DRAFT ENVIRONMENTAL IMPACT REPORT

for

SUNVELD SOLAR PV FACILITY AND BESS

On

Remaining Extent of the Farm Kruispad 120 and Remaining Extent of the Farm Doornfontein A 118

In terms of the

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

Prepared for Applicant: Sunveld Energy (Pty) Ltd.

Date: 05 March 2024

Author of Report: Dale Holder (EAPASA 2019/301)

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Report Reference: BER799/04

Department Reference: 14/12/16/3/3/2/2436

Case Officer: Mr Lunga Dlova

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DOCUMENT TRACKING

DOCUMENT HISTORY

REVISION	DATE	AUTHOR
Draft Scoping Report	15 September 2023	Dale Holder
Final Scoping Report	26 October 2023	Dale Holder
Draft Environmental Impact Report	05 March 2024	Dale Holder
Draft Environmental Management Programme	05 March 2024	Dale holder
Final Environmental Impact Report	Pending	
Final Environmental Management Programme	Pending	

APPROVAL FOR RELEASE

NAME	TITLE	SIGNATURE
Dale Holder	Senior Environmental Practitioner	

DISTRIBUTION

DISTRIBUTION LIST
Department of Forestry, Fisheries and the Environment
Sunveld Energy (Pty) Ltd
Registered and Potential Interested and Affected Parties

SUBMISSION AND CORRESPONDENCE WITH COMPETENT AUTHORITY

SUBMISSION / CORRESPONDENCE	DATE
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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:
Stakeholder Review and Comment

APPLICANT:
Sunveld Energy (Pty) Ltd

CAPE EAPRAC REFERENCE NO:
BER799/04

DEPARTMENT REFERENCE:
14/12/16/3/3/2/2436

SUBMISSION DATE:
05 March 2024

DRAFT REPORT

in terms of the

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

Sunveld Solar PV Facility and BESS

Remaining Extent of the Farm Kruispad 120 and Remaining Extent of the Farm Doornfontein A 118

Submitted for:

Departmental Review

Report Issued by:

Cape Environmental Assessment Practitioners

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REPORT DETAILS

Title:	Draft Environmental Impact Report – Sunveld Solar PV Facility and BESS
Purpose of this report:	The Draft Scoping Report (DSR) was made available to all registered and potential Interested and Affected Parties (I&APs) for review and comment and all comments received have been incorporated into the Final Scoping Report that was submitted to the competent authority for acceptance. The Draft Environmental Impact Report 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 Sunveld Solar PV Facility and BESS project near Velddrif in the Western 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 (complete) - Draft Environmental Impact Report (this document); - All Specialist Studies (appended to this document), and - Draft Environmental Management Programme (appended to this document). 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 was available to all registered and potential interested and affected parties for a 30-day review and comment period extending from 15 September 2023 – 17 October 2023. Furthermore, this Draft Environmental Impact Report is available to registered interested and affected parties for a further 30-da review and comment period extending from 05 March 2024 – 08 April 2024.
Prepared for:	Sunveld Energy (Pty) Ltd
Published by:	Cape Environmental Assessment Practitioners (Pty) Ltd. (Cape EAPrac)
Authors:	Mr Dale Holder
Cape EAPrac Ref:	BER799/04
DEA Case officer & Ref. No:	Mr Lunga Dlova – 14/12/16/3/3/2/2436
Date:	05 March 2024.

To be cited as:	*Cape EAPrac,* 2023. Draft Environmental Impact Report for Sunveld Solar PV Facility and BESS. Report Reference: BER799/04. George.

TECHNICAL CHECKLIST

The following technical checklist is included as a quick reference roadmap for the proposed project[1]. This Technical checklist must be read in conjunction with the Site Layout Plans attached in Appendix D.

Administrative Details		
Project Name		**Sunveld Solar PV and BESS**
Applicant Details	Applicant Name:	Sunveld Energy (Pty) Ltd Sunveld Energy (Pty) Ltd is a Special Purpose Vehicle (SPV) incorporated for the sole purpose of developing, constructing, and operating an up to 600 MW solar PV facility including a Battery Energy Storage System (BESS) facility located on the farm Kruispad 120 and on the farm Doornfontein A 118 situated approximately 7.5 km East of Velddrif in the Western Cape Province.
	Company Registration Number:	2023 / 657613 / 07
	BBBEE Status:	Level 4
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: Remaining Extent of the farm Kruispad 120 : size 2684.71ha (2586.32ha) Remaining Extent of the farm Doornfontein A 118: size 3801.30ha (3807.04ha) TOTAL hectares of optioned properties = 6486.01 (6393.36ha)
Size of the study area	Size in ha of initial study area.	2360 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 723 ha including: - PV 702ha, - BESS 29ha (within the PV Footprints), - 2 On-Site Substations 9ha and - Permanent auxiliary structures (buildings, lay-down areas and access roads) 10ha. - Mini Subs, Inverters and internal roads distributed within the PV footprint 23ha Total Fenced Area is 885 ha. (Note: The 2 On-site Substations (these are 2 Collector and Switching Substations of 300MVA each, collecting many inputs (from PV or BESS) of 33kV, transforming to 132kV outputs) footprints are included here although they are part of the EGI too. 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. The On-site Substations will be in areas of overlap of the project development footprint and the EGI.)
PV Technology Details		
Capacity of the facility	Capacity of the PV	Net generation (contracted) capacity of up to 600 MW_{AC}, which will consist of 7 sites or projects that may be developed singly or in groups in a phased-development approach. Each of the sites will be self-sufficient up to the point of an On-site substation or a Collective BESS.

[1] This Technical Description is based on the Mitigated Preferred Alternative (Layout Alternative 5)

	facility (in MW)	
Solar Technology selection	Type of technology	Solar photovoltaic (PV) technology (mono-facial or bifacial) with fixed, single or double axis tracking mounting structures, as well as associated infrastructure, which will include: - Laydown area; - 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) 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 ± 3m above the ground and a maximum height of 2.5m where panels occur within 500m of the R399
	Surface area to be covered (including associated infrastructure such as roads)	702 ha
	Structure orientation	Preferred technology - single axis track used in portrait orientation with strings of 1x ±30 panels. Mounting using hammered in uprights (as a worst case there will be 400mm diameter holes and some may need lateral support using pegged out cables, depending on soil type/profile). 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 a 2 ha temporary laydown area will be required for each 50MW site and will be situated within the assessed footprint. Temporary lay down area total at any one time will not exceed 8 ha due to development in stages
BESS Technology Details		
BESS technology section	Capacity of BESS facility (in MWh)	2400 MWh Or 4 hours at a maximum of 600MW
	Type of technology (preferred)	Redox Flow, -Vanadium Redox Flow Battery (VRB)
	Type of technology (alternatives)	Solid State including Lithium-Ion, Sodium-Ion and others, Liquid Metal.
	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)	29 ha (including electrolyte storage tanks of approximately 18 ha for redox flow battery)
	Structure locations	2 sites each ± 14 ha, near the On-Site Substations.

The Applicant, Sunveld Energy (Pty) Ltd, is proposing the construction of a photovoltaic (PV), and Battery Energy Storage System (BESS) energy facility (known as Sunveld Solar PV Facility and BESS) located on the Remaining Extent of the Farm Kruispad 120 and Remaining Extent of the Farm Doornfontein A 118 situated approximately 7.5km East of Velddrif in the Western Cape Province.

The infrastructure associated with the up to 600MW PV facility includes:

- PV modules and mounting structures;
- Inverters and transformers;
- Cabling;
- Battery Energy Storage System (BESS)[2];
- 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 Sunveld Solar PV Facility intends to connect to the National Grid via the existing Aurora Main Transmission Substation (MTS), located approximately 23km South of the proposed facility, by means of two double circuit 132kV conductor lines/powerlines, capable of evacuating or exporting the electricity output of both the 300MVA On-Site Substations.

The proposed connection will include Eskom switching stations and a 132kV powerline, from the On-Site Substations / Eskom Switching Station to the Aurora 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 Aurora MTS) is being assessed as part of a separate Basic Assessment Process that is being administered by the Western Cape Department of Environmental Affairs and Development Planning, which is currently in process. In order to consider cumulative impacts, the proposed EGI was cumulatively assessed as part of the current environmental process[3].

LOCATION OF PREFFERED ALTERNATIVE[4]

The following description provides the summary of the currently preferred footprint that forms part of this scoping process. The preferred alternative presented during the scoping phase was further refined with additional specialist input.

The co-ordinates of the mitigated preferred alternative, Layout Alternative 5 are reflected in the table below.[5]

Layout Alternative 5 (Mitigated Preferred Alternative)	Latitude	Longitude
PV 1	018° 17' 23.83379001" E	32° 47' 47.49367401" S

[2] The Battery Energy Storage System is accommodated within the PV footprint. All relevant BESS technologies have been assessed and under consideration in this environmental process. In the eventuality that the BESS is not developed, the area's spatially designated for BESS may be developed for PV.

[3] It is important to note that the specialists who undertook assessments for the Sunveld Solar PV and BESS also undertook assessments in respect of the Sunveld Solar Electrical Grid Infrastructure.

[4] The footprint of Sunveld 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 (PV Sites 1-7).

[5] 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 5 (Mitigated Preferred Alternative)	Latitude	Longitude
PV 1	018° 17' 32.70671650" E	32° 47' 28.47597771" S
PV 1	018° 18' 03.42865576" E	32° 47' 27.17475707" S
PV 1	018° 18' 03.12841353" E	32° 47' 35.93290853" S
PV 1	018° 17' 54.99146486" E	32° 47' 47.54698542" S
PV 1	018° 17' 23.83379001" E	32° 47' 47.49367401" S
PV 2	018° 18' 36.16091136" E	32° 48' 13.34850191" S
PV 2	018° 18' 49.37966327" E	32° 48' 14.78721466" S
PV 2	018° 18' 50.03566758" E	32° 48' 17.77767463" S
PV 2	018° 18' 58.86470255" E	32° 48' 17.88326818" S
PV 2	018° 18' 59.58585349" E	32° 48' 24.00574975" S
PV 2	018° 19' 10.85618509" E	32° 48' 24.03104791" S
PV 2	018° 19' 12.36020251" E	32° 48' 23.68356652" S
PV 2	018° 19' 24.55941615" E	32° 48' 23.64547173" S
PV 2	018° 19' 26.91607136" E	32° 48' 31.23781649" S
PV 2	018° 18' 56.82722946" E	32° 48' 38.08228518" S
PV 2	018° 18' 56.74722816" E	32° 48' 36.16225403" S
PV 2	018° 18' 55.15347106" E	32° 48' 33.65777859" S
PV 2	018° 18' 51.28291810" E	32° 48' 31.38098273" S
PV 2	018° 18' 48.09540390" E	32° 48' 30.69794397" S
PV 2	018° 18' 45.19531603" E	32° 48' 32.98165973" S
PV 2	018° 18' 40.35429798" E	32° 48' 33.20241942" S
PV 2	018° 18' 37.84982253" E	32° 48' 31.83634190" S
PV 2	018° 18' 36.16091136" E	32° 48' 13.34850191" S
PV 3	018° 17' 16.63626253" E	32° 49' 00.99526878" S
PV 3	018° 17' 13.63737732" E	32° 48' 48.93651114" S
PV 3	018° 17' 13.83643687" E	32° 48' 43.81844017" S
PV 3	018° 17' 11.54158158" E	32° 48' 40.50914863" S
PV 3	018° 17' 09.87608870" E	32° 48' 33.55258973" S
PV 3	018° 17' 06.27541233" E	32° 48' 24.09869960" S
PV 3	018° 17' 15.33485970" E	32° 48' 05.62238764" S
PV 3	018° 17' 34.44662176" E	32° 48' 08.06811219" S
PV 3	018° 17' 26.83852314" E	32° 48' 15.33655116" S
PV 3	018° 17' 51.35499267" E	32° 48' 18.13772383" S
PV 3	018° 17' 52.67189355" E	32° 48' 10.31941940" S
PV 3	018° 18' 18.77801496" E	32° 48' 12.81259670" S
PV 3	018° 18' 18.80042327" E	32° 48' 18.91217537" S
PV 3	018° 18' 08.77463337" E	32° 48' 18.76014742" S
PV 3	018° 18' 02.65779891" E	32° 48' 21.43100840" S
PV 3	018° 18' 01.62588285" E	32° 48' 22.90148878" S
PV 3	018° 17' 54.07666908" E	32° 48' 22.82213430" S
PV 3	018° 17' 52.92178456" E	32° 48' 27.28675929" S
PV 3	018° 17' 52.98501392" E	32° 48' 34.92013004" S
PV 3	018° 17' 49.16098541" E	32° 48' 34.88834472" S
PV 3	018° 17' 49.18755341" E	32° 48' 42.49717725" S
PV 3	018° 17' 53.51817538" E	32° 48' 48.90645557" S
PV 3	018° 17' 53.53297139" E	32° 48' 52.53922282" S
PV 3	018° 17' 16.63626253" E	32° 49' 00.99526878" S

Layout Alternative 5 (Mitigated Preferred Alternative)	Latitude	Longitude
PV 4	018° 17' 15.75708739" E	32° 47' 51.03960207" S
PV 4	018° 16' 50.96579777" E	32° 47' 48.44885400" S
PV 4	018° 16' 49.41639857" E	32° 47' 41.18057434" S
PV 4	018° 16' 27.22443321" E	32° 47' 41.47337232" S
PV 4	018° 16' 12.30447948" E	32° 47' 40.66633436" S
PV 4	018° 16' 01.21837541" E	32° 47' 32.23169229" S
PV 4	018° 16' 28.95906558" E	32° 47' 31.02266428" S
PV 4	018° 17' 26.46746004" E	32° 47' 28.62099953" S
PV 4	018° 17' 15.75708739" E	32° 47' 51.03960207" S
PV 5	018° 15' 49.95540081" E	32° 49' 26.02344760" S
PV 5	018° 15' 06.27974256" E	32° 49' 38.62263588" S
PV 5	018° 15' 06.43863598" E	32° 49' 30.43192569" S
PV 5	018° 15' 13.66050071" E	32° 49' 21.15017875" S
PV 5	018° 15' 13.62501865" E	32° 48' 53.38065441" S
PV 5	018° 15' 12.96423362" E	32° 48' 53.35812835" S
PV 5	018° 15' 12.83564786" E	32° 48' 50.50520184" S
PV 5	018° 15' 14.50812413" E	32° 48' 48.97873767" S
PV 5	018° 15' 14.53195231" E	32° 48' 46.63551498" S
PV 5	018° 15' 10.88907894" E	32° 48' 43.22032120" S
PV 5	018° 15' 09.97836060" E	32° 48' 39.80512741" S
PV 5	018° 15' 12.02013551" E	32° 48' 35.31322259" S
PV 5	018° 15' 33.17562274" E	32° 48' 35.18200513" S
PV 5	018° 15' 35.70615381" E	32° 48' 33.43009900" S
PV 5	018° 15' 41.62582304" E	32° 48' 33.65777859" S
PV 5	018° 15' 46.40709434" E	32° 48' 37.07297238" S
PV 5	018° 15' 45.04101683" E	32° 48' 41.17120492" S
PV 5	018° 15' 39.33947963" E	32° 48' 46.30678707" S
PV 5	018° 15' 39.28241271" E	32° 48' 55.59212441" S
PV 5	018° 15' 50.30973647" E	32° 49' 10.39330765" S
PV 5	018° 15' 49.95540081" E	32° 49' 26.02344760" S
PV 6	018° 15' 37.72466865" E	32° 48' 19.80081827" S
PV 6	018° 15' 31.58203469" E	32° 48' 19.60426968" S
PV 6	018° 15' 12.14769600" E	32° 48' 25.69289400" S
PV 6	018° 15' 10.11880165" E	32° 48' 27.78498857" S
PV 6	018° 14' 59.27742006" E	32° 48' 27.96578894" S
PV 6	018° 14' 48.49581115" E	32° 48' 33.80523020" S
PV 6	018° 14' 42.47170395" E	32° 48' 33.77323669" S
PV 6	018° 14' 41.06305319" E	32° 48' 31.83634190" S
PV 6	018° 14' 37.56372360" E	32° 48' 30.12063480" S
PV 6	018° 14' 37.64785940" E	32° 48' 27.05507060" S
PV 6	018° 14' 40.15233484" E	32° 48' 24.32291556" S
PV 6	018° 14' 46.21796788" E	32° 48' 22.57604590" S
PV 6	018° 14' 47.48753400" E	32° 48' 19.75126320" S
PV 6	018° 14' 47.03660817" E	32° 48' 13.85111008" S
PV 6	018° 14' 47.04508869" E	32° 48' 09.63728326" S
PV 6	018° 14' 50.26999554" E	32° 48' 06.63353103" S
PV 6	018° 15' 17.85584184" E	32° 48' 06.69161796" S

Layout Alternative 5 (Mitigated Preferred Alternative)	Latitude	Longitude
PV 6	018° 15' 17.86049221" E	32° 48' 05.21960309" S
PV 6	018° 15' 15.99685298" E	32° 48' 01.52492369" S
PV 6	018° 15' 35.51193989" E	32° 48' 03.61488319" S
PV 6	018° 15' 37.81694357" E	32° 48' 12.44958352" S
PV 6	018° 15' 37.72466865" E	32° 48' 19.80081827" S
PV 7	018° 16' 09.19438049" E	32° 48' 25.96821671" S
PV 7	018° 16' 07.98549073" E	32° 48' 24.81829230" S
PV 7	018° 15' 57.73968897" E	32° 48' 24.29043288" S
PV 7	018° 15' 56.98003474" E	32° 48' 31.53467174" S
PV 7	018° 15' 49.89786795" E	32° 48' 29.47539832" S
PV 7	018° 15' 38.45257538" E	32° 48' 21.86701096" S
PV 7	018° 15' 38.45681472" E	32° 48' 16.51853809" S
PV 7	018° 15' 44.35447052" E	32° 48' 16.53729586" S
PV 7	018° 15' 50.96595248" E	32° 48' 11.15465299" S
PV 7	018° 15' 51.45298209" E	32° 48' 05.31721034" S
PV 7	018° 16' 23.03165101" E	32° 48' 08.78934530" S
PV 7	018° 16' 24.54249892" E	32° 47' 59.22065827" S
PV 7	018° 16' 44.68027826" E	32° 48' 01.37110033" S
PV 7	018° 16' 44.68265548" E	32° 48' 10.05977356" S
PV 7	018° 16' 44.29275884" E	32° 48' 12.61951231" S
PV 7	018° 16' 32.53126612" E	32° 48' 25.56604651" S
PV 7	018° 16' 24.53185594" E	32° 48' 29.30629877" S
PV 7	018° 16' 13.83691089" E	32° 48' 29.08381621" S
PV 7	018° 16' 09.19438049" E	32° 48' 25.96821671" S

Access Road[6]	Latitude	Longitude
Access 1[7]	018° 13' 37.88" E	32° 47' 47.58" S
Access 2[8]	018° 16' 51.29" E	32° 47' 55.30" S
Access 3[9]	018° 18' 23.92" E	32° 48' 05.28" S

IPP Substation[10]	Latitude	Longitude
Substation 1	018° 16' 01.32" E	32° 48' 22.55" S
Substation 2	018° 16' 49.83" E	32° 48' 05.36" S

BESS Area[11]	Latitude	Longitude
BESS 1	018° 16' 15.36" E	32° 48' 20.71" S
BESS 2	018° 16' 30.82" E	32° 48' 17.80" S

[6] This table depicts the position of the proposed access points from the R399.

[7] This Access point provides access sections of the proposed development that are situated south of the R399.

[8] This access point provides access sections of the proposed development that are situated both north and south of the R399.

[9] This access point provides access sections of the proposed development that are situated south of the R399.

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

[11] This table depicts the approximate center point of the BESS.

CONTENTS OF AN ENVIRONMENTAL IMPACT REPORT.

Appendix 3 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Impact Report. The checklist below serves as a summary of how these requirements were incorporated into this Impact Report.

Requirement	Details
(1) 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 - The EAP who prepared the report; and The expertise of the EAP, including, a curriculum vitae.	The details of the EAP are included at the beginning of this Final EIR (overleaf from the cover page). The EAP's declaration and CV is also included in Annexure G3.
(b) the location of the activity, including – The 21 digit Surveyor General code of each cadastral land parcel; Where available, the physical address and farm name; 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 farm Kruispad 120 and on the farm Doornfontein A 118 in the Berg River Local Municipality of the Western Cape Province. <u>21 digit Surveyor General codes – PV Facility:</u> • Kruispad: 0/120 : C05800000000012000000 • Doornfontein A 0/118 : C05800000000011800000
(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale.	Detailed layout plans are attached in Appendix D.
(d) a description of the scope of the proposed activity, including - All listed and specified activities triggered and being applied for; and A description of the associated structures and infrastructure related to the development.	Sections 2 and 3.2 EIR.
(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 content.	Section 3 of this EIR.
(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.	Section 2.3 of this EIR.
(g) A motivation for the preferred development footprint within the approved site.	Section 2.4 and 2.5 of this EIR.
(h) A full description of the process followed to reach the proposed development footprint within the approved site, including - • Details of the development footprint alternatives considered; • Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; • 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; • The environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; • The impacts and risks identified, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts - can be reversed; may cause irreplaceable loss of resources; (and can be avoided, managed or mitigated.	Sections 2.4, 2.5, and sections 9 of this EIR. Please also refer to Annexures F2, F4 and F5 for the evidence of the initial public participation that took place during the scoping phase. Details on public participation that has taken place during the Impact Assessment Phase will be included in the Final EIR that will be submitted to the competent authority for decision making.

Requirement	Details
• The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks; • 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; • The possible mitigation measures that could be applied and level of residual risk; • If no alternative development locations for the activity were investigated, the motivation for not considering such: and • 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 - A description of all environmental issues and risks that were identified during the environmental impact assessment process; and 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.	Please refer to the Plan of Study For EIA that Formed part of the Final Scoping Report. Also refer to section 7 of this EIR.
(j) An assessment of each identified potentially significant impact and risk, including - • Cumulative impacts; • The nature, significance and consequences of the impact and risk; • The extent and duration of the impact and risk; • The probability of the impact and risk occurring; • The degree to which the impact and risk can be reversed; • The degree to which the impact and risk may cause irreplaceable loss of resources; and • The degree to which the impact and risk can be mitigated.	Section 7 of this EIR
(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.	Section 8 of the EIR
(l) An environmental impact statement which contains – • A summary of the key findings of the environmental impact assessment; • 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 • A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.	Sections 7.10 and 7.11 of this EIR. The Site Layout Plan attached in appendix D, includes the high sensitivity features identified by the participating specialists.
(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.	Appendix H and section 8 of this EIR.
(n) The final proposed alternatives which respond to the impact management measures, avoidance and mitigation measures identified through the assessment.	Section 8 of the EIR read in conjunction with sections 2.4 and 2.5.
(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.	Section 8 includes a table of all mitigation measures and identifies which mitigation is included in the EMPr and which should be included as conditions of authorisation.

Requirement	Details
(p) A description of assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed.	Section 1.3 of this EIR.
(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.	Section 1.1 and 7.11 of this Final EIR.
(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.	Section 5.
(s) An undertaking under oath or affirmation by the EAP in relation to: • The correctness of the information provided in the reports; • The inclusion of comments and inputs rom stakeholders and I&APs; • The inclusion of inputs and recommendations from the specialist reports where relevant; and • Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	Annexure G3.
(t) Where applicable, details of any financial provisions for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts;	Not applicable.
(u) An indication of any deviation from the approved scoping report, including the plan of study, including – Any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and A motivation for the deviation.	No deviation from the plan of study for EIA has occurred
(v) Any specific information that may be required by the competent authority.	Refer to table below.
(w) Any other matters required in terms of section 24(4)(a) and (b) of the Act.	None.

COMPETANT AUTHORITY ACCEPTANCE OF FINAL SCOPING REPORT

The Competent Authority (DFFE: Chief Directorate: Integrated Environmental Authorisations) accepted the Final Scoping Report on 08 December 2024. This acceptance was subject to certain requirements which need to be included / considered in the Environmental Impact Reporting Phase of the Environmental Process. These are detailed in the table below.

Comment	Response
a)Listed Activities	
(i)Please ensure that all relevant listed activities are applied for, are specific and that it can be linked to the development activity or infrastructure as described in the project description.	The listed activities reflected in section 3.1.2 are specific and can be linked to the Project Description.
(ii) Please ensure that all relevant listed activities and sub-activities are correctly numbered as per the relevant listing notices.	Please refer to section 3.1.2.
(iii)If the activities applied for in the application form differ from those mentioned in the draft EIAr, an amended application form must be submitted.	No changes to the activities applied for in the application form have taken place.
(iv)Please note that the Department's application form template has been amended and can be downloaded from the following link www.environment.gov.za/index.php/forms-and-permits.	The Departments Latest Application form has been utilised.

Comment	Response
(v) The EIAr must provide an assessment of the impacts and mitigation measures for each of the listed activities applied for.	Please refer to sections 6 and 7 of this Draft Environmental Impact Report
(b) Public Participation	
(i) Please ensure that comments from all relevant stakeholders are submitted to the Department with the EIAr. This includes but is not limited to the Department of Environmental Affairs and Development Planning (Western Cape); Department of Water and Sanitation; Berg River Municipality; Western Cape Department of Transport and Public Works; South African National Roads Agency Limited; South African Heritage Resources Agency; South African National Roads Agency Limited; Department of Minerals and Energy; Department of Forestry, Fisheries and the Environment: Biodiversity Conservation Directorate; Provincial Department of Agriculture; Endangered Wildlife Trust; Department of Mineral Resources; Birdlife South Africa; Affected Land Owners; and Interested and Affected Parties.	These parties listed by the Department have all been provided with an opportunity to provide comment on the Draft Environmental Impact Report
(ii) It is noted that figure 31 on page 45 of the final SR depicts the proposed development site within the West Coast Biosphere Reserve and the nearby Berg River Ramsar site. You are requested to obtain comments from the Department's Protected Areas, Planning and Management Effectiveness section (Tnethononda@dffe.gov.za).	The Department's Protected Areas, Planning and Management Effectiveness section has been requested to provide comment in this regard.
(iii) Please ensure that all issues raised, and comments received during the circulation of the draft SR and draft EIAr from registered I&APs and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the final EIAr.	The comments and responses report will be updated in the Final EIR to address all comments received during this current comment period.
(iv) Proof of correspondence with the various stakeholders must be included in the final EIAr. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments.	This will be included in the Final EIR, once the current comment period is complete.
(v) A Comments and Response trail report (C&R) must be submitted with the final EIAr. The C&R report must incorporate all comments for this development. The C&R report must be a separate document from the main report and the format must be in the table format as indicated in Annexure 1 of this comments letter. Please refrain from summarising comments made by I&APs. All comments from I&APs must be copied verbatim and responded to clearly. Please note that a response such as "noted" is not regarded as an adequate response to I&AP's comments.	The comments and responses report will be updated in the Final EIR to address all comments received during this current comment period.
(vi) Comments from I&APs must not be split and arranged into categories. Comments from each submission must be responded to individually.	Comments and Responses captured in the comments and responses report are captured individually and verbatim.
(vii) The Public Participation Process must be conducted in terms of Regulation 39, 40, 41, 42, 43 & 44 of the EIA Regulations, 2014, as amended	Please refer to section 8 of this Draft EIR for details in this regard.
(viii) The EAP is requested to contact the Department to make the necessary arrangements to conduct a site inspection prior to the submission of the final EIAr.	The EAP will contact the Department during the comment period on the Draft EIR, once the allocated case officer has had an opportunity to consider the content of this document.
(c) Alternatives	
(i) Please provide a description of each of the preferred alternative type and provide detailed motivation on why it is preferred.	Please refer to section 2.11
(ii) The EAP must ensure that all relevant alternatives and/or alternative combinations are adequately assessed in the EIAr.	Please refer to section 2.11
(d) Layout & Sensitivity Maps	
(i) The EIAr must provide coordinate points for the proposed development site (note that if the site has numerous bend points,	Please refer to the Table above

Comment	Response
at each bend point coordinates must be provided) as well as the start, middle and end point of all linear activities.	
(ii) A copy of the final layout map must be submitted with the final EIAr. All available biodiversity information must be used in the finalisation of the layout map. Existing infrastructure must be used as far as possible, e.g. roads. The layout map must indicate the following: a) The panel positions and its associated infrastructure; b) All supporting onsite infrastructure such as laydown area, guard house, control room, and buildings, including accommodation etc. c) All necessary details regarding all possible locations and sizes of the proposed BESS, the main substation and internal power lines. d) All existing infrastructure on the site, especially internal road infrastructure.	Please refer to Appendix D.
(iii) Please provide an environmental sensitivity map which indicates the following: a) The location of sensitive environmental features on site, e.g. CBAs, protected areas, heritage sites, wetlands, drainage lines etc. that will be affected by the facility and its associated infrastructure; b) Buffer areas; and c) All "no-go" areas.	Please Refer to Appendix D
(iv) The above layout map must be overlain with the sensitivity map and a cumulative map which shows neighbouring energy developments and existing grid infrastructure.	Please Refer to Appendix B and D
(e) Specialist assessments	
(i) The EAP must ensure that the terms of reference for all the identified specialist studies must include the following: a) A detailed description of the study's methodology; indication of the locations and descriptions of the development footprint, and all other associated infrastructures that they have assessed and are recommending for authorisations. b) Provide a detailed description of all limitations to the studies. All specialist studies must be conducted in the right season and providing that as a limitation will not be allowed. c) Please note that the Department considers a 'no-go' area, as an area where no development of any infrastructure is allowed; therefore, no development of associated infrastructure including access roads is allowed in the 'no-go' areas. d) Should the specialist definition of 'no-go' area differ from the Department's definition; this must be clearly indicated. The specialist must also indicate the 'no-go' area's buffer if applicable. e) All specialist studies must be final, and provide detailed/practical mitigation measures for the preferred alternative and recommendations, and must not recommend further studies to be completed post EA. f) Should a specialist recommend specific mitigation measures, these must be clearly indicated.	It is confirmed that these aspects have been included in the Terms of Reference for the specialists.
(ii) Should the appointed specialists specify contradicting recommendations, the EAP must clearly indicate the most reasonable recommendation and substantiate this with defendable reasons; and were necessary, include further expertise advice.	No contradicting Specialists recommendations have bee specified.
(iii) It is further brought to your attention that Procedures for the Assessment and Minimum Criteria for Reporting in identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation, which were	The Terrestrial Biodiversity, Plant Species, Animal Species and Agricultural Studies have all been compiled in compliance with the relevant protocols.

Comment	Response
promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020 (i.e. protocols for terrestrial plant and animal species), have come into effect. Please note that specialist assessments must be conducted in accordance with these protocols.	
(v) The following Specialist Assessments will form part of the EIAr: - Visual – Mr Stephen Stead of Visual Resource Management Africa (VRMA) - Botanical – Ms Tarryn Martin of Biodiversity Africa - Terrestrial Biodiversity – Mr Tarryn Martin and Ms Amber Jackson of Biodiversity Africa - Animal Species (excluding Invertebrates and Avifauna) – Ms Amber Jackson of Biodiversity Africa - Avifauna (including Black Harrier Habitat Modelling) – Mr Albert Froneman with Black Harrier habitat suitability modelling undertaken by Robin Colyn. - Invertebrate – Dr Jonothan Colville. - Aquatic Biodiversity – Ms Toni Belcher - Heritage – Dr Jayson Orton. - Agriculture – Mr Johann Lanz - BESS Risk – Ms Debbie Mitchell of ISHECON	Please refer to these specialist studies attached in Appendix E (Annexures E1-
(vii) Specialist studies related to biodiversity assessment must be amended to assess impacts related to the West Coast Biosphere Reserve and the Berg River Ramsar site	The project study area is not within the Berg River Ramsar Site. The Departments Protected Areas Directorate has been engaged to provide input on the project in respect of the West Coast Biosphere Reserve.
(f) Cumulative Assessment	
(i) If there are other similar facilities proposed within a 30km radius of the proposed development site, a cumulative impact assessment must be conducted for all identified and assessed impacts which must be refined to indicate the following: a) Identified cumulative impacts must be clearly defined, and where possible the size of the identified impact must be quantified and indicated, i.e. hectares of cumulatively transformed land. b) Detailed process flow and proof must be provided, to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project. c) The cumulative impacts significance rating must also inform the need and desirability of the proposed development. d) A cumulative impact environmental statement on whether the proposed development must proceed.	Please Refer to section 6.10
(g) Specific comments	
(i) The EAP must provide details of the specific locations (including GPS coordinates) in the EIAr, and not provide vague locations of the proposed developments. All associated infrastructure must be clearly indicated in the EIAr and its associated layout plans.	Please refer to the table above.
(ii) The EAP must identify and provide a map which shows this development and its associated infrastructure in relation to the other proposed facilities in the area.	Please Refer to Appendix B and Appendix D.
(iii) The EAP must clearly identify and provide a final list of all applicable listed activities. If any activities are to be removed, motivation for their removal must be included in the EIAr.	Please refer to section 3.1.2
(iv) When submitting the EIAr and future documents kindly name each of the documents and attachments according to the	This procedure will be followed for all documents.

Comment	Response
information it contains. E.g., instead of only naming it Appendix A, it must be Appendix A: Maps, Appendix B: EAP Declaration etc.	
(h) General	
(i) The EIAr must provide the technical details for the proposed facility in a table format as well as their description and/or dimensions (Annexure 2).	Please refer to the table above.
(ii) The EAP must provide landowner consent for all non-linear infrastructure proposed on the farm portions affected by the proposed project.	These are appended to the application form and in appendix G of this Draft EIR.
(iii) A construction and operational phase EMPr that includes mitigation and monitoring measures must be submitted with the final EIAr.	Please Refer to Appendix H
(iv) The final EIAr must include a list providing a clear description of the infrastructure associated with the development.	Please refer to section 2.1 -2.6
(v) The EAP must provide an outline of where in the final EIAr each of this Department's comments are addressed. This must be a separate document and must submitted as an appendix to the EIAr.	This table provides this detail
The applicant is hereby reminded to comply with the requirements of Regulation 45 of GN R982 of 04 December 2014, as amendment, with regard to the time period allowed for complying with the requirements of the Regulations.	The EAP and the Applicant are aware of the timeframes in Regulation 45.
You are hereby reminded of Section 24F of the National Environmental Management Act, Act No. 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.	The EAP and the Applicant are aware of the requirements in Regulation 24F.

ORDER OF REPORT

Non Technical Report Summary

Draft Environmental Impact Report – Main Report

Appendix A	:	Location, Topographical Plans
Appendix B	:	Biodiversity Overlays
Appendix C	:	Site Photographs
Appendix D	:	Solar Facility Layout Plans[12]
Appendix D1	:	Cluster Map showing proximity of Sunveld Solar PV Energy Facility to other projects in the vicinity.
Appendix E	:	Supplementary Reports (Specialist Reports and Technical Reports)
Annexure E1	:	Terrestrial Biodiversity Impact Assessment[13] (Biodiversity Africa, 2024)
Annexure E2	:	Invertebrate Species Compliance Statement (Collville, 2024)
Annexure E3	:	Avifaunal Impact Assessment (Froneman & Colyn, 2024)
Annexure E4	:	Aquatic Biodiversity Compliance Statement (Belcher, 2024)
Annexure E5	:	Heritage Impact Assessment (Orton, 2024[14])
Annexure E6	:	Agricultural Compliance Statement (Lanz, 2024)
Annexure E7	:	Visual Impact Assessment (Stead, 2024)
Annexure E8	:	Battery Energy Storage System Risk Assessment (Mitchell, 2023)
Annexure E9	:	Social Impact Assessment (Barbour, 2024)
Appendix F	:	Public Participation Process
Annexure F1	:	I&AP Register
Annexure F2	:	Comments and Response Report
Annexure F3	:	Adverts & Site Notices
Annexure F4	:	Draft Scoping Report Notifications
Annexure F5	:	Draft Scoping Report Comments and Responses
Annexure F6	:	Draft Environmental Impact Report Notifications (To be included in Final EIR)
Annexure F7	:	Draft Environmental Impact Report Comments and Responses (To be included in Final EIR).

[12] This includes the currently preferred layout alternative (Layout Alternative 5).

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

[14] This includes a Paleontology Impact Assessment prepared by Dr Graham Avery.

TABLE OF CONTENTS

FIGURES

TABLES

NON TECHNICAL SUMMARY

I. INTRODUCTION

Cape EAPrac has been appointed by Sunveld 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 Sunveld Solar PV Facility and BESS (hereafter referred to as Sunveld Solar PV) on the Remaining Extent of the farm Kruispad 120 and Remaining Extent of the farm Doornfontein A 118 in the Western Cape Province of South Africa.

The total generation capacity of the solar facility will be up to 600MW for input into the national Eskom grid.

The project will feed into the National Grid via the Eskom Aurora MTS. The grid connection to connect this project to the National Grid has been assessed, but is subject to a separate environmental process that is being administered by the provincial authority. This current process only includes the IPP portion of the on-site substations.

In accordance with the regulations, the objectives of this Environmental Impact Report is to, through a consultative process:

- determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted scoping report;
- identify the location of the development footprint within the approved site as contemplated in the accepted scoping report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- determine the nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and degree to which these impacts can be reversed, may cause irreplaceable loss of resources, can be avoided, managed or mitigated;
- identify the most ideal location for the activity within the development footprint of the approved site as contemplated in the accepted scoping report based on the lowest level of environmental sensitivity identified during the assessment;
- identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity;
- identify suitable measures to avoid, manage or mitigate identified impacts; and
- identify residual risks that need to be managed and monitored..

In compliance with Chapter 6 of the 2014 EIA regulations (as amended), the Draft EIR is available for a 30 - Day period extending from **06 March 2024 – 08 April 2024.**

All comments received on the Draft EIR will be considered and incorporated into the Final EIR that is submitted to the Department of Forestry, Fisheries and the Environment (DFFE) for consideration and decision making.

II. RECOMMENDATION OF THIS DRAFT ENVIRONMENTAL IMPACT REPORT

Neither the outcome of preceding scoping phase , nor this Impact Assessment phase, has identified any fatal flaws associated with the development of the proposed Sunveld Solar PV and BESS Facility. All impacts identified during the scoping phase have been avoided or mitigated to acceptable levels and no high post mitigation impacts or risks are envisioned.

It is Cape EAPrac's reasoned opinion that the preferred Alternative (Layout Alternative 5) can be considered for approval by the competent Authority subject to the outcome of the public participation process and on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr be strictly adhered to.

Please refer to section 7 of this report for justification of this statement.

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 in the Western 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)[15]. 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[16]. 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 Sunveld 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 two on site substations will have a capacity of up to 300MVA each. Two 132kV powerlines will be routed in an EGI corridor/servitude from the two 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 is routed within 32m of the Pans identified by the aquatic specialist.
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where	The BESS proposed will include the storage of dangerous goods in excess of the threshold of this activity.

[15] 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.

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

	such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	
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 is routed within 32m of the Pans identified by the aquatic specialist.
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 Sunveld Energy Project will have an Electricity Footprint of up to 600 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 Sunveld 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.**
4(i)(ii)(aa)	The development of a road wider than 4m with a reserve less than 13,5m. (ii). Areas outside urban areas; (aa) Areas containing indigenous vegetation;	The internal roads for Sunveld energy will have a maximum width of 4m and the main access roads will have a maximum width of 5m.
10(i)(ii)	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 30 but not exceeding 80m³ ii. All areas outside urban areas;	The BESS proposed will include the storage of dangerous goods in excess of the threshold of this activity.
12(i)(i)&(ii)	The clearance of an area of 300m² or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEM:BA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans;	The vegetation on site is mapped as the endangered Saldanha Flats Strandveld. Portions of the site fall within a Critical Biodiversity Area in terms of the Western Cape Biodiversity Sector Plan. More than 300 Square metres of vegetation will be removed in the endangered vegetation type and the critical biodiversity areas.
14(i)(ii)(c)(i)(ff)	The development of (ii) infrastructure or structures with a physical footprint of 10m² or more; where such development occurs—	Some of the project infrastructure, such as internal cabling to be routed within 32m of the Pans identified by the aquatic specialist.

	(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; i. Outside urban areas: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	
18(i)(II)(aa)	The widening of a road by more than 4m, or the lengthening of a road by more than 1km. ii. All areas outside urban areas: (aa) Areas containing indigenous vegetation;	The main and internal access roads will require that existing farm tracks be widened by more than 4m in some areas. 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, Sunveld Energy (Pty) Ltd, is proposing the construction of a photovoltaic (PV), and Battery Energy Storage System (BESS) energy facility (known as Sunveld Solar PV Facility and BESS) located on the Remaining Extent of the Farm Kruispad 120 and Remaining Extent of the Farm Doornfontein A 118 situated approximately 7.5km East of Velddrif in the Western Cape Province.

The infrastructure associated with the up to 600MW 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 Sunveld Solar PV Facility intends to connect to the National Grid via the existing Aurora Main Transmission Substation (MTS), located approximately 23km South of the proposed facility, by means of two double circuit 132kV conductor lines/powerlines capable of evacuating or exporting the electricity output of both the 300MVA On-Site Substations.

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 Aurora MTS) have been assessed cumulatively with the facility, but are subject to a separate Basic Assessment Process that is being administered by the Western Cape Department of Environmental Affairs and Development Planning.

VI. PROFFESIONAL INPUT

The following professionals[17] have provided input into this environmental process:

1.	Terrestrial Ecology	-	Biodiversity Africa
2.	Plant Species	-	Biodiversity Africa
3.	Animal Species	-	Biodiversity Africa
4.	Invertebrates	-	Jonathan Colville
5.	Avifaunal	-	Albert Froneman
6.	Black Harrier Habitat Model	-	Robyn Colyn
7.	Heritage	-	Dr Jayson Orton
8.	Palaeontology	-	Dr Graham Avery
9.	Archaeology	-	Dr Jayson Orton
10.	Agricultural	-	Mr Johann Lanz
11.	Visual	-	Visual Resource Management Africa
12.	Aquatic Biodiversity	-	Toni Belcher
13.	Social	-	Tony Barbour
14.	BESS Risk Assessment	-	ISHECON Ms Debbie Mitchell

VII. IMPACT SUMMARY AND STATEMENT

The table below summarises the status and significance of all impacts (with and without mitigation).

Construction Phase Terrestrial Biodiversity Impacts		
Nature: Loss of Near-Intact Saldanha Flats Strandveld		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Nature: Loss of degraded Saldanha Flats Strandveld		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Nature: Loss of Secondary Vegetation		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Loss of Faunal Habitat		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Loss of Plant Species of Conservation Concern		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Nature: Loss of Faunal Species of Conservation Concern		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**

[17] Note that not all of these professionals are considered specialists as contemplated in chapter 3 of Regulation 326. Studies such as the BESS risk assessment constitute "technical" studies, rather than specialist studies and as such, the requirements in appendix 6 of R326 do not apply to all these professionals

Nature: Disruption of Ecosystem Function and Process		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Disturbance to faunal species and their livelihood activities (shelter, foraging and breeding) due to construction related noise, vibrations, dust, night lighting and obstructions.		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Nature: Mortality of faunal species due to project related activities.		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Operational Phase Terrestrial Biodiversity Impacts		
Nature: Infestation of alien invasive plant species		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Nature: Mortality of faunal species due to operational project related activities		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Closure and Decomissioning Phase Terrestrial Biodiversity Impacts		
Nature: Loss of indigenous vegetation and species of conservation concern		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Disturbance to faunal species and potential reduction in abundance and mortality of faunal species		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Construction Phase Avifaunal Impacts		
Nature: Displacement of priority species due to disturbance associated with construction of the PV plant and associated infrastructure.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Operational Phase Avifaunal Impacts		
Nature: Displacement of priority species due to habitat transformation associated with construction of the PV plant and associated infrastructure		
	Without Mitigation	**With Mitigation**
Significance	**High Negative**	**Medium Negative**
Nature: Mortality of priority species due to collisions with the solar panels		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Entanglement of birds in the perimeter fence		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Electrocution of priority species in the on-site substations		

	Without Mitigation	With Mitigation
Significance	**High Negative**	**Low Negative**
Decomissioning Phase Avifaunal Impacts		
Nature: Displacement of priority species due to disturbance associated with decommissioning of the PV facility and associated infrastructure		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Construction Phase Heritage Impacts		
Nature: Construction Phase Archaeological Impacts associated with damage to or destruction of archaeological sites.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Construction Phase Impacts to graves associated with damage to or destruction of graves.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Construction Phase Impacts to the cultural landscape associated with: - Visual intrusion into the cultural landscape. - Extensive activity on site in a rural area. - Increased light pollution at night.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Operational Phase Heritage Impacts		
Nature: Operation Phase Impacts to the cultural landscape associated with: - Visual intrusion into the cultural landscape. - Increased light pollution at night.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Closure and Decommissioning Heritage Impacts		
Nature: Decommissioning Phase Impacts to the cultural landscape associated with: - Visual intrusion into the cultural landscape. - Extensive activity on site in a rural area. - Increased light pollution at night.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
.**Construction Phase Visual Impacts**		
Nature: Short-term landscape change from the current rural agricultural sense of place to the semi-industrial Renewable Energy landscape		

	Without Mitigation	With Mitigation
Significance	**Medium - High Negative**	**Medium Negative**
Operational Phase Visual Impacts.		
Nature: Short-term landscape change from the current rural agricultural sense of place to the semi-industrial Renewable Energy landscape (Loss of site landscape character due to the operation of the PV structures and associated infrastructure).		
	Without Mitigation	**With Mitigation**
Significance	**High Negative**	**Medium Negative**
Closure and Decomissioning Visual Impacts		
Nature: Short-term landscape change from the removal of the PV structures, followed by rehabilitation of the impacted areas back to agricultural lands.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Construction Phase Social Impacts		
Nature: Creation of employment and business opportunities during the construction phase		
	Without Mitigation	**With Enhancement**
Significance	**Medium Positive**	**Medium Positive**
Nature: Potential impacts on family structures and social networks associated with the presence of construction workers		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Potential impacts on family structures, social networks and community services associated with the influx of job seekers		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Potential risk to safety of scholars, farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Operational Phase Social Impacts		
Nature: Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Potential noise, dust and safety impacts associated with construction related activities		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: The activities associated with the construction phase, such as establishment of access roads and the construction camp, movement of heavy vehicles and preparation of foundations for the project etc. will damage farmlands and result in a loss of farmlands for grazing.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**

Nature: Development of infrastructure to improve energy security and support renewable sector		
	Without Mitigation	**With Mitigation**
Significance	**High Positive**	**High Positive**
Nature: Creation of employment and business opportunities associated with the operational phase		
	Without Mitigation	**With Enhancement**
Significance	**Low Positive**	**Medium Positive**
Nature: The generation of additional income represents a significant benefit for the local affected farmer(s) and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as feed etc.		
	Without Mitigation	**With Enhancement**
Significance	**Low Positive**	**Medium Positive**
Nature: Benefits associated with support for local community's form SED contributions		
	Without Mitigation	**With Enhancement**[18]
Significance	**Medium Positive**	**High Positive**
Nature: Visual impact associated with the proposed facility and associated infrastructure and the potential impact on the areas rural sense of place.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Potential impact of the Facility on local tourism		
	Without Mitigation	**With Enhancement / Mitigation**
Significance	**Low Negative**	**Low Negative**
Construction Phase Traffic Impacts		
Nature: Increase in Traffic		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Nature: Increase of Incidents with pedestrians and livestock		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Increase in Dust from gravel roads		
	Without Mitigation	**With Mitigation**
Significance	**High Negative**	**Medium Negative**
Nature: Increase in Road Maintenance		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Nature: Additional Abnormal Loads		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Operational Phase Traffic Impacts		
Nature: Increase in Traffic		

[18] Enhancement assumes effective management of the community trust

	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Increase of Incidents with pedestrians and livestock		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Increase in Dust from gravel roads		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Increase in Road Maintenance		
Significance	**Low Negative**	**Low Negative**
Nature: Additional Abnormal Loads		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Closure and Decomissioning Traffic Impacts		
Nature: Increase in Traffic		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Increase of Incidents with pedestrians and livestock		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Increase in Dust from gravel roads		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Increase in Road Maintenance		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Additional Abnormal Loads		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**

As can be seen in the table above, all impacts associated with the proposed Sunveld Solar and BESS range from high – positive to Medium – Negative. All High and very high negative Impacts have been avoided by the avoidance of sensitive features or mitigated to acceptable levels.

None of the participating specialists identified any impacts that remain high or very-high after mitigation. The preferred layout (Layout Alternative 5) avoids the vast majority of the main sensitive features including visual setbacks from the R399, intact Saldanha Strandveld, Unfragmented sections of Black Harrier Habitat and all aquatic features and their associated buffers. .

The Terrestrial Biodiversity specialist concluded that there are no fatal flaws are evident for the proposed project and that the average post-mitigation impact significance for the project is moderately low.

The Avifaunal Specialist concluded that no fatal-flaws were identified during the avifaunal assessment, but recommended monitoring protocols (post construction monitoring) be implemented during the lifecycle of the project.

The heritage specialist confirmed that the overall impact of the project is considered to be medium but can largely be mitigated to a low level with the implementation of the suggested mitigation measures (i.e. the sampling of surface and sub-surface resources and construction monitoring).

The visual specialist has concluded that the proposed development can commence subject to the implementation of mitigation measures, including the reduction of PV heights in certain areas as well as visual screening.

The Social specialist concluded that the proposed PV Facility and associated infrastructure will result in several social and socio-economic benefits, including creation of employment and business opportunities during both the construction and operational phase. The project will also contribute to local economic development though socio-economic development (SED) contributions. In addition, the development will improve energy security and reduce the carbon footprint associated with energy generation.

As such there are no fatal flaws or high post-mitigation impacts that should prevent the development from proceeding. Based on the layout provided for the assessment, Sunveld Solar PV can be supported from a terrestrial biodiversity, aquatic biodiversity, avifaunal, visual, social, heritage, agricultural and traffic point of view.

A map showing the proposed activity in relation to the key sensitive features is in attached in Appendix D. All sensitive features along with their appropriate buffers are shown in this plan. As required by the EMPr, all areas outside of the proposed development footprint are to be demarcated as no go areas.

It is Cape EAPrac's reasoned opinion that the mitigated preferred Alternative (Layout Alternative 5) can be approval by the Competent Authority subject to the outcome of the public participation process and on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr be strictly adhered to.

VIII. CONCLUSIONS & RECOMMENDATIONS

This environmental process is currently being undertaken to present proposals to the public and potential I&APs and to identify and assess environmental impacts, issues and concerns raised as a result of the proposed development.

Cape EAPrac is of the opinion that the information contained in this Draft Environmental Report and the documentation attached hereto is sufficient to allow the I&APs to apply their minds to the potential negative and/or positive impacts associated with the development, in respect of the activities applied for. Sunveld Solar PV has been analysed from Ecological, Agricultural, Heritage, Avifaunal, Social and Visual perspectives, and site constraints and potential impacts identified and assessed.

This environmental process has not identified any fatal flaws with the proposal and as such it is our reasoned view that the project should be considered for authorisation, subject to the outcome of the public participation process and on condition that all the mitigation measures outlined in section 7 of the report are adopted and implemented. All specialists concur that the development as proposed (Layout Alternative 5) can be considered for approval subject to the implementation of all mitigation measures. All impacts range from high positive to medium negative and all high, very high and critical negative impacts have been avoided by the risk adverse approach or mitigated to acceptable levels.

All stakeholders are requested to review the Draft EIR and the associated appendices, and provide comment, or raise issues of concern, directly to Cape EAPrac within the specified 30-day comment period. All comments received during this comment period will be considered, responded and included in the Final EIR that will be submitted to DFFE for decision making.

DRAFT ENVIRONMENTAL REPORT

1 INTRODUCTION

Cape EAPrac has been appointed by Sunveld 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 Sunveld Solar PV Facility and BESS (hereafter referred to as Sunveld Solar PV) on the Remaining Extent of the farm Kruispad 120 and Remaining Extent of the farm Doornfontein A 118 in the Western Cape Province of South Africa.

The total generation capacity of the solar facility will be up to 600MW for input into the national Eskom grid.

The project will feed into the National Grid via the Eskom Aurora MTS. The grid connection to connect this project to the National Grid has been assessed, but is subject to a separate environmental process that is being administered by the provincial authority. This current process only includes the IPP portion of the on-site substations.

In accordance with the regulations, the objectives of this Environmental Impact Report is to, through a consultative process:

- determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted scoping report;
- identify the location of the development footprint within the approved site as contemplated in the accepted scoping report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- determine the nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and degree to which these impacts can be reversed, may cause irreplaceable loss of resources, can be avoided, managed or mitigated;
- identify the most ideal location for the activity within the development footprint of the approved site as contemplated in the accepted scoping report based on the lowest level of environmental sensitivity identified during the assessment;
- identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity;
- identify suitable measures to avoid, manage or mitigate identified impacts; and
- identify residual risks that need to be managed and monitored..

In compliance with Chapter 6 of the 2014 EIA regulations (as amended), the Draft EIR is available for a 30 - Day period extending from **05 March 2024 – 08 April 2024**.

All comments received on the Draft EIR will be considered and incorporated into the Final EIR that is submitted to the Department of Forestry, Fisheries and the Environment (DFFE) for consideration and decision making.

1.1 RECOMMENDATION OF THE ENVIRONMENTAL IMPACT REPORT

Neither the outcome of preceding scoping phase , nor this Impact Assessment phase, has identified any fatal flaws associated with the development of the proposed Sunveld Solar PV and BESS Facility. All

impacts identified during the scoping phase have been avoided or mitigated to acceptable levels and no high post mitigation impacts or risks are envisioned.

It is Cape EAPrac's reasoned opinion that the preferred Alternative (Layout Alternative 5) can be considered for approval by the competent Authority subject to the outcome of the public participation process and on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr be strictly adhered to.

Please refer to section 7 of this report for justification of this statement.

1.2 OVERVIEW OF ALTERNATIVE ENERGY IN SOUTH AFRICA AND THE WESTERN CAPE[19]

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)[20] primary mandate is to secure electrical energy from the private from renewable energy sources.

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[21]), including interest during

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

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

[21] 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)

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).

To date, a total of 52 603 job years[22] 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

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

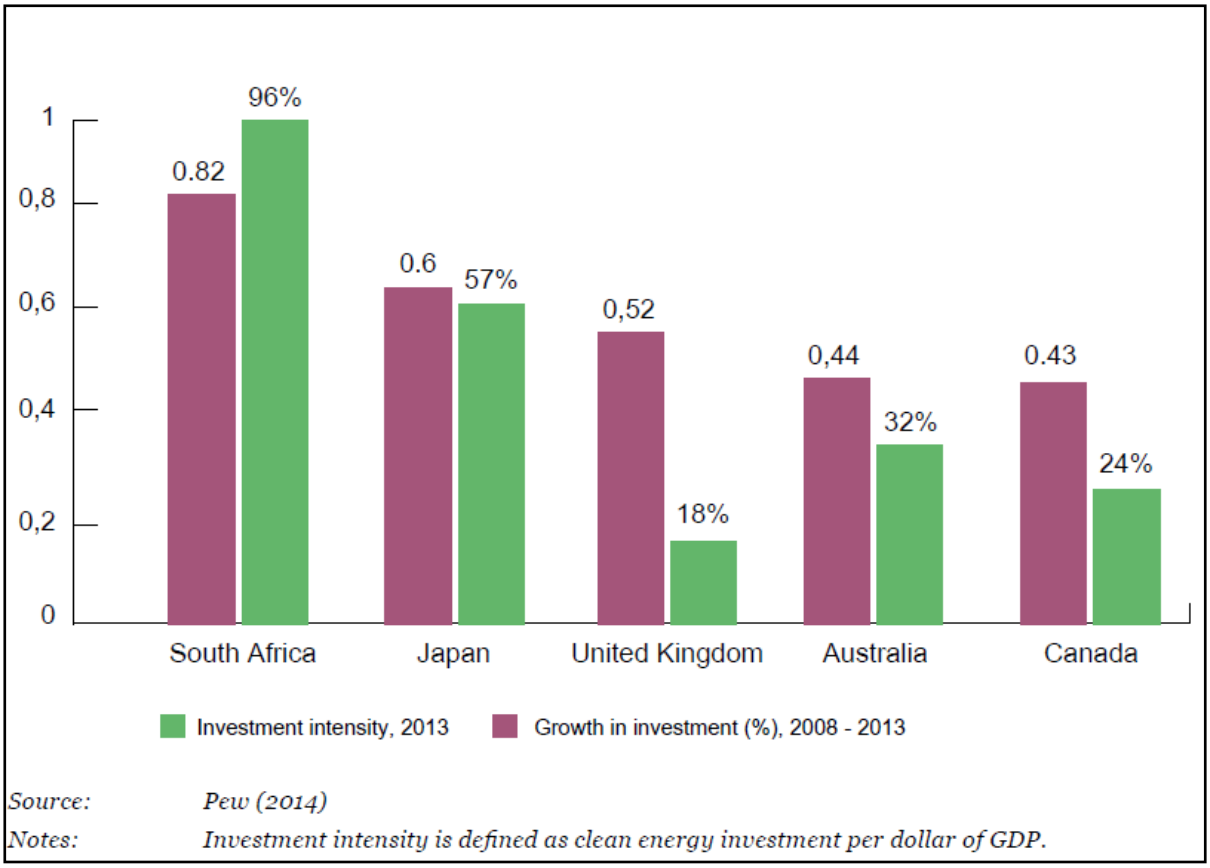

Figure 1: South Africa as a global lead clean energy investment destination.

The Sunveld Solar PV Facility may form part of the REIPPPP, or another State or Private Power Procurement process.

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).
- 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 Environmental Impact 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, Sunveld Energy (Pty) Ltd, is proposing the construction of a photovoltaic (PV), and Battery Energy Storage System (BESS) energy facility (known as Sunveld Solar PV Facility and BESS) located on the Remaining Extent of the Farm Kruispad 120 and Remaining Extent of the Farm Doornfontein A 118 situated approximately 7.5km East of Velddrif in the Western Cape Province.

The infrastructure associated with the up to 600MW 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 Sunveld Solar PV Facility intends to connect to the National Grid via the existing Aurora Main Transmission Substation (MTS), located approximately 23km South of the proposed facility, by means of two double circuit 132kV conductor lines/powerlines capable of evacuating or exporting the electricity output of both the 300MVA On-Site Substations.

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 Aurora MTS) have been assessed by participating specialists, but are subject to a separate Environmental Application that is being administered by the Western Cape Department of Environmental Affairs and Development Planning.

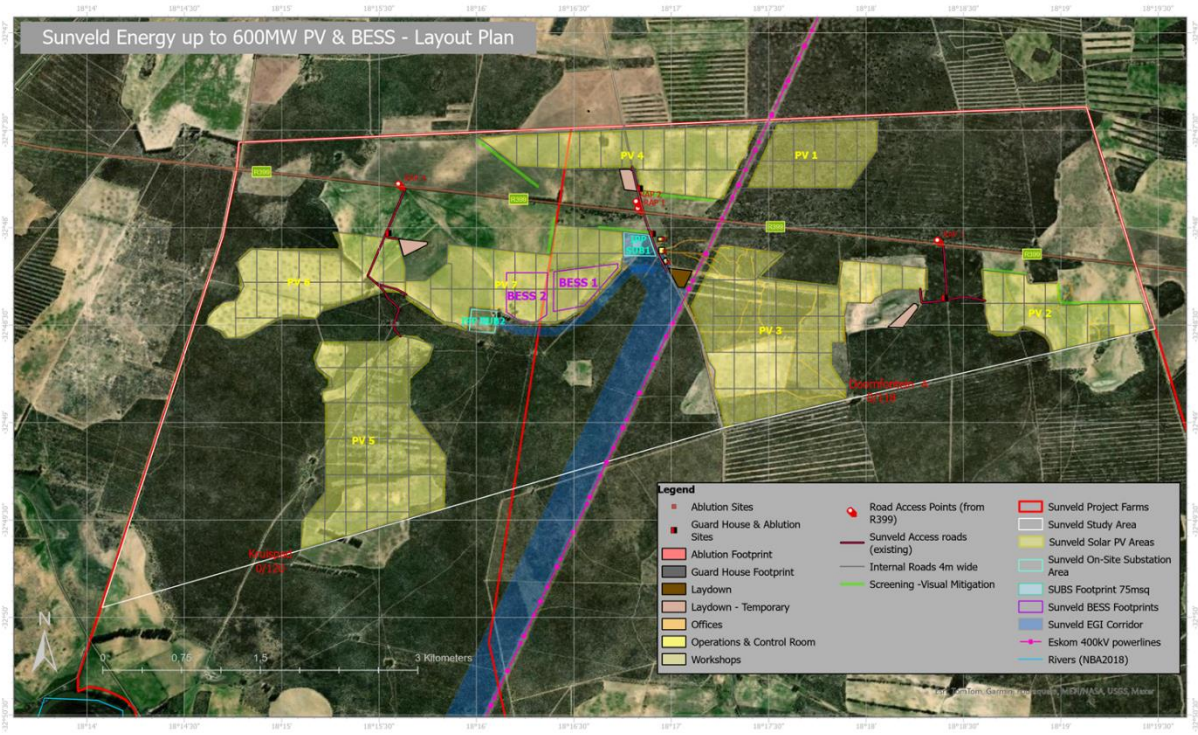

Figure 2: Plan depicting the key project infrastructure associated with the Sunveld Solar PV Facility (Please also refer to the full-scale plans attached in Appendix D).

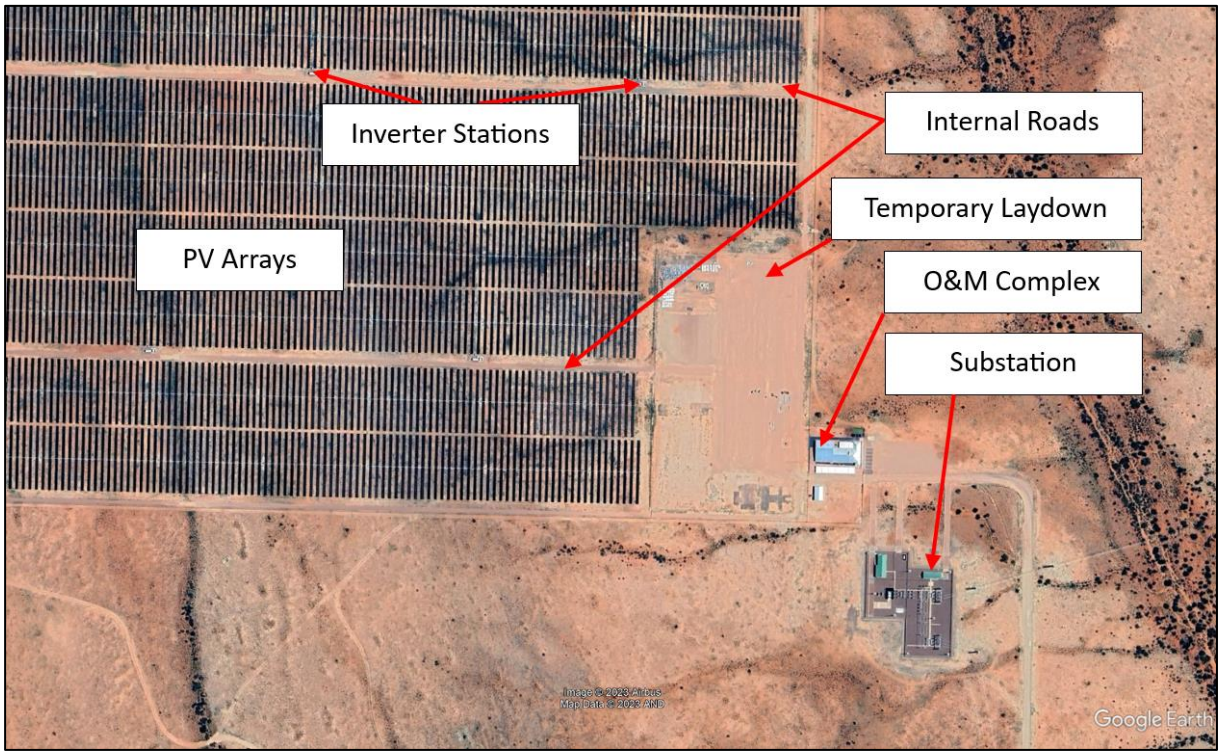

Figure 3: Typical configuration of a Solar PV Energy Facility.

The Sunveld Solar PV facility will have a net generating capacity of up to 600 MW with an estimated total maximum footprint of ± 723 ha.

The approximate area that each component of the Sunveld 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 Study Area (2360 ha)	% of Total Property (6486ha)
PV Footprint – including inverters and internal roads.	± 702 ha	28.2%	10%
Permanent and Temporary Auxiliary Structures	± 10 ha	0.2%	0.07%
Main Access roads[23]	± 2 ha	0.3%	0.12%
Substation	± 9 ha	0.4%	0.12 %
BESS (within the PV Footprints)	±29 ha	1.2%	0.44%

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 .

[23] The internal roads will be 4m wide and will have a maximum footprint of 23ha. This is within the 702ha PV footprint.

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.

Sunveld 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.

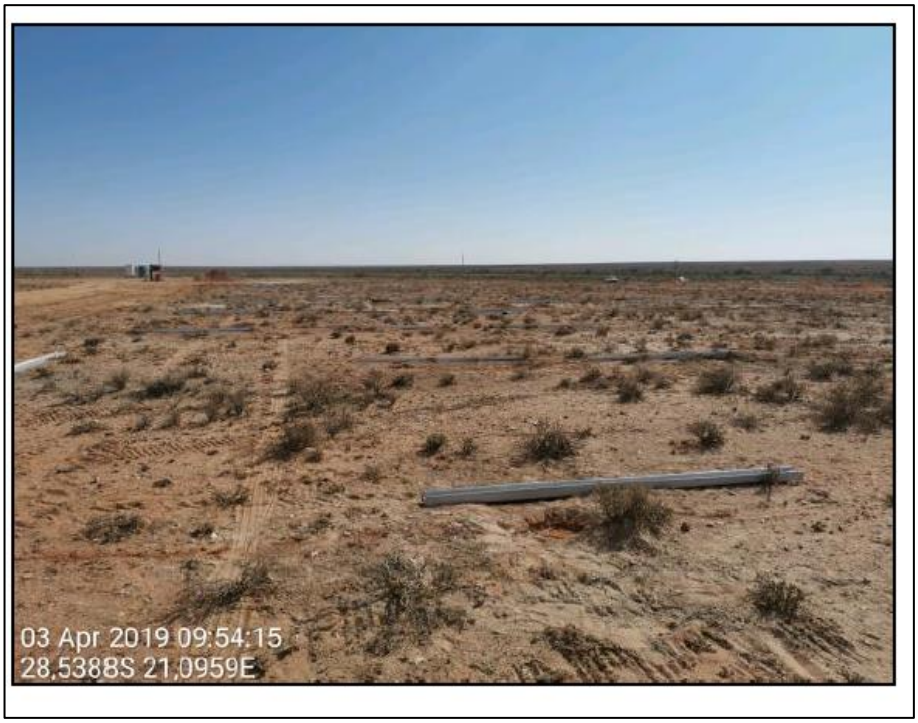

Figure 7: pre-drilled holes are backfilled with a wet sand mixture and steel piles placed in position ready for ramming.

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

Sunveld Solar PV intends to connect to the Aurora MTS (400/132 kV) located ± 23km to the South of Solar PV.

The two proposed Sunveld 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 OHL between Eskom side of the substation/ switching station and onto the Aurora MTS.

The Eskom side of the Substation and the grid connection corridor to the Aurora MTS has been assessed as part of a separate environmental application process being administered by the Western Cape Department of Environmental Affairs and Development Planning.

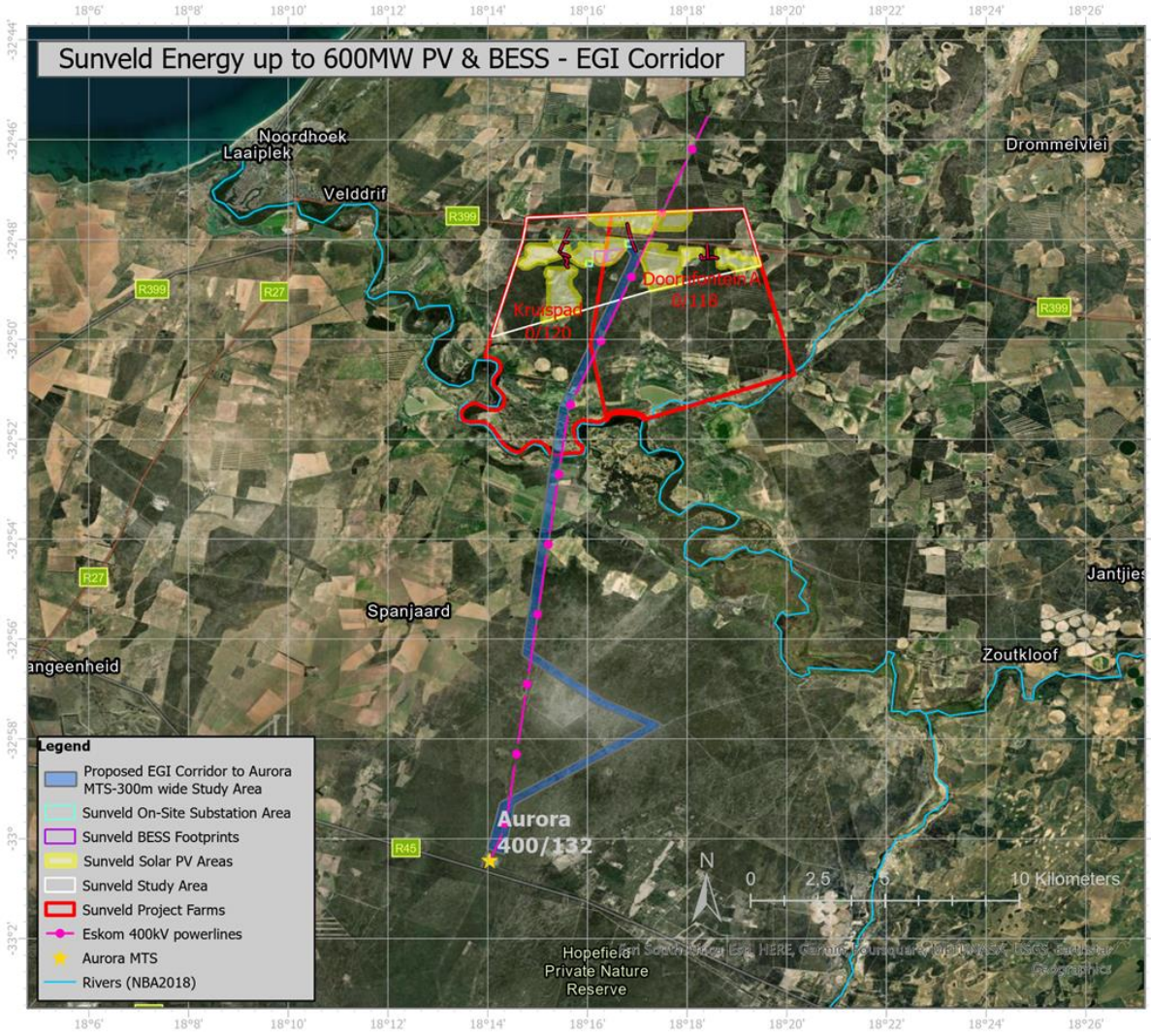

Figure 11: Showing Sunveld PV Electrical Grid Infrastructure that has been assessed as part of a Separate Environmental Process being administered by the provincial authority.

2.5 BATTERY ENERGY STORAGE SYSTEM

A BESS Health, Safety and Environment Risk Assessment has been compiled by ISHECON and is attached in **Appendix E8** of this Final 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 Sunveld Solar PV BESS will have a maximum footprint of up to 29 ha and will be centrally situated within the PV footprint (PV 7 Site) adjacent to the on-site substations as shown in the image below.

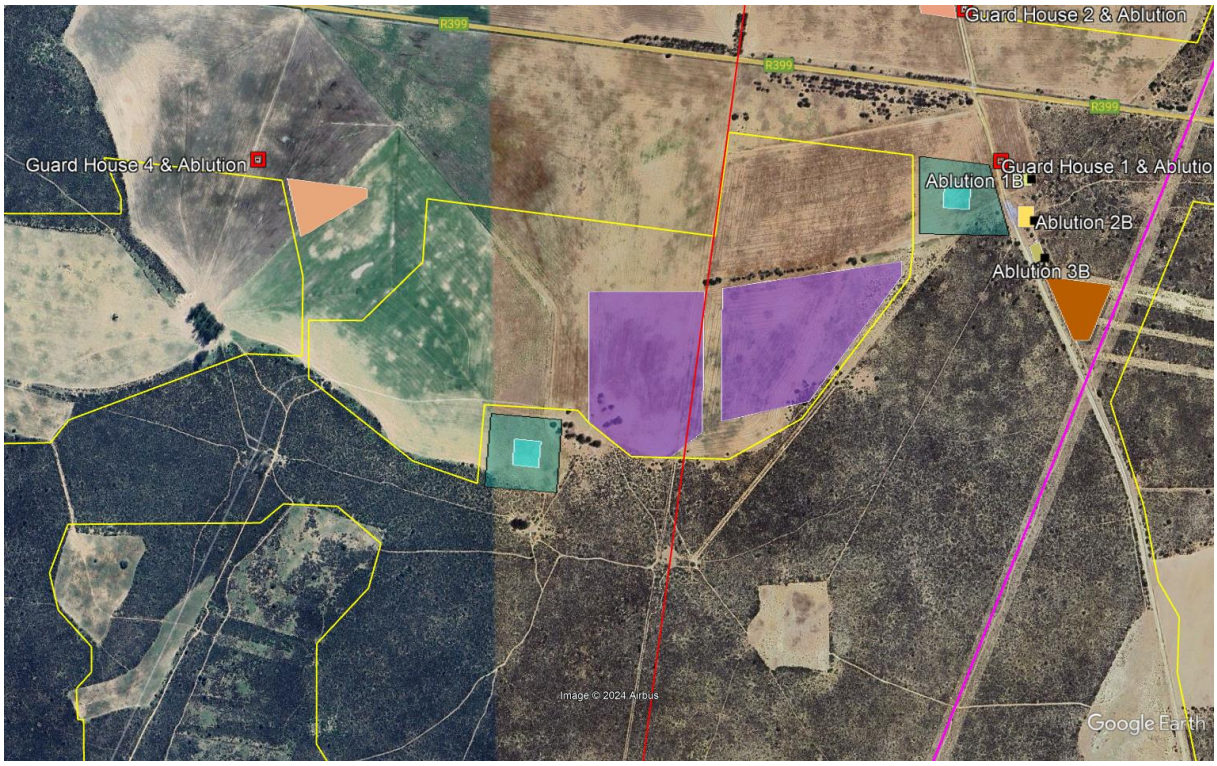

Figure 12: Proposed location of Battery Energy Storage System (purple polygon) in relation to the PV footprints and on site substation.

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 Sunveld Solar PV Facility.

BESS Components	
Capacity of BESS facility (in MWh)	2400 MWh or 4 hours at a maximum of 600MW per hour.
Type of technology (preferred)	Redox Flow, -Vanadium Redox Flow Battery (VRB)
Type of technology (alternatives)	Solid State including Lithium-Ion, Sodium-Ion and others, Liquid Metal or other technology types may 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)	29 ha (including electrolyte storage tanks of 18 ha for redox flow battery)
Structure locations	2 sites each ± 14 ha as shown in the figure above.

The specialist (Appendix E8) confirmed that the BESS Risk Assessment has found that with suitable preventative and mitigative measures in place, none of the identified potential risks are excessively high, i.e., from a Safety, Health and Environment (SHE) perspective no fatal flaws were found with either type of technology (solid state - lithium-ion, redox flow – vanadium, or molten liquid metal - Ambri) for the BESS installations at the proposed Sunveld Energy PVs near Velddrif in the Western Cape.

2.6 ACCESS ROUTES AND INTERNAL ROADS.

The proposed project site is accessible via the provincial R399 road which bisects the site. The 4 existing access points from the R399 will be used to access the Sunveld Solar PV Facility[24].

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.

Figure 13: Showing the position of the main access roads in brown within the Study Site.

An internal road network will also be constructed within the PV footprints. These internal roads will provide construction and operational access to the PV arrays and other infrastructure.

[24] It is proposed that only the central access road will be permanent. The east and west accessed will be used during construction only.

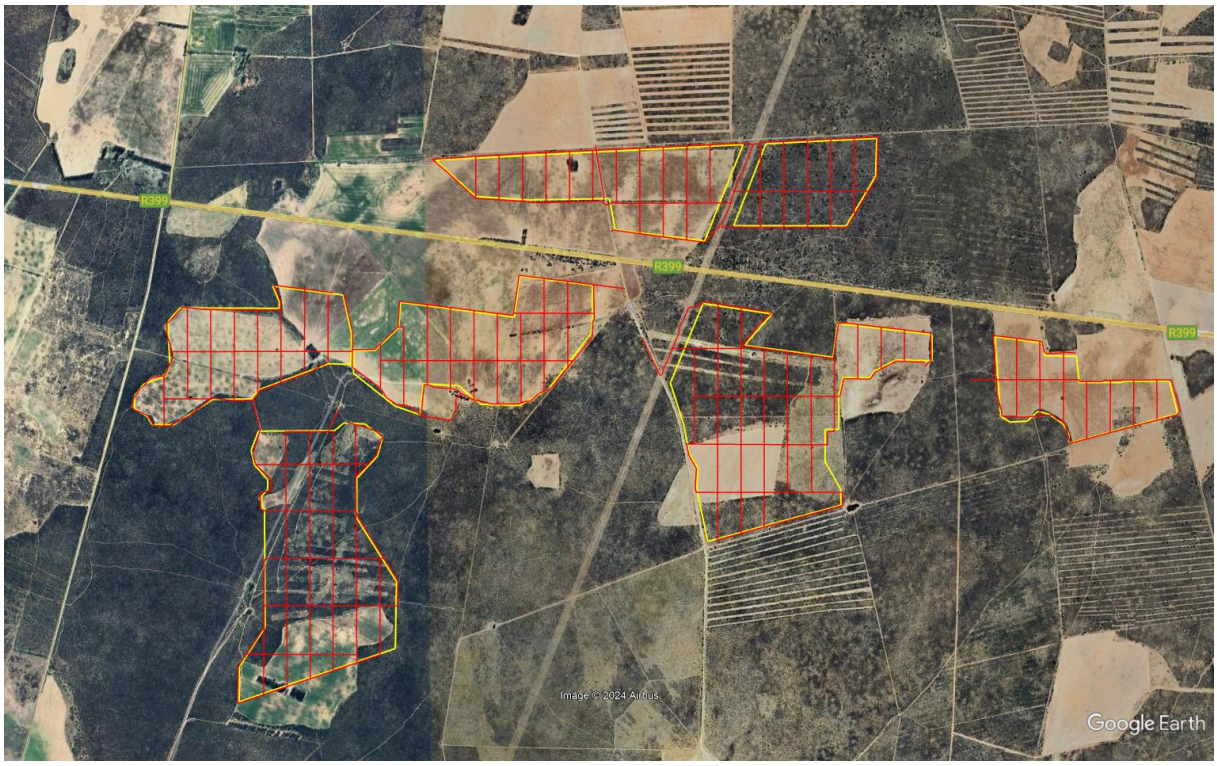

Figure 14: Internal Road network.

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

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 likely 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 Western 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 Sunveld 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[25] that have been suggested by both the Visual and Heritage Specialist.

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. Once a service provider for the BESS is determined, this service provider will be required to prepare a specific risk assessment and an operating procedure to ensure the correct handling and storage of electrolytes and other hazardous substances associated with the BESS.

[25] 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 promoting permeability and maintaining sheet flow.

Figure 15: Hydrocarbon Spill Kits must be in place within the site camp and in the field within 500m of any drilling or ramming activity.

Once the technology specific Risk Assessment for the BESS is completed (after selection of final service provider), the additional requirements outlined in this assessment will have to be implemented.

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 Berg River 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.

The applicant will need to demonstrate that the final selection of water supply for both the construction and operational phase of the project is both Lawful and Sustainable.

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)* 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 Western 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 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 600MW$_{AC}$ Sunveld Solar PV to be built on private land near Velddrif, has been informed by its contextual location, and economic, social and environmental impacts and influence. The project has gathered sufficient information and conducted studies of the site and the region to make qualified and reliable assumptions on the project's various impacts.

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.

Berg River receives relatively high Global Horizontal Irradiation (GHI). The GHI for the site is in the region of approximately 2,020 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.

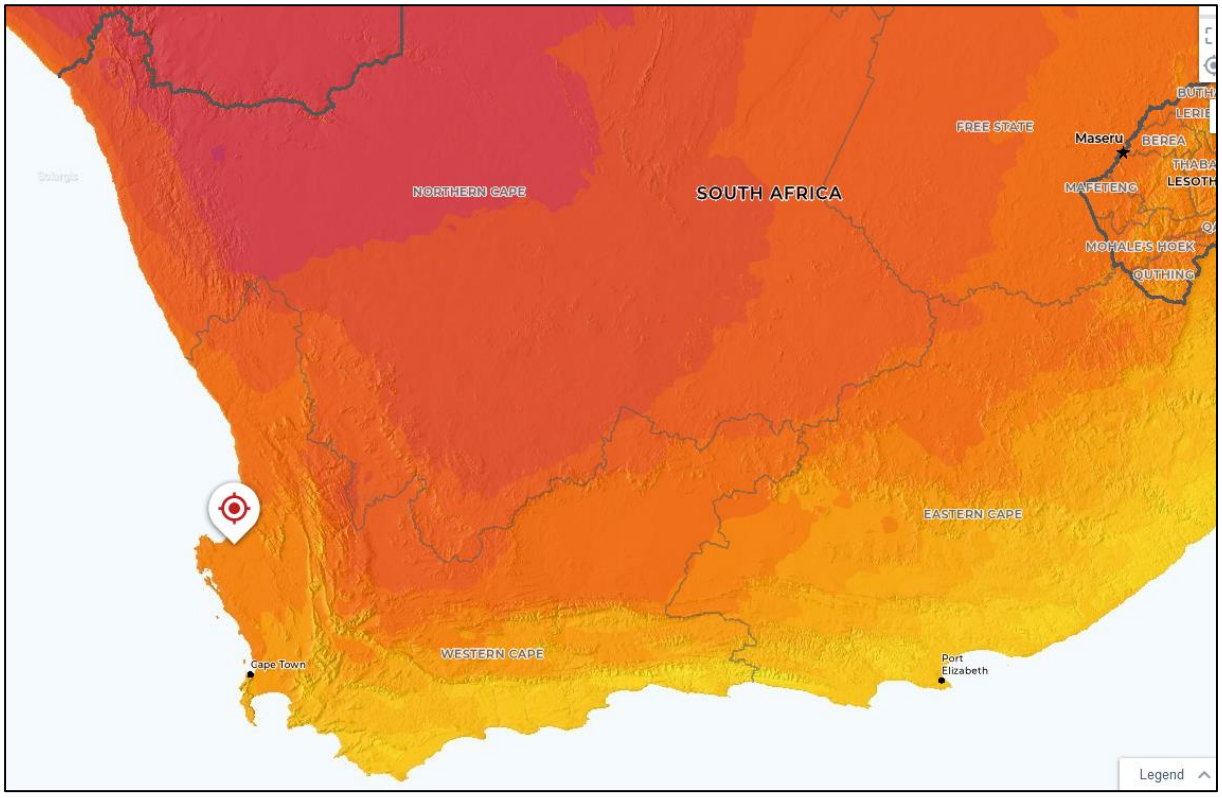

Figure 16: Global Horizontal Irradiation of the Sunveld Solar PV Facility (Solar Atlas.2023)

2.9.3 Access to Grid

The Aurora Main Transmission Substation (MTS) is located approximately 23 km south of the Sunveld Solar PV site[26]..

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 Western corridor[27] is one of these.

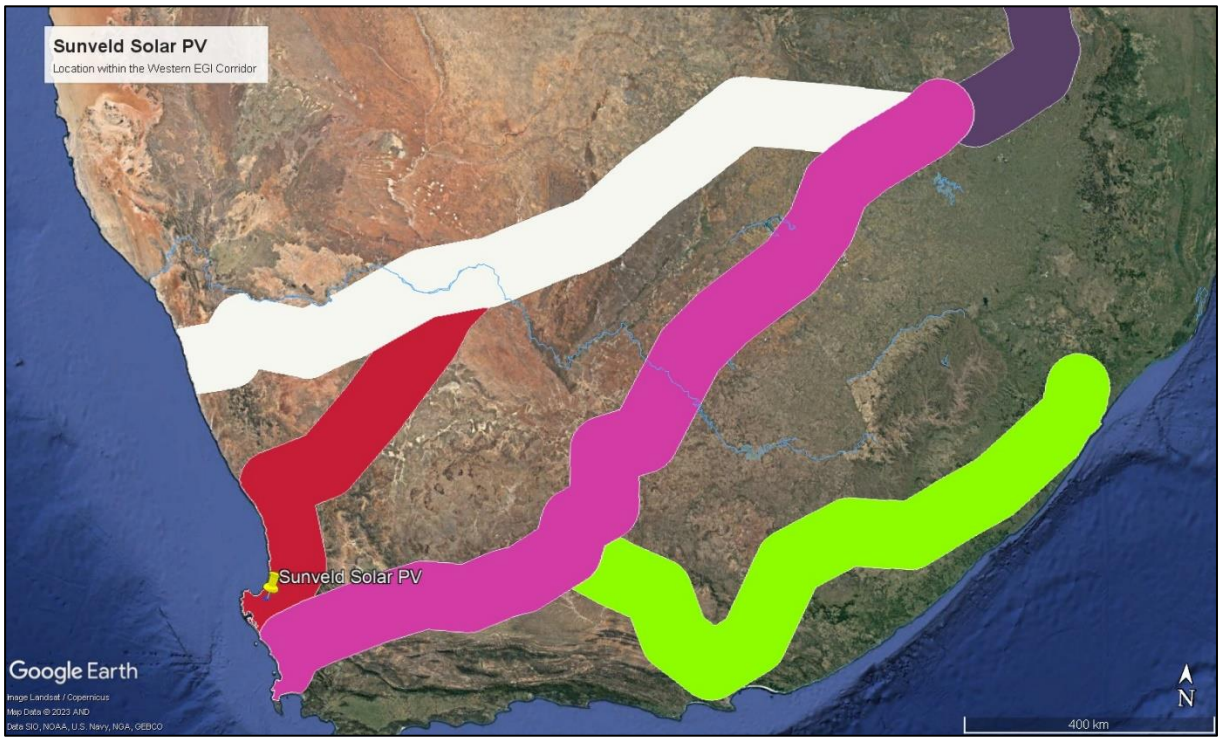

Figure 17: Plan showing Sunveld Solar PV within the Western Strategic Electrical Grid Corridor.

2.9.4 Site Suitability

Among the positive characteristics of the Sunveld 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 R399 decreases the impact on secondary roads from the traffic going to and from Sunveld Solar PV during construction and operations.

The relatively close proximity of the existing Eskom Aurora MTS also allows for connection via a relatively short distribution line. As the site is not used for intensive agricultural purposes and the specialist has confirmed that that is not suitable for cultivation, Sunveld Solar PV will not significantly interfere with the agricultural productivity of the area.

[26] The grid connection and associated infrastructure has been assessed as part of a separate environmental process that is being administered by the provincial authority.

[27] The Sunveld Solar PV and the associated grid connection falls within this Western EGI Corridor.

2.9.5 Social and Economic impact

The social specialist, Mr Tony Barbour found that the development of the proposed Sunveld Solar PV and associated infrastructure will create employment and business opportunities in the Berg River Municipality during both the construction and operational phase of the project. The potential negative impacts can also be effectively mitigated.

The project will also create opportunities for contributions to socio-economic development in the local community. The enhancement measures listed in the report should be implemented in order to maximise the potential benefits. The significance of this impact was rated by the specialist as High Positive.

The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole. The Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has resulted in significant socio-economic benefits, both at a national level and at a local, community level. These benefits are linked to direct foreign investment, local employment and procurement and investment in local community initiatives.

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 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.

Sunveld Solar PV will have a positive impact on local employment. According to the Social Specialist the project will likely employ between 300 and 350 individuals during the construction phase of the project and many of these opportunities will be from the local market.

During operations, Sunveld Solar PV is expected to have up to 30 employment opportunities area ranging from security staff to administration and artisans[28].

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 Western 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 Sunveld Solar PV energy facility is to be located outside the Velddrif 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

[28] These estimated figures have been provided by the Social Specialist (Appendix E9).

Need	Discussion	
		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 Berg River Local Municipality identified the opportunity for renewable energy projects through their SDF and IDP processes, which include public participation. The proposed Sunveld 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 Sunveld Solar PV development will contribute electricity to the constrained Western Cape and National electrical network, contributing to a provincial and national need.
Are the necessary services with adequate capacity currently available?	partially	Sunveld Solar PV requires the installation of an overhead power line to connect to the existing Eskom Aurora Substation[29] (feed into the national grid system), as well as part of the access road to the development site from the R399 (following existing farm tracks for most part). 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 Sunveld Solar PV will be sourced from the Berg River 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 600MW of electricity from the proposed Sunveld Solar PV, for input into the national grid via the Aurora Substation). The proposed Sunveld Solar PV is also situated within a legislated strategic EGI Corridor.

[29] This has been applied for as part of a separate environmental process that is being administered by the Western Cape Department of Environmental Affairs and Development Planning.

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 Velddrif 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 Berg River 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 states that the only alternative energy source at this stage is the installation of LED lights by the Municipality. The IDP also confirms Department of Energy has awarded a private company a license as a provider of solar energy to be fed into the Eskom grid for the provision of solar energy in the vicinity of Aurora, which provides corporate social beneficiation to this Community. The same corporate social beneficiation can be expected in the vicinity of the proposed Sunveld Solar PV.
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 a vegetation type that is classified as Endangered. The proposed positioning of the facility to fall predominantly within the transformed areas of the property will reduce the impact on this endangered vegetation type.
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 (compared to other regions within the province); • Close to existing main transport routes and access points; • Relatively 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.

Desirability	Discussion	
How will the development impact on people's health and wellbeing?	Yes	The site is located outside of the Velddrif Urban Edge and as a result is unlikely to impact negatively on the community's health and wellbeing. The closest populated settlement is situated more than 1.5km from the site.
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 700ha 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 Sunveld 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). Please refer to section 6.1 below for a discussion of cumulative impacts. As can be seen in this section, cumulative impacts range from High Positive to Medium Negative.

2.10 SITE SELECTION PROCESS

The site selection process followed a two-stage approach; firstly, to select the property for the proposed development (farm Kruispad 120 and on the farm Doornfontein A 118) 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 Sunveld Solar PV Facility.

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

The proposed Sunveld Solar PV facility is situated approximately 7 km southeast of Velddrif in the Western Cape Province.

According to the Berg River IDP, a clear stagnation trend is evident in the local economy, post 2015. The diversification of Economic opportunities is highlighted as a strategic objective within the municipality to address this.

To this extent the proposed Sunveld Solar PV Facility is situated in close proximity to the Velddrif 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 Sunveld Solar PV Facility falls into the Western Corridor (see figure 17 above)

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 sandy 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 R399 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 as they will continue with Game Farming / Conservation activities on the Southern Portions of the properties. The landowners have provided written consent for the proposed Sunveld 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

Sunveld 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 600MW$_{AC}$ 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 3) will take place during the Environmental Impact Reporting Phase.

2.11.1.1 Initial Assessment Area / Study site

The farm Kruispad 120 and on the farm Doornfontein A 118 situated approximately 7.5 km East of Velddrif in the Western Cape Province, was identified for the development of the proposed Sunveld Solar PV (see the site selection process outlined in section 2.10).

The Northern Section of the properties with an extent of approximately 2360ha was selected as the initial assessment area / study site. This area was selected after discussions with the landowners and was positioned in an area where the landowners were not undertaking any extensive agricultural and game farming activities. It was also selected to be set back as far as possible from the Berg River.

Figure 18: 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 R399 access road as well as reduced overhead powerline (OHL) distance to connect into the Aurora Main Transmission Substation (MTS), located ± 23 km to the South.

2.11.1.2 Layout Alternative 2

Layout alternative 2 was developed, taking into account a desktop sensitivity screening of the study site and consideration of the previous environmental assessment process[30] that was undertaken on the properties in 2018 and 2019.

[30] It must be noted that this previous assessment was undertaken prior to the Specialist Protocols, which largely accounts for the difference in the spatial sensitivities.

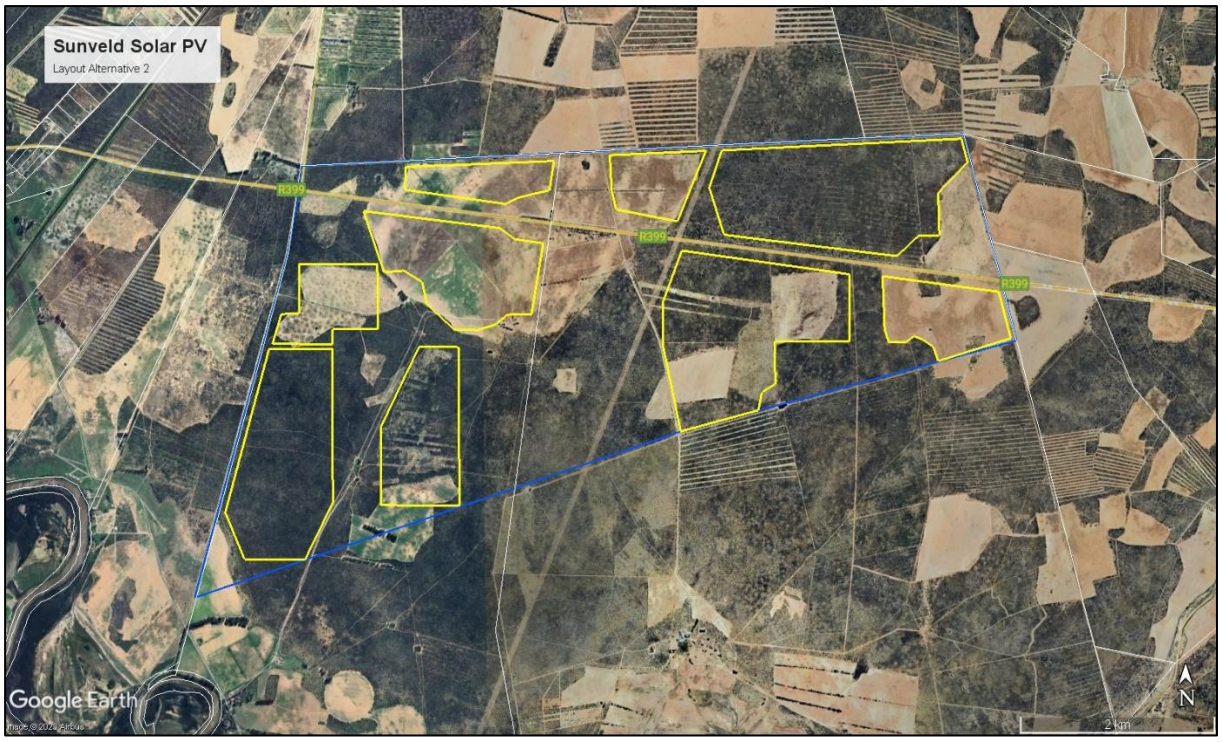

Figure 19: Layout Alternative 2.

Layout alternative 2 is approximately 1162.5ha in extent.

2.11.1.3 Site Sensitivity Assessment

Following the identification of the initial assessment area / study site and the development of Layout Alternative 2, the following specialists undertook Site sensitivity verifications of the of the Study Site[31]:

- Visual – Mr Stephen Stead of Visual Resource Management Africa (VRMA)
- Botanical – Ms Tarryn Martin of Biodiversity Africa
- Terrestrial Biodiversity – Mr Tarryn Martin and Ms Amber Jackson of Biodiversity Africa
- Animal Species (excluding Invertebrates and Avifauna) – Ms Amber Jackson of Biodiversity Africa
- Avifauna (including Black Harrier Habitat Modelling) – Mr Albert Froneman with Black Harrier habitat suitability modelling undertaken by Robin Colyn.
- Invertebrate – Dr Jonothan Colville.
- Aquatic Biodiversity – Ms Toni Belcher
- Heritage – Dr Jayson Orton.
- 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.

[31] It must be noted that the site sensitivity assessment was undertaken prior to the development of Layout Alternative 5 (Preferred Layout), which was developed specifically in response to the various sensitivities.

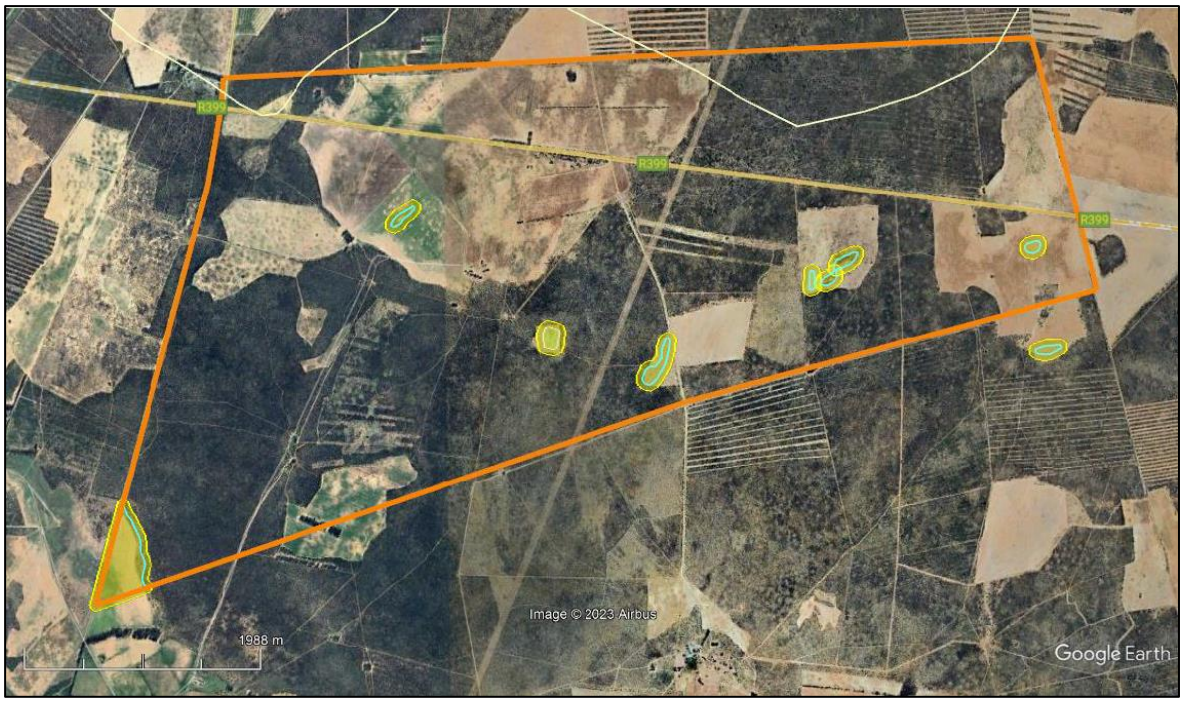

Figure 20: Delineated Aquatic Biodiversity Features and Buffers (Belcher, 2023)

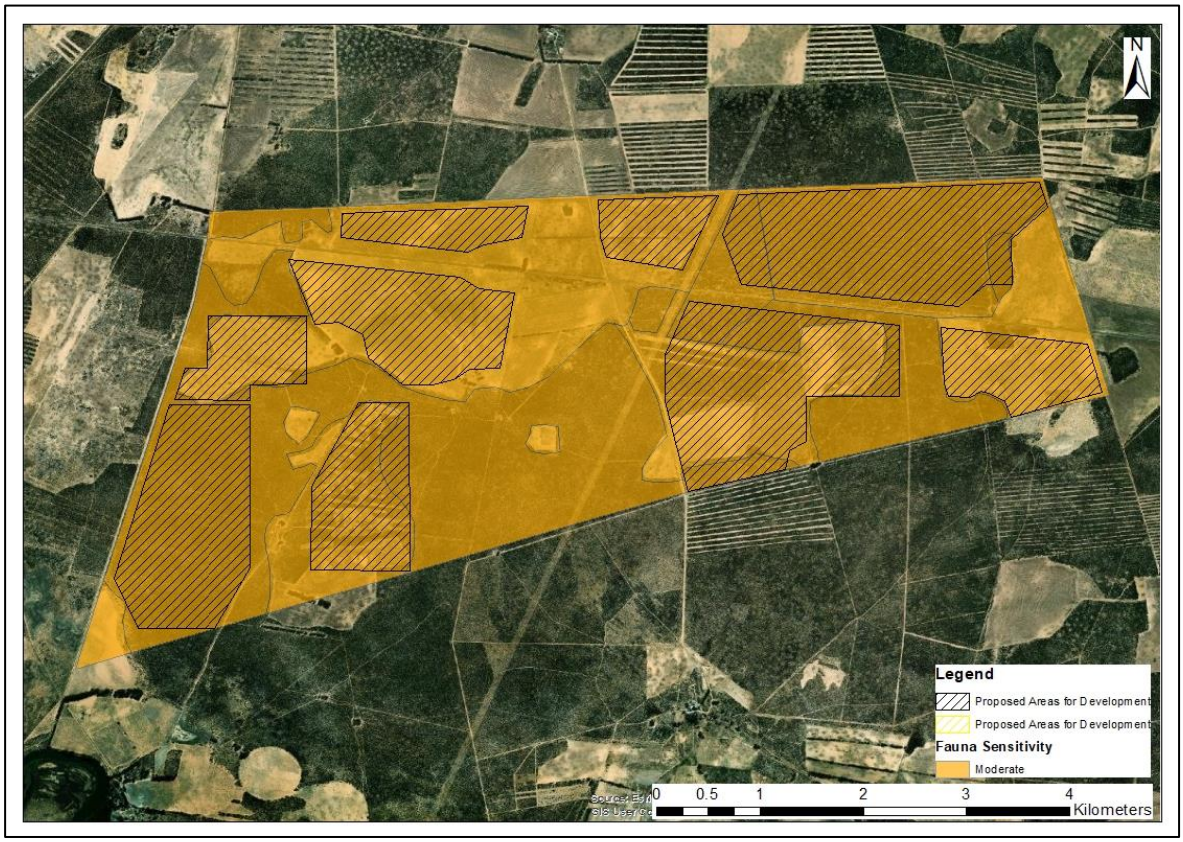

Figure 21[32]: Animal Species Site Sensitivity excluding invertebrates and Avifauna(Biodiversity Africa, 2023)

[32] The proposed development areas depicted in figures 22, 23 and 24 are those of Layout Alternative 2, prior to the development of Layout Alternative 3 (the preferred layout)

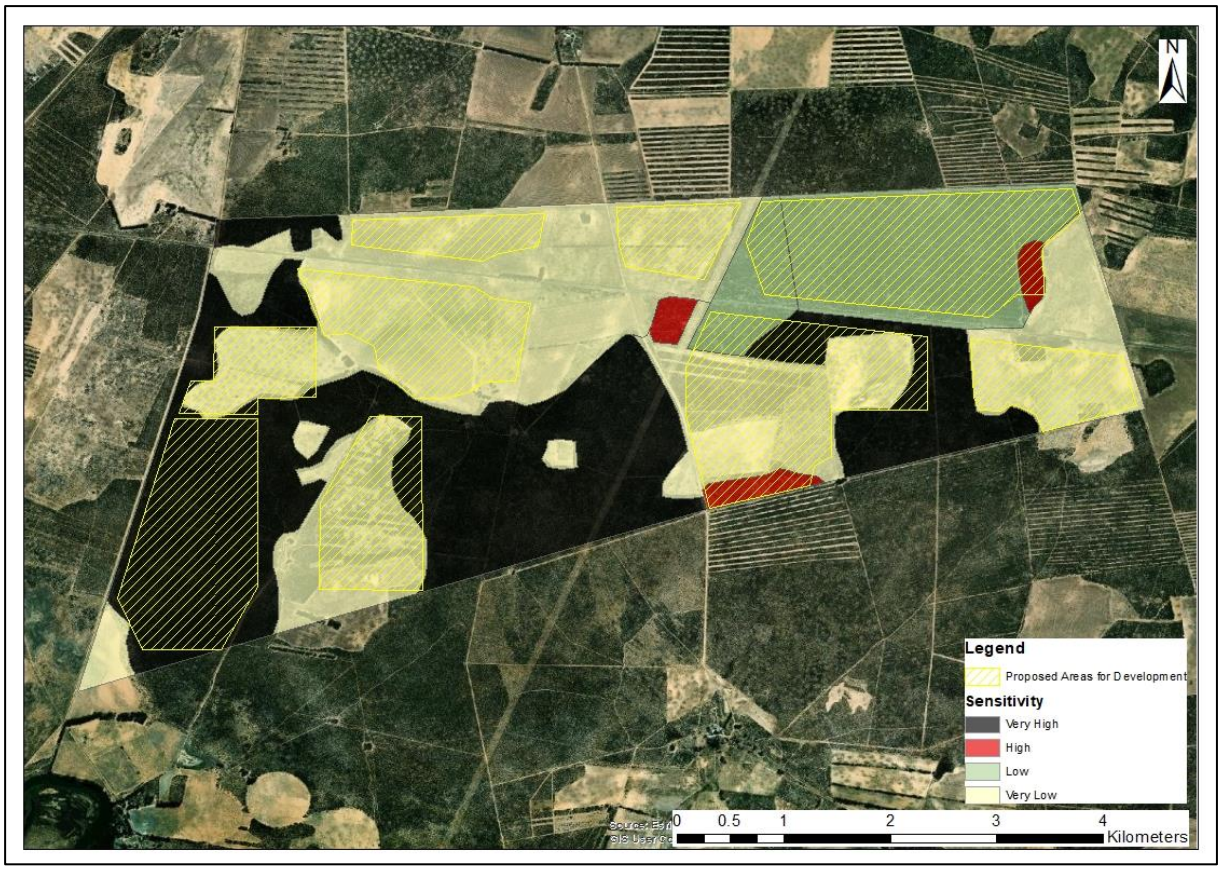

Figure 22: Botanical Site Sensitivity (Biodiversity Africa, 2023).

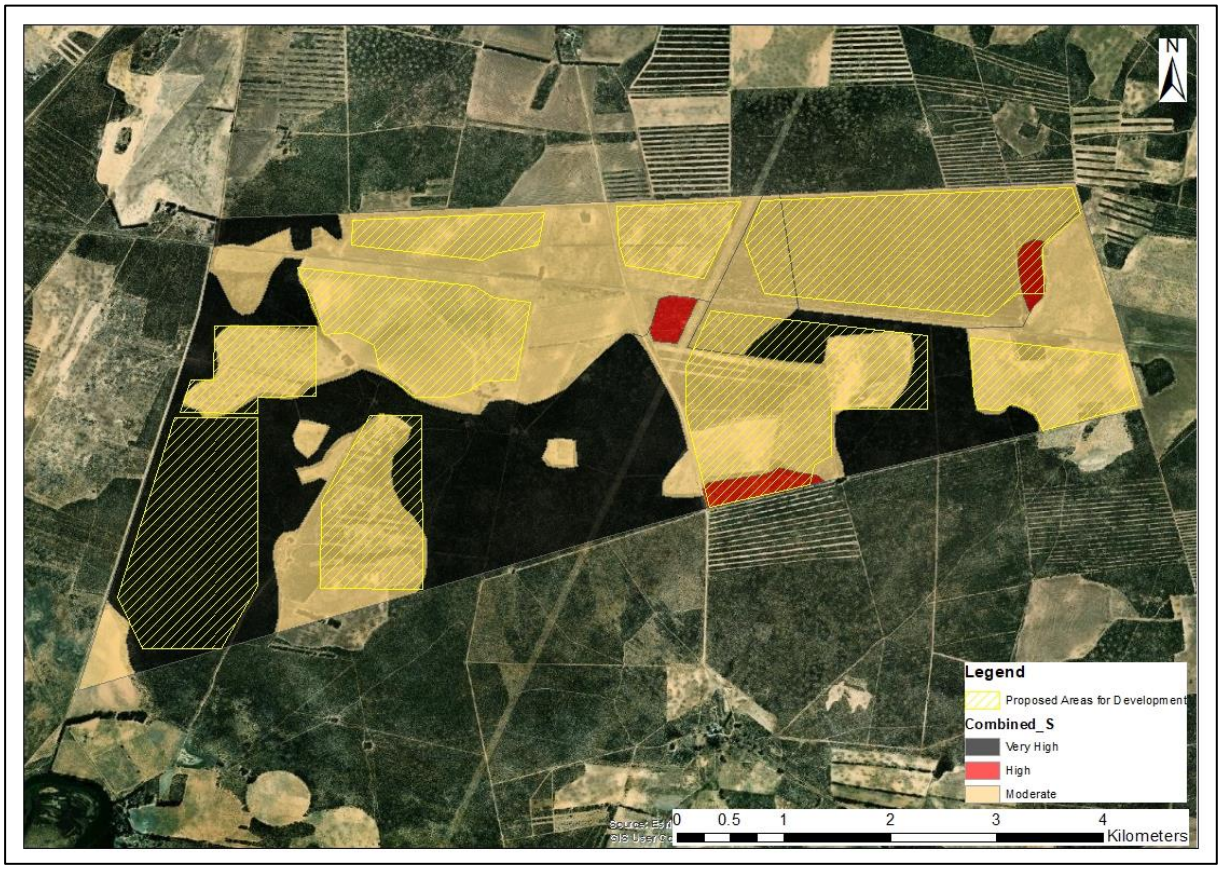

Figure 23: Combined Terrestrial Biodiversity Site Sensitivity (Biodiversity Africa, 2023)

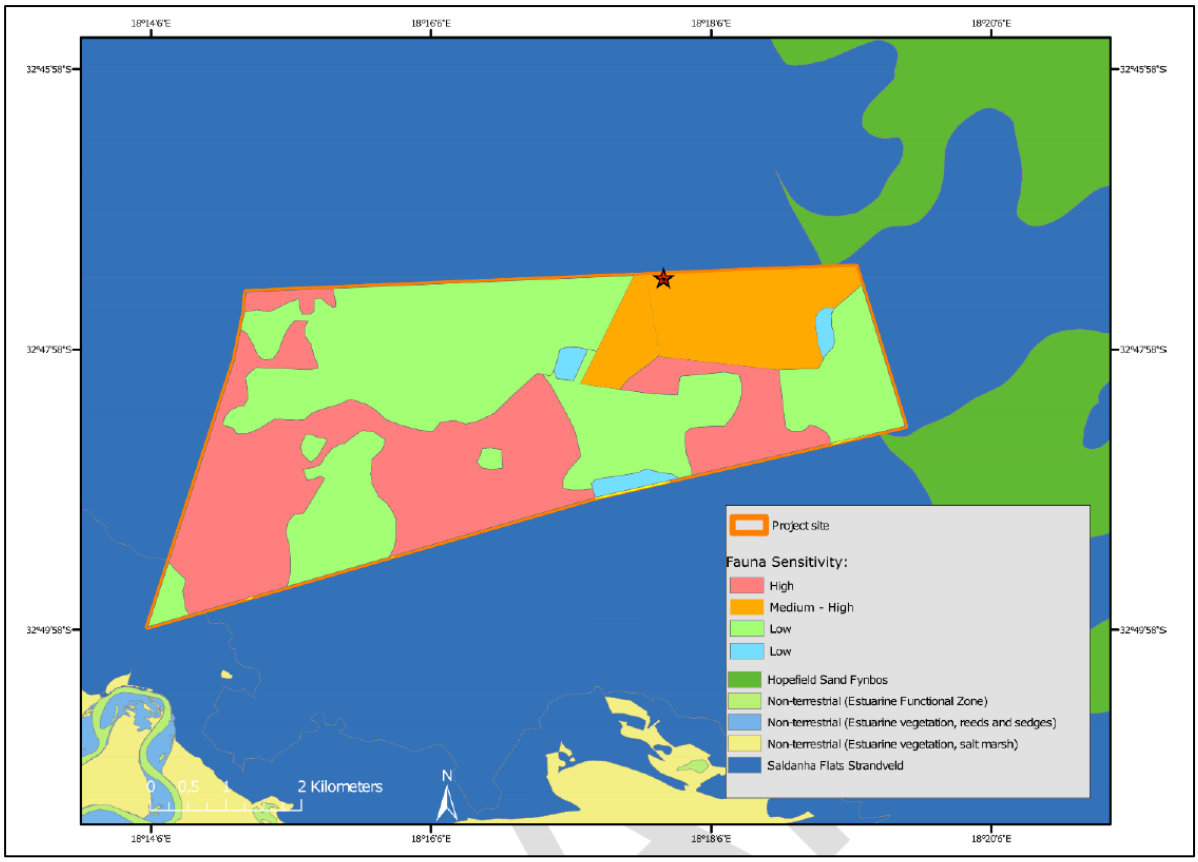

Figure 24: Invertebrate Site Sensitivity (Colville, 2023).

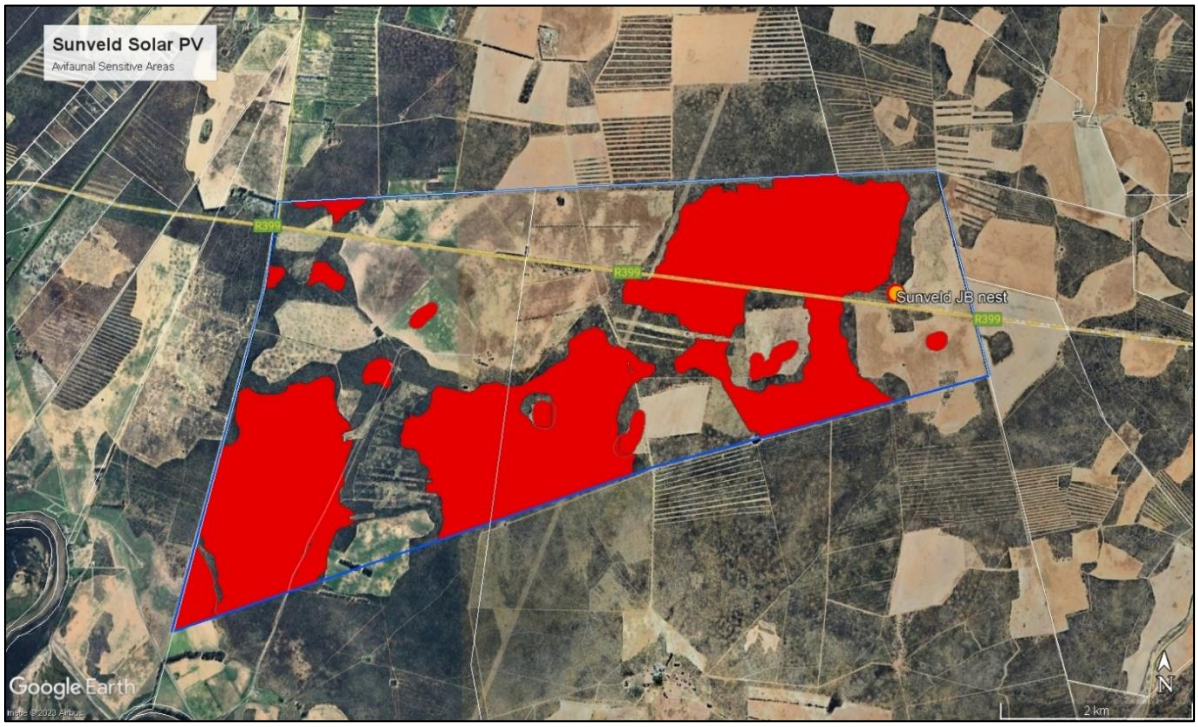

Figure 25: Avifaunal Site Sensitivity[33] - High Sensitivity Areas (Froneman, 2023)

[33] The sensitive Avifaunal Areas include, Suitable Black Harrier Habitat, Aquatic Features as well as a Jackal Buzzard Nest and Buffer.

Figure 26: Visually Sensitive Areas (Stead, 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.

The Heritage Specialists did not identify any specific features that would need to be avoided by the proposed development. The Heritage Impact Assessment did however identify areas where mitigation would need to be applied prior to the commencement of the construction of the development.

These sensitive features were then utilised to inform the Scoping - Preferred Layout alternative (Layout Alternative 3) as discussed below.

2.11.1.4 Layout Alternative 3 (Scoping - Preferred)

Based on the outcome of the site sensitivity assessment, the preferred layout alternative (Layout Alternative 3) as depicted below was developed. This was the preferred layout presented to stakeholders as part of the Scoping process and which has been further refined during the environmental impact assessment stage of the Environmental Process.

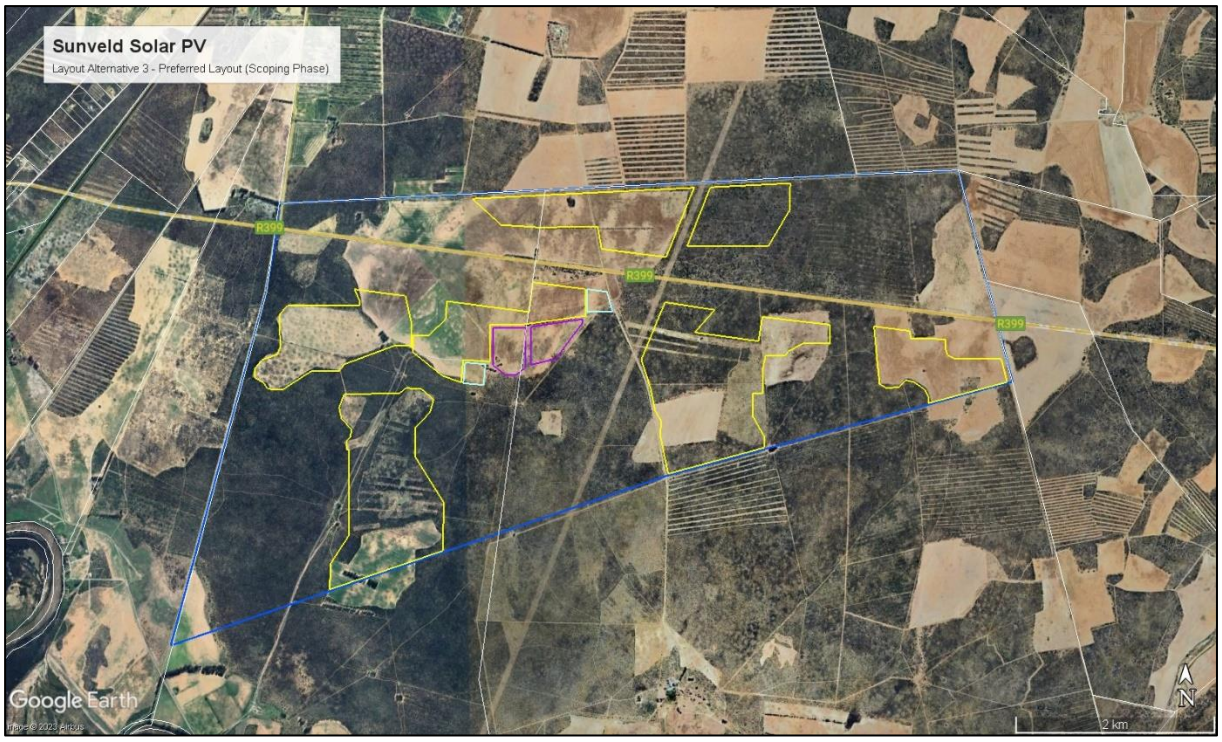

Figure 27: Layout Alternative 3 (Scoping Preferred) for Sunveld Solar PV.

This Layout was developed to avoid as many of the highly sensitive features as possible, while allowing the proposed development to remain technically and economically feasible.

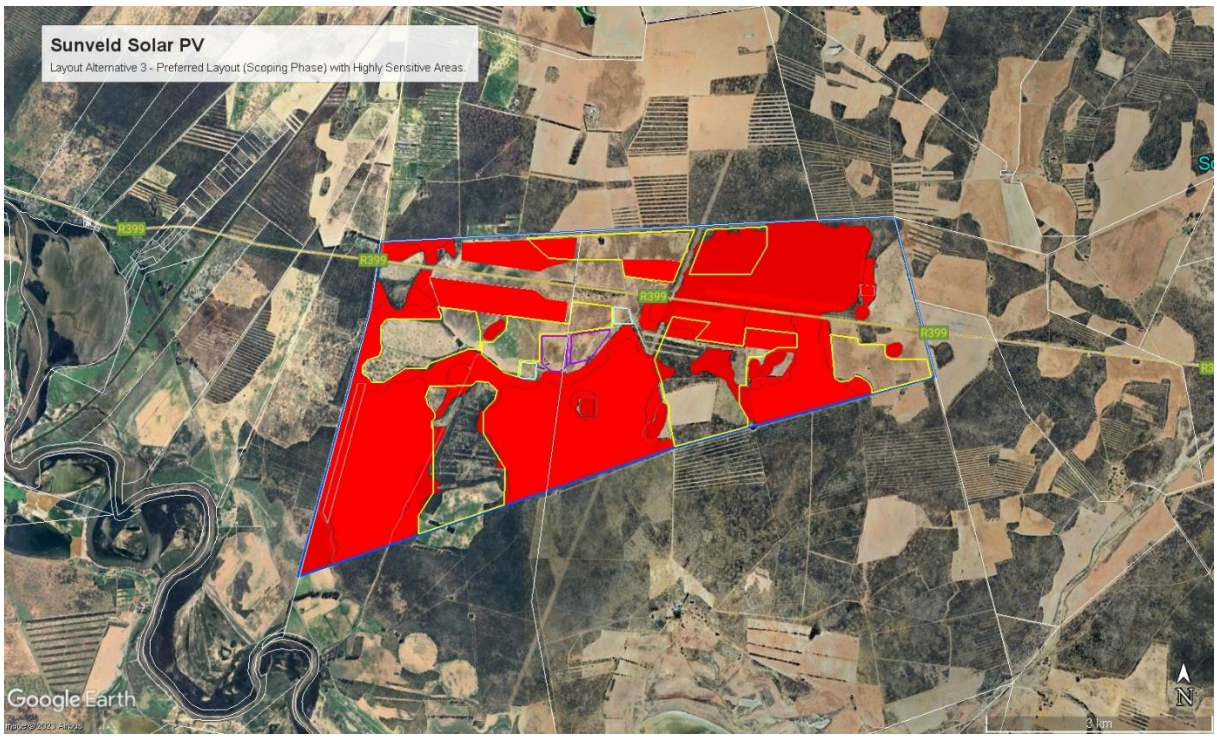

Figure 28: Layout Alternative 3 (Scoping Preferred Layout) – depicting the combined Very High and High sensitivity features from all specialist disciplines.

Further engagements have been had where proposed infrastructure intersects with sensitive features. Two further iterations of the layout were prepared with input from the participating specialists. This culminated in Layout Alternative 5 which is the mitigated preferred layout and what is been proposed as part of this environmental process.

2.11.1.5 Layout Alternative 5 (Mitigated Preferred)

As discussed above the scoping phase preferred layout went through a further two iterations and the final mitigated preferred layout (Layout Alternative 5) was developed. The key differences between the Layout alternative 3 (Scoping Preferred) and Layout Alternative 5 (Mitigated Preferred) is the exclusion of some further areas to address visual concerns as well as the addition of some visual screening that was recommended by both the Heritage and the Visual Specialists.

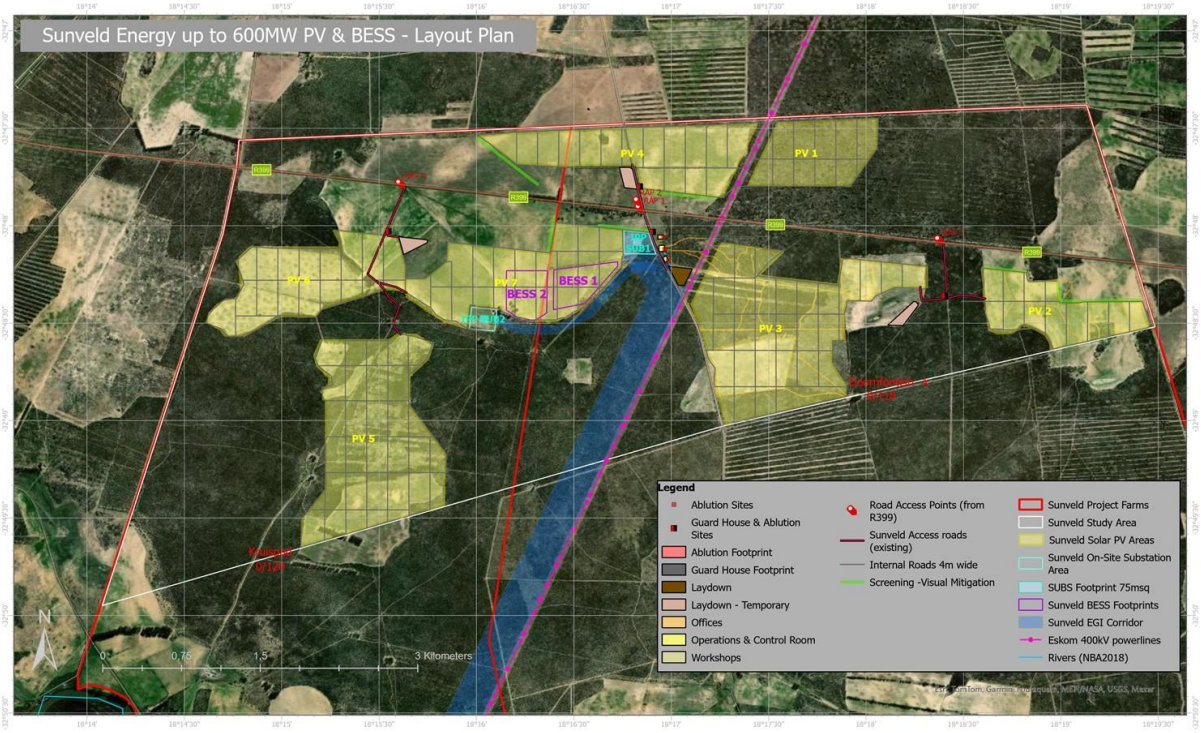

Figure 29: Layout Alternative 5 - Mitigated Preferred Alternative.

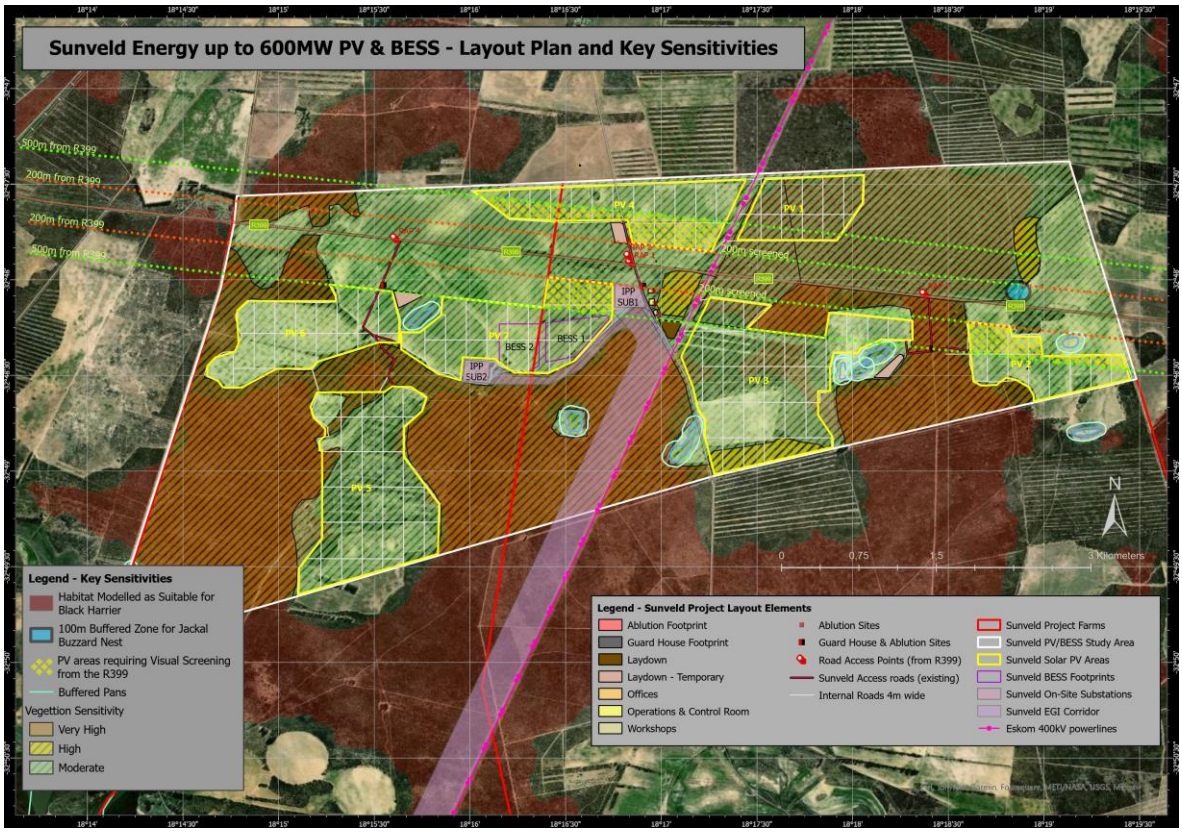

Figure 30: Layout Alternative 5, showing key sensitive areas identified by the Terrestrial Biodiversity , Avifaunal, Aquatic Biodiversity and Visual specialists.

2.11.2 Grid Connection Alternatives

The EGI (Eskom component) for Sunveld Solar PV has been assessed as part of a separate environmental process, the alternatives in respect of the EGI have been considered and discussed in the Basic Assessment Process for the Sunveld Solar PV and BESS Electrical Grid Infrastructure, which is being administered by the Western Cape Department of Environmental Affairs and Development Planning.

2.11.3 Access Road Alternatives

As discussed in section 2.6 above, the proposed access intents to utilise the existing access points from the R399 and furthermore utilise existing farm roads to access each of the PV development areas.

The relevant transport authorities have not raised concerns with the existing access, and as such no alternative access points have been considered.

The utilisation and upgrading of existing road infrastructure as proposed 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 Sunveld Solar PV facility does not go ahead and that the area in proximity to the Eskom Aurora MTS and within the Strategic EGI corridor will remain undeveloped as it is currently.

The land on which the Sunveld Solar PV is proposed is currently vacant and used for limited game and livestock grazing activities and dryland crops, 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 Berg River Municipal area, particularly in proximity to the existing substations 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 Sunveld 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 Sunveld 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, layout alternative 2, Layout Alternative 3 (Scoping Preferred) and Layout Alternative 5 (Mitigated Preferred)[34].

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

Alternative	Preference	Reasons (incl. potential issues)
PV Layout Alternatives		
Layout Alternative 5	Mitigated Preferred.	- Provides for visual screening for PV areas that are situated within 500m of the R399. - Avoids the majority of high and very high sensitivity habitat. - Topographically suitable. - Avoids all hydrologically sensitive areas. - Avoids the majority of very high avifaunal sensitive areas (namely the Black Harrier habitat, pans & their associated buffers and Jackal Buzzard Nest.
Layout Alternative 3	Scoping Preferred	- Avoids the majority of high and very high sensitivity habitat. - Topographically suitable. - Avoids all hydrologically sensitive areas. - Avoids the majority of very high avifaunal sensitive areas (namely the Black Harrier habitat, pans & their associated buffers and Jackal Buzzard Nest.
Layout Alternative 2	Less preferred	- Significant encroachment into high and very high sensitivity habitat. - Some encroachment into hydrologically sensitive areas. - Significant encroachment into very high avifaunal sensitive areas (namely the Black Harrier habitat, pans & their associated buffers and Jackal Buzzard Nest. - Concerns regarding visual massing.
Initial Assessment Area	Portions Less Preferred,	- Portions of the initial assessment area are topographically unsuitable for the development of PV.

[34] 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 that is being administered by the Western Cape Department of Environmental Affairs and Development Planning.

Alternative	Preference	Reasons (incl. potential issues)
	eliminated from further assessment	- Portions of the initial assessment area consist of high and very high ecologically sensitive areas. - 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.

The mitigation hierarchy was applied to the proposed development (as outlined in sections 2.11.1 above) and as such, Layout alternative 5 has been assessed against the no-go alternative in this Environmental Impact Report.

2.12 PROJECT PROGRAMME AND TIMELINES

As mentioned previously Sunveld 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 Sunveld 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)[35]. 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[36]. Cape EAPrac has been appointed to undertake this process. The figure below depicts a summary of the Scoping and Environmental Impact Reporting Process.

[35] 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.

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

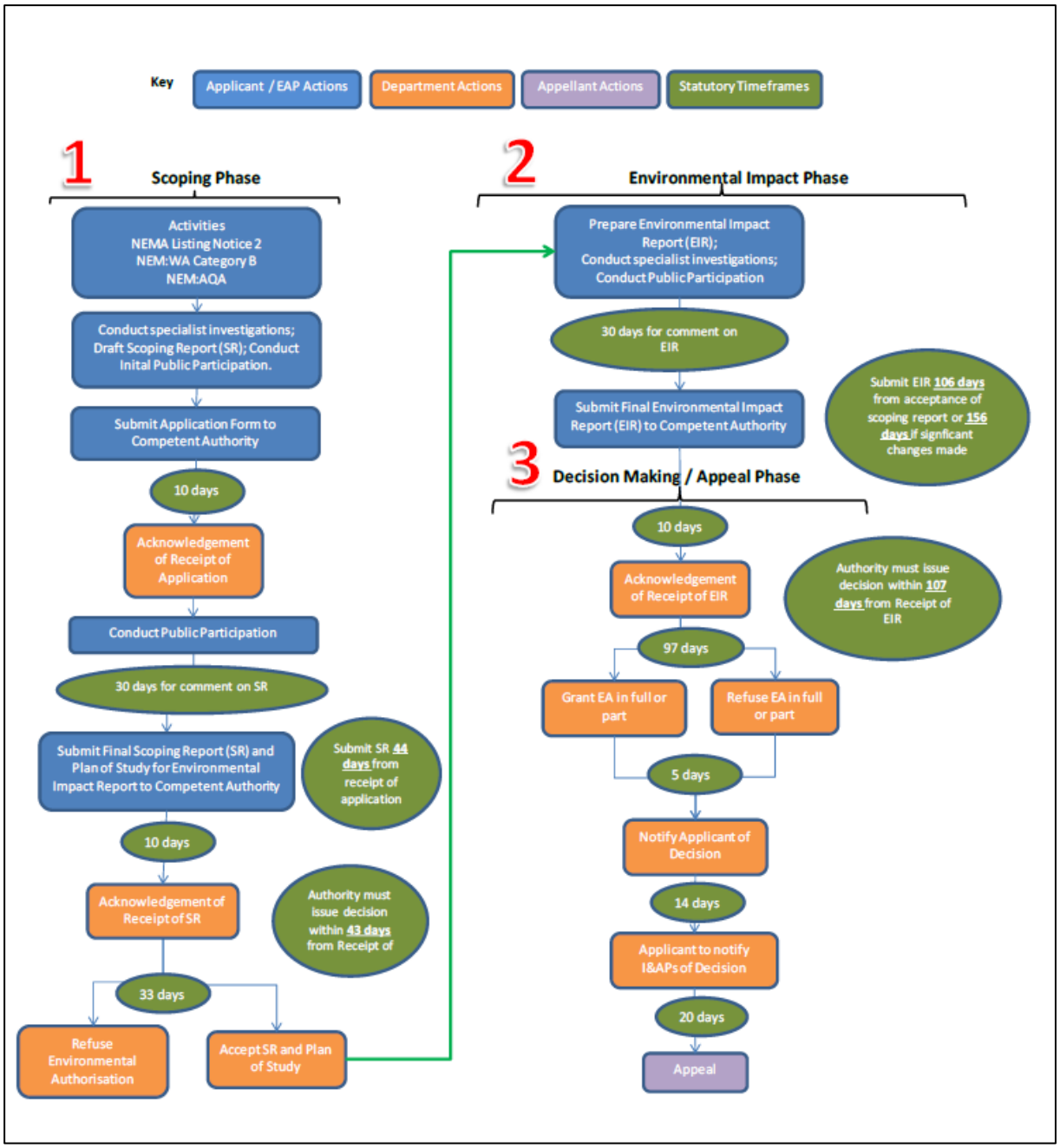

Figure 31: Summary of Scoping and Environmental Impact Reporting Process in terms of the 2014 EIA Regulations (as amended).

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 Sunveld 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 two on site substations will have a capacity of up to 300MVA each.

		Two 132kV powerlines will be routed in an EGI corridor/servitude from the two 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 is routed within 32m of the Pans identified by the aquatic specialist.
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 is routed within 32m of the Pans identified by the aquatic specialist.
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 Sunveld Energy Project will have an Electricity Footprint of up to 600 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 Sunveld 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.**
4(i)(ii)(aa)	The development of a road wider than 4m with a reserve less than 13,5m. (ii). Areas outside urban areas; (aa) Areas containing indigenous vegetation;	The internal roads for Sunveld energy will have a maximum width of 4m and the main access roads will have a maximum width of 5m.
10(i)(ii)	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 30 but not exceeding 80m³ ii. All areas outside urban areas;	The BESS proposed will include the storage of dangerous goods in excess of the threshold of this activity.

12(i)(i)&(ii)	The clearance of an area of 300m² or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEM:BA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans;	The vegetation on site is mapped as the endangered Saldanha Flats Strandveld. Portions of the site fall within a Critical Biodiversity Area in terms of the Western Cape Biodiversity Sector Plan. More than 300 Square metres of vegetation will be removed in the endangered vegetation type and the critical biodiversity areas.
14(i)(ii)(c)(i)(ff)	The development of (ii) infrastructure or structures with a physical footprint of 10m² or more; where such development occurs— (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; i. Outside urban areas: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	Some of the project infrastructure, such as internal cabling to be routed within 32m of the Pans identified by the aquatic specialist.
18(i)(II)(aa)	The widening of a road by more than 4m, or the lengthening of a road by more than 1km. ii. All areas outside urban areas: (aa) Areas containing indigenous vegetation;	The main and internal access roads will require that existing farm tracks be widened by more than 4m in some areas. 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 Saldanha Flats Strandveld. This was confirmed by the specialist in the field survey which identified patches of near-intact and degraded Saldanha Flats Strandveld**.**

Saldana Flats Strandveld is classified as Endangered (EN) (B1(i)) due to its narrow distribution and high rates of habitat loss in the past 28 years which has placed this ecosystem type at risk of collapse (DFFE, 2022). Only 36% (591.6 km2) of the historical extent remains and it is considered poorly protected. The conservation target for Saldanha Flats Strandveld is 24%.

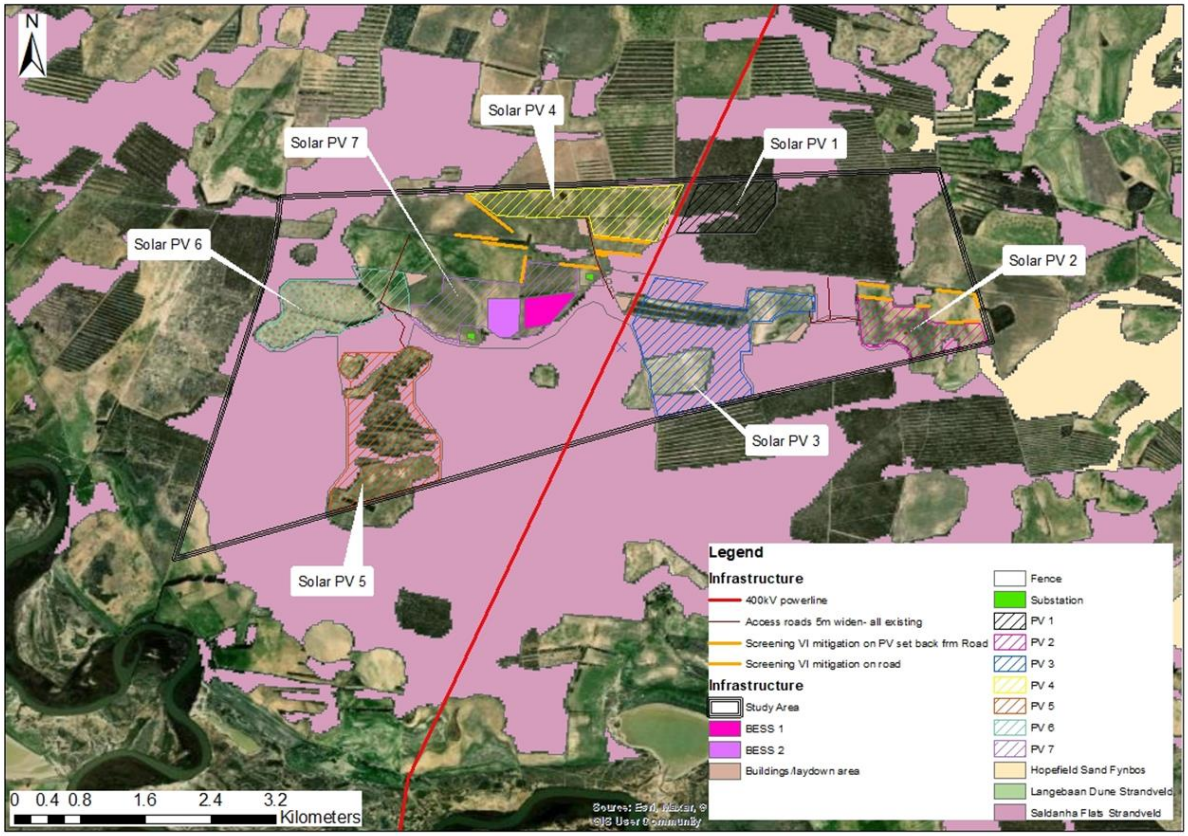

Figure 32: Remnant patches of Saldanha Flats Strandveld in relation to the Study Area and Layout Alternative 5.

According to the Terrestrial Biodiversity Specialist (Annexure E1\), Saldanha Flats Strandveld occurs on extensive coastal flats (altitudes of 0-120 m) from St Helena Bay and the southern banks of the Great Berg River near its mouth in the north, to Saldanha and Langebaan in the south, with the southernmost extension at the coast near Yzerfontein and Rietduin. This sclerophyllous shrubland is characterised by a sparse emergent and moderately tall shrub layer and an open succulent shrub layer forming the undergrowth. This vegetation type is known for its conspicuous displays of geophytes and herbaceous flora in spring.

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 Sunveld 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 Impact Assessment in Appendix E4 has identified a number of pans within the assessment area. The preferred layout, layout alternative 3 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 Western 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 Sunveld Solar PV is to be sourced from the Berg River 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 pans within the study site. Layout Alternative 5 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.

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). Heritage Western Cape (HWC) is the enforcing authority in the Western Cape and is registered as a Stakeholder for this environmental process.

In terms of Section 38 of the National Heritage Resources Act, Heritage Western Cape 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, Heritage Western Cape).

- 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, Heritage Western Cape).
- 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, Heritage Western Cape).

Dr Jayson Orton has compiled and Submitted a Heritage Impact Assessment (including an archaeology and palaeontology impact assessment to Heritage Western Cape. A copy of the NID was included in the scoping phase of the environmental process, and a copy of the Heritage Impact Assessment is attached in Appendix E5 of this report.

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 Sunveld 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.

The Sunveld Solar PV facility is not within the Geographic Advantage Area, as it is situated outside of the Northern Cape. It was furthermore found to be situated more than 336km from the closest SKA station (SKA133).

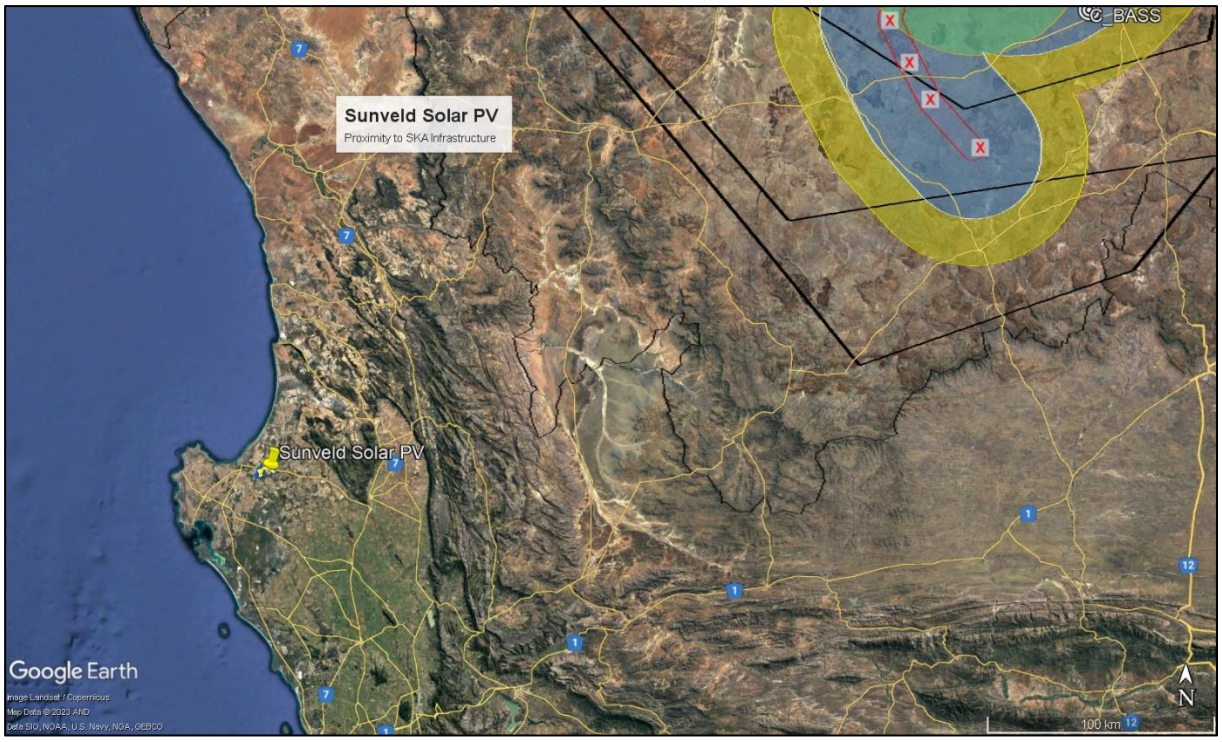

Figure 33: Proposed Sunveld Solar PV in relation to the SKA Infrastructure and Buffers.

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. The SKA project office and SARAO did provide any comment during the scoping phase of the environmental process, but have been given a further opportunity to comment during the EIR phase.

3.2.2 Western 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 Western Cape Land Use Planning Act 2014 (LUPA) was adopted by the provincial government of the Western 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 Western Cape's commitment to renewable energy production in order to respond to climate change.

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

Amendments to the Western 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 Sunveld Solar PV[37].

3.3.1 Berg River Municipality Integrated Development Plan (2022 - 2027)

The Berg River 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.

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

It is envisioned that the proposed Sunveld 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 Berg River Local Municipality Spatial Development Framework (2091-2024)

The Berg River 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 Sunveld 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.

The closest protected area is the West Coast National Park situated approximately 23 Kilometres south of the site.

Figure 34: Proximity of Sunveld Solar to Protected areas as identified in the South African Protected Areas Database.

According to the Terrestrial Biodiversity Specialist (Appendix E1), the project does occur within the Cape West Coast Biosphere Reserve.

Biosphere reserves are 'learning places for sustainable development'. They are sites for testing interdisciplinary approaches to understanding and managing changes and interactions between social and ecological systems, including conflict prevention and management of biodiversity. They are places that provide local solutions to global challenges. Biosphere reserves include terrestrial, marine and coastal ecosystems. Each site promotes solutions reconciling the conservation of biodiversity with its sustainable use.

Biosphere reserves are nominated by national governments and remain under the sovereign jurisdiction of the states where they are located. Biosphere Reserves are designated under the intergovernmental MAB Programme by the Director-General of UNESCO following the decisions of the MAB International Coordinating Council (MAB ICC). Their status is internationally recognized.

The Cape West Coast Biosphere Reserve stretches northward from the Diep River in Cape Town to the Berg River and covers 378 000 ha of coastal lowland plains. It is unique in terms of its natural beauty, biodiversity, history, culture and location. It was proclaimed and supported by all three spheres of government and the formal designation procedure was completed in November 2000. The aim of the Cape West Coast Biosphere Reserve is to foster human development that is ecologically sustainable.

The proposed project area does not occur within a NPAES Focus Area (2010) or a negotiated Focus Area (2018).

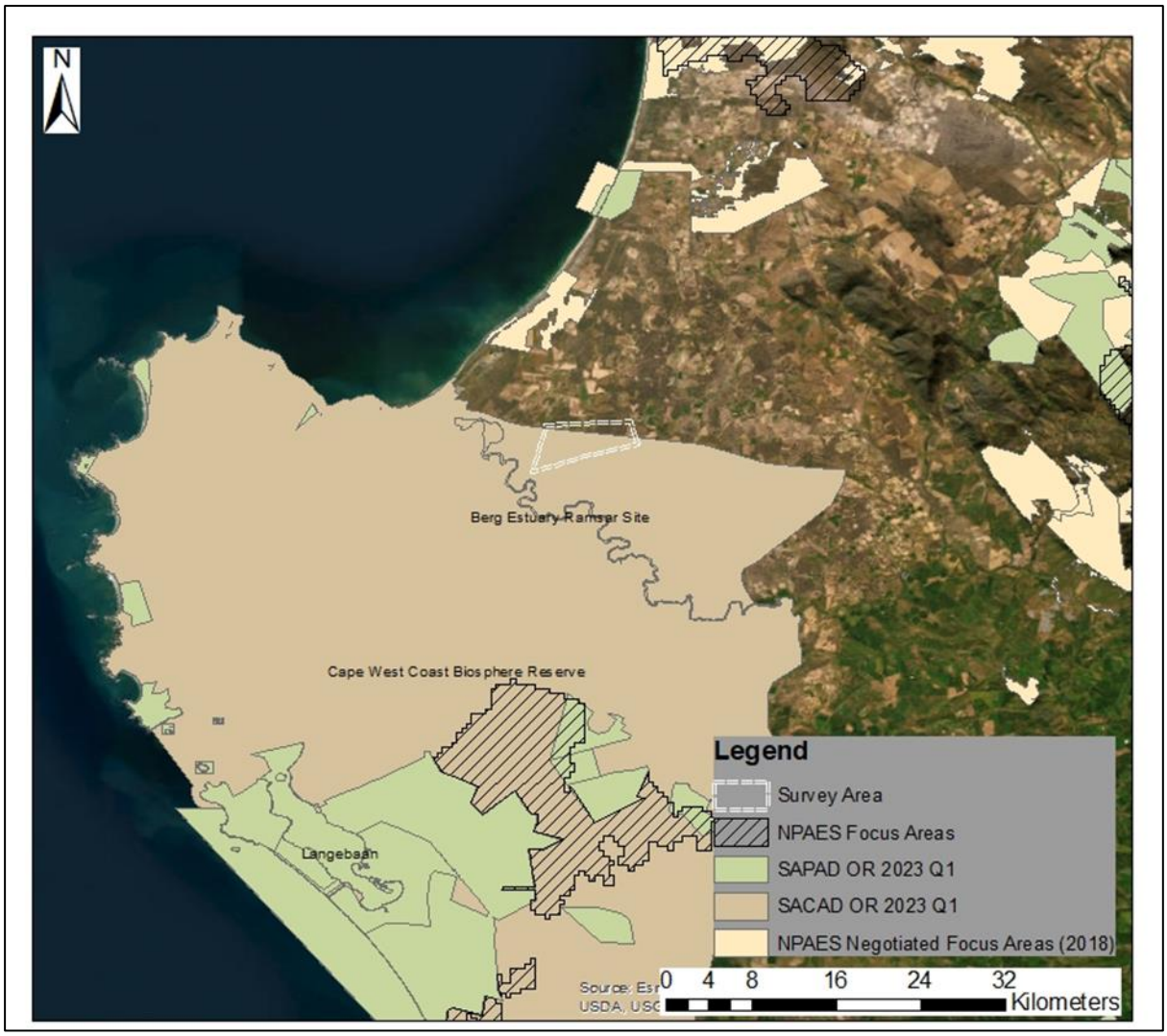

Figure 35: Sunveld Solar PV in relation to the West Coast Biosphere Reserve and NPAES Expansion Focus Areas (Biodiversity Africa, 2023).

The Protected Areas Directorate at DFFE have been provided an opportunity to comment on the proposed project in light in light of the Cape West Coast Biosphere Reserve.

3.4.2 Western Cape Biodiversity Sector Plan (2017)

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

The Western 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 (Appendix E1) has confirmed portions of the property occur within a CBA1, CBA 2 and ESA 1. The specialist furthermore confirmed that the reason layer indicates that

the spatial planning unit in which the project area occurs was designated as a CBA and ESA for the following reasons:

- Saldanha Flats Strandveld (EN)
- Watercourse Protection – South Western Coastal Belt

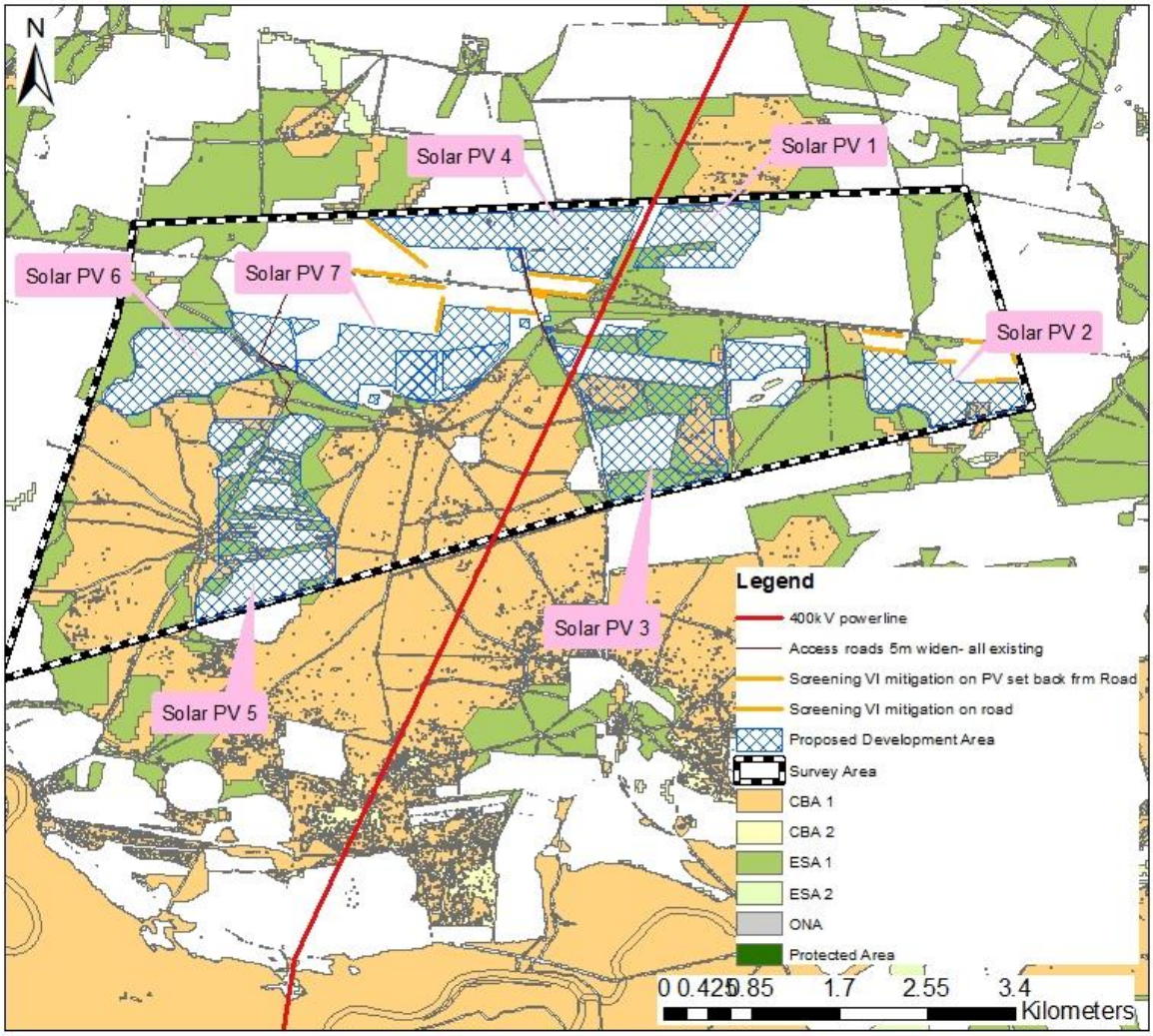

Figure 36: Sunveld Solar PV in relation to Critical Biodiversity Areas and Ecological Support Areas as per the Western Cape Biodiversity Spatial Plan (Biodiversity Africa, 2024).

The terrestrial biodiversity specialist furthermore provided details on how the development will impact the features associated with the project area listed as a CBA and ESA.

Table 9 : Details on how the proposed development affects the Mapped CBA's and ESA's (Biodiversity Africa, 2023).

Feature	Comment
Saldanha Flats Strandveld (EN)	This vegetation type was confirmed to occur within the project area and has been mapped. Project infrastructure must avoid CBA 1 that overlap with near-intact Saldanha Flats Strandveld which has a SEI of Very High. These areas must be considered a no-go area.
Watercourse protection- South Western Coastal Belt	Since this is an aquatic feature, the aquatic specialist must provide comment on how the development will affect this feature[38].

[38] This aquatic feature is avoided by Layout Alternative 5 (Mitigated Preferred Layout).

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 Sunveld Solar PV are SIP 8, 9 and 10.

Table 10: Strategic Infrastructure related to Sunveld 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 Sunveld 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 Sunveld 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 Sunveld 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 11: 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 E7.
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 input 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, Invertebrates, 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

Impact Description	Relevant Legislation	Applicability to this project
		avoided in Layout Alternative 3 (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 133, at approximately 332km from the proposed Sunveld Solar PV. 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.*[39]

It is believed that the proposed 600MW Sunveld 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.

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

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 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).

The freshwater specialist (Appendix E4) confirmed that there is a small aquatic CBA mapped near the depression wetlands in the FEPA and NWM5. The two natural depressions mapped in the FEPA and NWM5 are mapped as aquatic ESAs in the WCBSP. The aquatic CBA associated in the WCBSP with the Berg River Estuary follows the mapping of the FEPA wetland mapping.

All aquatic features as well as the buffer areas defined by the specialist have been avoided by Layout Alternative 5 (Mitigated Preferred Layout).

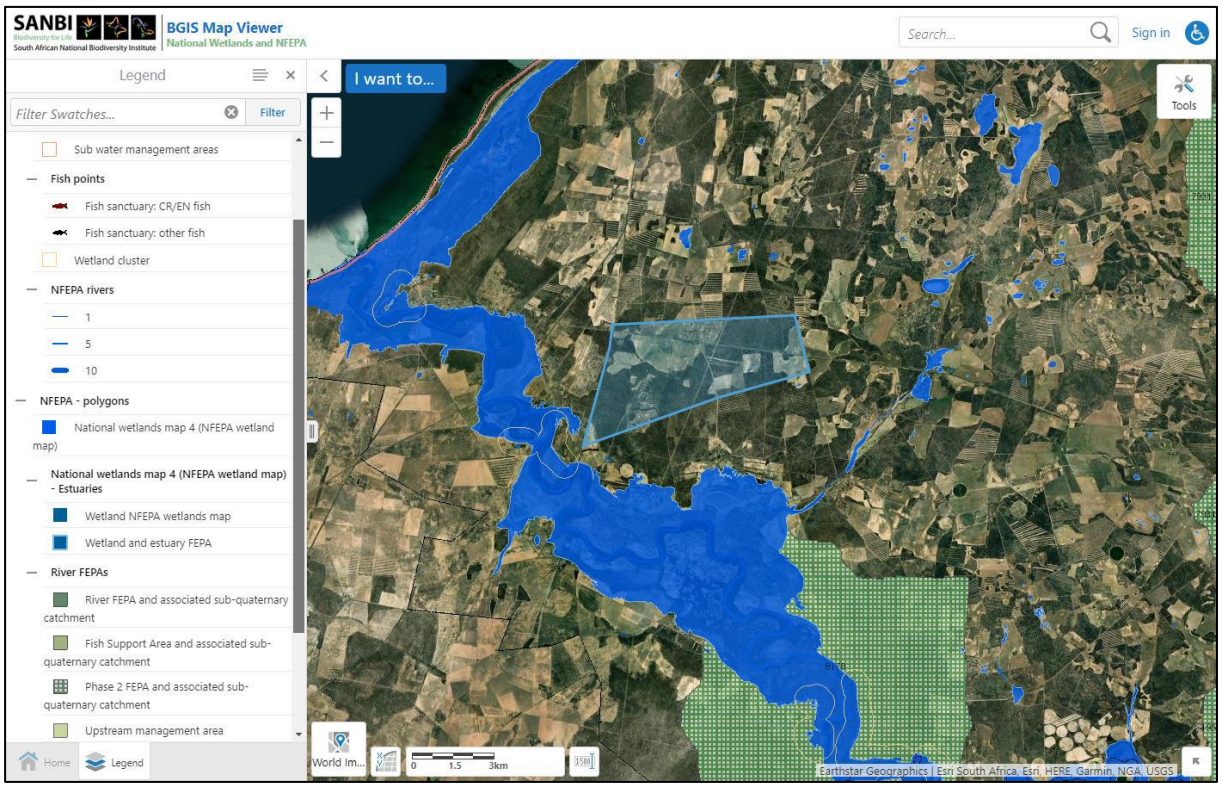

Figure 37: National Freshwater Ecosystem Priority Areas in relation to the Study Site (Belcher, 2023)

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 authorisation.

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 Sunveld Solar PV and is attached in Appendix I 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 have been included in the Draft EIR.

Table 12: Specialist Studies recommended in the DFFE Screening Tool.

Study Recommended in Screening Tool	Discussion
Agricultural Impact Assessment	Completed. In terms of the SSVR for Agriculture, this was a Compliance Statement due to the Medium Sensitivity
Landscape/Visual Impact Assessment	Completed
Archaeological and Cultural Heritage Impact Assessment	Completed
Palaeontology Impact Assessment	Completed
Terrestrial Biodiversity Impact Assessment	Completed
Aquatic Biodiversity Impact Assessment	Due to the low sensitivity and the avoidance of the delineated aquatic features, an Aquatic Compliance Statement was sufficient.
Avian Impact Assessment	Completed
Civil Aviation Assessment	The closest airstrip was identified as the Saldanha Airport situated approximately 29 km to the South of the Site. The applicant will also submit an obstacle application (Part 30-27) to the South African Civil Aviation Authority.
Defence Assessment	Completed by EAP.
RFI Assessment	Not undertaken – The Sunveld Solar PV facility is not within the Geographic Advantage Area, as it is situated outside of the Northern Cape. It was furthermore found to be situated more than 336km from the closest SKA station (SKA133). 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	Not undertaken. The proposed facility is not within an area known for unstable geological conditions such as: - Slope Instability - Sinkholes and Subsidence - Seismic Activity - Expansive Soils - Collapsible Soils - Saltwater Intrusion A detailed geotechnical investigation will therefore only take place during the detailed design phase to inform specific foundation requirements within the footprint of the authorised activities.
Socio-Economic Assessment	Complete
Plant Species Assessment	Complete

Study Recommended in Screening Tool	Discussion
Animal Species Assessment	Complete

4. PLANNING CONTEXT

A planning process application will take place during the decision making process of this application, as the planning approvals cannot be considered for approval until the environmental process is concluded.

The land use planning process for the Sunveld 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 Berg River Local Municipality, in terms of the Berg River 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 13: 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 Sunveld Solar PV:

- The property is located within the Berg River 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 Berg River 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 Berg River 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 farm Kruispad 120 and the farm Doornfontein A 118, with particular focus on the Study Site for the proposed Sunveld Solar PV.

5.1 LOCATION & BUILT ENVIRONMENT

The target properties, farm Kruispad 120 and farm Doornfontein A 118, are located in the West Coast District of the Western Cape Province, within the jurisdiction area of the Berg River Local Municipality.

The total properties are approximately 6486.01 hectares in size and located approximately 7.5km East of Velddrif.

The proposed Sunveld Solar PV is accessed from the R399 between Velddrif and Piketberg.

According to the heritage specialist, no buildings, ruins or any other structures were noted on or within the Sunveld Solar PV Study Site.

5.2 GEOLOGY & CLIMATE

According to Cape Farm Mapper, the Geology of the site is within the Sandveld Group which consists of fine to medium grained quartzitic sand

According to the Agricultural Specialist, Johan Lanz (Annexure E6) has classified the underlying soils as follows:

Table 14: Classification of underlying Soils at Sunveld Solar PV (Lanz, 2023)

	Parameter	Value
Soil	Geology (DAFF, 2002)	Aeolian sand mostly overlying marine sediments.
	Land type (DAFF, 2002)	Hb118, Ha70, Db298, Db297
	Description of the soils	Heuweltjie veld (land with a regular, dotted pattern of extinct underground termite nests) occurs across the site, but apart from the soil distinctions on and off the heuweltjies, the soils are very homogenous. All are deep, light coloured, very light textured (sandy) soils, occasionally with clay in the subsoil.
	Dominant soil forms	Fernwood
	Soil capability classification (out of 9) (DAFF, 2017)	Hb land types: 6 (moderate-high) to 7 (high). However this is an overestimation of soil capability. Db land types: 4 (low-moderate)
	Land capability classification (out of 15) (DAFF, 2017)	Hb land types: 7 (low-moderate) to 9 (moderate-high), bu tis an overestimate Db land types: 6 (moderate-high) to 7 (high)
	Within Protected Agricultural Area DALRRD, 2020)	Yes

According to the Aquatic Biodiversity Specialist, the area normally receives about 253 mm of rain per year, mostly during winter.

Typically, very little rain falls between December and March and the highest rainfall (41mm) occurs in June. As a result of the very low rainfall in the area, the depression wetlands at the site are ephemeral and are only inundated for short periods immediately following local rainfall events.

The larger Berg River is perennial, receiving most of its runoff from the upper mountainous catchment area at Franschhoek where the mean annual rainfall in places exceeds 2000 mm.

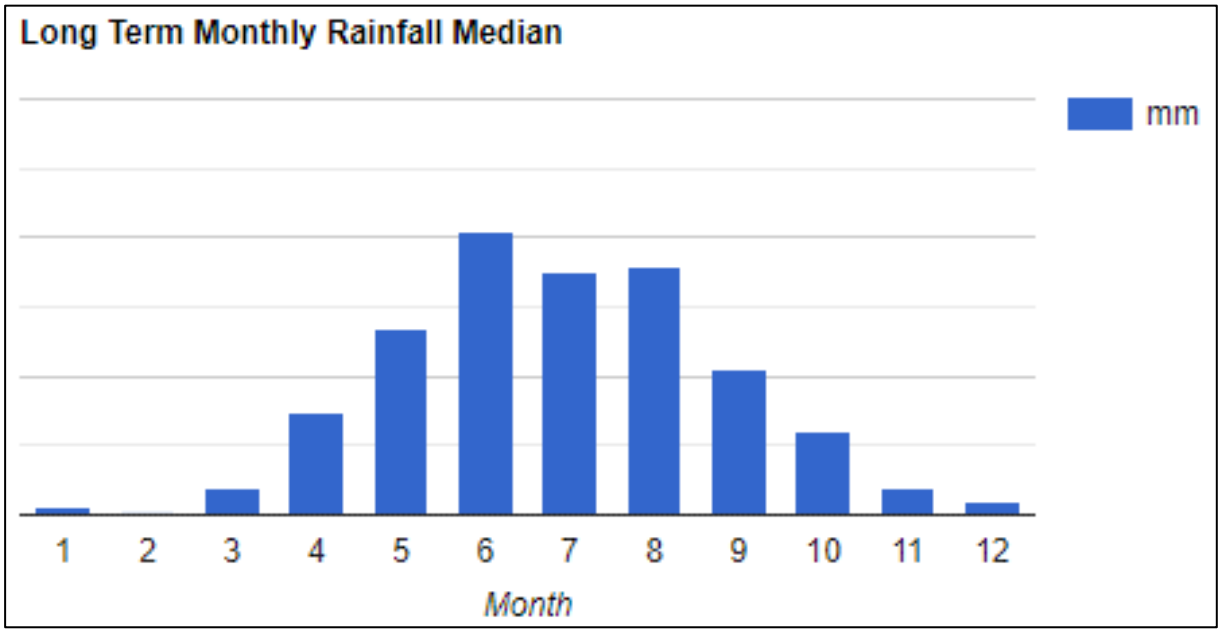

Figure 38: Average monthly Rainfall for the Velddrif area where the Sunveld Solar PV facility is proposed (Belcher, 2023).

The average annual temperatures range from 7° in July to 30° in January.

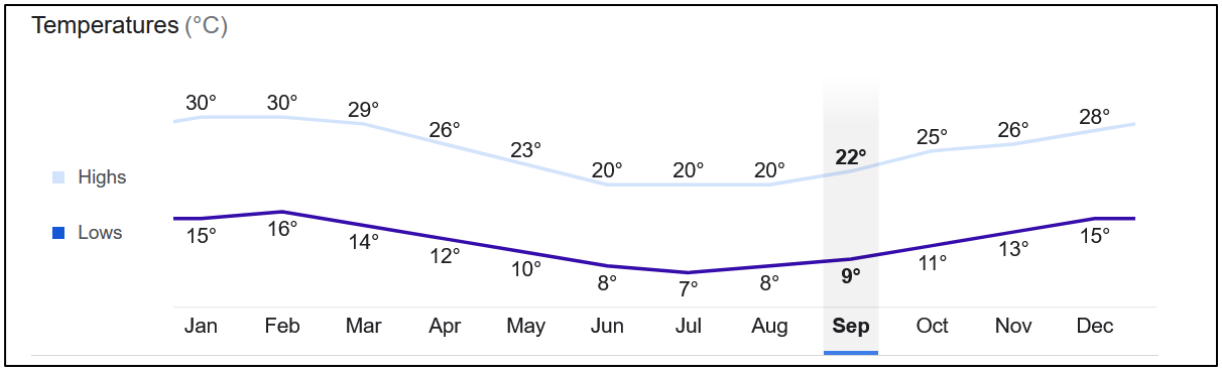

Figure 39: Average Monthly Temperatures for the Velddrif Area.

5.3 TOPOGRAPHY

According to the Visual Specialist, Mr Stephen Stead (Annexure E7), the terrain is predominantly flat and gently undulating.

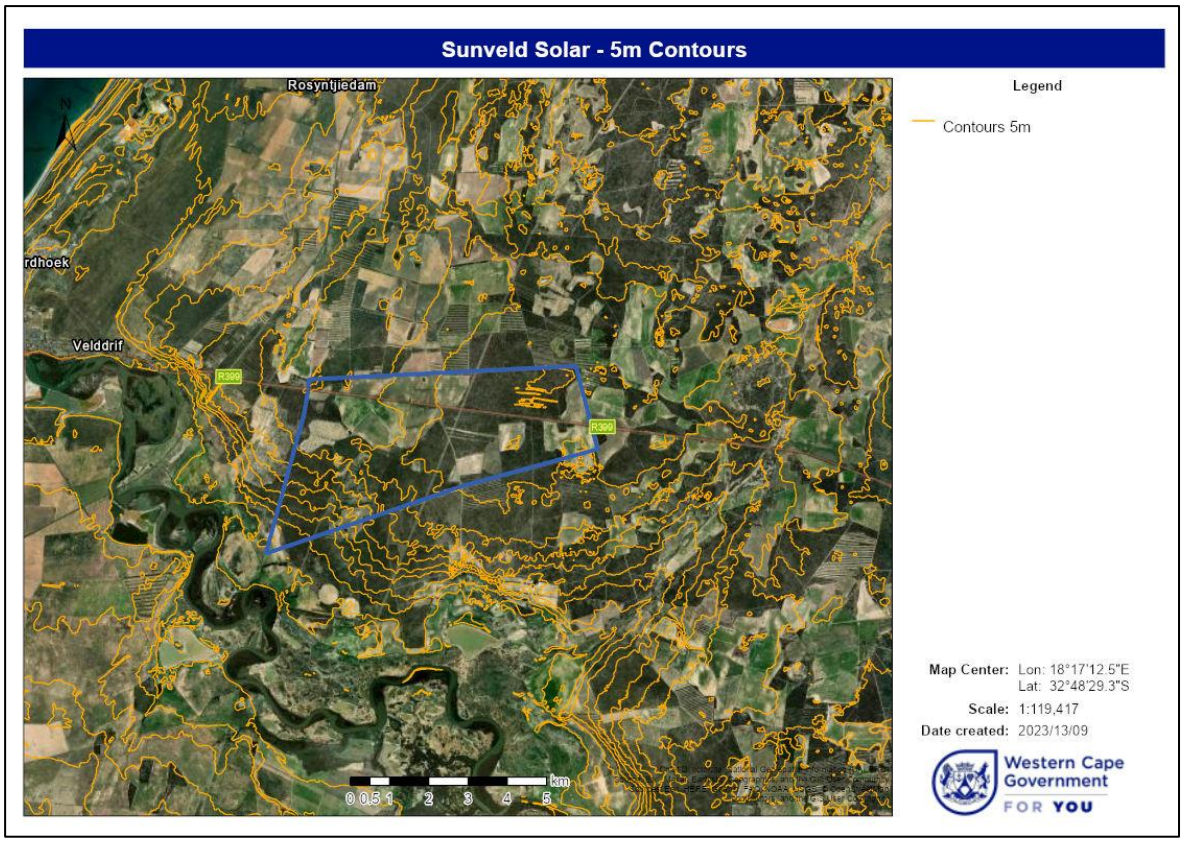

Figure 40: 5 Meter contour map of the Sunveld Solar PV site, showing the gently sloping Nature of the Study Site (Cape Farm Mapper, 2023)

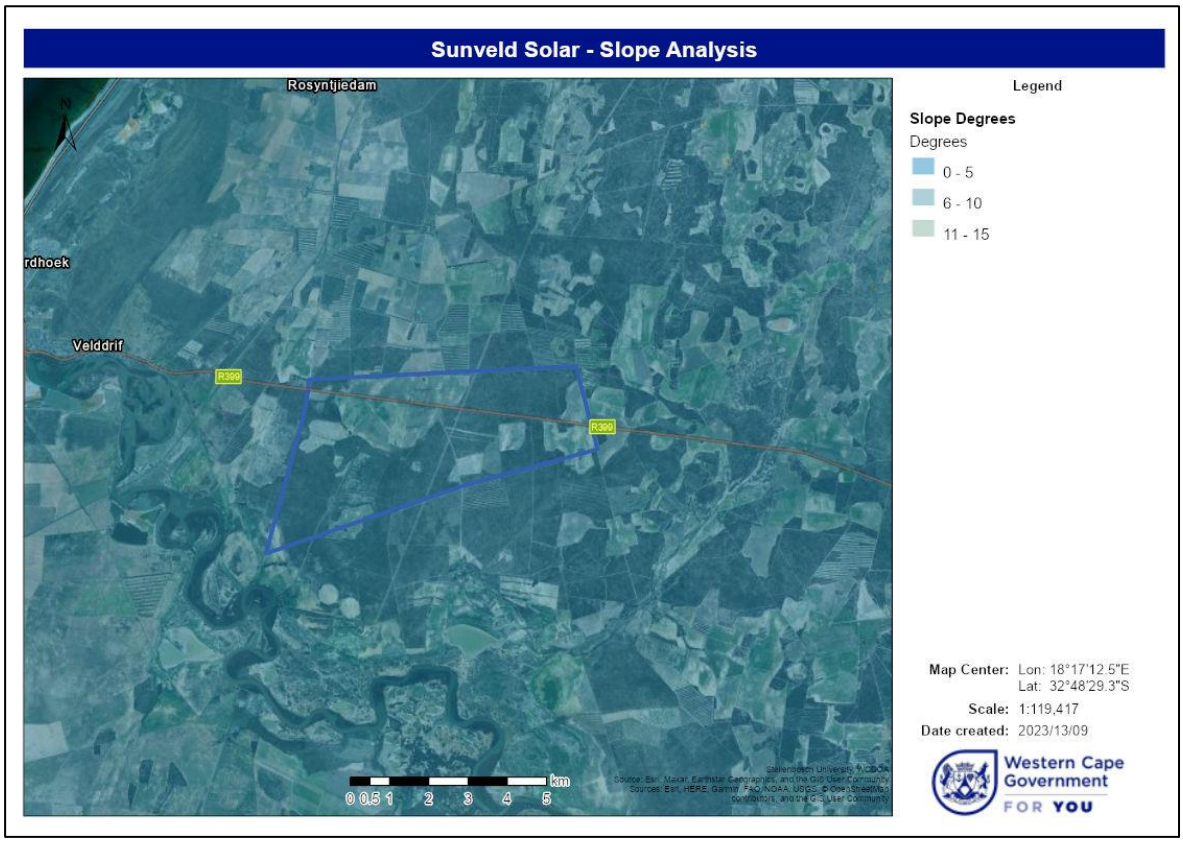

Figure 41: Slope Analysis of the Sunveld Solar PV facility showing the entire study site as having between a 1 and 5 degree slope (Cape Farm Mapper, 2023).

5.4 BOTANICAL COMPOSITION OF THE SITE

Biodiversity Africa 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 Saldanha Flats Strandveld.

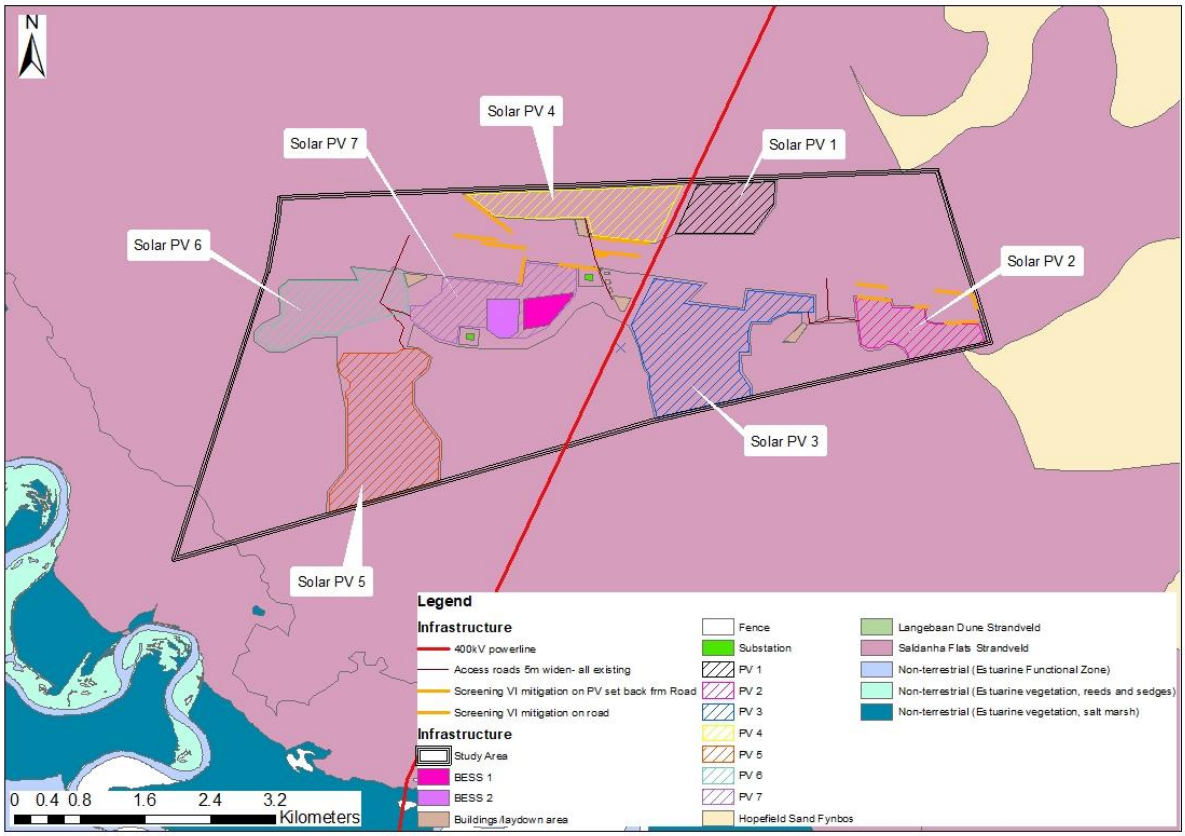

Figure 42: Broad Scale Vegetation Types Associated with Sunveld Solar PV showing that the entire study site falls within the Saldanha Flats Strandveld vegetation type (Biodiversity Africa, 2024).

Saldana Flats Strandveld is classified as Endangered (EN) (B1(i)) due to its narrow distribution and high rates of habitat loss in the past 28 years which has placed this ecosystem type at risk of collapse (DFFE, 2022). Only 36% (591.6 km2) of the historical extent remains and it is considered poorly protected. The conservation target for Saldanha Flats Strandveld is 24%.

5.4.2 Habitats & Plant Communities

The broad scale mapping was confirmed by the specialist in the field survey which identified patches of near-intact and degraded Saldanha Flats Strandveld present within the project area as well as Secondary Vegetation and Transformed area. Each of these are described in further detail below.

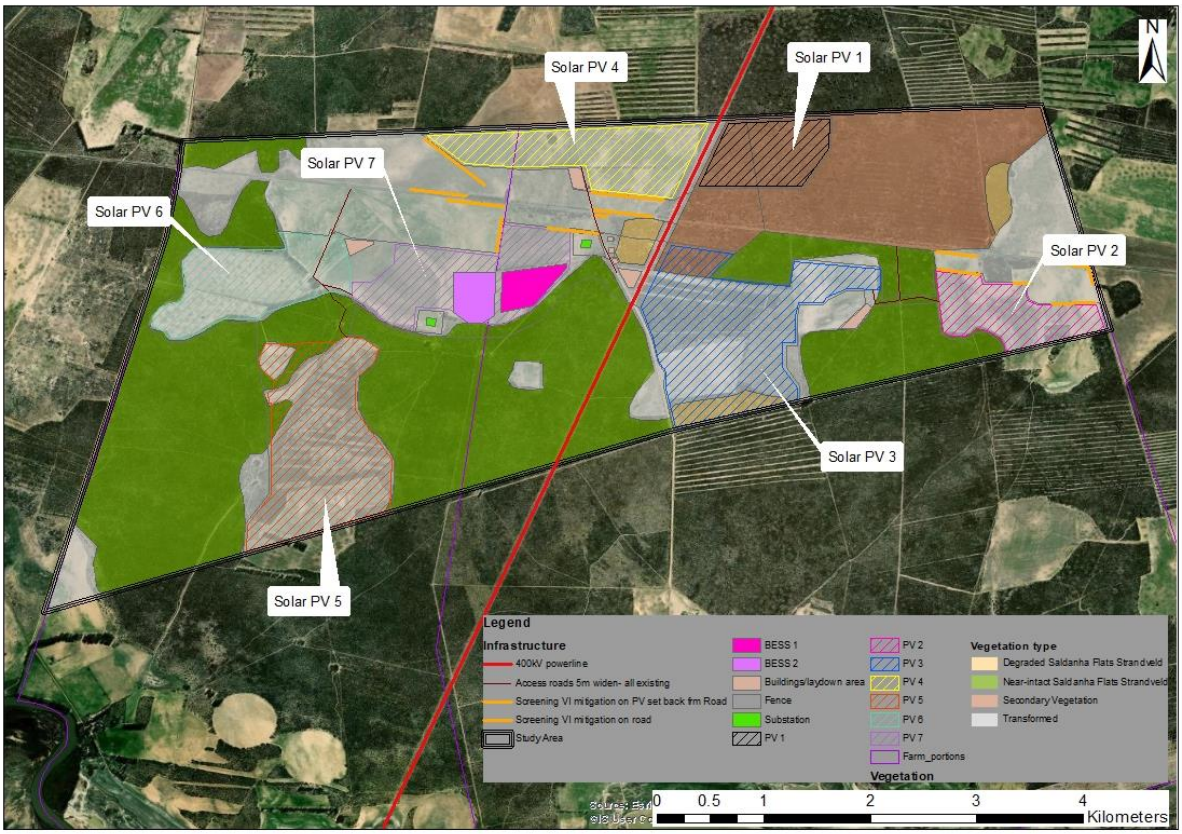

Table 15: Vegetation Map of the study site and the mitigated preferred layout (Layout Alternative 5) based on the field survey undertaken by the Terrestrial Biodiversity Specialist (Biodiversity Africa, 2024).

5.4.2.1 Saldanha Flats Strandveld (Degraded and Near-Intact)

Saldanha Flats Strandveld occurs on extensive coastal flats (altitudes of 0-120 m) from St Helena Bay and the southern banks of the Great Berg River near its mouth in the north, to Saldanha and Langebaan in the south, with the southernmost extension at the coast near Yzerfontein and Rietduin. This sclerophyllous shrubland is characterised by a sparse emergent and moderately tall shrub layer and an open succulent shrub layer forming the undergrowth. This vegetation type is known for its conspicuous displays of geophytes and herbaceous flora in spring (Rebelo et al., 2006).

Within the project area, shrubs such as Searsia glauca, Olea exasperate, Searsia laevigata, Searsia dissecta, Gymnosporia buxifolia and Euclea tomentosa formed bush clumps surrounded by smaller shrubs, herbs and restios such as Eriocephalus racemosus, Zygophyllum morgsana, Struthiola ciliata, Crassothonna cylindrica, Lycium amoena, Asparagus capensis, A. rubicundus, Salvia africana, Salvia lanceolata, Ruschia macowanii, Zygophyllum flexuosa, Gladiolus carinatus, Microloma sagittatum, Euphorbia mauritanica, a number of Oxalis, Babiana and Lachenalia species, as well as Thamnochortus sp. and Wildenowia incurvata.

The patches of degraded Saldanha Flats Strandveld had a lower species diversity than the near-intact patches.

5.4.2.2 Secondary Vegetation

Patches of Secondary Vegetation were present in the north eastern corner of the project area. This vegetation shows evidence of historical disturbance and was more heavily infested with alien invasive species such as *Acacia cyclops*. Species diversity was lower and comprised of species that were more resilient to disturbance such as annuals. However, a population of *Leucospermum rodolentum*, which is listed as a VU species, was recorded within this area.

5.4.2.3 Transformed Area

The Transformed areas are characterised by vegetation that has been cleared and the land has been ploughed and used for agricultural purposes. These areas are of low ecological significance but have been mapped as they are suitable for development from an ecological perspective.

5.4.3 Botanical Species of conservation concern.

According to the terrestrial biodiversity specialist, fifty-eight (58) species were recorded within the study site. Of these species, one was listed as Endangered (EN), two as Vulnerable (VU) and one as Near Threatened (NT).

These species were present within the near-intact vegetation except for a population of Leucospermum rodolentum (VU) which were found to occur within the secondary vegetation, north of the R399.

The specialist desktop assessment of the study site identified thirty-seven (37) threatened and near threatened species that could occur within the project area. Based on the results of the field survey, it was determined that of these thirty-seven (37) species, two (2) were confirmed to occur in the project area, ten (10) have a high likelihood of occurrence based on suitable available habitat being present, three (3) have a moderate likelihood of occurrence and twenty-four (24) have a low likelihood of occurrence.

Table 16: Assessment of the likelihood of occurrence of Species of Conservation Concern identified in literature as possibly occurring within the Study Site (Biodiversity Africa, 2024).

Species	Conservation Status	Likelihood of Occurrence
Sensitive species 878	EN B1ab(i,ii,iii,iv,v)	Confirmed This species was recorded within the project area
Leucospermum rodolentum	VU A2c	Confirmed This species was recorded within the project area
Sarcocornia freitagii	EN B1ab(ii,iii,iv,v)+ 2ab(ii,iii,iv,v)	High Suitable habitat was present.
Xiphotheca reflexa	EN A2bc; B1ab(i,ii,iii,iv,v)	High Suitable habitat was present.
Ferraria parva	EN C2a(i)	High Suitable habitat was present.
Leucadendron stellare	EN A2c	High Suitable habitat was present.
Argyrolobium velutinum	VU A2c	High Suitable habitat was present.
Caesia sabulosa	VU B1ab(ii,iii,iv,v)	High Suitable habitat was present.
Cotula duckittiae	VU B1ab(ii,iii)	High Suitable habitat was present.
Leucadendron foedum	VU A2c	High Suitable habitat is present.
Leucospermum hypophyllocarpodendron subsp. canaliculatum	VU A2c	High Suitable habitat is present.
Oncosiphon africanum	VU	High

Species	Conservation Status	Likelihood of Occurrence
	B1ab(ii,iii,iv,v)	Suitable habitat is present.
Leucadendron cinereum	VU A2c+3c+4c	Moderate Suitable habitat is present.
Protea scolymocephala	VU A2c	Moderate No suitable habitat present.
Sensitive species 222	VU	Moderate Although suitable habitat is present, given how few locations remain it is unlikely to be present within the project area.
Lampranthus coccineus	CR C2a(i)	Low No suitable habitat present.
Cleretum clavatum	EN B1ab(i,ii,iii,iv,v)	Low No suitable habitat present.
Erepsia brevipetala	EN B1ab(ii,iii,v)	Low No suitable habitat present.
Echiostachys spicatus	EN B1ab(ii,iii,iv,v)	Low No suitable habitat present.
Empodium veratrifolium	EN B1ab(ii,iii,iv,v)	Low No suitable habitat present.
Limonium depauperatum	EN B1ab(i,ii,iii,iv)	Low Suitable habitat not present within the project area.
Cotula eckloniana	VU B1ab(iii,v)+2ab(iii,v)	Low Suitable habitat is not present.
Drosanthemum hispifolium	VU B1ab(ii,iii,iv,v)	Low Suitable habitat is not present.
Ferraria densepunctulata	VU C2a(i)	Low Suitable habitat is not present.
Galenia crystallina var. maritima	VU B1ab(iii)	Low Suitable habitat is not present.
Geissorhiza lewisiae	VU B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v)	Low Suitable habitat is not present.
Helichrysum bachmannii	VU B1ab(iii,iv,v)+ 2ab(iii,iv,v)	Low Suitable habitat is not present.
Helichrysum dunense	VU B1ab(ii,iii,v)	Low Suitable habitat is not present.
Lachnaea capitata	VU A2ac	Low Suitable habitat is not present.
Lachnaea grandiflora	VU A2ac	Low Suitable habitat is not present.

Species	Conservation Status	Likelihood of Occurrence
Limonium acuminatum	VU A2c; B1ab(iii,iv,v)+ 2ab(iii,iv,v); C1	Low No suitable habitat present.
Manulea corymbosa	VU B1ab(ii,iii,iv,v)+ 2ab(ii,iii,iv,v)	Low No suitable habitat present..
Otholobium venustum	VU B1ab(ii,iii,v)+ 2ab(ii,iii,v)	Low No suitable habitat present.
Sensitive species 1225	VU A2c	Low Suitable habitat is not present.
Sensitive species 599	VU A2c	Low No suitable habitat present.
Sensitive species 816	CR B2ab(ii,iii,iv,v); C2a(i)	Low No suitable habitat present.
Sensitive species 244	VU B1ab(ii,iii,iv,v)	Low Suitable Habitat is not present.
Steirodiscus tagetes	VU B1ab(ii,iii,iv,v)	Low No suitable habitat present.
Wahlenbergia umbellata	VU D2	Low Project area does not occur in Lamberts Bay where the one known population occurs.

5.5 TERRESTRIAL FAUNAL COMPONENT OF THE SITE

Biodiversity Africa undertook a Animal Species Assessment which formed part of larger Terrestrial Ecosystems Impact Assessment (Appendix E1). In addition to this, Dr Jonothan Colville undertook an invertebrate species assessment of the site (Annexure E2).

According to the Terrestrial Biodiversity Specialist, the Western Cape is host to approximately 62 amphibian species, 155 reptile species and 172 mammal species. The study site is within or partly within the distribution range of approximately 12 amphibian species, 62 reptile species and 108 mammal species.

5.5.1 Faunal Species of conservation concern

According to the terrestrial biodiversity specialist, faunal species of conservation concern are those listed as threatened, near-threatened and/or are endemic or range restricted. The Western Cape hosts several terrestrial vertebrate species of conservation concern of which four have a distribution which includes the Study. This includes one amphibian species, one reptile species and two mammal species.

Table 17: Faunal Species of Conservation Concern that have a distribution which includes the study site (Biodiversity Africa, 2023)

Taxon	Common name	Species	Threat status	Likelihood of Occurrence	Importance of project area to SCC
Amphibian	Cape Caco	*Cacosternum capense*	NT	High	Medium
Reptile	Kasner's Dwarf Burrowing Skink	*Scelotes kasneri*	EN	High	Medium
Mammal	Grant's Golden Mole	*Eremitalpa granti*	VU	High	Medium
	African Clawless Otter	*Aonyx capensis*	NT	Low	Low

In addition to these species, the Screening tool for Sunveld Solar PV also identified the possible occurrence of an invertebrate species of conservation concern, namely *Pachysoma Aesculapius*. Dr Jonothan Colville was appointed to undertake an invertebrate study of the site to determine to potential presence of this species (Appendix E2).

According to the specialist, this species of flightless dung beetle is endemic to South Africa and restricted to low-altitude areas (>300m) of the south-western parts of the Western Cape Province.

A historical collection record from 1973 for P is known from the north-eastern part of the study site.

Historical collection records indicate that this species is associated with several types of Sand Fynbos (Leipoldtville Sand Fynbos, Atlantis Sand Fynbos, and Hopefield Sand Fynbos). It has a limited range, extending from Cape Town northwards to the mouth of the Olifants River

The specialist has made certain recommendations regarding the layout to ensure the persistence of this species, which have been considered in the development of Layout Alternative 5 (Mitigated Preferred Alternative)

5.6 AQUATIC COMPOSITION OF THE STUDY SITE

Ms Toni Belcher of Blue Science undertook an Aquatic Ecosystems Assessment of the proposed project site. Please refer to the Aquatic Ecosystems Site Sensitivity Verification report attached in **Annexure E4** from which the following has been drawn.

The specialist confirmed that the study site is located within an area that is mostly considered of Low Aquatic Biodiversity Combined Sensitivity as it does not lie within a Freshwater Ecosystem Priority Area) River Sub catchment or has any Aquatic Critical Biodiversity Areas mapped. The site is also not located within Strategic Water Source

The aquatic features occurring within the site comprise some disturbed depression wetlands within cultivated areas on the site and the floodplain of the Berg River Estuary in the south-western corner of the site.

The depression wetlands as well as the floodplain wetland are in largely to seriously modified ecological condition within the site as they are all in cultivated areas.

Figure 43: Photographic Examples of the Depression wetlands present in the study site (Belcher, 2023)

Figure 44: Mapped aquatic features and suggested buffers within the study site (Belcher, 2023).

The mitigated preferred layout alternative (layout alternative 5) was developed to completely avoid these aquatic features and their buffers.

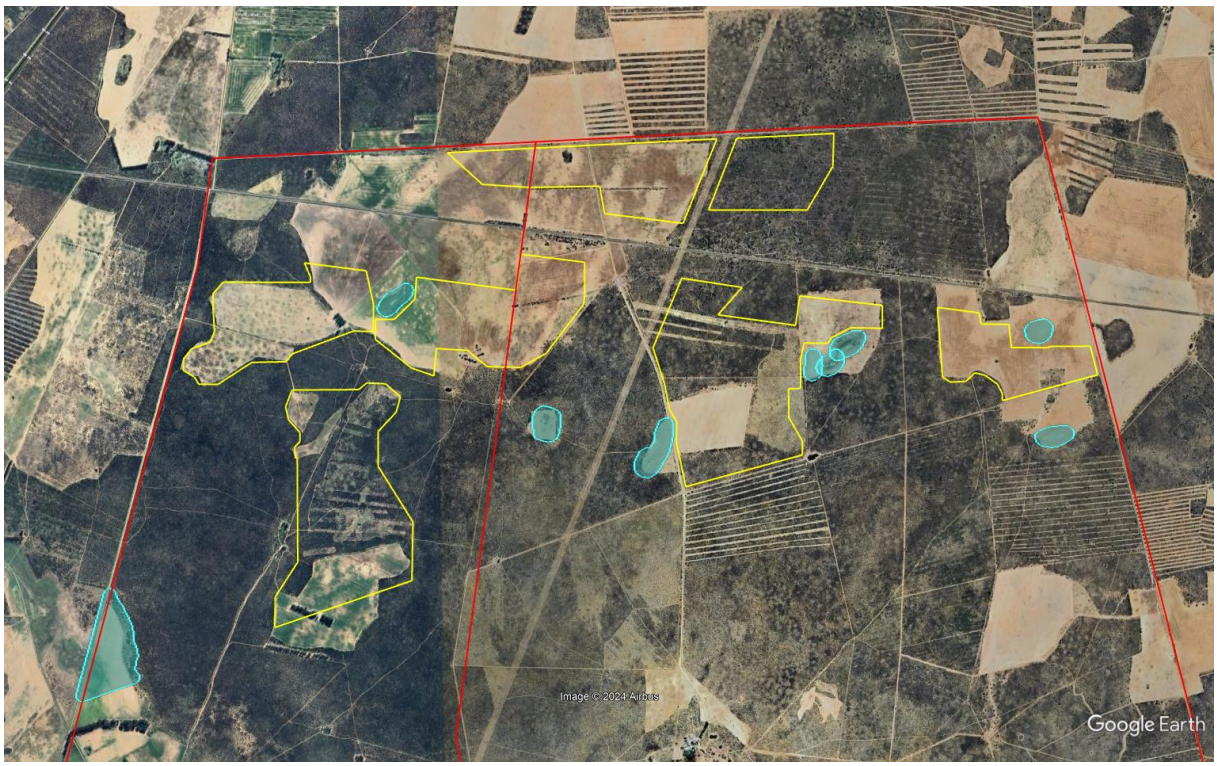

Figure 45: Showing how the aquatic features and their associated buffers have been avoided by the mitigated preferred alternative (Layout Alternative 5).

5.7 AVIFAUNAL COMPOSITION OF THE SITE

An Avifaunal specialist, Mr Albert Froneman of Afri Avian Consulting, was appointed to undertake a site sensitivity verification and an Avifaunal Impact Assessment of the proposed Sunveld Solar PV facility, this study also included the compilation of a Black Harrier suitability model by Mr Robin Colyn. Please refer to Appendix E3 of the final scoping report for a copy of the Avifauna Site Sensitivity Verification Report and Appendix E3 of the Environmental Impact report for a copy of the Avifaunal Impact Assessment.

The first phase of the avifaunal site monitoring took place on 26 June 2023, with the second monitoring session taking place on 07 September 2023.

The specialist confirmed that during the site assessments, distribution and abundance of the bird species in and near the Project Site is mostly associated with natural vegetation. There are however some species that were associated with the modified environments, as follows:

- High Voltage Power Lines: The 400kV Aurora Juno 1 power line traverses the Project Site. Power lines could provide roosting and nesting habitat for priority species, especially raptors.
- Alien Trees: The Project Site contains clumps of alien trees. The trees could attract a variety of bird species for nesting and roosting.
- Agriculture: The Project Site contains agricultural fields, mainly canola, wheat, grains, and planted pastures. Some priority species are likely to be associated with the cultivated fields, especially to forage (e.g., raptors and small birds). The Cape Weaver, Large-billed Lark, Blue Crane, and Barn Swallow are some of the priority species that could utilise these areas.

The specialist confirmed that the SABAP2 data indicated that a total of 259 bird species could potentially occur within the Broader Area where the Project Site is located. Of these, 135 species are classified as priority species for solar developments and 20 of these are South African Red Listed species (i.e., Species of Conservation Concern – SCC).

Of the 135 priority species, 85 are likely to occur regularly in or near the Project Site.

Table 18: Avifaunal Species that could potentially occur on or in the vicinity of the study site (Froneman, 2023)

Avifaunal Species – SABAP 2		
Acacia Pied Barbet	Large-billed Lark	Sickle-winged Chat
African Black Duck	Lark-like Bunting	South African Shelduck
African Black Swift	Laughing Dove	Southern Black Korhaan
African Darter	Layard's Warbler	Southern Boubou
African Dusky Flycatcher	Lesser Flamingo	Southern Double-collared Sunbird
African Fish Eagle	Lesser Honeyguide	Southern Fiscal
African Harrier-Hawk	Lesser Kestrel	Southern Grey-headed Sparrow
African Hoopoe	Lesser Sand Plover	Southern Masked Weaver
African Marsh Harrier	Lesser Swamp Warbler	Southern Pochard
African Openbill	Levaillant's Cisticola	Southern Red Bishop
African Oystercatcher	Little Bittern	Speckled Mousebird
African Palm Swift	Little Egret	Speckled Pigeon
African Paradise Flycatcher	Little Grebe	Spotted Eagle-Owl
African Pied Wagtail	Little Rush Warbler	Spotted Flycatcher
African Pipit	Little Stint	Spotted Thick-knee
African Rail	Little Swift	Spur-winged Goose
African Red-eyed Bulbul	Little Tern	Streaky-headed Seedeater
African Reed Warbler	Long-billed Crombec	Terek Sandpiper

Avifaunal Species – SABAP 2		
African Sacred Ibis	Ludwig's Bustard	Three-banded Plover
African Snipe	Maccoa Duck	Verreaux's Eagle
African Spoonbill	Malachite Kingfisher	Water Thick-knee
African Stonechat	Malachite Sunbird	Wattled Starling
African Swamphen	Mallard	Western Barn Owl
Alpine Swift	Marsh Sandpiper	Western Cattle Egret
American Golden Plover	Martial Eagle	Western Osprey
Ant-eating Chat	Mountain Wheatear	Whiskered Tern
Arctic Tern	Namaqua Dove	White Stork
Banded Martin	Namaqua Sandgrouse	White-backed Duck
Bank Cormorant	Neddicky	White-backed Mousebird
Barn Swallow	Olive Thrush	White-breasted Cormorant
Bar-tailed Godwit	Pale Chanting Goshawk	White-faced Whistling Duck
Bar-throated Apalis	Pearl-breasted Swallow	White-fronted Plover
Black Crake	Peregrine Falcon	White-necked Raven
Black Harrier	Pied Avocet	White-rumped Sandpiper
Black Sparrowhawk	Pied Crow	White-rumped Swift
Black Stork	Pied Kingfisher	White-throated Canary
Black-chested Snake Eagle	Pied Starling	White-throated Swallow
Black-crowned Night Heron	Pink-backed Pelican	White-winged Tern
Black-headed Canary	Pin-tailed Whydah	Wilson's Phalarope
Black-headed Gull	Plain-backed Pipit	Wood Sandpiper
Black-headed Heron	Purple Heron	Yellow Bishop
Black-necked Grebe	Quailfinch	Yellow Canary
Blacksmith Lapwing	Red Knot	Yellow-billed Duck
Black-winged Kite	Red-backed Shrike	Yellow-billed Kite
Black-winged Stilt	Red-billed Quelea	Yellow-billed Stork
Blue Crane	Red-billed Teal	Zitting Cisticola
Blue-billed Teal	Red-capped Lark	Greater Striped Swallow
Bokmakierie	Red-eyed Dove	Grey Heron
Booted Eagle	Red-faced Mousebird	Grey Plover
Brimstone Canary	Red-knobbed Coot	Grey Tit
Brown-throated Martin	Red-necked Phalarope	Grey-backed Cisticola
Burchell's Coucal	Red-winged Starling	Grey-backed Sparrow-Lark
Cape Batis	Reed Cormorant	Grey-headed Gull
Cape Bulbul	Rock Dove	Grey-winged Francolin
Cape Bunting	Rock Kestrel	Groundscraper Thrush
Cape Canary	Rock Martin	Gull-billed Tern
Cape Clapper Lark	Rosy-faced Lovebird	Hadada Ibis
Cape Cormorant	Ruddy Turnstone	Hamerkop
Cape Gannet	Ruff	Hartlaub's Gull
Cape Grassbird	Sand Martin	Helmeted Guineafowl
Cape Long-billed Lark	Sanderling	House Sparrow
Cape Longclaw	Sandwich Tern	Hybrid Duck
Cape Penduline Tit	Secretarybird	Hybrid Mallard

Avifaunal Species – SABAP 2		
Cape Robin-Chat	European Bee-eater	Indian Peafowl
Cape Shoveler	European Roller	Intermediate Egret
Cape Sparrow	Familiar Chat	Jackal Buzzard
Cape Spurfowl	Fiery-necked Nightjar	Karoo Chat
Cape Teal	Fiscal Flycatcher	Karoo Lark
Cape Turtle Dove	Fork-tailed Drongo	Karoo Prinia
Cape Wagtail	Giant Kingfisher	Karoo Scrub Robin
Cape Weaver	Glossy Ibis	Karoo Thrush
Cape White-eye	Goliath Heron	Kelp Gull
Capped Wheatear	Great Crested Grebe	Kittlitz's Plover
Cardinal Woodpecker	Great Egret	Klaas's Cuckoo
Caspian Plover	Great White Pelican	Lanner Falcon
Caspian Tern	Greater Crested Tern	Common Moorhen
Chat Flycatcher	Greater Flamingo	Common Ostrich
Chestnut-banded Plover	Greater Kestrel	Common Quail
Chestnut-vented Warbler	Greater Sand Plover	Common Redshank
Cloud Cisticola	Dusky Sunbird	Common Ringed Plover
Common Buzzard	Egyptian Goose	Common Sandpiper
Common Greenshank	Eurasian Curlew	Common Shelduck
Common House Martin	Eurasian Whimbrel	Common Starling
Diederik Cuckoo	Crowned Cormorant	Common Swift
Domestic Duck	Crowned Lapwing	Common Tern
Domestic Goose	Curlew Sandpiper	Common Waxbill
Damara Canary		

5.8 SOCIAL CONTEXT

This section has been prepared with input from the Social Specialist, Mr Tony Barbour and provides an overview of the spatial context of the Province, District Municipality, and Local Municipality within which Sunveld Solar PV is proposed.

5.8.1 Administrative context

The proposed SEF is located within the Berg River Local Municipality, which is one of five Local Municipalities that make up the West Coast District Municipality, a Category-C municipality, within the Western Cape Province.

The Berg River Local Municipality is bordered in the west by the Atlantic Ocean, in the east by the Swartland Local Municipality, the Matzikama Local Municipality to the north and the Saldhanha Bay Local Municipality to the south.

The municipal area covers an area of approximately 4407.04 km² and contains nine settlements of which three can be classified as towns, namely Piketberg, Porterville and Velddrif .

Piketberg serves as the administrative centre of the Bergrivier Municipality. These towns are between 100 and 140 kilometres respectively from Cape Town, with Velddrif situated on the coast and in close proximity to Saldanha Bay and the proposed Industrial Development Zone.

The four other towns that reflect more or less similar population size albeit different functions are Dwarskersbos, Redelinghuys, Aurora and Eendekuil. The two remaining settlements namely Wittewater

and Goedverwacht are Moravian settlements and administered by the Moravian Church, as is Genadenberg.

5.8.2 Demographic overview

The population of the West Coast District Municipality increased by from 282 672 in 2001 to 391 766 in 2011, which represents a significant increase of ~ 38.5%. The population of the Berg River Local Municipality increased from 43 538 in 2001 to 61 897 in 2011, and increase of 33.0 % over the same period. The increase in the population is linked to an increase in the economically active 15-64 year and the 65 year and older age group.

The increase in the economically active 15-65 age group in also reflected in the decrease in the dependency ratios in both the district and local municipalities. It also reflects an influx of job-seekers to the area. The increase in the 65 year and older ager group is linked the areas reputation as a retirement destination.

As expected, the number of households in both the district and local municipalities increased between 2001 and 2011.

Table 19: Overview of key demographic indicators for the West Coast District Municipality and Brede River Local Municipality (Stats SA)

	WCDM		BRLM	
ASPECT	**2001**	**2011**	**2001**	**2011**
Population	282 672	391 766	46 538	61 897
% Population <15 years	28.7	25.5	26.7	24.9
% Population 15-64	66.1	68.5	67.2	68.1
% Population 65+	5.2	6.0	6.1	7.0
Households	73 449	106 781	11 766	16 275
Household size (average)	3.5	3.4	3.3	3.5
Formal Dwellings %	90.5 %	87.9 %	93.5 %	93.4 %
Dependency ratio per 100 (15-64)	51.4	45.9	48.8	46.9
Unemployment rate (official) - % of economically active population	13.8 %	14.6 %	7.6 %	6.8 %
Youth unemployment rate (official) - % of economically active population 15-34	18.1 %	19.9 %	10.0 %	9.6 %
No schooling - % of population 20+	9.5 %	5.4 %	10.4 %	6.4 %
Higher Education - % of population20+	7.0 %	8.1 %	6.7 %	7.7 %
Matric - % of population 20+	19.1 %	23.7 %	19.4 %	22.3 %

5.8.3 Employment

The official unemployment rate in the district increased for the ten year period between 2001 and 2011 from 13.8 % to 14.6 %. This is likely to be due to influx of job seekers to the district and the inability to find employment. In addition, job losses are likely to be associated with the decline in the role of the fishing sector and the subsequent loss of employment opportunities in this sector.

5.8.4 Household income

Based on the data from the 2011 Census, 9.3 % of the population of the local municipality have no formal income, 1.4% earn between 1 and R 4 800, 1.9% earn between R 4 801 and R 9 600 per annum, 13.5% between R 9 601 and 19 600 per annum and 22.3% between R 19 600 and R 38 200 per annum (Census 2011). The poverty gap indicator produced by the World Bank Development Research Group measures poverty using information from household per capita income/consumption. This indicator

illustrates the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty, which is based on living on less than R3 200 per month for an average sized household. Based on this measure 48.4% of the local municipalities population live below the poverty line.

5.8.5 Education

The education levels in both the district and the local municipality improved between 2001 and 2011, with the percentage of the population over 20 years of age with no schooling in the district decreasing from 9.5 1% to 5.4 %.

5.9 ECONOMIC CONTEXT

The following economic context is however provided as part of this scoping exercise.

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 Sunveld 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 Sunveld Solar PV (See Appendix E7 of the Final Scoping report), followed by a Visual and Landscape Impact Assessment[40] (See Appendix E7 of this Environmental Impact Report) The following visual context was determined from these studies. .

The DFFE Screening tool indicated Very High Landscape Sensitivity to High Ridgelines and Mountains. The specialist found that this risk is limited as, although the site has some regional elevation, there are no high ridgelines are mountain features on the site.

Other risks identified during the site survey were the importance of tourism view corridors associated with the R399 as well as the gravel access road to the Berg River.

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 Low Positive. While there is clear support for renewable energy sources and the promotion as part of a planning effort to enhance the electricity capacity in the West Coast District, alternative energy facilities such as solar and wind farms are also listed as a risk to have spatial implications relating to visual impacts, environmental impacts, etc, given the importance of tourism for the area where there is a strong planning requirements to “promote and enhance the Berg Rivier Municipality as a unique destination for discerning travellers with unrivalled eco-tourism and authentic cultural heritage tourism opportunities”.

Given that planning is highlighting the risk to land use change through human intervention, there planned need to address future challenges compromising local landscape and scenic resources through appropriate land use.

As the property is large and, in some areas, visually degraded by alien vegetation, there is also a clear need to ensure that visual resources along the R399 road tourist corridor, and the Berg River are not compromised.

5.10.2 Zone of visual influence

The visible extent, or viewshed, is “the outer boundary defining a view catchment area, usually along crests and ridgelines” (Oberholzer, 2005). In order to define the extent of the possible influence of the proposed project, a viewshed analysis was undertaken from the proposed site at a specified height above ground level. There is some regional elevation to the where the viewshed is likely to extend beyond the Foreground/ Mid Ground areas. The specialist recommended that the PV structures are limited to approximately 3m and this has been incorporated into the current Design.

5.10.3 Receptors and key observation points

The main Key Observation Points for the site were identified by the visual specialist as:

- The R399 road that is the main access road to the tourist related coastal town of Velddrif.
- Berg River and Berg River gravel access road.

5.10.4 Scenic quality

The scenic quality of the proposed development site was rated by the specialist as Medium to High. This is due to the interplay of the natural and agrarian cultivated areas, as well as the Berg River located within the project zone of visual influence. The terrain is predominately flat and gently undulating, but

[40] A Level 3 Landscape and Visual Impact Assessment has been undertaken.

the backdrop of the mountains to the east and the close proximity to the Berg River valley do add value to the site scenic resources.

5.10.5 Receptor sensitivity to landscape change

The receptor sensitivity to landscape changes was rated by the specialist as High. This is due to the area being important for tourism, and the R399 road to Velddrif which is considered a tourist view corridor, with the Berg River also an important tourist destination.

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 ground-truthed, 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)[41].

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.

It must be noted that the properties affected by proposed Sunveld Solar PV were the subject of two previous environmental impact assessment process, each of which culminated in the environmental authorisation for a development similar to what is currently being proposed. These previous studies were consulted and taken into account by the specialists as part of this Environmental Assessment process.

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

Table 20: 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) was compiled by the EAP and the Specialists. Please refer to the Specialist SSVr's that were attached in appendices E1 to E7 of the Draft and Final Scoping Reports.
A preliminary on-site inspection must be undertaken	A site Inspection was undertaken by the EAP in June 2023 and again in January 2024. All specialists have undertaken site inspections between June and September 2023. Please refer to the Specialist SSVR's attached in Appendix E1-E7 of the Draft and Final Scoping Reports 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 DEA&DP GIS Viewer, CapeFarm Mapper spatial layers, and Google Earth. All

[41] The site sensitivity verification report was submitted along with both the Draft and Final Scoping Reports.

	relevant spatial biodiversity layers were consulted, including: - Western Cape Biodiversity Sector plan. - National Freshwater Ecosystems Priority areas. - National Spatial Biodiversity Assessment. - National Protected Areas Expansion Strategy.

5.11.1 General Site Information

The General site information for the proposed Sunveld Solar PV is discussed in detain in sections 5.1 – 5.7 of this report.

5.11.2 Screening Tool Results

According to the Screening Tool Report that was run on **12 May 2023**, the following summary of the Study Site environmental sensitivities were identified in the screening tool.

Table 21: 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 areas present on the site.

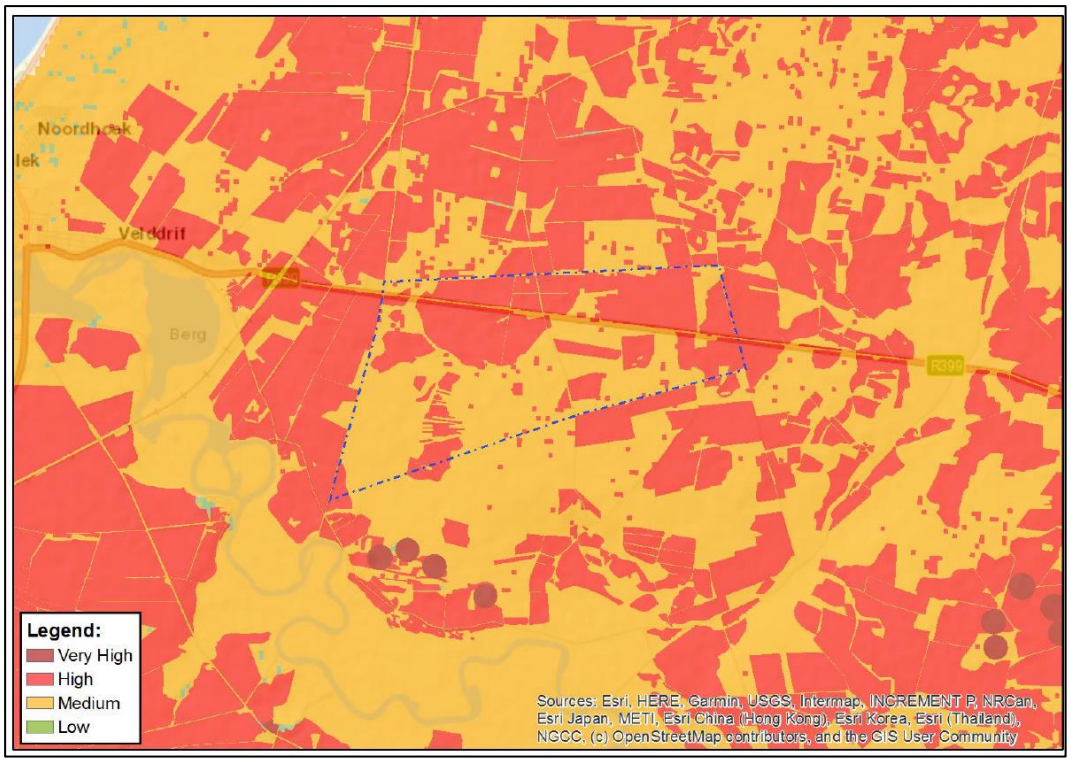

Figure 46: Image from Screening Tool identifying agricultural theme sensitivity for the Study Site.

The agricultural Specialist has refuted this and confirmed the entire site to be of medium sensitivity. Please refer to Appendix E6 of the Draft and Final Scoping Reports for a copy of the Agriculture SSVr

5.11.2.2 Animal Species

The Screening Tool identifies the Animal Species sensitivity theme as “High”, with high and medium sensitivity areas present on the site.

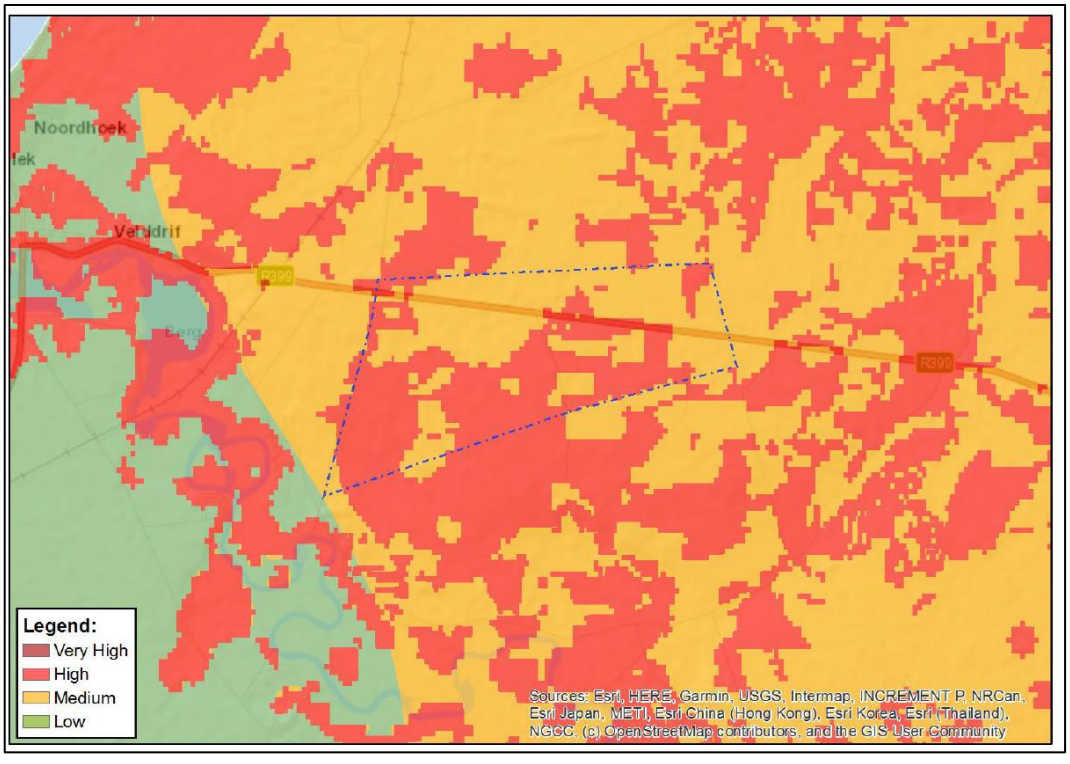

Figure 47: Image from Screening Tool identifying Animal Species theme sensitivity for the Study Site.

The Terrestrial Biodiversity Specialist (Appendix E1) has identified Very High, High, Medium and low sensitivities for different portions of the site.

The Invertebrate specialist has identified Medium to high and Medium sensitivities for different portions of the site. The Avifaunal Specialist has confirmed the high sensitivity for Avifaunal Species and has mapped the specific sensitive habitat in this regard.

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.

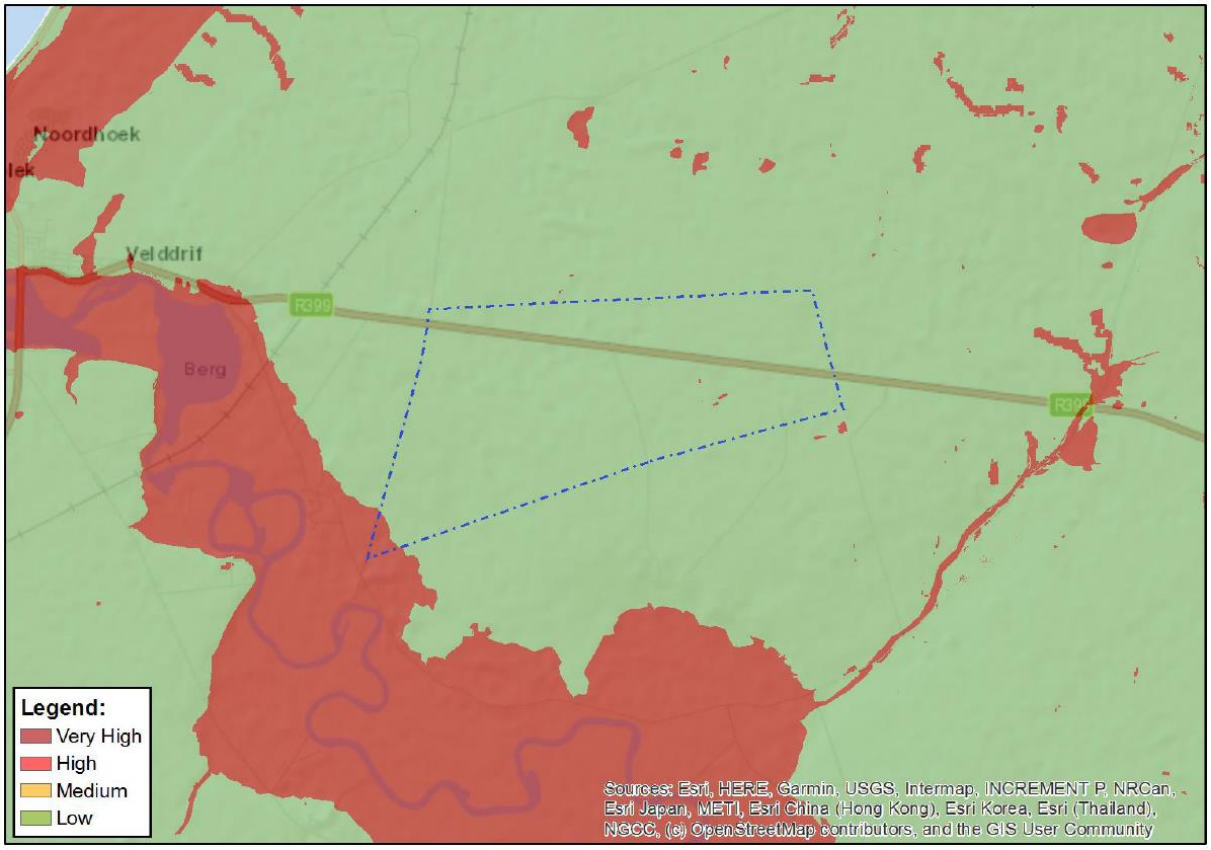

Figure 48: Image from Screening Tool identifying Aquatic Biodiversity theme sensitivity for the Study Site.

The Aquatic Biodiversity specialist (Appendix E4) has confirmed the Low sensitivity for the majority of the site and has refuted the Very High Sensitivity of Seasonal Pans and Categorised these as medium sensitivity (Notwithstanding this, these seasonal pans along with required buffers have been avoided by the mitigated preferred layout – Layout Alternative 5)

5.11.2.4 Archaeology and Cultural Heritage

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

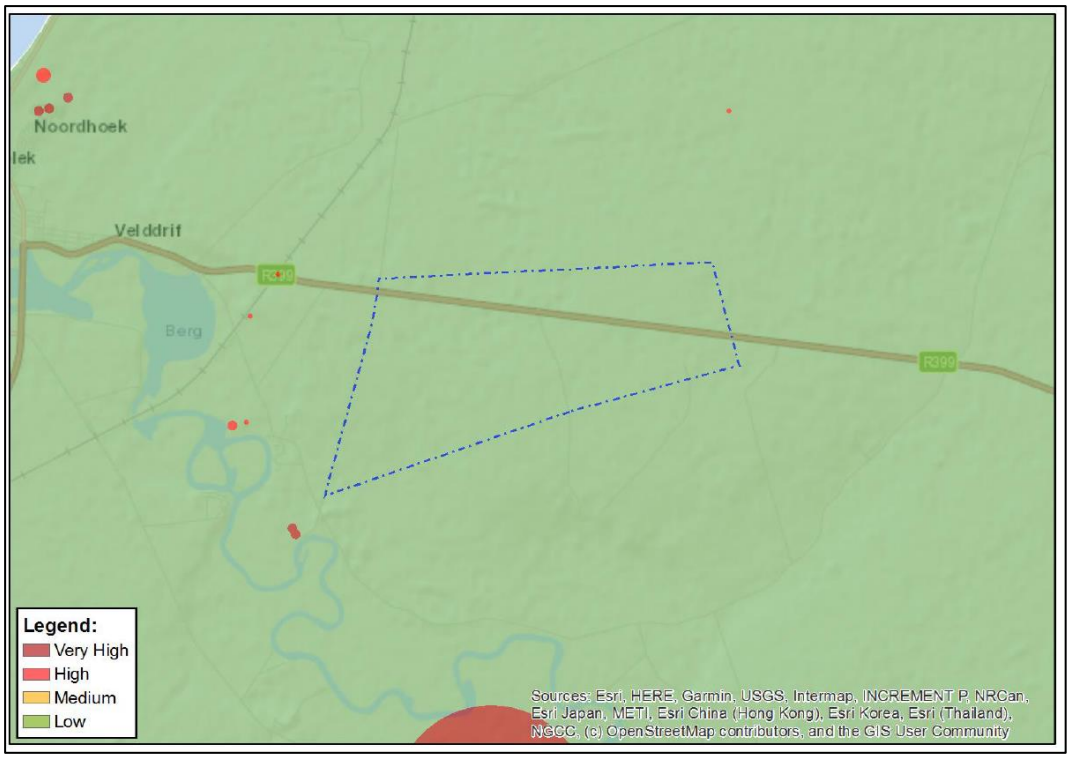

Figure 49: Image from Screening Tool identifying Archaeology and Cultural Heritage theme sensitivity for the Study Site.

The Heritage Specialist (Annexure E5) has confirmed the low sensitivity identified in the screening tool.

5.11.2.5 Avifauna

The Screening Tool identifies the Avifauna sensitivity theme as “Low”.

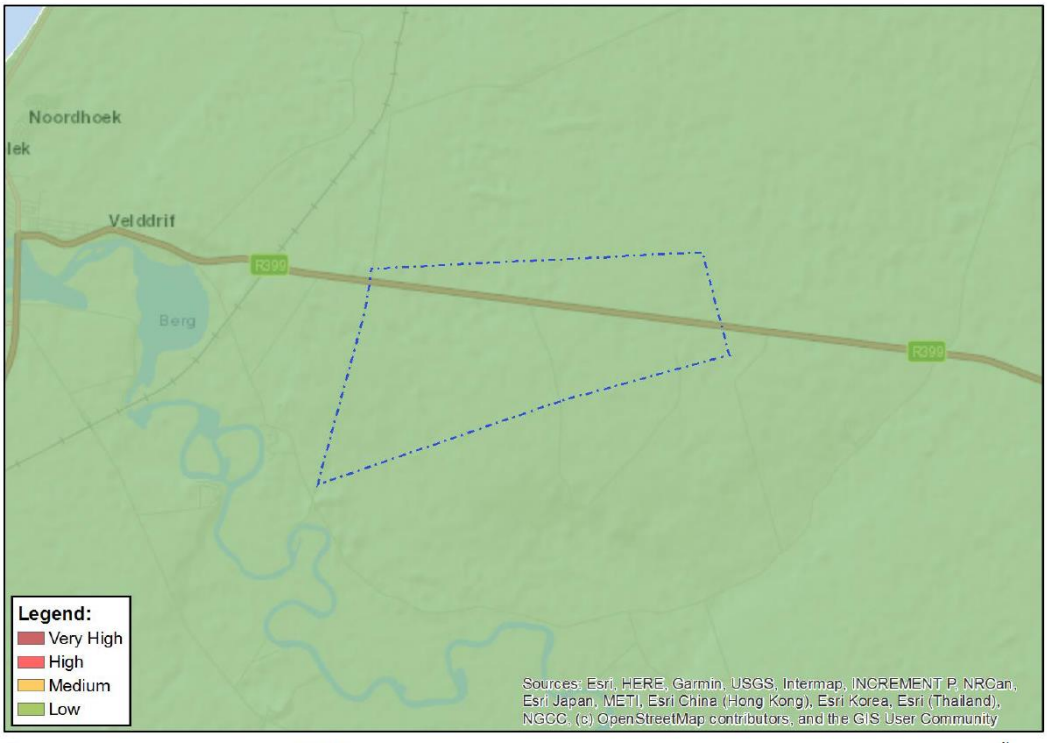

Figure 50: Image from Screening Tool identifying Avifauna theme sensitivity for the Study Site.

The Avifauna Specialist has refuted the Low sensitivity identified in the screening tool and has categorised portions of the study site as high, do to the presence of habitat for Species of Conservation concern.

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.

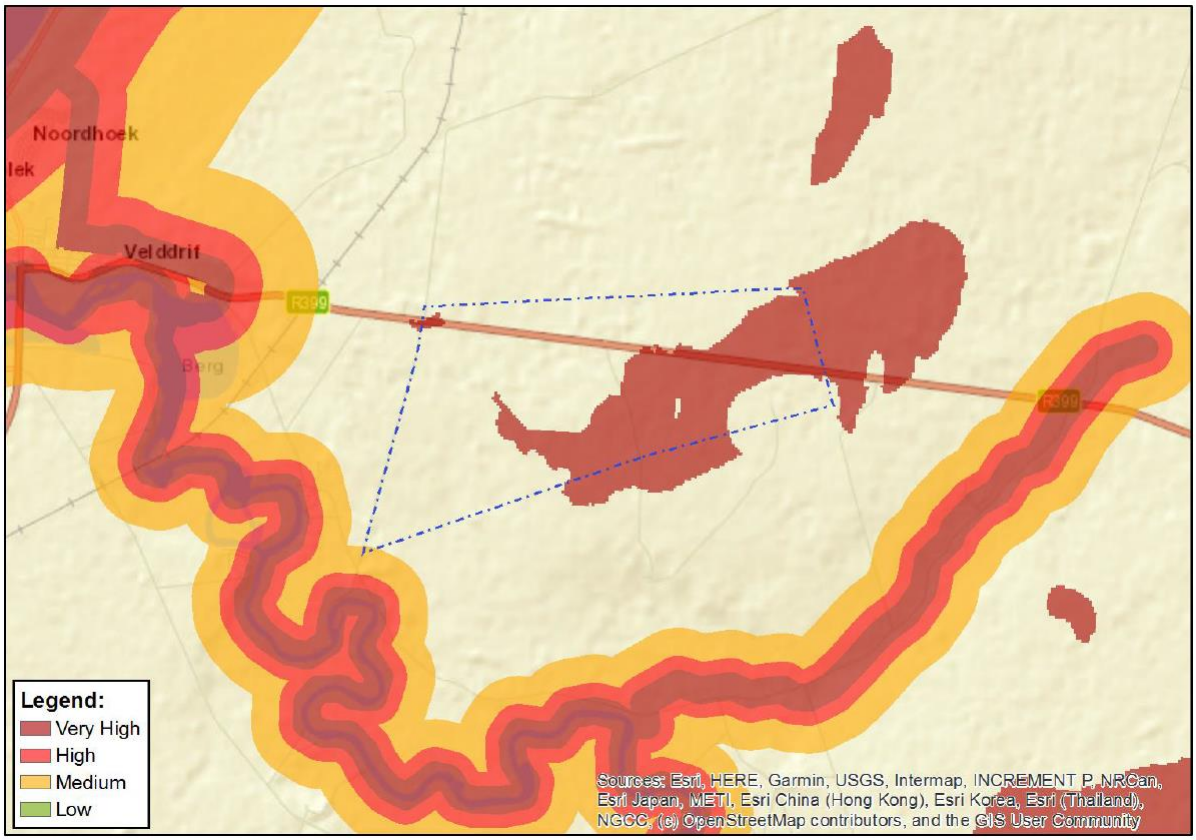

Figure 51: Image from Screening Tool identifying Visual and Landscape theme sensitivity for the Study Site.

The visual specialist (appendix E7) refuted the very high sensitivity in the Screening Tool in that the mapped area does not form does not form a prominent ridgeline or mountain top.

The specialist categorised the site as ranging from low – high.

5.11.2.7 Palaeontology

The Screening Tool identifies the Palaeontology sensitivity theme as “Low”.

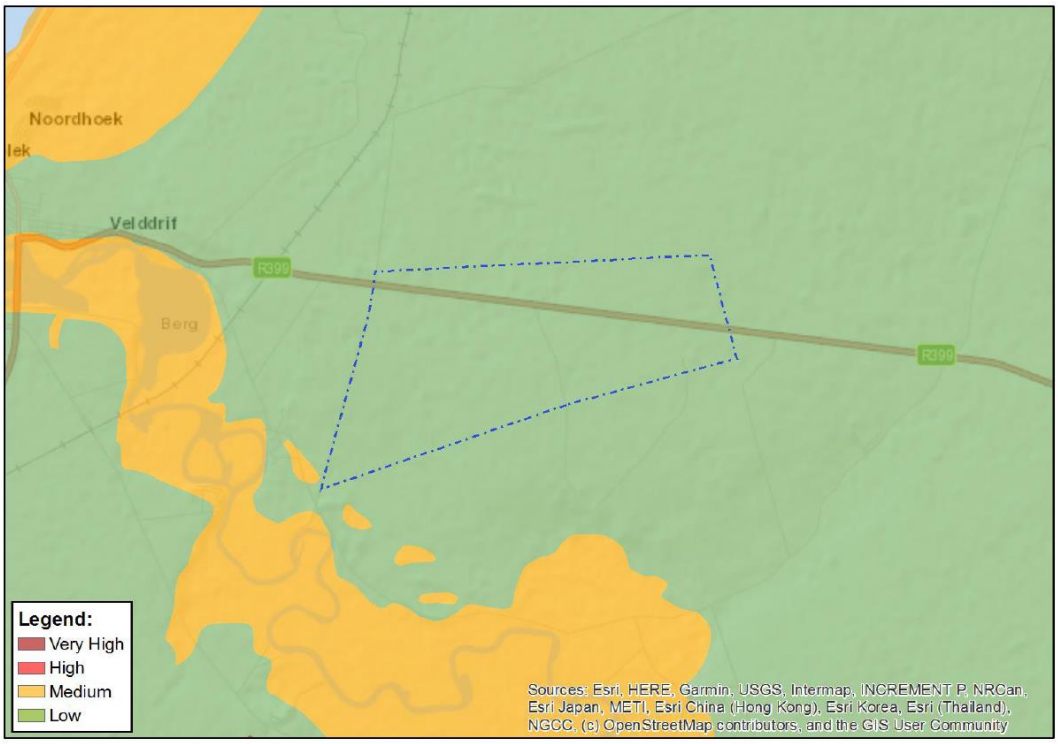

Figure 52: Image from Screening Tool identifying Palaeontology theme sensitivity for the Study Site.

The Heritage Specialist (Appendix E5) confirmed the low sensitivity in the screening tool. A palaeontology assessment undertaken by Dr Graham Avery forms part of the Heritage Impact Assessment.

5.11.2.8 Plant Species

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

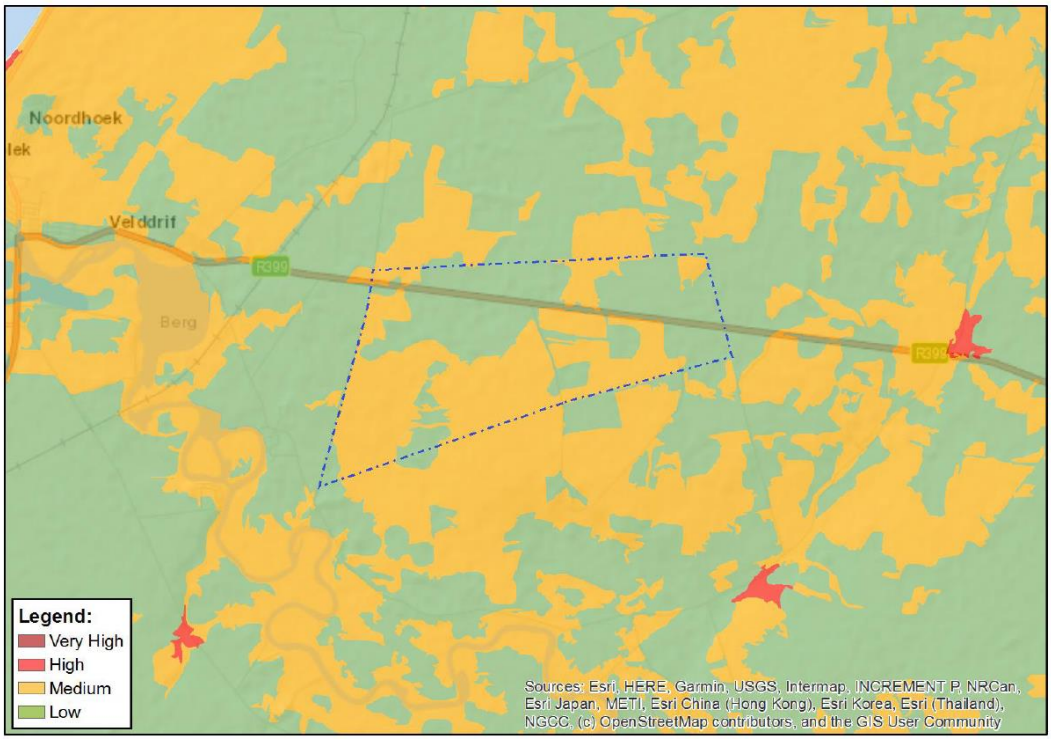

Figure 53: Image from Screening Tool identifying Plant Species theme sensitivity for the Study Site.

The Terrestrial Biodiversity Specialist (Appendix E1) has identified Very High, High, Medium and low sensitivities for different portions of the site.

5.11.2.9 Terrestrial Biodiversity

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

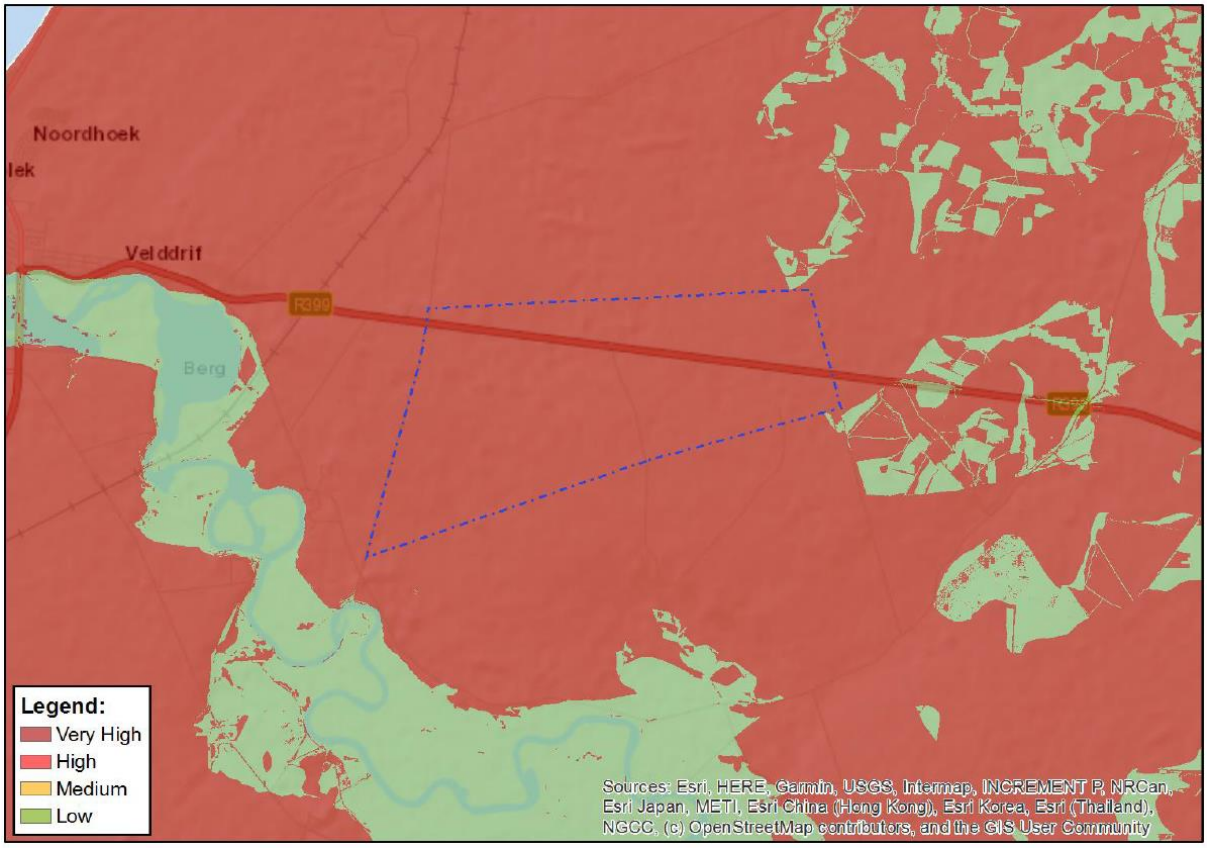

Figure 54: Image from Screening Tool identifying Terrestrial Biodiversity theme sensitivity for the Study Site.

The Terrestrial Biodiversity Specialist (Appendix E1) very high sensitivity of the entire site and has identified Very High, High, Medium and low sensitivities for different portions of the site.

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 of the Final Scoping Report, the following specialist assessments were undertaken:

1. Freshwater Biodiversity Compliance Statement
2. Terrestrial Biodiversity Impact Assessment
3. Plant Species Impact Assessment
4. Animal Species Impact Assessment (including compliance statement for invertebrate species.
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

6. ASSESSMENT OF IMPACTS

The Plan of Study for the environmental Impact Assessment (PosEIA) was approved by the DFFE on 08 December 2023. In compliance with the approved PosEIA, the following aspects have been assessed in this Draft EIR.

Table 22: Impacts Assessed in the Environmental Impact Report.

Specialist Discipline	Nature of impact assessed.	Project phase	Specialist
Terrestrial Biodiversity	Loss and fragmentation of vegetation communities in the vicinity of the project area	Construction, Operation and Decommissioning	The Biodiversity Company. Ms Tarryn Martin and Ms Amber Jackson. Dr Jonothan Colville for invertebrates.
	Impact on Critical Biodiversity Areas and Ecological Support Areas.		
	Impact on in-tact and Near in tact Saldanha Strandveld.		
	Negative fragmentation effects		
	Movement of faunal species		
	Direct and indirect loss and disturbance of faunal species and community		
	Direct and indirect loss and disturbance of species of conservation concern		
Aquatic Biodiversity	Disturbance and possibly loss of aquatic habitats within the wetlands with the associated impact on associated aquatic biota	Construction Phase	Blue Science Environmental. Ms Toni Belcher
	Demand for water for construction		
	Alien vegetation infestation within the aquatic features due to disturbance		
	Increased sedimentation and risks of contamination of surface water runoff during construction		
	Ongoing disturbance of aquatic features and associated vegetation along access roads or adjacent to the infrastructure that needs to be maintained;	Operational Phase	
	Modified runoff characteristics from hardened surfaces that have the potential to result in flow modification impacts within the wetland areas		
	Possible increase in water consumption and potential for water quality impacts (such as contamination from sewage generated onsite) as a result of the operation of the site		
	increased disturbance of aquatic habitat due to the increased activity on the site.	Decommissioning Phase	
	Increased sedimentation		
	risks of contamination of surface water runoff		
Avifauna	The loss of habitat and subsequent displacement of bird species.	Construction, Operation and Decommissioning	Mr Albert Froneman in conjunction with Mr Robin Colyn
	Impact on Black Harrier foraging and breeding habitat.		
	Direct interaction (collision trauma)	Operation	
	Direct interaction (electrocution)		
	Direct interaction (entrapment)		

Specialist Discipline	Nature of impact assessed.	Project phase	Specialist
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	Dr Jayson Orton Palaeontology Dr Graham Avery
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	
	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 Construction	
	Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles.		
	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;	Construction, Operation and Decommissioning.	ISHEcon Ms Debbie Mitchell.

Specialist Discipline	Nature of impact assessed.	Project phase	Specialist
	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 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		

This section of the report was completed with input from the following specialists:

- Terrestrial Biodiversity (Biodiversity Africa, 2024)
- Avifauna (Afri Avian, 2024)
- Plant Species (Biodiversity Africa, 2024)
- Animal Species (Biodiversity Africa, 2024)
- Aquatic Biodiversity (Belcher, 2024)
- Agricultural (Lanz, 2024)
- Palaeontology (Avery, 2024)
- Archaeology and Heritage (Orton, 2024)
- Visual (VRMA, 2024)
- Socio Economic (Tony Barbour, 2022)

The impacts will firstly be discussed per specialist discipline and then summarised in the impact summary and statement in the following sections.

6.1 ASSESSMENT METHODOLOGY

All possible impacts need to the assessed – the **direct, in-direct as well as cumulative impacts**. The following general assessment methodology has been applied:

- **Nature of the impact:** impacts associated with the proposed PV have been described in terms of whether they are negative or positive and to what extent.
- **Duration of impacts**: Impact were assessed in terms of their anticipated duration:
    - Short term (e.g., during the construction phase – 0 – 2 years)
    - Medium term (e.g., during part or all of the operational phase – 2 - 20 years)
    - Long term (e.g., > 20 years)
    - Permanent (e.g., where the impact is for all intents and purposes irreversible)
    - Discontinuous or intermittent (e.g., where the impact may only occur during specific climatic conditions or during a particular season of the year)

- **Intensity or magnitude**: The size of the impact (if positive) or its severity (if negative):
    - Low, where the receiving environment (biophysical, social, economic, cultural etc) is negligibly affected or where the impact is so low that the remedial action is not required;
    - Medium, where the receiving environment (biophysical, social, economic, cultural etc) is altered, but not severely affected, and the impact can be remedied successfully; and
    - High, where the receiving environment (biophysical, social, economic, cultural etc) would be substantially (i.e., to a very large degree) affected. If a negative impact, could lead to irreplaceable loss of a resource and/or unacceptable consequences for human wellbeing.
- **Probability**: Should describe the likelihood of the impact actually occurring indicated as:
    - Improbable, where the possibility of the impact is very low either because of design or historic experience;
    - Probable, where there is a distinct possibility that the impact will occur;
    - Highly probable, where it is most likely that the impact will occur; or
    - Definite, where the impact will occur regardless of any prevention measures.
- **Significance:** The significance of impacts can be determined through a synthesis of the assessment criteria. Significance can be described as:
    - Low, where it would have negligible effect on the receiving environment (biophysical, social, economic, cultural etc), and on the decision;
    - Medium, where it would have a moderate effect on the receiving environment (biophysical, social, economic, cultural etc), and should influence the decision;
    - High, where it would have, or there would be a high risk of, a large effect on the receiving environment (biophysical, social, economic, cultural etc). These impacts should have a major influence on the decision;
    - Very high, where it would have, or there would be a high risk of, an irreversible negative impact on the receiving environment (biophysical, social, economic, cultural etc) and irreplaceable loss of natural capital/resources or a major positive effect on human well-being. Impacts of very high significance should be a central factor in decision-making.
    - Provision should be made for with and without mitigation scenarios.
- **Reversibility:**
    - Reversible, the impact can be managed to a low to high degree and is not permanent; or
    - Irreversible, the impact can only be managed to a limited degree and is permanent.
- **Confidence**: The level of confidence in predicting the impact can be described as:
    - Low, where there is little confidence in the prediction, due to inherent uncertainty about the likely response of the receiving ecosystem, or inadequate information;
    - Medium, where there is a moderate level of confidence in the prediction, or
    - High, where the impact can be predicted with a high level of confidence
- **Consequence**: What will happen if the impact occurs

- Insignificant, where the potential consequence of an identified impact will not cause detrimental impact to the receiving environment;
- Significant, where the potential consequence of an identified impact will cause detrimental impact to the receiving environment.
- Provision must be made for with and without mitigation scenarios.

The impacts have been assessed in terms of the following aspects:

- **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.

- **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.

Care must be taken to ensure that where cumulative impacts can occur that these impacts are considered and categorised as **additive** (incremental or accumulative); **interactive**, **sequential** or **synergistic**.

Based on a synthesis of the information contained in the above-described procedure, the specialists assessed 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.

Where relevant, all specialists have assessed the preferred footprint (Layout Alternative 1) and the No-Go Alternative 1 using the abovementioned general methodology as a basis. Please note that each specialist utilises rating and waiting criteria specific to their discipline in order to determine the significance of specific impacts.

For ease of reference, the significance and status of impacts reflected in all the assessment tables in the following sections are also visually reflected using the following colour scheme[42].

All positive impacts (regardless of their significance)	
Very low or low negative impacts	
Medium negative impacts	
Medium – High negative impacts	
High and Very High negative impacts	

[42] Where specialist ratings fall across 2 of the groups, the worst case is reflected in the quick reference.

6.2 TERRESTRIAL BIODIVERSITY IMPACTS

A Terrestrial Biodiversity Impact Assessment (covering Animal Species, Plant Species and Terrestrial Biodiversity) was undertaken by Biodiversity Africa and is attached in Annexure E1**.** The following has been summarised from this assessment.

6.2.1 Construction Phase Terrestrial Biodiversity Impacts[43]

The terrestrial biodiversity specialist identified the following potential impacts that could occur during the construction phase of the development:

- The direct and permanent loss of vegetation types and associated plant species, including species of conservation concern.
- The direct and permanent loss of faunal habitat.
- Clearing of vegetation resulting in breaks in habitat that will lead to habitat fragmentation and edge effects
- Faunal mortality due to construction activities (e.g., earthworks), roadkill and persecution.
- Disturbance to faunal species due to construction and operation activities that generate noise, dust, vibrations and lighting. This disturbance may cause faunal species to leave the area or disrupt foraging and/or breeding behaviour of those that remain.

An assessment of these impacts is included in the table below.

Table 23: Assessment of Construction Phase Terrestrial Biodiversity Impacts.

Nature: Loss of Near-Intact Saldanha Flats Strandveld		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Localised	Localised
Duration	Permanent	Permanent
Magnitude / Severity	Direct	Direct.
Probability	Definite	Definite
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Resource will be partially lost	Resource will be partially lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Loss of degraded Saldanha Flats Strandveld		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Localised	Localised
Duration	Permanent	Permanent
Magnitude / Severity	Direct	Direct.
Probability	Definite	Definite

[43] The impact tables in this section reflect those of the preferred alternative (Layout Alternative 1. Cumulative and no-go impacts are assessed in following separate sections.

Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Resource will be partially lost	Resource will be partially lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Loss of Secondary Vegetation		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Localised	Localised
Duration	Permanent	Permanent
Magnitude / Severity	Direct	Direct.
Probability	Definite	Definite
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Resource will be partially lost	Resource will be partially lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Loss of Faunal Habitat		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Localised	Localised
Duration	Permanent	Permanent
Magnitude / Severity	Direct	Direct.
Probability	Definite	Definite
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Resource will be partially lost	Resource will be partially lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Loss of Plant Species of Conservation Concern		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Localised	Localised

Duration	Permanent	Permanent
Magnitude / Severity	Direct	Direct.
Probability	Definite	Definite
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Resource will be partially lost	Resource will be partially lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Loss of Faunal Species of Conservation Concern		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Localised	Localised
Duration	Permanent	Permanent
Magnitude / Severity	Direct	Direct.
Probability	Definite	Definite
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Resource will be partially lost	Resource will be partially lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Disruption of Ecosystem Function and Process		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Localised	Localised
Duration	Permanent	Permanent
Magnitude / Severity	Direct	Direct.
Probability	Definite	Definite
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Resource will be partially lost	Resource will be partially lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Disturbance to faunal species and their livelihood activities (shelter, foraging and breeding) due to construction related noise, vibrations, dust, night lighting and obstructions.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Localised	Localised
Duration	Permanent	Permanent
Magnitude / Severity	Direct	Direct.
Probability	Definite	Definite
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Resource will be partially lost	Resource will be partially lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Mortality of faunal species due to project related activities.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Localised	Localised
Duration	Permanent	Permanent
Magnitude / Severity	Direct	Direct.
Probability	Definite	Definite
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Irreversible	Irreversible
Irreplaceable loss of resources / Sensitivity of receiving environment.	Resource will be partially lost	Resource will be partially lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

6.2.2 Operational Phase Terrestrial Biodiversity impacts[44]

The terrestrial biodiversity specialist identified the following potential impacts that could occur during the operational phase of the development:

- Clearing of vegetation and subsequent disturbance to the soil, and therefore seed bank, leading to the infestation of alien invasive plant species and other ruderal species. Although disturbance to the soil and seedbank will occur during the construction phase, infestations of alien invasive species may only occur during the operational phase, once construction has ceased.

[44] The impact tables in this section reflect those of the preferred alternative (Layout Alternative 5). Cumulative and no-go impacts assessed in following separate sections.

- Increased mortality of faunal species due to operational activities such as roadkill and persecution.

These operational impacts on Terrestrial Biodiversity are assessed in the tables below.

Table 24: Assessment of Operational Phase Terrestrial Biodiversity Impacts.

Nature: Infestation of alien invasive plant species		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Long Term	Long Term
Magnitude / Severity	Direct	Direct
Probability	Probable	Probable
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Resource will be partly lost	Resource will be partly lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Mortality of faunal species due to operational project related activities		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Long Term	Long Term
Magnitude / Severity	Direct	Direct
Probability	Probable	Probable
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Resource will be partly lost	Resource will be partly lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

6.2.3 Decommissioning Phase Terrestrial Biodiversity Impacts

The terrestrial biodiversity specialist identified the following potential impacts that could occur during the Closure and decommissioning phase of the development:

- The direct and permanent loss of vegetation types and associated plant species, including SCC.
- Disturbance to faunal species and potential reduction in abundance and mortality of faunal species.

These impacts are assessed in the tables below.

Table 25: Assessment of Decommissioning Phase Terrestrial Biodiversity Impacts.

Nature: Loss of indigenous vegetation and species of conservation concern

	Without Mitigation	With Mitigation
Extent / Spatial Scope	Study Area	Study Area
Duration	Long Term	Long Term
Magnitude / Severity	Direct	Direct
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Resource will be partly lost	Resource will be partly lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Disturbance to faunal species and potential reduction in abundance and mortality of faunal species		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Long Term	Long Term
Magnitude / Severity	Direct	Direct
Probability	Probable	Probable
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Resource will be partly lost	Resource will be partly lost
Can impact be mitigated?	Achievable	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

6.2.4 Concluding Statement – Terrestrial Biodiversity Impacts

The terrestrial Biodiversity specialist confirmed that the mitigation hierarchy was applied to all impacts.

Eleven construction phase impacts, two operational phase impacts, two decommissioning phase impacts and two cumulative impacts have been identified for the project area. The post mitigation significance of all impacts was found to be low.

The terrestrial biodiversity specialist concluded that the project infrastructure has been designed to largely avoid sensitive features such as near-intact and degraded Saldanha Flats Strandveld. Further to the above, impacts on the terrestrial plant species and faunal habitats can be reduced to acceptable levels through the implementation of mitigation measures. The specialist is therefore of the opinion that the development can proceed provided the recommendations contained in this report are implemented.

6.3 AVIFAUNAL IMPACTS

An Avifaunal Impact Assessment was undertaken by Mr Albert Froneman of Afri Avian and is attached in Annexure E2**.** The following has been summarised from this assessment.

6.3.1 Construction Phase Avifaunal Impacts.

The following Avifaunal Impacts were assessed for the construction phase of the proposed PV facility and associated infrastructure.

Table 26: Assessment of construction Phase Avifaunal Impacts.

Nature: Displacement of priority species due to disturbance associated with construction of the PV plant and associated infrastructure.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Whole site and nearby surroundings	Part of site
Duration	Short term	Short term
Magnitude / Severity	High	Medium
Probability	High	High
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Reversible	Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Medium	Medium
Can impact be mitigated?	Medium to High	
Mitigation:	Mitigation measures outlined in section 7	

6.3.2 Operational Phase Avifaunal Impacts

The following Avifaunal Impacts were assessed for the Operational phase of the proposed PV facility and associated infrastructure.

Table 27: Assessment of Operational Phase Avifaunal Impacts

Nature: Displacement of priority species due to habitat transformation associated with construction of the PV plant and associated infrastructure		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Whole site and nearby surroundings	Part of site
Duration	Short term	Short term
Magnitude / Severity	High	Medium
Probability	High	High
Significance	**High**	**Medium**
Status	Negative	Negative
Reversibility	Partly Reversible	Partly Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Medium	Medium
Can impact be mitigated?	Medium to High	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Mortality of priority species due to collisions with the solar panels		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Whole site and nearby surroundings	Part of site

Duration	Short term	Short term
Magnitude / Severity	High	Medium
Probability	High	High
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Partly Reversible	Partly Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Medium	Medium
Can impact be mitigated?	No mitigation required due to low impact.	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Entanglement of birds in the perimeter fence		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Whole site and nearby surroundings	Part of site
Duration	Short term	Short term
Magnitude / Severity	High	Medium
Probability	High	High
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Partially reversable if mitigation measures are strictly implemented	Partially reversable if mitigation measures are strictly implemented
Irreplaceable loss of resources / Sensitivity of receiving environment	Medium	Medium
Can impact be mitigated?	Medium.	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Electrocution of priority species in the on-site substations		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Whole site and nearby surroundings	Part of site
Duration	Short term	Short term
Magnitude / Severity	High	Medium
Probability	High	High
Significance	**High**	**Low**
Status	Negative	Negative
Reversibility	Partially reversable if mitigation measures are strictly implemented	Partially reversable if mitigation measures are strictly implemented
Irreplaceable loss of resources / Sensitivity of receiving environment	It is expected that the electrocution impact will not cause irreplaceable losses through mortality, as it is likely to be a rare event, and can be virtually eliminated with mitigation.	It is expected that the electrocution impact will not cause irreplaceable losses through mortality, as it is likely to be a rare event, and can be virtually eliminated with mitigation.

Can impact be mitigated?	Medium.
Mitigation:	Mitigation measures outlined in section 7

6.3.3 Decommissioning Phase Avifaunal Impacts

The following Avifaunal Impacts were assessed for the Closure and Decomissioning phase of the proposed PV facility and associated infrastructure.

Table 28: Assessment of Closure and Decomissioning Phase Avifaunal Impacts

Nature: Displacement of priority species due to disturbance associated with decommissioning of the PV facility and associated infrastructure		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Whole site and nearby surroundings	Part of site
Duration	Short term	Short term
Magnitude / Severity	High	Medium
Probability	High	High
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources / Sensitivity of receiving environment	Low	Low
Can impact be mitigated?	Medium to High	
Mitigation:	Mitigation measures outlined in section 7	

6.3.4 Concluding Statement – Avifaunal Impacts

The Avifaunal Specialist confirmed that the proposed Sunveld solar PV and BESS will have anticipated high, medium, and low negative impacts on priority avifauna, which is expected to be reduced to medium and low with appropriate mitigation.

No fatal flaws were discovered during the investigations. The specialist therefore recommended that the activity is authorised, on condition that the proposed mitigation measures as detailed in the Impact Tables and the EMPr are strictly implemented.

6.4 AGRICULTURAL IMPACTS.

An Agricultural Compliance Statement was undertaken by Mr Johann Lanz from Soil ZA and is attached in Annexure E3**.** The following has been summarised from this assessment.

It should be noted that in terms of the protocols, an Agricultural Compliance Statement is not required to formally rate agricultural impacts by way of impact assessment tables.

An agricultural impact is a change to the future agricultural production potential of land. In most developments, including the one being assessed here, this is primarily caused by the exclusion of agriculture from the footprint of the development. Soil erosion and degradation may also contribute to loss of agricultural production potential. The significance of an agricultural impact is a direct function of the following three factors:

1. the size of the footprint of land from which agriculture will be excluded (or the footprint that will have its potential decreased)
2. the baseline production potential (particularly cropping potential) of that land
3. the length of time for which agriculture will be excluded (or for which potential will be decreased).

The most significant agricultural impact is therefore a loss of a large area of high yielding cropland and the least significant impact is a loss of a small area of low carrying capacity grazing land.

Cropping potential is highlighted in factor 2, above, because the threshold, above which it is a priority to conserve land for agricultural production, is determined by the scarcity of arable crop production land in South Africa and the relative abundance of land that is only good enough to be used for grazing. If land can support viable and sustainable crop production, then it is considered to be above the threshold and is a priority for being conserved as agricultural production land. If land is unable to support viable and sustainable crop production, then it is considered to be below the threshold and of much lower priority for being conserved.

In this case, the entire assessed area is considered to be below the threshold because of the limitations on its cropping potential. The use of this land for solar power generation represents a minimal loss of agricultural production potential in terms of national food security. Furthermore, the land occupied by PV panels can be used for the dual purposes of solar power generation and agricultural food production by way of sheep grazing. This has potential benefits for both activities and means that the land remains agriculturally productive. The benefit for sheep farming is that the security infrastructure of the solar facility will protect the sheep within it against stock theft. The benefit for the solar facility is that the sheep will control the height of the vegetation below the solar panels and make it unnecessary to mechanically control the height of vegetation.

At the farm level, the development will provide a positive economic impact. The income generated by the farming enterprises through the lease of the land to the energy facility is highly likely to exceed the potential agricultural income from the site. It will diversify the farm's income sources and provide reliable and predictable income that is independent of variable agricultural economic factors such as weather, agricultural markets and agricultural input costs. This is likely to increase cash flow and financial security and may improve farming operations and productivity on other, parts of the farm, through increased investment into farming.

Due to the fact that the solar facility will not occupy scarce, viable cropland, that it can still be used to graze sheep, and that its negative impact is offset by economic benefits to farming, the overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed here as being of low significance and as acceptable.

6.4.1 Concluding statement – Agricultural Impacts

The overall conclusion of the agricultural specialist is that the proposed development is desirable because it can provide benefits to agriculture with minimal loss of future agricultural production potential.

The assessed area is classified as high agricultural sensitivity by the screening tool. This has been disputed by the agricultural specialist who has classified the sensitivity as being entirely of medium agricultural sensitivity.

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 sandy 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.

From an agricultural impact point of view, the specialist recommended that the proposed development be approved. The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is not subject to any conditions.

6.5 HERITAGE IMPACTS.

A Heritage Impact Assessment was undertaken by Dr Jayson Orton from ASHA consulting and is attached in Annexure E4**.** The Heritage Impact Assessment includes a Palaeontological assessment compiled by Dr Graham Avery. The following has been summarised from this assessment.

6.5.1 Construction Phase Heritage Impacts.

The following Heritage Impacts were assessed for the construction phase of the proposed PV facility and associated infrastructure

Table 29: Assessment of Construction Phase Heritage Impacts.

Nature: Construction Phase Archaeological Impacts associated with: • Damage to or destruction of archaeological sites.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Permanent	Permanent
Magnitude / Severity	Medium	Low
Probability	Definite	Definite
Significance	**Medium**	**Low**
Status	Negative	Negative
Irreplaceable loss of resources / Sensitivity of receiving environment	Yes – archaeological resources cannot be replaced or recreated	None – archaeological data will have been rescued and preserved for further study
Can impact be mitigated	Yes	
Mitigation:	A pre-construction survey of the PV footprint should be caried out to check for newly exposed archaeological sites. Graded archaeological sites within the development footprint should be excavated if they cannot be avoided. Ungraded archaeological sites in the development footprint should be tested to determine artefact density with excavations expanded as needed to capture good samples	

Nature: Construction Phase Impacts to graves associated with damage to or destruction of graves.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Permanent	Permanent
Magnitude / Severity	High	Low
Probability	Improbable	Improbable
Significance	**Low**	**Low**

Status	Negative	Negative
Irreplaceable loss of resources / Sensitivity of receiving environment	Yes – graves cannot be replaced or recreated	No – graves will have been rescued and protected or relocated
Can impact be mitigated	Yes	
Mitigation:	If found during development, graves must be protected in situ and reported to an archaeologist and/or HWC for further assessment.	

Nature: Construction Phase Impacts to the cultural landscape associated with: • Visual intrusion into the cultural landscape. • Extensive activity on site in a rural area. • Increased light pollution at night.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Short term	Short term
Magnitude / Severity	High	Medium
Probability	Definite	Definite
Significance	**Medium**	**Medium**
Status	Negative	Negative
Irreplaceable loss of resources / Sensitivity of receiving environment	No – the site can be rehabilitated.	No – the site can be rehabilitated.
Can impact be mitigated	Yes, but only slightly	
Mitigation:	Minimise construction duration. Ensure rehabilitation of all areas not required during operation. Make use of visual mitigation measures to reduce nighttime impacts (e.g. downlighters, motion detectors).	

6.5.2 Operational Phase Heritage Impacts

The following Heritage Impacts were assessed for the operational phase of the proposed PV facility and associated infrastructure

Table 30: Assessment of Operational Phase Heritage Impacts

Nature: Operation Phase Impacts to the cultural landscape associated with: • Visual intrusion into the cultural landscape. • Increased light pollution at night.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local

Duration	Long term	Long term
Magnitude / Severity	Medium	Medium
Probability	Definite	Definite
Significance	**Medium**	**Medium**
Status	Negative	Negative
Irreplaceable loss of resources / Sensitivity of receiving environment	No – the site can be rehabilitated.	No – the site can be rehabilitated.
Can impact be mitigated	Yes, but only slightly	
Mitigation:	Ensure all maintenance and operation vehicles and activities remain in designated areas. Paint structures in earthy tones where technically feasible to minimise contrast. Make use of visual mitigation measures to reduce nighttime impacts (e.g. downlighters, motion detectors).	

6.5.3 Closure and Decommissioning Phase Heritage Impacts

The following Heritage Impacts were assessed for the closure and decommissioning phase of the proposed PV facility and associated infrastructure

Table 31: Assessment of Closure and Decomissioning Phase Heritage Impacts

Nature: Decommissioning Phase Impacts to the cultural landscape associated with: • Visual intrusion into the cultural landscape. • Extensive activity on site in a rural area. • Increased light pollution at night.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Short term	Short term
Magnitude / Severity	High	Medium
Probability	Definite	Definite
Significance	**Medium**	**Medium**
Status	Negative	Negative
Irreplaceable loss of resources / Sensitivity of receiving environment	No – the site can be rehabilitated.	No – the site can be rehabilitated.
Can impact be mitigated	Yes, but only slightly	
Mitigation:	Minimise decommissioning duration. Ensure rehabilitation of all areas after the removal of infrastructure.	

	Make use of visual mitigation measures to reduce nighttime impacts (e.g. downlighters, motion detectors).

6.5.4 Concluding Statement – Heritage Impacts

Palaeontological impacts have been assessed by Avery (2024). He found that fossils could be present anywhere in the footprint area, but, if encountered, are likely to be sparse. There is a very small possibility, however, that more numerous fossils could occur in Springfontyn sediments. There is no way to predict such finds and the opportunity to inspect subsurface excavations could prove to be a benefit if fossils are found, recorded in context and rescued.

Archaeological resources occur in and around the study area and tend to have been revealed by ploughing. An important consideration here is that sites "come and go" depending on the visibility of artefacts which, in turn depends on how recently an area has been ploughed. The observations from this study suggest that archaeological materials are likely to be quite widespread in the study area but that only some have been located. The implication is that significant sites may be lost where they are as yet unknown and currently undiscoverable. A pre-construction survey will be required to locate any newly revealed archaeological sites and any such sites will need to be added to the list of locations for further work.

The third aspect is the cultural landscape. In and around the study area there is a mix of arable land and natural vegetation. A significant concern for this project is its proximity to the R399 which runs from Piketberg to Velddrif and is regarded as a scenic route. For various reasons parts of the project need to be closer to this road than is desirable from a strictly visual perspective and, as such, the visual specialist has proposed mitigation measures that will reduce the visual impacts to the landscape as seen from this road. The Berg River corridor is a highly significant landscape feature but, being located at a lower elevation that the proposed PV project, its context will only be minimally affected.

The heritage specialist concluded that the project can be authorised, subject to the implementation of all mitigation measures.

6.6 VISUAL IMPACTS

A Visual Impact Assessment was undertaken by Mr Stephen Stead from Visual Resource Management Africa and is attached in Annexure E5. The following has been summarised from this assessment.

6.6.1 Construction Phase Visual Impacts

The following Visual Impacts were assessed for the construction phase of the proposed PV facility and associated infrastructure.

Table 32: Assessment of construction phase visual impacts.

Nature: Short-term landscape change from the current rural agricultural sense of place to the semi-industrial Renewable Energy landscape		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Short term	Short term
Magnitude / Severity	Medium to High	Medium to Low
Probability	Likely	Likely
Significance	**Medium - High**	**Medium**
Status	Negative	Negative
Reversibility	Medium	Medium

Irreplaceable loss of resources / Sensitivity of receiving environment	Reversible after decommissioning	Reversible after decommissioning
Can impact be mitigated?	Medium Mitigation viability	
Mitigation:	Mitigation measures outlined in section 8	

6.6.2 Operational Phase Visual Impacts

The following Visual Impacts were assessed for the operational phase of the proposed PV facility and associated infrastructure.

Table 33: Assessment of operational phase visual impacts.

Nature: Short-term landscape change from the current rural agricultural sense of place to the semi-industrial Renewable Energy landscape (Loss of site landscape character due to the operation of the PV structures and associated infrastructure).		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Long term	Long term
Magnitude / Severity	Medium	Medium to Low
Probability	Likely	Likely
Significance	**High**	**Medium**
Status	Negative	Negative
Reversibility	Medium	Medium
Irreplaceable loss of resources / Sensitivity of receiving environment	Reversible after decommissioning	Reversible after decommissioning
Can impact be mitigated?	Medium	
Mitigation:	Mitigation measures outlined in section 8	

6.6.3 Decommissioning Phase Visual Impacts

The following Visual Impacts were assessed for the closure and decommissioning phase of the proposed PV facility and associated infrastructure.

Table 34: Assessment of Decommissioning phase visual impacts.

Nature: Short-term landscape change from the removal of the PV structures, followed by rehabilitation of the impacted areas back to agricultural lands.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Short term	Short term
Magnitude / Severity	Medium	Medium
Probability	Likely	Likely
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Medium	Medium
Irreplaceable loss of resources / Sensitivity of receiving environment	Impact will persist until completion of rehabilitation.	Impact will persist until completion of rehabilitation.
Can impact be mitigated?	Medium	
Mitigation:	Mitigation measures outlined in section 8	

6.6.4 Concluding Statement - Visual

The Visual Specialist has recommended that the proposed development should commence with mitigation for the following key reasons:

- Wide buffer areas and fragmented design elements of the different PV areas does reduce the massing effects to some degree.
- Mitigation for much of the southern PV area is berm related and as such will result in short-term visual screening.
- PV areas to the north have partial screening from alien trees as well as windrow trees. Further establishment of the windrow cultural landscape theme in these areas will result in the northern portions of the PV being screened in the medium-term.
- No intervisibility between other renewable energy projects.
- Existing authorisation for a PV development (unbuilt) that would generate higher levels of visual intrusion if it was built.
- Medium Post Mitigation Impacts are likely but where residual effects could remain that could moderately degrade local landscape resources.

To ensure that visual resources along the R399 are not degraded, post development monitoring to evaluate the effectiveness of the screening mitigations is a requirement 6 months after Operation Phase commences.

6.7 SOCIAL IMPACTS

A social Impact Assessment was undertaken by Mr Tony Barbour and Mr Schalk van der Merwe from Tony Barbour Environmental Consulting and is attached in Annexure E6. The following has been summarised from this assessment.

6.7.1 Construction Phase Social Impacts

The following Social Impacts were assessed for the construction phase of the proposed PV facility and associated infrastructure.

Table 35: Assessment of Construction Phase Social Impacts

Nature: Creation of employment and business opportunities during the construction phase		
	Without Mitigation	**With Enhancement**
Extent	Local – Regional	Local – Regional
Duration	Short term	Short term
Magnitude	Moderate	Moderate
Probability	Highly probable	Highly probable
Significance	**Medium**	**Medium**
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	N/A	N/A
Can impact be enhanced?	Yes	
Enhancement:	Mitigation and enhancement measures outlined in section 8	

Nature: Potential impacts on family structures and social networks associated with the presence of construction workers		
	Without Mitigation	**With Mitigation**

Extent	Local	Local
Duration	Short term for community as a whole	Short term for community as a whole
Magnitude	Moderate for the community as a whole	Low for community as a whole
Probability	Probable	Probable (3)
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	No in case of HIV and AIDS	No in case of HIV and AIDS
Irreplaceable loss of resources?	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be eliminated	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Potential impacts on family structures, social networks and community services associated with the influx of job seekers		
	Without Mitigation	**With Mitigation**
Extent	Local	Local (1)
Duration	Permanent (For job seekers that stay on in the area)	Permanent (For job seekers that stay on in the area)
Magnitude	Minor	Minor
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	No in case of HIV and AIDS	No in case of HIV and AIDS
Irreplaceable loss of resources?	Yes, if people contract HIV/AIDS. Human capital plays a critical role in communities that rely on farming for their livelihoods	
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be eliminated	
Mitigation	Mitigation measures outlined in section 8	

Nature: Potential risk to safety of scholars, farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site		
	Without Mitigation	**With Mitigation**
Extent	Local	Local
Duration	Short term	Short term
Magnitude	Medium	Low

Probability	Probable	Probable
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Yes, compensation paid for stock losses and damage to farm infrastructure etc.	Yes, compensation paid for stock losses and damage to farm infrastructure etc.
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires		
	Without Mitigation	**With Mitigation**
Extent	Local	Local
Duration	Short term	short term
Magnitude	Moderate due to reliance on agriculture for maintaining livelihoods	Low
Probability	Probable	Probable (3)
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Yes, compensation paid for stock and crop losses etc.	Yes, compensation paid for stock and crop losses etc.
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Potential noise, dust and safety impacts associated with construction related activities		
	Without Mitigation	**With Mitigation**
Extent	Local	Local
Duration	Short Term	Short Term
Magnitude	Medium	Minor
Probability	Probable	Probable (3)
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: The activities associated with the construction phase, such as establishment of access roads and the construction camp, movement of heavy vehicles and preparation of foundations for the project etc. will damage farmlands and result in a loss of farmlands for grazing.		
	Without Mitigation	**With Mitigation**
Extent	Local	Local
Duration	Long term-permanent if disturbed areas are not effectively rehabilitated	Short term if damaged areas are rehabilitated
Magnitude	Medium	Minor
Probability	Probable	Highly Probable
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Yes, disturbed areas can be rehabilitated	Yes, disturbed areas can be rehabilitated
Irreplaceable loss of resources?	Yes, loss of farmland. However, disturbed areas can be rehabilitated	Yes, loss of farmland. However, disturbed areas can be rehabilitated
Can impact be mitigated?	Yes, however, loss of farmland cannot be avoided	Yes, however, loss of farmland cannot be avoided
Mitigation:	Mitigation measures outlined in section 8	

6.7.2 Operational Phase Social Impacts

The following Social Impacts were assessed for the operational phase of the proposed PV facility and associated infrastructure.

Table 36: Assessment of social impacts during the operational phase of the development.

Nature: Development of infrastructure to improve energy security and support renewable sector		
	Without Mitigation	**With Mitigation**
Extent	Local, Regional and National	Local, Regional and National
Duration	Long term	Long term
Magnitude	High	High
Probability	Highly Probable	Definite
Significance	**High**	**High**
Status	Positive	Positive
Reversibility	Yes	Yes
Irreplaceable loss of resources?	Yes, impact of climate change on ecosystems	Reduced CO2 emissions and impact on climate change
Can impact be mitigated?	Yes	
Enhancement:	Mitigation and Enhancement measures outlined in section 8	

Nature: Creation of employment and business opportunities associated with the operational phase		
	Without Mitigation	**With Enhancement**
Extent	Local and Regional	Local and Regional

Duration	Long term	Long term
Magnitude	Minor	Low
Probability	Highly Probable	Highly Probable
Significance	**Low**	**Medium**
Status	Positive	Positive
Reversibility	N/A	N/A
Irreplaceable loss of resources?	No	No
Can impact be enhanced?	Yes	
Enhancement: See below	Mitigation and Enhancement measures outlined in section 8	

Nature: The generation of additional income represents a significant benefit for the local affected farmer(s) and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as feed etc.		
	Without Mitigation	**With Enhancement**
Extent	Local	Local
Duration	Long term	Long term
Intensity	Low	Moderate
Likelihood	Probable	Definite
Significance	**Low**	**Medium**
Status	Positive	Positive
Reversibility	Yes	Yes
Can impact be enhanced?	Yes	
Enhancement:	Mitigation and Enhancement measures outlined in section 8	

Nature: Benefits associated with support for local community's form SED contributions		
	Without Mitigation	**With Enhancement**[45]
Extent	Local and Regional	Local and Regional
Duration	Long term	Long term
Intensity	Low	Moderate
Likelihood	Probable	Definite
Significance	**Medium**	**High**
Status	Positive	Positive
Reversibility	Yes	Yes
Can impact be enhanced?	Yes	
Enhancement:	Mitigation and Enhancement measures outlined in section 8	

[45] Enhancement assumes effective management of the community trust

Nature: Visual impact associated with the proposed facility and associated infrastructure and the potential impact on the areas rural sense of place.		
	Without Mitigation	**With Mitigation**
Extent	Local	Local
Duration	Long term	Long term
Magnitude	Minor	Minor
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Yes, SEF components and other infrastructure can be removed.	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation	Mitigation measures outlined in section 8	

Nature: Potential impact of the Facility on local tourism		
	Without Mitigation	**With Enhancement / Mitigation**
Extent	Local	Local
Duration	Long term	Long term
Magnitude	Minor	Minor
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	No	No
Can impact be enhanced?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

6.7.3 Decommissioning Phase Social Impacts

Given the relatively small number of people employed during the operational phase (~20-30), the potential negative social impact on the local economy associated with decommissioning will be limited. In addition, the potential impacts associated with the decommissioning phase can also be effectively managed with the implementation of a retrenchment and downscaling programme. With mitigation, the impacts are assessed to be Low Negative.

6.7.4 Concluding Statement – Social

The findings of the Social Impact Assessment indicate that the development of the proposed Sunveld Solar PV and BESS Development as well as associated infrastructure will create employment and business opportunities in the Berg River Municipality during both the construction and operational phase of the project. The potential negative impacts can also be effectively mitigated.

The project will also create opportunities for contributions to socio-economic development in the local community. The enhancement measures listed in the report should be implemented in order to maximise the potential benefits. The significance of this impact is rated as High Positive. The proposed

development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated a coal-based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole. The Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has resulted in significant socio-economic benefits, both at a national level and at a local, community level. These benefits are linked to direct foreign investment, local employment and procurement and investment in local community initiatives.

The establishment of the proposed Sunveld PV SEF and associated infrastructure including a battery energy storage system (BESS) is supported by the findings of the Social Impact Assessment.

6.8 TRAFFIC IMPACTS

An assessment of potential traffic Impacts that are generally associated with PV facilities of such a scale was undertaken by the EAP. This assessment is based on the EAPs experience as Principal ECO in the construction phase of over 1000MW of PV and 1140MWh of Battery Storage. The Traffic Impacts associated with the construction and operation facilities are well understood and as such it was not deemed to obtain specialist input in this regard on provision that all conditions contained in the abnormal load permits, once granted are implemented in full.

6.8.1 Construction Phase Traffic Impacts

The following Traffic Impacts were assessed for the construction phase of the proposed PV Facility and Associated infrastructure.

Table 37: Assessment of Traffic impacts during the construction phase.

Nature: Increase in Traffic		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Short Term	Short Term
Magnitude / Severity	High	Medium
Probability	Definite	Definite
Significance	**Medium**	**Medium**
Status	Negative	Negative
Reversibility	Completely Reversible	Completely Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss of resources	Marginal Loss of resources
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Increase of Incidents with pedestrians and livestock		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Short Term	Short Term
Magnitude / Severity	Medium	Low
Probability	Probable	Probable
Significance	**Medium**	**Low**

Status	Negative	Negative
Reversibility	Partly Reversible	Partly Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Complete loss of resources	Complete loss of resources
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Increase in Dust from gravel roads		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Short Term	Short Term
Magnitude / Severity	Medium	Medium
Probability	Probable	Probable
Significance	**High**	**Medium**
Status	Negative	Negative
Reversibility	Partly Reversible	Partly Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss of Resources	Marginal Loss of Resources
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Increase in Road Maintenance		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Medium Term	Short Term
Magnitude / Severity	Medium	Medium
Probability	Probable	Probable
Significance	**Medium**	**Medium**
Status	Negative	Negative
Reversibility	Partly Reversible	Partly Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss of Resources	Marginal Loss of Resources
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Additional Abnormal Loads		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Province / Region	Province / Region
Duration	Short Term	Short Term

Magnitude / Severity	Low	Low
Probability	Probable	Possible
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Completely Reversible	Completely Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss of Resources	Marginal Loss of Resources
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

6.8.2 Operational Phase Traffic Impacts

The following Traffic Impacts were assessed for the Operational phase of the proposed PV Facility and Associated infrastructure.

Table 38: Assessment of Operational Phase Traffic Impacts

Nature: Increase in Traffic		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Long Term	Long Term
Magnitude / Severity	Low	Low
Probability	Unlikely	Unlikely
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Completely Reversible	Completely Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss of Resources	Marginal Loss of Resources
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Increase of Incidents with pedestrians and livestock		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Long Term	Long Term
Magnitude / Severity	Low	Low
Probability	Unlikely	Unlikely
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Completely Reversible	Completely Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss of Resources	Marginal Loss of Resources
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Increase in Dust from gravel roads		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Long Term	Long Term
Magnitude / Severity	Low	Low
Probability	Unlikely	Unlikely
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Completely Reversible	Completely Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss of Resources	Marginal Loss of Resources
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Increase in Road Maintenance		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Long Term	Long Term
Magnitude / Severity	Low	Low
Probability	Unlikely	Unlikely
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Completely Reversible	Completely Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss of Resources	Marginal Loss of Resources
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Additional Abnormal Loads		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Province / Region	Province / Region
Duration	Long Term	Long Term
Magnitude / Severity	Low	Low
Probability	Unlikely	Unlikely
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Completely Reversible	Completely Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss of Resources	Marginal Loss of Resources

Can impact be mitigated?	Yes
Mitigation:	Mitigation measures outlined in section 8

6.8.3 Decommissioning Phase Traffic Impacts

The following Traffic Impacts were assessed for the Decommissioning and Closure phase of the proposed PV Facility and Associated infrastructure.

Table 39: Assessment of Decommissioning Phase Traffic Impacts

Nature: Increase in Traffic		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Short Term	Short Term
Magnitude / Severity	High	Medium
Probability	Definite	Definite
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Completely Reversible	Completely Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss of Resources	Marginal Loss of Resources
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Increase of Incidents with pedestrians and livestock		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Short Term	Short Term
Magnitude / Severity	Medium	Low
Probability	Probable	Probable
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Partly Reversible	Partly Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Complete Loss of Resources	Complete Loss of Resources
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Increase in Dust from gravel roads		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Short Term	Short Term
Magnitude / Severity	Medium	Medium

Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Partly Reversible	Partly Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Complete Loss of Resources	Complete Loss of Resources
Can impact be mitigated?	Yes	
Mitigation:	Low	

Nature: Increase in Road Maintenance		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local / District	Local / District
Duration	Medium Term	Short Term
Magnitude / Severity	Medium	Medium
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Partly Reversible	Partly Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss	Marginal Loss
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

Nature: Additional Abnormal Loads		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Province / Region	Province / Region
Duration	Short Term	Short Term
Magnitude / Severity	Low	Low
Probability	Possible	Possible
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Completely Reversible	Completely Reversible
Irreplaceable loss of resources / Sensitivity of receiving environment	Marginal Loss	Marginal Loss
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 8	

6.8.4 Concluding Statement - Traffic

The most significant traffic impact is associated with the increase of traffic during the construction phase of the development. This increase in construction traffic will generally create additional impacts

associated with generation of dust and additional maintenance requirements on existing roads. All such impacts can be mitigated to a low and medium significance with the implementation of the various mitigation and management measures outlined in the EMPr. Notwithstanding these impacts, the applicant will need to get approval from the Department of Transport and Public Works for the continued use of the existing farm access points and will also be required to comply with all conditions of abnormal load permits.

6.9 BATTERY ENERGY STORAGE RISK ASSESSMENT.

The BESS Specialist ISHcon prepared a risk assessment for the Three main Battery Technologies that are being proposed as part of this assessment.

Please note that the BESS risk assessment does not follow the assessment methodology outlined in section 6.1 of this report, but focusses potential risks. The table below outlines the receptor of the risk as well as the Raw and Residual risk to that receptor. Please refer to the detailed BESS Risk Assessment appended to this Draft Environmental Impact Report.

Table 40: Summary of BESS Risk Assessment For Solid State Battery Technologies (ISHcon, 2024).

Impact / Receptor	Project Phase	Raw Risk	Residual Risk
Human Health - chronic exposure to toxic chemical or biological agents	Construction	Moderate	Low
Human Health - exposure to noise	Construction	Moderate	Low
Human Health - exposure to temperature extremes and/or humidity	Construction	Low	Very Low
Human Health - exposure to psychological stress	Construction	Low	Low
Human Health - exposure to ergonomic stress	Construction	Low	Low
Human and Equipment Safety - exposure to fire radiation	Construction	Moderate	Low
Human and Equipment Safety - exposure to fire radiation	Construction	Moderate	Low
Human and Equipment Safety - exposure to explosion over pressures	Construction	Moderate	Low
Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Construction	Moderate	Low
Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Construction	Moderate	Low
Human and Equipment Safety - exposure to violent release of kinetic or potential energy	Construction	High	Low
Human and Equipment Safety - exposure to electromagnetic waves	Construction	Moderate	Low
Environment - emissions to air	Construction	Low	Very Low

Impact / Receptor	Project Phase	Raw Risk	Residual Risk
Environment - emissions to water	Construction	Low	Low
Environment - emissions to earth	Construction	Low	Low
Environment - waste of resources e.g., water, power etc	Construction	Low	Very Low
Public - Aesthetics	Construction	Low	Low
Investors - Financial	Construction	Low	Low
Employees and investors - Security	Construction	Moderate	Low
Emergencies	Construction	Moderate	Low
Investors - Legal	Construction	Moderate	Low
Human Health - chronic exposure to toxic chemical or biological agents	Operations	Moderate	Low
Human Health - chronic exposure to toxic chemical or biological agents	Operations	Moderate	Low
Human Health - exposure to noise	Operations	Moderate	Low
Human Health - exposure to temperature extremes and/or humidity	Operations	Low	Very Low
Human Health - exposure to ergonomic stress	Operations	Moderate	Low
Human Health - exposure to psychological stress	Operations	Low	Very Low
Human and Equipment Safety - exposure to fire radiation	Operations	High	Low
Human and Equipment Safety - exposure to explosion over pressures	Operations	Moderate	Low
Human and Equipment Safety - exposure to fire radiation	Operations	High	Low
Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Operations	Low	Low
Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Operations	Moderate	Low
Human and Equipment Safety - exposure to violent release of kinetic or potential energy	Operations	Moderate	Low
Human and Equipment Safety - exposure to electromagnetic waves	Operations	Moderate	Low

Impact / Receptor	Project Phase	Raw Risk	Residual Risk
Environment - emissions to air	Operations	Low	Very Low
Environment - emissions to water	Operations	Low	Very Low
Environment - emissions to earth	Operations	Low	Very Low
Environment - waste of resources e.g., water, power etc	Operations	Low	Very Low
Public - Aesthetics	Operations	Low	Low
Investors - Financial	Operations	Moderate	Low
Employees and investors - Security	Operations	Moderate	Low
Employees and investors - Security	Operations	Moderate	Low
Emergencies	Operations	Moderate	Low
Investors - Legal	Operations	Moderate	Low

The above Risk Assessment shows that, provided the preventative and mitigative measures are incorporated, the construction and operational phase of the project does not present any high risks nor any fatal flaws for solid state BESS.

Table 41: Summary of BESS Risk Assessment for Redox Flow Technologies (ISHcon, 2024).

Impact / Receptor	Project Phase	Raw Risk	Residual Risk
Human Health - chronic exposure to toxic chemical or biological agents	Construction	Moderate	Low
Human Health - exposure to noise	Construction	Moderate	Low
Human Health - exposure to temperature extremes and/or humidity	Construction	Low	Very Low
Human Health - exposure to psychological stress	Construction	Low	Low
Human Health - exposure to ergonomic stress	Construction	Low	Low
Human and Equipment Safety - exposure to fire radiation	Construction	Low	Low
Human and Equipment Safety - exposure to explosion over pressures	Construction	None	None
Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Construction	Moderate	Low
Human and Equipment Safety - exposure to violent release of kinetic or potential energy	Construction	High	Low

Impact / Receptor	Project Phase	Raw Risk	Residual Risk
Human and Equipment Safety - exposure to electromagnetic waves	Construction	Moderate	Low
Environment - emissions to air	Construction	Low	Very Low
Environment - emissions to water	Construction	Low	Low
Environment - emissions to earth	Construction	Low	Low
Environment - waste of resources e.g., water, power etc	Construction	Moderate	Low
Public - Aesthetics	Construction	Moderate	Low
Investors - Financial	Construction	Moderate	Low
Employees and investors - Security	Construction	Moderate	Low
Emergencies	Construction	Moderate	Low
Investors - Legal	Construction	Moderate	Low
Human Health - chronic exposure to toxic chemical or biological agents	Operation	Moderate	Low
Human Health - chronic exposure to toxic chemical or biological agents	Operation	Moderate	Low
Human Health - exposure to temperature extremes and/or humidity	Operation	Low	Low
Human Health - exposure to noise	Operation	Moderate	Low
Human Health - exposure to psychological stress	Operation	Low	Very Low
Human Health - exposure to ergonomic stress	Operation	Moderate	Low
Human and Equipment Safety - exposure to fire radiation	Operation	Moderate	Low
Human and Equipment Safety - exposure to fire radiation	Operation	Moderate	Low
Human and Equipment Safety - exposure to explosion over pressures	Operation	Moderate	Low
Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Operation	Low	Low
Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Operation	Moderate	Low

Impact / Receptor	Project Phase	Raw Risk	Residual Risk
Human and Equipment Safety - exposure to violent release of kinetic or potential energy	Operation	Moderate	Low
Human and Equipment Safety - exposure to electromagnetic waves	Operation	Moderate	Low
Environment - emissions to air	Operation	Low	Very Low
Environment - emissions to water	Operation	Low	Low
Environment - emissions to earth	Operation	Moderate	Low
Environment - waste of resources e.g., water, power etc	Operation	Low	Very Low
Public - Aesthetics	Operation	Moderate	Low
Investors - Financial	Operation	Moderate	Low
Employees and investors - Security	Operation	Moderate	Low
Employees and investors - Security	Operation	Moderate	Low
Emergencies	Operation	Moderate	Low
Investors - Legal	Operation	Moderate	Low

According to the specialist, from the details of accidents that have happened both with BESS installations and chemical plants in general, it is clear that many potential problems manifest during the commissioning phase when units are first powered up to test functionality. This phase is critical and all controls, procedures, mitigation measures etc that would be in place for full operation should be in place before commissioning commences.

The above Risk Assessment shows that, provided the preventative and mitigative measures are incorporated, the construction and operational phase of the project does not present any high risks nor any fatal flaws for Redox Flow Technologies.

Table 42: Summary of BESS Risk Assessment for Molten Metal BESS Technologies (ISHcon, 2024).

Impact / Receptor	Project Phase	Raw Risk	Residual Risk
Human Health - chronic exposure to toxic chemical or biological agents	Construction	Moderate	Low
Human Health - exposure to noise	Construction	Moderate	Low
Human Health - exposure to temperature extremes and/or humidity	Construction	Low	Very Low
Human Health - exposure to psychological stress	Construction	Low	Very Low
Human Health - exposure to ergonomic stress	Construction	Low	Low

Impact / Receptor	Project Phase	Raw Risk	Residual Risk
Human and Equipment Safety - exposure to fire radiation	Construction	Moderate	Low
Human and Equipment Safety - exposure to explosion over pressures	Construction	Moderate	Low
Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Construction	Moderate	Low
Human and Equipment Safety - exposure to violent release of kinetic or potential energy	Construction	High	Low
Human and Equipment Safety - exposure to electromagnetic waves	Construction	Moderate	Low
Environment - emissions to air	Construction	Low	Very Low
Environment - emissions to water	Construction	Low	Low
Environment - emissions to earth	Construction	Low	Low
Environment - waste of resources e.g. water, power etc	Construction	Low	Very Low
Public - Aesthetics	Construction	Moderate	Low
Investors - Financial	Construction	Moderate	Low
Employees and investors - Security	Construction	Moderate	Low
Emergencies	Construction	Moderate	Low
Investors - Legal	Construction	Moderate	Low
Human Health - chronic exposure to toxic chemical or biological agents	Operations	Moderate	Low
Human Health - chronic exposure to toxic chemical or biological agents	Operations	Moderate	Low
Human Health - exposure to noise	Operations	Moderate	Low
Human Health - exposure to temperature extremes and/or humidity	Operations	Low	Very Low
Human and Equipment Safety - exposure to fire radiation	Operations	Moderate	Low
Human and Equipment Safety - exposure to fire radiation	Operations	Moderate	Low
Human and Equipment Safety - exposure to explosion over pressures	Operations	Moderate	Low

Impact / Receptor	Project Phase	Raw Risk	Residual Risk
Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Operations	Moderate	Low
Human and Equipment Safety - exposure to acute toxic chemical and biological agents	Operations	Moderate	Low
Human and Equipment Safety - exposure to violent release of kinetic or potential energy	Operations	Moderate	Low
Human and Equipment Safety - exposure to electromagnetic waves	Operations	Moderate	Low
Environment - emissions to air	Operations	Low	Very Low
Environment - emissions to water	Operations	Low	Low
Environment - emissions to earth	Operations	Low	Low
Environment - waste of resources e.g. water, power etc	Operations	Low	Very Low
Public - Aesthetics	Operations	Moderate	Low
Investors - Financial	Operations	Moderate	Low
Employees and investors - Security	Operations	Moderate	Low
Employees and investors - Security	Operations	Moderate	Low
Emergencies	Operations	Moderate	Low
Investors - Legal	Operations	Moderate	Low

According to the specialist. from the details of accidents that have happened both with BESS installations and chemical plants in general, it is clear that many potential problems manifest during the commissioning phase when units are first powered up to test functionality. This phase is critical and all controls, procedures, mitigation measures etc that would be in place for full operation should be in place before commissioning commences.

The above Risk Assessment shows that, provided the preventative and mitigative measures are incorporated, the construction and operational phase of the project does not present any high risks nor any fatal flaws for Molten Metal Technologies.

6.9.1 BESS Risk Assessment Conclusion and Recommendations.

The Specialist (Appendix E8) concluded the following with regards to the potential risk of the BESS technologies under investigation in this Environmental Process

The study proceeded based on the assumption that redox flow batteries (typically vanadium) could be installed within a building and solid state batteries (typically lithium) and liquid metal batteries would be installed in containers. Flow batteries can also be installed in containers, but the building option has been chosen in order to highlight possible major differences between technologies.

This Risk Assessment has found that with suitable preventative and mitigative measures in place, none of the identified potential risks are excessively high, i.e., from a Safety, Health and Environment (SHE) perspective no fatal flaws were found with either type of technology (solid state - lithium-ion, redox flow – vanadium, or molten liquid metal - Ambri) for the BESS installations at the proposed Sunveld Energy PVs near Velddrif in the Western Cape.

At a large facility, without installation of the state-of-the art battery technology that includes protective features, there can be significant risks to employees and first responders. The latest battery designs include many preventative and mitigative measures to reduce these risks to tolerable levels. (Refer to tables in section 4 under preventative and mitigative measures). State-of-the-art technology should be used, i.e., not old technology, such as liquid phase lithium ion batteries, that may have been prone to fire and explosion risks.

The design should be subject to a full Hazard and Operability Study (HAZOP) prior to commencement of procurement. A HAZOP is a detailed technical systematic study that looks at the intricacies of the design, the control system, the emergency system etc. and how these may fail under abnormal operating conditions. Additional safeguards may be suggested by the team doing the study.

From a short term health and safety point of view, and ignoring the fact that this project may in the long run help to mitigate possible adverse impacts of climate change, the No-Go option will always be a preferred option since there are no immediate health and safety risks associated with not doing a project.

6.9.2 Lithium solid state containerized batteries

- With lithium solid-state batteries, the most significant hazard with battery units is the possibility of thermal runaway and the generation of toxic and flammable gases. There have been numerous such incidents around the world with lithium-ion batteries at all scales and modern technology providers include many preventative and mitigative features in their designs, e.g. solid state electrolytes being one of these improvements. This type of event also generates heat which may possibly propagate the thermal runaway event to neighbouring batteries if suitable state of the art technology is not employed.
- The flammable gases generated may ignite leading to a fire which accelerates the runaway process and may spread the fire to other parts of the BESS or other equipment located near-by.
- If the flammable gases accumulate within the container before they ignite, they may eventually ignite with explosive force. This type of event is unusual with solid state batteries, but has happened with an older technology container installed at McMicken in the USA in 2019.
- Due to a variety of causes, thermal runaway could happen at any point during transport to the facility, during construction or operation / maintenance at the facility or during decommissioning and safe making for disposal.
- Due to the containerized approach as well as the usual good practice of separation between containers, which should be applied on this project, and therefore the likely restriction of events to one container at a time, the main risks are close to the containers i.e., to transport drivers, employees at the facilities and first responders to incidents.
- In terms of a worst conceivable case container fires, the significant impact zone is likely to be limited to within 10m of the container and mild impacts to 20m. Based on the current proposed layouts, impacts at the closest isolated farmhouses or other independent facilities are not expected.
- In terms of a worst conceivable case explosion, the significant impact zone is likely to be limited to with 10m of the container and minor impacts such as debris within 50m. Based on the current proposed layouts, impacts at the closest isolated farmhouses or other independent facilities are not expected.

- In terms of a worst reasonably conceivable toxic smoke scenario, provided the units are placed suitably far apart to prevent propagation from one unit to another and large external fires are prevented, the amount of material burning should be limited to one container at any one time. In this case, beyond the immediate vicinity of the fire, the concentrations of harmful gases within the smoke should be low.
- For the Sunveld Energy PV, the BESS location is over 100m from busy public roads and 500m from any occupied farmhouse and in this context the location is therefore considered suitable in terms of toxic gas risks. This does not mean that as a precaution persons, particularly employees on site, should not be advised to shelter-in-place if there is a fire with toxic smoke, it only means that severe impacts are highly unlikely and the risks is sufficiently low.

6.9.3 Vanadium redox flow battery installations

- The most significant hazard with VRF battery units is the possibility of spills of corrosive and environmentally toxic electrolyte. Many preventative and mitigative features will be included in the design and operation, e.g., full secondary containment, level control/monitoring on bulk tanks, leak detection on equipment etc.
- For the Sunveld Energy PV, the BESS locations should be over 100m from any water source / course and is therefore considered suitable in terms of spill management.
- VRF batteries do not present significant fire and electrical arcing hazards provided they are correctly designed, operated, maintained and managed. Suitable Battery Management System (BMS), safety procedures, operating instructions, maintenance procedures, trips, alarms and interlocks should be in place.

6.9.4 Liquid metal battery installations

- The most significant hazard with liquid metal battery units is the possibility of injury to personnel mishandling hot items. Suitable on site procedures and PPE for operations and maintenance need to be in place.
- Fires in the event of battery leaks are not impossible, but these should be limited to the combustible materials in a container, e.g. cable coatings etc. and is not likely to be the result of thermal runaway of the battery. The fire is not inherently electrical and normal fire suppression could be used. Note water on hot surfaces would not be advised.
- For the Sunveld Energy PV, the BESS location is suitable for molten metal batteries.

6.9.5 Technology and location of BESS facilities

- From a safety and health point of view, the above Risk Assessment shows that risks posed by VRFB systems may be slightly lower than those of SSL facilities, particularly with respect to fire and explosion risks. From an environmental spill and pollution point of view the VRFB systems present higher short-term risks than the SSL systems. Liquid metal batteries present lower risks than both the SSL and VRF battery systems as both the risks of fire and spills are significantly lower. However, the above conclusions may be due to the fact that the VRFB and Liquid Metal technology is not as mature as SSL technology and there is not as much operating experience and accident information available. Overall, from a SHE RA points of view, there is no specific preference for a type of technology.
- From a SHE risk assessment point of view, where there is a choice of location that is further from public roads, water courses, isolated farmhouses or other occupied facilities, this would be preferred. VRFB hazards are mostly related to possible loss of containment of electrolyte, SSL batteries to fires producing toxic smoke and fire fighting which may result in contaminated of firewater runoff and liquid metal hazards are mostly limited to onsite operational issues. The current chosen locations are suitably far from the above with a very low risk of any significant impacts.

6.10 CUMULATIVE IMPACTS

This section is summarised from the cumulative impact assessments that took place by each of the participating specialists. For further details in this regard, the reader is referred to the specialist assessments contained in **Appendix E**.

The specialists assessed cumulative impacts based on a dataset provided with all similar projects within a 30km radius. This dataset made use of the projects listed in the Departments latest REEA dataset as well as others identified by the Applicant and the EAP.

The 2014 EIA Regulations (as amended) (GNR 326) define a cumulative impact as follows:

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

There are a number of other renewable energy facilities in the vicinity of the proposed Sunveld Solar PV as shown in the Figure below.

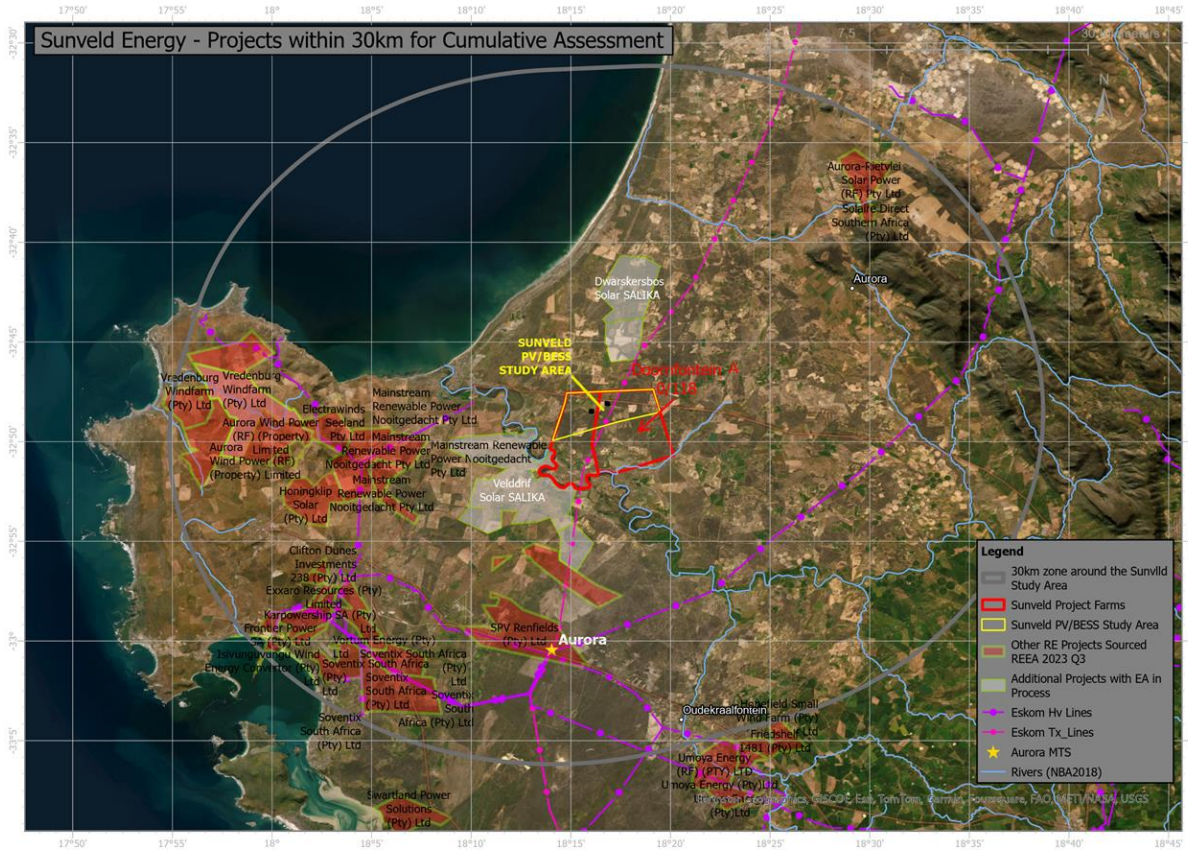

Figure 55: Renewable Energy Facilities within proximity of the proposed Sunveld Solar PV.

According the DFFE Database of renewable energy facilities as well as additional projects known to Cape EAPrac, there are 15 other renewable energy within 30km of Sunveld PV..

In terms of possible cumulative impacts, one needs to look at the presence of similar facilities on the farm portions as well as the greater landscape, namely:

- Cumulative impacts due to the cumulative effects of Sunveld Solar added to all other renewable energy facilities in the Veldrift area have been assessed. These impacts however need to be managed through strategic spatial planning documents such as an SEA and SDF and not through individual EIA processes.

- Cumulative impacts due to the cumulative effects of 7 PV areas proposed as part of the Sunveld Solar PV project to be co-located on one site.

The table below reflects the other renewable energy facilities in close proximity to the proposed Sunveld Solar PV.

Cape EAPrac does not have details on the exact configuration of these facilities, however, based on the conservative assumption that approximately 1.3ha is required per megawatt of energy generated, one can assume the following transformation of the vegetation types vegetation types associated with the greater area[46].

Table 43: Potential cumulative habitat transformation associated with renewable energy within 30km of Sunveld Solar.

Status	Transformation Area in Hectares
In operation	0
Under construction	0
Authorised	4700
EIA in Progress (including Sunveld Solar)	2330

It is impossible to foresee how many of these projects will reach preferred bidder status in terms of the REIPPPP and will eventually be constructed. Due current and future Transmission capacity associated with the Aurora MTS, it is highly unlikely that all these projects will be constructed. As a worst-case scenario one can assume a total transformation of 7030ha of Saldanha Sandveld (in various states), Secondary Vegetation and Agricultural Areas.

Potential cumulative impacts identified for the project include various negative impacts such as loss of habitat, visual massing, loss of agricultural land, an influx of jobseekers and change in the area's sense of place, but also include positive cumulative impacts on the economy, business development, and employment.

Furthermore, the BESS specialist confirmed that unless another BESS is installed within 500m of the BESS locations, cumulative impacts of other developments in the greater area do not affect the safety and health of employees, contractors of members of the public within the BESS impact zone. The same can be said of the BESS electrical infrastructure and grid connection. These projects do not plan additional BESS within 500m and future projects in the area should not install new BESS within 500m of any existing BESS. Therefore, from a safety and health point of view, there are no significant cumulative impacts from any other BESS installation in the greater area.

The table below provides a summary of the significance and status of cumulative impacts associated with the Sunveld Solar PV in conjunction with all other proposed facilities within 30km.

Table 44: Assessment of Cumulative Impacts Associated with the Proposed Sunveld Solar PV and BESS.

Nature of Cumulative Impact	Description	Significance[47]	Status
Terrestrial Biodiversity Impacts.			
Loss of indigenous vegetation and species of conservation concern	The loss of indigenous vegetation and SCC will be compounded by the EGI as well as other projects occurring within the area. However, given that most of the project infrastructure has been located in areas that were transformed or are secondary vegetation, the additive impact of this project is likely to have a cumulative significance of low since the project has been	Low	Negative

[46] Where generation capacity is not known, it has been assumed as 100 Megawatts.

[47] The Significance reflected in this table depicts the post mitigation significance of the cumulative impact.

Nature of Cumulative Impact	Description	Significance[47]	Status
	designed to limit the loss of indigenous vegetation and SCC.		
Increased reduction in faunal habitat and increase disturbance of faunal species	The impacts associated with this development will be compounded by other projects in the area. This project will add to the loss of faunal habitat by other developments including roads, housing and agriculture. Fauna that are displaced may have to move farther afield causing a displacement knock-on effect. However, given that the majority of project infrastructure is located in areas that have been transformed and therefore offer limited faunal habitat, and assuming that neighbouring projects implement suitable mitigation measures to reduce their impact, the overall significance of the impact will be Low	Low	Negative
Avifaunal Impacts			
Displacement of avifauna during construction.	Displacement due to disturbance associated with the construction of the Sunveld PV SEF Project will be a feature of all other proposed renewable energy projects within a 30km radius around the Sunveld solar PV.	Low	Negative
Displacement of avifauna during operations	Displacement of avifauna due to habitat transformation associated with the presence of the Sunveld PV SEF Project will be a feature of all other proposed renewable energy projects within a 30km radius around the Sunveld Solar PV Project.	Medium	Negative
Mortality due to collisions	Mortality due to collisions with the solar panels will be a feature of all other proposed SEF projects within a 30km radius around the Sunveld PV SEF Project.	Low	Negative
Mortality due to entanglement in perimeter fences	Mortality due to entanglement in perimeter fences associated with the SEF Projects will be a feature of all other proposed renewable energy projects within a 30km radius around the Sunveld PV SEF Project.	Low	Negative
Displacement due to disturbance associated with the decommissioning activities	Displacement due to disturbance associated with the decommissioning activities will be a feature of all other proposed renewable energy projects within a 30km radius around the Sunveld PV SEF Project.	Low	Negative
Agricultural Impacts			
Loss of Agricultural Land	The potential cumulative agricultural impact of importance is a regional loss (including by degradation) of future agricultural production potential.	Low	Medium
Heritage Impacts			
Impact on Archaeological Resources	Developments close to the Berg River are likely to have the greatest impacts on archaeology. The renewable energy application to the southwest of the site (has the greatest relevance in this regard, although no archaeological sites were reported by Lavin [2023b]. The extent of archaeological material in the development footprint is unknown but likely quite widespread, and that the same problem likely pertains for all other surveys in the area.	Low	Negative

Nature of Cumulative Impact	Description	Significance[47]	Status
Impacts on Graves	Cumulative impacts to graves are not a concern since graves are very rarely encountered, especially in areas away from the coastline.	Low	Negative
Impacts on Cultural Landscape	Sources of cumulative impacts to the cultural landscape relate to any activities that are incongruent with the rural landscape. In this area these include mainly other renewable energy facilities and mining. The most important landscape feature is the Berg River corridor.	Low	Negative
Visual Impacts			
Short-term landscape change from the current rural agricultural sense of place to the semi-industrial Renewable Energy landscape.	With mitigation and retaining the visual setback buffers, short-term visual screening will take place, reducing the intervisibility of the different project components that are spready out over a 6km distance. Without mitigation should be considered a Fatal Flaw.	Low	Negative
Long Term landscape change from the current rural agricultural sense of place to the semi-industrial RE landscape.	With mitigation and retaining the visual setback buffers, short-term visual screening will take place, reducing the intervisibility of the different project components that are spready out over a 6km distance. Residual risks to landscape resources will remain as the precedent for renewable energy development will be site in place, possible attracting future similar land uses changes. This is mitigated to some degree by the setback and height restriction mitigations that will set a more suitable precedent for PV development in the region.	Medium	Negative
Social Impacts			
Cumulative impacts on sense of place and the landscape	Visual impacts associated with the establishment of associated grid infrastructure and the potential impact on the area's rural sense of place and character of the landscape	Medium	Negative
Cumulative impacts on local services	The establishment of a number of renewable energy facilities and associated projects, such as the proposed Solar PV Facility , in the Berg River Municipality has the potential to place pressure on local services, specifically medical, education and accommodation.	Medium	Negative
Cumulative impacts on local economy.	The establishment of renewable energy facilities and associated projects, such as the Solar PV Facility, in the Berg River Municipality will create employment, skills development and training opportunities, creation of downstream business opportunities	High	Positive

As can be seen in the table above, the cumulative impacts range from Medium negative to High positive and no High and very High cumulative impacts are expected. This is considered to be acceptable on a regional scale. Due to the limited capacity at the Aurora MTS and the highly competitive bid process, it is a reasonable assumption that not all the projects in the area will be developed.

6.11 Assessment of the No-Go Alternative

As required in the 2014 EIA regulations (as amended), this EIR includes an assessment of the assessment of the no go alternative (i.e. the option of not proceeding with the proposed development). This provides details on the impact of the status quo (i.e. the impact and risks associated with the current land use)

The Terrestrial Biodiversity specialist has confirmed that the current land use is predominantly agriculture or secondary vegetation, and the associated impacts caused by this to the terrestrial ecology is considered to be low. However, if this land use is left unmanaged for the foreseeable future, it is probable that the ecological integrity and functioning of the area will deteriorate. .

The primary goal of the project is to assist in providing additional capacity to Eskom to assist in addressing the current energy supply constraints. The project also aims to reduce the carbon footprint associated with energy generation. As indicated in the social impact assessment (Annexure E6) energy supply constraints and the associated load shedding have had a significant impact on the economic development of the South African economy. South Africa also relies on coal-powered energy to meet more than 90% of its energy needs. South Africa is therefore one of the highest per capita producers of carbon emissions in the world and Eskom, as an energy utility, has been identified as the world's second largest producer carbon emissions. The no-development option would result in the lost opportunity for South Africa to improve energy security and assist to support with the development of clean, renewable energy. The No-Development option would represent a lost opportunity for South Africa to improve energy security and supplement is current energy needs with clean, renewable energy. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a significant negative social cost.

Table 45: Assessment of No Go Alternative

Nature of Impact	Description	Significance[48]	Status
Terrestrial Biodiversity			
Loss of Near-Intact Saldanha Flats Strandveld	If the project does not proceed, the properties will continue to be used for grazing livestock, such as sheep and cattle, and this will likely result in the ongoing loss of near-intact Saldanha Flats Strandveld. Impacts under this scenario are low.	Low	Negative
Loss of degraded Saldanha Flats Strandveld	If the project does not proceed, the properties will continue to be used for grazing livestock, such as sheep and cattle, and this will likely result in the ongoing loss of near-intact Saldanha Flats Strandveld. Impacts under this scenario are low.	Low	Negative
Loss of Secondary Vegetation	If the project does not proceed, the properties will continue to be used for grazing livestock, such as sheep and cattle, and this will likely result in the ongoing loss of near-intact Saldanha Flats Strandveld. Impacts under this scenario are low.	Low	Negative
Loss of Plant Species of Conservation Concern.	If the project does not proceed, impacts under this scenario are expected to be low as limited SCC will be lost	Low	Negative
Loss of Faunal Habitat	If the project does not proceed, the properties will continue to be used for grazing livestock, such as sheep and cattle, and this will likely result in the ongoing loss of faunal habitat. Impacts under this scenario are low.	Low	Negative
Loss of Faunal Species of Conservation Concern	If the project does not proceed, impacts under this scenario are expected to be low as limited SCC will be lost	Low	Negative
Disturbance to faunal species and their livelihood activities (shelter, foraging	Under the no-go alternative it is unlikely that fauna will be disturbed as the current land use involves livestock farming. As such, the significance of this impact is low.	Low	Negative

[48] The Significance reflected in this table depicts the post mitigation significance of the cumulative impact.

Nature of Impact	Description	Significance[48]	Status
and breeding) due to construction related noise, vibrations, dust, night lighting and obstructions.			
Avifauna			
Impact on Avifauna	The no-go option will result in no additional impacts on avifauna and will result in the ecological status quo being maintained, which will be to the advantage of the avifauna. However, no fatal flaws were identified during the investigations.	None	Neutral
Heritage			
Impact on Heritage Resources.	The main current impact to heritage is the ploughing of the lands which results in archaeological materials being buried and revealed on a cyclical basis. A significant concern here is that sites that are visible now are only so because they are in ploughed lands lying fallow. This means that there are likely many more sites that have either not been identified or have been undergraded and would get destroyed by development. Conversely, sites identified and avoided now may be ploughed over and become largely invisible and hence vulnerable to future development. Trampling from grazing animals and/or farm/other vehicles could also occur.	Medium	Negative
Social Impacts			
Impacts on Social	Opportunities - The current rural agricultural land uses of the property do add to the rural agricultural landscape character. - Agricultural productivity from sheep farming creates some employment opportunities. Constraints - National energy objectives for renewable energy and job creation will not be met.	Low	Negative
Visual Impacts			
Impacts on Sense of place	None	None	Neutral

6.12 IMPACT SUMMARY

The table below summarises the status and significance of all impacts (with and without mitigation) as assessed in the sections above.

Table 46: Impact Summary of the proposed Sunveld Solar PV & BESS and associated infrastructure[49].

Construction Phase Terrestrial Biodiversity Impacts		
Nature: Loss of Near-Intact Saldanha Flats Strandveld		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**

[49] The nature and significance of impacts outlined in this section refer to those associated with the preferred alternative.

Nature: Loss of degraded Saldanha Flats Strandveld		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Nature: Loss of Secondary Vegetation		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Loss of Faunal Habitat		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Loss of Plant Species of Conservation Concern		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Nature: Loss of Faunal Species of Conservation Concern		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Nature: Disruption of Ecosystem Function and Process		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Disturbance to faunal species and their livelihood activities (shelter, foraging and breeding) due to construction related noise, vibrations, dust, night lighting and obstructions.		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Nature: Mortality of faunal species due to project related activities.		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Operational Phase Terrestrial Biodiversity Impacts		
Nature: Infestation of alien invasive plant species		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Nature: Mortality of faunal species due to operational project related activities		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Closure and Decomissioning Phase Terrestrial Biodiversity Impacts		
Nature: Loss of indigenous vegetation and species of conservation concern		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Disturbance to faunal species and potential reduction in abundance and mortality of faunal species		
	Without Mitigation	**With Mitigation**
Significance	**Moderate Negative**	**Low Negative**
Construction Phase Avifaunal Impacts		

Nature: Displacement of priority species due to disturbance associated with construction of the PV plant and associated infrastructure.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Operational Phase Avifaunal Impacts		
Nature: Displacement of priority species due to habitat transformation associated with construction of the PV plant and associated infrastructure		
	Without Mitigation	**With Mitigation**
Significance	**High Negative**	**Medium Negative**
Nature: Mortality of priority species due to collisions with the solar panels		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Entanglement of birds in the perimeter fence		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Electrocution of priority species in the on-site substations		
	Without Mitigation	**With Mitigation**
Significance	**High Negative**	**Low Negative**
Decomissioning Phase Avifaunal Impacts		
Nature: Displacement of priority species due to disturbance associated with decommissioning of the PV facility and associated infrastructure		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Construction Phase Heritage Impacts		
Nature: Construction Phase Archaeological Impacts associated with damage to or destruction of archaeological sites.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Construction Phase Impacts to graves associated with damage to or destruction of graves.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Construction Phase Impacts to the cultural landscape associated with: - Visual intrusion into the cultural landscape. - Extensive activity on site in a rural area. - Increased light pollution at night.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Operational Phase Heritage Impacts		
Nature: Operation Phase Impacts to the cultural landscape associated with:		

- Visual intrusion into the cultural landscape. - Increased light pollution at night.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Closure and Decommissioning Heritage Impacts		
Nature: Decommissioning Phase Impacts to the cultural landscape associated with: - Visual intrusion into the cultural landscape. - Extensive activity on site in a rural area. - Increased light pollution at night.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
.**Construction Phase Visual Impacts**		
Nature: Short-term landscape change from the current rural agricultural sense of place to the semi-industrial Renewable Energy landscape		
	Without Mitigation	**With Mitigation**
Significance	**Medium - High Negative**	**Medium Negative**
Operational Phase Visual Impacts.		
Nature: Short-term landscape change from the current rural agricultural sense of place to the semi-industrial Renewable Energy landscape (Loss of site landscape character due to the operation of the PV structures and associated infrastructure).		
	Without Mitigation	**With Mitigation**
Significance	**High Negative**	**Medium Negative**
Closure and Decomissioning Visual Impacts		
Nature: Short-term landscape change from the removal of the PV structures, followed by rehabilitation of the impacted areas back to agricultural lands.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Construction Phase Social Impacts		
Nature: Creation of employment and business opportunities during the construction phase		
	Without Mitigation	**With Enhancement**
Significance	**Medium Positive**	**Medium Positive**
Nature: Potential impacts on family structures and social networks associated with the presence of construction workers		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Potential impacts on family structures, social networks and community services associated with the influx of job seekers		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**

Nature: Potential risk to safety of scholars, farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Operational Phase Social Impacts		
Nature: Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased incidence of grass fires		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Potential noise, dust and safety impacts associated with construction related activities		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: The activities associated with the construction phase, such as establishment of access roads and the construction camp, movement of heavy vehicles and preparation of foundations for the project etc. will damage farmlands and result in a loss of farmlands for grazing.		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Development of infrastructure to improve energy security and support renewable sector		
	Without Mitigation	**With Mitigation**
Significance	**High Positive**	**High Positive**
Nature: Creation of employment and business opportunities associated with the operational phase		
	Without Mitigation	**With Enhancement**
Significance	**Low Positive**	**Medium Positive**
Nature: The generation of additional income represents a significant benefit for the local affected farmer(s) and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as feed etc.		
	Without Mitigation	**With Enhancement**
Significance	**Low Positive**	**Medium Positive**
Nature: Benefits associated with support for local community's form SED contributions		
	Without Mitigation	**With Enhancement[50]**
Significance	**Medium Positive**	**High Positive**
Nature: Visual impact associated with the proposed facility and associated infrastructure and the potential impact on the areas rural sense of place.		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Potential impact of the Facility on local tourism		
	Without Mitigation	**With Enhancement / Mitigation**
Significance	**Low Negative**	**Low Negative**
Construction Phase Traffic Impacts		

[50] Enhancement assumes effective management of the community trust

Nature: Increase in Traffic		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Nature: Increase of Incidents with pedestrians and livestock		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Increase in Dust from gravel roads		
	Without Mitigation	**With Mitigation**
Significance	**High Negative**	**Medium Negative**
Nature: Increase in Road Maintenance		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Medium Negative**
Nature: Additional Abnormal Loads		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Operational Phase Traffic Impacts		
Nature: Increase in Traffic		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Increase of Incidents with pedestrians and livestock		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Increase in Dust from gravel roads		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Increase in Road Maintenance		
Significance	**Low Negative**	**Low Negative**
Nature: Additional Abnormal Loads		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Closure and Decomissioning Traffic Impacts		
Nature: Increase in Traffic		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Increase of Incidents with pedestrians and livestock		
	Without Mitigation	**With Mitigation**
Significance	**Medium Negative**	**Low Negative**
Nature: Increase in Dust from gravel roads		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**

Nature: Increase in Road Maintenance		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**
Nature: Additional Abnormal Loads		
	Without Mitigation	**With Mitigation**
Significance	**Low Negative**	**Low Negative**

6.13 IMPACT STATEMENT

As can be seen in the table above, all impacts associated with the proposed Sunveld Solar and BESS range from high – positive to Medium – Negative. All High and very high negative Impacts have been avoided by the avoidance of sensitive features or mitigated to acceptable levels.

None of the participating specialists identified any impacts that remain high or very-high after mitigation. The preferred layout (Layout Alternative 5) avoids the vast majority of the main sensitive features including visual setbacks from the R399, intact Saldanha Strandveld, Unfragmented sections of Black Harrier Habitat and all aquatic features and their associated buffers. .

The Terrestrial Biodiversity specialist concluded that there are no fatal flaws are evident for the proposed project and that the average post-mitigation impact significance for the project is moderately low.

The Avifaunal Specialist concluded that no fatal-flaws were identified during the avifaunal assessment, but recommended monitoring protocols (post construction monitoring) be implemented during the lifecycle of the project.

The heritage specialist confirmed that the overall impact of the project is considered to be medium but can largely be mitigated to a low level with the implementation of the suggested mitigation measures (i.e. the sampling of surface and sub-surface resources identified).

The visual specialist has concluded that the proposed development can commence subject to the implementation of mitigation measures, including the reduction of PV heights in certain areas as well as visual screening.

The Social specialist concluded that the proposed PV Facility and associated infrastructure will result in several social and socio-economic benefits, including creation of employment and business opportunities during both the construction and operational phase. The project will also contribute to local economic development though socio-economic development (SED) contributions. In addition, the development will improve energy security and reduce the carbon footprint associated with energy generation.

As such there are no fatal flaws or high post-mitigation impacts that should prevent the development from proceeding. Based on the layout provided for the assessment, Sunveld Solar PV can be supported from a terrestrial biodiversity, aquatic biodiversity, avifaunal, visual, social, heritage, agricultural and traffic point of view.

A map showing the proposed activity in relation to the key sensitive features is in attached in Appendix D. All sensitive features along with their appropriate buffers are shown in this plan. As required by the EMPr, all areas outside of the proposed development footprint are to be demarcated as no go areas.

It is Cape EAPrac's reasoned opinion that the mitigated preferred Alternative (Layout Alternative 5) can be approval by the competent Authority subject to the outcome of the public participation process and on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr be strictly adhered to.

7. MANAGEMENT AND MITIGATION OF IMPACTS

Please refer to the table below, which summarises the mitigation measures recommended by both the Specialists and Cape EAPrac. This table summarises the mitigations, and details whether they should be included as conditions of approval, or whether they have been included as actions in the EMPr. The mitigations reflected in this table must be read in conjunction with the EMPr attached in Appendix H, where the Environmental Impact Management Outcomes and responsible parties for the implementation of these mitigations are provided in more detail (in compliance with appendix 4 of the 2014 EIA regulations).

The table furthermore reflects to which stage of the development the proposed mitigation measures are applicable. In instances where suggested mitigations have already been incorporated into the design phase, they have been reflected as such[51].

Table 47: Recommended mitigation measures required for the construction, operation and decommissioning of the proposed Sunveld Solar PV and BESS development.

Mitigation Measures and Environmental Impact Management Actions	Condition of Approval	Included in EMPr	Construction[52] Phase	Operational Phase	Decommissioning Phase
Terrestrial Biodiversity					
Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible. Brush cutting of vegetation beneath the panels should be, implemented, otherwise controlled grazing by small livestock like sheep. No topsoil stripping or complete vegetation removal beneath the panels. No imported material to be placed under the modules		✓	✓	✓	
Where possible, existing access routes and walking paths must be made use of.		✓	✓	✓	
All laydown, chemical toilets etc. should be restricted to medium sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded. No storage of vehicles or equipment will be allowed outside of the designated project areas.		✓	✓	✓	
Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species.		✓		✓	
Any woody material removed can be shredded and used in conjunction with the topsoil to augment soil moisture and prevent further erosion.		✓		✓	✓
A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and		✓	✓	✓	✓

[51] There are overlapping mitigations suggested be different specialists. In such instances, they have bee reflected for each specialist discipline.

[52] In this instance, the construction phase includes mitigation measures associated with pre-construction and planning.

Mitigation Measures and Environmental Impact Management Actions	Condition of Approval	Included in EMPr	Construction[52] Phase	Operational Phase	Decommissioning Phase
equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment					
A carefully considered surface water/drainage management plan must be developed for the site including attention to the use of environmentally friendly cleaning chemicals for cleaning of panels during the operational phase. No mass herbicide application to be applied beneath modules during operation.		✓	✓	✓	✓
It should be made an offence for any staff to take/ bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants		✓	✓	✓	✓
A fire management plan needs to be complied and implemented to restrict the impact fire might have on the surrounding areas.		✓	✓	✓	✓
Rocks removed in the construction phased may not be dumped, but can be used in areas where erosion control needs to be performed		✓		✓	
Any individual of the nationally protected trees or protected plants that was observed needs a relocation or destruction permit in order for any individual that may be removed or destroyed due to the development. Preferably, the trees/plants should be avoided. Hi visibility flags must be placed near any protected plants in order to avoid any damage or destruction of the species. If left undisturbed the sensitivity and importance of these species needs to be part of the environmental awareness program		✓	✓	✓	✓
The Solar panel surfaces may not have reflective surfaces which can lead to veld fires		✓		✓	
The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into the surrounding environments, signs must be put up to enforce this.		✓	✓	✓	
Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals		✓	✓	✓	
No trapping, killing, or poisoning of any wildlife is to be allowed. Signs must be put up to enforce this;		✓	✓	✓	✓
Try incorporating motion detection lights as much as possible to reduce the duration of illumination. Heights of light columns to be minimised to reduce light spill. Baffles, hoods, or louvres to also be used to reduce light spill		✓	✓		
Facility lighting during construction & operation should be kept to a minimum and should make use of latest technology to ensure that light disturbance is minimised. This will also reduce the attraction of insects (and in turn insectivorous bats) to the facility. Lighting to be limited to O&M complex and substation. No Perimeter security lighting to be allowed (if perimeter security is a concern, security cameras rather than lighting.)		✓	✓	✓	
Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible.		✓	✓	✓	
All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with		✓	✓	✓	✓

Mitigation Measures and Environmental Impact Management Actions	Condition of Approval	Included in EMPr	Construction[52] Phase	Operational Phase	Decommissioning Phase
speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings and erosion is limited.					
Schedule activities and operations during least sensitive periods, to avoid migration, nesting, and breeding seasons.		✓	✓	✓	✓
Heat generated from the substations must be monitored to ensure it does not negatively affect the local fauna		✓	✓	✓	✓
All areas to be developed must be walked through prior to any activity to ensure no nests or fauna species are found in the area. Should any Species of Conservation Concern not move out of the area, or their nest be found in the area a suitably qualified specialist must be consulted to advise on the correct actions to be taken.	✓	✓	✓		
Any holes/deep excavations must be dug and planted in a progressive manner; Should the holes overnight they must be covered temporarily to ensure no small fauna species fall in and subsequently inspected prior to backfilling		✓	✓		
Wildlife-permeable fencing with holes large enough for mongoose and other smaller mammals should be installed, the holes must not be placed in the fence where it is next to a major road as this will increase road killings in the area		✓	✓		
Use environmentally friendly cleaning and dust suppressant products		✓	✓		
Fencing mitigations: - Top 2 strands must be smooth wire - Routinely retention loose wires - Minimum 30cm between wires - Place markers on fences		✓	✓		
Once the development layout has been confirmed, the open areas must be fenced off appropriately pre-construction in order to allow animals to move or be moved into these areas before breaking ground activities occur. Construction activities must take place systemically. The perimeter fence should not be completed -i.e. leaving sections unfenced to allow fauna to escape. Drilling etc should start one side of the site and progress towards the section of the site where fences are incomplete.		✓	✓		
The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. Footprint of the roads must be kept to prescribed widths		✓	✓	✓	
An alien management plan must be implemented quarterly for 2 years after initial clearing phase.		✓	✓		✓
Dust-reducing mitigation measures must be put in place and must be strictly adhered to. This includes wetting of exposed soft soil surfaces. No non environmentally friendly suppressants may be used as this could result in pollution of water sources		✓	✓		✓
Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site. Refuse bins will be emptied and secured; Temporary storage of domestic waste shall be in covered waste skips; and Maximum domestic waste storage period will be 10 days.		✓	✓		
Toilets at the recommended Health and Safety standards must be provided. These should be emptied twice a day, to prevent staff from using the surrounding vegetation		✓	✓		
The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed		✓	✓		

Mitigation Measures and Environmental Impact Management Actions	Condition of Approval	Included in EMPr	Construction[52] Phase	Operational Phase	Decommissioning Phase
disposal facility. Under no circumstances may domestic waste be burned on site					
Refuse bins will be emptied and secured. Temporary storage of domestic waste shall be in covered waste skips. Maximum domestic waste storage period will be 10 days.		✓	✓		
Suitable temporary solid waste facilities are to be incorporated into the design to prevent unsanitary conditions. These are to be cleared weekly and waste collected by the local waste management department. The residents must be encouraged to recycle.		✓		✓	
All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr		✓	✓	✓	✓
Speed limits must be put in place to reduce erosion.		✓	✓	✓	✓
Where possible, existing access routes and walking paths must be made use of.		✓	✓		
Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events and strong winds.		✓	✓	✓	
A stormwater management plan must be compiled and implemented.		✓	✓		
A spill response kit must be available at all times. The incident must be reported on and if necessary, a biodiversity specialist must investigate the extent of the impact and provide rehabilitation recommendations.		✓	✓	✓	
Appropriate/Adequate fire management plan need to be implemented.		✓	✓	✓	
Avifauna					
Concentrate all surface infrastructure on habitat of medium to low avifaunal sensitivity. The development footprint of the various individual facilities must be kept as small as possible and sensitive habitats must be avoided.		✓	✓		
Where possible, existing access roads should be used and the construction of new roads should be kept to a minimum.		✓	✓		
Prevent an overspill of construction activities into areas that are not part of the proposed construction site.		✓	✓		
Use indigenous plant species native to the study area during landscaping and rehabilitation.		✓	✓		
All AC internal electrical reticulation should be placed underground		✓	✓		
Reduce or minimise the use of outdoor lighting to avoid attracting birds to the lights or to reduce potential disorientation to migrating birds.		✓		✓	
Use indigenous plant species native to the study area during landscaping and rehabilitation.		✓	✓	✓	
Implement at least an additional bird survey on commencement of operations.	✓		✓		
Apply systematic reflective/dynamic markers to the boundary fence to increase the visibility of the fence for approaching birds (e.g. korhaan taxa) and to avoid potential bird collisions with the fence structure.	✓		✓		
Remove/relocates artificial watering holes. It is recommended that watering holes be relocated at least 200m from any PV arrays.	✓		✓		
All construction sites/areas must be demarcated on site layout plans (preferably), and no construction personnel or vehicles may leave the		✓	✓		

Mitigation Measures and Environmental Impact Management Actions	Condition of Approval	Included in EMPr	Construction[52] Phase	Operational Phase	Decommissioning Phase
demarcated area except those authorised to do so. Those areas surrounding the construction sites that are not part of the demarcated development area should be considered as "no-go" areas for employees, machinery or even visitors.					
All road networks must be planned with care to minimise dissection or fragmentation of important avifaunal habitat type. Where possible, the use of existing roads is encouraged.		✓	✓		
Killing or poaching of any bird species should be avoided by means of awareness programs presented to the labour force. The labour force should be made aware of the conservation issues pertaining to the bird taxa occurring on the study site. Any person found deliberately harassing any bird species in any way should face disciplinary measures, following the possible dismissal from the site.		✓	✓	✓	✓
Checks must be carried out at regular intervals to identify areas where erosion is occurring. Appropriate remedial action, including the rehabilitation of eroded areas should be undertaken.		✓	✓	✓	
Open fires is strictly prohibited and only allowed at designated areas		✓	✓	✓	✓
Agricultural					
Vegetation clearance must be restricted to areas where infrastructure is constructed.		✓	✓		
No materials removed from development area must be allowed to be dumped in nearby livestock farming areas.		✓	✓		
Prior arrangements must be made with the landowners to ensure that livestock and game animals are moved to areas where they cannot be injured by vehicles traversing the area		✓	✓		
No boundary fence must be opened without the landowners' permission		✓	✓		
Access to areas outside of the authorised development footprint should be strictly prohibited.		✓	✓		
All left-over construction material must be removed from site once construction on a land portion is completed		✓	✓		
No open fires made by the construction teams are allowable during the construction phase.		✓	✓		
Land clearance must only be undertaken immediately prior to construction activities and only within the development footprint;		✓	✓		
Unnecessary land clearance must be avoided;		✓	✓		
Level any remaining soil removed from excavation pits (where the PV modules will be mounted) that remained on the surface, instead of allowing small stockpiles of soil to remain on the surface		✓	✓		
Where possible, conduct the construction activities outside of the rainy season;		✓	✓		
Stormwater channels must be designed to minimise soil erosion risk resulting from surface water runoff.		✓	✓		
Maintenance must be undertaken regularly on all vehicles and construction/maintenance machinery to prevent hydrocarbon spills;		✓	✓		
Any waste generated during construction must be stored into designated containers and removed from the site by the construction teams;		✓	✓		
Any left-over construction materials must be removed from site;		✓	✓		
The construction site must be monitored by the Environmental Control Officer (ECO) to detect any early signs of fuel and oil spills and waste dumping;		✓	✓		
Ensure battery transport and installation by accredited staff / contractors;		✓	✓		

Mitigation Measures and Environmental Impact Management Actions	Condition of Approval	Included in EMPr	Construction[52] Phase	Operational Phase	Decommissioning Phase
Compile (and adhere to) a procedure for the safe handling of battery cells during transport and installation		✓	✓		
The area around the project, including the internal access roads, must regularly be monitored to detect early signs of soil erosion on-set		✓		✓	
If soil erosion is detected, the area must be stabilised using geo-textiles and facilitated re-vegetation		✓		✓	
Maintenance must be undertaken regularly on all vehicles and maintenance machinery to prevent hydrocarbon spills		✓		✓	
No domestic and other waste must be left at the site and must be transported with the maintenance vehicles to an authorised waste dumping area		✓		✓	
Heritage					
Implementation of a chance find procedure for the project;		✓	✓		
Construction monitoring and mitigation by Archaeological monitoring during bulk earthworks.	✓		✓		
Monitoring of the project area during construction by the ECO.	✓		✓		
Visual					
Restrict hight of PV Panels to 2.4m for all areas between the 500m and 200m buffer from the R399					
Implementation of visual screening in all areas as identified in the site layout plan		✓	✓	✓	
Continuation of Agricultural activities on remaining undeveloped agricultural lands.		✓	✓		
The area needs to be managed such that there is no risk from wildfire, and may require tractor-mowing to reduce veld grass growth.		✓	✓		
Rehabilitation of impacted areas to agriculturally viable areas or natural vegetation		✓			✓
Social					
Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.		✓	✓		
Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.		✓	✓		
Before the construction phase commences the proponent should meet with representatives from the Local Municipality to establish the existence of a skills database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase.		✓	✓		
The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.		✓	✓		
Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.		✓	✓		
The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.		✓	✓		
The proponent should liaise with the Local Municipality with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security		✓	✓		

Mitigation Measures and Environmental Impact Management Actions	Condition of Approval	Included in EMPr	Construction[52] Phase	Operational Phase	Decommissioning Phase
companies etc.) prior to the commencement of the tender process for construction contractors. These companies should be notified of the tender process and invited to bid for project-related work.					
The Local Municipality, in conjunction with the local business sector and representatives from the local hospitality industry, should identify strategies aimed at maximising the potential benefits associated with the project.		✓			
The proponent should consider the option of establishing a Monitoring Forum (MF) in order to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should be established before the construction phase commences, and should include key stakeholders, including representatives from Local Municipality, farmers, and the contractor(s). The MF should also be briefed on the potential risks to the local community associated with construction workers.		✓	✓		
The proponent and the contractor(s) should, in consultation with representatives from the MF, develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be dismissed. All dismissals must comply with the South African labour legislation.		✓	✓		
The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase.		✓	✓		
The construction area should be fenced off before construction commences and no workers should be permitted to leave the fenced off area.		✓	✓		
The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site.		✓	✓		
The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days of their contract coming to an end.		✓	✓		
It is recommended that no construction workers, except for security personnel, should be permitted to stay over-night on the site.		✓	✓		
The proponent should implement a policy that no employment will be available at the gate.		✓	✓		
The proponent should prepare a Stakeholder Engagement Plan (SEP) and Community Health, Safety and Security Plan (CHSSP) prior to commencement of the construction phase.		✓	✓		
The proponent should enter into an agreement with local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.		✓	✓		
Traffic movement and construction related activities should be contained within clearly designated areas.		✓	✓		
Strict traffic speed limits must be enforced.		✓	✓		
All farm gates must be closed after passing through.		✓	✓		
Contractors appointed by the proponent should provide daily transport for construction workers to and from the site. This would reduce the potential risk of trespassing on the remainder of the farm and adjacent properties.		✓	✓		
The proponent should hold contractors liable for compensating farmers in full for any stock losses and/or damage to farm infrastructure that can be linked to construction related activities and or workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors, and		✓	✓		

Mitigation Measures and Environmental Impact Management Actions	Condition of Approval	Included in EMPr	Construction[52] Phase	Operational Phase	Decommissioning Phase
neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities					
The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.		✓	✓		
Contractors appointed by the proponent must ensure that construction workers found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation.		✓	✓		
Establishment of a fire break around the construction area before work commences should be investigated.		✓	✓		
Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.		✓	✓		
Smoking on site should be confined to designated areas.		✓	✓		
Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy winter months		✓	✓		
Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.		✓	✓		
Contractor should provide fire-fighting training to selected construction staff.		✓	✓		
The movement of construction vehicles on the site should be confined to agreed access road/s.		✓	✓		
The movement of heavy vehicles associated with the construction phase should be timed to avoid times days of the week, such as weekends, when the volume of traffic travelling along the access roads may be higher.		✓	✓		
Dust suppression measures should be implemented, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.		✓	✓		
All vehicles must be road worthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.		✓	✓		
An Environmental Control Officer (ECO) should be appointed to monitor the construction phase.		✓	✓		
Existing internal roads should be used where possible. In the event that new roads are required, these roads should be rehabilitated on the completion of the construction phase.		✓	✓		
The footprint associated with the construction related activities (access roads, construction camps, workshop etc.) should be minimised.		✓	✓		
All areas disturbed by construction related activities, such as access roads on the site, construction camps etc., should be rehabilitated at the end of the construction phase.		✓	✓		
The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. The specifications for the rehabilitation programme should be included in the EMP.		✓	✓		
The implementation of the Rehabilitation Programme should be monitored by the ECO.		✓	✓		

Mitigation Measures and Environmental Impact Management Actions	Condition of Approval	Included in EMPr	Construction[52] Phase	Operational Phase	Decommissioning Phase
Implement a skills development and training programme aimed at maximizing the number of employment opportunities for local community members		✓		✓	
Maximise opportunities for local content, procurement, and community shareholding.		✓		✓	
The enhancement measures listed in SIA, i.e. to enhance local employment and business opportunities during the construction phase, also apply to the operational phase.		✓		✓	
The proponents should liaise with the DLM to identify projects that can be supported by SED contributions.		✓		✓	
Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community.		✓		✓	
Traffic					
Ensure staff transport is done in the 'off peak' periods and by bus, if possible		✓	✓		
Stagger material, component, and abnormal loads delivery		✓	✓		
Implement control and Monitoring programme		✓	✓		
Reduction in the speed of vehicles		✓	✓		
Implementation of pedestrian safety initiatives.		✓	✓		
Regular maintenance of farm fences & access cattle grids		✓	✓		
Maintenance of Existing Gravel Roads		✓	✓		
Implement a road maintenance program under the auspices of the respective transport department.		✓	✓		
BESS					
Where reasonably practicable, state-of-the-art battery technology should be used with all the necessary protective features e.g., draining of cells during shutdown and standby-mode, full BMS with deviation monitoring and trips, leak detection systems		✓	✓		
The overall design should be subject to a full Hazop prior to finalization of the design	✓		✓		
For the VRFB systems an environmentally friendly method of filling the system with electrolyte upon startup and an end of life (and for possible periodic purging requirements) solution for the large quantities of hazardous electrolyte should be investigated, e.g., can it be returned to the supplier for re-conditioning.	✓	✓	✓		
Prior to bringing any solid-state battery containers into the country, the contractor should ensure that: - An Emergency Response Plan is in place that would be applicable for the full route from the ship to the site. This plan would include details of the most appropriate emergency response to fires both while the units are in transit and once they are installed and operating. - An End-of-Life plan is in place for the handling, repurposing or disposal of dysfunctional, severely damaged batteries, modules and containers.	✓		✓		
The site layout and spacing between lithium solid-state containers should be such that it mitigates the risk of a fire or explosion event spreading from one container to another.		✓	✓		
Under certain weather conditions, the noxious smoke from a fire in a lithium battery container could travel some distance from the unit. The smoke will most likely be acrid and could cause irritation, coughing, distress etc. Close to the source of the smoke, the concentration of toxic gases may be high enough to		✓	✓		

Mitigation Measures and Environmental Impact Management Actions	Condition of Approval	Included in EMPr	Construction[52] Phase	Operational Phase	Decommissioning Phase
cause irreversible harmful effects. Location of the facilities needs to ensure a suitable separation distance from public facilities/residences etc. The current proposed BESS location is over 500m from isolated farmhouses / other occupied facilities and over 100m from busy public roads, and is therefore suitable.					
For molten metal batteries the most significant hazards are to persons working with the facilities, e.g. operation and maintenance personnel. Suitable procedures will need to be in place and PPE to be specified.		✓	✓		
Once the BESS technology has been selected and further specifics of the final design are available, verify that all recommendations as provided in this risk assessment are adhered to, including the mitigation measures provided by the BESS supplier.	✓		✓		

8. 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 48: 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 Sunveld 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 R399. 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 -	

Regulated Requirement	Description
(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. The landowners were 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 were 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 Berg River municipality (Planning and Technical Services) as well as the West Coast 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 were given an opportunity to comment on this Draft Scoping Report, All additional parties identified by the DFFE have been notified of the availability of the Draft Environmental Impact Report
(c) placing an advertisement in - (i) one local newspaper; or (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;	An advert calling for registration of I&APs and notifying of the availability of the Draft Scoping Report was placed in Die Weslander local newspaper on 14 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 -	Please refer to **Annexure F3**.

Regulated Requirement	Description
(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.	
(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 (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.	This will be complied with if final reports are produced later on in the environmental process.
(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.	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.

Regulated Requirement	Description
(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.	

8.1 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 49: Key Stakeholders automatically registered as part of the Environmental Process

Stakeholders Registered		
Neighbouring property owners	Department of Environmental Affairs and Development Planning (Western Cape)	Department of Water and Sanitation
Western Cape Department of Transport and Public Works	Berg River Municipality	Department of Science and Technology
Berg River Municipality: Ward Councillors	South African National Roads Agency Limited	The Council for Scientific and Industrial Research
South African Heritage Resources Agency	Heritage Western Cape	The South African Square Kilometre Array
Proto 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
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.
Central Karoo District Municipality	SANParks – West Coast National Park	

8.2 AVAILABILITY OF DRAFT SCOPING REPORT.

The Draft Scoping report was available to all automatically registered and potential Interested and Affected Parties for a 30 day-comment period extending from **15 September 2023 – 17 October 2023.**

Copies of the report were available at the following locations:

- Cape EAPrac Website: www.cape-eaprac.co.za.
- Direct download link.

All notifications (including the site notice and advert) 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.

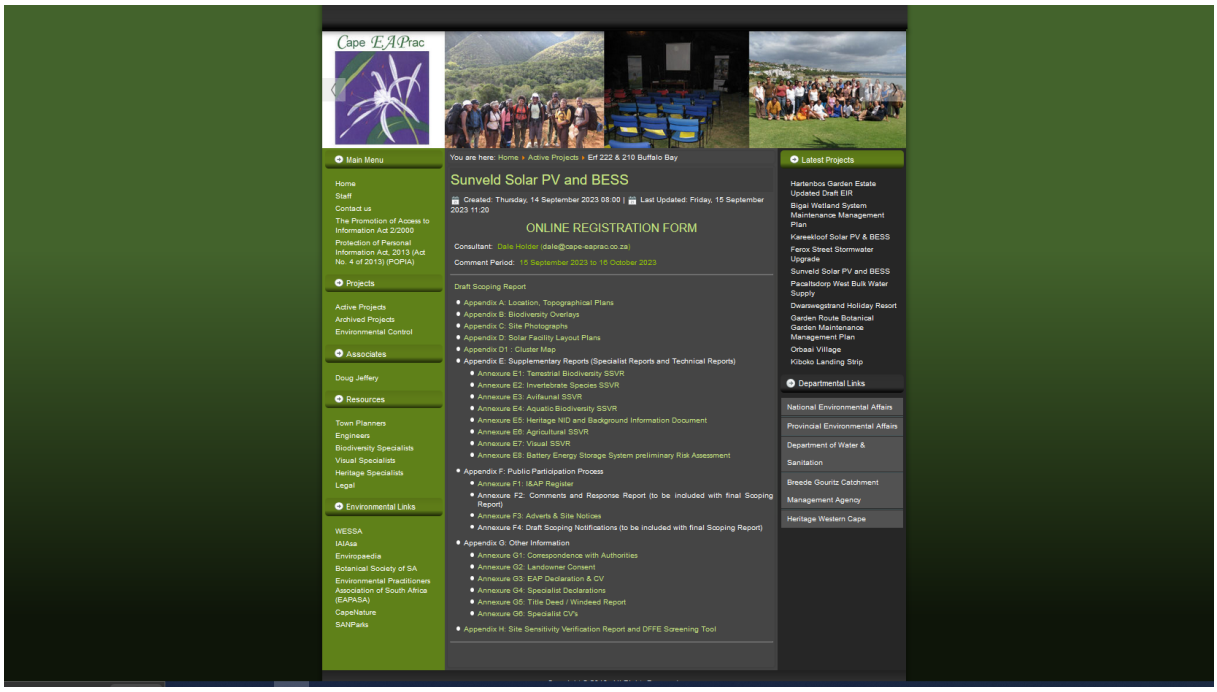

Figure 56: Draft Scoping Report as available on the Cape EAPrac Website.

Figure 57: Draft Scoping Report as available via dropbox direct download.

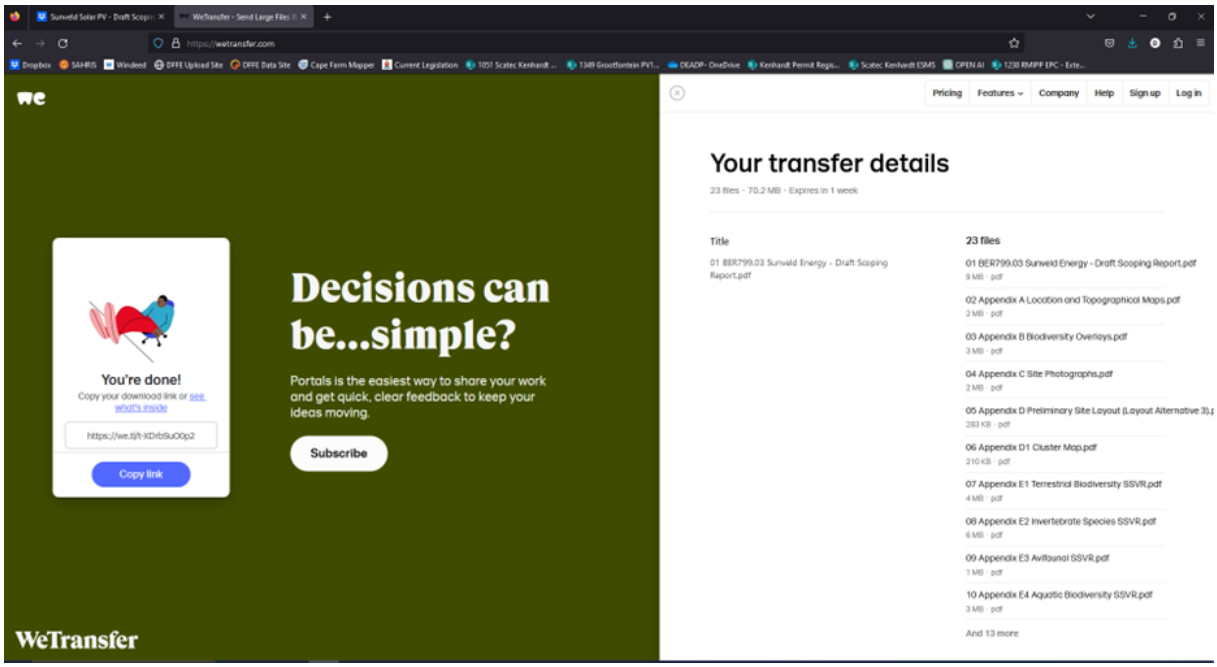

Figure 58: Draft Scoping Report as available via WeTransfer direct download.

8.3 COMMENTS AND RESPONSES ON DRAFT SCOPING REPORT

During the comment period on the Draft Scoping Report, comments were received from the following Parties:

- The Department of Forestry, Fisheries and the Environment: Chief Directorate Integrated Authorisations.
- The Department of Forestry, Fisheries and the Environment: Directorate Biodiversity Conservation.
- The Western Cape Department of Environmental Affairs and Development Planning.
- Breede River Local Municipality.
- MTN
- Heritage Western Cape
- Department of Transport and Public Works and
- I&AP registrations b a number of individuals.

Copies of all these comments received are included in Annexure F5 and the responses thereto are included in the comments and responses report in Annexure F2.

8.4 AVAILABILITY OF DRAFT ENVIRONMENTAL IMPACT REPORT.

The Draft Environmental Impact Report is available to all registered Interested and Affected Parties for a 30 day-comment period**.**

Copies of the report were available at the following locations:

- Cape EAPrac Website: www.cape-eaprac.co.za.
- Direct download link.

All notifications (including the site notice and advert) 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.

Proof of the availability of the Draft Environmental Impact Report will be provided in the Final Environmental Impact Report.

8.5 REMAINDER OF THE ENVIRONMENTAL ASSESSMENT PROCESS

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

- The Draft EIR is herewith 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.

9. CONCLUSION AND RECOMMENDATIONS

This environmental process is currently being undertaken to present proposals to the public and potential I&APs and to identify and assess environmental impacts, issues and concerns raised as a result of the proposed development.

Cape EAPrac is of the opinion that the information contained in this Draft Environmental Report and the documentation attached hereto is sufficient to allow the I&APs to apply their minds to the potential negative and/or positive impacts associated with the development, in respect of the activities applied for. Sunveld Solar PV has been analysed from Ecological, Agricultural, Heritage, Avifaunal, Social and Visual perspectives, and site constraints and potential impacts identified and assessed.

This environmental process has not identified any fatal flaws with the proposal and as such it is our reasoned view that the project should be considered for authorisation, subject to the outcome of the public participation process and on condition that all the mitigation measures outlined in section 7 of the report are adopted and implemented. All specialists concur that the development as proposed (Layout Alternative 5) can be considered for approval subject to the implementation of all mitigation measures. All impacts range from high positive to medium negative and all high, very high and critical negative impacts have been avoided by the risk adverse approach or mitigated to acceptable levels.

All stakeholders are requested to review the Draft EIR and the associated appendices, and provide comment, or raise issues of concern, directly to Cape EAPrac within the specified 30-day comment period. All comments received during this comment period will be considered, responded and included in the Final EIR that will be submitted to DFFE for decision making.

10. 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
DEA	Department of Environmental Affairs
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

11. REFERENCES

[53]**DEA** (2010). National Climate Change Response Green Paper 2010.

DEA (January 2008). *National Response to South Africa's Electricity Shortage.* Interventions to address electricity shortages.

DEA&DP (2003). Waste Minimisation *Guideline for Environmental Impact Assessment reviews.* NEMA EIA Regulations Guideline & Information Series, Department Environmental Affairs & Development Planning.

DEA&DP (2005). *Guideline for the review of specialist input in the EIA process*. NEMA EIA Regulations Guideline & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2005). *Guideline for involving biodiversity specialists in the EIA process*. NEMA EIA Regulations Guideline & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2005). *Guideline for environmental management plans*. NEMA EIA Regulations Guideline & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2005). *Provincial urban edge guideline*. Department Environmental Affairs & Development Planning.

DEA&DP (2006). *Guideline on the Interpretation of the Listed Activities.* NEMA EIA Regulations Guidelines & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2007). *Guide on Alternatives,* NEMA EIA Regulations Guidelines & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2007). *Guideline on Appeals,* NEMA EIA Regulations Guidelines & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2007). *Guideline on Exemption Applications.* NEMA EIA Regulations Guidelines & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2007). *Guideline on Public Participation*. NEMA EIA Regulations Guidelines & Information Document Series, Department of Environmental Affairs & Development Planning.

DEA&DP (2009). *Guideline on Need & Desirability,* NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

DEA&DP (2009). *Guideline on Alternatives*, NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

DEA&DP (2009). *Guideline on Transitional Arrangements,* NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

DEA&DP (2009). *Guideline on Exemption Applications*. NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

DEA&DP (2009). *Guideline on Appeals*. NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

[53] This reference list excludes specialist studies that form part of this environmental process, and which are contained in Annexure E1 – E12

DEA&DP (2009). *Guideline on Public Participation*. NEMA EIA Regulations Guideline and Information Document Series, Department Environmental Affairs & Development Planning.

DEA&DP. (May 2006). *Strategic Initiative to Introduce Commercial Land Based Wind Energy Development to the Western Cape*: Specialist Study: Executive Summary - CNdV Africa prepared for Provincial Government of the Western Cape.

Department of Mineral & Energy (1998). White Paper on Energy Policy of the Republic of South Africa**.**

Department of Mineral & Energy (2003). *The White Paper on Renewable Energy***.**

DEAT (2002). Integrated Environmental Management Information Series 3: *Stakeholder Engagement*. Department of Environmental Affairs and Tourism, Pretoria.

DEAT (2004). *Criteria for determining alternatives in EIAs*, Integrated Environmental Management, Information Series 11, Department of Environmental Affairs & Tourism, Pretoria.

DEAT (2004). *Environmental Management Plans*, Integrated Environmental management, Information Series 12, Department Environmental Affairs & Tourism.

DEAT (2005). *Assessment of Impacts and Alternatives*, Integrated Environmental Management Guideline Series, Department of Environmental Affairs & Tourism, Pretoria.

DEAT (2005). Guideline 4: *Public Participation*, in terms of the EIA Regulations 2005, Integrated Environmental Management Guideline Series, Department of Environmental Affairs and Tourism, Pretoria.

DEAT (2006). *EIA Regulations* in terms of the National Environmental Management Act (Act No 107 of 1998) (Government Notice No R 385, R 386 and R 387 in Government Gazette No 28753 of 21 April 2006).

DWA (2001). *Generic public participation guideline*. Department of Water Affairs and Forestry.

Hsai-Yang, F (Ed)(2006). *Environmental Geotechnology Dictionary* (online version). University of North Caroline, Charlotte, USA.

Integrated Resource Plan for Electricity (Oct. 2010). Revision 2, Version8.

International Finance Corporation – World Bank Group. (April 2007). Environmental, Health and Safety Guidelines for Electric Power Transmission and Distribution.

International Finance Corporation – World Bank Group. (April 2007). *Environmental, Health and Safety Guidelines for Wind Energy.*

International Finance Corporation – World Bank Group. (April 2007). *General Environmental, Health and Safety Guidelines.*

Keatimilwe K & Ashton PJ 2005. *Guideline for the review of specialist input in EIA processes.* Department Environmental Affairs & Development Planning.

Lochner P (2005). *Guideline for Environmental Management Plans*. Department Environmental Affairs & Development Planning.

Lower Orange River Trans frontier Conservation Area Planning: Background Information Document (August 2007). Retrieved on 29 March 2012 from:

www.dwaf.gov.za/Documents/Other/RMP/LOR/LORRMPBIDAug07.pdf

Mucina, L. & Rutherford, M.C. (eds) 2006. *The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19.* South African National Biodiversity Institute, Pretoria.

Münster, F. (2005). *Guidelines for Determining the Scope of Specialist Involvement in EIA Processes: Edition 1.* CSIR Report No ENV-S-C 2005 053 A. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

Oberholzer B (2005). *Guideline for involving visual & aesthetic specialists*. Department Environmental Affairs & Development Planning.

National Energy Regulator of South Africa (NERSA)(Feb.2010). Rules on selection criteria for renewable energy projects under the REFIT Programme.

National Protected Area Expansion Strategy for S.A. 2008: Priorities for expanding the protected area network for ecological sustainability and climate change adaptation. Government of South Africa, Pretoria, 2010. ISBN 978-1-919976-55-6.

Northern Cape Business online. Retrieved from: http://www.northerncapebusiness.co.za on 27 March 2012.

Northern Cape Business online. *Solar Power.* Retrieved from: http://www.northerncapebusiness.co.za/special_features/941417.htm on 27 March 2012.

Saayman, I. (2005). *Guideline for Involving Hydrogeologists in EIA Processes: Edition 1.* CSIR Report No ENV-S-C 2005 053 D. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

SANBI Biodiversity GIS (2007). South African National Biodiversity Institute, Cape Town, South Africa.

Winter S & Beaumann N (2005). *Guideline for involving heritage specialists in EIA processes.* Department Environmental Affairs & Development Planning.