLOGICAL SITE VERIVICATION REPORT

Seelo Alpha Solar PV

(Part of the Seelo Solar PV Cluster)

CONTENTS

1. INTRODUCTION

Seelo Alpha Solar PV (RF) (Pty) Ltd (the Applicant) has proposed the development of the Seelo Alpha 240MW Solar PV and Battery Energy Storage Systems (BESS) Project near the town of Carletonville, in the North West Province (the "Project"). The electricity generated by the Project will be injected into the existing Eskom 132 kV distribution system. The Applicant intends to bid for the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) bid windows.

The Project is located in the most eastern part of the North West Province (at the boundary between North West and Gauteng) and falls within the Dr Kenneth Kaunda District Municipality (DKKDM) and the JB Marks Local Municipality (JBMLM). The site is located approximately 13km to the north-west of the town of Carletonville. The D331 road bisects the site.

The property earmarked for the Project covers a combined area of approximately 898 ha, of which the buildable area determined by the engineering team is approximately 355 ha.

Table 1: Details of the affected properties

Farm Name	21-digit Surveyor General (SG) Code
Portion 2 of Farm 96 (Rooipan)	T0IQ00000000009600002

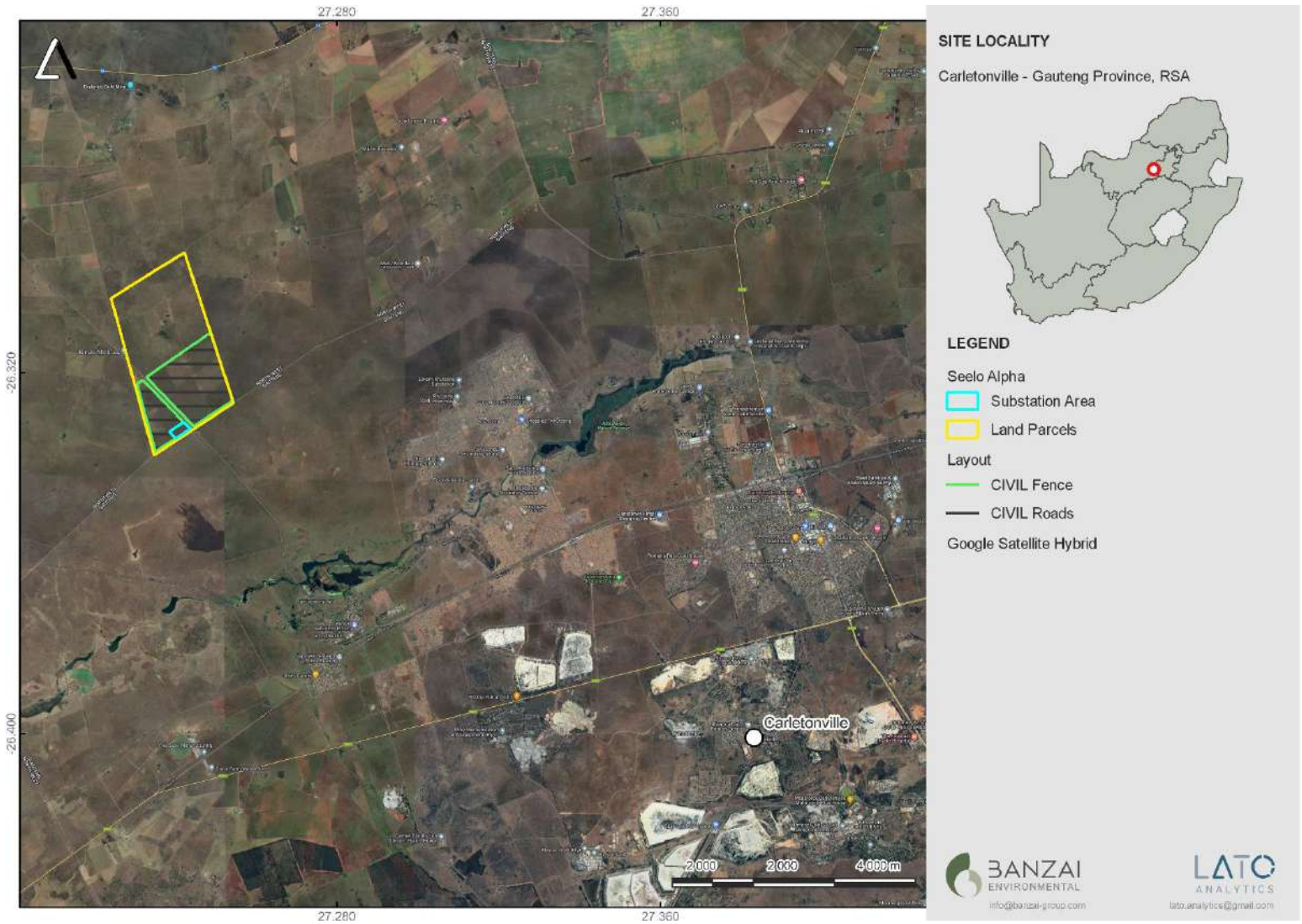


***Figure 1**: Regional context of the Seelo Alpha Solar PV development.*

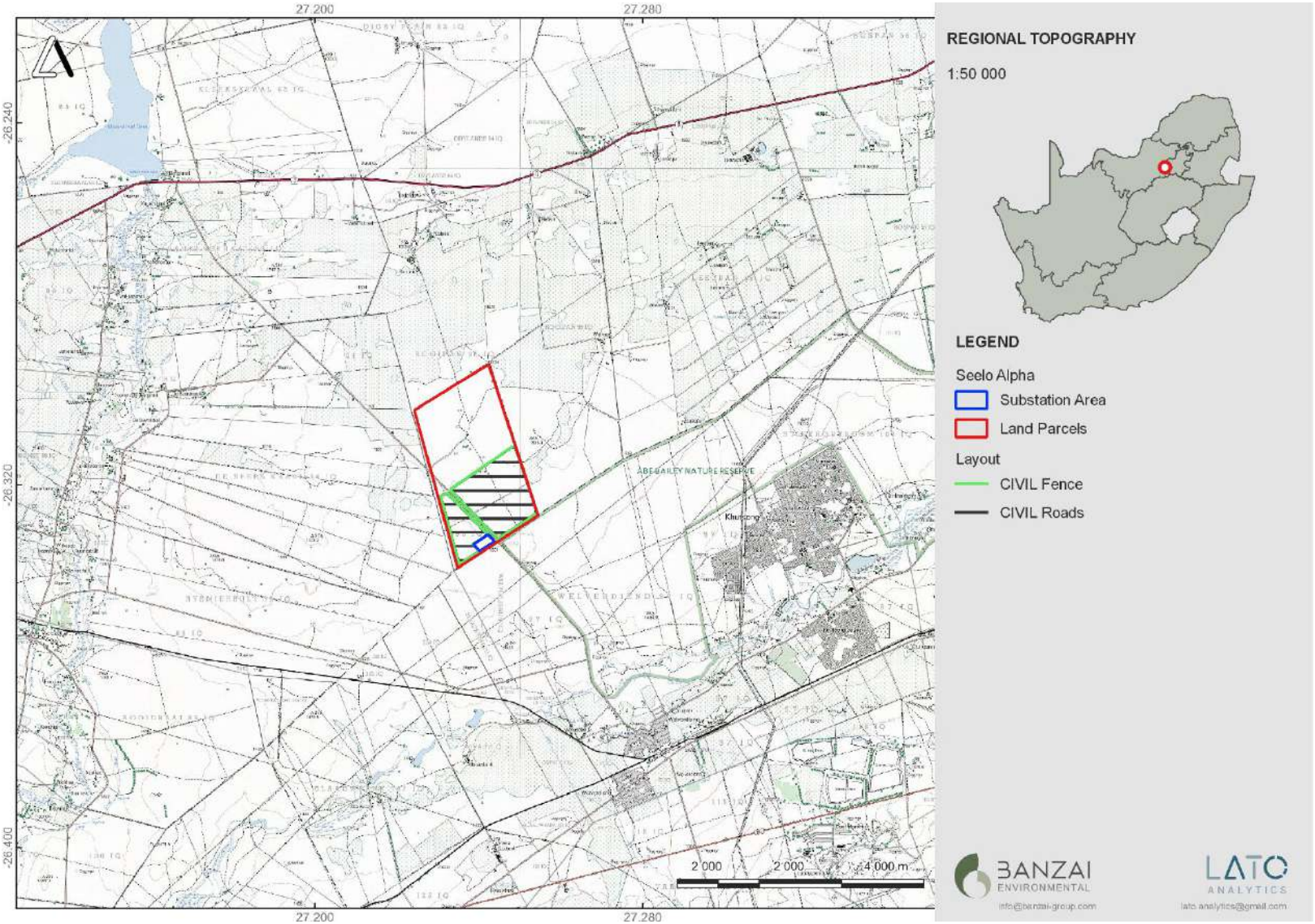


***Figure 2**: Local setting map of the proposed Seelo Alpha Solar PV development*.

2. TECHNICAL DETAILS FOR THE PROPOSED DEVELOPMENT

Components of the Proposed Solar PV Plant

The Project consists of the following systems, sub-systems or components (amongst others):

- PV panel arrays, which are the subsystems which convert incoming sunlight into electrical energy;
- Mounting structures to support the PV panels;
- On-site inverters to convert DC to facilitate AC connection between the solar energy facility and electricity grid;
- BESS);
- IPP substation;
- Eskom switching substation[1];
- Cabling between the Project's components, to be laid underground (where practical);
- Administration Buildings (Offices);
- Workshop areas for maintenance and storage;
- Temporary and permanent laydown areas;
- Internal access roads and perimeter fencing of the footprint;
- High Voltage (HV) Transformers; and
- Security Infrastructure.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations [4 December 2014, Government Notice (GN) R982, R983, R984 and R985, as amended), various aspects of the proposed development may have an impact on the environment and are considered to be listed activities. These activities require environmental authorisation (EA) from the Competent Authority (CA), namely the Department of Small Business Development, Tourism and Environmental Affairs (DESTEA), prior to the commencement thereof.

In accordance with GN 320 of 20 March 2020 and GN 1150 of 30 October 2020[2] (i.e., "the Protocols") of the NEMA EIA Regulations of 2014 (as amended), prior to commencing with a

[1] The dedicated grid connection for the proposed Project which includes a 132/33 kV switching substation which does not form part of the current application for EA.

[2] GN 320 (20 March 2020): Procedures for The Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation

specialist assessment, a site sensitivity verification must be undertaken to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool (i.e., Screening Tool). Elize Butler as Palaeontology Specialist have been commissioned to verify the sensitivity of the Seelo Alpha Solar PV and associated infrastructure (as part of the Seelo Solar PV Cluster), under these specialist protocols.

3. SITE SENSITIVITY VERIFICATION METHODOLOGY

The Palaeontology Sensitivity Verification was undertaken by the following methodology:

- The site sensitivity is established through the National Environmental Web-Based Screening Tool
- The Site is mapped on the relevant Geological Map to determine the underlying geology of the development
- Then the site is mapped on the South African Heritage Resources Information System (SAHRIS) PalaeoMap, and the Sensitivity of the proposed development established.
- Other information is obtained by using satellite imagery and
- Palaeontological Impact Assessments and Desktop Assessments of projects in the same area are studied.
- A comprehensive site-specific field survey of the development footprint for the combined projects was conducted on foot and motor vehicle by Banzai Environmental in March 2023.

4. OUTCOME OF SITE SENSITIVITY VERIFICATION

The Seelo Alpha Solar PV (as part of the Seelo Solar PV Cluster), near Carletonville in the North West Province State is depicted on the 1: 250 000 West-Rand 2626 (1986) Geological Map (Council for Geosciences, Pretoria) (**Figure 3, Table 1**). This map indicates that the proposed development is completely underlain by the Precambrian dolomites and associated marine sedimentary rocks of the of the Malmani Subgroup (Vmd, light blue; Chuniespoort Group, Transvaal Supergroup).

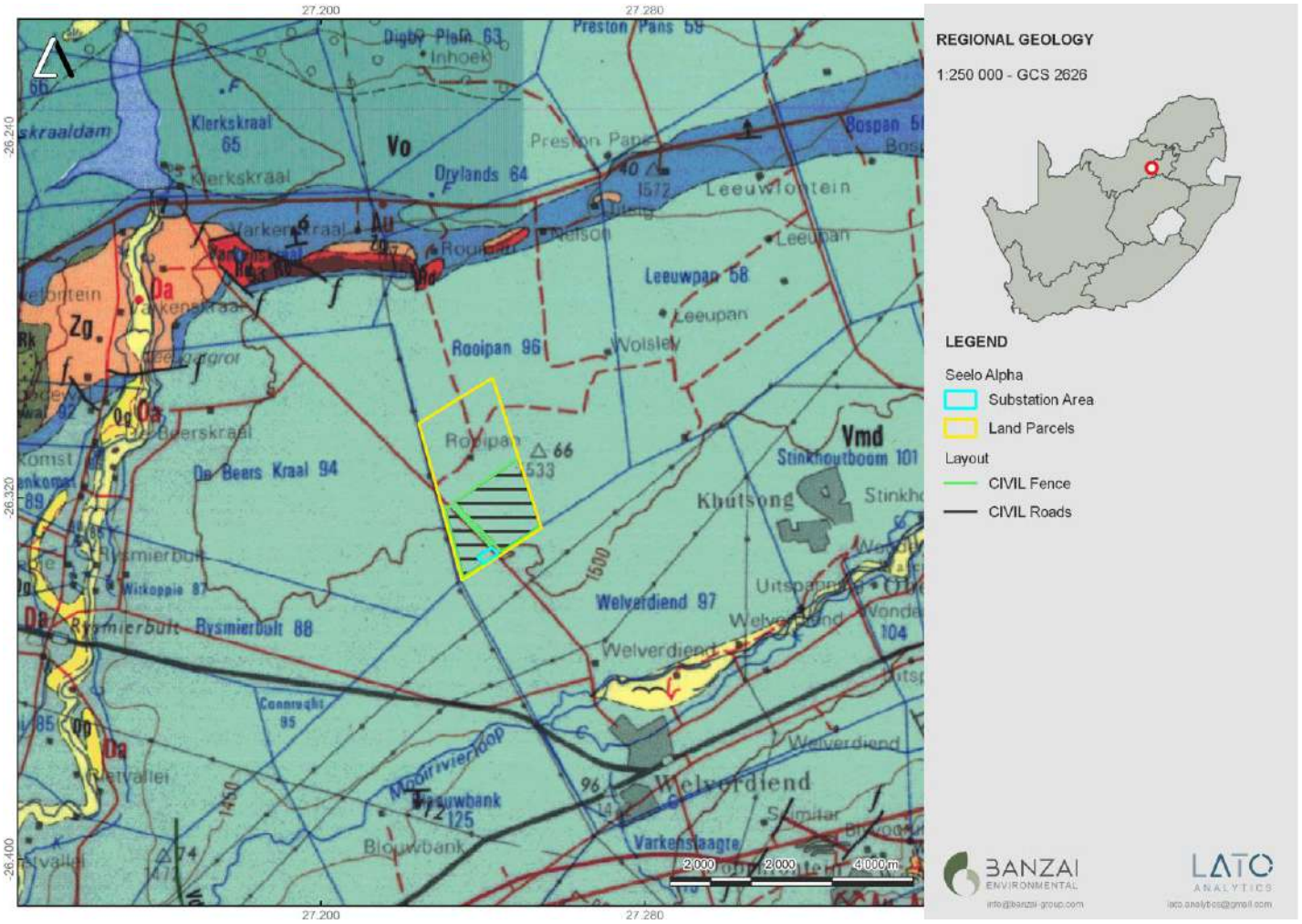


***Figure 3**: Extract of the 1:250 000 West Rand 2626 (1986) Geological Map (Council of Geoscience, Pretoria) indicating that the Seelo Alpha Solar PV development is underlain by the Malmani Subgroup (Chuniespoort Group, Transvaal Supergroup).*

Table 1: *Legend of the 2626 West-Rand (1986) Geological Map (Council for Geoscience, Pretoria).*

Relevant sediments are indicated in a red square

The SAHRIS Palaeomap indicates that the Palaeontological Sensitivity of the proposed development is underlain by sediments with a Very High (red) Palaeontological Sensitivity.

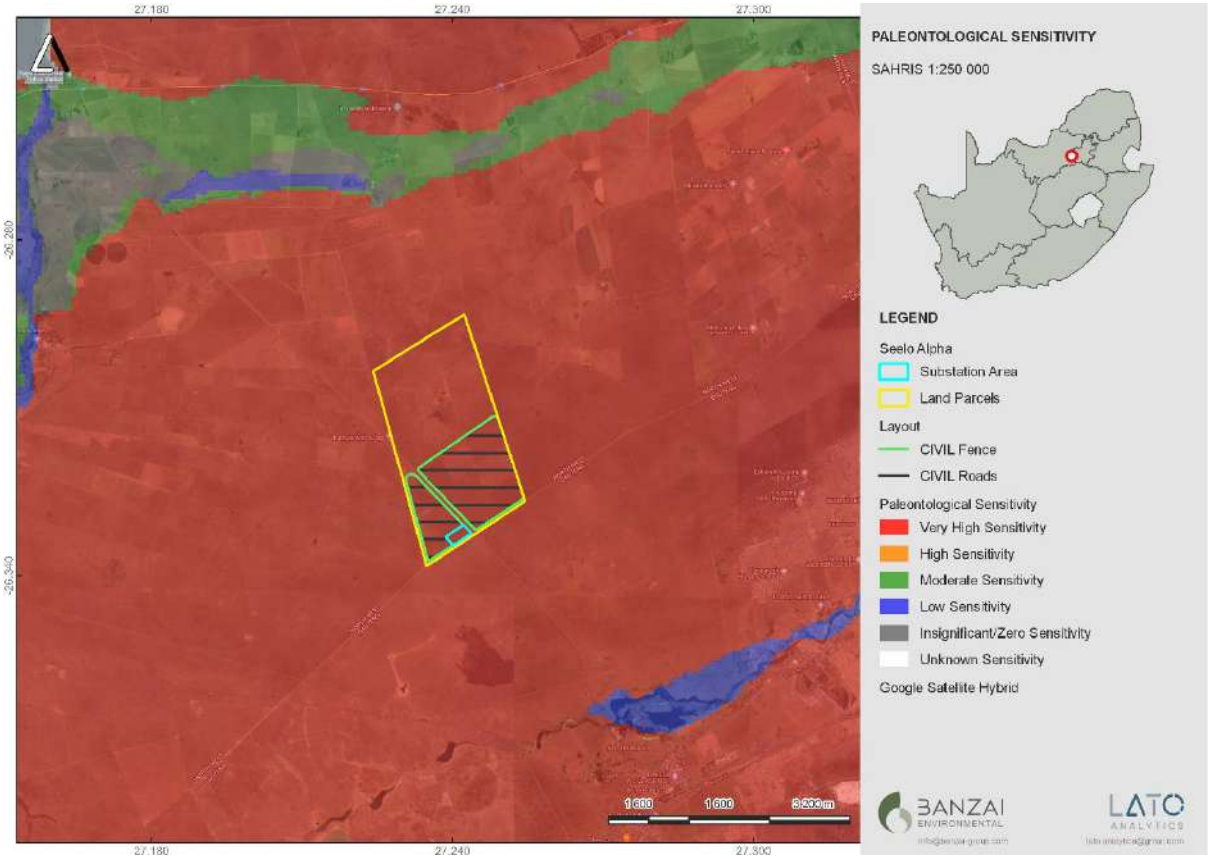
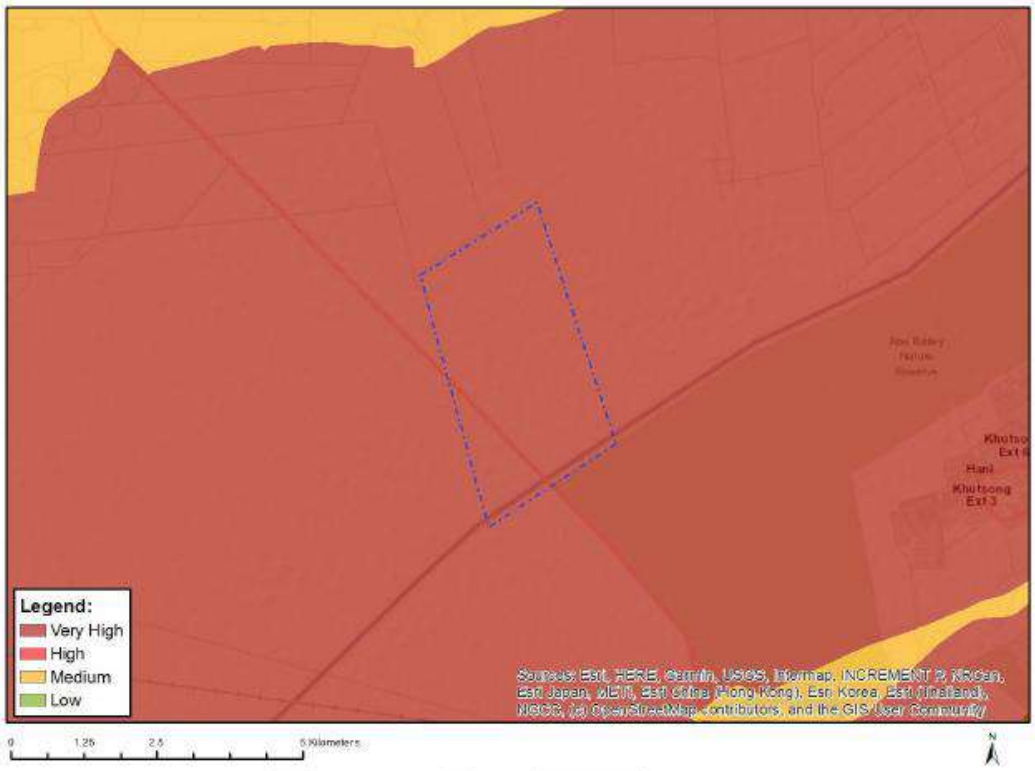


Figure 4: Extract of the 1: 250 000 SAHRIS PalaeoMap map (Council of Geosciences) indicating the proposed Seelo Alpha Solar PV development.

Table 2: Palaeontological Sensitivity according to the SAHRIS PalaeoMap (Almond et al, 2013; SAHRIS website).		
Colour	**Sensitivity**	**Required Action**
RED	**VERY HIGH**	**field assessment and protocol for finds is required**
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study; a field assessment is likely
GREEN	**MODERATE**	**desktop study is required**
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

The PalaeoMap of the South African Heritage Resources Information System (**Figure 3, Table 2**) indicates that the Palaeontological Sensitivity of the Seelo Alpha Solar PV development is Very High (red) (Almond and Pether, 2009; Almond *et al*., 2013).

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

***Figure 4**: Palaeontological Sensitivity of the Seelo Alpha Solar PV by the National Environmental Web-bases Screening Tool.*

The National Environmental Web-based Screening Tool indicates that the Palaeontological Sensitivity of the development is Very High (dark red).

5. CONCLUSION

The Site Sensitivities of the proposed Seelo Alpha Solar PV has been verified and it was found that:

The SAHRIS Palaeosensitivity map indicates that the Palaeontological Sensitivity of the development is Very High.

and

The National Environmental Web-based Screening Tool indicates that the Palaeontological Sensitivity of the development is Very High (dark red).

These maps indicate that the proposed Seelo Alpha Solar PV development is highly Sensitive from a Palaeontological point of view. A site investigation in March 2023 uncovered fossiliferous outcrops. This classification is thus in agreement (National Environmental Web-bases Screening Tool and SAHRIS) as far as the impact of the Seelo Alpha Solar PV development is concerned, based on actual conditions recorded on the ground during the site visit in March 2023.

APPENDIX E7: Landscape

SEELO ALPHA SOLAR PV

LANDSCAPE THEME: SITE SENSITIVITY VERIFICATION REPORT

The National Web-based Environmental Screening Tool identified a Site Environmental Sensitivity of **Very High** for the Landscape Theme for the proposed development site (see **Figure 1**, below). Mountain tops and high ridges were identified as the sensitivity features as per the Environmental Screening Tool. The proposed project site was examined at desktop level.

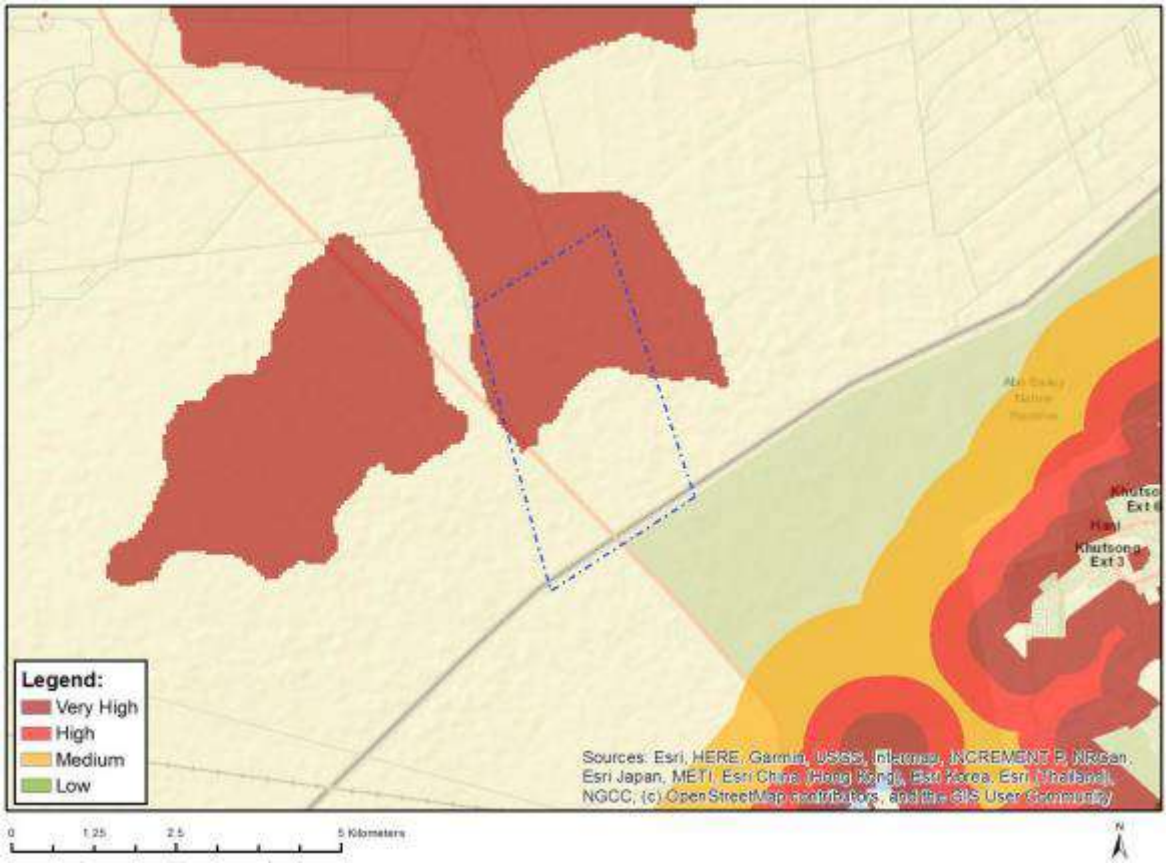


Figure 1: Landscape Theme Sensitivity map indicating that the project footprint is located within a region of very high sensitivity (DFFE Screening Tool).

Desktop Assessment

The topography and elevation profile of the development site was assessed through tools provided for in Google Earth (see **Figure 1**, below) as well as a digital elevation model (see **Figure 3,** below). From the elevation profile generated in Google Earth there is a gradual increase in elevation from south (1 500 m) to north (1 537 m) over a distance of 3.7km (see **Figure 2,** below).

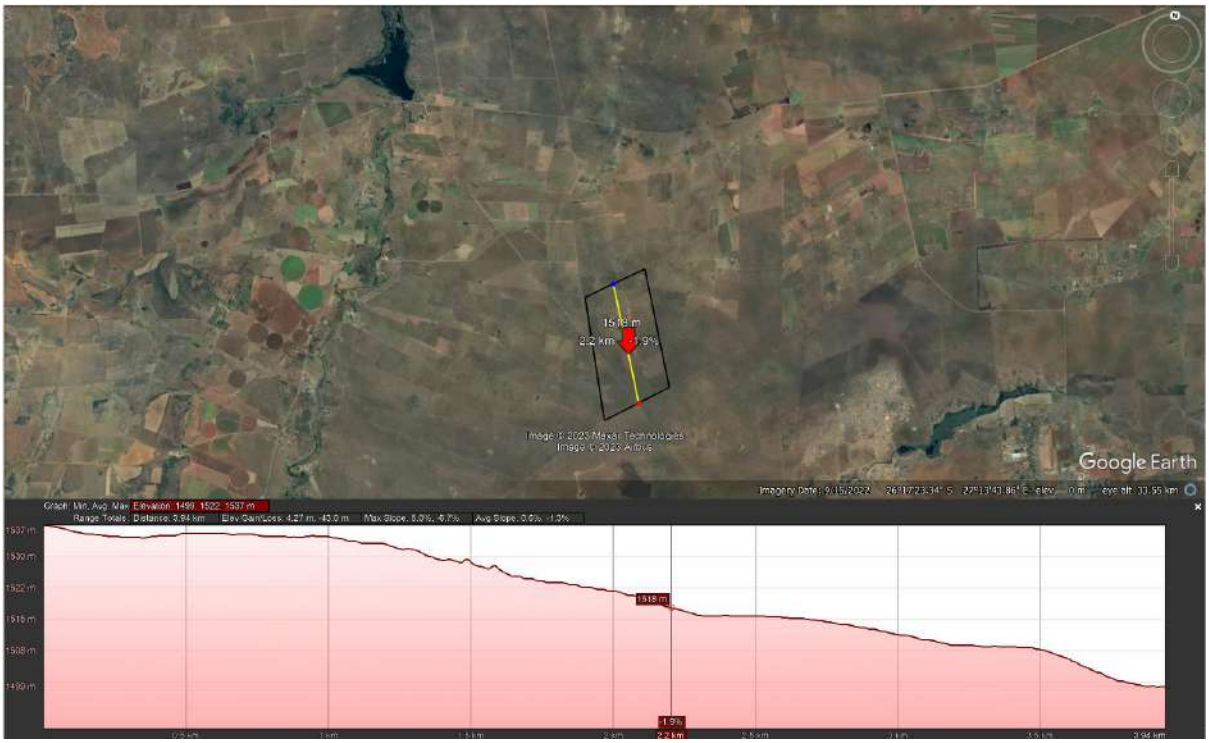


Figure 2: Site Elevation Profile (North to South) (Google Earth)

The digital elevation model for the project site is depicted below. According to the digital elevation model the topography and elevation of the site appear consistent across with no significant or sudden increase in elevation from south to north.

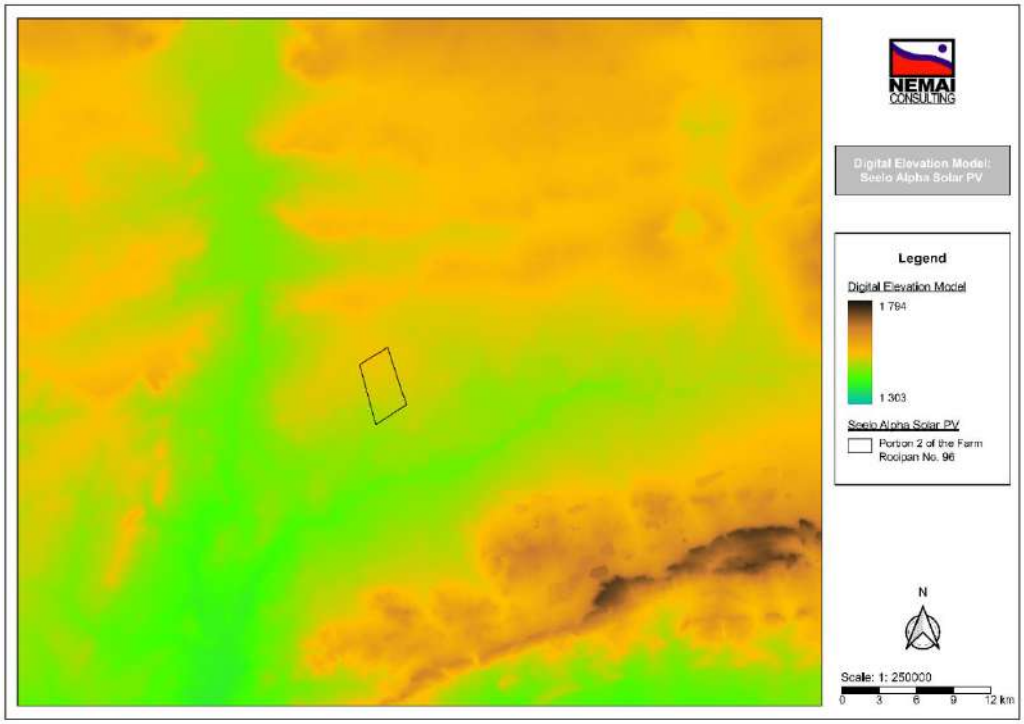


Figure 3: Digital elevation model

Conclusion/Recommendations

Based on the elevation profile generated in Google Earth and the digital elevation model it can be concluded that no mountain tops or highs ridge are associated with the project site. The findings of the site sensitivity verification therefore dispute the very high sensitivity designated for the Landscape Theme.

Although the project site is regarded relatively flat, the site's elevation is higher compared to areas south and south-west if the site. Due the higher elevation of the project site and the nature of the project (proposed PV facility), the proposed project will result in the transformation of the landscape and potential visual impacts which require specialist investigation and assessment. It is therefore recommended that a Visual Impact Assessment be undertaken for the project.

APPENDIX F

OATH OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

OATH OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

Proposed Seelo Alpha Solar Photovoltaic (PV) and Battery Energy Storage System (BESS) Project near the town of Carletonville, North West Province - Draft Scoping Report

I (name and surname)	Donovan Henning		
Of (address)	147 Bram Fischer Dr, Ferndale, 2194		
ID No.	7612065057080	*Contact No.*	011 781 1730

I hereby make an oath and state that:

In accordance with Appendix 2 of Government Notice No. R. 982 of 4 December 2014 (as amended), this serves as an affirmation by the Environmental Assessment Practitioner (EAP) in relation to:

1. *The correctness of the information provided in this report;*
2. *The inclusion of comments and inputs from stakeholders and interested and affected parties;*
3. *Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties; and*
4. *The level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment.*

1. I know and understand the contents of this declaration.

2. I do not have any objection in taking prescribed oath.

3. I consider the prescribed oath to be binding on my conscience.

Signature ____________ *Date:* 01/03/2023

I certify that the deponent has acknowledged that he/she knows and understands the contents of the statement and the deponent signature was placed there on in my presence.

2123369-3	Tintswalo Belinda Maraki	Sergeant
COMMISSIONER OF OATH	FULL NAME	DESIGNATION

SOUTH AFRICAN POLICE SERVICE

FINANCE

2023 -03- 01

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SUID-AFRIKAANSE POLISIEDIENS

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

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

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

PROJECT TITLE

Proposed Seelo Alpha 240 MW Solar Photovoltaic (PV) & Battery Energy Storage Systems (BESS) Project near the town of Carletonville, North West Province

Kindly note the following:

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

Departmental Details

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

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

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

1. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) INFORMATION

EAP Company Name:	Nemai Consulting (Pty) Ltd			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	1	Percentage Procurement recognition	
EAP name:	Donavan Henning			
EAP Qualifications:	MSc Freshwater Ecology			
Professional affiliation/registration:	Registered EAP (EAPASA Reg. no. 2020/1217) Registered Professional Natural Scientist (SACNASP Reg no: 400108/17)			
Physical address:	No. 147 Bram Fischer Drive, Ferndale, 2194			
Postal address:	P.O. Box 1673, SUNNINGHILL			
Postal code:	2157	Cell:	082 891 0604	
Telephone:	011 781 1730	Fax:	011 781 1731	
E-mail:	donavanh@nemai.co.za			

The appointed EAP must meet the requirements of Regulation 13 of GN R982 of 04 December 2014, as amended.

2. DECLARATION BY THE EAP

I, Donavan Henning, declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

- I have a vested interest in the proposed activity proceeding, such vested interest being:

Signature of the Environmental Assessment Practitioner

Nemai Consulting

Name of Company:

01/03/2023

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

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

Signature of the Environmental Assessment Practitioner

Nemai Consulting

Name of Company

01/03/2023

Date

2183369-8991

Signature of the Commissioner of Oaths

2023-03-01

Date

SOUTH AFRICAN POLICE SERVICE
FINANCE
2023 -03- 01
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SUID-AFRIKAANSE POLISIEDIENS

APPENDIX G

COMMENT SHEET

NEMAI CONSULTING

P.O. Box 1673
SUNNINGHILL
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147 Bram Fischer Drive
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Fax: (011) 781 1731
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PROPOSED SEELO ALPHA 240MW SOLAR PV & BESS PROJECT NEAR THE TOWN OF CARLETONVILLE, NORTH WEST PROVINCE

COMMENT SHEET – Draft Scoping Report

Official use	Date received:	Our reference:	Status:

1) GENERAL INFORMATION

Name of organisation (if applicable)	
Name & Surname	
Postal Address	
Physical Address (*please provide full farm description, if applicable*)	
Telephone No.	
Mobile No.	
Fax No.	
Email Address	
Manner in which the report was accessed (e.g. project website, library, etc.):	

Signature _____

Date _____

2) COMMENTS

(Note - additional pages may be included if the space provided is insufficient)