DRAFT SCOPING REPORT

for

KAREEKLOOF SOLAR PV FACILITY AND BESS

On

Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85

In terms of the

National Environmental Management Act (Act No. 107 of 1998, as amended) & 2014 Environmental Impact Regulations

Prepared for Applicant: Kareekloof Energy (Pty) Ltd.

Date: 29 September 2023

Author of Report: Dale Holder

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Report Reference: PIX796/03

Department Reference: 2023-05-0021 (Pre-Application Reference)

Case Officer: Ms Mathlodi Mogorosi

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Draft Scoping Report	29 September 2023	Dale Holder
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Draft Environmental Impact Report	Pending	
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Final Environmental Impact Report	Pending	
Final Environmental Management Programme	Pending	

APPROVAL FOR RELEASE

NAME	TITLE	SIGNATURE
Dale Holder	Senior Environmental Practitioner	

DISTRIBUTION

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Kareekloof Energy (Pty) Ltd
Registered and Potential Interested and Affected Parties

SUBMISSION AND CORRESPONDENCE WITH COMPETENT AUTHORITY

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Competent Authority comment on Draft Environmental Report	Pending
Final Environmental Impact Report Submitted	Pending

APPOINTED ENVIRONMENTAL ASSESSMENT PRACTITIONER:
Cape EAPrac Environmental Assessment Practitioners PO Box 2070 George 6530 Tel: 044-874 0365 Fax: 044-874 0432 **Report written & compiled by:** Dale Holder (Ndip Nature Conservation), who has over 20 years' experience as an environmental practitioner. **Registrations:** Registered Environmental Assessment Practitioner, EAPASA (2019/301)

PURPOSE OF THIS REPORT:
I&AP Review and Comment

APPLICANT:
Kareekloof Energy (Pty) Ltd

CAPE EAPRAC REFERENCE NO:
PIX796/03

DEPARTMENT REFERENCE:
2023-05-0021 (Pre-Application Reference)

SUBMISSION DATE:
29 September 2023

DRAFT SCOPING REPORT

in terms of the

National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended) & Environmental Impact Regulations2014 (as amended)

Kareekloof Solar PV Facility and BESS

Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85

Submitted for:

Stakeholder Review & Comment

Report Issued by:

Cape Environmental Assessment Practitioners

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17 Progress Street, George 6530

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REPORT DETAILS

Title:	Draft Scoping Report – Kareekloof Solar PV Facility and BESS
Purpose of this report:	This Draft Scoping Report (DSR) is made available to all registered and potential Interested and Affected Parties (I&APs) for review and comment and all comments received will be incorporated into the Final Scoping Report that will be submitted to the competent authority for decision making / acceptance. This DSR forms part of a series of reports and information sources that are being provided during the Scoping and Environmental Impact Reporting Process for the proposed Kareekloof Solar PV Facility and BESS project near De Aar in the Northern Cape Province. Registered I&APs will be given an opportunity to comment on the following reports as part of this environmental process: - Draft Scoping Report, - Draft Environmental Impact Report; - All Specialist Studies, and - Draft Environmental Management Programme. In accordance with the regulations, the objectives of an environmental process are to, through a consultative process: (a)identify the relevant policies and legislation relevant to the activity; (b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location; (c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process; (d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment; (e) identify the key issues to be addressed in the assessment phase; (f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and (g) identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored. The Draft Scoping Report is available to all registered and potential interested and affected parties for a 30-day review and comment period extending from 29 September 2023 – 30 October 2023. All comments received during this comment period will be incorporated into the Final Scoping Report that will be submitted to the DFFE for Decision making.
Prepared for:	Kareekloof Energy (Pty) Ltd
Published by:	Cape Environmental Assessment Practitioners (Pty) Ltd. (Cape EAPrac)
Authors:	Mr Dale Holder
Cape EAPrac Ref:	PIX796/03
DEA Case officer & Ref. No:	Ms Mathlodi Mogorosi - 2023-05-0021 (Pre-application reference number)
Date:	29 September 2023.
To be cited as:	*Cape EAPrac,* 2023. Draft Scoping Report for Kareekloof Solar PV Facility and BESS. Report Reference: PIX/796/03. George.

TECHNICAL CHECKLIST

The following technical checklist is included as a quick reference roadmap for the proposed project.

Project Name		**Kareekloof Energy PV and BESS**
Applicant Details	Applicant Name:	Kareekloof Energy (Pty) Ltd Kareekloof Energy (Pty) Ltd is a Special Purpose Vehicle (SPV) incorporated for the sole purpose of developing, constructing, and operating an up to 900MW solar PV facility including a Battery Energy Storage System (BESS) facility, located on Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85 situated near De Aar in the Northern Cape Province.
	Company Registration Number:	2023 / 725974 / 07
	BBBEE Status:	Exempt Micro Enterprise
	Project Name:	Kareekloof Energy PV and BESS
Site Details		
Size of the property	Description and Size in hectares of the affected property (Size as per the Deed is in brackets).	PV/BESS Site: - Portion 1 of the farm Bas Berg 88 : size1878.04 (1881.98) - Portion 2 of the farm Koppy Alleen 83: size 44.95 (38.10) - Portion 6 of the farm Karee Kloof 85: size 631.61 (630.34) - Portions 11 of the Farm Karee Kloof 85: size 576.63 (662.25) - Portion 16 of the Farm Karee Kloof 85: size 23.08 (23.00) - Portion 17 of the Farm Karee Kloof 85: size 357.60 (355.60)
Size of the study area	Size in ha of initial study area.(this is also the total of all the properties affected)	3512 ha (3591 ha)
Development Footprint	This includes the total footprint of PV panels, BESS auxiliary buildings, On-site Substation, Mini-substations, inverter stations and internal roads.	The Total Development area is 1513 ha including: PV 1442 ha, 3 BESS Sites 43ha in total, 3 On-Site Substations 14 ha in total, and permanent auxiliary structures (buildings, lay-down areas and access roads) 14 ha in total. (Mini Subs, Inverters and internal roads are distributed within the PV footprint (internal roads 4m wide total 25ha)) Total Fenced Area is 1793 ha. (Note for the 3 On-site or IPP Substations. Tthese are 3 Collector and Switching Substations of 300MVA, collecting many inputs (from PV or BESS) of 33kV, transforming to 132kV outputs. The input of 33kV is the project-side until it is transformed to 132kV which will be part of the EGI-side. The EGI will be transferred to ESKOM and is being assessed as part of a separate environmental process. The On-site Substations will be in areas of overlap of the PV/BESS and the EGI.)
PV Technology Details		
Capacity of the facility	Capacity of the PV facility (in MW)	Net generation (contracted) capacity of up to 900MW_{AC}, which will consist of 18 sites or projects that may be developed singly or in groups in a phased-development approach. Each of the 18 x 50MW sites will be self-sufficient up to the point of an On-site Substation or a collective BESS.
Solar Technology selection	Type of technology	- Solar photovoltaic (PV) technology (mono-facial or bifacial) with single-axis tracking or fixed-tilt, or double axis tracking mounting structures, as well as associated infrastructure, which will include: - Laydown area;

Project Name		Kareekloof Energy PV and BESS
		- Access and Internal road network; - Auxiliary buildings (33kV switch room, gate-house and security, control centre, office, warehouse, canteen & visitors centre, staff lockers etc.); - Facility (IPP or On-Site) substation; - Inverter-station, transformers and internal electrical reticulation (underground cabling); - Rainwater Tanks; and - Perimeter fencing and security infrastructure.
	Structure height	PV panels with a maximum height of ± 4m above the ground
	Surface area to be covered (including associated infrastructure such as roads)	1442 ha
	Structure orientation	Preferred technology - single axis track used in portrait orientation with strings of 1x ±30 panels. Mounting using hammered in uprights and stabilising cables (as a worst case there will be 400mm diameter holes). Alternative technologies : fixed-tilt: north-facing at a defined angle of tilt, single or double axis tracking: mounted in a north-south orientation, tracking from east to west.
	Laydown area dimensions	Approximately 2 ha temporary laydown area will be required for each development site of 50MW and will be situated within the assessed footprint. Temporary lay down area total at any one time will probably not exceed 12 ha due to development in stages.
BESS Technology Details		
BESS technology section	Capacity of BESS facility (in MWh)	3600 MWh
	Type of technology (preferred)	Redox Flow, for exampleVanadium Redox Flow Battery (VRB)
	Type of technology (alternatives)	Lithium-Ion, Sodium-Ion, Solid State, Liquid Metal (https://ambri.com/) and other technology types will be considered
	Structure height	Containerised batteries less than 5m high except for lightening conductors and vent pipes. Storage tanks may be required for the VRB and could be 6m high, if the non-containerised type of VRB battery is installed.
	Surface area to be covered (including associated infrastructure such as roads)	43 ha (3 x ±14 ha) (including electrolyte storage tanks of 27 ha (3 x ±9 ha) for redox flow battery)
	Structure locations	Three BESS sites, each ± 14 ha near each of the 3 On-Site Substations-

The Applicant, Kareekloof Energy (Pty) Ltd, is proposing the construction of a photovoltaic (PV), and Battery Energy Storage System (BESS) energy facility (known as Kareekloof Solar PV Facility and BESS) located on the Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85 situated near De Aar in the Northern Cape Province.

A study site of approximately 3512 ha is being assessed as part of this Environmental Process and the infrastructure associated with the up to 900MW PV facility includes:

- PV modules and mounting structures;
- Inverters and transformers;

- Cabling;
- Battery Energy Storage System (BESS);
- Site and internal access roads;
- Auxiliary buildings (33 kV switch room, gatehouse and security, control centre, office, warehouse, canteen & visitors centre, staff lockers etc.);
- Perimeter fencing and security infrastructure;
- Rainwater tanks;
- Temporary and permanent laydown areas;
- Facility substation.
- Own-build grid connection solution, including on-site substations.

The final grid solution will be determined through discussions with Eskom, as part of an ongoing Cost Estimate Application process. The Kareekloof Solar PV Facility anticipates connecting to the National Grid via the proposed Hydra B Main Transmission Substation (MTS), with a planned location approximately 1.5 kilometers east of the proposed facility. This connection will be established using three double circuit 132kV conductor lines or powerlines, capable of evacuating or exporting the electricity generated by all three of the 300MVA On-Site Substations. The proposed connection will include an Electrical Grid Infrastructure (EGI) corridor for the three 132kV powerlines, running from the On-Site Substations to the MTS.

It must be noted that this application only includes the IPP Portion of the EGI (i.e. the on site substations) the remainder of the EGI (i.e. those components that will be transferred to Eskom – namely, the Eskom Side of the on-site substations and the Overhead powerlines to the MTS) is being assessed as part of a separate Basic Assessment Process that will run in parallel with the Environmental Impact Assessment phase of this Environmental Process.

LOCATION OF PREFFERED ALTERNATIVE[1]

The following description provides the summary of the currently preferred footprint that forms part of this scoping process. The current footprint has been informed by specialist input, but will be further refined in the Impact Assessment Phase of this Environmental Process.

The co-ordinates of the preferred alternative[2] are reflected in the table below.[3]

Layout Alternative 2 - Preferred	Latitude	Longitude
Area 1	024° 19' 26.24" E	30° 17' 05.81" S
	024° 19' 08.48" E	30° 17' 00.86" S
	024° 19' 03.68" E	30° 16' 53.48" S
	024° 18' 15.28" E	30° 16' 53.41" S
	024° 18' 07.53" E	30° 16' 48.95" S
	024° 18' 10.42" E	30° 16' 43.92" S

[1] The footprint of Kareekloof Energy is not rectangular. The co-ordinates reflected in this table indicate the bend points of the PV Footprint for each of the spatially separated areas.

[2] The Preferred alternative will be refined further in the Environmental Impact Reporting Phase of the Environmental Process.

[3] This Environmental Assessment Process includes consideration and assessment of the IPP portion of the on-site substations only. The powerline and remainder of infrastructure needed to connect this facility to the national grid is being considered as part of a separate Basic Assessment Process that will run in parallel with the environmental impact assessment phase of this environmental process.

Layout Alternative 2 - Preferred	Latitude	Longitude
	024° 18' 03.60" E	30° 16' 16.82" S
	024° 17' 59.34" E	30° 16' 16.82" S
	024° 17' 59.25" E	30° 16' 11.29" S
	024° 18' 05.53" E	30° 16' 02.81" S
	024° 18' 12.78" E	30° 16' 00.71" S
	024° 19' 09.99" E	30° 16' 19.17" S
	024° 19' 59.96" E	30° 16' 59.69" S
	024° 19' 41.89" E	30° 17' 03.00" S
	024° 19' 26.24" E	30° 17' 05.81" S
Area 2	024° 19' 34.73" E	30° 17' 54.63" S
	024° 18' 48.10" E	30° 17' 44.32" S
	024° 18' 48.37" E	30° 17' 34.27" S
	024° 18' 31.79" E	30° 17' 33.97" S
	024° 18' 33.11" E	30° 17' 11.11" S
	024° 18' 47.65" E	30° 17' 19.48" S
	024° 18' 50.47" E	30° 17' 19.43" S
	024° 18' 50.37" E	30° 17' 28.01" S
	024° 19' 01.72" E	30° 17' 27.76" S
	024° 19' 01.79" E	30° 17' 16.98" S
	024° 20' 04.62" E	30° 17' 05.80" S
	024° 19' 53.40" E	30° 17' 45.56" S
	024° 19' 34.73" E	30° 17' 54.63" S
Area 3	024° 18' 33.05" E	30° 18' 14.64" S
	024° 17' 59.41" E	30° 18' 14.47" S
	024° 17' 54.94" E	30° 17' 52.95" S
	024° 18' 10.62" E	30° 17' 39.64" S
	024° 18' 19.92" E	30° 17' 47.18" S
	024° 18' 23.10" E	30° 17' 52.99" S
	024° 18' 34.56" E	30° 17' 52.90" S
	024° 18' 44.13" E	30° 17' 46.73" S
	024° 19' 24.59" E	30° 17' 56.00" S
	024° 19' 16.38" E	30° 17' 59.12" S
	024° 19' 09.02" E	30° 18' 03.34" S
	024° 19' 03.09" E	30° 18' 09.97" S
	024° 18' 33.05" E	30° 18' 14.64" S
Area 4.	024° 18' 31.36" E	30° 17' 10.10" S
	024° 18' 29.43" E	30° 17' 38.73" S
	024° 18' 15.00" E	30° 17' 38.55" S
	024° 18' 15.06" E	30° 17' 34.30" S
	024° 18' 04.11" E	30° 17' 27.96" S
	024° 18' 04.02" E	30° 17' 10.51" S
	024° 17' 53.10" E	30° 17' 10.44" S
	024° 17' 52.82" E	30° 17' 21.25" S
	024° 17' 32.64" E	30° 17' 09.21" S
	024° 17' 38.86" E	30° 16' 46.93" S

Layout Alternative 2 - Preferred	Latitude	Longitude
	024° 17' 51.70" E	30° 16' 46.77" S
	024° 18' 31.36" E	30° 17' 10.10" S
Area 5.	024° 16' 46.92" E	30° 15' 51.84" S
	024° 16' 34.40" E	30° 15' 30.68" S
	024° 16' 34.58" E	30° 15' 16.11" S
	024° 17' 15.33" E	30° 14' 59.18" S
	024° 17' 23.40" E	30° 15' 13.35" S
	024° 17' 22.98" E	30° 15' 28.06" S
	024° 17' 25.24" E	30° 15' 32.18" S
	024° 17' 25.58" E	30° 15' 51.76" S
	024° 16' 46.92" E	30° 15' 51.84" S
Area 6	024° 16' 48.49" E	30° 15' 54.54" S
	024° 17' 24.79" E	30° 15' 54.66" S
	024° 17' 26.84" E	30° 15' 55.26" S
	024° 17' 26.92" E	30° 16' 00.39" S
	024° 17' 23.28" E	30° 16' 05.30" S
	024° 17' 23.23" E	30° 16' 07.82" S
	024° 17' 11.92" E	30° 16' 18.56" S
	024° 16' 58.44" E	30° 16' 11.02" S
	024° 16' 48.49" E	30° 15' 54.54" S
Area 7	024° 15' 57.60" E	30° 15' 39.97" S
	024° 16' 37.58" E	30° 16' 03.41" S
	024° 16' 37.94" E	30° 16' 10.57" S
	024° 16' 49.16" E	30° 16' 10.30" S
	024° 16' 55.37" E	30° 16' 13.87" S
	024° 16' 52.79" E	30° 16' 36.96" S
	024° 16' 41.58" E	30° 16' 47.68" S
	024° 15' 56.39" E	30° 16' 25.67" S
	024° 15' 37.22" E	30° 15' 57.75" S
	024° 15' 57.60" E	30° 15' 39.97" S
Area 8	024° 15' 10.85" E	30° 15' 12.41" S
	024° 15' 54.29" E	30° 15' 37.89" S
	024° 15' 35.28" E	30° 15' 54.49 S
	024° 15' 09.18" E	30° 15' 15.95" S
	024° 15' 10.85" E	30° 15' 12.41" S
Area 9	024° 15' 54.65" E	30° 15' 36.53" S
	024° 15' 11.48" E	30° 15' 11.21" S
	024° 15' 13.79" E	30° 15' 06.41" S
	024° 15' 54.29" E	30° 15' 06.21" S
	024° 15' 54.65" E	30° 15' 36.53" S
Area 10	024° 16' 06.18" E	30° 15' 43.25" S
	024° 16' 12.14" E	30° 15' 35.06" S
	024° 16' 25.14" E	30° 15' 35.04" S
	024° 16' 37.54" E	30° 15' 55.93" S
	024° 16' 37.65" E	30° 16' 01.61" S

Layout Alternative 2 - Preferred	Latitude	Longitude
	024° 16' 06.18" E	30° 15' 43.25" S

Access Road[4]	Latitude	Longitude
Access 1 (RAP 1)	024° 18' 28.70" E	30° 17' 43.62" S
Access 2 (RAP 2)	024° 20' 04.39" E	30° 17' 01.67" S
Access 3 (RAP 3)	024° 17' 40.06" E	30° 14' 55.92" S

IPP Substation[5]	Latitude	Longitude
Substation 1	24° 16' 42.60" E	30° 15' 55.81" S
Substation 2	24° 18' 29.80" E	30° 16' 57.26" S
Substation 3	24° 19' 04.38" E	30° 17' 05.68" S

BESS Area[6]	Latitude	Longitude
BESS 1	24° 16' 36.88" E	30° 15' 42.49" S
BESS 2	24° 18' 42.37" E	30° 17' 01.12" S
BESS 3	24° 18' 54.39" E	30° 17' 02.66" S

CONTENTS OF A SCOPING REPORT.

Section 2 in Appendix 2 of regulation 982 details the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process. The table below lists the minimal contents of a scoping report in terms of these regulations;

Requirement	Details
(a) details of - (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	This was compiled by Dale Holder of Cape Environmental Assessment Practitioners (Pty) Ltd (Cape EAPrac). Details of the EAP are included at the beginning of this report. A CV of the author as well as a company profile of the EAP company, Cape EAPrac, is attached in Appendix G3.
(b) the location of the activity, including - (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	The proposed facility is to be situated on the farm Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85 situated near De Aar in the Northern Cape Province. . 21 digit Surveyor General codes: - Bas Berg 1/88: C05700000000008300002 - Koppy Alleen 2/83: C05700000000008300002 - Karee Kloof 6/85: C05700000000008500006 - Karee Kloof 11/85: C05700000000008500011 - Karee Kloof 16/85: C05700000000008500016 - Karee Kloof 17/85: C05700000000008500017
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is (i) a linear activity,	A location plan including co-ordinates of the proposed activity is attached in Appendix A.

[4] This table depicts the position of the proposed road access points (RAP's) to the PV footprints. The Access road from the R48 to the point where it enters the PV footprints is existing.

[5] This table depicts the approximate center point of the IPP portion of the on site substations.

[6] This table depicts the approximate center-point of the proposed BESS Areas.

Requirement	Details
a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	The PV Facility, BESS, Substations and Access Roads are included in the sections above.
(d) a description of the scope of the proposed activity, including - (i) all listed and specified activities triggered; (ii) a description of the activities to be undertaken, including associated structures and infrastructure;	The description of the proposed activity is detailed in section 2 of this report. Listed and specified activities triggered are detailed in section 3.1.2 of this report.
(e) a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	The legislative and policy context is included in section 3 of this report.
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	The need and desirability of the project is included in section 2.9 of this report.
(h) a full description of the process followed to reach the proposed preferred activity, site and location within the site, including - (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (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 - (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (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; (viii) the possible mitigation measures that could be applied and level of residual risk; (ix) the outcome of the site selection matrix; (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	The details of all alternatives considered, is included in section 2.11. The details of the public participation already undertaken as well as the details of the public participation for the remainder of the environmental process, is detailed in section 7 of this report. An issues and responses will be included in Annexure F2 on completion of the initial Public Participation Process. Detailed site description and attributes is included in section 5of this report. A description of potential impacts identified by the EAP as well as participating specialists is included in section 6.2 of this report. The methodology used for the determination and ranking of significance is included in section 6.4 of this report. Please also refer to the specific methodologies in the specialist reports attached in Annexures E1 – E8. This scoping report identifies the potential positive and negative impacts associated with the proposed project. These are summarised in section 6.2 of this report. An assessment of the significance of these identified impacts will take place in the impact assessment phase of this environmental process. The potential mitigation measures will only be identified once the detailed impact assessment has been completed. Details regarding the criteria for the selection of the preferred site selection is included in section 2.10of this report. Alternatives have been discussed in section 2.11 of this report. The preferred alternative has been determined based on the outcome of the specialist Site Sensitivity Verifications. The preferred alternative may be mitigated further based on the outcome of the scoping process. This Preferred Mitigated alternative will be presented and assessed in the Draft Environmental Impact Report.

Requirement	Details
(i) a plan of study for undertaking the environmental impact assessment process to be undertaken, including - (i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; (ii) a description of the aspects to be assessed as part of the environmental impact assessment process; (iii) aspects to be assessed by specialists; (iv) a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists; (v) a description of the proposed method of assessing duration and significance; (vi) an indication of the stages at which the competent authority will be consulted; (vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and (viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process; (ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	The plan of study for Environmental Impact Assessment phase of the environmental process is included in section 6 of this report.
(j) an undertaking under oath or affirmation by the EAP in relation to - (i) the correctness of the information provided in the report; (ii) the inclusion of comments and inputs from stakeholders and interested and affected parties; and (iii) 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;	The signed EAP declaration is included in the application form submitted simultaneously with this Draft Scoping Report.
(k) an undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	Please refer to the plan of Study for EIA included in section 6 of this report.
(l) where applicable, any specific information required by the competent authority;	The submission of this draft scoping report to the competent authority, allows the competent authority to advise the EAP on any specific additional requirements.
(m) any other matter required in terms of section 24(4)(a) and (b) of the Act.	Compliance with this section will be required at a later stage, once the competent authority has considered the contents of this Draft Scoping Report.

COMPETANT AUTHORITY COMMENT ON DRAFT SCOPING REPORT

This section will be updated once the DFFE provide comment on the Draft Scoping Report.

ORDER OF REPORT

Report Summary

Draft Scoping Report – Main Report

Appendix A	:	Location, Topographical Plans
Appendix B	:	Biodiversity Overlays
Appendix C	:	Site Photographs
Appendix D	:	Solar Facility Layout Plans[7]
Appendix D1	:	Cluster Map showing proximity of Kareekloof Solar PV Energy Facility to other projects in the vicinity.
Appendix E	:	Supplementary Reports (Specialist Reports and Technical Reports)
Appendix E1	:	Terrestrial Biodiversity[8] SSVR (Enviro Insight, 2023)
Appendix E2	:	Avifaunal SSVR (Enviro Insight, 2023)
Appendix E3	:	Aquatic Biodiversity SSVR (Enviro Insight, 2023)
Appendix E4	:	Heritage SSVR (Beyond Heritage, 2023)
Appendix E5	:	Agricultural SSVR (Lanz, 2023)
Appendix E6	:	Visual SSVR (Stead, 2023)
Appendix E7	:	Battery Energy Storage System preliminary Risk Assessment (Mitchell, 2023)
Appendix F	:	Public Participation Process
Appendix F1	:	I&AP Register
Appendix F2	:	Comments and Response Report (to be included with final Scoping Report)
Appendix F3	:	Adverts & Site Notices
Appendix F4	:	Draft Scoping Report Notifications (To be included with final Scoping Report)
Appendix F5	:	Draft Scoping Report Notifications (To be included with final Scoping Report)
Appendix G	:	Other Information
Appendix G1	:	Correspondence with Authorities
Appendix G2	:	Landowner Consent
Appendix G3	:	EAP Declaration & CV
Appendix G4	:	Specialist Declarations

[7] This includes a general plan of the currently preferred layout alternative (Layout Alternative 2). A detailed SLP that will be prepared pending the outcome of the detailed specialist assessments will be included in the Draft EIR.

[8] This includes Terrestrial Biodiversity, Plant Species and Animal Species Themes but excludes Avifauna which are reported separately.

Appendix G5	:	Title Deed / Windeed Report
Appendix G6	:	Specialist CV's
Appendix H	:	Site Sensitivity Verification Report and DFFE Screening Tool

TABLE OF CONTENTS

MAIN REPORT

FIGURES

TABLES

NON TECHNICAL SUMMARY

I. INTRODUCTION

Cape EAPrac has been appointed by Kareekloof Energy (Pty) Ltd, hereafter referred to as the Applicant, as the independent Environmental Assessment Practitioner (EAP), to facilitate the Scoping and Environmental Impact Reporting process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998) for the proposed development of the Kareekloof Solar PV Facility and BESS (hereafter referred to as Kareekloof Solar PV) on Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85 near De Aar in the Northern Cape Province of South Africa.

The total generation capacity of the solar facility will be up to 900MW for input into the national Eskom grid.

The project will feed into the National Grid via the proposed Eskom Hydra B MTS. The grid connection to connect this project to the National Grid is being assessed as part of a separate environmental process to be initiated at Draft EIR stage of the current process. This current process only includes the IPP portion of the on-site substation.

The purpose of this **Draft Scoping Report** (DSR) is to describe the environment to be affected, the proposed project, to present the site constraints identified by the various specialist during their site assessments and identify impacts of this development on the receiving environment. This information is herewith presented to all registered and potential Interested and Affected Parties (I&AP's), organs of state, state departments and the competent authority for review and comment.

In compliance with Chapter 6 of the 2014 EIA regulations (as amended), Draft Scoping Report is available for a 30 - Day period extending from **Friday 29 September 2023 – Monday 30 October 2023.**

All comments received on the DSR will be incorporated into the Final Scoping Report (FSR) that will be submitted to the Department of Forestry, Fisheries and the Environment (DFFE) for consideration and decision making.

II. RECOMMENDATION OF THIS SCOPING REPORT

The outcome of this scoping process has not identified any fatal flaws that would prevent the Kareekloof Solar PV Facility from proceeding to the next phase of the Environmental process. It is the EAP's recommendation that, subject to the outcome of the initial public participation, that the project proceed with the activities outlined in the plan of study for EIR outlined in section 6 of this report.

III. NEED AND DESIRABILITY

Need and desirability for this project has been considered in detail in this environmental process. The overall need and desirability in terms of developing renewable energy generation in South Africa, Northern Cape Province and globally is considered in section 1, while the project specific need and desirability is considered in section 2.8 of this report.

IV. ENVIRONMENTAL LEGISLATIVE REQUIREMENTS

The current assessment is being undertaken in terms of the **National Environmental Management Act** (NEMA, Act 107 of 1998)[9]. This Act makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority (in this case, the

[9] The Minister of Water and Environmental Affairs promulgated new regulations in terms of Chapter 5 of the National Environmental Management Act (NEMA, Act 107 of 1998), viz, the Environmental Impact Assessment (EIA) Regulations 2014 (as amended). These regulations came into effect on 08 December 2014 and replace the EIA regulations promulgated in 2006 and 2010.

national Department of Forestry, Fisheries and the Environment) based on the findings of an Environmental Assessment.

The proposed development entails a number of listed activities, which require a Scoping & Environmental Impact Reporting process to be followed. Such a process must be conducted by an independent registered EAP[10]. Cape EAPrac has been appointed to undertake this process.

The listed activities associated with the proposed development, as stipulation under 2014 Regulations **327, 325 and 324** are as follows:

Table 1: NEMA 2014 (As amended in April 2017) listed activities applicable to Kareekloof Solar PV.

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. Ensure to include thresholds/area/footprint applicable.**
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;	The three On-Site Substations will have a capacity of up to 300MVA each. Three 132kV powerlines will be routed in an EGI corridor/servitude from the three on-site substations to the grid connection
12(ii)(c)	The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	Some of the project infrastructure, such as internal cabling may be routed within 32m of the Aquatic features identified by the aquatic specialist. The relevance of this activity will be determined in the Environmental Impact Reporting phase after layouts are finalised and assessments completed.
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.	The BESS proposed will include the storage of dangerous goods in excess of the threshold of this 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: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	The proposed PV and BESS Development constitutes Commercial / Industrial use and will occur on a property currently used for agricultural purposes.
48	The expansion of— (i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	Some of the project infrastructure, such as internal cabling may be routed within 32m of the freshwater resources identified by the aquatic specialist. The relevance of this activity will be determined in the Environmental Impact Reporting phase after layouts are finalised and assessments completed.
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. Ensure to include thresholds/area/footprint applicable.**
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.	The proposed Kareekloof Energy Project will have an Electricity Footprint of up to 900 megawatts.
4	The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a	The BESS proposed will include the storage of dangerous goods in excess of the threshold of this activity.

[10] The EAP in this regard is registered with EAPASA under registration number 2019/301

	dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.	
15	The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed Kareekloof Energy project will require the clearance of more than 20ha of indigenous vegetation.
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. Ensure to include thresholds/area/footprint applicable.**
18(g)(ii)(ii)	The widening of a road by more than 4m, or the lengthening of a road by more than 1km. g. Northern Cape ii. Outside urban areas: (ii) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland; or	The main and internal access roads will require that existing farm tracks be widened by more than 4m in some areas which may be in proximity to the delineated watercourses. Existing Farm roads will be lengthened by more than 1km.

NOTE: Basic Assessment as well as S&EIR Activities are being triggered by the proposed development, the Environmental Application Process will follow a Scoping and Environmental Impact Reporting Process.

Before any of the above-mentioned listed activities can be undertaken, authorisation must be obtained from the competent authority, in this case the DFFE. Should the Department approve the proposed activity, the Environmental Authorisation does not exclude the need for obtaining relevant approvals from other Authorities who have a legal mandate in respect of the activity.

V. DEVELOPMENT PROPOSAL

The Applicant, Kareekloof Energy (Pty) Ltd, is proposing the construction of a photovoltaic (PV), and Battery Energy Storage System (BESS) energy facility (known as Kareekloof Solar PV Facility and BESS) located on Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85 situated near De Aar in the Northern Cape Province.

A study site of approximately 3512 ha is being assessed as part of this Environmental Process and the infrastructure associated with the up to 900MW PV facility includes:

- PV modules and mounting structures;
- Inverters and transformers;
- Cabling;
- Battery Energy Storage System (BESS);
- Site and internal access roads;
- Auxiliary buildings (33 kV switch room, gatehouse and security, control centre, office, warehouse, canteen & visitors centre, staff lockers etc.);
- Perimeter fencing and security infrastructure;
- Rainwater tanks;
- Temporary and permanent laydown areas;
- Facility substation.
- Internal electrical reticulation, including on-site substations.

The Kareekloof Solar PV Facility intends to connect to the National Grid via the proposed Hydra B Main Transmission Substation (MTS), located approximately 1.5km east of the proposed facility, by means of three double circuit 132kV conductor lines/powerlines, capable of evacuating or exporting the electricity output of from all 3 of the 300MVA On-Site Substations.

The proposed connection will include an Electrical Grid Infrastructure (EGI) corridor for the three 132kV powerlines, from the On-Site Substations to the MTS.

It must be noted that this application only includes the IPP Portion of the EGI (i.e. the on site substations) the remainder of the EGI (i.e. those components that will be transferred to Eskom – namely, the Eskom Side of the on-site substations and the Overhead powerlines to the MTS) is being assessed as part of a separate Basic Assessment Process that will run in parallel with the Environmental Impact Assessment phase of this Environmental Process.

VI. PROFFESIONAL INPUT

The following professionals[11] have provided input into this environmental process:

1.	Terrestrial Ecology	-	Enviro Insight
2.	Plant Species	-	Enviro Insight
3.	Animal Species	-	Enviro Insight
4.	Avifaunal	-	Enviro Insight
5.	Heritage	-	Beyond Heritage
6.	Archaeology	-	Beyond Heritage
7.	Agricultural	-	Mr Johann Lanz
8.	Visual	-	Visual Resource Management Africa
9.	Aquatic Biodiversity	-	Enviro Insight
10.	Social	-	Tony Barbour
11.	BESS Risk Assessment	-	ISHECON Ms Debbie Mitchell

VII. CONCLUSIONS & RECOMMENDATIONS

This scoping exercise is currently being undertaken to present concept proposals to the public and potential Interested & Affected Parties and to identify environmental issues and concerns raised as a result of the proposed development alternatives to date.

This will allow Interested & Affected Parties (I&APs), authorities, the project team, as well as specialists to provide input and raise issues and concerns, based on baseline / scoping studies undertaken.

Kareekloof Solar PV has been analysed from Ecological, Agricultural, Heritage, Avifaunal, Social and Visual perspectives, and site constraints and potential impacts identified.

This Draft Scoping report summarises the process to date, reports on the findings of relevant baseline studies and outlines the requirements for the remainder of the environmental process.

Cape EAPrac is of the opinion that the information contained in this Draft Scoping Report and the documentation attached hereto is sufficient to allow the general public and key stakeholders (including the competent authority) to apply their minds to the potential negative and/or positive impacts associated with the development, in respect of the activities applied for.

The outcome of this scoping report has not identified any fatal flaws associated with the development of the proposed Kareekloof Solar PV Facility.

Subject to the outcome of the public participation process, it is Cape EAPrac's reasoned opinion that the project should proceed to the Environmental Impact Assessment phase of the environmental process as outlined in section 7 of this report.

All stakeholders are requested to review this Scoping Report and the associated appendices, and provide comment, or raise issues of concern, directly to Cape EAPrac within the specified 30-day comment period.

[11] Note that not all of these professionals are considered specialists as contemplated in chapter 3 of Regulation 326. Studies such as Engineering, Stormwater, Traffic, water consumption and planning constitute "technical" studies, rather than specialist studies and as such, the requirements in appendix 6 of R326 do not apply to all these professionals

DRAFT SCOPING REPORT

1 INTRODUCTION

Cape EAPrac has been appointed by Kareekloof Energy (Pty) Ltd, hereafter referred to as the Applicant, as the independent Environmental Assessment Practitioner (EAP), to facilitate the Scoping and Environmental Impact Reporting process required in terms of the National Environmental Management Act (NEMA, Act 107 of 1998) for the proposed development of the Kareekloof Solar PV Energy Facility and BESS (hereafter referred to as the Kareekloof Solar PV Facility) on Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85 in the Northern Cape Province of South Africa.

The total generation capacity of the solar facility will be up to 900MW for input into the national Eskom grid.

The project will feed into the National Grid via the Eskom Proposed Hydra B MTS. The grid connection to connect this project to the National Grid is being assessed as part of a separate environmental process to be initiated in at Draft EIR stage of the current environmental process. This current process only includes the IPP portion of the on-site substation.

The purpose of this **Draft Scoping Report** (DSR) is to describe the environment to be affected, the proposed project, to present the site constraints identified by the various specialist during their site assessments and identify impacts of this development on the receiving environment. This information is herewith presented to all registered and potential Interested and Affected Parties (I&AP's), organs of state, state departments and the competent authority for review and comment.

In compliance with Chapter 6 of the 2014 EIA regulations (as amended), Draft Scoping Report is available for a 30 - Day period extending from **Friday 29 September 2023 – Monday 30 October 2023.**

All comments received on the DSR will be incorporated into the Final Scoping Report (FSR) that will be submitted to the Department of Forestry, Fisheries and the Environment (DFFE) for consideration and decision making.

1.1 RECOMMENDATION OF THE SCOPING REPORT

The outcome of this scoping process has not identified any fatal flaws that would prevent the Kareekloof Solar PV Facility from proceeding to the next phase of the Environmental process. It is the EAP's recommendation that, subject to the outcome of the initial public participation, that the project proceed with the activities outlined in the plan of study for EIR outlined in section 6 of this report.

1.2 OVERVIEW OF ALTERNATIVE ENERGY IN SOUTH AFRICA AND THE NORTHERN CAPE[12]

The section below provides an overview of the potential benefits associated with the renewable energy sector in South Africa. Given that South Africa supports the development of renewable energy at national level, the intention is not to provide a critical review of renewable energy. The focus is therefore on the contribution of renewable energy, specifically in terms of supporting economic development.

The Renewable Energy Independent Power Producers Procurement Programmes (REIPPPP)[13] primary mandate is to secure electrical energy from the private from renewable energy sources.

[12] This section has been prepared with input from the social specialist.

[13] The Kareekloof Solar PV Facility may form part of the REIPPPP, or another State or Private Power Procurement process.

The programme is designed to reduce the country's reliance on fossil fuels, stimulate an indigenous renewable energy industry and contribute to socio-economic development and environmentally sustainable growth. The REIPPPP has been designed not only to procure energy but has also been structured to contribute to the broader national development objectives of job creation, social upliftment and broadening of economic ownership.

By the end of June 2020, the REIPPPP had made the following significant impacts in terms of energy supply:

- 6 422MW of electricity had been procured from 112 Renewable Energy Independent Power Producers (IPPs) in seven bid rounds.
- 4 276 MW of electricity generation capacity from 68 IPP projects has been connected to the national grid.
- 49 461GWh of energy has been generated by renewable energy sources procured under the REIPPPP since the first project became operational in November 2013.

Renewable energy IPPs have proved to be very reliable. Of the 68 projects that have reached COD, 64 projects have been operational for longer than a year. The energy generated over the past 12-month period for these 64 projects is 11 079GWh, which is 93% of their annual energy contribution projections (P50) of 11 882GWh over a 12-month delivery period. Twenty-eight (24) of the 64 projects (38%) have individually exceeded their P50 projections.

In line with international experience, the price of renewable energy is increasingly cost competitive when compared with conventional power sources. The REIPPPP has effectively captured this global downward trend with prices decreasing in every bid window. Energy procured by the REIPPPP is progressively more cost effective and has approached a point where the wholesale pricing for new coal- and renewable-generated energy intersect.

The document notes that the REIPPPP has attracted significant investment in the development of the REIPPs into the country. The total investment (total project costs [14]), including interest during construction, of projects under construction and projects in the process of closure is R209.7 billion (this includes total debt and equity of R209.2 billion, as well as early revenue and VAT facility of R0.5 billion).

To date, the REIPPPP has attracted R41.8 billion in foreign investment and financing in the seven bid windows.

The REIPPPP also contributes to Broad Based Black Economic Empowerment and the creation of black industrialists. In this regard, Black South Africans own, on average, 33% of projects that have reached financial close (BW1-BW4), which is 3% higher than the 30% target. This includes black people in local communities that have ownership in the IPP projects that operate in or near their communities and represents the majority share of total South African Entity Participation.

On average, black local communities own 9% of projects that have reached financial close. This is well above the 5% target. In addition, an average of 21% shareholding by black people in engineering, procurement, and construction (EPC) contractors has been attained for projects that have reached financial closure. This is higher than 20% target. The shareholding by black people in operating companies of IPPs has averaged 24% (against the targeted 20%) for the 68 projects in operation (i.e. in BW1–4).

[14] Total project costs means the total capital expenditure to be incurred up to the commercial operations date in the design, construction, development, installation, and or commissioning of the project)

To date, a total of 52 603 job years[15] have been created for South African citizens, of which 42 355 job years were in construction and 10 248 in operations. These job years should rise further past the planned target as more projects enter the construction phase. Employment opportunities across all five active bid windows are 126% of the planned number during the construction phase (i.e. 33 707 job years), with 23 projects still in construction and employing people. The number of employment opportunities is therefore likely to continue to grow beyond the original expectations. By the end of June 2020, 68 projects had successfully completed construction and moved into operation. These projects created 33 449 job years of employment, compared to the anticipated 23 619. This was 42% more than planned.

The emission reductions for the programme during the preceding 12 months (June 2019-June 2020) is calculated as 11.5 million tonnes CO2 (MtonCO2) based on the 11 313 GWh energy that has been generated and supplied to the grid over this period. This represents 56% of the total projected annual emission reductions (20.5MtonCO2) achieved with only partial operations. A total of 50.2 Mton CO2 equivalent reduction has been realised from programme inception to date.

The Green Jobs Study notes that South Africa has one of the most carbon-intensive economies in the world, therefore making the greening of the electricity mix a national imperative. Within this context the study notes that the green economy could be an extremely important trigger and lever for enhancing a country's growth potential and redirecting its development trajectory in the 21st century.

The REIPPPP introduced in 2011, has by all accounts been highly successful in quickly and efficiently delivering clean energy to the grid. Increasingly competitive bidding rounds have led to substantial price reductions.

A 20-year sovereign guarantee on the power purchase agreement (PPA) and, especially, ideal solar power conditions, have driven the investment case for Renewable Energy in South Africa. In this regard South Africa has been identified as one of the worlds' leading clean energy investment destinations

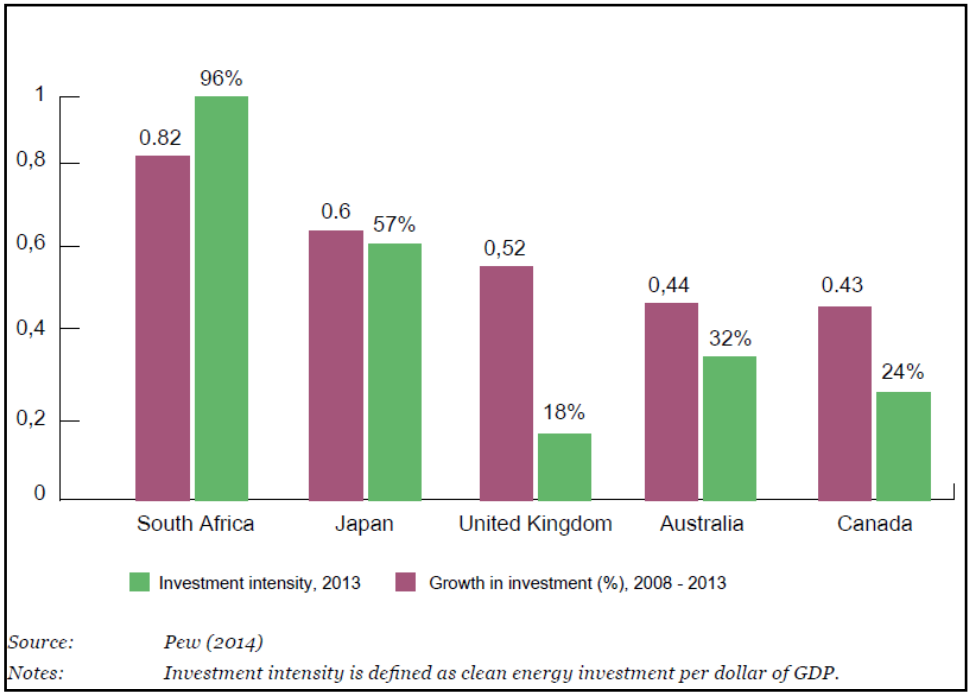


Figure 1: South Africa as a global lead clean energy investment destination

[15] The equivalent of a full-time employment opportunity for one person for one year

With regard to local economic development, the REIPPPP sets out various local economic development requirements with stipulated minimum threshold and aspirational targeted levels, which each bidder must comply with. Based on the Broad-Based Black Economic Empowerment Codes, this requirement comprises the following components which make up a scorecard:

- Ownership by black people and local communities,
- Job creation,
- Local content,
- Management control,
- Preferential procurement,
- Enterprise development, and
- Socio-economic development.

1.3 ASSUMPTIONS & LIMITATIONS

This section provides a brief overview of *specific assumptions and limitations* having an impact on this environmental application process:

- It is assumed that the information on which this report is based (specialist studies and project information, as well as existing information) is **correct, factual and truthful.**
- The proposed development is **in line** with the statutory planning vision for the area, most notably the local Spatial Development Plan, and thus it is assumed that issues such as the cumulative impact of development in terms of character of the area and it's resources, have been taken into account during the strategic planning for the area.
- It is assumed that all the relevant **mitigation and management measures** and agreements specified in this report will be implemented in order to ensure minimal negative impacts and maximum environmental benefits.
- It is assumed that due consideration will be given to the **discrepancies in the digital mapping** (PV panel array layouts against possible constraints), caused by differing software programs, and that it is understood that the ultimate/final positioning of solar array will only be confirmed on-site with the relevant specialist/s.
- The Department of Water and Sanitation / Catchment Management Agency **will consider the submission of a water use application** necessary for allowing the use of water from any water resource on site. The assumption at this stage is made that water provision for construction and operations is to be obtained from the local municipality.
- It is assumed that Stakeholders and Interested and Affected Parties notified of the availability of this will submit all relevant **comments within the designated 30-days** review and comment period, so that these can included in the Final Scoping Report to be timeously submitted to the competent authority, the Department of Forestry, Fisheries and the Environment, for consideration and decision making.

The assumptions and limitations of the various specialist studies are included in their respective reports attached in Appendix E.

2. PROPOSED ACTIVITY

The Applicant, Kareekloof Energy (Pty) Ltd, is proposing the construction of a photovoltaic (PV), and Battery Energy Storage System (BESS) energy facility (known as Kareekloof Solar PV Facility and BESS) located on Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85 situated near De Aar in the Northern Cape Province.

A study site of approximately 3512 ha is being assessed as part of this Environmental Process and the infrastructure associated with the up to 900MW PV facility includes:

- PV modules and mounting structures;
- Inverters and transformers;
- Cabling;
- Battery Energy Storage System (BESS);
- Site and internal access roads;
- Auxiliary buildings (33 kV switch room, gatehouse and security, control centre, office, warehouse, canteen & visitors centre, staff lockers etc.);
- Perimeter fencing and security infrastructure;
- Rainwater tanks;
- Temporary and permanent laydown areas;
- Facility substation.
- Own-build grid connection solution, including on-site substations.

The Kareekloof Solar PV Facility intends to connect to the National Grid via the proposed Hydra B Main Transmission Substation (MTS), located approximately 1.5km east of the proposed facility, by means of three double circuit 132kV conductor lines/powerlines, capable of evacuating or exporting the electricity output of from all 3 of the 300MVA On-Site Substations.

The proposed connection will include an Electrical Grid Infrastructure (EGI) corridor for the three 132kV powerlines, from the On-Site Substations to the MTS.

It must be noted that this application only includes the IPP Portion of the EGI (i.e. the on site substations) the remainder of the EGI (i.e. those components that will be transferred to Eskom – namely, the Eskom Side of the on-site substations and the Overhead powerlines to the MTS) is being assessed as part of a separate Basic Assessment Process that will run in parallel with the Environmental Impact Assessment phase of this Environmental Process..

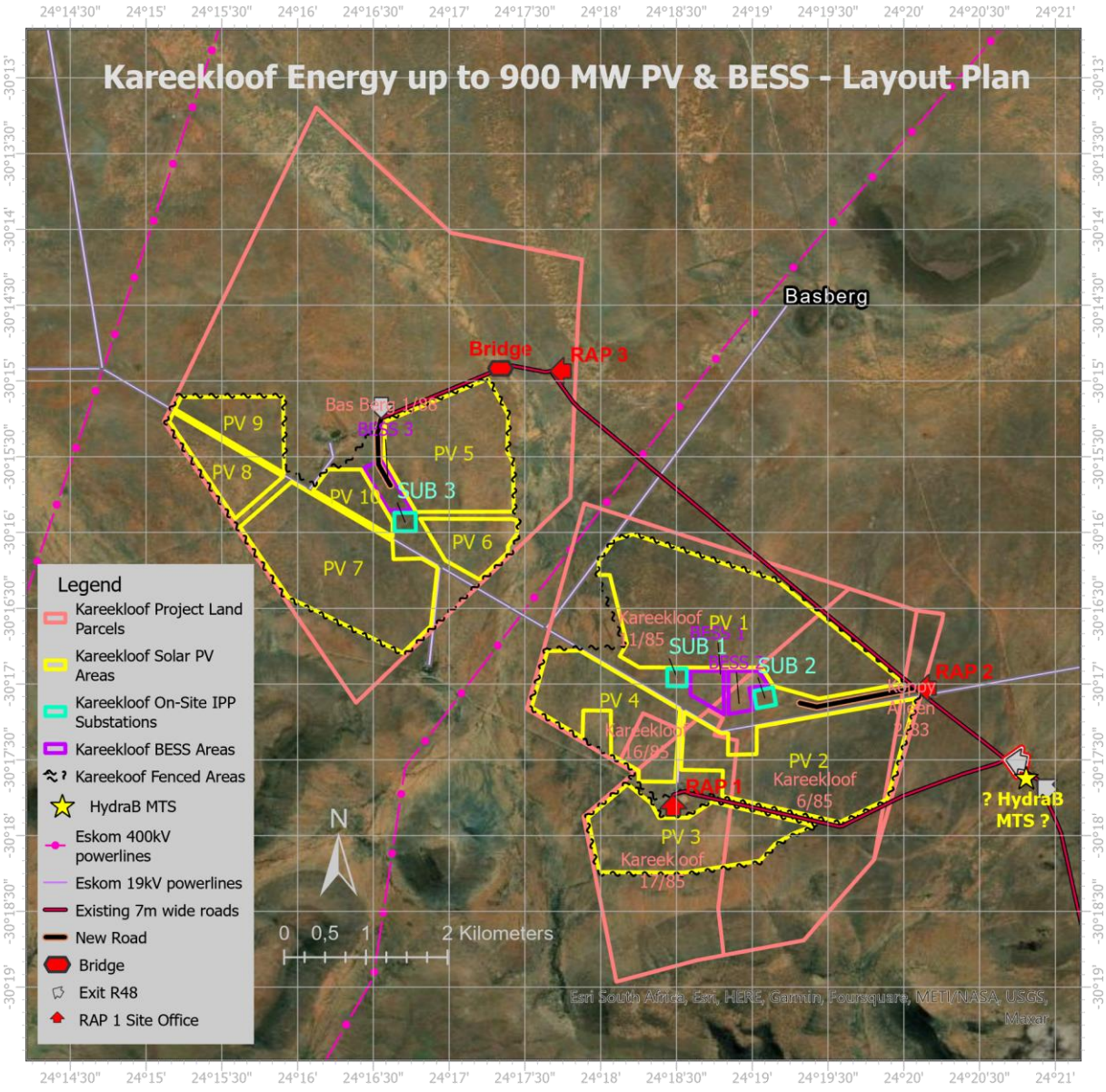


Figure 2: Plan depicting the key project infrastructure associated with the Kareekloof Solar PV Facility (Please also refer to the full-scale plans attached in Appendix A)[16].

[16] The Abbreviation "RAP" in figure 2 refers to Road Access Point

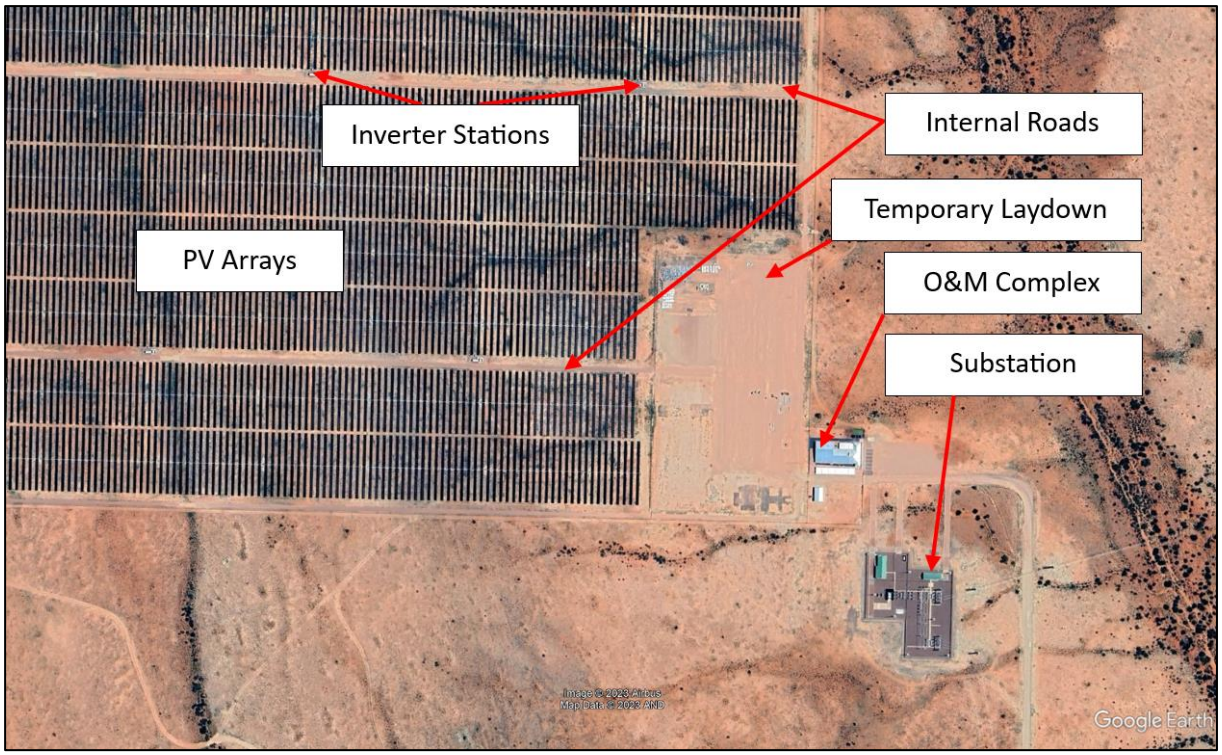


Figure 3: Typical configuration of a Solar PV Energy Facility.

The Kareekloof Solar PV facility will have a net generating capacity of up to 900 MW with an estimated total maximum footprint of ± 1513 ha.

The approximate area that each component of the Kareekloof Solar PV Facility will occupy is summarised in the table below.

Table 2: Component Areas and % of Total Project Area

SEF Component	Estimated Area	% of Total Property (3590ha)
PV Footprint – including inverters and internal roads.	± 1442 ha	40%
Auxiliary Structures	± 14 ha	0.3%
Access roads	± 8 ha	0.2%
Substation	± 14 ha	0.3 %
BESS	±43 ha	1.1%

2.1 SOLAR ARRAY

Solar PV modules are connected in series to form a string. A number of strings are then wired in parallel to form an array of modules. PV modules are mounted on structures that are either fixed, north-facing at a defined angle, or mounted to a single or double axis tracker to optimise electricity yield.

2.2 MOUNTING STRUCTURES

Various options exist for mounting structure foundations, which include cast/ pre-cast concrete, driven/ rammed piles, or ground/ earth screws mounting systems. Typical examples of these are shown in the images below .

Figure 4: Example of cast concrete mounting systems (BVI International 2023)

Figure 5: Example of Earth Screw Mounting Technology (HQ, Mount 2023)

The impact on of these options are considered to be similar, however concrete is least preferred due the extensive mitigation required during construction (in terms of run off and spillage prevention) and effort required at a decommissioning phase in order to remove the concrete from the soil.

Kareekloof Solar PV will therefore aim to make the most use of predrilling and backfilling of holes prior to either driven/ rammed piles, or ground/ earth screws mounting systems, and only in certain instances resort to concrete foundations should geotechnical studies necessitate this.

The images below show typical examples of the preferred mounting technology during and after installations (Photos: Cape EAPrac).

Figure 6: Pre-drilling of holes prior to the ramming of steel piles.

Note that the vegetation is not completely removed prior to the drilling and installation of the piles.

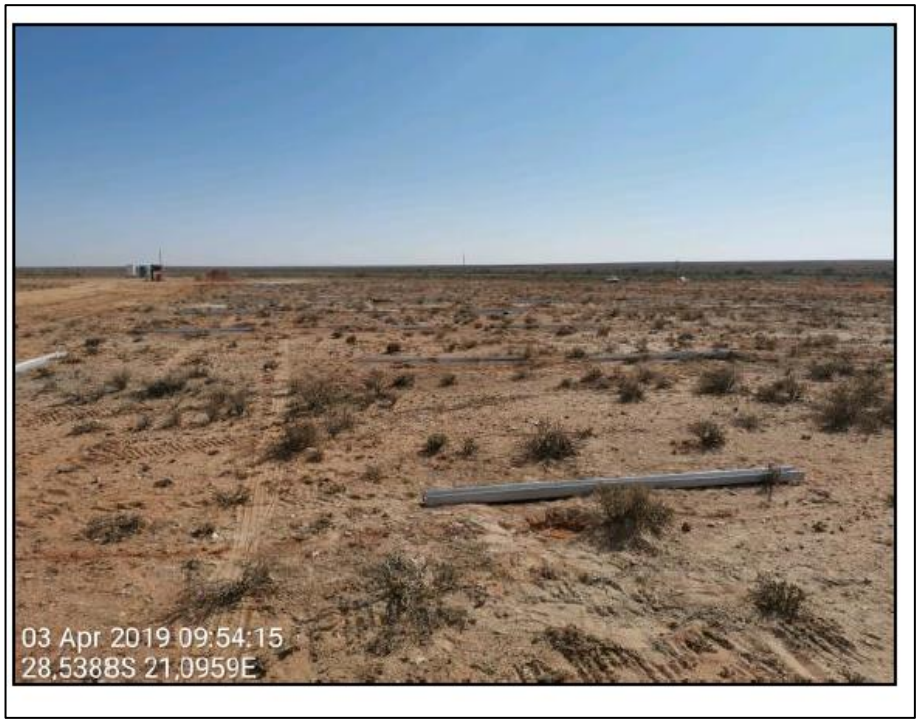


Figure 7: pre-drilled holes are backfilled with a wet sand mixture and steel piles placed in position ready for ramming.

The predrilled holes are backfilled on a continuous basis to ensure that no fauna is trapped in the holes

Figure 8: Ramming of steel piles into the pre-drilled / backfilled holes.

Note that the ramming machines follow the same entry and exit routes as the drilling rigs in order to reduce the impacts of trampling and compaction.

Figure 9: Completed ramming and assembly showing vegetation remaining intact beneath the modules.

Figure 10: Showing vegetation re- establishing along the driplines of the arrays within weeks after installation.

2.3 AUXILIARY BUILDINGS

The auxiliary buildings will comprise of the following as a minimum:

- 33 kV switch room;
- Control building/ centre;
- Offices;
- Warehouses;
- Canteen & visitors centre;
- Staff lockers & ablution; and
- Gatehouse and security.

2.4 GRID CONNECTION AND CABLING

Kareekloof Solar PV intends to connect to the proposed Hydra B MTS (400/132 kV) located ± 1.5km to the East of Kareekloof Solar PV.

The three proposed Kareekloof Solar PV On-Site Substations will each be up to 4.5ha (IPP component) and feature a step-up transformer/s to transmit electricity via a 132 kV Overhead Powerine between Eskom side of the substation/ switching station and onto the proposed Hydra B MTS.

The Eskom side of the Substation and the grid connection corridor to the proposed Hydra B MTS will be assessed as part of a Separate Environmental Process that will be initiated simultaneously with the Environmental Impact Reporting Phase of the current Environmental Process.

2.5 BATTERY ENERGY STORAGE SYSTEM

A BESS Health, Safety and Environment Risk Assessment has been compiled by ISHECON and is attached in **Appendix E7**of this Draft Scoping Report.

Renewable energy can currently achieve lower costs than fossil fuels. By incorporating energy storage systems (BESS) into renewable energy facilities, electricity can be stored during generation peaks and supplied during demand peaks.

The proposed Kareekloof Solar PV BESS will have a maximum footprint of up to 43 ha and will be centrally situated adjacent to the on-site substations,

The table below outlines the BESS Technology Alternatives that will be considered and assessed as part of this Environmental Process.

Table 3: Details of the Proposed BESS that will be considered and assessed as part of the Kareekloof Solar PV Facility.

Capacity of BESS facility (in MWh)	3600 MWh
Type of technology (preferred)	Redox Flow, for example Vanadium Redox Flow Battery (VRB)
Type of technology (alternatives)	Lithium-Ion, Sodium-Ion, Solid State, Liquid Metal (https://ambri.com/) and other technology types will be considered
Structure height	Containerised batteries less than 5m high except for lightening conductors and vent pipes. Storage tanks may be required for the VRB and could be 6m high, if the non-containerised type of VRB battery is installed.
Surface area to be covered (including associated infrastructure such as roads)	43 ha (3 x ±14 ha) (including electrolyte storage tanks of 27 ha (3 x 9 ha) for redox flow battery)

Structure locations	Three BESS sites, each ± 14 ha near each of the 3 On-Site Substations- refer to the maps appendix

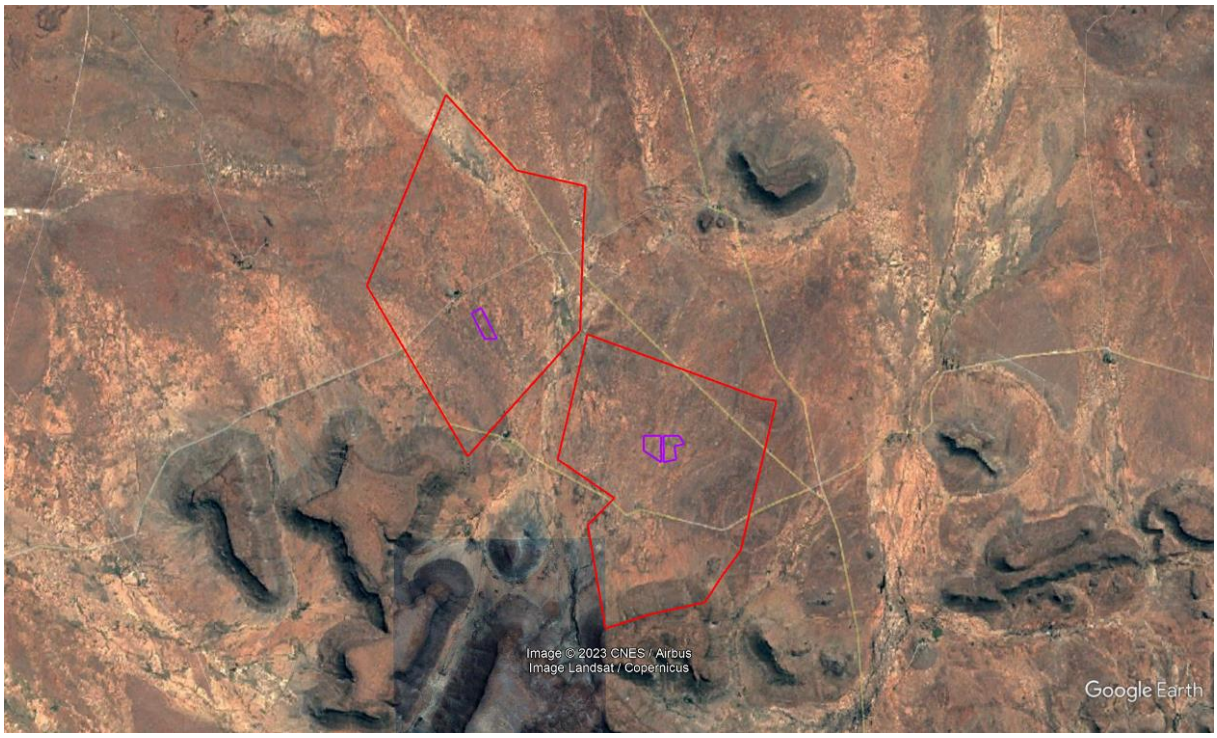


Figure 11: Showing the proposed position of the BESS within the Study Site[17].

The Draft Environmental Impact Assessment Report will include further details of the BESS system once the Detailed Specialist BESS Risk Assessment is completed.

2.6 ACCESS ROUTES AND INTERNAL ROADS.

The proposed project site is accessible via the provincial R48 road situated to the South of the Site.

The internal road network will follow existing farm tracks for the most part and will consist of gravelled roads, up to 5 m in width.

[17] This is the proposed position as per layout alternative 2 and is subject to change pending the outcome of the specialist studies, including the BESS risk assessment during the Environmental Impact Reporting Phase of the Environmental Process.

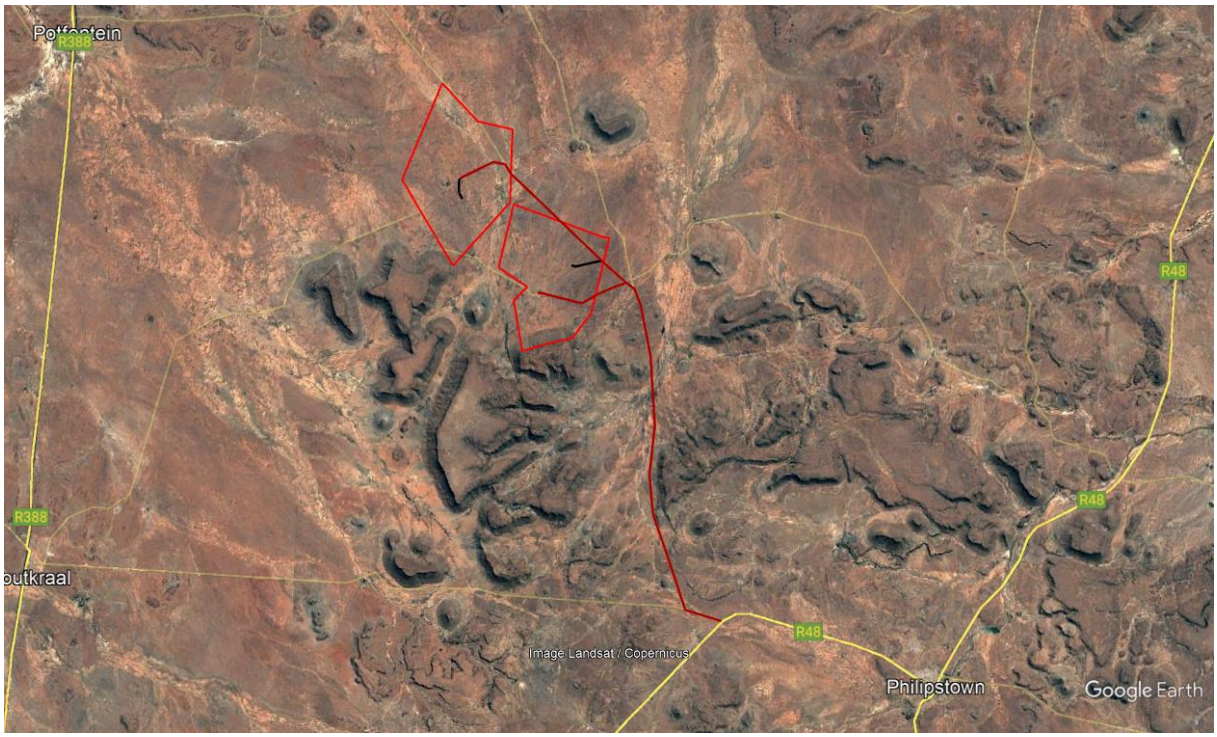


Figure 12: Showing the position of the main access roads within the Study Site.

A detailed transport and traffic impact study will form part of the Environmental Impact Reporting phase of this environmental process. Precautionary measures will be taken to mitigate the risk of ground disturbances where access roads will be constructed. Special attention will be given to drainage, water flow and erosion by applying appropriate building methods.

2.7 TRANSPORT OF COMPONENTS AND STAFF

A Traffic Impact and Transportation Assessment will form part of the Environmental Impact Reporting phase of this environmental process.

This section will be updated on receipt of this plan.

It is anticipated that the following vehicles will access the site during construction:

- Conventional trucks within the freight limitations to transport building material to the site;
- 40ft container trucks transporting solar panels, frames and the inverter, which are within freight limitations;
- Light Differential Vehicle (LDV) type vehicles transporting workers from surrounding areas to site;
- Drilling machines and other required construction machinery being transported by conventional trucks or via self-drive to site; and
- The transformers and BESS infrastructure will be transported as abnormal loads.

There are two viable options for the port of entry for imported components - the Port of Ngqura in the Eastern Cape and the Port of Saldanha in the Northern Cape. A third option, the Port of Cape Town, could be considered for smaller components.

It is envisaged that most materials, water, plant, services and people will be procured within a 120km radius from the proposed site; however, this would be informed by the procurement requirements.

2.8 SERVICES REQUIRED

The services required for the construction and operation of the proposed Kareekloof Solar PV Facility are outlined below.

2.8.1 Solid Waste

Solid waste during the construction phase will mainly be in the form of construction material, excavated substrate and domestic solid waste. All waste generated during construction will be separated into recyclable components and removed from site by a licenced recycling service provider. All non recyclable waste will be disposed of in scavenger proof bins and temporarily placed in a central location for removal by the contractor. Any other waste and excess material will be removed once construction is complete and disposed of at a registered waste facility. Excess excavation material will either be spoiled offsite at a registered facility or used for landscaping berms[18] within the overall PV footprint.

2.8.2 Sewerage.

During the construction phase, chemical ablution facilities will be utilised. These ablution facilities will be maintained, serviced and emptied by an appointed contractor, who will dispose of the effluent at a licensed facility off site.

Once construction is complete, the chemical ablution facilities will be removed from the site. A conservancy tank which will be regularly emptied by a registered service provider will be installed at the Operations & Maintenance building and on-site/ facility substation and the BESS control room.

2.8.3 Hazardous substances

During the construction phase, use of the following hazardous substances is anticipated:

- Cement associated with piling activities and construction of buildings and inverter station plinths;
- Petrol/ diesel for construction plant;
- Electrolytes associated with the BESS and
- Limited amounts of lubricants and transformer oils.

Temporary storage and disposal of hazardous waste will be done in compliance with relevant legislation (i.e., stored in covered containers with appropriate bunding). Refuelling areas to be in designated positions, with suitable mitigation to reduce the risk of hydrocarbon spills. In Terms of the EMPr, Spill kits will be available on site to clean up any minor spillages.

[18] If any landscaped berms are constructed around infrastructure, these must be done in such a way as to comply with the overall Stormwater design philosophy of maintaining sheet flow.

Figure 13: Hydrocarbon Spill Kits must be in place within the site camp and in the field within 500m of any drilling or ramming activity.

2.8.4 Water Supply

Water required during the construction and operation phases will be sourced from (in order of priority):

1. The Local Municipality - Specific arrangements will need to be agreed with the Emthanjeni Local Municipality in a Service Level Agreement (SLA). Most likely the water will be either trucked in, or otherwise made available for collection at their Water Treatment Plant via a metered standpipe.
2. Investigation into a third-party water supplier which may include a private services company.
3. The investigation of drilling a borehole on site, which includes complete geohydrological testing, groundwater census and a Water Use License Application (WULA) in terms of section 21a of the National Water Act, 1998.

2.9 PROJECT NEED AND DESIRABILITY

In keeping with the requirements of an integrated Environmental Impact process, the DEA&DP *Guidelines on Need and Desirability (2010 & 2011)*[19] were referenced to provide the following estimation of the activity in relation to the broader societal needs. The concept of need and desirability can be explained in terms of its two components, where *need* refers to *time,* and *desirability* refers to *place*. Questions pertaining to these components are answered in the Sections below.

The section above (overview to alternative energy in South Africa and the Northern Cape) considers the overall need for alternative, so-called 'green energy' in light of the known environmental burdens associated with the impact of coal power generation through which most of our country's electricity is

[19] The Western Cape Guidelines were considered in this regard, as no guidelines are available for the Northern Cape Province.

currently being generated. Associated aspects such as air pollution, water use and carbon tax are discussed in order to further explain the need and desirability for 'green energy' projects in general.

This section however considers the need and desirability of this specific project at this point in time.

2.9.1 Feasibility consideration

The commercial feasibility for the proposed up to 900MW$_{AC}$ Kareekloof Solar PV to be built on private land near De Aar, has been informed by its contextual location, and economic, social and environmental impacts and influence. The project will gather sufficient information and conduct studies of the site and the region to make qualified and reliable assumptions on the project's various impacts (This will take place during the Environmental Impact Reporting Phase of this Environmental process).

2.9.2 Solar Resource & Energy Production

The economic viability of a solar PV facility is directly dependent on the annual solar irradiation at the site.

Emthanjeni receives relatively high Global Horizontal Irradiation (GHI). The GHI for the site is in the region of approximately 2186 kWh/m^2/annum. The irradiation level is an important factor in a highly competitive bidding environment; the economic viability of a project is a critical success factor.

Figure 14: Global Horizontal Irradiation of the Kareekloof Solar PV Facility (Solar Atlas.2023)

2.9.3 Access to Grid

The proposed Hydra B Main Transmission Substation (MTS) is located approximately 1.5 km east of the Kareekloof Solar PV site[20].

[20] The grid connection and associated infrastructure will be assessed as part of a separate environmental process

Ease of access into the Eskom electricity grid is vital to the viability of a solar PV facility. Projects which are in close proximity to a connection point and/or demand centre are favourable, and reduce the losses associated with power transmission.

In addition, Eskom's '2040 Transmission Network Study' has drawn on various scenarios to determine the grid's development requirements, as well as to identify critical power corridors for future strategic development, of which the Central corridor[21] is one of these.

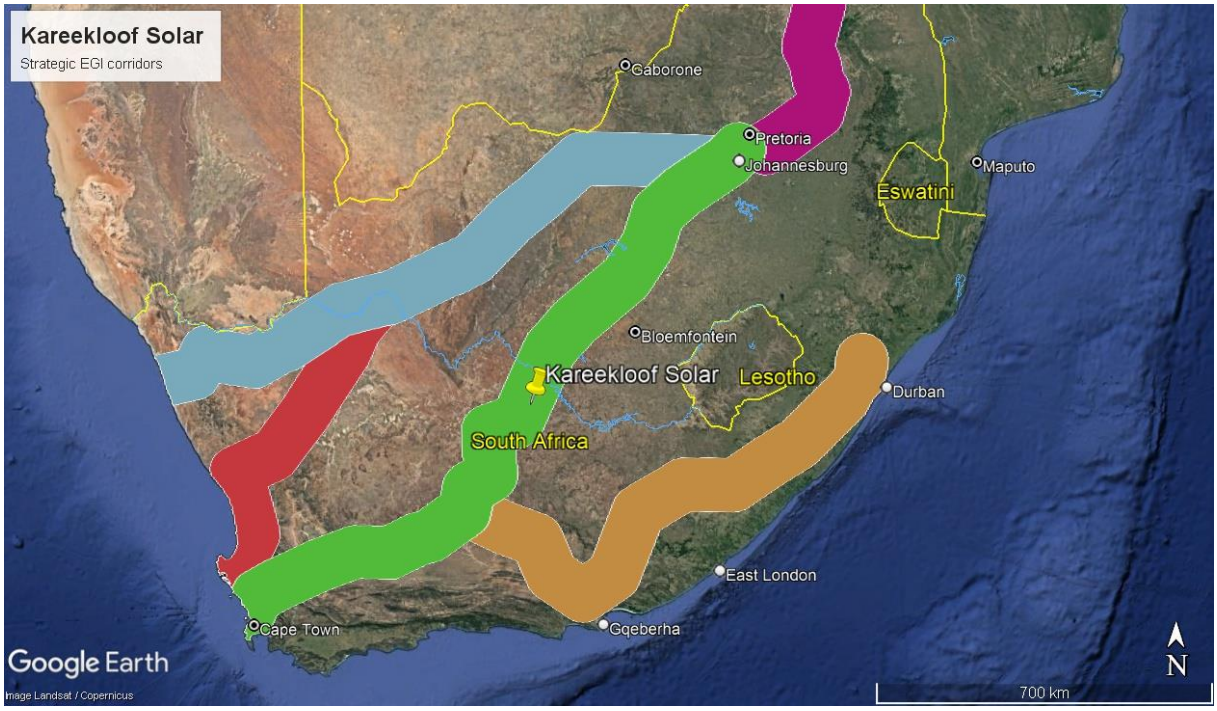


Figure 15: Plan showing Kareekloof Solar PV within the Central Strategic Electrical Grid Corridor.

2.9.4 Site Suitability

Among the positive characteristics of the Kareekloof Solar PV site is its flat nature, and accessible location, facilitating the delivery of infrastructure, and the construction and assembly process.

The proximity of the site to the R48 decreases the impact on secondary roads from the traffic going to and from Kareekloof Solar PV during construction and operations.

The very close proximity of the proposed Hydra B MTS also allows for connection via a short distribution line. As the site is not used for intensive agricultural purposes, Kareekloof Solar PV will therefore not significantly interfere with the agricultural productivity of the area.

2.9.5 Social and Economic impact

A social impact assessment will be undertaken During the Environmental Impact Assessment Phase of the Environmental Process.

2.9.6 Employment & Skills Transfer

The benefits of renewable energy facilities to local regions are not confined to the initial investment in the project. They also provide a reliable and on-going income for landowners and municipality, creating

[21] The Kareekloof Solar PV and the associated grid connection falls within this Central EGI Corridor.

direct employment opportunities for locals, as well as flow-on employment for local businesses through provision of products and services to the project and its employees.

Kareekloof Solar PV will have a positive impact on local employment. During the construction phase, the project will employ approximately 300 individuals per 50 Megawatt Area of various qualifications. The majority will be provided by the local labour market.

During operations, Kareekloof Solar PV is expected to have up to 20 employment opportunities per 50MW area ranging from security staff to administration and artisans[22].

2.9.7 Need (time)

In accordance with the guidelines on need and desirability, a project should be able to answer a series of questions to demonstrate need. These are highlighted in the table below:

Table 4: Project Need Analysis

Need	Discussion	
Is the land use considered within the timeframe intended by the existing approved Spatial Development Framework (SDF)? (I.e., is the proposed development in line with the projects and programmes identified as priorities within the credible IDP?	Yes	One of the Key Transitions per sector as proposed by Northern Cape Infrastructure Framework is to promote the development of renewable energy plants in the Province and associated manufacturing capability.
Should the development occur here at this point in time?	Yes	The proposed Kareekloof Solar PV energy facility is to be located outside the De Aar urban edge, but within a legislated EGI corridor, and would promote diversification to the local economy as well as serve as a catalyst for further expansion in the stream of sustainable renewable energy development within this Corridor.
Does the community / area need the activity and the associated land use concerned?	Yes	The Emthanjeni Local Municipality identified the opportunity for renewable energy projects through their SDF and IDP processes, which include public participation. The proposed Kareekloof Solar PV development will allow for a diversification of employment, skills and contribute to the potential development of small business associated with its construction, operation and maintenance activities. The proposed Kareekloof Solar PV development will contribute electricity to the constrained Northern Cape and National electrical network, contributing to a provincial and national need.
Are the necessary services with adequate capacity currently available?	partially	Kareekloof Solar PV requires the installation of an overhead power line to connect to the proposed Hydra B Substation[23] (feed into the national grid system), as well as part of the access road to the development site from the R48 (following existing farm tracks for most part).

[22] These estimated figures will be reviewed and confirmed by the Social Specialist during the EIR phase of the Environmental process.

[23] To be assessed as part of a separate environmental process.

Need	Discussion	
		The cost of supplying the new infrastructure will be covered by the Applicant, and the impacts thereof have been assessed in this environmental process and the additional process to be initiated. The water required for the construction and operation of Kareekloof Solar PV will be sourced from the Emthanjeni Municipality (preferred option) and will be supplemented by stored rainwater. The applicant may at a later stage consider the utilisation of groundwater to supplement this supply, this will however be subject to approval in terms of the National Water Act. Construction waste (general waste) will be disposed of at the existing landfill sites. Defunct and damaged modules identified during construction will be returned to the supplier for recycling and/or disposal.
Is this development provided for in the infrastructure planning of the municipality?	Yes	Yes. Attracting private investment and the employment opportunities associated with renewable energy development are identified a strategy to create sustainable urban and rural settlements.
Is this project part of a national programme to address an issue of national concern or importance?	Yes	In order to meet the increasing power demand within South Africa, Eskom has set a target of 30% of all new power generation to be derived from independent power producers (IPPs). The Applicant is one such IPP which intends to generate up to 900MW of electricity from the proposed Kareekloof Solar PV, for input into the national grid via the proposed Hydra B Substation). The proposed Kareekloof Solar PV is also situated within a legislated strategic EGI Corridor.

2.9.8 Desirability (place)

In accordance with the guidelines on need and desirability, a project should be able to answer a series of questions to demonstrate desirability. These are highlighted in the table below:

Table 5: Project Desirability Analysis

Desirability	Discussion	
Is the development the best practicable environmental option for this land / site?	Yes	The target property is outside the De Aar Urban Edge, within a legislated EGI Corridor. The property has a poor agricultural potential due to the arid climate and other limiting factors. These factors have rendered the property with limited land use option alternatives. Considering these factors, it is very unlikely to be considered for an alternative land use such as urban development.
Would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?	No	The Emthanjeni IDP aligns with the National Development Plan which states that at least 20 000 MW of renewable energy should be contracted by 2030. The IDP identifies renewable energy investment as a strategic objective for the region.
Would the approval of this application compromise the integrity of the existing approved environmental management priorities for the area?	unlikely	According to the national vegetation map (Mucina & Rutherford 2018, the solar development site lies within vegetation types all classified as least threatened.

Desirability	Discussion	
Do location factors favour this land use at this place?	Yes	The region has been identified as being viable areas for solar energy generation due to the following factors: • Good solar radiation ; • Close to existing main transport routes and access points; • Very close to connection points to the local and national electrical grid; and The proposed site is furthermore situated within a legislated Strategic EGI Corridor and as such has been subjected to a detailed Strategic Environmental Assessment in which highly sensitive landscapes were already excluded from these areas. The ecological sensitive areas on and surrounding the solar site have informed the optimal location and layout for the proposed solar project, in order to minimise the impact on the receiving environment, subject to implementation of mitigation measures.
How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas?	Yes	The alternatives considered for the solar development have been iteratively designed and informed by various investigations and assessments that considered both the natural and cultural landscapes. The natural and culturally sensitive areas have been identified and where possible, avoided to prevent negative impacts on such areas.
How will the development impact on people's health and wellbeing?	Yes	The site is located outside of the De Aar Urban Edge and as a result is unlikely to impact negatively on the community's health and wellbeing. The closest populated settlement is approximately from the site (The owner of this settlement has however consented to the development.
Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?	Unlikely	The next best land use alternative to the solar facility is limited agriculture (the status-quo). However, the proposed development site does not have any significant agricultural value and has not been utilised for any intensive agricultural purposes.. The development of the proposed solar facility would constitute the loss of approximately 1500ha of the overall property. The economic benefits and opportunities that the proposed solar development holds for the landowner and the local economy of the municipal area cannot be recovered from the current or potential agricultural activities. The opportunity costs in terms of the water-use requirements of Kareekloof Solar PV are within acceptable bounds if one considers the minimal demand on the resources.
Will the proposed land use result in unacceptable cumulative impacts?	Unlikely.	The sites are within the legislated Strategic EGI corridors which have been identified as an area with high potential for Electrical Grid Infrastructure. The potential for further, renewable energy developments in the area cannot be discounted (as several have already been approved or are in progress). The significance of the cumulative impacts will be assessed in detail in the Environmental Impact reporting Phase of this environmental Process.

2.10 SITE SELECTION PROCESS

The site selection process followed a two-stage approach; firstly, to select the property for the proposed development (Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6,

11, 16 & 17 of the farm Karee Kloof 85) and secondly, to select the footprint of the proposed development within the farm portion.

2.10.1 Property Selection

The following criteria were taken into account by the applicant when selecting the property for the proposed development of the Kareekloof Solar PV Facility.

2.10.1.1 Proximity to towns with a need for socio-economic upliftment

The proposed Kareekloof Solar PV facility is situated approximately 50 km North East of De Aar in the Northern Cape Province.

According to the Emthanjeni IDP there are already 8 renewable energy facilities established within the municipality and further diversification of these is noted as desirable.

To this extent the proposed Kareekloof Solar PV Facility is situated in close proximity to the De Aar town. Consequently, local labour would be easy to source, which fits in well with the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) economic development criteria for socio-economic upliftment.

2.10.1.2 Access to grid

Eskom's 2040 Transmission Network Study' has drawn on various scenarios to determine the grid's development requirements, as well as to identify critical power corridors for future strategic development.

The National EGI corridors consisting of five transmission power corridors of 100 km in width have been gazetted by the DFFE following the outcome of the Strategic Environmental Assessment (SEA) which aimed to identify environmentally acceptable routes. The Kareekloof Solar PV Facility falls into the Western Corridor (see figure 16 above). The proposed Kareekloof Solar PV facility is furthermore situated very close to a point of connection, via the proposed Hydra B Substation.

2.10.1.3 Current land use

The Agricultural specialist has confirmed that the cropping potential of the site is severely limited by the combination of climate and soil constraints. The rainfall is low and consequently very marginal for crop production. The soils are very shallow and consequently have very low water and nutrient holding capacity. The low water holding capacity, in combination with the rainfall, provides an insufficient moisture reservoir to reliably carry a crop through the season. The climate and soil constraints mean that the assessed area is not suitable for continuous, profitable crop production

2.10.1.4 The solar irradiation

The economic viability of a solar PV facility is directly dependent on the annual solar irradiation at the site. As outlined in the above section the solar irradiation is favourable for commercial energy generation from PV..

2.10.1.5 Proximity to access road for transportation of material and components

The proximity of the site to the R48 decreases the impact on secondary roads from traffic during the construction and operation phases.

2.10.1.6 Landowner support

The selection of a site where the landowner is supportive of the development of renewable energy is essential for ensuring the success of the project. The landowners do not view the development as a conflict with their current land use practices. The landowners have provided written consent for the proposed Kareekloof Solar PV.

2.10.2 Footprint selection

The selection of the proposed study area within the affected properties followed a risk adverse, bottom-up approach in order to ensure that the impacts of the proposed developments can be avoided as far as possible. This avoidance approach reduces the degree of mitigation required in order ensure that potential environmental impacts are within acceptable levels.

Please refer to the section below detailing the layout progression and the alternatives that were considered.

2.11 CONSIDERATION OF ALTERNATIVES

Kareekloof Solar PV will consist of solar PV technology with fixed, single or double axis tracking mounting structures, with a net generation (contracted) capacity of up to 900MW_{AC} as well as associated infrastructure including BESS.

In terms of the of the guidelines on consideration of alternatives, alternatives can include:

- Site Alternatives (please refer to the site selection process detailed in section 2.10).
- Technology Alternatives (please refer to section 2 where technology alternatives are discussed in further detail).
- Layout Alternatives (discussed below).

In compliance with the regulations, as a minimum, the No-Go Alternative must be considered and assessed.

2.11.1 Layout Alternatives

The following layout alternatives have been considered thus far in this environmental process. Further refinement of the Preferred Layout Alternative (Layout Alternative 2) will take place during the Environmental Impact Reporting Phase.

2.11.1.1 Initial Assessment Area / Study site

Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85 situated near de Aar in the Northern Cape Province, was identified for the development of the proposed Kareekloof Solar PV (see the site selection process outlined in section 2.10). The initial study area consisted of the entire extent of these properties as shown in the map below.

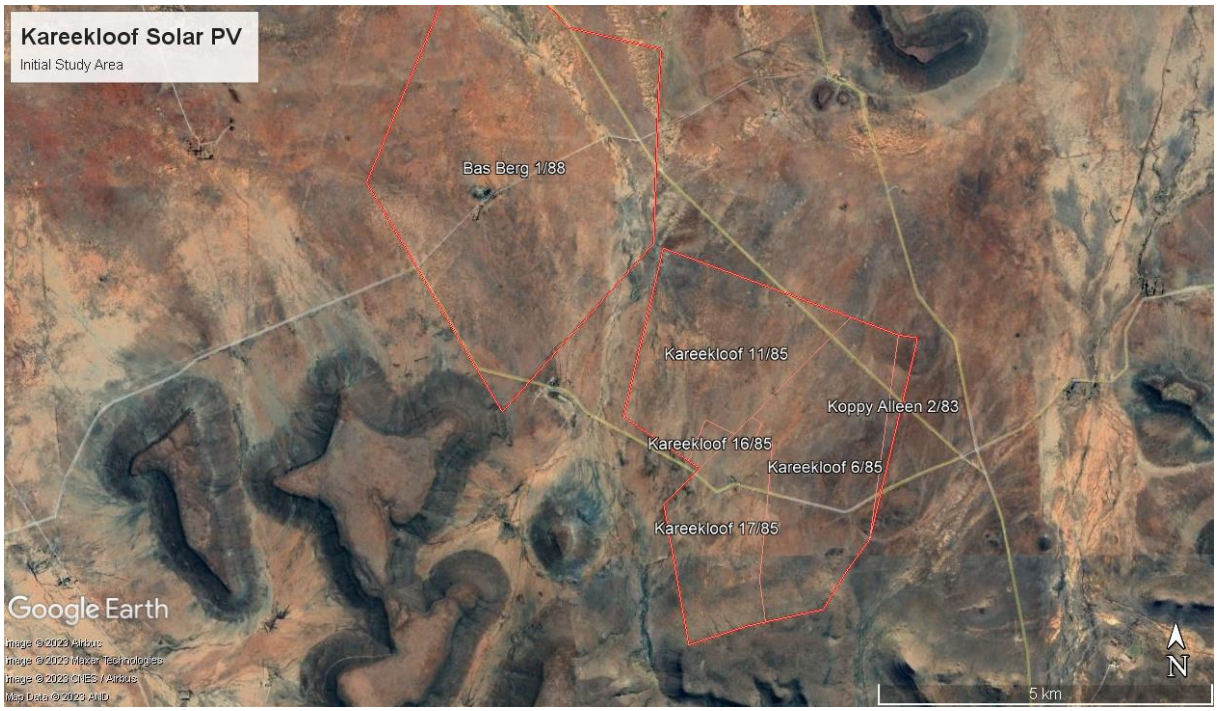


Figure 16: Initial Assessment Area / Study Site

The initial study area did not consider any environmental sensitive areas and was driven primarily by its proximity to the proposed Hydra B Main Transmission Substation (MTS), located ± 1.5 km to the East.

2.11.1.2 Site Sensitivity Assessment

Following the identification of the initial assessment area / study site, the following specialists undertook Site sensitivity verifications of the of the Study Site[24]:

- Visual – Mr Stephen Stead of Visual Resource Management Africa (VRMA)
- Botanical – Enviro Insight
- Terrestrial Biodiversity – Enviro Insight
- Animal Species – Enviro Insight
- Avifauna – Enviro Insight
- Aquatic Biodiversity – Enviro Insight
- Heritage – Mr Jaco van der Walt of Beyond Heritage.
- Agriculture – Mr Johann Lanz
- BESS Risk – Ms Debbie Mitchell of ISHECON

These participating specialists spatially mapped the sensitivities of the site according to their specific disciplines. These sensitivities are depicted in the maps below.

[24] It must be noted that the site sensitivity assessment was undertaken prior to the development of Layout Alternative 2 (Preferred Layout), which was developed specifically in response to the various sensitivities.

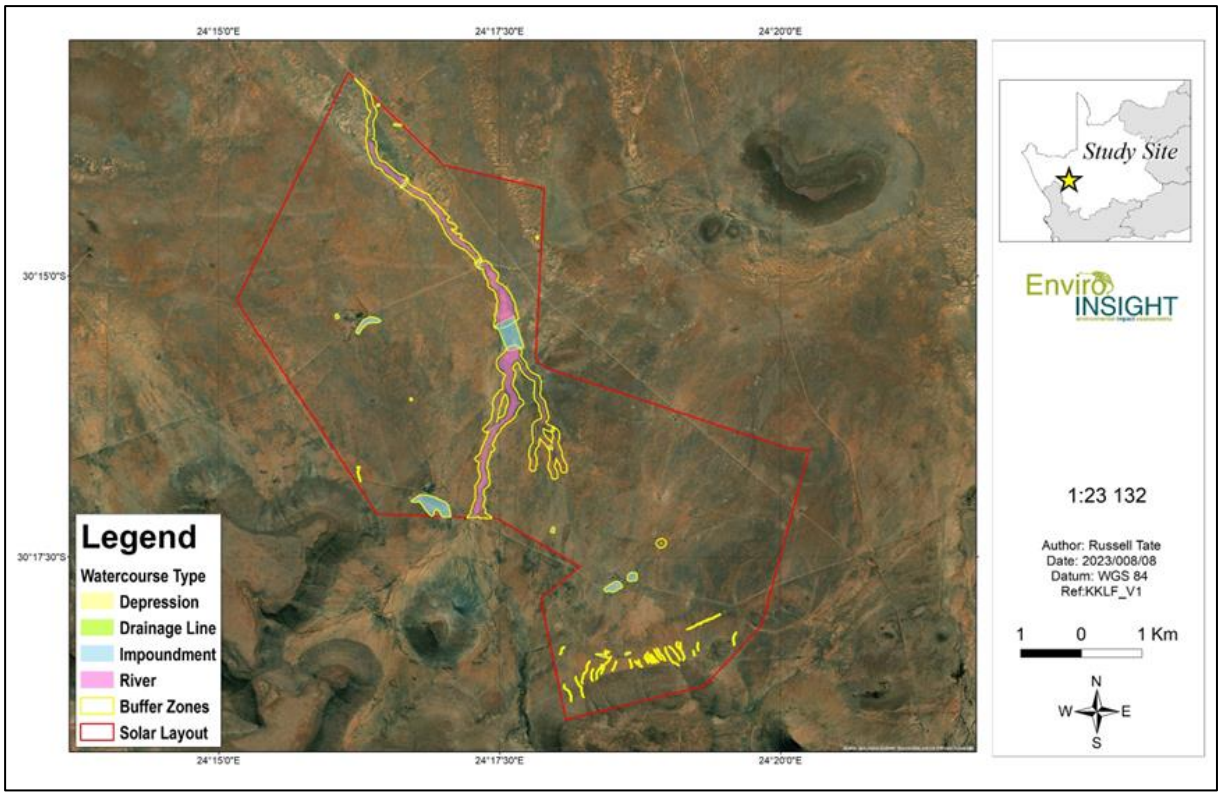


Figure 17: Delineated Aquatic Biodiversity Features and Buffers (Enviro Insight, 2023)

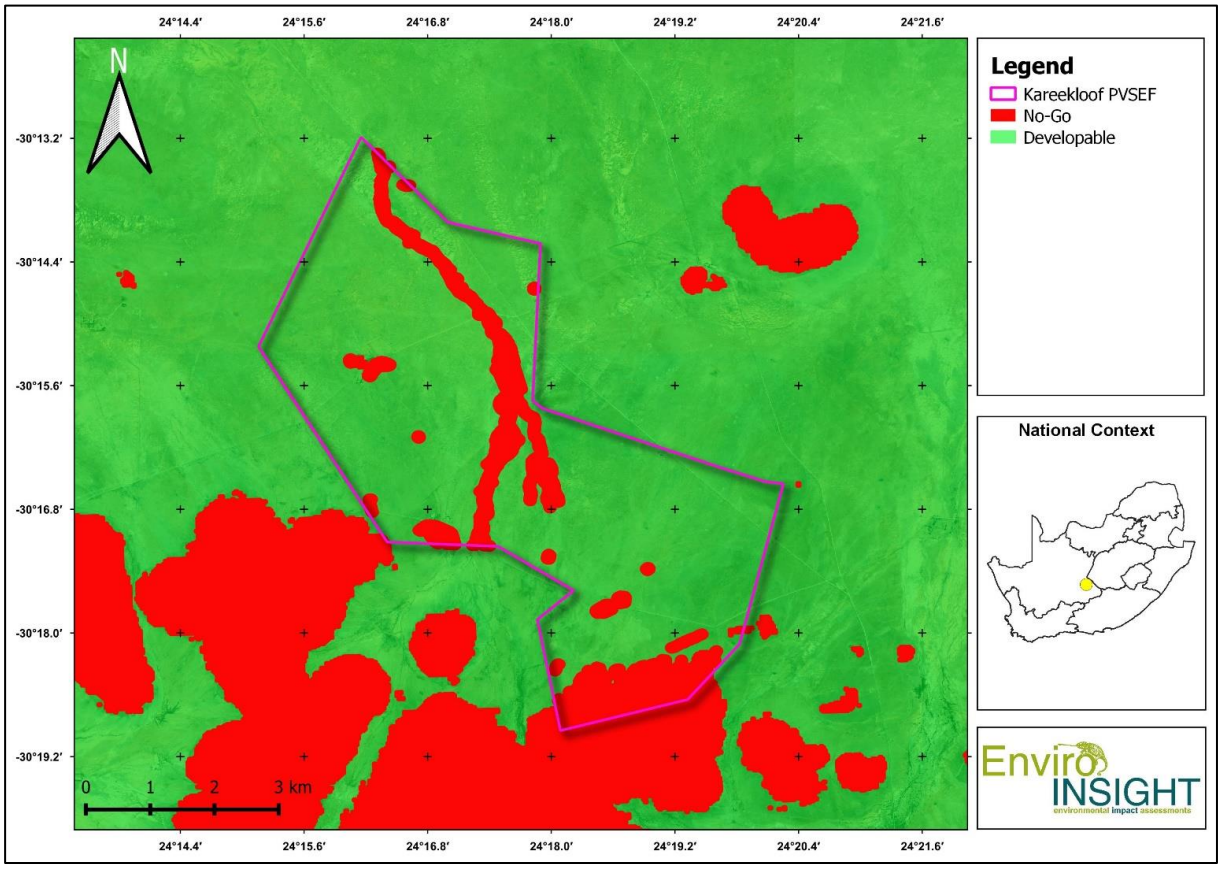


Figure 18: Terrestrial Biodiversity Site Sensitivity (Enviro Insight, 2023)

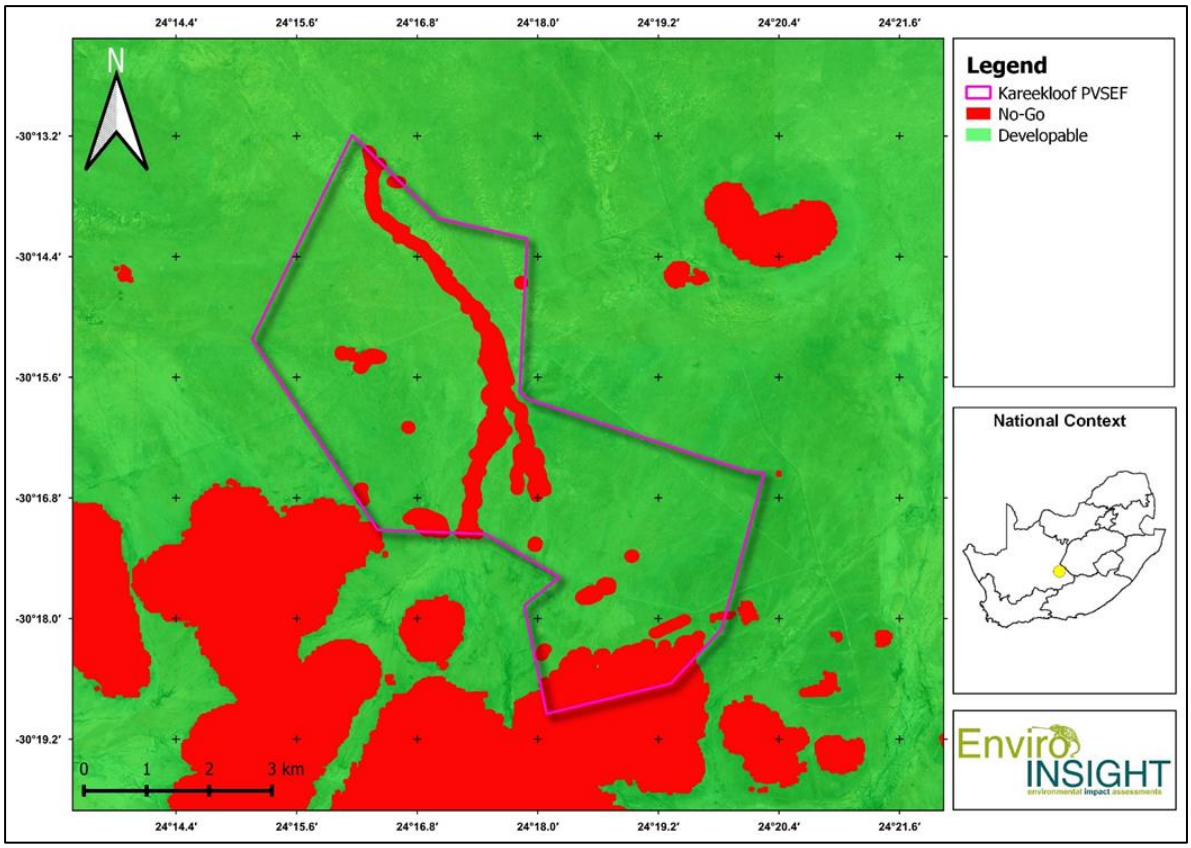


Figure 19: Avifaunal Site Sensitivity - High Sensitivity Areas (Enviro Insight, 2023)

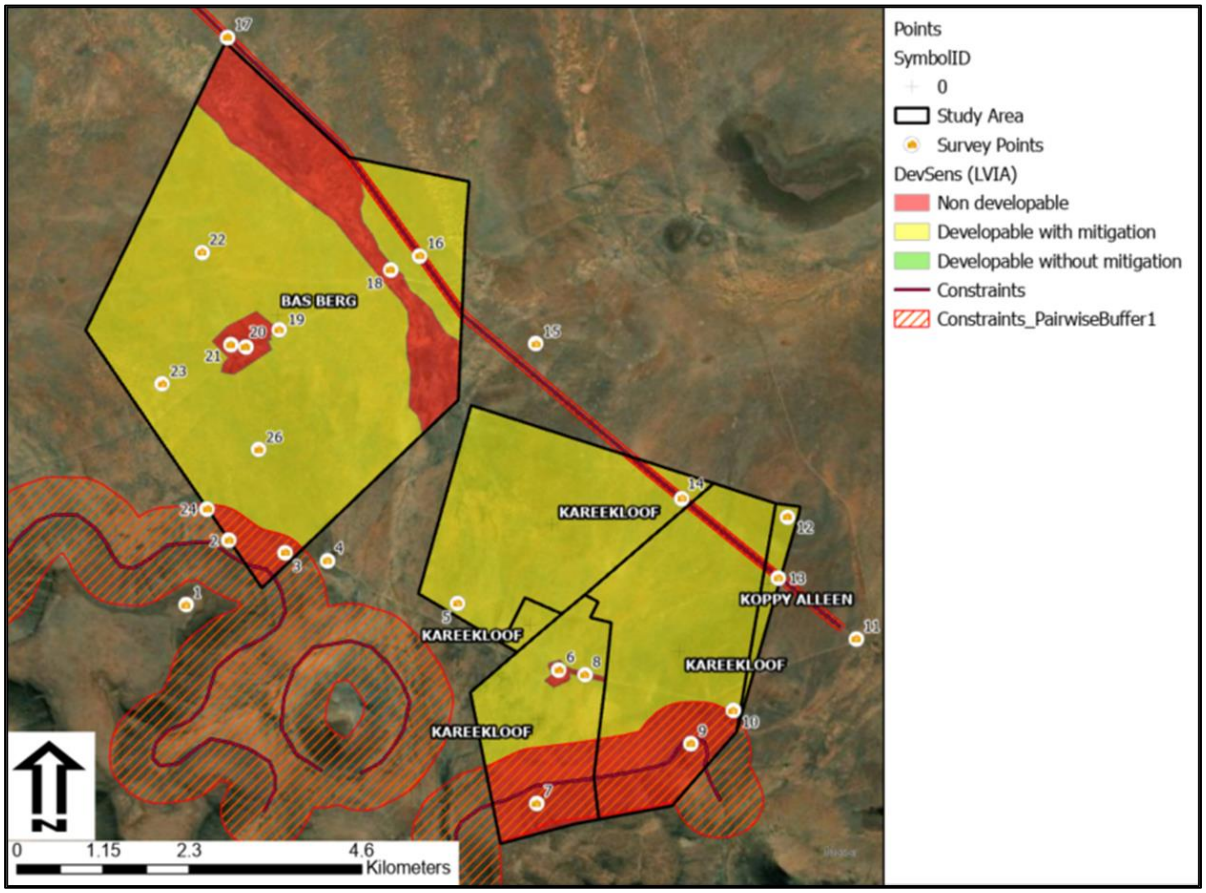


Figure 20: Visually Sensitive Areas (Stead, 2023)

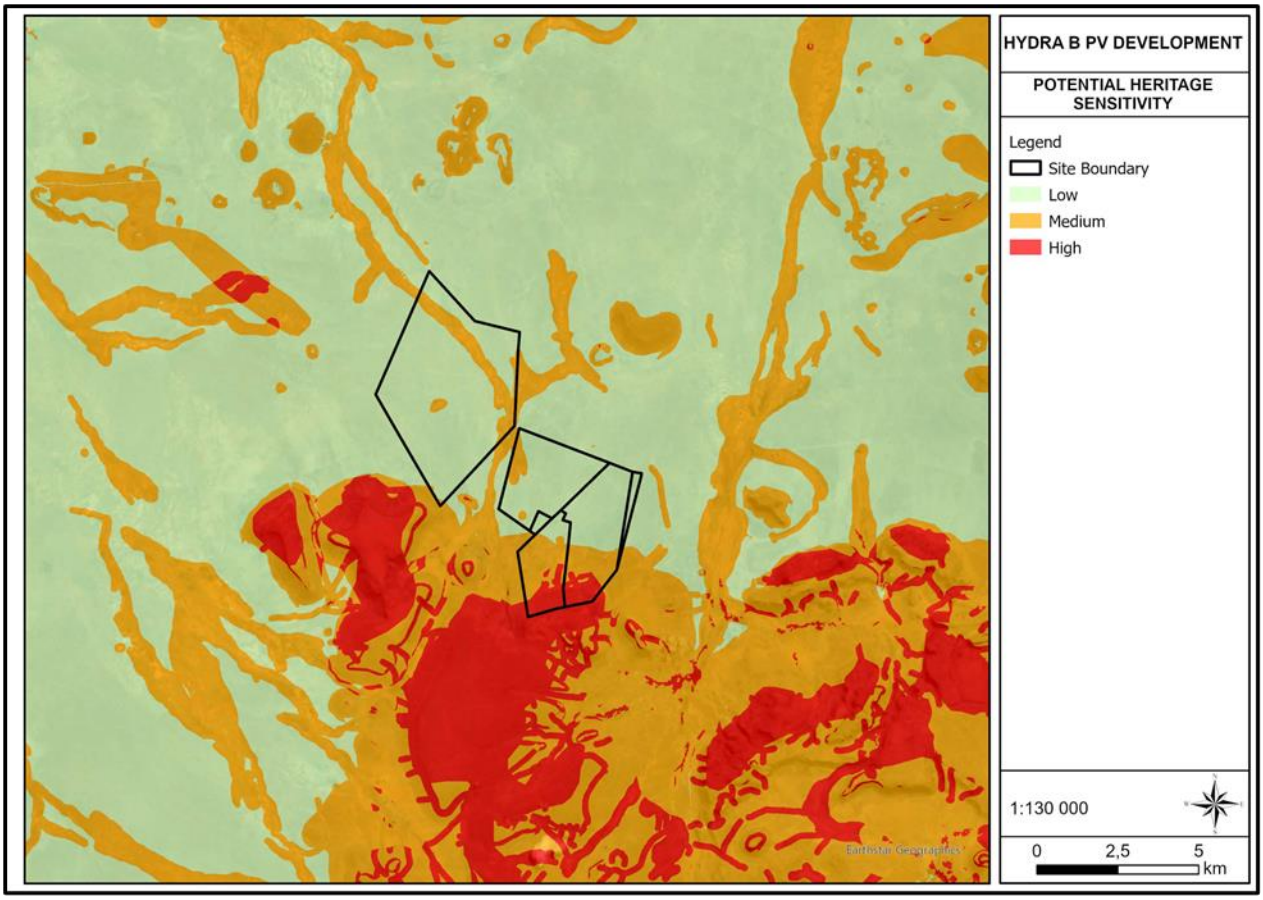


Figure 21: Heritage Sensitive Areas (Van Der Walt, 2023)

The Agricultural specialist confirmed the entire study site to be of medium sensitivity and did not identify any agricultural features or landscapes that would need to be avoided.

These sensitive features were then utilised to inform the Preferred Layout alternative (Layout Alternative 2) as discussed below.

2.11.1.3 Layout Alternative 2 (Preferred)

Based on the outcome of the site sensitivity assessment, the preferred layout alternative (Layout Alternative 2) as depicted below was developed. This is the preferred layout presented to stakeholders as part of the Scoping process and will be further refined in the next stage of the Environmental Process.

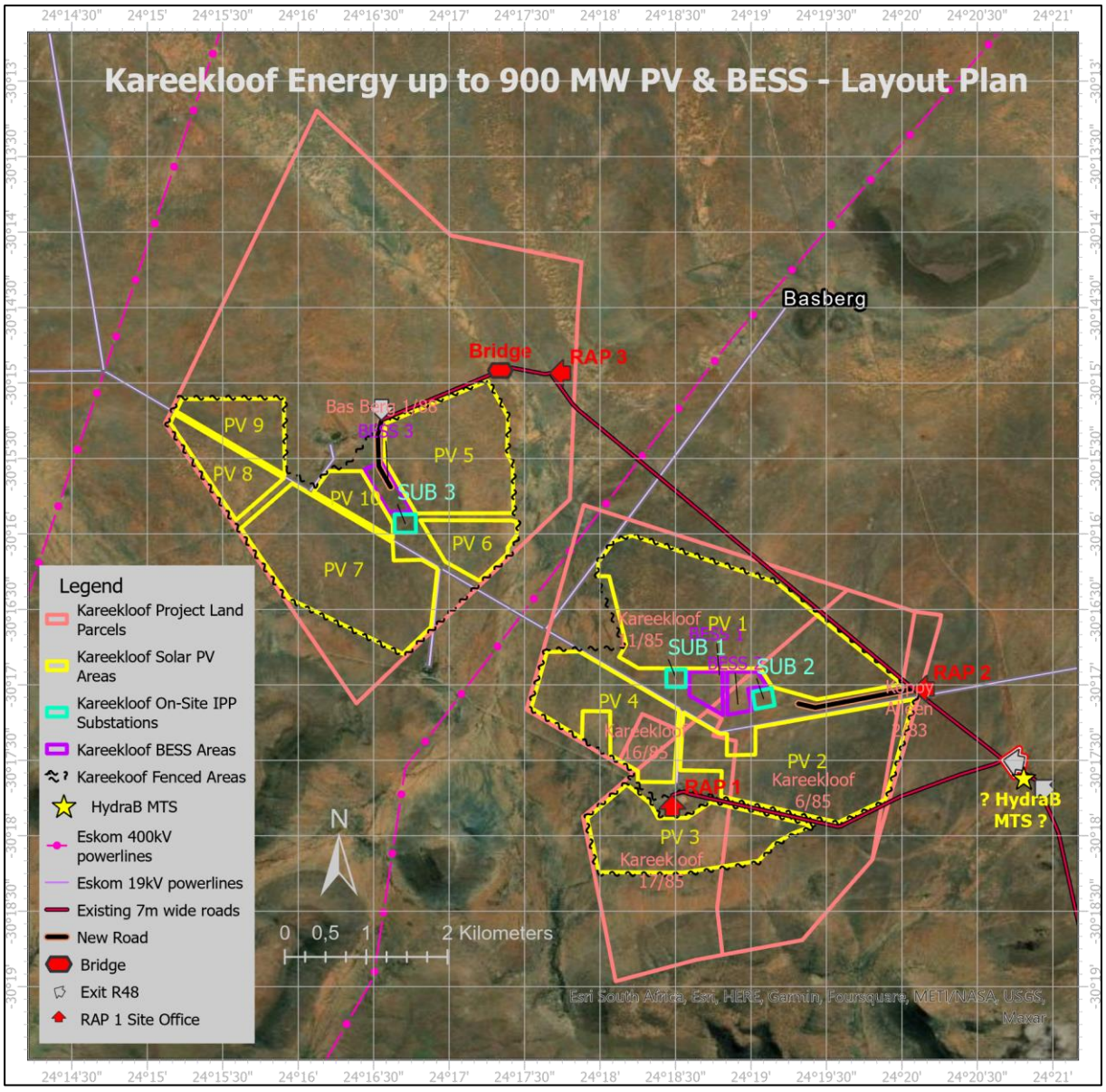


Figure 22: Layout Alternative 2 (preferred) for Kareekloof Solar PV.

This Layout was developed to avoid all of the highly sensitive features with the exception of some of those modelled for potential Archaeology, which will be verified during the next stage of the Environmental Process.

Further engagements with specialists will be undertaken and the currently preferred layout alternative will be adapted further where necessary.

2.11.2 Grid Connection Alternatives

The EGI (Eskom component) for Kareekloof Solar PV is being assessed as part of a separate environmental process, the alternatives in respect of the EGI will be discussed in that environmental process.

2.11.3 Access Road Alternatives

As discussed in section 2.6 above, the proposed access intents to utilise the existing access point from the R48 and furthermore utilise existing roads to access each of the PV development areas.

Unless the Traffic Impact Assessment[25] or relevant transport authorities raise concerns with the existing access, no alternatives will be considered (as the utilisation and upgrading of existing road infrastructure will have a significantly lower physical impact than the development of new infrastructure).

2.11.4 The no-go alternative

The no-go Alternative (or status quo) proposes that Kareekloof Solar PV facility does not go ahead and that the area in proximity to the proposed Hydra B MTS and within the Strategic EGI corridor will remain undeveloped as it is currently.

The land on which the Kareekloof Solar PV is proposed is currently vacant and used for limited game and livestock grazing activities, however due to a combination of factors, it has no potential for irrigated crop cultivation (this has been confirmed by the Agricultural Specialist).

The solar-power generation potential of the Emthanjeni Municipal area, particularly in proximity to the proposed Hydra B substation and within the strategic EGI is significant and will persist should the no-go alternative occur.

The no-go alternative will limit the potential associated with the land and the area as a whole for ensuring energy security locally, as well as the meeting of renewable energy targets on a provincial and national scale. Should the no-go alternative be approved, the positive impacts associated with Kareekloof Solar PV (increased revenue for the farmer, economic investment, local employment and generation of electricity from a renewable resource) will not be realised.

The no-go alternative will be used as a baseline from which to determine the level and significance of potential impacts associated with the proposed Kareekloof Solar PV Facility.

2.11.5 Comparison of alternatives

The table below reflects the key environmental advantages and disadvantages of the two layouts (i.e., the initial assessment area and Layout Alternative 2 (Preferred Alternative)[26]. This will be expanded on during the Impact Assessment Phase of the Environmental Process.

Table 6: Comparison of Advantages and Disadvantages of Layout Alternatives described above.

Alternative	Preference	Reasons (incl. potential issues)
PV Layout Alternatives		
Layout Alternative 2	Preferred	- Avoids all high and very high sensitivity habitat. - Topographically suitable. - Avoids all hydrologically sensitive areas. - Avoids the high avifaunal sensitive areas
Initial Assessment Area	Portions Less Preferred, eliminated from	- Portions of the initial assessment area are topographically unsuitable for the development of PV. - Portions of the initial assessment area consist of high and very high ecologically sensitive areas.

[25] The Traffic Impact Assessment will form part of the EIR phase of the Environmental Process.

[26] The comparative assessment of the EGI alternatives is not included in this report, as these are being assessed as part of a separate Basic Assessment Process.

Alternative	Preference	Reasons (incl. potential issues)
	further assessment	- Portions of the initial assessment area high and very high hydrologically sensitive areas. - Portions of the initial assessment area are within areas with a very high avifaunal sensitivity and their buffers.

Layout alternative 2 will be assessed against the no-go alternative and further mitigation and or avoidance applied during the Environmental Impact Reporting Phase of this Environmental Process.

2.12 PROJECT PROGRAMME AND TIMELINES

As mentioned previously Kareekloof Solar PV is intended to be bid into the REIPPPP or alternative private power procurement programme.

Table 7: Preliminary implementation schedule.

	Description	Timeline
1	Finalisation of Environmental and other Pre Construction programmes	Second Quarter 2024
2	Bidding process	Last Quarter 2024
3	Finalisation of agreements	First Quarter 2025
4	Procurement of infrastructure	First Quarter 2025
5	Construction	2025
6	Commissioning	2026

The table above clearly depicts the dependence of the project on the timelines of any particular procurement programme. Any delay or acceleration within the procurement programme will have a corresponding effect on the timelines of the projects.

Due to the uncertainty regarding the timing of the procurement programmes, the competent authority is herewith requested that the validity period of the environmental authorisation (if authorised) be granted as follows:

- Commencement of Construction Activities within 10 Year's from the date of the Environmental Authorisation.
- Completion of all non operational aspects of the Environmental Authorisation within 10 years of commencement of construction activities.

3. LEGISLATIVE AND POLICY FRAMEWORK

The legislation that is relevant to this study is briefly outlined below. These environmental requirements are not intended to be definitive or exhaustive but serve to highlight key environmental legislation and responsibilities only.

3.1 NATIONAL LEGISLATION

This section deals with nationally promulgated or nationally applicable legislation associated with the proposed Kareekloof Solar PV.

3.1.1 The Constitution of the Republic of South Africa

The Constitution of the Republic of South Africa (Act 108 of 1996) states that, everyone has a right to a non-threatening environment and that reasonable measures are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

The Constitution and Bill of Rights provides that:

Everyone has the right:

- to an environment that is not harmful to their health or well-being; and
- to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures:
    - prevent pollution and ecological degradation
    - promote conservation; and
    - secure, ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development.

The National Environmental Management Act, NEMA (discussed below) is the enabling legislation to ensure this primary right is achieved.

3.1.2 National Environmental Management Act (NEMA)

The current assessment is being undertaken in terms of the **National Environmental Management Act** (NEMA, Act 107 of 1998)[27]. This Act makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority (in this case, the national Department of Forestry, Fisheries and the Environment) based on the findings of an Environmental Assessment.

The proposed development entails a number of listed activities, which require a Scoping & Environmental Impact Reporting process to be followed. Such a process must be conducted by an independent registered EAP[28]. Cape EAPrac has been appointed to undertake this process. The figure below depicts a summary of the Scoping and Environmental Impact Reporting Process.

[27] The Minister of Water and Environmental Affairs promulgated new regulations in terms of Chapter 5 of the National Environmental Management Act (NEMA, Act 107 of 1998), viz, the Environmental Impact Assessment (EIA) Regulations 2014 (as amended). These regulations came into effect on 08 December 2014 and replace the EIA regulations promulgated in 2006 and 2010.

[28] The EAP in this regard is registered with EAPASA under registration number 2019/301

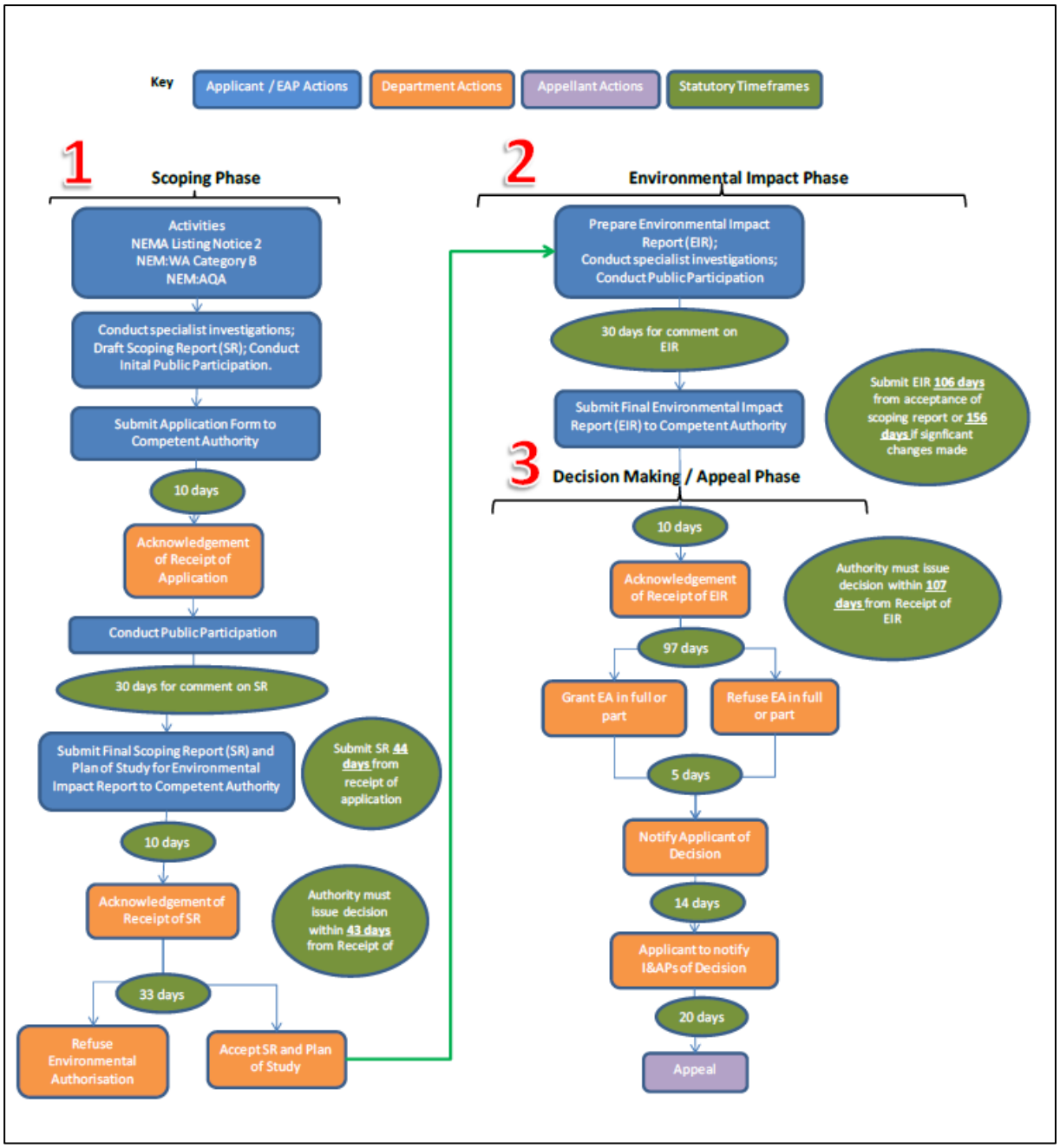


Figure 23: Summary of Scoping and Environmental Impact Reporting Process in terms of the 2014 EIA Regulations (as amended).

The listed activities associated with the proposed development, as stipulation under 2014 Regulations **327, 325 and 324** are as follows:

Table 8: NEMA 2014 (As amended in April 2017) listed activities applicable to Kareekloof Solar PV.

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. Ensure to include thresholds/area/footprint applicable.
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;	The three On-Site Substations will have a capacity of up to 300MVA each.

		Three 132kV powerlines will be routed in an EGI corridor/servitude from the three on-site substations to the grid connection
12(ii)(c)	The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	Some of the project infrastructure, such as internal cabling may be routed within 32m of the Aquatic features identified by the aquatic specialist. The relevance of this activity will be determined in the Environmental Impact Reporting phase after layouts are finalised and assessments completed.
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.	The BESS proposed will include the storage of dangerous goods in excess of the threshold of this 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: (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	The proposed PV and BESS Development constitutes Commercial / Industrial use and will occur on a property currently used for agricultural purposes.
48	The expansion of— (i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	Some of the project infrastructure, such as internal cabling may be routed within 32m of the freshwater resources identified by the aquatic specialist. The relevance of this activity will be determined in the Environmental Impact Reporting phase after layouts are finalised and assessments completed.
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. Ensure to include thresholds/area/footprint applicable.**
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.	The proposed Kareekloof Energy Project will have an Electricity Footprint of up to 900 megawatts.
4	The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.	The BESS proposed will include the storage of dangerous goods in excess of the threshold of this activity.
15	The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed Kareekloof Energy project will require the clearance of more than 20ha of indigenous vegetation.
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. Ensure to include thresholds/area/footprint applicable.**
18(g)(ii)(ii)	The widening of a road by more than 4m, or the lengthening of a road by more than 1km. g. Northern Cape ii. Outside urban areas: (ii) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland; or	The main and internal access roads will require that existing farm tracks be widened by more than 4m in some areas which may be in proximity to the delineated watercourses. Existing Farm roads will be lengthened by more than 1km.

NOTE: Basic Assessment as well as S&EIR Activities are being triggered by the proposed development, the Environmental Application Process will follow a Scoping and Environmental Impact Reporting Process.

Before any of the above-mentioned listed activities can be undertaken, authorisation must be obtained from the competent authority, in this case the DFFE. Should the Department approve the proposed activity, the Environmental Authorisation does not exclude the need for obtaining relevant approvals from other Authorities who have a legal mandate in respect of the activity.

3.1.3 National Environmental Management: Biodiversity (Act 10 of 2004)

The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The Draft National List of Threatened Ecosystems (Notice 1477 of 2009, Government Gazette No 32689, 6 November 2009) has been gazetted for public comment.

The list of threatened terrestrial ecosystems supersedes the information regarding terrestrial ecosystem status in the NSBA 2004. In terms of the EIA regulations, an environmental assessment and authorisation is required for the transformation or removal of indigenous vegetation in a critically endangered or endangered ecosystem if more than 300 square metres will be removed.

NEMBA also deals with endangered, threatened and otherwise controlled species. The Act provides for listing of species as threatened or protected, under one of the following categories:

- **Critically Endangered**: any indigenous species facing an extremely high risk of extinction in the wild in the immediate future.
- **Endangered**: any indigenous species facing a high risk of extinction in the wild in the near future, although it is not a critically endangered species.
- **Vulnerable**: any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future; although it is not a critically endangered species or an endangered species.
- **Protected species**: any species which is of such high conservation value or national importance that it requires national protection. Species listed in this category include, among others, species listed in terms of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Certain activities, known as Restricted Activities, are regulated by a set of permit regulations published under the Act. These activities may not proceed without environmental authorization.

According to the national vegetation map, the project area falls within three vegetation types, namely Eastern Upper Karoo, Northern Upper Karoo and Besemkaree Koppies Shrubland.

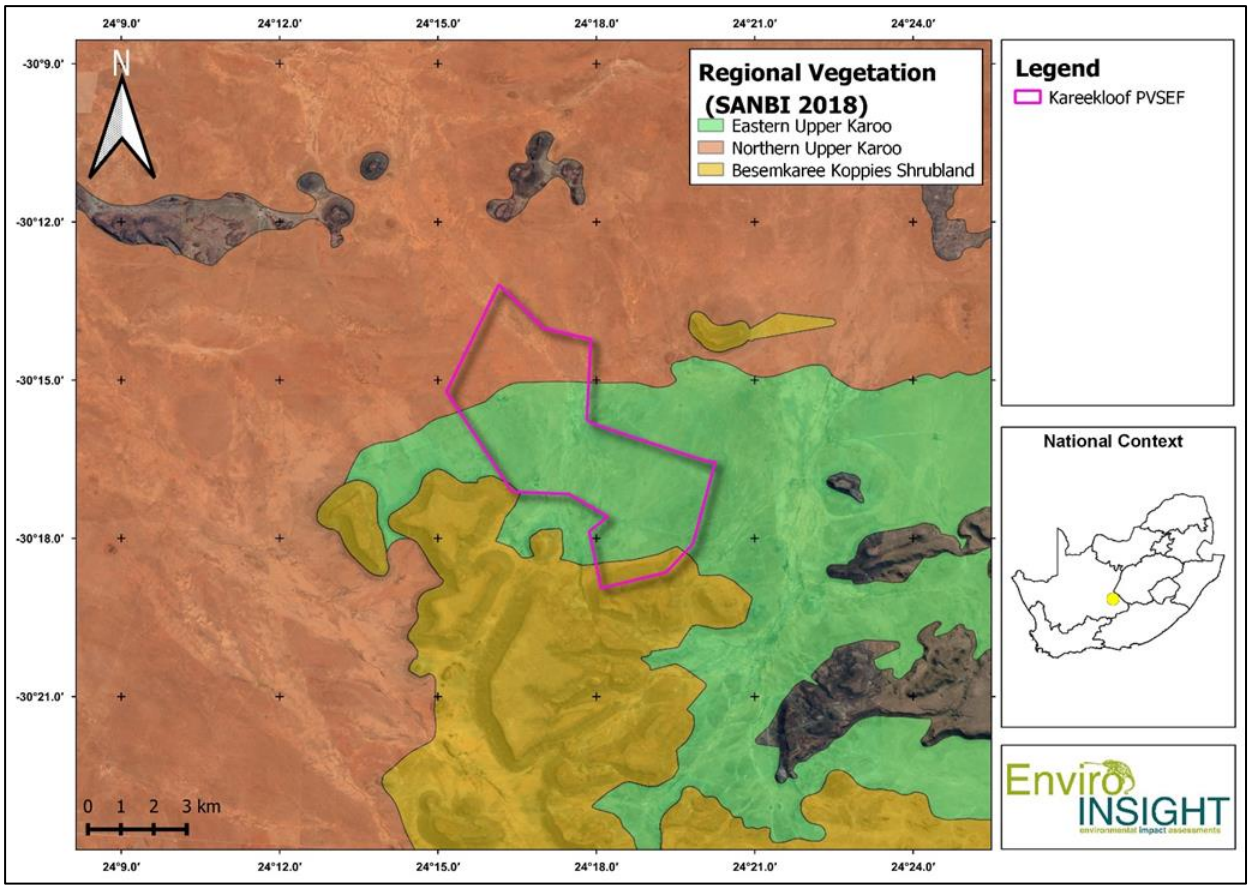


Figure 24: Broad Scale Vegetation types of Kareekloof Solar PV (Enviro Insight, 2023).

These Vegetation Types are all categorised as “least threatened”.

According to the Terrestrial Biodiversity Specialist, Besemkaree Koppies Shrubland occurs in the Northern Cape, Free State and Eastern Cape provinces on the plains of the Eastern Upper Karoo, between Richmond and Middelburg in the south and the Orange River in the north (Mucina & Rutherford 2006). The vegetation occurs on the slopes of koppies, buttes and tafelbergs and consists of a two-layered karroid shrubland. The lower layer of the vegetation is dominated by dwarf small-leaved shrubs and the upper layer is dominated by tall shrubs. The geology consists of dolerite koppies and sills embedded within Karoo Super Group sediments.

The Northern Upper Karoo vegetation unit occupies the Northern regions of the Upper Karoo plateau from Prieska, Vosburg and Carnarvon in the west to Philipstown, Petrusville and Petrusburg in the east. Bordered in the north by Niekerkshoop, Douglas and Petrusburg and in the south by Carnarvon, Pampoenpoort and De Aar. A few patches occur in Griqualand West.

The landscape typifying this vegetation type is flat to gently sloping plains with isolated Koppies of Upper Karoo Hardeveld in the south, Vaalbos Rocky Shrubland in the northeast and interspersed with many pans.

The Eastern Upper Karoo vegetation type is one of the largest vegetation types in the country and consists of flat and gently sloping plains vegetation dominated by dwarf microphyllous shrubs with ‘white’ grasses, especially Aristida, Eragrostis and Stipagrostis. Eastern Upper Karoo is found in the Northern, Western and Eastern Cape, between Carnarvon and Loxton in the west, De Aar, Petrusville and Venterstad in the north and Burgersdorp and Cradock in the east, and the Great Escarpment in the south (Mucina & Rutherford 2006).

3.1.4 Conservation of Agricultural Resources Act – CARA (Act 43 of 1983):

The Conservation of Agricultural Resources Act (CARA) provides for the regulation of control over the utilisation of the natural agricultural resources in order to promote the conservation of soil, water and vegetation and provides for combating weeds and invader plant species. CARA defines different categories of alien plants:

- Category 1 - prohibited and must be controlled;
- Category 2 – must be grown within a demarcated area under permit; and
- Category 3 - ornamental plants that may no longer be planted, but existing plants may remain provided that all reasonable steps are taken to prevent the spreading thereof, except within the flood lines of water courses and wetlands.

The abundance of alien plant species on the Kareekloof Solar PV site is moderate and consists mainly of invasive Acacia species.

The Department of Agriculture, Land Reform and Rural Development is guided by Act 43 of 1983.

In order to comply with their mandate in terms of this legislation, the applicant is required to take note of the following:

Article 7.(3)b of Regulation 9238: Conservation of Agriculture Resources, 1983 (Act 43 of 1983) deals with the Utilisation and protection of vleis, marshes, water sponges and water courses

- 7.(1) “no land user shall utilize the vegetation in a vlei, marsh or water sponge or within the flood area of a water course or within 10 meters horizontally outside such flood area in a manner that causes or may cause the deterioration of or damage to the natural agriculture resources.”
- (3)(b) “cultivate any land on his farm unit within the flood area of a water course or within 10 meters horizontally outside the flood area of a water course”.

The Aquatic Biodiversity SSVR attached in Appendix E3 has identified a number of surface water resources within the assessment area. The preferred layout, layout alternative 2 has avoided these features along with the buffers suggested by the specialist.

3.1.5 The Subdivision of Agricultural Land, Act 70 Of 1970

The Subdivision of Agricultural Land Act 70 of 1970 (SALA”) came into operation on 2 January 1971. The Department of Agriculture administers the Subdivision of Agricultural Land Act No. 70 of 1970. Subdivision of agricultural land, therefore, requires consent from the Department of Agriculture.

The Department of Agriculture is considered a commenting authority on this environmental process, but will be a decision-making authority on the SALA application which will take place after the project receives an EA.

The National and Northern Cape Department of Agriculture have been registered as a key stakeholder for this environmental process.

3.1.6 National Water Act, No 36 of 1998

Section 21c & i of the National Water Act (NWA) requires the Applicant to apply for authorisation from the Department of Water and Sanitation for an activity in, or in proximity to any watercourse. Such an application would be required for any access road or PV infrastructure that crosses any watercourse.

Section 21(a) of the National Water Act is related to the abstraction of water from a water resource (including abstraction of groundwater); a Water Use Licence (WUL) would be required for such abstraction.

Water required for the construction and operation of Kareekloof Solar PV is to be sourced from the Emthanjeni Local Municipality (who will be engaged with to provide confirmation of availability). Should the applicant in the future, wish to utilise groundwater for the purposes of construction or operation of the facility, such use will require a licence in terms of Section 21(a) of the NWA.

The freshwater specialist has identified a number of surface water resources within the study site. Layout Alternative 2 avoids these features along with the buffer areas identified by the specialist. The proposal does however include infrastructure within the regulated zone of these features and as such will require a Water Use Licence / General Authorisation in terms of the NWA[29].

The Department of Water and Sanitation as well as the Catchment Management Agency have been registered as a key stakeholder to provide input into in this environmental process.

3.1.7 National Forests Act (No. 84 of 1998):

The National Forests Act (NFA) provides for the protection of forests as well as specific tree species, quoting directly from the Act: "*no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated".*

The Terrestrial Biodiversity specialist has not identified any species protected in terms of the National Forest Act on site.

3.1.8 National Heritage Resources Act, 25 of 1998

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999). The South African Heritage Resources agency is the enforcing authority in the Northern Cape and is registered as a Stakeholder for this environmental process.

In terms of Section 38 of the National Heritage Resources Act, SAHRA will comment on the detailed Heritage Impact Assessment (HIA) where certain categories of development are proposed. Section 38(8) also makes provision for the assessment of heritage impacts as part of an EIA process.

The National Heritage Resources Act requires relevant authorities to be notified regarding this proposed development, as the following activities are relevant:

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- any development or other activity which will change the character of a *site* exceeding 5 000 m² in extent; and
- the re-zoning of a site exceeding 10 000m^2 in extent.

Furthermore, in terms of Section 34(1), no person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the SAHRA, or the responsible resources authority (in this case, SAHRA).

- In terms of Section 36 (3), no person may destroy, damage, alter, exhume or remove from its original position, or otherwise disturb, any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority, without a permit issued by the SAHRA, or a provincial heritage authority (in this case, SAHRA).

[29] The Risk Assessment that will be undertaken in the Assessment phase of the Environmental Process will determine whether a General Authorisation or Water Use Licence Application will be appropriate.

- In terms of Section 35 (4), no person may destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object, without a permit issued by the SAHRA, or the responsible resources authority (In this Case, SAHRA).

Mr Jaco van der Walt of Beyond Heritage has compiled and submitted a heritage scoping report and SSVR to SAHRA. A copy of this scoping report and SSVR is attached in Appendix E4.

In response to the submission, SAHRA will issue a case number. The Heritage Specialist will then undertake the Heritage Impact Assessment[30] as required.

3.1.9 National Energy Act (No. 34 of 2008)

The purpose of the National Energy Act (No. 34 of 2008) is to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation; while taking environmental management requirements into account. In addition, the Act also provides for energy planning, and increased generation and consumption of Renewable Energies.

The objectives of the Act, are to amongst other things, to:

- Ensure uninterrupted supply of energy to the Republic.
- Promote diversity of supply of energy and its sources.
- Facilitate energy access for improvement of the quality of life of the people of the Republic.
- Contribute to the sustainable development of South Africa's economy.

The National Energy Act therefore recognises the significant role which electricity plays growing the economy while improving citizens' quality of life. The Act provides the legal framework which supports the development of Renewable Energy facilities for the greater environmental and social good and provides the backdrop against which South Africa's strategic planning regarding future electricity provision and supply takes place.

3.2 PROVINCIAL LEGISLATION

This section deals with provincially promulgated or provincially applicable legislation associated with the proposed Kareekloof Solar PV.

3.2.1 Astronomy Geographic Advantage Act, 2007 (Act No 21 Of 2007)

The purpose of the Act is to preserve the geographic advantage areas that attract investment in astronomy. The entire Northern Cape Province, excluding the Tsantsabane Municipality, has been declared an astronomy advantage area. The Northern Cape optical and radio telescope sites were declared core astronomy advantage areas. The Act allowed for the declaration of the Southern Africa Large Telescope (SALT), Meerkat and Square Kilometre Array (SKA) as astronomy and related scientific endeavours that has to be protected.

Chapter 2 of the act allows for the declaration of astronomy advantage areas whilst Chapter 3 pertains to the management and control of astronomy advantage areas. Management and control of astronomy advantage areas include, amongst others, the following:

- Restrictions on use of radio frequency spectrum in astronomy advantage areas;
- Declared activities in core or central astronomy advantage area;
- Identified activities in coordinated astronomy advantage area; and
- Authorisation to undertake identified activities.

[30] The Heritage Impact Assessment will be included in the Environmental Impact Reporting Phase of this Environmental Process.

The Kareekloof Solar PV facility was furthermore found to be situated more than 194km from the closest SKA station (SKA004).

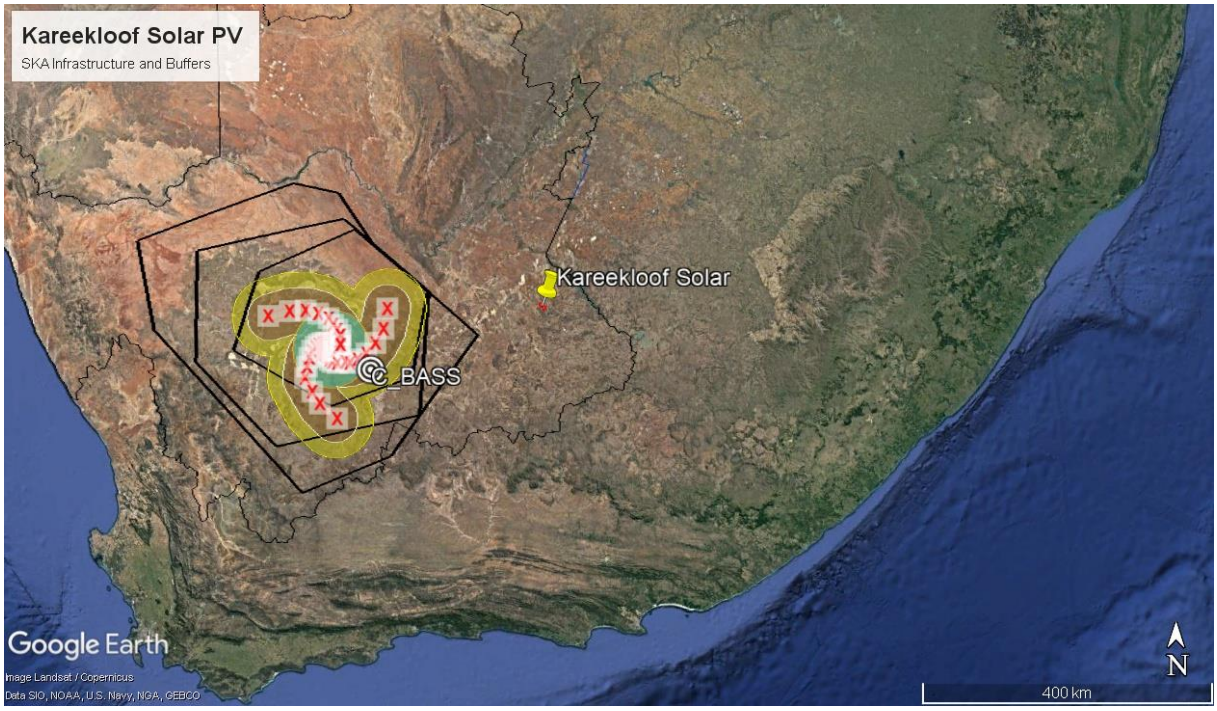


Figure 25: Proposed Kareekloof Solar PV in relation to the SKA Infrastructure and Buffers.

The South African SKA Project Office and the South African Radio Astronomy Observatory (SARAO) have been registered as a key stakeholder on this environmental process and have been requested to provide input in terms of the Astronomy Geographic Advantage Act and potential impact to SKA.

3.2.2 Northern Cape Land Use Planning Act (Act 16 of 2013)

In line with the Spatial Planning and Land Use Management Act, (Act 16 of 2013), the Northern Cape Land Use Planning Act 2014 (LUPA) was adopted by the provincial government of the Northern Cape in April 2014. Chapter III (which deals with spatial planning matters) sets out the minimum requirements for drafting a Provincial Spatial Development Framework (PSDF) for the WCP.

Of specific relevance, Section 4 requires a PSDF to (3) 'contain at least (c) provincial priorities, objectives and strategies, dealing in particular with (iiii) adaptation to climate change, mitigation of the impact of climate change, renewable energy production and energy conservation'. This requirement would apply to all future revisions of the PSDF. As such, it indicates the provincial government of the Northern Cape's commitment to renewable energy production in order to respond to climate change.

3.2.3 Northern Cape Amended Zoning Scheme Regulations for Commercial Renewable Energy Facilities (2011).

Amendments to the Northern Cape Land Use Ordinance (1985) (LUPO) were promulgated in 2011 in order to guide the development of commercial renewable energy generation facilities (REFs), mainly wind and solar. The Zoning Scheme amendments are specifically intended to provide guidance with regard to land use compatibility, and applicable development restrictions and conditions, including provision for mandatory rehabilitation post construction and final decommissioning ("abandonment" in terms of the Provincial Notice). The ambit of the Regulations includes all REFs as well as associated ("appurtenant") infra/ structure(s) operated for commercial gain, irrespective of whether such feed into the electricity grid or not. The section below provides an overview of key points of relevance to the proposed PV Development.

3.2.3.1 Zoning status

In terms of zoning status, “renewable energy structures” are designated as a consent use in the zone Agriculture I.

3.2.3.2 Land use restrictions

Restrictions with regard to height are mainly applicable to wind energy facilities (WEFs) but associated on-site buildings for all REFs are limited to a maximum of 8,5 m (ground to highest point of roof).

Restrictions with regard to setback are only applicable to WEFs.

3.2.3.3 Establishment of a Rehabilitation Fund

Prior to authorisation, the applicant (“owner”) must make financial provision for the rehabilitation or management of negative environmental impacts, as well as of negative impacts associated with decommissioning or abandonment of the facility. Such provision should be in the form of a fund to be administrated by the Municipality, and should be to the satisfaction of the competent authority (i.e. Department of Energy).

3.2.3.4 Land clearing/ erosion management

- Land clearing should be limited to areas considered essential for the construction, operation and decommissioning of a Renewable Energy Facility.
- All land cleared during construction which does not form part of the Renewable Energy Facility structural footprint, must be rehabilitated in accordance with an approved rehabilitation plan.
- Soil erosion must be avoided at all costs, and any high-risk areas should be rehabilitated.

3.2.3.5 Visual impact management

- Visual and environmental impacts must be considered, to the satisfaction of the competent authority.
- Associated structures (i.e., substations, storage facilities, control buildings, etc.) must be screened from view by indigenous vegetation, and/or located underground, or be joined and clustered to avoid adverse visual impacts. In addition, appurtenant structures must be architecturally compatible with the receiving environment.
- Lighting should be restricted to safety and operational purposes, must be appropriately screened from adjacent land units, and should also be in accordance with applicable Civil Aviation Authority requirements.

3.2.3.6 Operational management and maintenance

- Renewable Energy Facilities may not cause or give rise to any noise or pollution, deemed to be a nuisance in terms of applicable Environmental Impact Assessment (EIA) regulations or Municipal by-laws.
- The PV Facility owner/ operator is responsible for maintaining the facility in a good condition, including with regard to painting, structural repairs, on-going rehabilitation measures (e.g., erosion), as well as the upkeep of safety and security measures.

3.2.3.7 Decommissioning management

- A PV Facility which has reached the end of its lifespan or that has been abandoned must be removed. The owner (operator) is responsible for the removal of such structures in whole, no longer than 150 days after the date of discontinued operation, and the land must be rehabilitated to the condition it was in prior to construction of the facility.
- Decommissioning activities must include the removal of all PV Facility structures, associated structures, as well as transmission lines; the disposal of solid and hazardous waste according to applicable waste disposal regulations; and the stabilisation and re-vegetation of the site. In order to minimise disruptive impacts on vegetation, soils, etc., the competent authority may grant approval not to remove any underground foundations or landscaping.

3.3 REGIONAL AND MUNICIPAL LEGISLATION

This section deals with regionally and municipally promulgated or regionally or municipally applicable legislation associated with the proposed Kareekloof Solar PV[31].

3.3.1 Emthanjeni Municipality Integrated Development Plan (2022 - 2027)

The Emthanjeni IDP has identified the following strategic objectives for the municipality.

1. **Strengthen financial sustainability**
    a. To budget strategically
    b. Entrench the Long-Term Financial Plan in the planning, implementation and management of the organisation
    c. Diversify revenue and ensure value for money services
    d. Ensure sustainable financial risk and asset management
    e. Diversify by sourcing grant funding to support projects, programmes and initiatives of Council
    f. Ensure transparency in financial management by ensuring that all financial records are accurate, reliable and timely.

2. **Ensure good governance**
    a. Create an efficient, effective, economic and accountable administration.
    b. Provide a transparent and corruption free municipality.
    c. Accountable leadership supported by professional and skilled administration.
    d. Communicate effectively with the public
    e. A customer centred approach to everything

3. **Sustainable service delivery**
    a. Develop and provide bulk infrastructure within the climate change risks.
    b. Maintain existing bulk infrastructure and services.
    c. Develop, manage and regulate the built environment.
    d. Source alternative sources of energy in the context of national electricity provision.
    e. Conserve and manage the natural environment and mitigate the impacts of climate change.

4. **Facilitate an enabling environment for a diversified economy and growth to alleviate poverty.**
    a. Improve the regulatory environment for ease of doing business.
    b. Promote tourism.
    c. Alleviate poverty through job creation in municipal driven projects and programmes.
    d. Ensure all policies and systems in Bergrivier Municipality support poverty alleviation.
    e. Attract investment through catalytic infrastructure.

5. **Empowering people through innovation.**
    a. To promote healthy lifestyles through the provision of sport, recreational and other facilities and opportunities.
    b. Promote continued partnerships for youth development.
    c. Promote a safe environment for all who live in Bergrivier Municipal Area.
    d. Develop a Master Plan for "Smart Cities" in Bergrivier Municipal Area.

[31] This section includes legislation applicable to both the District (Category C) and Local (Category B) municipalities.

It is envisioned that the proposed Kareekloof Solar PV Facility can contribute to strategic objectives 1(d), 3(d), 3(e), 4(c) and 4(e) if the IDP.

3.3.2 Emthanjeni Local Municipality Spatial Development Framework (2091-2024)

The Emthanjeni Spatial Development Framework (SDF) outlines a strategic goal to ensure that adequate energy is supplied to meet developmental challenges, it furthermore promotes the notion that such energy should focus on renewable sources.

The SDF furthermore promotes Renewable Energy to shift the focus on to what it terms “sustainable energy”, stressing that appropriate policies need to be followed to ensure that adequate energy is supplied as, in order to meet developmental challenges such as decent jobs, security, climate change, food production or increasing incomes and access to energy for all communities.

The SDF does highlight a challenge and cites interventions that will be needed for large scale infrastructure that is located within or adjacent to landscapes of high heritage and scenic significance.

Policy BE17 states that:

- Wind and solar farm locations should be informed by a range of criteria, i.e., environmental considerations, topography, planning and land use considerations as well as infrastructure considerations
- Wind farms and solar farms should be located where their visual and environmental impact will be the lowest.

The risk adverse approach to the proposed positioning of the infrastructure will ensure that these policy objectives are not compromised.

3.4 GUIDELINES, POLICIES AND AUTHORITATIVE REPORTS

This section includes relevant Guidelines, Policies and Authoritative reports applicable to the proposed Kareekloof Solar PV.

3.4.1 National Protected Area Expansion Strategy (NPAES) for S.A. 2008 (2010)

Considering that South Africa’s protected area network currently falls far short of sustaining biodiversity and ecological processes, the NPEAS aims to achieve cost-effective protected area expansion for ecological sustainability and increased resilience to Climate Change. Protected areas, recognised by the National Environmental Management: Protected Areas Act (Act 57 of 2003), are considered formal protected areas in the NPAES. The NPAES sets targets for expansion of these protected areas, provides maps of the most important protected area expansion, and makes recommendations on mechanisms for protected area expansion.

The NPAES identifies 42 focus areas for land-based protected area expansion in South Africa. These are large intact and un-fragmented areas suitable for the creation or expansion of large, protected areas.

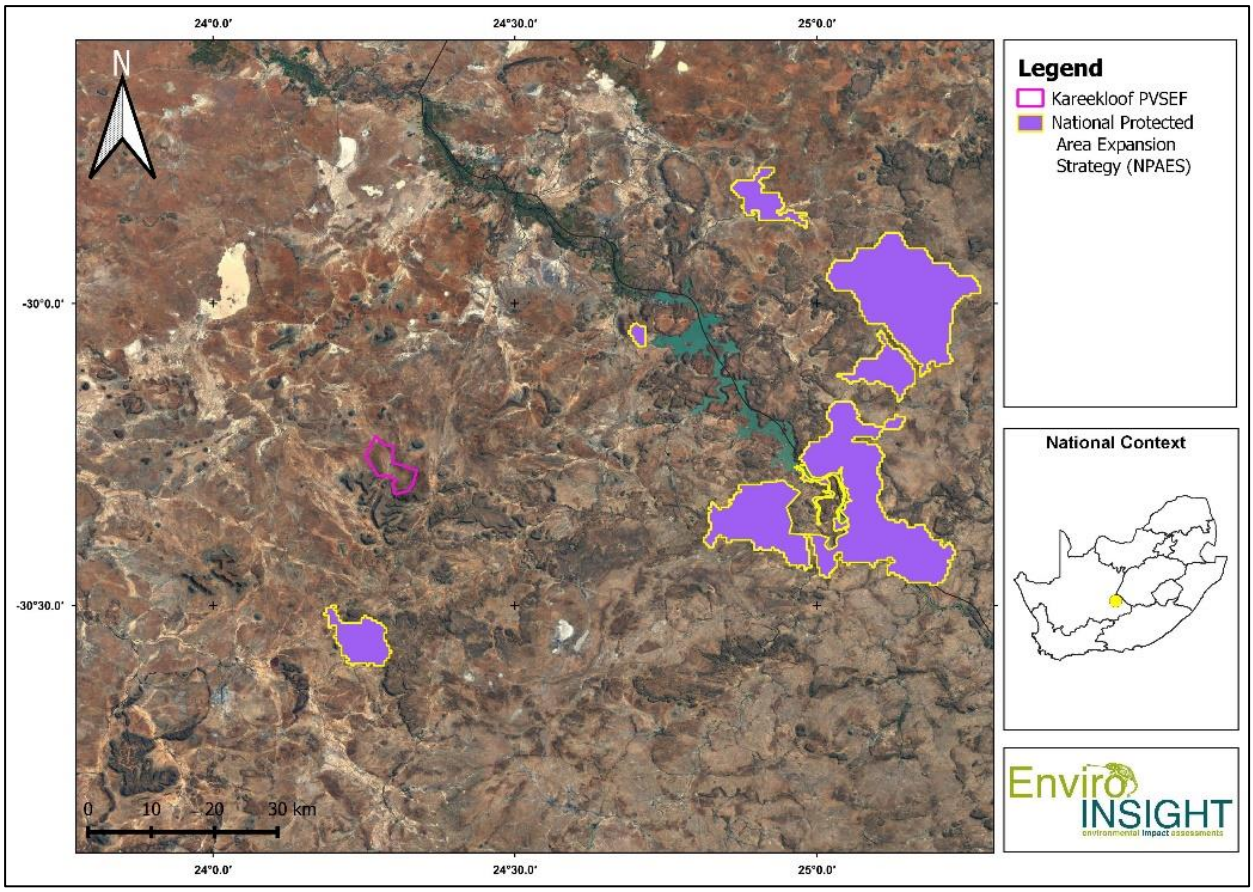


Figure 26: Proximity of Kareekloof Solar to Protected areas as identified in the South African Protected Areas Database (Enviro Insight, 2023).

According to the terrestrial biodiversity specialist, the Kareekloof PVSEF project area does not intersect with any current or future planned protected areas. The nearest protected area is the Rolfontein Provincial Nature Reserve situated approximately 40 km away towards the northeast. The Kareekloof Solar PV project area is however situated entirely within the “Platberg-Karoo Conservancy” Important Bird Area (IBA).

The nearest future planned protected area is the “Senqu Caledon” area located approximately 23 km towards the south of the Kareekloof Solar PV project area.

3.4.2 Northern Cape Biodiversity Sector Plan (2016)

A Critical Biodiversity Areas (CBA) Map is a spatial plan for ecological sustainability. It identifies a set of biodiversity priority areas, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), which, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole.

The Northern Cape Biodiversity Sector Plan gives legal status to the CBA Map through the National Environmental Management: Biodiversity Act (Act 10 of 2004),

The Northern Cape Biodiversity Spatial Plan classifies areas into Critical Biodiversity Areas (CBA1), Degraded Critical Biodiversity Areas (CBA2), Ecological Support Areas (ESA1 &ESA2), Other Natural Areas (ONA) and Protected Areas (PA).

The terrestrial Biodiversity specialist confirmed that the region surrounding the Kareekloof Solar PV project area has been classified as an Ecological Support Areas (ESA) due to it being located in the Platberg-Karoo Conservancy, the vegetation units and important wetland and river features. From a

Terrestrial Biodiversity perspective, the Platberg-Karoo Conservancy and the vegetation units are important systems for grasslands and grassland-associated animals, as well as important areas for the conservation of avifauna. This section of the Karoo has the highest rainfall, and provides an ecotone between the Nama Karoo and Grassland biomes.

The Kareekloof Solar PV study site is entirely located on an ESA. The assignment of this ESA as “Very High Sensitivity” in the Kareekloof Solar PV project area by the screening tool was refuted by the terrestrial biodiversity specialist for the following reasons:

- No threatened ecosystems or vegetation types are present in the portion of the ESA that cover the proposed Kareekloof Solar PV;
- No specific habitat in the Kareekloof Solar PV project area has any obvious key ecological role such as a migration corridor;
- No threatened plant species are expected to occur in the Kareekloof Solar PV project area;
- Only two threatened fauna species of Medium sensitivity (modelled to occur, not known to occur) were flagged by the screening tool for the Kareekloof Solar PV project area (please refer to avifauna SSVR); and
- This ESA is an extremely large area (860,279 ha).

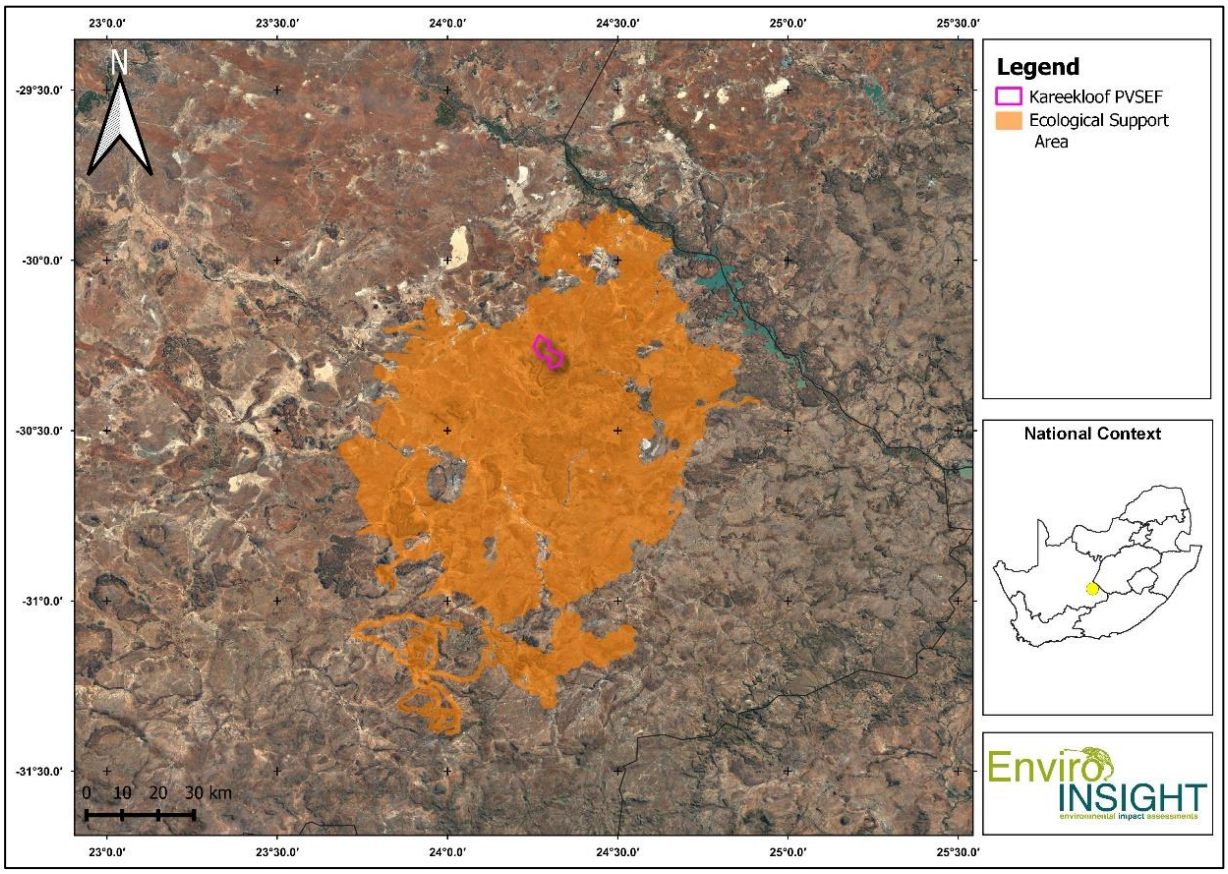


Figure 27: Kareekloof Solar PV in relation to Critical Biodiversity Areas and Ecological Support Areas as per the Northern Cape Biodiversity Spatial Plan (Enviro Insight, 2023).

3.4.3 White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)

The White Paper on Renewable Energy Policy of 2003 supplements Government’s predominant policy on energy as set out in the White Paper on the Energy Policy of the Republic of South Africa (DME, 1998). The policy recognises the potential of Renewable Energy and aims to create the necessary

conditions for the development and commercial implementation of Renewable Energy technologies. The position of the White Paper on Renewable Policy is based on the integrated resource planning criterion of:

"Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options."

The White Paper on Renewable Energy Policy sets out Government's vision, policy principles, strategic goals and objectives for promoting and implementing Renewable Energy in South Africa. The country relies heavily on coal to meet its energy needs due to its abundant, and fairly accessible and affordable coal resources. However, massive Renewable Energy resources that can be sustainable alternatives to fossil fuels, have so far remained largely untapped. The White Paper on Renewable Energy Policy fosters the uptake of Renewable Energy in the economy and has a number of objectives that include: ensuring equitable resources are invested in renewable technologies; directing public resources for implementation of Renewable Energy technologies; introducing suitable fiscal incentives for Renewable Energy and; creating an investment climate for the development of the Renewable Energy sector.

The White Paper on Renewable Energy Policy set a target of 10 000GWh to be generated from Renewable Energy by 2013 to be produced mainly from biomass, wind, solar and small-scale hydro. The target was subsequently reviewed in 2009 during the Renewable Energy summit of 2009. The objectives of the White Paper on Renewable Energy Policy are considered in six focal areas, namely; financial instruments, legal instruments, technology development, awareness raising, capacity building and education, and market based and regulatory instruments. The policy supports the investment in Renewable Energy facilities as they contribute towards ensuring energy security through the diversification of energy supply, reducing GHG emissions and the promotion of Renewable Energy sources.

3.4.4 White Paper on the Energy Policy of the Republic of South Africa (1998)

The White Paper on Energy Policy places emphasis on the expansion of energy supply options to enhance South Africa's energy security. This can be achieved through increased use of renewable energy and encouraging new entries into the generation market. South Africa has an attractive range of cost-effective renewable resources, taking into consideration social and environmental costs. Government policy on renewable energy is thus concerned with meeting the following challenges:

- Ensuring that economically feasible technologies and applications are implemented.
- Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options.
- Addressing constraints on the development of the renewable industry.

The policy states that the advantages of Renewable Energy include; minimal environmental impacts during operation in comparison with traditional supply technologies, generally lower running costs, and high labour intensities. Disadvantages include; higher capital costs in some cases; lower energy densities; and lower levels of availability, depending on specific conditions, especially with sun and wind-based systems. Nonetheless, renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future. The White Paper on Energy Policy therefore supports the advancement of Renewable Energy sources and ensuring energy security through the diversification of supply.

3.4.5 Integrated Energy Plan, 2016

The development of a National Integrated Energy Plan was envisaged in the White Paper on the Energy Policy of the Republic of South Africa of 1998 and, in terms of the National Energy Act, 2008 (Act No. 34 of 2008), the Minister of Energy is mandated to develop and, on an annual basis, review and publish

the Integrated Energy Plan in the Government Gazette. The purpose of the Integrated Energy Plan is to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development.

The Integrated Energy Plan notes that South Africa needs to grow its energy supply to support economi**c expansion and** in so doing, alleviate supply bottlenecks and supply-demand deficits. In addition, it is essential that all citizens are provided with clean and modern forms of energy at an affordable price. As part of the Integrated Energy Planning process, eight key objectives were identified, namely:

- Objective 1: Ensure security of supply;
- Objective 2: Minimise the cost of energy;
- Objective 3: Promote the creation of jobs and localisation;
- Objective 4: Minimise negative environmental impacts from the energy sector;
- Objective 5: Promote the conservation of water;
- Objective 6: Diversify supply sources and primary sources of energy;
- Objective 7: Promote energy efficiency in the economy; and
- Objective 8: Increase access to modern energy.

The Integrated Energy Plan provides an assessment of current energy consumption trends within different sectors of the economy (i.e., agriculture, commerce, industry, residential and transport) and uses this information to identify future energy requirements, based on different scenarios. The scenarios are informed by different assumptions on economic development and the structure of the economy and also take into account the impact of key policies such as environmental policies, energy efficiency policies, transport policies and industrial policies, amongst others.

Based on this information the Integrated Energy Plan then determines the optimal mix of energy sources and technologies to meet those energy needs in the most cost-effective manner for each of the scenarios. The associated environmental impacts, socio-economic benefits and macroeconomic impacts are also analysed. The Integrated Energy Plan is therefore focused on determining the long-term energy pathway for South Africa, taking into account a multitude of factors which are embedded in the eight objectives.

As part of the analysis four key scenarios were developed, namely the Base Case, Environmental Awareness, Resource Constrained and Green Shoots scenarios:

- The Base Case Scenario assumes that existing policies are implemented and will continue to shape the energy sector landscape going forward. It assumes moderate economic growth in the medium to long term;
- The Environmental Awareness Scenario is characterised by more stringent emission limits and a more environmentally aware society, where a higher cost is placed on externalities caused by the supply of energy;
- The Resource Constrained Scenario in which global energy commodity prices (i.e., coal, crude oil and natural gas) are high due to limited supply;
- The Green Shoots Scenario describes an economy in which the targets for high economic growth and structural changes to the economy, as set out in the National Development Plan, are met.

The Integrated Energy Plan notes that South Africa should continue to pursue a diversified energy mix which reduces reliance on a single or a few primary energy sources. In terms of renewable energy, the document refers to wind and solar energy. The document does however appear to support solar over wind noting that solar PV and CSP with storage present excellent opportunities to diversify the electricity mix, to produce distributed generation and to provide off-grid electricity. Solar technologies also present the greatest potential for job creation and localisation. Incentive programmes and special focused programmes to promote further development in the technology, as well as solar roll-out programmes should be pursued.

3.4.6 Integrated Resource Plan for Electricity (2010-2030)

The Integrated Resource Plan (IRP) for Electricity 2010 – 2030 is a subset of the Integrated Energy Plan and constitutes South Africa's national electricity plan. The primary objective of the IRP is to determine the long-term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing and cost. The IRP also serves as input to other planning functions, including amongst others, economic development and funding, and environmental and social policy formulation.

The current iteration of the IRP, led to the Revised Balanced Scenario (RBS) that was published in October 2010. Following a round of public participation which was conducted in November / December 2010, several changes were made to the IRP model assumptions. The document outlines the proposed generation new-build fleet for South Africa for the period 2010 to 2030. This scenario was derived based on a cost-optimal solution for new-build options (considering the direct costs of new build power plants), which was then "balanced" in accordance with qualitative measures such as local job creation.

The Policy-Adjusted IRP reflects recent developments with respect to prices for renewables. In addition to all existing and committed power plants, the plan includes 9.6GW of nuclear; 6.25GW of coal; 17.8GW of renewables; and approximately 8.9GW of other generation sources such as hydro, and gas.

3.4.7 National Development Plan 2030 (2012)

The National Development Plan 2030 is a plan prepared by the National Planning Commission in consultation with the South African public which is aimed at eliminating poverty and reducing inequality by 2030. The National Development Plan aims to achieve this by drawing on the energies of its people, growing and inclusive economy, building capabilities, enhancing the capacity of the state and promoting leaderships and partnerships throughout society. While the achievement of the objectives of the National Development Plan requires progress on a broad front, three priorities stand out, namely:

- Raising employment through faster economic growth.
- Improving the quality of education, skills development and innovation.
- Building the capability of the state to play a developmental, transformative role.

In terms of the Energy Sectors role in empowering South Africa, the National Development Plan envisages that, by 2030, South Africa will have an energy sector that promotes:

- Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.
- Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households.
- Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change.

The National Development Plan aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The proposed project will assist in reducing carbon emissions targets and creating jobs in the local area as well as assist in creating a competitive infrastructure based on terms of energy contribution to the national grid.

3.4.8 The New Growth Path Framework

The aim of the New Economic Growth Path Framework is to enhance growth, employment creation and equity. Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. In this regard the framework identifies investments in five key areas namely: energy, transport, communication, water and housing.

The New Growth Path also identifies five other priority areas as part of the programme, through a series of partnerships between the State and the private sector. The Green Economy as one of the five priority

areas to create jobs, including expansions in construction and the production of technologies for solar, wind and biofuels. In this regard clean manufacturing and environmental services are projected to create 300 000 jobs over the next decade.

3.4.9 National Infrastructure Plan

The South African Government adopted a National Infrastructure Plan in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthen the delivery of basic services. The plan also supports the integration of African economies. In terms of the plan Government will invest R827 billion over the next three years to build new and upgrade existing infrastructure. The aim of the investments is to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, electricity plants, hospitals, schools and dams will contribute to improved economic growth.

As part of the National Infrastructure Plan, Cabinet established the Presidential Infrastructure Coordinating Committee (PICC). The Committee identified and developed 18 strategic integrated projects (SIPS). The SIPs cover social and economic infrastructure across all nine provinces (with an emphasis on lagging regions) and consist of:

- Five geographically focussed SIPs;
- Three spatial SIPs;
- Three energy SIPs;
- Three social infrastructure SIPs;
- Two knowledge SIPs;
- One regional integration SIP;
- One water and sanitation SIP.

The three energy SIPS that are related to Kareekloof Solar PV are SIP 8, 9 and 10.

Table 9: Strategic Infrastructure related to Kareekloof Solar PV

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 (IRP 2010); Support bio-fuel production facilities.
SIP 9: Electricity generation to support socio-economic development
Accelerate the construction of new electricity generation capacity in accordance with the IRP 2010 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.
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.

Although this project aligns with these 3 SIP's, it will only receive formal SIP status once it is selected as a preferred bidder under the REIPPPP or other private procurement process.

3.4.10 Strategic Environmental Assessment (SEA) for Wind and Solar PV energy in South Africa

The Strategic Environmental Assessment (SEA) for wind and solar PV energy in South Africa (CSIR, 2013) identified eight (8) Renewable Development Zones (REDZs). The REDZs identified areas where large scale renewable energy facilities can be developed in in a manner that limits significant negative impacts on the environment while yielding the highest possible socio-economic benefits to the country.

The Phase 2 SEA identified a further 3 REDZ, which were formally gazetted in 2021. The Kareekloof Solar PV Facility is not situated within a REDZ.

3.4.11 Conservation of Migratory Species of Wild Animals

Conservation of Migratory Species of Wild Animals (also known as CMS or the Bonn Convention) is an intergovernmental treaty and is the most appropriate instrument to deal with the conservation of terrestrial, aquatic and avian migratory species. The convention includes policy and guidelines with regards to the impact associated with man-made infrastructure. CMS requires that parties (South Africa is a signatory) take measures to avoid migratory species from becoming endangered (Art II, par. 1 and 2) and to make every effort to prevent the adverse effects of activities and obstacles that seriously impede or prevent the migration of migratory species i.e., power lines (Art 111, par. 4b and 4c).

An Avifaunal Specialist has been appointed to consider the impact of the proposed Kareekloof Solar PV (Annexure E3). Birdlife Africa South Africa has also been given an opportunity to comment on this Scoping Report.

3.4.12 The Agreement on the Convention of African-Eurasian Migratory Water Birds

The Agreement on the Conservation of African-Eurasian Migratory Water birds (AEWA) is an intergovernmental treaty dedicated to the conservation of migratory waterbirds and their habitat across Africa, Europe, the Middle East Central Asia, Greenland and the Canadian Archipelago. The AEWA covers 255 species of birds ecologically dependent on wetlands for at least part of their annual cycle and is a legally binding agreement by all contracting parties (South Africa included) to guarantee the conservation of migratory waterbirds within their national boundaries through species and habitat protection and the management of human activities. As mentioned above, an Avifaunal Specialist has been appointed to consider the impact of the proposed Kareekloof Solar PV (Annexure E3). Birdlife Africa South Africa has also been given an opportunity to comment in this regard.

3.4.13 Guidelines to minimise the impacts on birds of Solar Facilities and Associated Infrastructure in South Africa

The “Guidelines to minimise the impact on birds of Solar Facilities and Associated Infrastructure in South Africa” (Smit, 2012) is perhaps the most important (although not legally binding) document from an avifaunal impact perspective currently applicable to solar development in South Africa. The guidelines are published by BirdLife South Africa (BLSA) and detail the recommended procedure for conducting an avifaunal specialist study as well as list all of the potential impacts of interactions between birds and solar facilities and associated infrastructure. We are aware of changes to the BLSA best-practise guidelines recently published at the Birds and Renewable Energy Forum in Johannesburg (2015) and although the revised requirements are still a work in progress and have not yet been ratified, they will inform this assessment where applicable.

Please refer to Annexure E3 for a copy of the Avifaunal Site Sensitivity Verification Report. In compliance with regime 2 of these guidelines, a second season of avifaunal monitoring and Avifaunal Impact Assessment will take place during the Environmental Impact Reporting Phase of this Environmental Process.

3.4.14 Environmental Impact Assessment Guideline for Renewable Energy Projects

The Minister of Environmental Affairs published the Environmental Impact Assessment Guideline for Renewable Energy in terms of section 24J of the National Environmental Management Act, 1998 (Act No. 107 of 1998) on 16 October 2016.

In pursuit of promoting the country’s Renewable Energy development imperatives, the Government has been actively encouraging the role of Independent Power Producers (IPPs) to feed into the national grid. Through its REIPPPP, the DoE has been engaging with the sector in order to strengthen the role of IPPs in renewable energy development. Launched during 2011, the REIPPPP is designed so as to contribute towards a target of 3 725MW, and towards socio-economic and environmentally sustainable development, as well as to further stimulate the renewable industry in South Africa.

In order to facilitate the development of the first phase of IPPs in South Africa, these guidelines have been written to assist project planning, financing, permitting, and implementation for both developers and regulators. The guideline is principally intended for use by the following stakeholder groups:

- Public Sector Authorities (as regulator and/or competent authority);
- Joint public sector authorities and project funders, e.g., Eskom, IDC, etc.
- Private Sector Entities (as project funder/developer/consultant);
- Other interested and affected parties (as determined by the project location and/or scope).

This guideline aims to ensure that all potential environmental issues pertaining to renewable energy projects are adequately and timeously assessed and addressed as necessary so as to ensure sustainable roll-out of these technologies by creating a better understanding of the environmental approval process for renewable energy projects.

The guidelines list the following possible environmental impacts associated with the development of solar energy facilities.

Table 10: Potential environmental impacts of solar energy projects (Adapted from DEA, 2015) showing where they have been considered in this report

Impact Description	Relevant Legislation	Applicability to this project
Visual Impact	NEMA	Specialist input attached in Annexure E8.
Noise Impact (CSP)	NEMA	Not applicable, as CSP is not considered as a technology alternative.
Land Use Transformation (fuel growth and production)	NEMA, NEMPAA, NHRA	Not Applicable to PV. Agricultural specialist input however attached in Annexure E6.
Impacts on Cultural Heritage	NEMA, NHRA	Heritage SSVR is attached in Annexure E5. A full Heritage Impact Assessment will take place as part of the Environmental Impact Reporting Phase of this Environmental Process.
Impacts on Biodiversity	NEMA, NEMBA, NEMPAA, NFA	Biodiversity specialist input attached in Annexure E1 -E4 (Terrestrial Biodiversity, Avifauna and Aquatic Biodiversity)
Impacts on Water Resources	NEMA, NEMICMA, NWA, WSA	The project will obtain water directly from the local municipality. A freshwater ecologist has assessed the potential impacts on freshwater resources (Annexure E4). All Aquatic Biodiversity Features as well and associated buffers identified by the Aquatic Biodiversity Specialist have been avoided in Layout Alternative 2 (Preferred Layout)
Hazardous Waste Generation (CSP and PV)	NEMA, NEMWA, HAS	The EMPr will make provision for damaged and defunct PV and Battery infrastructure for dismantling and re-use.
Electromagnetic Interference	NEMA	The nearest SKA station has been identified as SKA 004, at approximately 190km from the proposed Kareekloof Solar PV.

Impact Description	Relevant Legislation	Applicability to this project
		SKA and SARAO have been given an opportunity to provide comment in this regard.
Aircraft Interference	NEMA, MSA	The SA CAA have been automatically registered as an interested and affected party on this environmental process. There are no airports nor landing strips in the vicinity of the proposed site.
Loss of Agricultural Land	SALA	Agricultural specialist input is attached in Annexure E6
Sterilisation of mineral resources	MPRDA	The Department of Mineral Resources has been registered as an I&AP on this environmental process. The applicant will also consult with DMR to ascertain whether there are any prospecting rights in terms of section 53 of the MPRDA on the properties.

Assuming an IPP project triggers the need for BA or S&EIR under the EIA regulations (which in this case is a Scoping and Environmental Impact Reporting process), included in the assessment process is the preparation of an Environmental Management Programme (EMPr). Project-specific measures designed to mitigate negative impacts and enhance positive impacts should be informed by good industry practice and are to be included in the EMPr. Potential mitigation measures for solar energy projects include but are not limited to:

- Conduct pre-disturbance surveys as appropriate to assess the presence of sensitive areas, fauna, flora and sensitive habitats;
- Plan visual impact reduction measures such as natural (vegetation and topography) and engineered (berms, fences, and shades, etc.) screens and buffers;
- Utilise existing roads and servitudes as much as possible to minimise project footprint;
- Site projects to avoid construction too near pristine natural areas and communities;
- Locate developments away from important habitat for faunal species, particularly species which are threatened or have restricted ranges, and are collision-prone or vulnerable to disturbance, displacement and/or habitat loss;
- Fence sites as appropriate to ensure safe restricted access;
- Ensure dust abatement measures are in place during and post construction;
- Develop and implement a storm water management plan;
- Develop and implement waste management plan; and
- Re-vegetation with appropriate indigenous species to prevent dust and erosion, as well as establishment of alien species.

The recommendations of these guidelines have been explicitly considered in this scoping process and where necessary, additional specialist input has been obtained. This guideline and the outcome of the specialist assessments will also be incorporated into the EMPr that will be included in the next phase of the environmental process.

3.4.15 Sustainability Imperative

The norm implicit to our environmental law is the notion of sustainable development (“SD”). SD and sustainable use and exploitation of natural resources are at the core of the protection of the environment.

SD is generally accepted to mean development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. The evolving elements of the concept of SD *inter alia* include the right to develop; the pursuit of equity in the use and allocation of natural resources (the principle of intra-generational equity) and the need to preserve natural resources for the benefit of present and future generations. Economic development, social development and the protection of the environment are considered the pillars of SD (the triple bottom line).

"Man-land relationships require a holistic perspective, an ability to appreciate the many aspects that make up the real problems. Sustainable planning has to confront the physical, social, environmental and economic challenges and conflicting aspirations of local communities. The imperative of sustainable planning translates into notions of striking a balance between the many competing interests in the ecological, economic and social fields in a planned manner. The 'triple bottom line' objectives of sustainable planning and development should be understood in terms of economic efficiency (employment and economic growth), social equity (human needs) and ecological integrity (ecological capital)."

As was pointed out by the Constitutional Court, SD does not require the cessation of socio-economic development but seeks to regulate the manner in which it takes place. The idea that developmental and environmental protection must be reconciled is central to the concept of SD - it implies the accommodation, reconciliation and (in some instances) integration between economic development, social development and environmental protection. It is regarded as providing a "conceptual bridge" between the right to social and economic development, and the need to protect the environment.

Our Constitutional Court has pointed out that the requirement that environmental authorities must place people and their needs at the forefront of their concern so that environmental management can serve their developmental, cultural and social interests, can be achieved if a development is sustainable. "*The very idea of sustainability implies continuity. It reflects the concern for social and developmental equity between generations, a concern that must logically be extended to equity within each generation. This concern is reflected in the principles of inter-generational and intra-generational equity which are embodied in both section 24 of the Constitution and the principles of environmental management contained in NEMA.*" [Emphasis added.]

In terms of NEMA sustainable development requires the integration of the relevant factors, the purpose of which is *to ensure that development serves present and future generations.*[32]

It is believed that the proposed 900MW Kareekloof Solar PV supports the notion of sustainable development by presenting a reasonable and feasible alternative to the existing vacant land use type, which has limited agricultural potential due the lack of water and infrastructure.

Furthermore, the proposed alternative energy project (reliant on a natural renewable resource – solar energy) is in line with the national and global goal of reducing reliance on fossil fuels, thereby providing long-term benefits to future generations in a sustainable manner.

3.4.16 National Freshwater Ecosystem Priority Area Status

The National Freshwater Ecosystem Priority Areas (NFEPA) database forms part of a comprehensive approach to the sustainable and equitable development of South Africa's scarce water resources. This database guides how many rivers, wetlands and estuaries, and which ones, should remain in a natural or near-natural condition to support the water resource protection goals of the National Water Act (Act 36 of 1998). This directly applies to the National Water Act, which feeds into Catchment Management Strategies, water resource classification, reserve determination, and the setting and monitoring of resource quality objectives (Nel *et al*., 2011). The NFEPAs are intended to be conservation support tools and envisioned to guide the effective implementation of measures to achieve the National Environment

32 Refer to definition of "sustainable development" in section 1 of NEMA.

Management Biodiversity Act's biodiversity goals (NEM:BA) (Act 10 of 2004), informing both the listing of threatened freshwater ecosystems and the process of bioregional planning provided for by this Act (Nel *et al.,* 2011).

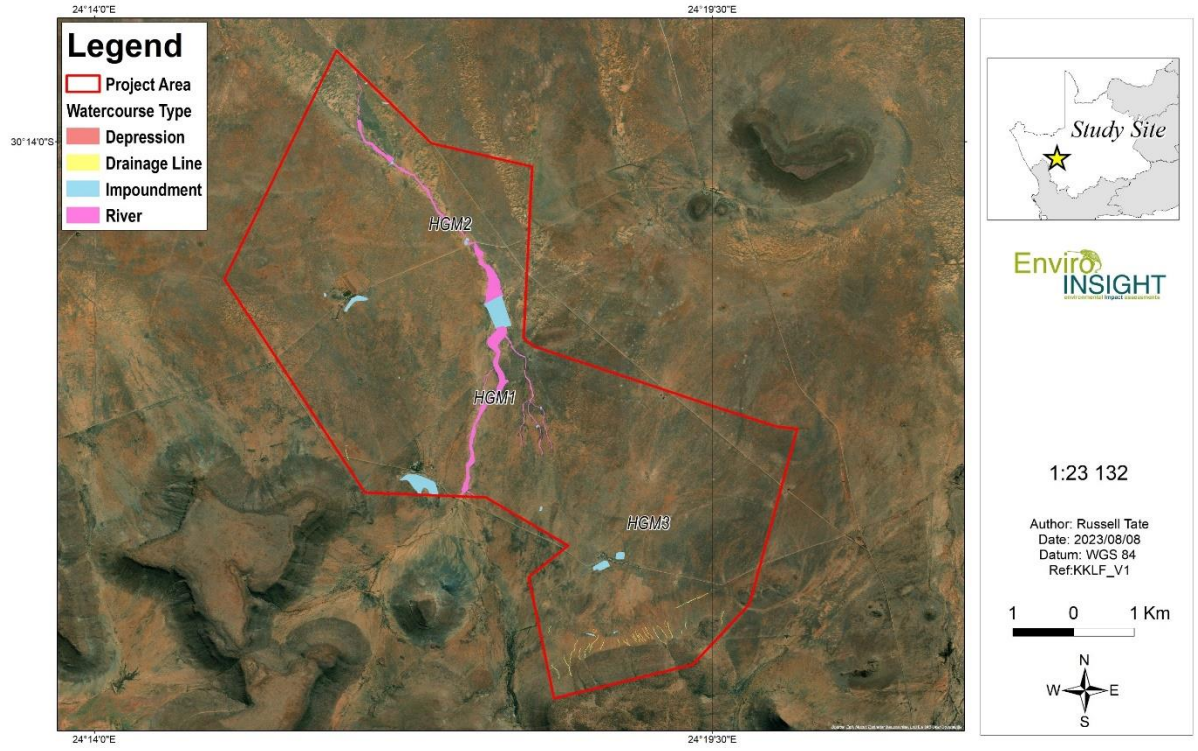


Figure 28: Delineated Surface Water Resources within the study site (Enviro Insight, 2023)

3.4.17 DFFE Screening Tool and Protocols

The National Web based Environmental Screening Tool is a geographically based web-enabled application which allows a proponent intending to submit an application for environmental authorisation in terms of the Environmental Impact Assessment (EIA) Regulations 2014, as amended to screen their proposed site for any environmental sensitivity.

The Screening Tool also provides site specific EIA process and review information for a specific area.

Further to this, the Screening Tool identifies 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.

Finally, the Screening Tool allows for the generating 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.

Prior to commencing with a specialist assessment, the current use of the land and the environmental sensitivity of the site under consideration identified by the national web based environmental screening tool (screening tool), where determined, must be confirmed by undertaking a site sensitivity verification.

A screening tool report was generated for the proposed Kareekloof Solar PV and is attached in Appendix H and the site sensitivity verification is discussed in section 5.9 below.

The table below reflects the specialist studies recommended in the DFFE Screening tool and whether they will be included in the Draft EIR.

Table 11: Specialist Studies recommended in the DFFE Screening Tool.

Study Recommended in Screening Tool	Discussion
Agricultural Impact Assessment	Will be undertaken.
Landscape/Visual Impact Assessment	Will be undertaken
Archaeological and Cultural Heritage Impact Assessment	Will be undertaken
Palaeontology Impact Assessment	Will be undertaken
Terrestrial Biodiversity Impact Assessment	Will be undertaken
Aquatic Biodiversity Impact Assessment	Will be undertaken
Avian Impact Assessment	Will be undertaken
Civil Aviation Assessment	To be determined – The closest airstrip was identified as the Petrusville Aerodrome situated approximately 38 km to the North East of the site. The South Avian Civil Aviation Authority, ATNS and the Saldanha Airport will be given an opportunity to comment on this scoping Process. The applicant will also submit an obstacle application (Part 30-27) to the South African Civil Aviation Authority.
Defence Assessment	To be determined – the South African National Defence Force will be provided with an opportunity to comment on this Scoping Process.
RFI Assessment	Not undertaken –It was furthermore found that the project is situated more than 180km from the closest SKA station (SKA004). The South African SKA Project Office and the South African Radio Astronomy Observatory (SARAO) have been registered as a key stakeholder on this environmental process and have been requested to provide input in terms of the Astronomy Geographic Advantage Act and potential impact to SKA.
Geotechnical Assessment	Will be undertaken
Socio-Economic Assessment	Will be undertaken
Plant Species Assessment	Will be undertaken
Animal Species Assessment	Will be undertaken

4. PLANNING CONTEXT

A Planning statement will be prepared as part of the Environmental Impact Reporting phase of this environmental process.

The land use planning process for the Kareekloof will typically involve the following:

- Application for consent use in terms of the Spatial Planning and Land Use Management Act, Act 16 of 2013, submitted to the Emthanjeni Local Municipality, in terms of the Emthanjeni Municipal Zoning Scheme By-law, 2017.
- Application in terms of the Subdivision of Agricultural Land Act (Act 70 of 1970).

In terms of the Municipal By-law, a renewable energy structure is permitted as a consent use of Agricultural 1 Zoned land.

Table 12: Showing Renewable Energy Structures as a consent use on Land Zoned for Agriculture 1.

1	2	3
Zoning	**Primary use**	**Consent use**
AGRICULTURAL ZONES		
Agricultural Zone I (AZ1)		
The objective of this zone is to promote and protect agriculture on farms as an important economic, environmental and cultural resource. Limited provision is made for non-agricultural uses to provide rural communities in more remote areas with the opportunity to increase the economic potential of their properties, provided these uses do not present a significant negative impact on the primary agricultural resource.	**Primary use** • Agriculture • Farm shop • Function venue • Guest house • Bed & Breakfast • Plant nursery	**Consent uses** • Additional dwelling units • Airfield • Animal care centre • Aqua-culture • Farm Shop • Freestanding base telecommunication station • Off road trail • Quarry • Renewable energy structure • Tourist facilities • Utility service • Crèche • Farmers' Market

The following planning process are likely to be required for the proposed Kareekloof Solar PV:

- The property is located within the Emthanjeni Local Municipality and any process of land use change will be subject to the Scheme Regulations and Municipal Planning By-laws of the said Municipality.
- The property is currently zoned as Agricultural Zone 1 in terms of Emthanjeni Municipal Zoning Scheme By-law, 2017. In order to allow for the development of a Renewable Energy Facility, application for a consent use on the applicable portion of the property will have to be launched.
- The application for consent use will be compiled and submitted in terms of the Spatial Planning and Land Use Management Act, Act 16 of 2013 (SPLUMA), as well as the Emthanjeni Local Municipal Zoning Scheme By-law, 2017.
- SPLUMA retracts the Removal of Restrictions Act, Act 84 of 1967, and any title deed restrictions on the property may be removed at the discretion of the local authority in terms of SPLUMA.

In addition to attaining the land use rights at the Local Authority, a long-term lease from the Department of Agriculture will be required.

5. SITE DESCRIPTION AND ATTRIBUTES

The following sections provide a description of the natural environment, built environment and social and economic context of the Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83

and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85, with particular focus on the Study Site for the proposed Kareekloof Solar PV.

5.1 LOCATION & BUILT ENVIRONMENT

The target properties, Portion 1 of the farm Bas Berg 88, Portion 2 of the farm Koppy Alleen 83 and Portions 6, 11, 16 & 17 of the farm Karee Kloof 85, are located in the Pixley ka Seme District of the Northern Cape Province, within the jurisdiction area of the Emthanjeni Local Municipality. North

The total properties are approximately 3590 hectares in size and located approximately 50km East of De Aar.

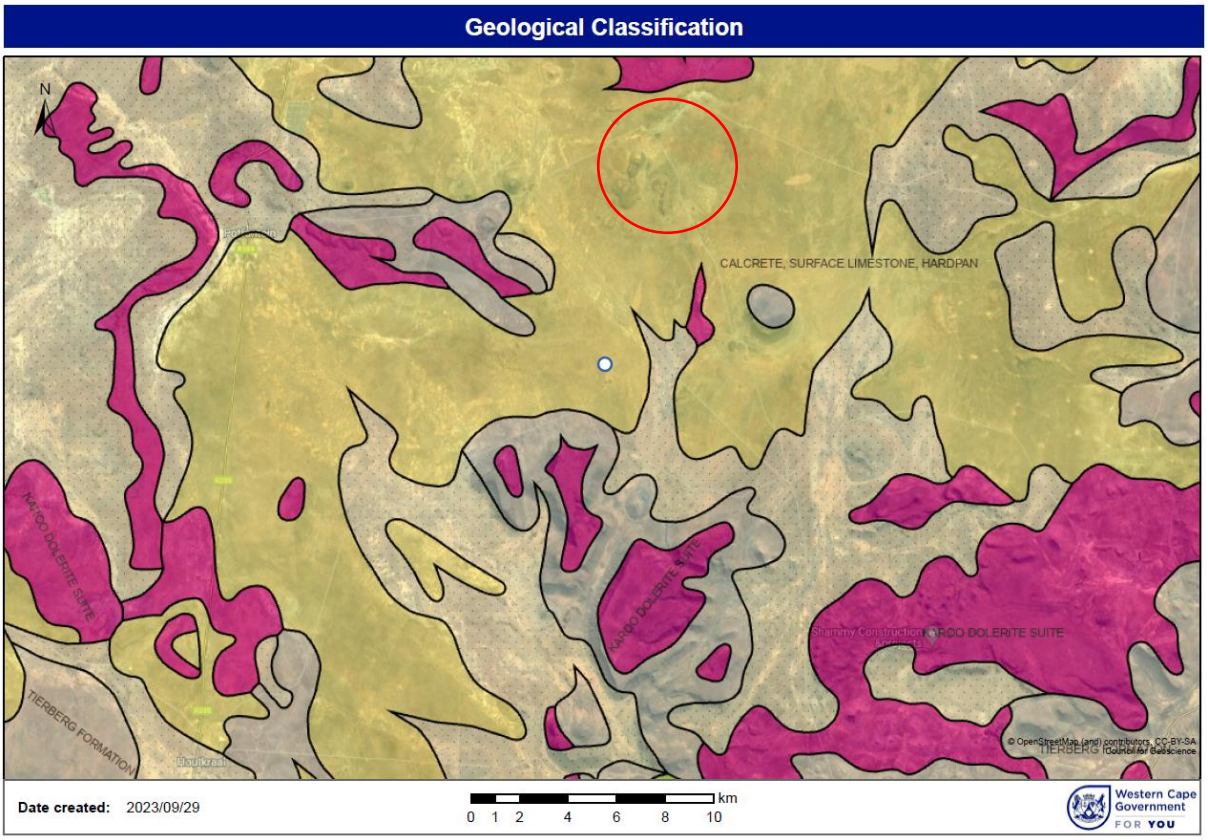
The proposed Kareekloof Solar PV is accessed from the R48 between De Aar and Petrusville.

There are three homesteads within the study site. These homesteads along with a buffer have been incorporated into the proposed layout (Layout Alternative 2)

5.2 GEOLOGY & CLIMATE

Karoo Supergroup – Beaufort Group – The Karoo Supergroup comprise approximately 60% of the surface of South Africa, consisting of thick succession of sedimentary rocks. The Beaufort Group is dominated by fluvial depositional environments consisting of sedimentary rocks such as sandstone, mudstone, limestone and calcretes. The surrounding area contains early Jurassic sills of the Karoo Dolerite Suite that intruded into the sedimentary successions.

Table 13: Classification of underlying Soils at Kareekloof Solar PV



According to the Aquatic Biodiversity Specialist the Mean Annual Precipitation (MAP) is 331 mm, peaking in 2022 at 623 mm, with the lowest value recorded in 2015 at 231 mm.

The temporal distribution of rainfall consisted of a unimodal flood regime where peak flows are observed in the summer between November and March...

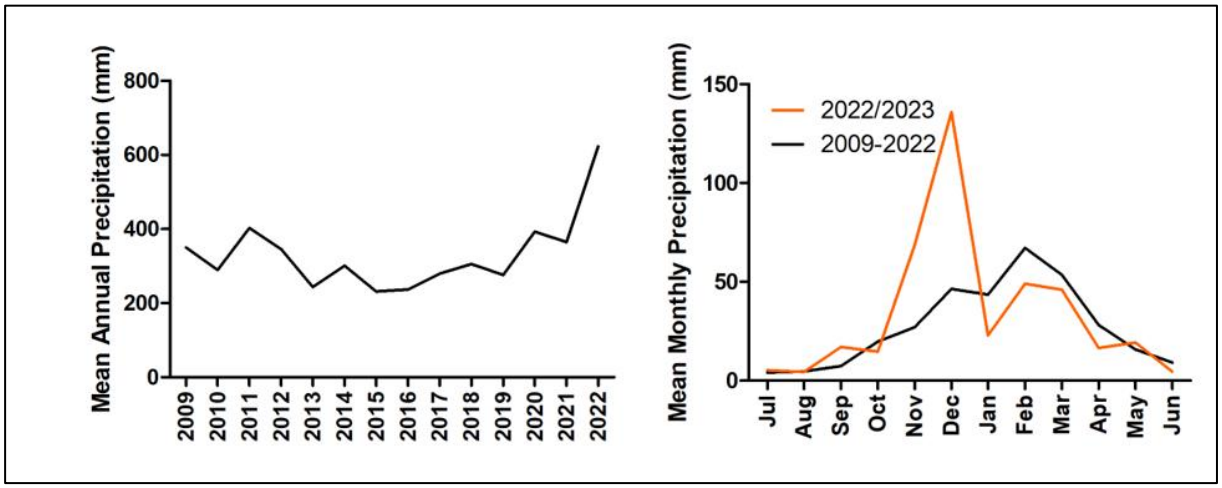


Figure 29: Average Annual and monthly Rainfall for the De Aar area where the Kareekloof Solar PV facility is proposed (Enviro Insite, 2023).

The average annual temperatures range from 3° in July to 33° in December to February.

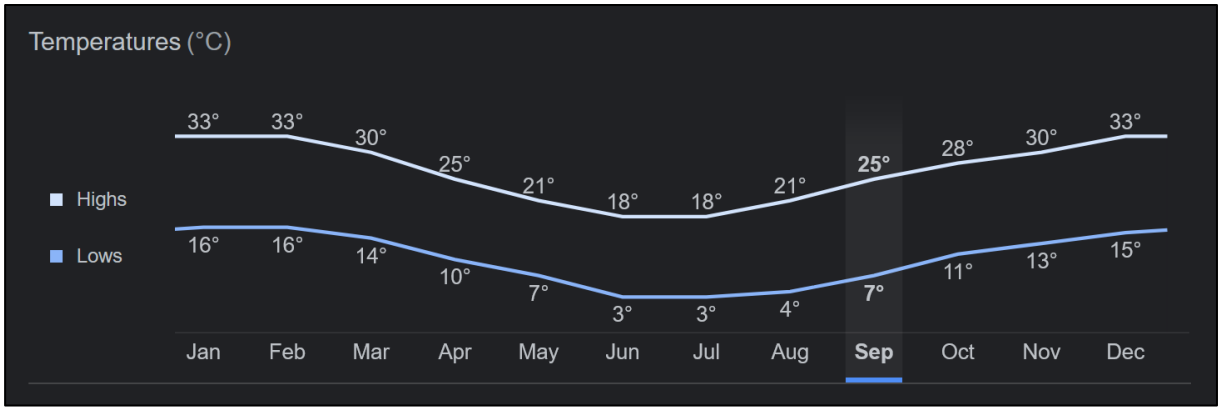


Figure 30: Average Monthly Temperatures for the De Aar Area.

5.3 TOPOGRAPHY

According to the Terrestrial Biodiversity Specialist, the Kareekloof Solar PV project area is predominantly located on relatively flat land, with elevated rocky ridges characterising the southern areas outside of the proposed PVSEF. There are few depression wetlands, scattered artificial dams and drainage areas present and no major rivers.

The flat areas of Northern and Eastern Upper Karoo vegetation types are characterised by two major habitat types, namely Nama Karoo Low Shrubland and Natural Grassland according to the National Landcover Classification.

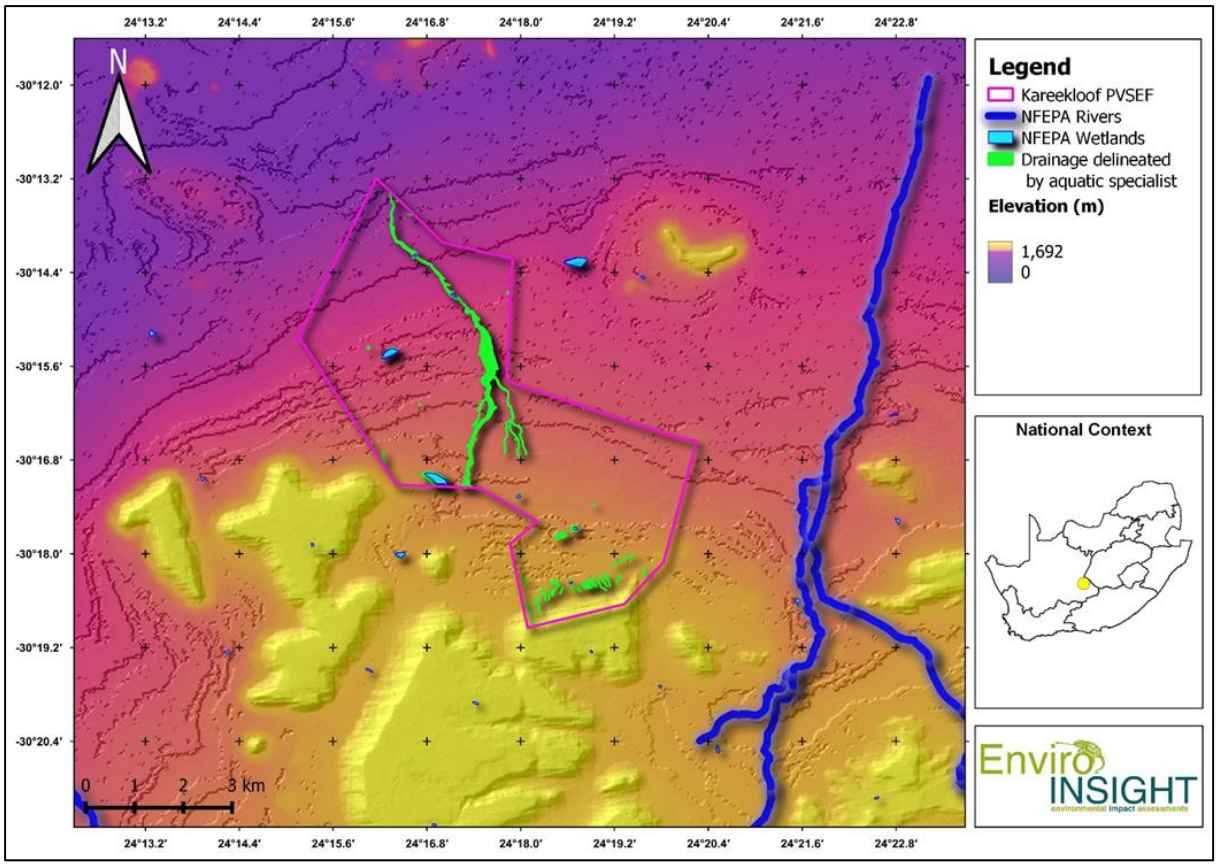


Figure 31: Main landscape features and elevation within the Kareekloof Solar PV Study Site.

5.4 BOTANICAL COMPOSITION OF THE SITE

Enviro Insight undertook a Terrestrial Biodiversity Site Sensitivity Verification which included a review of the Botanical component of the site (Annexure E1) from which the following is summarised.

5.4.1 Broad-Scale Vegetation Patterns

According to the national vegetation map, the project area falls within three broad vegetation units, namely Eastern Upper Karoo, Northern Upper Karoo and Besemkaree Koppies Shrubland.

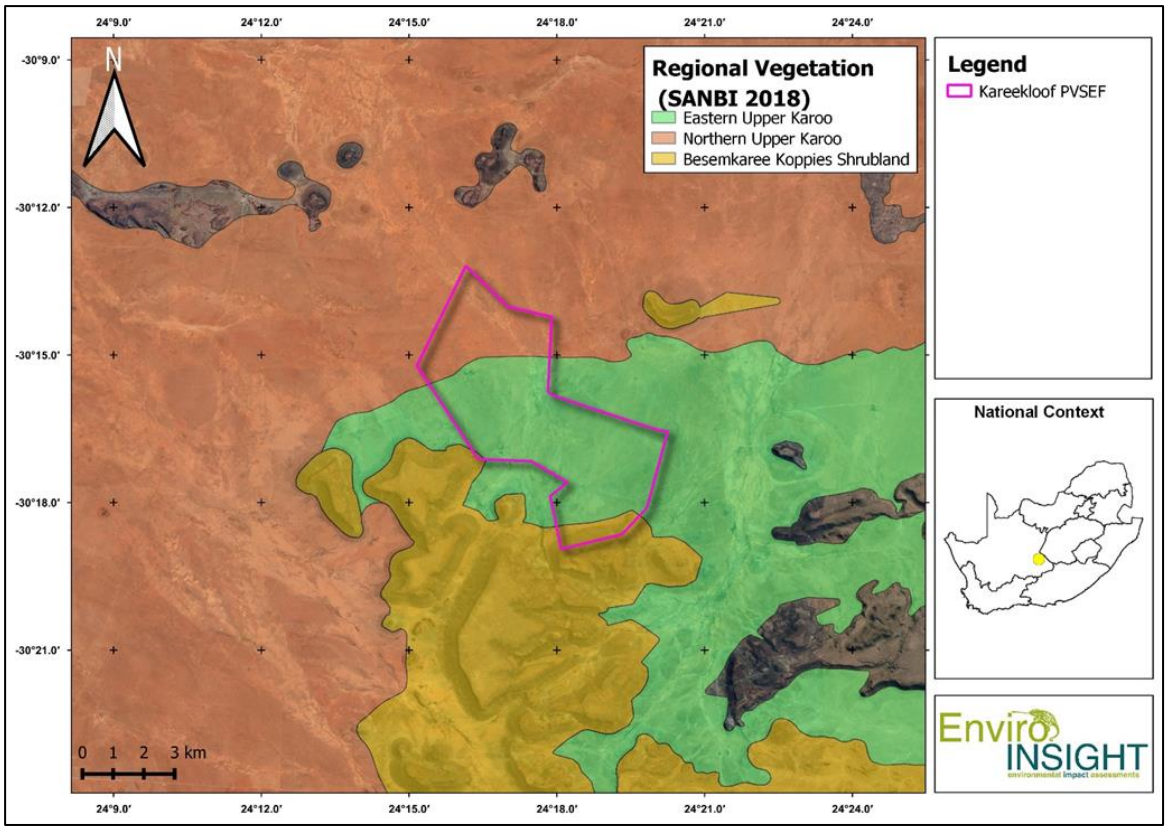


Figure 32: Broad Scale Vegetation Types Associated with Kareekloof Solar PV (Enviro Insight, 2023).

5.4.2 Habitats & Plant Communities

This area generally receives very limited and sporadic rainfall. Accordingly, plant diversity is relatively low. Four main habitats were identified based on species composition and structure. The main driver of vegetation pattern in the area is the substrate. These 4 main habitat types are discussed below.

5.4.2.1 Grassland

This is the dominant habitat and is mostly present on softer, sandier soils. It is characterised by a dense grass sward with only few shrubs present. It is dominated by white grasses of the genera *Aristida* and *Eragrostis* interspersed with *microphyllous* shrubs such as *Lycium spp*.

This habitat is considered moderately sensitive due to moderate species diversity and the potential presence of provincially protected species (of the genera *Aloe, Ruschia, Jamesbrittenia, Crassula, Haemanthus, Oxalis*).

Figure 33: Example of Grassland Habitat Types (Enviro Insight, 2023)

5.4.2.2 Scrubland

This habitat is present as patches amongst the grassland, typically characterised by the near-absence of grasses (such as *Aristida sp*. and *Eragrostis sp*.) and the presence of large, woody shrubs. However, it often forms a habitat mosaic with the grassland, particularly on the ecotone of the two habitats. Similar to the grassland habitat, scrubland has a very expansive occurrence in the region and is therefore not considered to be highly sensitive. Provincially protected species of the genera *Aloe, Ruschia, Euphorbia, Haemanthus, Oxalis, Jamesbrittenia* and *Ammocharis* have been recorded in the area before.

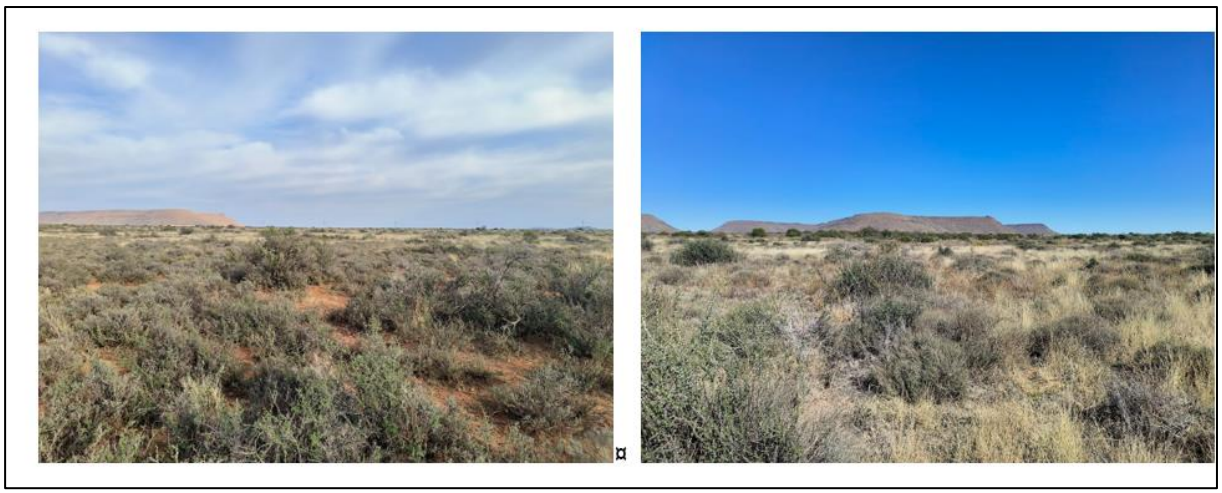


Figure 34: Example of Shrubland Habitat Types (Enviro Insight, 2023)

5.4.2.3 Rocky Ridges & Steep Slopes

This structurally defined habitat is limited in the region and has the potential to act a s a migration corridor for fauna. It is also not able to fully recover from any mechanical disturbances and has therefore been buffered from development by 30m. The presence of the protected tree *Boscia albitrunca* has been recorded on similar Koppies or their foot slopes within a 5 km radius from the Kareekloof Solar PV Study Site.

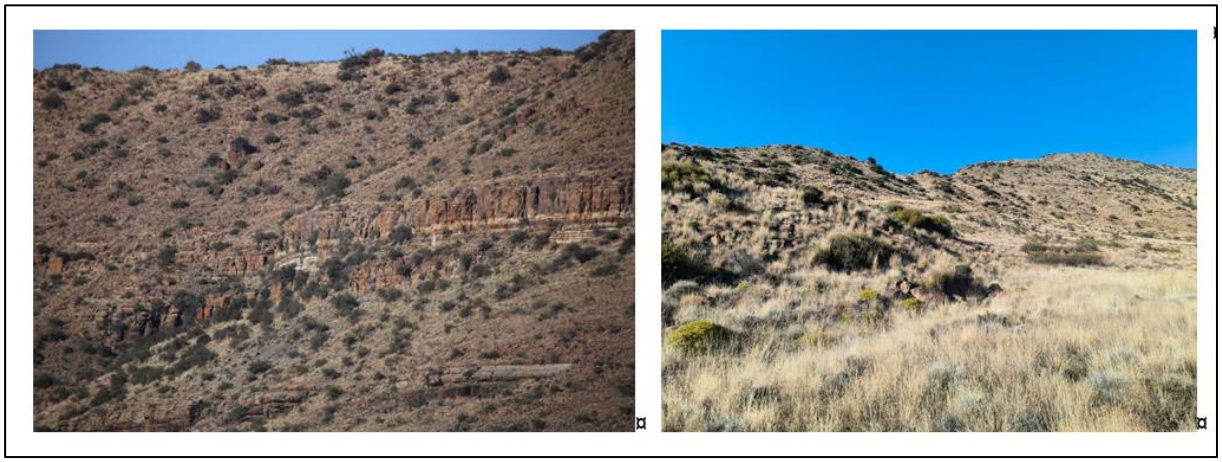


Figure 35: Example of Rocky Ridges and Steep Slopes Habitat Types (Enviro Insight, 2023)

5.4.2.4 Drainage, wetlands & dams

This is a collection of aquatic habitats predominantly characterised by the ephemeral drainage lines and their marginal vegetation, but also the man-made impoundments (dams) in these drainage lines which retain surface water for longer.

These habitats are very limited in this arid region and due to the periodic presence of water provide excellent foraging habitats for fauna, particularly in the dry months. The dense marginal vegetation is also often suitable for fauna breeding purposes. This habitat is considered to be sensitive as it functions as both foraging habitat and migration corridors for fauna and is limited in the landscape. It has therefore been buffered from development by 100 m.

Figure 36: Example of Drainage, Wetlands and Dams Habitat Types (Enviro Insight, 2023)

5.4.3 Botanical Species of conservation concern.

According to the terrestrial biodiversity specialist, no botanical species of conservation concern are expected to be found on site.

5.5 TERRESTRIAL FAUNAL COMPONENT OF THE SITE

Enviro Insight undertook a Terrestrial Biodiversity Site Sensitivity Verification (Appendix E1) which included consideration of the Faunal component. This will be expanded on in the Environmental Impact Assessment Phase of the environmental process.

The specialist confirmed that the aquatic habitats (drainage and dams) and the rocky ridges and steep slopes habitats represent the most limited and therefore, most important ecological features for terrestrial fauna.

The main drainage line and its associated marginal vegetation as well as the rocky ridges and steep slopes habitats function as migration corridors across the landscape for fauna.

5.5.1 Faunal Species of conservation concern

According to the terrestrial biodiversity specialist, no botanical species of conservation concern are expected to be found on site[33].

5.6 AQUATIC COMPOSITION OF THE STUDY SITE

Enviro Insight undertook an Aquatic Biodiversity Assessment of the proposed project site. Please refer to the Aquatic Biodiversity Site Sensitivity Verification report attached in **Annexure E4** from which the following has been drawn.

[33] This excludes avifaunal species which are discussed separately.

Two hydrogeomorphic (HGM) wetland types were observed during the survey within the 500m screening area. These wetland types consisted of riverine and depression wetland types.

A number of artificial wetlands were also identified during the survey and included historical borrow pits and impoundments created to capture surface runoff. Additional drainage features associated with the project also include drainage lines.

The wetland areas could be separated into 3 distinct units as detailed below.

Table 14: Wetland classification within 500m screening zone (Enviro Insight, 2023)

Wetland Name	Hectares	System	DWS Ecoregion/s	NFEPA Wet Veg Group/s	Landscape Unit	HGM Type
HGM1	29.08	Inland	Nama Karoo	Upper Nama Karoo	Valley Bottom	River
HGM2	25.08	Inland	Nama Karoo	Upper Nama Karoo	Valley Bottom	River
HGM3	0.133	Inland	Nama Karoo	Upper Nama Karoo	Flat	Depression

Figure 37: The depression unit at HGM3 (Enviro Insight, 2023)

Figure 38: The riverine geomorphic unit at HGM1 (Enviro Insight, 2023)

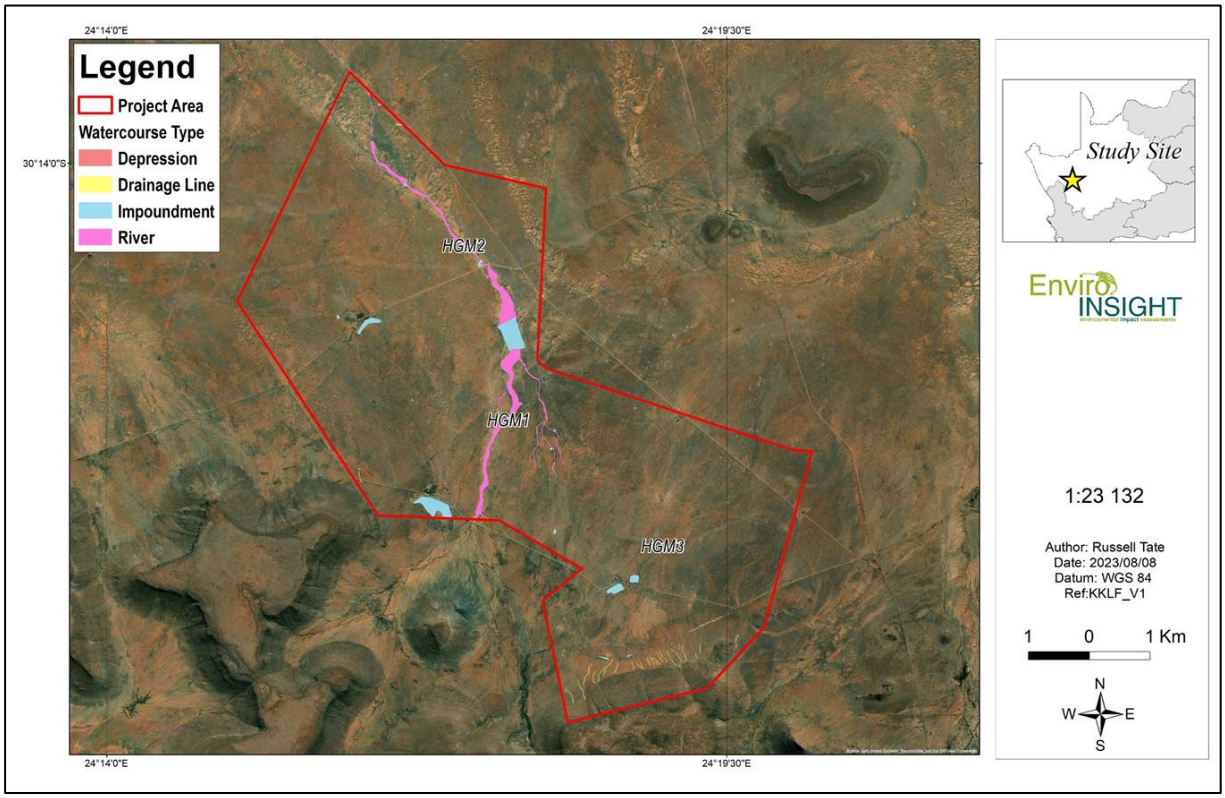


Figure 39: Delineation of the watercourses in the project area (Enviro Insight, 2023).

5.7 AVIFAUNAL COMPOSITION OF THE SITE

An Avifaunal specialist, Enviro Insight, was appointed to undertake a site sensitivity verification of the proposed Kareekloof Solar PV facility. Please refer to Appendix E2 for a copy of the Avifauna Site Sensitivity Verification Report.

The Avifaunal specialist confirmed that a total of 109 bird species have been recorded by the South African Bird Atlas Project (SABAP2) on the nine focal pentads relevant to the Kareekloof Solar PV project area, all of which are expected to occur on the project area. Eight species of conservation concern (threatened and near-threatened) have been observed within at least one of the nine focal

pentads for the Kareekloof Solar PV project area, two of which were observed during the winter survey (August 2023). The specialist furthermore noted that the Tawny Eagle, predicted by the Screening Tool, has not been recorded in the SABAP2 dataset for the nine focal pentads for the Kareekloof Solar PV study area.

Table 15: Expected and observed avifauna species of conservation concern for the Kareekloof solar PV project area.

Common Name	Scientific Name	Global Status (IUCN)	Regional Status (Taylor et al. 2015)	Individuals Observed Winter (Aug '23)
Ludwig's Bustard	*Neotis ludwigii*	EN	EN	
Martial Eagle	*Polemaetus bellicosus*	EN	EN	
Secretarybird	*Sagittarius serpentarius*	EN	VU	1
African Rock Pipit	*Anthus crenatus*	LC	NT	
Verreaux's Eagle	*Aquila verreauxii*	LC	VU	5
Lanner Falcon	*Falco biarmicus*	LC	VU	
Blue Korhaan	*Eupodotis caerulescens*	NT	LC	
Blue Crane	*Grus paradisea*	VU	NT	

Figure 40: A Verreaux's Eagle observed on the Kareekloof PVSEF project area during the winter survey (Enviro Insight, 2023)

The total number of bird species observed by the avifaunal specialist within and around the Kareekloof Solar PV project area during the winter survey (31July - 4 August 2023) was 69, comprising a total of 907 individuals. Of these, two species are considered to be of conservation concern, namely the Verreax's Eagle and Secretarybird. In general, the observed avian species richness is relatively low but expected for this region and abundances were moderate to high due to a productive summer season

5.8 SOCIAL CONTEXT

This section below provides a summary of the social context of the local municipality as contained in their 2020-2023 IDP. The appointed Social specialist, Mr Tony Barbour will further details in this regard during the Environmental Impact Assessment Phase of the environmental process.

Emthanjeni Local Municipality is a category B municipality consisting of three towns: De Aar, Britstown and Hanover. It is situated in the Pixley ka Seme District Municipality and is the seat of this district.

Emthanjeni represents approximately 22, 7% of the district's population. The Pixley ka Seme District has an approximate population of 220 830 people (IHS Markit Review 2019) representing 16, 26% of the Northern Cape population with its 1 145 861 residents. The Northern Cape represents 2, 21% of the National population

Table 16: Demographics of the local municipality (Emthanjeni IDP, 2020 - 2023)

		2011	2016 (CS 2016)	2019 (MSEP 2021)
Population		42 356	45 405	46 777
Population growth rate			1.69%	0.41%
Households		10 456	12 617	11 583
People per household		4.1	3.9	4.07
Indigent Households			3 594	3 799
Gender breakdown	**Males**	20 722 (41%)	22 443 (49%)	(49%)
	Females	21 634 (51%)	22 962 (51%)	(51%)
Age breakdown	**0-14**	13 424	11 949	30.1%
	15-64	26 461	30 832	61.1%
	65+	2 471	2 621	8.8%
Race composition	**Black-African**	14 059	14 515	
	Coloured	24 436	27 644	
	White	3 388	3 129	
	Asian	236	116	
Unemployment rate		28%	28%	27.3%
Population density		3 person's/km²	3 person's/km²	3.5 person's/km²

5.9 ECONOMIC CONTEXT

The following economic context is however provided as part of this scoping exercise and will be expanded upon by the Social Specialist during the Environmental Impact Assessment Process .

5.9.1 Project cost overview

Renewable energy projects, such as the proposed solar facility, require significant capital investment. Funds of equity and debt investors either from foreign or domestic sources are obtained. The cost requirements and potential revenue are discussed in this section, sketching a business case for the development of renewable energy projects within South Africa.

The project costs consist of two parts, capital cost and running cost. The capital cost pertains to all costs incurred for the establishment of a producing facility. The running cost relates to those costs incurred to ensure that the facility operates as it should throughout its expected lifetime.

Solar PV installations can operate for many years with relatively little maintenance or intervention. Therefore after the initial capital outlay required for building the solar power plant, further financial investment is limited. Operating costs are also limited compared to other power generation technologies.

5.9.2 Project specific costs

The Kareekloof Solar PV detailed costing has not been completed on the date of submitting this scoping report. The project is, however, based on the industry standard cost with capital expenditure that can amount to more or less R20-25M per megawatt installed capacity. The running cost of a solar PV facility is minimal related to the initial capital cost, contributing to the most significant cost of constructing and running a solar PV facility.

1.1.1 Revenue streams

The payback of the facility results mainly from electricity sales, either under the current governmental programme, known as the “Renewable Energy Independent Power Producer Procurement Programme” (REIPPPP) or through private power purchase agreements.

The IPP procurement programme portrays fixed ceiling prices for bidders to tender against in a competitive environment. The establishment of these ceiling prices is based on industry standard return on investments.

As part of the IPP procurement programme preferred bidders will enter into a power purchase agreement between the IPP generator and the Single Buyers Office/Department of Energy. National treasury provides surety, while NERSA regulates the IPP licences.

The bidding and tender procedure of the IPP procurement programme requires an approved EIA Environmental Authorisation as a gate keeping criteria, where no project would be considered without the EIA Environmental Authorisation being given. In most cases the same criteria is applicable to a private power purchase agreement.

5.10 VISUAL CONTEXT

Mr Stephen Stead of Visual Resource Management Africa (VRMA) undertook a Visual Site Sensitivity Verification of the proposed Kareekloof Solar PV (See Appendix E6). The following visual context was determined from this study. A Level 3 Landscape and Visual Impact Assessment will be undertaken and included in the Environmental Impact Reporting phase of this environmental process.

The DFFE Screening tool indicated Very High Landscape Sensitivity due to

- Slope between 1:4 and 1:10,
- Mountain tops and high ridges, and
- Slope more than 1:4m.

The visual specialists confirmed these sensitivities for certain parts of the site which were excluded from the preferred layout alternative.

5.10.1 Policy fit

In terms of regional and local planning fit for planned landscape and visual related themes, the expected visual/ landscape policy fit of the landscape change is rated Medium. While not within a REDZ, there are no other RE projects within the zone of visual influence, and the site is already degraded to some degree from the existing Eskom power line that transects the site. The project is also within a strategic powerline corridor area, and as such, further powerlines are likely to be routing through the vicinity.

5.10.2 Zone of visual influence

No significant, landscapes are located within the proposed project zone of visual influence.

The preliminary finding of the visual specialist is that with the exclusion of the southern hills and steep slopes areas, the proposed landscape change will not constitute a fatal flaw. Mitigations will be required to protect the following visual and landscape resources:

- 500m buffer from the southern mountains.
- Setback of 50m from the northern rural access road where there a 'walling' effect is created by the proposed location of PV on either side of road.
- Exclusion of the main farm house area of farm Koppy Alleen, and the adjacent small 'koppie' as part of retaining cultural landscape integrity.
- Exclusion around the remaining structures of the abandoned Kareekloof Farm houses (pending heritage specialists findings).
- Exclusion of drainage lines as these areas are unique landscape features of the region (refer to Aquatic Biodiversity Specialist findings).

5.11 SITE SENSITIVITY.

On 20 March 2020 the Minister of Forestry, Fisheries and the Environmental published the general requirements for undertaking site sensitivity verification for environmental themes for activities requiring environmental authorisation (Government Gazette No. 43110). In terms of these requirements, prior to commencing with a specialist assessment, the **current land use** and **environmental sensitivity** of the site under consideration by the screening tool must be confirmed by undertaking a site sensitivity verification by either an EAP or a specialist.

The report uses national datasets to identify site sensitivities and potential specialist studies that may be required for any particular development. Since the datasets are not necessarily groundtruthed, there may be instances where the required specialist study is in actual fact not necessary.

Prior to commencing with a specialist assessment, the **current use of the land** must be verified and the environmental sensitivity of the site under consideration identified by the screening tool must be verified by the undertaking a **site sensitivity verification** (SSV).

According to the Assessment Protocol for specialist involvement, if any part of the proposed development falls within an area of 'high" or "very high" sensitivity and confirmed as such by the specialist or EAP, the requirements prescribed for such sensitivity must be followed.

In terms of legislative requirements The following is required to form part of a site sensitivity verification.

Table 17: General requirements for site sensitivity verifications in terms of GN43110.

SSVr Requirement	Discussion
The SSV must be undertaken by an EAP or a specialist	This SSV report (SSVr) has been compiled by the EAP and the Specialists. Please refer to the Specialist SSVr's attached in appendices E1 to E7.
A preliminary on-site inspection must be undertaken	A site Inspection was undertaken by the EAP in June 2023. All specialists have undertaken site inspections between June and September 2023. Please refer to the Specialist SSVR's attached in Appendix E1-E7 for dates in which each specialist undertook field work.
A desktop analysis must be undertaken, alongside any other applicable/ relevant information.	Consideration has been given to the datasets available on the SANBI BGIS spatial application. All

SSVr Requirement	Discussion
	relevant spatial biodiversity layers were consulted, including: - Northern Cape Biodiversity Sector plan. - National Freshwater Ecosystems Priority areas. - National Spatial Biodiversity Assessment. - National Protected Areas Expansion Strategy. - Important Bird Areas - South African Bird Atlas Project (SABAP 2) dataset.

5.11.1 General Site Information

The General site information for the proposed Kareekloof Solar PV is discussed in detail in sections 5.1 – 5.10of this report. These sections on the general site have been informed by the specialist studies attached in appendices E1 – E8.

5.11.2 Screening Tool Results

According to the Screening Tool Report that was run on **25 April 2023**, the following summary of the Study Site environmental sensitivities were identified in the screening tool.

Table 18: Summary of the development footprint environmental sensitivities.

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			

The verification of these sensitivities by the participating specialists is included in the sections below. Please also refer to the site sensitivity maps included in section 2.11 of this report.

5.11.2.1 Agriculture

The Screening Tool identifies the agricultural sensitivity theme as “High”, with high and medium sensitivity and low sensitivity areas present on the majority of the study site.

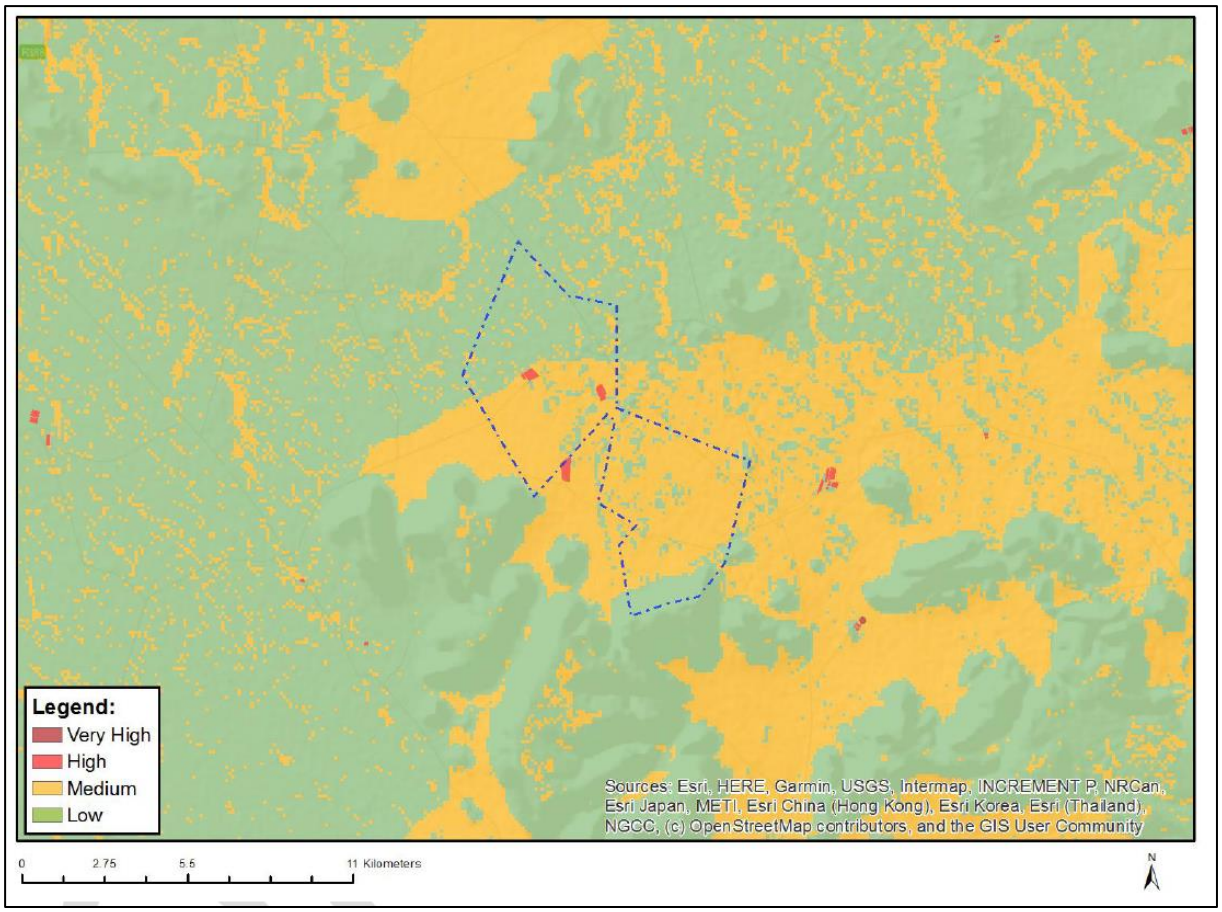


Figure 41: Image from Screening Tool identifying agricultural theme sensitivity for the Study Site.

The high sensitivity areas were reflected in the screening tool for the following reasons:

- Annual Crop Cultivation;
- Planted Pastures Rotation; and
- Land capability of Low-Moderate/07. Low-Moderate.

The agricultural Specialist has refuted this and confirmed the entire site to be of medium to low sensitivity. Please refer to Appendix E5 for a copy of the Agriculture SSVr

5.11.2.2 Animal Species

The Screening Tool identifies the Animal Species sensitivity theme as “Medium”, with low sensitivity areas also present on the site.

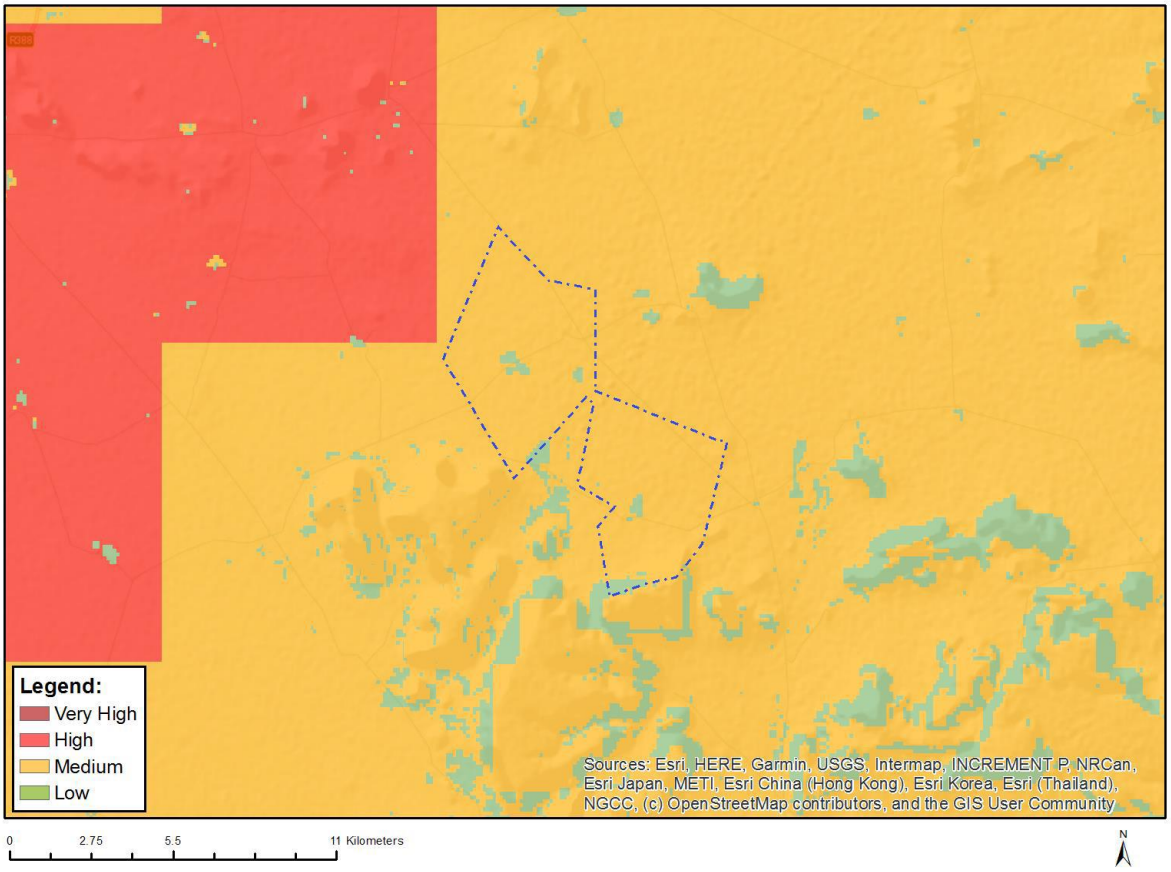


Figure 42: Image from Screening Tool identifying Animal Species theme sensitivity for the Study Site.

The medium sensitivity was attributed to the sensitive bird species Neotis ludwigii. An avifaunal specialist was appointed to consider the potential impact on this species.

The Avifaunal Specialist confirmed that the Site Ecological Importance for this species will be evaluated for each of the avifauna habitats in the Kareekloof Solar PV project area in the Impact Assessment Phase of the Environmental Process, after all fieldwork has been completed[34], which will also complete the requirements of a SSV.

Regardless of the outcome of the second season of avifaunal monitoring, a Bird species impact assessment and not a compliance statement will be undertaken in compliance with the Bird Life South Africa Guidelines.

5.11.2.3 Aquatic Biodiversity

The Screening Tool identifies the Aquatic Biodiversity sensitivity theme as “Very High”, but with the majority of the site as low sensitivity.

[34] The Avifaunal specialist has completed the first season of avifaunal monitoring, and the second season will take place in spring, before the preparation of the Draft Environmental Impact Report.

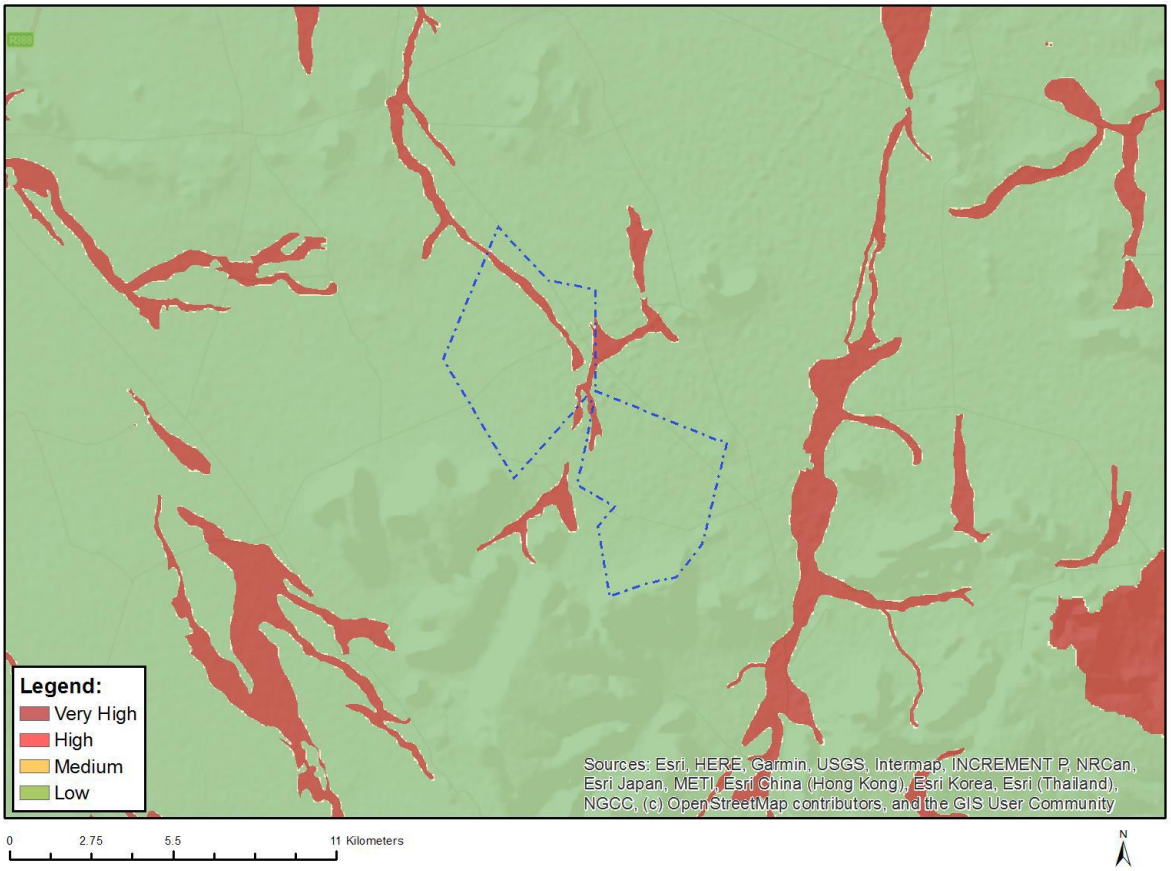


Figure 43: Image from Screening Tool identifying Aquatic Biodiversity theme sensitivity for the Study Site.

The Aquatic Biodiversity specialist (Appendix E3) has confirmed the Low sensitivity for the majority of the site and has confirmed and further delineated the very high sensitivity features (notwithstanding all Aquatic Biodiversity features along with required buffers have been avoided by the preferred layout – Layout Alternative 2)

5.11.2.4 Archaeology and Cultural Heritage

The Screening Tool identifies the Archaeology and Cultural Heritage sensitivity theme as “Low”.

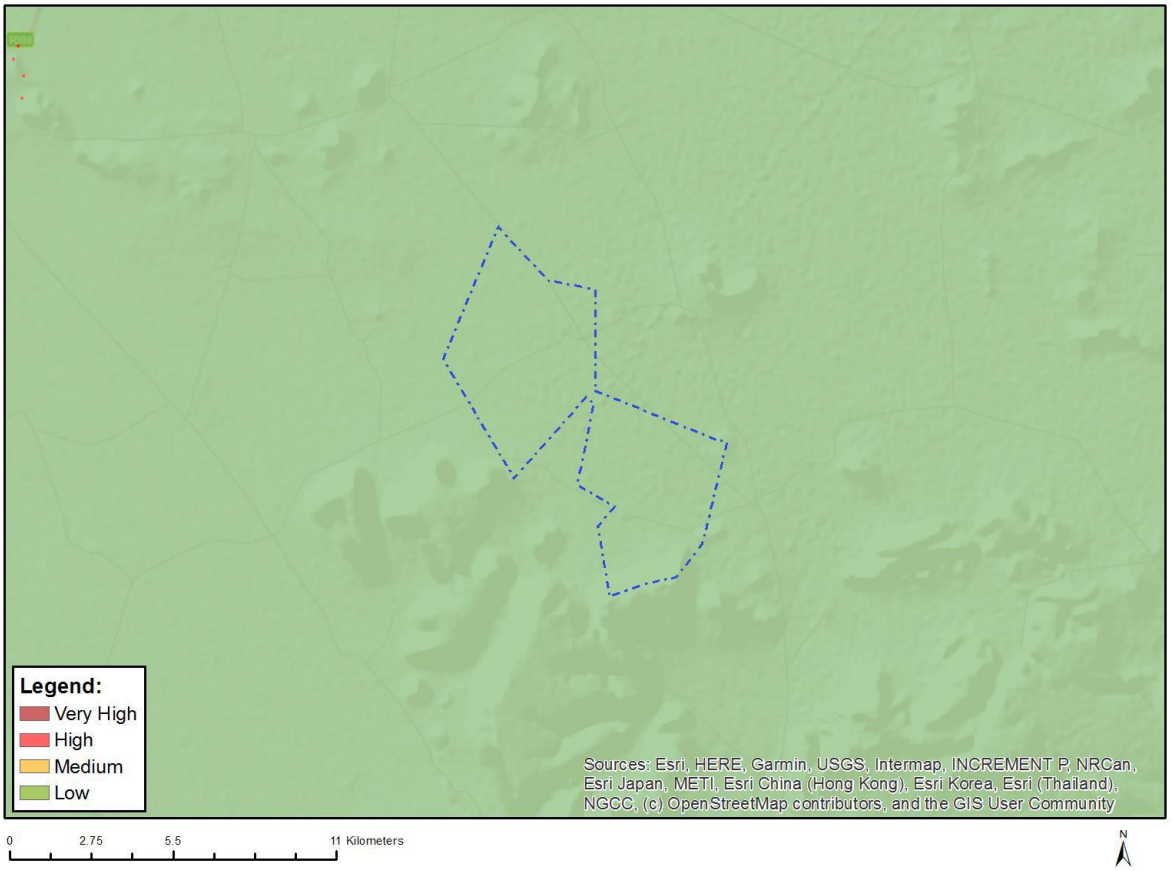


Figure 44: Image from Screening Tool identifying Archaeology and Cultural Heritage theme sensitivity for the Study Site.

The Heritage Specialist (Annexure E5) has confirmed the low sensitivity identified in the screening tool for the majority of the property but has identified certain areas associated with the Koppies and the Watercouses that may contain Archaeological Resources. These areas will be verified during the Impact Assessment Phase of the Environmental process.

5.11.2.5 Avifauna

The Screening Tool identifies the Avifauna sensitivity theme as “Low” for the entire study site.

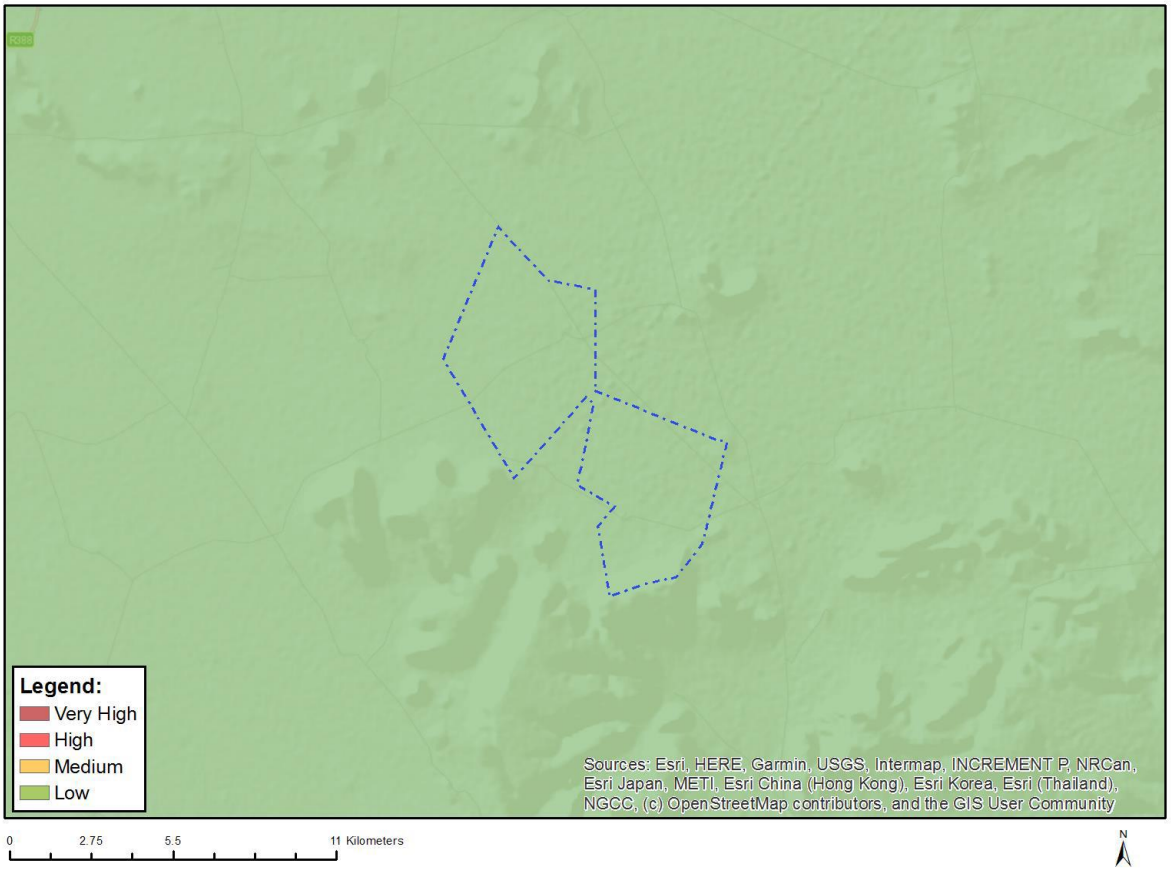


Figure 45: Image from Screening Tool identifying Avifauna theme sensitivity for the Study Site.

The Avifauna Specialist has refuted the low sensitivity classification in the screening tool due to the possible (and confirmed) presence of 5 Species of Conservation concern.

The Site Ecological Importance will be evaluated for each of the avifauna habitats in the Kareekloof Solar PV project area in the impact assessment phase of the environmental process, after the second season of avifaunal monitoring is completed. In compliance with the Bird Life SA Guidelines, an avifaunal impact assessment will be undertaken, regardless of the outcome of the second season of avifaunal monitoring.

5.11.2.6 Visual and Landscape

The Screening Tool identifies the Visual and landscape sensitivity theme as “Very High”, but with the majority of the site consisting of medium sensitivity.

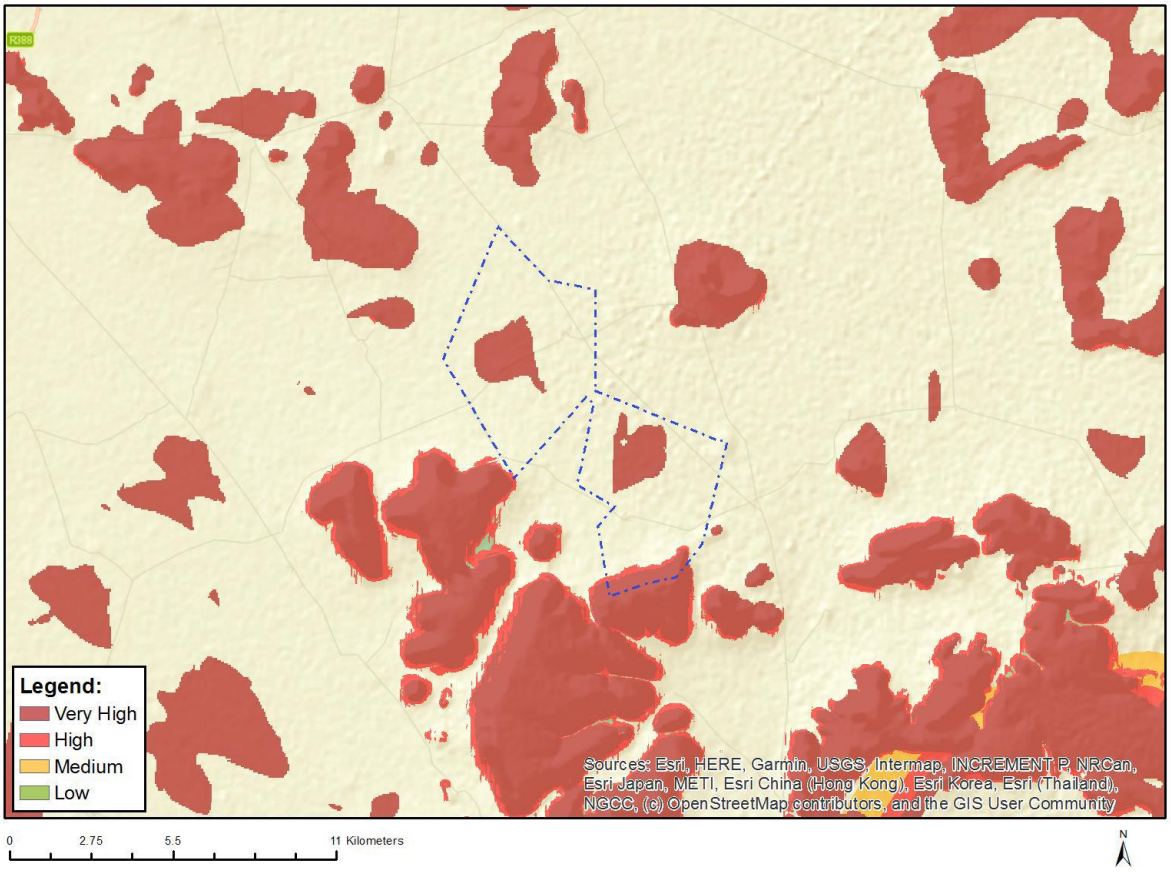


Figure 46: Image from Screening Tool identifying Visual and Landscape theme sensitivity for the Study Site.

The very high sensitivity was attributed to the following features:

- Slope between 1:4 and 1:10
- Mountain tops and high ridges
- Slope more than 1:4

The visual specialist (appendix E6) confirmed the very high sensitivity in the Screening Tool for certain areas.

The southern border of the study area the flat-topped inselbergs are unique mountain features and do have steep slopes on the northern flanks that are included in the proposed project assessment area. These areas and a buffer of 500m from the mountain feature should be retained as a natural landscape. Exclusion of these areas would result in Low risk to slopes and mountain features. These features and buffers have been avoided by layout alternative 2 (preferred layout) and as such the Landscape and Visual Sensitivity of the remaining areas is classified as low.

5.11.2.7 Palaeontology

The Screening Tool identifies the Palaeontology sensitivity theme as Very high due to features with a high Palaeontology sensitivity.

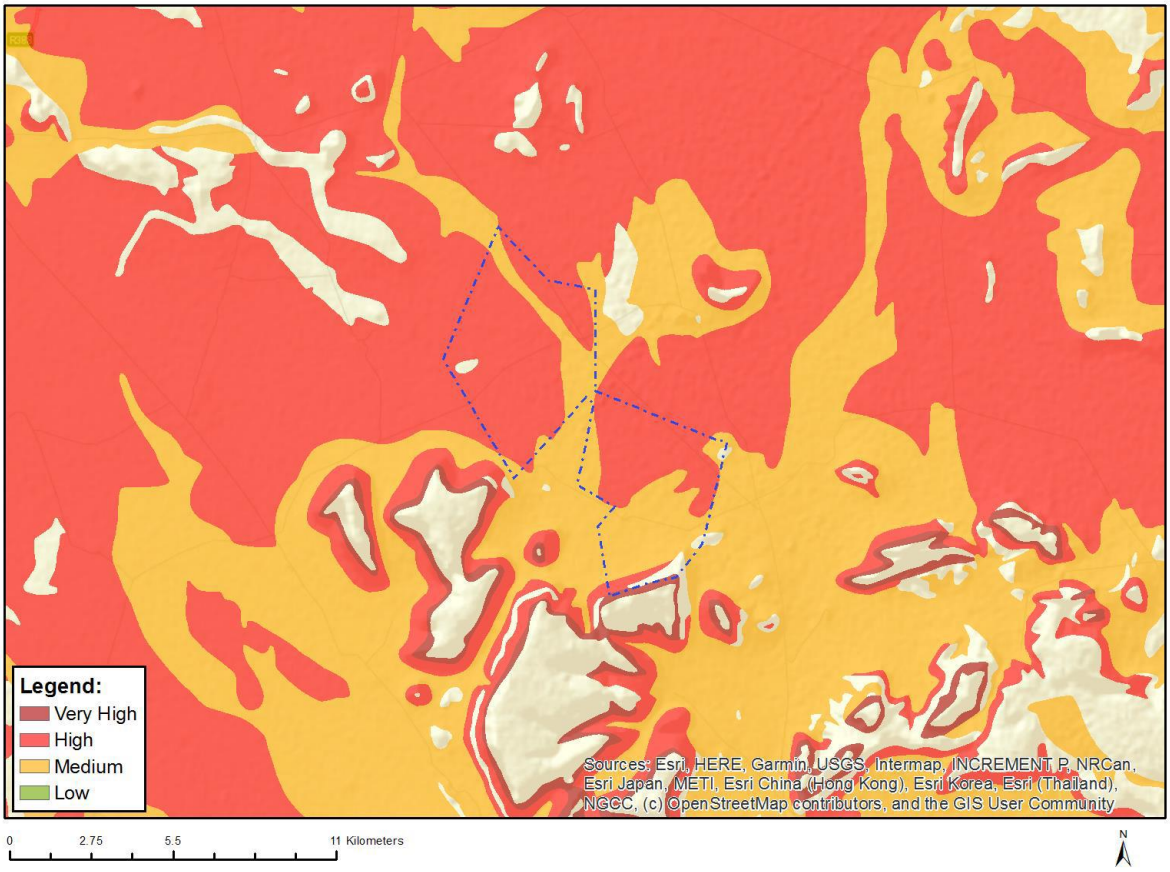


Figure 47: Image from Screening Tool identifying Palaeontology theme sensitivity for the Study Site.

The Heritage Specialist (Appendix E4) confirmed that the study area ranges from low to moderate and high paleontological sensitivity based on the SAHRA paleontological sensitivity map. Based on the SAHRA requirements a desktop palaeontological study will be conducted during the Impact assessment Phase of the environmental process.

5.11.2.8 Plant Species

The Screening Tool identifies the Plant Species sensitivity theme as “Low”, for the entire study site.

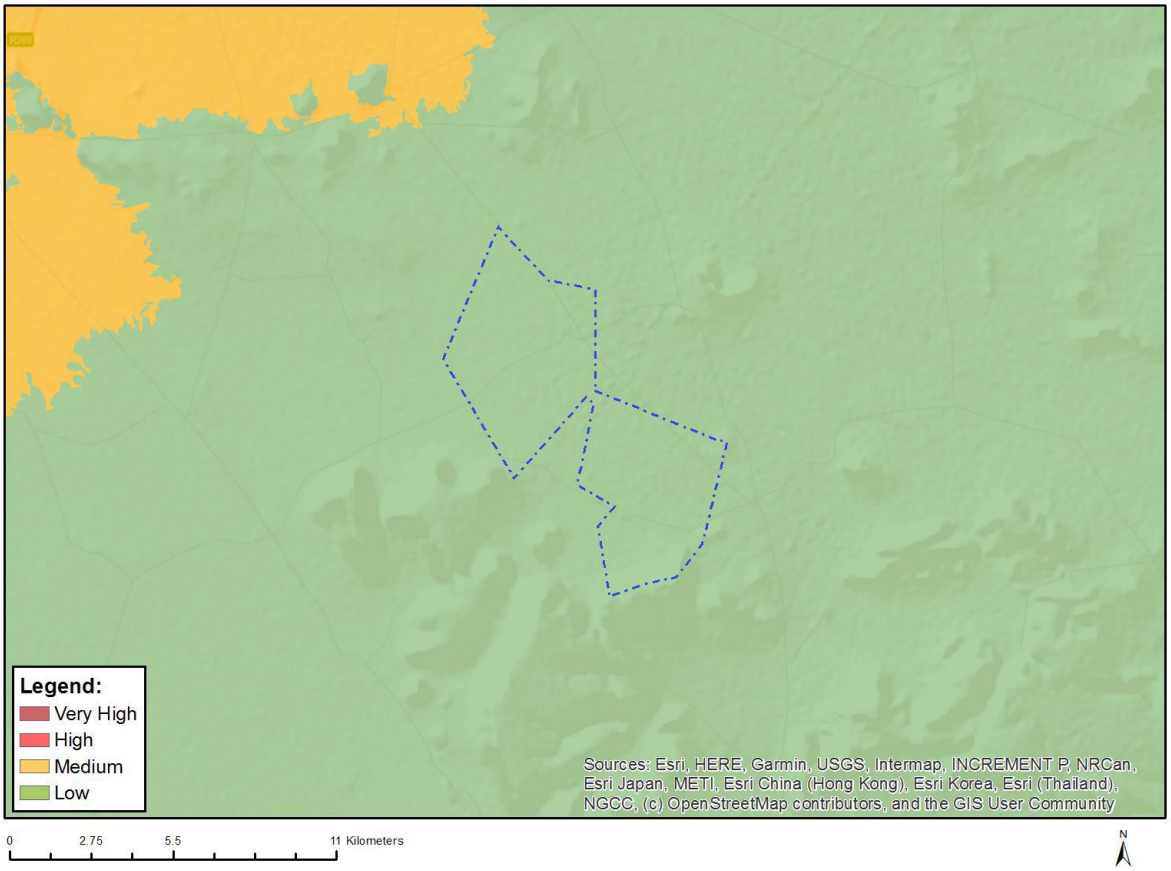


Figure 48: Image from Screening Tool identifying Plant Species theme sensitivity for the Study Site.

The Terrestrial Biodiversity Specialist (Appendix E1) has confirmed the low sensitivity of the site and furthermore confirmed that no plant species of conservation concern were observed or expected to occur on the site.

5.11.2.9 Terrestrial Biodiversity

The Screening Tool identifies the Terrestrial Biodiversity sensitivity theme as “Very High”, for the Majority of the site.

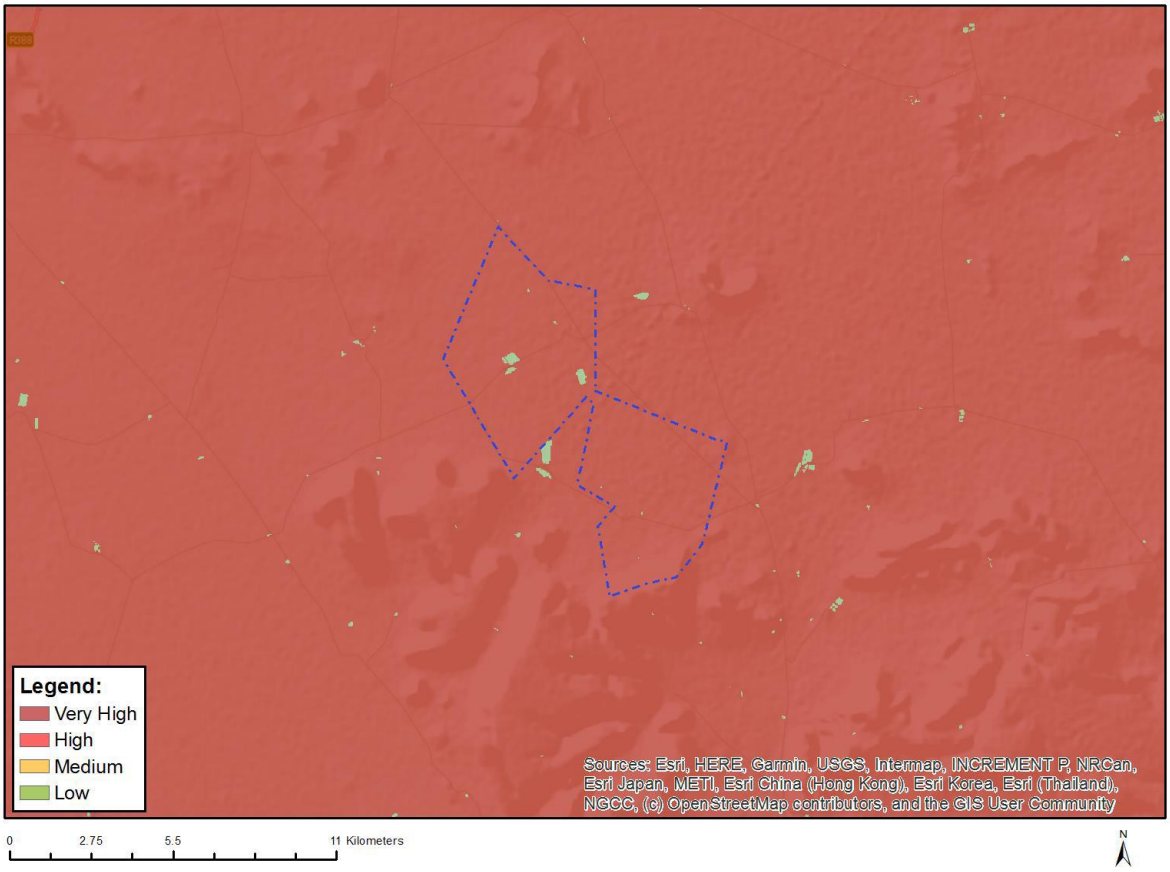


Figure 49: Image from Screening Tool identifying Terrestrial Biodiversity theme sensitivity for the Study Site.

The Terrestrial Biodiversity Specialist (Appendix E1) confirmed that the findings of the site verification, which included a desktop assessment and site survey, could not confirm the Very High environmental sensitivity of the Terrestrial Biodiversity Theme, which is based solely on the presence of an Ecological Support Area (ESA) on which the Kareekloof Solar PV project area is located. This ESA is an extremely large area (860,279 ha; Figure and of low intensity land use activities. There are no specific terrestrial features that are linked to the ESA (e.g. specific habitat types or fauna populations), and the vast majority of the ESA encompassed ecosystems that are considered to be of Least Concern.

The ESA has most likely been classified as a supporting ecological role to provide connectivity between the surrounding Critical Biodiversity Areas and Protected Areas and to maintain healthy populations of many species that are not of conservation concern. While this is an important ecological role, designation of the entire area as Very High for the entire study site is unfounded. The specialist did however identify Very High sensitivity features within the study site and these were avoided (along with the suggested buffers) in Layout Alternative 2 (preferred layout).

5.11.3 Specialist Assessments

It is important to note that specialist involvement is needed when the environment could be **significantly affected** by the proposed activity, where that environment is **valued by, or important** to **society** and/or where there is **insufficient information** to determine whether impacts would be significant.

The scope of specialists' contribution (if required) depends on the **nature of the project**, the environmental context [of the site] and the amount of available information and does not always entail detailed studies or assessment of impacts (*Source: Guideline for the review of specialist input in EIA processes, 2005*).

Based on the SSV above read in conjunction with the Specialist SSVr's in appendices E1-E7, the following specialist assessments will be undertaken in the next stage of the environmental process:

1. Freshwater Biodiversity Impact Assessment.
2. Terrestrial Biodiversity Impact Assessment.
3. Plant Species Compliance Statement.
4. Animal Species Impact Assessment.
5. Avifaunal Impact Assessment
6. Heritage Impact Assessment (including Cultural Heritage, Archaeology and Palaeontology)
7. Landscape and Visual Impact Assessment
8. Agricultural Compliance Statement.
9. Socio-Economic Impact Assessment.
10. Radio Frequency Interference Compliance Statement.

6. PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT

Following this scoping process, the next stage of the environmental process is the environmental impact assessment, which will assess the significance of the potential impacts identified in this process and further refine the preferred alternative in response to the assessments.

In compliance with section (i) of Appendix 2 of regulation 982, the following plan of study for undertaking the Environmental Impact Assessment Report is provided. In terms of these regulations the following must be included in this plan of study.

Table 19: Legislated content requirements for Plan of Study for Environmental Impact Assessment

Legislative Content Requirement.		Report Reference
i.	a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;	Please refer to section 2.3 above
ii.	a description of the aspects to be assessed as part of the environmental impact assessment process;	Please Refer to section 6.2 below
iii.	aspects to be assessed by specialists;	Please Refer to section 6.2 below
iv.	a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;	Please Refer to section 6.4 below
v.	a description of the proposed method of assessing duration and significance;	Please Refer to section 6.4 below
vi.	an indication of the stages at which the competent authority will be consulted;	Please Refer to section 7 below
vii.	particulars of the public participation process that will be conducted during the environmental impact assessment process;	Please Refer to section 7 below
viii.	a description of the tasks that will be undertaken as part of the environmental impact assessment process;	Please Refer to section 6

ix.	identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Please Refer to section 6.

6.1 DESCRIPTION OF THE ALTERNATIVES TO BE CONSIDERED AND ASSESSED

Please refer to section 2.11 above where Alternatives have been considered in this scoping report and where relevant will be assessed in the impact assessment phase of this environmental process.

As mentioned earlier in the report, the intention of environmental process is that layout alternatives will not be comparatively assessed, but rather a single layout (within the selected site) will be selected through additional specialist input and stakeholder engagement (i.e. a risk adverse approach will be followed to determine the best practicable environmental option. The currently preferred alternative, Layout Alternative 2 will be further refined during the Environmental Impact Assessment phase.

In compliance with the regulations, the specialists will as a minimum assess the mitigated preferred layout alternative as well as the No-go alternative. Other Alternatives, such as Access Alternatives and Technology Alternatives will be assessed by the EAP with input from the participating specialists.

6.2 ASPECTS TO BE ASSESSED

All potential impacts to on the economic, social and biophysical environments that have been identified in this scoping report will be assessed in the Environmental Impact Assessment phase of this Environmental Process.

Potential impacts of the project have been identified by the EAP and participating specialists. These are included in the table below and the significance thereof will be assessed in the Environmental Impact Report.

It must be noted that this section reflects the impacts as identified during the scoping phase. Additional impacts may be identified by specialists during the Environmental Impact Assessment Phase after all the additional site investigations have been completed.

In this section, the potential impacts and associated risk factors that may be generated by the development are identified.

Table 20: Nature of Impacts to be assessed in the Impact Assessment Phase of the Environmental Process.[35]

Specialist Discipline	Nature of impact to be assessed.	Project phase	Specialist appointed.
Terrestrial Biodiversity	Habitat loss due to placement of infrastructure, habitat fragmentation & reduced connectivity within the landscape	Construction, Operation and Decommissioning	Enviro Insight .
	Increased presence of alien invasive plant species due to soil disturbance and movement during the construction phase;		
	Soil erosion and compaction		
	Pollution		

[35] It must be noted that during the Environmental Impact Assessment Phase, additional impacts may be identified by participating specialists and these will need to be assessed.

Specialist Discipline	Nature of impact to be assessed.	Project phase	Specialist appointed.
Aquatic Biodiversity	Direct impacts attributed to linear road infrastructure which may require the implementation of culverts and drifts	All Phases	Enviro Insight
	Indirect hydrological process impacts stemming from watershed roughness change.		
Avifauna	The removal or alteration of large expanses of habitat specifically utilised by avifauna species of conservation concern;	Construction, Operation and Decommissioning	Enviro Insight
	Collisions with solar panels from the effects of polarized light and/or the "lake effect" ;		
	Collisions/electrocutions with auxiliary infrastructure, specifically electrical transmission lines and security fences (vehicle induced flushing);		
	Disturbance due to noise such as, machinery movements and maintenance operations during the construction and operational phase of the proposed PVSEF;		
	Attraction of certain bird species due to the development of PVSEF with associated infrastructure such as perches, nest and shade opportunities; and		
	Chemicals used to keep the PV panels clean from dust (suppressants) may cause poisoning and or exacerbate habitat loss.		
Agriculture	Loss of areas of grazing areas where livestock can be produced	Construction and Operation.	Mr Johan Lanz
	Soil compaction	Construction	
	Soil erosion	Construction and Operation	
	Loss of soil fertility through disturbance of in situ horizon organisation	Construction	
	Soil chemical pollution	Construction and Operation	
Heritage	Direct impact on heritage Resources (including archaeology, Palaeontology and Build environment) identified within the study site.	Construction	Mr Jaco van Der Walt
Visual	Loss of site landscape character from the removal of vegetation and the construction of the PV structures and associated infrastructure;	Construction	Visual Resource Management Africa, Mr Stephen Stead.
	Wind-blown dust due to the removal of large areas of vegetation		
	Possible soil erosion from temporary roads crossing drainage lines		
	Windblown litter from the laydown and construction sites		
	Light spillage making a glow effect that would be clearly noticeable to the surrounding dark sky night landscapes to the north of the proposed site;	Operation	
	Massing effect on the landscape from a large-scale modification;		
	On-going soil erosion;		
	On-going windblown dust		
	Movement of vehicles and associated dust	Decommissioning	

Specialist Discipline	Nature of impact to be assessed.	Project phase	Specialist appointed.
	Windblown dust from the disturbance of cover vegetation / gravel		
Social	Creation of employment and business opportunities, and opportunity for skills development and on-site training.	Construction, Operation and Decommissioning	Tony Barbour Consulting, Mr Tony Barbour.
	Impacts associated with the presence of construction workers on local communities.	Construction	
	Impacts related to the potential influx of job-seekers	Construction, Operation and Decommissioning	
	Increased risks to livestock and farming infrastructure associated with the construction related activities and presence of construction workers on the site.	Construction and Decommissioning	
	Increased risk of grass fires associated with construction related activities	Construction	
	Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles.	Construction	
	Impact on productive farmland	Operation	
Battery Energy Storage System Risk	The following potential risks of Lithium-ion or sodium ion batteries will be assessed: 1. the proximity to occupied residences; 2. the layout to prevent domino effects of fires/explosions between facilities; 3. suitable emergency response during all phases of the project; and 4. suitable end of life plan to be in place.	Construction, Operation and Decommissioning.	ISHEcon Ms Debbie Mitchell.
	The following potential risks for Redox flow BESS (assume vanadium but may be alternative chemistry) batteries will be assessed: 1. proximity to water courses; 2. suitable secondary spill containment for large tanks of electrolyte; 3. suitable emergency response during all phases of the project; and 4. suitable end of life plan to be in place.		
	The following potential risks for Molten metal BESS will be assessed: 1. safety of personnel due to high temperature liquids; 2. suitable emergency response during all phases of the project; and 3. suitable end of life plan to be in place		

In addition to the detailed impact assessments of the specialists listed above, a traffic specialist will be appointed to prepare a Traffic and Transportation Plan. This Traffic and Transportation plan will form part of the EMPr that will be included in Draft Environmental Impact Assessment Report.

As part of the assessments, specialists will need to consider all information at their disposal, which includes all specialist assessments undertaken in the greater area.

6.3 SPECIALIST STUDIES REQUIRED IN TERMS OF THE NATIONAL SCREENING TOOL

The table below reflects the specialist studies recommended in the DFFE Screening tool and whether they will be included in the Draft EIR.

Table 21: Specialist Studies recommended in the DFFE Screening Tool.

Study Recommended in Screening Tool	Discussion
Agricultural Impact Assessment	Will be undertaken. In terms of the SSVR for Agriculture, this will be in the form of a Compliance Statement due to the Medium Sensitivity
Landscape/Visual Impact Assessment	Will be undertaken
Archaeological and Cultural Heritage Impact Assessment	Will be undertaken
Palaeontology Impact Assessment	Will be undertaken
Terrestrial Biodiversity Impact Assessment	Will be undertaken
Aquatic Biodiversity Impact Assessment	Will be undertaken
Avian Impact Assessment	Will be undertaken
Civil Aviation Assessment	To be determined – The closest airstrip was identified as the Petrusville Aerodrome situated approximately 38 km to the North East of the Site. The South Avian Civil Aviation Authority, ATNS and the Saldanha Airport will be given an opportunity to comment on this scoping Process. The applicant will also submit an obstacle application (Part 30-27) to the South African Civil Aviation Authority.
Defence Assessment	To be determined – the South African National Defence Force will be provided with an opportunity to comment on this Scoping Process.
RFI Assessment	Not undertaken –It was furthermore found that the project is situated more than 180km from the closest SKA station (SKA004). The South African SKA Project Office and the South African Radio Astronomy Observatory (SARAO) have been registered as a key stakeholder on this environmental process and have been requested to provide input in terms of the Astronomy Geographic Advantage Act and potential impact to SKA.
Geotechnical Assessment	Will be undertaken
Socio-Economic Assessment	Will be undertaken
Plant Species Assessment	Will be undertaken
Animal Species Assessment	Will be undertaken

6.4 ASSESSMENT METHODOLOGY

All possible impacts need to the assessed – the direct, in-direct as well as cumulative impacts. Impact criteria should include the following:

6.4.1 Nature of the impact

This is an appraisal of the type of effect the construction, operation and maintenance of a development would have on the affected environment. This description should include what is to be affected and how.

6.4.2 Extent of the impact

Describe whether the impact will be: local extending only as far as the development site area; or limited to the site and its immediate surroundings; or will have an impact on the region, or will have an impact on a national scale or across international borders.

6.4.3 Duration of the impact

The specialist should indicate whether the lifespan of the impact would be short term (0-5 years), medium term (5-15 years), long terms (16-30 years) or permanent.

6.4.4 Intensity

The specialist should establish whether the impact is destructive or benign and should be qualified as low, medium or high. The specialist study must attempt to quantify the magnitude of the impacts and outline the rationale used.

6.4.5 Probability of occurrence

The specialist should describe the probability of the impact actually occurring and should be described as improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of any prevention measures).

The impacts should also be assessed in terms of the following aspects:

6.4.6 Status of the impact

The specialist should determine whether the impacts are negative, positive or neutral ("cost – benefit" analysis). The impacts are to be assessed in terms of their effect on the project and the environment. For example, an impact that is positive for the proposed development may be negative for the environment. It is important that this distinction is made in the analysis.

6.4.7 Cumulative impact

Consideration must be given to the extent of any accumulative impact that may occur due to the proposed development. Such impacts must be evaluated with an assessment of similar developments planned and already in the environment. Such impacts will be either positive or negative, and will be graded as being of negligible, low, medium or high impact. As agreed with DFFE at the pre-application meeting, cumulative impacts will be assessed for all similar facilities within a 30km radius.

6.4.8 Degree of confidence in predictions

The specialist should state what degree of confidence (low, medium or high) is there in the predictions based on the available information and level of knowledge and expertise.

Based on a synthesis of the information contained in the above-described procedure, the specialists are required to assess the potential impacts in terms of the following significance criteria:

- **No significance**: The impacts do not influence the proposed development and/or environment in any way.
- **Low significance**: The impacts will have a minor influence on the proposed development and/or environment. These impacts require some attention to modification of the project design where possible, or alternative mitigation.
- **Moderate significance**: The impacts will have a moderate influence on the proposed development and/or environment. The impact can be ameliorated by a modification in the project design or implementation of effective mitigation measures.
- **High significance**: The impacts will have a major influence on the proposed development and/or environment.

6.5 CONSULTATION WITH COMPETENT AUTHORITY.

The competent authority has been identified as the National Department of Forestry, Fisheries and the Environment. Engagement with the competent authority will be ongoing throughout the environmental process and will include the following as a minimum:

- Provided with a copy of the Draft Scoping Report for Review and comment ;
- Submission of application form and engagement on the contents of the application form;
- Responding to comments received on the draft scoping report;
- Provided with a copy of Final Scoping report for review and decision making;
- Addressing requirements in the Department's acceptance of the Draft Scoping Report;
- Provided with a copy of the Draft Environmental Impact Report for review;
- Addressing the Departments Draft Environmental Impact Report, and
- Undertaking a site inspection with the competent authority if deemed necessary.

6.6 PUBLIC PARTICIPATION TO BE CONDUCTED DURING THE EIA

Please refer to **Section 7** of this report where the ongoing public participation process, including aspects that will take place within the EIA phase, is discussed in detail.

6.7 TASKS TO BE UNDERTAKEN IN THE EIA PHASE

In terms of the 2014 EIA regulations, an environmental impact assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include -

(a) details of -

(i) the EAP who prepared the report; and

(ii) the expertise of the EAP, including a curriculum vitae;

(b) the location of the activity, including:

(i) the 21 digit Surveyor General code of each cadastral land parcel;

(ii) where available, the physical address and farm name; and

(iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;

(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is -

(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;

(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;

(d) a description of the scope of the proposed activity, including -

(i) all listed and specified activities triggered and being applied for; and

(ii) a description of the associated structures and infrastructure related to the development;

(e) a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;

(f) a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location;

(g) a motivation for the preferred development footprint within the approved site;

(h) a full description of the process followed to reach the proposed development footprint within the approved site, including:

(i) details of the development footprint alternatives considered;

(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;

(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;

(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

(v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts -

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and

(cc) can be avoided, managed or mitigated;

(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

(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;

(viii) the possible mitigation measures that could be applied and level of residual risk;

(ix) if no alternative development locations for the activity were investigated, the motivation for not considering such; and

(x) a concluding statement indicating the preferred alternative development location within the approved site;

(i) a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including -

(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and

(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;

(j) an assessment of each identified potentially significant impact and risk, including -

(i) cumulative impacts;

(ii) the nature, significance and consequences of the impact and risk;

(iii) the extent and duration of the impact and risk;

(iv) the probability of the impact and risk occurring;

(v) the degree to which the impact and risk can be reversed;

(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and

(vii) the degree to which the impact and risk can be mitigated;

(k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;

(l) an environmental impact statement which contains -

(i) a summary of the key findings of the environmental impact assessment:

(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and

(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

(m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;

(n) the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;

(o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation

(p) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;

(q) 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;

(r) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;

(s) an undertaking under oath or affirmation by the EAP in relation to:

(i) the correctness of the information provided in the reports;

(ii) the inclusion of comments and inputs from stakeholders and I&APs;

(iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and

(iv) 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;

The Environmental Impact Report for the proposed Kareekloof Solar PV facility will consider and comply with these legislated requirements.

6.8 MEASURES TO AVOID, REVERSE, MITIGATE OR MANAGE IDENTIFIED IMPACTS

As shown in this scoping report, the proposed Kareekloof Solar PV will follow a risk adverse approach, whereby primary specialist inputs have and will continue to be utilised to ensure that the project is developed in such a way as to avoid impacts as a priority, thus reducing the need for further mitigation and management.

The EAP and participating specialists, as part of the impact assessment phase, will provide Environmental Impact Management Actions and Outcomes to ensure that the potential impacts are further reduced and managed.

An environmental management programme will be developed to ensure management and monitoring of all direct, indirect and residual impacts.

The following additional management plans will form part of the overall Environmental Management Programme:

- Stormwater Management Plan;
- Washwater Management Plan;
- Traffic and Transportation Management Plan;
- Alien Vegetation Management Plan;
- Habitat Restoration Plan;
- Plant Rescue and Protection Plan;
- Open Space Management Plan; and
- Avifaunal Management Plan.
- BESS Risk Management Plan

6.9 CONTENTS OF THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT

The Draft Environmental Impact Assessment Report will as a minimum include the following sections:

- Non Technical Summary;
- Introduction and description of study site;
- Methodology;
- Results;
- Presentation of mitigated preferred layout;
- Assessment of Impacts (Direct, In-direct & Cumulative, including mitigation measures to reduce negative impacts and measures to enhance positive impacts and the completion of impact tables);
- Assessment of project alternatives;
- Discussion and Recommendation for Preferred Alternative;
- Specialist recommendation for Pre-Construction, Construction and Operational Phases);
- Conclusion and;
- Environmental Management Programme.

7. PUBLIC PARTICIPATION PROCESS

Section 41 in Chapter 6 of regulation 982 details the public participation process that has to take place as part of an environmental process. The table below provides a quick reference to show how this environmental process has or intends to comply with these legislated requirements relating to public participation.

Please refer to **Appendix F**, where all evidence of public participation is included.

Table 22: Public participation requirements in terms of S41 of R982

Regulated Requirement	Description
(1) 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. (2) Sub regulation (1) does not apply in respect of-. (a) linear activities;	Proof of landowner consent for Kareekloof Solar PV is attached in **Annexure G2.** .
The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by -	
(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of - (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and (ii) any alternative site;	A site notice was placed at three positions along the R48 ant at a number of positions at the various farm gates.. Photographic evidence and the location of these notices is attached in **Annexure F3**.
(b) giving written notice, in any of the manners provided for in section 47D of the Act, to -	
(i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	There are no occupiers on the study site other than the current landowners who have provided consent for the development. The landowners will be requested to notify tenants of other occupiers that may reside elsewhere on the property/
(ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	Owners of adjacent properties have been notified of this environmental process. Such owners have been requested to inform the occupiers of the land of this environmental process. Please refer to **Annexure F4** for copies of these notifications
(iii) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;	The ward councillor has been notified of this environmental process. Please refer to **Annexure F4** for copies of these notifications
(iv) the municipality which has jurisdiction in the area;	The Emthanjeni municipality (Planning and Technical Services) as well as the Pixley ka Seme District Municipality have been notified of this environmental process. Please refer to **Annexure F4** for copies of these notifications.
(v) any organ of state having jurisdiction in respect of any aspect of the activity; and	Please refer to section **Annexure F1** showing the list of organs of state that were notified as part of this environmental process. Please refer to **Annexure F4** for copies of these notifications.
(vi) any other party as required by the competent authority;	The DFFE has been given an opportunity to comment on this Draft Scoping Report, any other parties identified will be given an opportunity to comment.
(c) placing an advertisement in - (i) one local newspaper; or	An advert calling for registration of I&APs and notifying of the availability of the Draft Scoping Report was placed in "Die

Regulated Requirement	Description
(ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	Noord Kaap Bulletin" local newspaper on 27 September 2023. Please refer to **Annexure F3** for a copy of this advertisement. There is currently no official Gazette that has been published specifically for the purpose of providing public notice of applications
(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii);and	Adverts were not placed in provincial or national newspapers, as the potential impacts will not extend beyond the borders of the municipal area.
(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to - (i) illiteracy; (ii) disability; or (iii) any other disadvantage.	Notifications have included provision for alternative engagement in the event of illiteracy, disability or any other disadvantage. In such instances, Cape EAPrac will engage with such individuals in such a manner as agreed on with the competent authority.
(3) A notice, notice board or advertisement referred to in sub regulation (2) must - (a) give details of the application or proposed application which is subjected to public participation; and (b) state - (i) whether basic assessment or S&EIR procedures are being applied to the application; (ii) the nature and location of the activity to which the application relates; (iii) where further information on the application or proposed application can be obtained; and (iv) the manner in which and the person to whom representations in respect of the application or proposed application may be made.	Please refer to **Annexure F3**.
(4) A notice board referred to in sub regulation (2) must - (a) be of a size at least 60cm by 42cm; and (b) display the required information in lettering and in a format as may be determined by the competent authority.	Please refer to **Annexure F3**.
(5) Where public participation is conducted in terms of this regulation for an application or proposed application, sub regulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d), on condition that - (a) such process has been preceded by a public participation process which included compliance with sub regulation (2)(a), (b), (c) and (d); and	This will be complied with if final reports are produced later on in the environmental process.

Regulated Requirement	Description
(b) written notice is given to registered interested and affected parties regarding where the - (i) revised basic assessment report or, EMPr or closure plan, as contemplated in regulation 19(1)(b); (ii) revised environmental impact report or EMPr as contemplated in regulation 23(1)(b); or (iii) environmental impact report and EMPr as contemplated in regulation 21(2)(d); may be obtained, the manner in which and the person to whom representations on these reports or plans may be made and the date on which such representations are due.	
(6) When complying with this regulation, the person conducting the public participation process must ensure that - (a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and (b) participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application. (7) Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.	All reports that are submitted to the competent authority will be subject to a public participation process. These include: - Draft Scoping Report - Draft Environmental Impact Report - Draft EMPr - All specialist reports that form part of this environmental process.

7.1 REGISTRATION OF KEY STAKEHOLDERS

A number of key stakeholders were automatically registered and were given an opportunity to comment on the Draft Scoping Report Copies and proof of these notifications are included in **Annexure F4**. A list of key stakeholders registered for this process included in the table below.

Table 23: Key Stakeholders automatically registered as part of the Environmental Process

Stakeholders Registered		
Neighbouring property owners	Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	Department of Water and Sanitation
Northern Cape Department of Transport and Public Works	Emthanjeni Municipality	Department of Science and Technology
Emthanjeni Municipality: Ward Councillors	South African National Roads Agency Limited	The Council for Scientific and Industrial Research
South African Heritage Resources Agency	Ngwao Boswa Jwa Kapa Bokone	The South African Square Kilometre Array
Catchment Management Agency	Department of Health	The South African Civil Aviation Authority
Department of Forestry, Fisheries and the Environment: Biodiversity Conservation Directorate	Department of Minerals and Energy	Affected Landowner

Stakeholders Registered		
Provincial Department of Agriculture	Eskom	Department of Communications
Endangered Wildlife Trust.	Department of Mineral Resources	SENTECH
Cape Nature	Birdlife South Africa.	South African National Defence Force.
Pixley ka Seme District Municipality		

7.2 AVAILABILITY OF DRAFT SCOPING REPORT.

This Draft Scoping report is available to all automatically registered and potential Interested and Affected Parties for a 30 day-comment period extending from **29 September 2023 – 30 October 2023.**

Copies of the report were available at the following locations:

- Cape EAPrac Website: www.cape-eaprac.co.za.
- Direct download link via both WeTransfer and Dropbox

All notifications (including the site notice and advert) have made provisions for potential I&AP's to contact Cape EAPrac, should they not have access to the digital platforms provided. In such instances, Cape EAPrac will arrange other suitable mechanisms for them to be able to access the relevant information.

A copy of the notifications regarding the availability of the Draft Scoping Report are attached in Appendix F4 and the Newspaper Article advertising the availability of the Draft Scoping Report is attached in Appendix F3.

7.3 COMMENTS AND RESPONSES ON DRAFT SCOPING REPORT

All comments received on this Draft scoping report will be considered, responded to and included in the final scoping report that will be submitted to the DFFE for consideration.

7.4 REMAINDER OF THE ENVIRONMENTAL ASSESSMENT PROCESS

The following process is to be followed for the remainder of the environmental process:

- This Draft Scoping Report is made available for public review and comment for a period of 30 days. Comments received on this document will be responded to and included in the Final Scoping Report which will be submitted to DFFE for decision making.
- All comments received will be considered and addressed and a Final Scoping Report will be submitted to the competent authority for consideration.
- Once the DFFE accepts the Scoping Report and Plan of Study for Environmental Impact Reporting, the relevant specialists will undertake and complete their respective impact assessments;
- Discussions will be held with the various specialists and project team members in order to determine how best the development concept should be amended / refined to avoid significant impacts;
- The EIR will be made available for public review and comment period of 30-days;
- All comments received will be responded to, addressed and the proposal adapter where necessary and the Final EIR will be submitted to the DFFE for consideration and decision-making;
- The DFFE's decision (Environmental Authorisation) on the FEIR will be communicated with all registered I&APs.

8. CONCLUSION AND RECOMMENDATIONS

This scoping exercise is currently being undertaken to present concept proposals to the public and potential Interested & Affected Parties and to identify environmental issues and concerns raised as a result of the proposed development alternatives to date.

This will allow Interested & Affected Parties (I&APs), authorities, the project team, as well as specialists to provide input and raise issues and concerns, based on baseline / scoping studies undertaken.

Kareekloof Solar PV has been analysed from Ecological, Agricultural, Heritage, Avifaunal, Social and Visual perspectives, and site constraints and potential impacts identified.

This Draft Scoping report summarises the process to date, reports on the findings of relevant baseline studies and outlines the requirements for the remainder of the environmental process.

Cape EAPrac is of the opinion that the information contained in this Draft Scoping Report and the documentation attached hereto is sufficient to allow the general public and key stakeholders (including the competent authority) to apply their minds to the potential negative and/or positive impacts associated with the development, in respect of the activities applied for.

The outcome of this scoping report , has not identified any fatal flaws associated with the development of the proposed Kareekloof Solar PV Facility.

Subject to the outcome of the public participation process, it is Cape EAPrac's reasoned opinion that the project should proceed to the Environmental Impact Assessment phase of the environmental process as outlined in section 7 of this report.

All stakeholders are requested to review this Scoping Report and the associated appendices, and provide comment, or raise issues of concern, directly to Cape EAPrac within the specified 30-day comment period.

9. ABBREVIATIONS

AIA	Archaeological Impact Assessment
BGIS LUDS	Biodiversity Geographic Information System Land Use Decision Support
CBA	Critical Biodiversity Area
CDSM	Chief Directorate Surveys and Mapping
CEMPr	Construction Environmental Management Programme
DFFE	Department of Forestry, Fisheries and the Environment
DEA&NC	Department of Environmental Affairs and Nature Conservation
DME	Department of Minerals and Energy
DSR	Draft Scoping Report
EAP	Environmental Impact Practitioner
EHS	Environmental, Health & Safety
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GPS	Global Positioning System
GWh	Giga Watt hour
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
kV	Kilo Volt
LUDS	Land Use Decision Support
LUPO	Land Use Planning Ordinance
MW	Mega Watt

NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act
NPAES	National Protected Area Expansion Strategy
NSBA	National Spatial Biodiversity Assessment
NWA	National Water Act
PM	Post Meridiem; “Afternoon”
PSDF	Provincial Spatial Development Framework
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
S.A.	South Africa
SACAA / CAA	South African Civil Aviation Authority
SAHRA	South African National Heritage Resources Agency
SANBI	South Africa National Biodiversity Institute
SANS	South Africa National Standards
SDF	Spatial Development Framework
TOPS	Threatened and Protected Species

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