REVISED DRAFT ENVIRONMENTAL IMPACT REPORT

for

BETHEL SOLAR PV FACILITY AND ASSOCIATED INFRASTRUCTURE

On

Farm 431 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province.

In terms of the

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

Prepared for Applicant: **Bethel Solar PV (Pty) Ltd.**

Date: **06 November 2025**

Appointed EAP: Dale Holder (EAPASA Reg: 2019/301)

Author Email: dale@cape-eaprac.co.za

Assisting Candidate EAP: Francois Byleveld (EAPASA Reg: 2023/6770)

Report Reference: VHE853/22

Department Reference: 14/12/16/3/3/2/2698

Case Officer: Ms Zamalanga Langa

Cape EAPrac

Cape Environmental Assessment Practitioners

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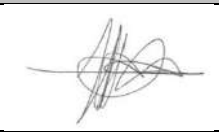
DOCUMENT TRACKING

DOCUMENT HISTORY

REVISION	DATE	AUTHOR
Draft Scoping Report	25 April 2025	Dale Holder
Final Scoping Report	06 June 2025	Dale Holder
Draft Environmental Impact Report	21 August 2025	Dale Holder
Draft Environmental Management Programme	21 August 2025	Dale Holder
Final Environmental Impact Report	06 October 2025	Dale Holder
Final Environmental Management Programme	06 October 2025	Dale Holder
Revised Draft Environmental Impact Report	06 November 2025	Dale Holder

APPROVAL FOR RELEASE

NAME	TITLE	SIGNATURE
Dale Holder	Senior Environmental Practitioner EAPASA Reg # 2019/301	

DISTRIBUTION

DISTRIBUTION LIST
Department of Forestry, Fisheries and the Environment.
Bethel Solar PV (Pty) Ltd.
Registered and Potential Interested and Affected Parties

SUBMISSION AND CORRESPONDENCE WITH COMPETENT AUTHORITY

SUBMISSION / CORRESPONDENCE	DATE
Pre-Application meeting request submitted	05 February 2025
Pre-Application meeting held	03 March 2025
Application form submitted	25 April 2025
Application form acknowledged	30 April 2025
Draft Scoping Report submitted	25 April 2025
Draft Scoping Report acknowledged	30 April 2025
Competent Authority comment on Draft Scoping Report	21 May 2025
Final Scoping Report submitted	06 June 2025
Final Scoping Report acknowledged	10 June 2025
Competent Authority acceptance of Final Scoping Report	23 July 2025
Draft Environmental Impact Report submitted	21 August 2025
Draft Environmental Impact Report acknowledged	26 August 2025
Competent Authority comment on Draft Environmental Report	19 September 2025
Final Environmental Impact Report Submitted	06 October 2025
Final Environmental Impact Report Acknowledged	09 October 2025
Final Environmental Impact Report withdrawn	21 October 2025
Revised Draft Environmental Impact Report Submitted	06 November 2025

APPOINTED ENVIRONMENTAL ASSESSMENT PRACTITIONER:
Cape EAPrac Environmental Assessment Practitioners PO Box 2070 George 6530 Tel: 044-874 0365 **Report written & compiled by:** Dale Holder (Ndip Nature Conservation), who has over 20 years' experience as an environmental practitioner. Registered Environmental Assessment Practitioner, EAPASA (2019/301) **Assisted By -** Candidate EAP: Mr Francois Byleveld (MSc Geology [University of the Free State] (Candidate EAPASA Registration Number: 2023/6770) in assistance to the Appointed EAP.

PURPOSE OF THIS REPORT:
Review and Comment

APPLICANT:
Bethel Solar PV (Pty) Ltd

CAPE EAPRAC REFERENCE NO:
VHE853/22

DEPARTMENT REFERENCE:
14/12/16/3/3/2/2698

SUBMISSION DATE:
06 November 2025

REVISED DRAFT ENVIRONMENTAL IMPACT REPORT

in terms of the

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

Bethel Solar PV and Associated Infrastructure

Farm 431 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province.

Submitted for:

Stakeholder Review & Comment

Report Issued by:

Cape Environmental Assessment Practitioners

Tel: 044 874 0365 PO Box 2070

17 Progress Street, George 6530

Web: www.cape-eaprac.co.za

REPORT DETAILS

Title:	Revised Environmental Impact Report – Bethel Solar PV Facility and Associated Infrastructure, including grid connection infrastructure.
Purpose of this report:	The Draft Scoping Report (DSR) and Draft Environmental Impact Report (DEIR) 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 Environmental Impact Report that has been submitted to the competent authority for decision making. Following the submission of the Final Environmental Impact Report, an I&AP provided comment to both the EAP and the Competent Authority. The Final Environmental Impact Report was subsequently withdrawn and this Revised Draft Environmental Impact Report was prepared to address the concerns raised after the submission of the Final Environmental Impact Report. 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 Bethel Solar PV and Associated Infrastructure project near Louis Trichardt in the Limpopo Province. Registered I&APs were be given an opportunity to comment on the following reports as part of this environmental process: - Draft Scoping Report; - Draft Environmental Impact Report; - All Specialist Studies, and - Draft Environmental Management Programme. In accordance with the regulations, the objectives of an environmental process are to, through a consultative process: (a) identify the relevant policies and legislation relevant to the activity; (b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location; (c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process; (d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment; (e) identify the key issues to be addressed in the assessment phase; (f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and (g) identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored. The Draft Scoping Report was available to all registered and potential interested and affected parties for a 30-day review and comment period extending from 25 April 2025 – 27 May 2025. The Draft Environmental Impact Report was available for a further 30 day comment period extending from 21 August 2025 – 22 September 2025. The Revised Draft Environmental Impact Report was subjected to a further 30 day comment period extending from Friday 07 November 2025 – Monday 08 December 2025. All comments received during this comment period will be incorporated into the Final Environmental Impact Report that will be submitted to the DFFE for consideration and Decision making. The decision in respect of this application will be communicated to Registered I&AP's.
Prepared for:	Bethel Solar PV (Pty) Ltd
Published by:	Cape Environmental Assessment Practitioners (Pty) Ltd. (Cape EAPrac)
Authors:	Mr Dale Holder – Appointed EAP Mr Francois Byleveld – Assisting Candidate EAP
Cape EAPrac Ref:	VHE853/22
DFFE Case officer & Ref. No:	Ms Zamalanga Langa – 14/12/16/3/3/2/2698
Date:	06 November 2025
To be cited as:	*Cape EAPrac,* 2025. Final Environmental Impact Report for Bethel Solar PV and Associated Infrastructure. Report Reference: VHE853/22. George.

TECHNICAL CHECKLIST

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

Project Name		**Bethel Solar PV and Associated Infrastructure**
Applicant Details	Applicant Name:	Bethel Solar PV (Pty) Ltd Bethel Solar PV (Pty) Ltd is a Special Purpose Vehicle (SPV) established solely to develop, construct, and operate up to 240 MW PV facility and Battery Energy Storage System (BESS).
	Company Registration Number:	2024 / 297 / 478
	BBBEE Status:	NA
	Project Name:	Bethel Solar PV and Associated Infrastructure[1].
Site Details		
Size of the property	Description of the affected property	<u>PV & Associated Infrastructure.</u> - Farm 431 - Remainder of Farm 466. <u>Electrical Grid Connection Infrastructure Alternatives.</u> **ALTERNATIVE 1** - Remainder of Farm 466 - Portion 1 of Farm 466 - Portion 1 of Farm 425 - Portion 2 of Farm 425 - Remainder of Farm 424 - Portion 2 of Farm 470 - Farm 1211 - Remaining Extent of Portion 2 of Farm 472 - Farm 1209 - Portion 1 of Farm 473 **ALTERNATIVE 2** - Remainder of Farm 466 - Farm 431 - Portion 1 of Farm 425 - Remainder of Farm 430 - Remainder of Farm 426 - Portion 2 of Farm 425 - Remainder of Farm 423 - Portion 1 of Farm 423 - Portion 1 of Farm 424 - Remainder of Farm 420 - Farm 1211 - Remainder of Farm 418 - Remainder of Farm 1210 - Farm 1209 - Portion 1 of Farm 473 **ALTERNATIVE 3** - Remainder of Farm 466 - Portion 1 of Farm 466 - Farm 431 - Portion 1 of Farm 425 - Portion 2 of Farm 425 - Remainder of Farm 426 - Remainder of Farm 423

[1] The associated infrastructure in this regard, included the electrical grid connection infrastructure to connect the proposed facility to the National Grid via the existing Eskom Tabor substation.

Project Name		Bethel Solar PV and Associated Infrastructure
		- Portion 1 of Farm 423 - Portion 1 of Farm 424 - Remainder of Farm 420 - Remainder of Farm 424 - Farm 1211 - Portion 2 of Farm 470 - Remaining Extent of Portion 2 of Farm 472 - Farm 1209 - Portion 1 of Farm 473
Size of the study area	Size in ha of initial study area.	PV Site: 625 ha[2] Grid Connection Alternatives: Each, Approximately 13km long within a 500m wide assessment area.
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 footprint and preferred grid connection corridor will be determined once the preferred layout alternative is selected during the Environmental Impact Assessment Phase of this Environmental Process. This will be done after completion of the second season of avifaunal monitoring and initial public participation process, as both of these processes can have an impact on the configuration and positioning of the preferred layout.
		PV Technology Details
Capacity of the facility	Capacity of the PV facility (in MW)	Net generation capacity of up to 240MW_{AC}.
Sola. technology selection	Type of technology	Solar photovoltaic (PV) with single-axis tracking structures.
	Structure height	To be determined.
	Surface area to be covered (including associated infrastructure such as roads)	The total surface area to be covered will be determined once the preferred layout alternative is selected during the Environmental Impact Assessment Phase of this Environmental Process.
	Structure orientation	Single-axis (panels tracking east-west).
	Laydown area dimensions	The size and position of the proposed laydown area will be determined, once the preferred layout alternative is developed during the Environmental Impact Assessment Phase of the Environmental Process.
		BESS Technology Details
BESS technology section	Capacity of BESS facility (in MWh)	3840MWh
	Type of technology (preferred)	Solid state Lithium-Ion or Sodium-Ion.
	Type of technology (alternatives)	No alternative BESS technology is under consideration as part of this environmental process.
	Structure height	Containerized types, including all solid-state types = maximum of 4m from ground level (may have vent pipes and lightning conductors exceeding 4m above ground level).
	Surface area to be covered (including associated infrastructure such as roads)	To be determined.
	Structure locations	DC Coupled BESS within the PV field and AC coupled BESS adjacent to the project substation.

The applicant Bethel Solar PV (Pty) Ltd are proposing the construction of a Solar Photovoltaic (PV) Energy Facility and associated infrastructure, known as Bethel Solar PV, on Farm 431 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province.

[2] This excludes the grid connection corridor that is also being assessed as part of this environmental process.

A study site of approximately 625ha is being assessed as part of this Environmental Process and the infrastructure associated with an up to 240 Megawatt (MW) PV facility.

The proposed Bethel Solar PV Project will include the following components:

- Solar Field
    - Solar Arrays: PV modules
    - Single axis tracking technology maximum height of 5m (aligned north-south);
    - Solar module mounting structures comprised of galvanised steel and aluminium;
    - Foundations which will likely be drilled and concreted into the ground; and
    - Solar measurement and weather stations.
    - Central/string Inverters and MV transformers in in field
    - DC coupled Battery Energy Storage system (BESS) containers distributed through PV field located adjacent to inverters
        - Lithium Ion battery Cells, Modules, Racks and containers
        - Power Conversion Equipment
        - Battery Management System
        - Energy Management System
- Associated Infrastructure
    - Medium Voltage (MV =22/33 kV) overhead powerlines and underground cables;
    - MV Collector stations
    - Access road;
    - Internal gravel roads;
    - Fencing;
    - General maintenance area;
    - Storm water channels and berms;
    - Water storage tanks and pipelines;
    - Temporary work area during the construction phase (i.e. laydown area).
    - O&M buildings, store
- Project IPP Substation;
    - 132kV substation 200m x 200m
    - HV transformer
    - Substation Control Building
    - HV metering, Scada and protection building
    - MV collector switchgear buildings
    - Compensation equipment (Filters capacitors reactors statcoms)
- AC coupled BESS installation at project substation and laydown area:
    - Solid Sate Battery technology - either Lithium-Ion or Sodium Sulphide (NaS)
        - Battery Cells, Modules, Racks and containers
        - Power Conversion Equipment
        - Battery Management System
        - Energy Management System
        - MV transformers
        - MV cabling and collector stations
        - Fencing
        - Offices, workshop
        - Fire Protection systems

This environmental application process includes Electrical Grid Connection Infrastructure required to connect the Bethel Solar PV to the National Grid via the existing Tabor Main Transmission Substation (MTS). This Electrical Grid Infrastructure includes:

- Onsite Switching Station (SS), adjacent to the IPP Substation.
- 132kV Overhead Power Line (OHPL) – 30m height from the switching station to the existing Eskom Tabor Substation.
- Access Road to Switching Station
- Maintenance access road below or adjacent to the power line.

Three Grid connection alternatives are under investigation as part of this environmental process. Different land portions are affected by the various grid connection alternatives. These are discussed in further detail in section 2 of this report.

As per the DFFE Acceptance of Scoping Report Letter, please see below table with technical details for the proposed Bethel Solar PV in the format provided by the DFFE.

Component	Description / dimensions
Height of PV structures	Up to 5m
Capacity of the PV facility	Up to 240MW
Surface area to be covered by the facility (i.e., the area occupied by both permanent and construction laydown areas, including PV array area and associated infrastructure such as roads)	Up to 625Ha
Proximity to grid connection	Up to 14.5km
Number of overhead power lines required and voltage of overhead power lines	One 132kV Powerline required, double circuit.
Height of the Power Line	Up to 32m
Number of substations required and voltage of substations	One IPP Substation next to an Eskom Switching station, 132kV.
Area occupied by inverter/transformer stations/substations	Up to 2Ha
Area occupied by buildings	Up to 9Ha
Number of access roads, including length and width	One access road, there are two options for this road, a preferred route and an alternative route. 8m wide servitude and Up to 4.5km.
Length and width of internal roads	6m wide roads with variable lengths between the rows of solar panels.
Additional Infrastructure	Laydown area, guard house, fuel storage area, borehole, conservancy tank, LV and MV cabling.

BACKGROUND INFORMATION

This project forms pars of a series of 4 projects forming part of the Tabor Solar PV Cluster as Follows:

Project	DFFE Reference Number	Proponent
Bethel Solar PV (240MW PV Facility)	14/12/16/3/3/2/2698	Bethel Solar PV (Pty) Ltd
Draailoop Solar PV (240MW PV Facility)	14/12/16/3/3/2/2699	Draailoop Solar PV (Pty) Ltd
Klipput Solar PV (240MW PV Facility)	14/12/16/3/3/2/2700	Klipput Solar PV (Pty) Ltd
Makoppa Solar PV (75MW PV Facility)	14/12/16/3/3/2/2701	Makoppa Solar PV (Pty) Ltd

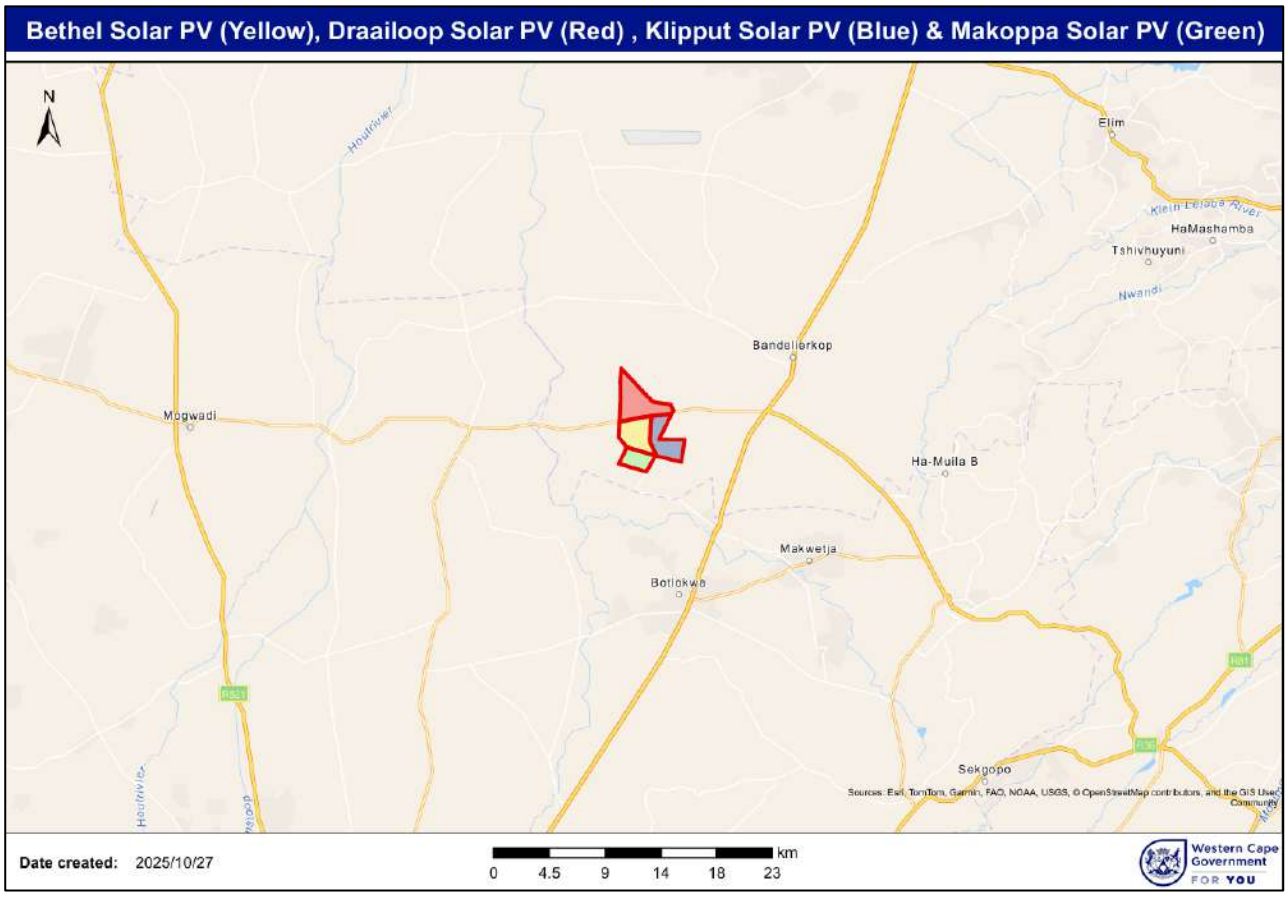
SUMMARY OF PROPOSAL

The proposed Tabor Solar PV and Electrical Grid Connection project entails the following:

- Three (3) up to 240 Megawatt (MW) Solar PV Developments with associated infrastructure, including a Battery Energy Storage System (BESS).
- One (1) up to 75 Megawatt (MW) Solar PV Developments with associated infrastructure, including a Battery Energy Storage System (BESS).
- Electrical Grid Connection infrastructure to connect the Solar PV Development to Eskom's national electricity network.

LOCATION

The proposed development sites located South of Louis Trichardt, include Portion 1 of Farm 425, Remainder of Farm 430, Farm 431, Portion 1 of Farm 465, Portion 1 of Farm 466 and Remainder of Farm 466, in the Makhado Local Municipality in the Vhembe District, Limpopo Province.



ENVIRONMENTAL PROCESS

The project triggers a number of listed activities in terms of the National Environmental Management Act and as such is following a Scoping and Environmental Impact Assessment Process. The Draft Environmental Impact Report provides details on all issues and concerns raised in the Scoping Phase of the Environmental Process and presents the outcome of the specialist impact assessments to all stakeholders for review and comment.

Applicable Listed Activities: **Listing Notice 1 (GNR. 983) Activities** 11, 12, 19, 24, 28 & 56. **Listing Notice 2 (GNR. 984)** Activities 1 & 15. **Listing Notice 3 (GNR. 985) Activities** 4, 10, 14 & 18.

DOCUMENTATION AVAILABLE

A Revised Draft Environmental Impact Report (DEIR) and Environmental Management Programme (EMPr), with specialist reports, are available for a 30-day commenting period, extending from **07 November – 08 December 2025.** The electronic reports can be accessed digitally via www.cape-eaprac.co.za / Active Projects. Alternative platforms / access to reports / assistance can be arranged on request.

Copies of the Revised Draft Environmental Impact Reports are available at:

- Viva Bandelierkop (Fuel Station) – N1-Main Road, Bandelierkop.
- Munzhedzi Post Office at Chris Hani Street, Vleifontein, Louis Trichardt.
- The Cape EAPrac Website: www.cape-eaprac.co.za
- Dropbox Direct download link:

https://www.dropbox.com/scl/fo/swyy23n4nec5jb3lp5dtu/ALymVMyoBmmiA-i6VDsQxAs?rlkey=qz6v5z8ptj67xbuqsnnr6107l&st=uqxcq7q3&dl=0

Cape EAPrac will host a **Public Open Day** on **25 November 2025** from **12:00 to 19:00** at the **Vleifontein Community Hall** located in **Chris Hani Street, Vleifontein, Louis Trichardt**.

This event is intended to provide community members who may have difficulty accessing or interpreting the electronic versions of the reports with an opportunity to engage directly, ask questions, and share their comments on the proposed developments.

Should any interested and affected party not be able to access the documentation at the various platforms listed above, they should please contact Cape EAPrac directly and an alternative means of access will be provided.

If you require any further assistance, please do not hesitate to contact this office directly

Cape EAPrac – Attention: Mr Dale Holder or Mr Francois Byleveld,

Email: dale@cape-eaprac.co.za or francois@cape-eaprac.co.za

PO Box 2070 George 6530; Telephone: 044 874 0365

Phurojeke	Nomboro ya Referensi ya DFFE	Mutikedzi
Bethel Solar PV (240MW PV Facility)	14/12/16/3/3/2/2698	Bethel Solar PV (Pty) Ltd
Draailoop Solar PV (240MW PV Facility)	14/12/16/3/3/2/2699	Draailoop Solar PV (Pty) Ltd
Klipput Solar PV (240MW PV Facility)	14/12/16/3/3/2/2700	Klipput Solar PV (Pty) Ltd
Makoppa Solar PV (75MW PV Facility)	14/12/16/3/3/2/2701	Makoppa Solar PV (Pty) Ltd

Khumbelo dzo **Fhelelaho na Tsenguluso ya Mvelelo ya Mupo** i tshi khou ambela kha **Themamveledziso dza Solar PV** dzi ḓo ṋetshedzwa Muhasho wa Lushaka wa Maḓaka, Vhureakhovhe na Mupo (**DFFE**) sa maanḓalanga a re na vhukoni ha u dzhia tsheo.

NYELETSHEDZO

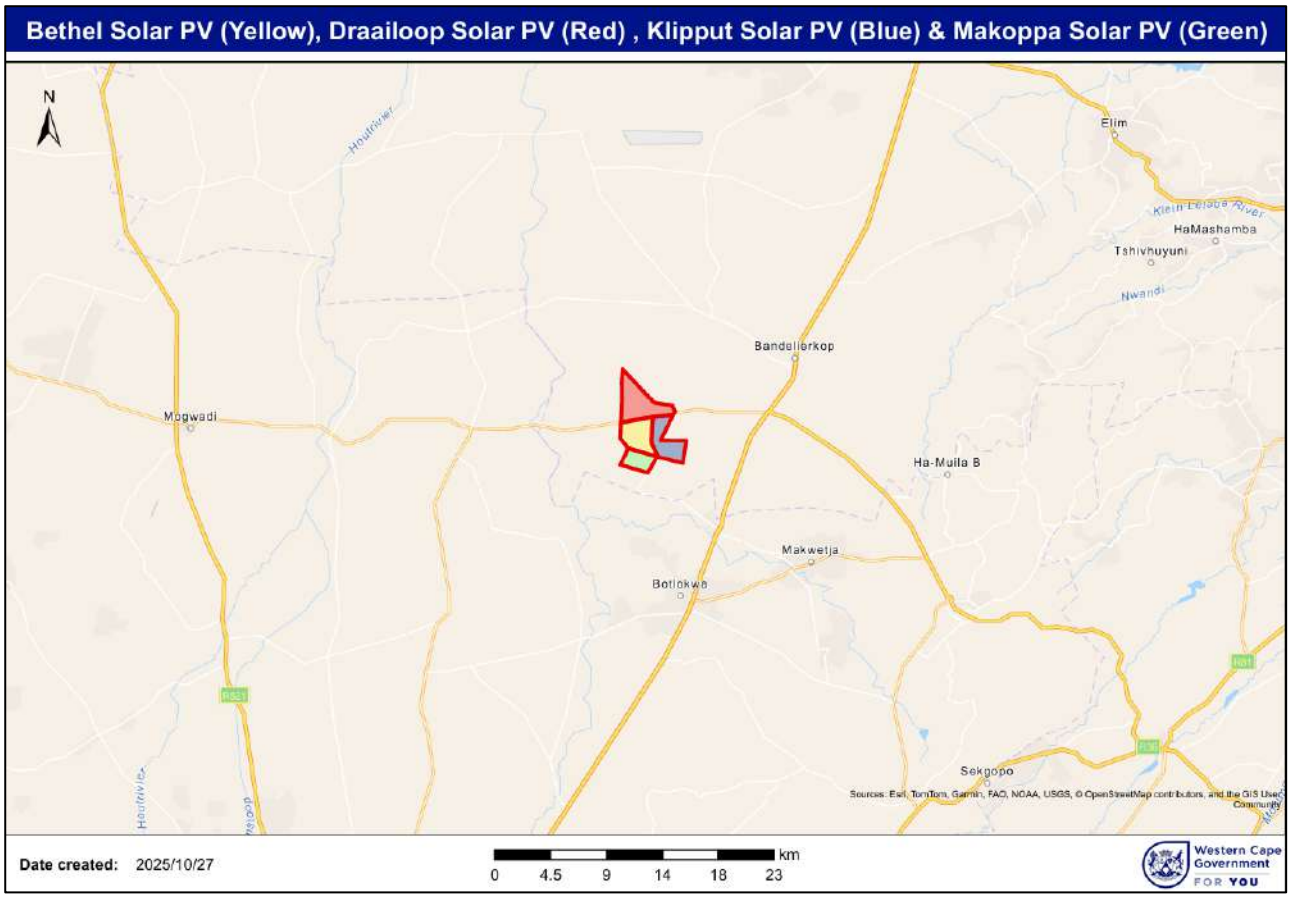
Phurojeke yo eletshedzwaho ya Tabor Solar PV na Vhuṱumani ha Giridi ya Muḓagasi i katela zwi tevhelaho:

- Tharu (3) dza Mveledziso dza PV ya Ḓuvha dzi swikaho 240 Megawatt (MW) dzi re na themamveledziso dzi tshimbilelanaho nayo, hu tshi katelwa na Sisiṱeme ya u Vhulunga Fulufulu ḽa Beṱiri (BESS).
- Muthihi (1) u swika kha 75 Megawatt (MW) Mveledziso dza Solar PV dzi re na themamveledziso dzi tshimbilelanaho nadzo, hu tshi katelwa na Sisiṱeme ya u Vhulunga Fulufulu ḽa Beṱiri (BESS).

- Themamveledziso ya Vhuṱumani ha Giridi ya Muḓagasi u itela u ṱumanya Mveledziso ya Solar PV na nethiweke ya muḓagasi wa Eskom.

VHUPO

Fhethu ho dzinginywaho ha mveledziso hune ha wanala Tshipembe ha Louis Trichardt, hu katela Tshipiḓa 1 tsha Bulasi ya 425, Masalela a Bulasi ya 430, Bulasi ya 431, Tshipiḓa 1 tsha Bulasi ya 465, Tshipiḓa 1 tsha Bulasi ya 466 na Masalela a Bulasi ya 466, kha Masipala Wapo wa Makhado, Tshiṱirikini tsha Vhembe, Vunḓuni ḽa Limpopo.



MAITELE A MUPO

Phurojeke i ṱuṱuwedza mishumo minzhi yo ṅwalwaho u ya nga Mulayo wa Ndangulo ya Mupo wa Lushaka nahone nga zwenezwo i khou tevhela Maitele a u Ṭola na u Sedzulusa Mvelelo ya Mupo. Mvetamveto ya Muvhigo wa Masiandoitwa a Mupo i ṋetshedza zwidodombedzwa nga ha mafhungo oṱhe na mbilaelo dzo vusiwaho kha Tshifhinga tsha Tsenguluso tsha Maitele a Mupo na u ṋetshedza mvelelo dza tsedzuluso dza masiandoitwa a vhaḓivhi kha vhakwamei vhoṱhe uri vha sedzuluswe na u ṋea mihumbulo.

Mishumo Ye Ya Itwa: **Nḓivhadzo yo Ganḓiswaho Fhasi ha 1 (GNR. 983) Mishumo** 11, 12, 19, 24, 28 & 56. **Nḓivhadzo yo Ganḓiswaho Fhasi ha 2 (GNR. 984)** Mishumo 1 & 15. **Nḓivhadzo yo Ganḓiswaho Fhasi ha 3 (GNR. 985) Mishumo** 4, 10, 14 & 18.

MAṄWALO A RE HONE

Mvetamveto yo Vusuludzwaho ya Mivhigo ya Mveleo ya Mupo (DEIR) na Mbekanyamushumo dza Ndangulo ya Mupo (EMPr), dzi re na mivhigo ya vhaḓivhi, dzi a wanala lwa tshifhinga tsha u ṋea vhupfiwa tsha maḓuvha a 30, u bva nga ḽa **07 Ḽara – 08 Nyendavhusiku 2025.** Mivhigo ya eḽekthironiki i nga swikeleliwa nga didzhithala nga kha www.cape-eaprac.co.za / Phurojeke dzi Shumaho. Dziṅwe pulatifomo / tswikelelo kha mivhigo / thuso dzi nga dzudzanywa nga khumbelo.

Kopi dza Mvetamveto yo Vusuludzwaho ya Muvhigo wa Mvelelo dza Mupo dzi a wanala kha:

1. Viva Bandelierkop (Tshiṱitshi tsha mapfura) ine ya wanala Badani khulwane ya N1, Bandelierkop.
2. Poswo ya Munzhedzi ine ya wanala tshiṱaraṱani tsha Chris Hani, Vleifontein, Louis Trichardt.
3. Webusaithi ya Cape EAPrac: www.cape-eaprac.co.za
4. Ḽinki ya u Dawunilouda Thwii ya Dropbox:

https://www.dropbox.com/scl/fo/swyy23n4nec5jb3lp5dtu/ALymVMyoBmmiA-i6VDsQxAs?rlkey=qz6v5z8ptj67xbuqsnnr6107l&st=u38lsvnl&dl=0

Cape EAPrac i ḓo vha **Ḓuvha ḽa u Vula ḽa Tshitshavha** nga ḽa **25 Ḽara 2025** u bva nga **12:00 u swika nga 19:00** kha **Vleifontein Holo ya Tshitshavha** ine ya wanala tshiṱaraṱani tsha **Chris Hani, Vleifontein, Louis Trichardt**.

Tshiitea itshi tsho itelwa u ṋetshedza miraḓo ya tshitshavha ine ya nga vha na vhuleme ha u swikelela kana u ṱalutshedza mbekanyamushumo dza eḽekiṯhironiki dza mivhigo tshikhala tsha u ṱanganelana thwii, u vhudzisa mbudziso, na u kovhelana vhupfiwa havho nga ha mvelaphanḓa dzo dzinginywaho.

Arali muthu ane a vha na dzangalelo na a kwameaho a sa koni u swikelela maṅwalo kha pulatifomo dzo fhambanaho dzo bulwaho afho nṯha, vha fanela u kwama Cape EAPrac thwii nahone hu ḓo ṋetshedzwa nḓila iṅwe ya u swikelela.

Arali ni tshi khou ṱoḓa thuso iṅwe, ni songo timatima u kwama ofisi iyi nga ho livhaho.

Cape EAPrac – Ṯhogomelani: Vho Dale Holder kana Vho Francois Byleveld,

Imeiḽi: dale@cape-eaprac.co.za kana francois@cape-eaprac.co.za

PO Box 2070 George 6530; Luṯingo: 044 874 0365

LOCATION OF PREFFERED ALTERNATIVE

The co-ordinates of the preferred alternatives. Co-ordinates of Layout Alternative 3 and Grid Connection Alternative 1 are reflected in the table below.

POINT ID	Project Name	Comments	Type	Latitude	Longitude
APPref	Bethel Solar PV	Gate	Access Point	-23° 22.680'	29° 41.421'
BHPref	Bethel Solar PV	Additional Infrastructure	Borehole	-23° 22.766'	29° 41.264'
CT	Bethel Solar PV	Additional Infrastructure	Conservancy Tank	-23° 22.764'	29° 41.291'
BESS	Bethel Solar PV	BESS Centerpoint	Center Point	-23° 22.865'	29° 41.303'
ESS	Bethel Solar PV	ESS Centerpoint	Center Point	-23° 22.735'	29° 41.347'
GH	Bethel Solar PV	Guard Houses	Access Point	-23° 22.659'	29° 41.385'
GH	Bethel Solar PV	Guard Houses	Access Point	-23° 22.696'	29° 41.386'
GH	Bethel Solar PV	Guard Houses	Access Point	-23° 21.886'	29° 40.549'
IPP	Bethel Solar PV	IPP substation Centerpoint	Center Point	-23° 22.788'	29° 41.343'
LD	Bethel Solar PV	Laydown Centerpoint	Center Point	-23° 22.751'	29° 41.193'
O&M	Bethel Solar PV	O&M Centerpoint	Center Point	-23° 22.786'	29° 41.284'
A	Bethel Solar PV	Project Footprint	Corner Point	-23° 21.895'	29° 39.999'
B	Bethel Solar PV	Project Footprint	Corner Point	-23° 21.865'	29° 40.338'
C	Bethel Solar PV	Project Footprint	Corner Point	-23° 21.726'	29° 41.059'
D	Bethel Solar PV	Project Footprint	Corner Point	-23° 21.710'	29° 41.202'
E	Bethel Solar PV	Project Footprint	Corner Point	-23° 21.678'	29° 41.505'
F	Bethel Solar PV	Project Footprint	Corner Point	-23° 22.681'	29° 41.421'
G	Bethel Solar PV	Project Footprint	Corner Point	-23° 22.716'	29° 41.422'
H	Bethel Solar PV	Project Footprint	Corner Point	-23° 22.774'	29° 41.429'
I	Bethel Solar PV	Project Footprint	Corner Point	-23° 22.826'	29° 41.447'
J	Bethel Solar PV	Project Footprint	Corner Point	-23° 23.297'	29° 41.695'
K	Bethel Solar PV	Project Footprint	Corner Point	-23° 23.329'	29° 41.702'
L	Bethel Solar PV	Project Footprint	Corner Point	-23° 23.359'	29° 41.704'
M	Bethel Solar PV	Project Footprint	Corner Point	-23° 23.388'	29° 41.700'
N	Bethel Solar PV	Project Footprint	Corner Point	-23° 23.030'	29° 40.346'
O	Bethel Solar PV	Project Footprint	Corner Point	-23° 22.611'	29° 39.972'
A	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.643'	29° 41.392'
B	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.752'	29° 41.389'

POINT ID	Project Name	Comments	Type	Latitude	Longitude
C	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.909'	29° 46.001'
D	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.783'	29° 46.050'
E	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.785'	29° 46.141'
F	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.850'	29° 46.661'
G	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.926'	29° 47.265'
H	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.483'	29° 47.245'
I	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.170'	29° 47.194'
J	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.165'	29° 46.640'
K	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.509'	29° 46.634'
L	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.643'	29° 46.122'
M	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.535'	29° 41.395'
N	Bethel Solar PV	Preferred Grid Corridor	Corner Point	-23° 22.643'	29° 41.392'

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.	This Draft Environmental Impact Report was compiled by Dale Holder of Cape Environmental Assessment Practitioners (Pty) Ltd (Cape EAPrac). Details of the EAP are included at the beginning of this report. A CV of the author as well as a company profile of the EAP company, Cape EAPrac, is attached in Appendix G3.
(b) the location of the activity, including – 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 projects are located on Farm 431 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province. Farm 431: T0LS00000000043100000 Remainder of Farm 466: T0LS00000000046600000
(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.

Requirement	Details
(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. • 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.	Sections 2.4, 2.5, and sections 9 of this EIR. Please also refer to Annexures F2, F4, F5, F6 and F7 for the evidence of the public participation that took place during the scoping phase. Please also refer to section 8 of this report.
(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;	Section 7 of this EIR

Requirement	Details
• 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.	
(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.
(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

Requirement	Details
(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.

COMPETENT AUTHORITY ACCEPTANCE OF FINAL SCOPING REPORT

The Department of Forestry, Fisheries and the Environment, Chief Directorate Integrated Environmental Authorisations accepted the final scoping report on 23 July 2025. A copy of this comment is included in Appendix G1. Please refer to the table below and the comments and responses report attached in Appendix F2 for the responses to this comment.

Comment	Response
(a) Listed Activities	
(i) For activities listed under Listing Notice 3, please ensure that the specific name of the protected area in proximity to the proposed project is clearly indicated in the activity description.	The activity descriptions for the activities applied for under Listing Notice 3 have been amended to indicated the specific name of the protected area in proximity to the proposed project. The nearest protected area is the Blijdschap Private Nature Reserve located approximately 8,5km north of the proposed development site.
(ii) Please ensure that all relevant listed activities are applied for, are specific and can be linked to the development activity or infrastructure as described in the project description. Also ensure to choose the correct and relevant sub listing. Additionally, note that the onus is on the applicant and the environmental assessment practitioner (EAP) to ensure that all the applicable listed activities are included in the application. Failure to do so may result in unnecessary delays in the processing of the application.	Kindly refer to Section 3.12 of the Draft Environmental Impact Report which includes a table of all the listed activities associated with the proposed development, as stipulated under 2014 Regulations 327, 325 and 324.
(iii) The EIAr must provide an assessment of the impacts and mitigation measures for each of the listed activities applied for.	Kindly refer to Section 6 and Section 7 of the Draft Environmental Impact Report which includes the Assessment of Impacts as well as the Management and Mitigation of Impacts for the listed activities applied for.
(iv) If the activities applied for in the application form differ from those mentioned in the final EIAr, an amended application form must be submitted. Please note that the Department's application form template has been amended and can be downloaded from the following link https://www.environment.gov.za/documents/forms.	An amended Application Form will be submitted with the Final Environmental Impact Report to include the complete list of Listed Activities applied for.
(v) The relevant authorities with jurisdiction in respect of geographically designated areas in terms of GN R. 985 (Listing Notice 3) Activities must be continuously involved throughout the environmental impact assessment process. Written comments (or proof of consultation) must be obtained from the relevant authorities and submitted to this Department. In addition, a graphical representation of the proposed development within the respective geographical areas must be provided. Please also ensure that the potential impacts on the affected Critical Biodiversity Areas and protected areas are fully assessed in the EIAr.	Kindly refer to Appendix F1 of the Draft Environmental Impact Report for the Stakeholder Register for this project. All comments received thus far are included as Appendix 5 as well as in the Comments & Responses Report (Appendix F2). All correspondence with the Competent Authority are included in Appendix G1. Please also refer to Appendix D1 – Site Layout Plans, which includes a graphical representation of the proposed development within a provincial as well as national context.

Comment	Response
	The potential impacts of Critical Biodiversity Areas as well as Protected Areas have been assessed and included in the specialist studies attached as Appendix E.
(b) Public Participation	
(i) Please ensure that comments from all relevant stakeholders are submitted to the Department with the EIAr.	Kindly refer to Appendix F2 of the Draft Environmental Impact Report for the most up to date Comments & Responses Report, as well as Appendix F5 for all the comments received on the Draft Scoping Report. All comments and correspondence received on the Draft Environmental Impact Report will be included as Appendix F7 in the Final Environmental Impact Report.
(ii) 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. 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.	Kindly refer to Appendix F2 of the Draft Environmental Impact Report for the most up to date Comments & Responses Report, as well as Appendix F5 for all the comments received on the Draft Scoping Report. All comments and correspondence received on the Draft Environmental Impact Report will be included as Appendix F7 in the Final Environmental Impact Report. Proof of notification of the availability of the Draft Scoping Report and the Draft Environmental Impact Report will be include as Appendix F4 and F6 respectively with the submission of the Final Environmental Impact Report.
(iii) Copies of comments received must be submitted to the Department. Copies of responses provided to all comments received must also be submitted. In addition, the EIAr must also include proof that responses were sent to Interested and Affected Parties.	Kindly refer to Appendix F2 of the Draft Environmental Impact Report for the most up to date Comments & Responses Report, as well as Appendix F5 for all the copies of the comments received on the Draft Scoping Report along with copies of the responses sent to I&APs . All comments and correspondence received on the Draft Environmental Impact Report will be included as Appendix F7 in the Final Environmental Impact Report.
(iv) 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 Appendix 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. Please ensure that the comments and trail report is in the format provided by the department. This must include all comments received on this application.	The comments and responses report attached in Appendix F2 responds to each comment individually in detail in the format requested by the Department. Response to the Departments acceptance of the Final Scoping Report is included in this comment and responses report. This comments ant responses report will be updated to include any comments received on the Draft Environmental Impact Report.
(v) Comments from I&APs must not be split and arranged into categories. Comments from each submission must be responded to individually.	Duly noted. Comments from I&APs are arranged by date received in the Comments & Responses Report attached as Appendix F2 to the Draft Environmental Impact Report.
(vi) The Public Participation Process must be conducted in terms of Regulation 39, 40, 41, 42, 43 & 44 of the EIA Regulations, 2014, as amended.	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 provided in Section 8 of the Draft Environmental Impact Report provides a quick reference to show how this environmental process has or intends to comply with these legislated requirements relating to public participation. Please also refer to **Appendix F**, where all evidence of public participation is included.

Comment	Response
(vii) 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 engage with the Department during the comment period on the Draft Environmental Impact Report to arrange a suitable date and time for the site inspection.
(viii) All evidence of public participation must be included in the final EIR including site notices and newspaper articles.	Duly noted. All evidence of public participation undertaken thus far are included as Appendix F to the Draft Environmental Impact Report.
(c) Cumulative Assessment	
(i) The EIR must include cumulative impact assessment for all identified and assessed impacts and must be refined to indicate the following. ➢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. ➢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. ➢The cumulative impacts significance rating must also inform the need and desirability of the proposed development. ➢A cumulative impact environmental statement on whether the proposed development must proceed.	Kindly refer to Section 6.11 of the Draft Environmental Impact Report for the assessment of Cumulative Impacts.
(d) Specialist assessments	
(i) The specialist studies must include the following: ➢ 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. ➢ 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. ➢ 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. ➢ Should the specialist definition of 'no-go' area differ from the Departments definition; this must be clearly indicated. The specialist must also indicate the 'no-go' area's buffer if applicable. ➢ 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. ➢ Should a specialist recommend specific mitigation measures, these must be clearly indicated. ➢ Regarding cumulative impacts:	Kindly refer to Appendix E1 – E8 for all the specialist studies undertaken for the proposed development. Please also refer to the following sections in the Draft Environmental Impact Report: • Section 1.3 – Assumptions & Limitations; • Section 2.11.4 – The no-go Alternative; • Section 7 – Management and Mitigation of Impacts; • Section 6.11 – Cumulative Impacts.

Comment	Response
Clearly defined cumulative impacts and where possible the size of the identified impact must be quantified and indicated, i.e. hectares of cumulatively transformed land. A detailed process flow 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. Identified cumulative impacts associated with the proposed development must be rated with the significance rating methodology used in the process. The significance rating must also inform the need and desirability of the proposed development. A cumulative impact environmental statement on whether the proposed development must proceed.	
(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 recommendations were made by the appointed specialists.
(iii) It is further brought to your attention that Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation, which were 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.	All specialist studies were undertaken in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998.
(iv) The screening tool output: ➢ The screening tool and the gazetted protocols (GN R320 of 20 March 2020 and GN R 1150 of 30 October 2020) require a site sensitivity verification to be completed to either confirm or dispute the findings and sensitivity ratings of the screening tool. ➢ It is the responsibility of the EAP to confirm the list of specialist assessments and to motivate in the assessment report, the reason for not including any of the identified specialist studies including the provision of photographic evidence of the site situation.	Kindly refer to Section 5.11 of the Draft Environmental Impact Report for the Site Sensitivity Verification. Please also refer to Appendix H for the Screening Tool Reports for the proposed development.
(v) Additionally, the protocols specify that an assessment must be prepared by a specialist who is an expert in the field and is SACNASP registered for e.g.an aquatic assessment must be prepared by a specialist registered with SACNASP, with expertise in the field of aquatics sciences.	Kindly refer to Appendix G6 for the Specialist CVs that undertook the specialist studies for the proposed development.
(vi) Please be reminded that section 2(3) of NEMA requires developments to be socially, environmentally and economically sustainable, while section 2(4)(i) of NEMA requires the social, economic and environmental impacts of	Kindly refer to Section 5 of the Draft Environmental Impact Report for the Site Description and Attributes separated per discipline as well as Section 6 for the Assessment of Impacts also separated per discipline.

Comment	Response
activities, including disadvantages and benefits, to be considered, assessed and evaluated. (vii) Specialist findings and recommendations must be separated per project.	Please refer to Section 7 for the Management and Mitigation of Impacts as recommended by each specialist study undertaken for the proposed development.
(viii) The following Specialist Assessments will form part of the EIAr: Specialist Study Agricultural Compliance Statement Landscape/Visual Impact Assessment Archaeological and Heritage Impact Assessment Palaeontology Impact Assessment Terrestrial Biodiversity Impact Assessment Aquatic Biodiversity Impact Assessment Avian Impact Assessment Civil Aviation Compliance Statement Defence Compliance Statement Geotechnical Assessment Socio-Economic Impact Assessment Plant Species Compliance Statement Animal Species Impact Assessment	Kindly refer to the following appendices to the Draft Environmental Impact Report: Appendix E5: Agricultural Compliance Statement; Appendix E6: Landscape/Visual Impact Assessment; Appendix E4: Archaeological and Heritage Impact Assessment; Appendix E4: Palaeontology Impact Assessment; Appendix E1: Terrestrial Biodiversity Impact Assessment (inclusive of botanical and faunal assessments); Appendix E3: Aquatic Biodiversity Impact Assessment; Appendix E2: Avian Impact Assessment; Appendix E7: Socio-Economic Impact Assessment. The applicant has submitted an obstacles investigation to the South African Civil Aviation Authority (SACAA). At the time of submission of this Draft Environmental Impact Report, a response on this application had not yet been received from the SACAA. This will be included in the Final Environmental Impact Report should it be received prior to the final submission. The EAP will continue to actively engage with the Department of Defence regarding the Defence Theme. A detailed geotechnical assessment can only be undertaken once the final equipment suppliers have been selected and the detailed designs completed.
(e) Locality, Site Layout and Sensitivity Maps	
The draft EIAr must provide the following maps that includes:	
(i) A clear description of all associated infrastructure. This description must include, but is not limited to the following: ➢PV facility and all associated infrastructures such as, substation, access road etc; ➢Internal road infrastructure; and; ➢All supporting onsite infrastructure such as laydown area and auxiliary buildings, etc.	The clear description of the infrastructure is included in the technical checklist at the beginning of this report. Internal roads infrastructure; and all supporting onsite infrastructure are depicted in the solar facility layout plans for the preferred alternative attached in appendix D1.
(ii) All necessary details regarding all possible locations and sizes of the proposed project infrastructure.	The co-ordinates of all infrastructure proposed as part of this project are included in the tables at the beginning of this report. The details regarding the relevant sizes of the proposed solar PV infrastructure is included in Technical details checklist at the beginning of the report and in section 2. Please also note, that an additional table detailing the technical details in the format requested by the competent authority is also included on page 9 of the report.
(iii) A copy of the final preferred layout map. 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:	The Copy of the final preferred layout as well as the preferred layout overlaid onto a sensitivity map is attached in Appendix D1. All proposed infrastructure as well as relevant existing infrastructure on the properties is shown in these layout plans. Please note, that should the outcome of the public participation

Comment	Response
➢ Permanent laydown area footprint; ➢ Internal roads indicating width (construction period width and operation period width) and with numbered sections between the other site elements which they serve (to make commenting on sections possible); ➢ Wetlands, drainage lines, rivers, streams, and water crossings of roads and cables indicating the type of bridging structures that will be used; ➢ The location of sensitive environmental features on-site e.g. CBAs, ESA, heritage sites, wetlands, drainage lines, etc. that will be affected by the facility and its associated infrastructure; ➢ Substation(s) and/or transformer(s) sites, including their entire footprint; ➢ Location of access and service roads; ➢ All existing infrastructure on the site, especially railway lines and roads; ➢ Buffer areas; ➢ Buildings, ; ➢ All "no-go" areas; and ➢ A north arrow and legend/key, to enable the Department to interpret the layout map.	process require the need for this preferred layout plan to be revised, such a revised plan will be included in the Final EIR.
(iv) An environmental sensitivity map indicating environmentally sensitive areas and features identified during the assessment process.	The environmental sensitivity map, which includes all no-go areas and buffers identified by the specialists overlain onto the final preferred layout map is attached in Appendix D1.
(v) A map combining the final layout map superimposed (overlain) on the environmental sensitivity map.	
(f) Environmental Management Programme (EMPr)	
(i) It is drawn to your attention that for the overhead electricity transmission and distribution infrastructure, when such facilities trigger activity 11 of the EIA Regulations Listing Notice 1 of 2014, as amended, and any other listed and specified activities necessary for the realisation of such facilities, the generic Environmental Management Programmes (EMPr), contemplated in Regulations 19(4) must be used over and above the EMPr for the facility. Accordingly, there needs to be a generic EMPr for the substation, powerline and separate EMPr for the facility.	Kindly refer to Appendix I of the Draft Environmental Impact Report which includes the EMPr for the PV facility, a generic EMPr for the on-site substation as well as a generic EMPr for the overhead powerline. The Applicant will sign the generic EMPr upon submission of the Final Environmental Impact Report as there may still be amendments required based on the outcome of the public participation period of the Draft Environmental Impact Report.
(ii) Please ensure that the mitigation measures specified in the EIAr and specialist reports are also incorporated into the EMPr. (iii) In addition, ensure that the EMPr complies with the content of the EMPr in terms of Appendix 4 of the EIA Regulations, 2014, as amended.	All mitigation measures identified in the Draft Environmental Impact Report as well as the specialist studies have been incorporated into the EMPrs attached as Appendix I of the Draft Environmental Impact Report. Please refer to Section 3 of the EMPr outlined the compliance of the EMPr with Section 24N of NEMA.
(iv) Please also include in the EMPr, a recommended frequency for the auditing of compliance with the conditions of the EA and EMPr, and for the submission of such compliance reports to the competent authority.	Please refer to Section 2.14 of the EMPr attached as Appendix I to the Draft Environmental Impact Report for Environmental Audit Frequencies.
(v) EMPr must include an environmental sensitivity map indicating environmental sensitive areas and features identified during the assessment process.	Kindly refer to the Site Layout Plans appended to the EMPr as Appendix A which include Environmental Sensitivity Maps superimposed on the site layout.
(vi) A map combining the final layout map superimposed (overlain) on the environmental sensitivity map.	

Comment	Response
(vii) EMPr must include measures to protect hydrological features such as streams, rivers, pans, wetlands, dams and their catchments, and other environmental sensitive areas from construction impacts including the direct or indirect spillage of pollutants.	All the Management and Mitigation measures/recommendations provided in the Aquatic Impact Assessment (Appendix E3) are included in the draft EMPr (Appendix I).
(g) 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. A sample for the minimum information required is listed under Annexure 2 below.	Kindly refer to the Technical Checklist in the beginning of the report providing the technical details of the proposed development in the table format as requested.
(ii) Recommendations of conditions to be included in the EA, must be done per project.	Duly noted.
(iii) Details of the future plans for the site and infrastructure after decommissioning in 20-30 years and the possibility of upgrading the proposed infrastructure to more advanced technologies must be indicated.	Two possible scenarios for the decommissioning are addressed in the EMPr attached in Appendix I.
(iv) The EAP must provide landowner consent for all farm portions affected by the proposed project, whether the project component is linear or not, i.e. all farm portions where the access road, solar panels and associated infrastructure is to be located.	Kindly refer to Appendix G2 for the signed Landowner Consent for the Solar PV properties. According to Regulation 39 (1) of the EIA Regulations 2014 [published in Government Notice No. R326 under Section 24(5) and 44 of the National Environmental Management Act (Act No. 107 of 1998)], *"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) Subregulation (1) does not apply in respect of—* *(a) linear activities;"* Since only linear activities are being proposed on the grid connection infrastructure, written consent of the landowners are not required as part of the Environmental Process.
(v) Please also ensure that the EIAr includes the period for which the Environmental Authorisation is required and the date on which the activity will be concluded as per Appendix 3 of the NEMA EIA Regulations, 2014, as amended.	Kindly refer to Section 2.12 of the Draft Environmental Impact Report for the Project Programme and Timelines. 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 Years 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.
(vi) Kindly ensure that, the appendices of the EIAr are properly packed and grouped. For example, you must create a folder that relate to public participation process and all information regarding the public participation process must all be included in that folder. The same must be done also to Specialist report, maps, EMPr(s) and other files.	Duly noted.
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.	Duly noted.

Comment	Response
Should you fail to meet any of the timeframes stipulated in Regulation 23 of the NEMA EIA Regulations, 2014, as amended, your application will lapse.	Duly noted.
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.	Duly noted.

COMPETENT AUTHORITY COMMENT ON DRAFT ENVIRONMENTAL IMPACT REPORT

The Department of Forestry, Fisheries and the Environment, Chief Directorate Integrated Environmental Authorisations Provided comment on the Draft Environmental Impact Report on 19 September 2025. A copy of this letter is included in Appendix G1. Please refer to the table below and the comments and responses report attached in Appendix F2 for the responses to this comment.

Comment	Response
a) Listed Activities	
Please ensure that all relevant listed activities are applied for, are specific and can be linked to the development activity or infrastructure as described in the project description. Also ensure to choose the correct and relevant sub listing. Additionally, note that the onus is on the applicant and the environmental assessment practitioner (EAP) to ensure that all the applicable listed activities are included in the application. Failure to do so may result in unnecessary delays in the processing of the application.	These relevant thresholds are included in the description for each of the listed activities as reflected in the revised application form in Appendix J as well as in section 3.1.2.
If the activities applied for in the application form differ from those mentioned in the final SR and draft EIAr, an amended application form must be submitted. Please note that the Department's application form template has been amended and can be downloaded from the following link https://www.environment.gov.za/documents/forms.	A revised application form is attached in Appendix in Appendix J. The Listed activities outlined in this application form and those reflected in section 3.1.2 of this report (and assessed) are the same.
b) Draft Environmental Impact Assessment Report (EIAr)	
i) It has been noted that the associated infrastructure includes water storage tanks and pipelines. The DEIAr provides no assessment of the pipeline's impact. Kindly specify the size and length of the pipeline. Also please ensure that the pipeline impacts are assessed and do not trigger a listed activity.	Kindly note that pipelines and water storage tanks referred to are limited to rainwater storage tanks (typical JoJo type Tanks) and plumbing reticulation at the Operations and Maintenance building. The Pipeline, which is essentially plumbing between the rainwater storage tank and the O&M building will not trigger any Listed Activity and is situated entirely within the area depicted for O&M buildings on the Site Layout Plan in Appendix D1.
(ii) You have applied for the BESS. You are required to provide the height and capacity of the BESS.	Please refer to the technical details in the tables above. The BESS will have a maximum storage capacity of 3840MWh and a maximum height of 6m.
(iii) Please provide a technical detail for the proposed facility with the components and descriptions and or dimensions of the project not limited to BESS, onsite switching station, IPP substation, O&M complex, Access road and internal roads, temporary storage, laydown area.	Please refer to the tables above, where all the technical details of the proposed PV development as well as the associated infrastructure have been tabulated.
(iv) Furthermore, the technical details must indicate the distances of all the assessed powerline alternatives. Currently,	The technical details of the powerline infrastructure detailed in the tables above are applicable to the preferred powerline

Comment	Response
only one powerline distance has been provided, and it is unclear whether this relates to the preferred powerline alternative or not.	alignment. The co-ordinates and the Site Layout Plan in Appendix D1 also reflect the preferred Alternative.
(v) Please note that Appendix 1(3)(1)(h)(x) of the Environmental Impact Assessment (EIA) Regulations, 2014, as amended, requires that "if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such" must be included in the final EIAr.	Please refer to section 2.11 below where the alternatives are discussed in detail.
(vi) A description of the process followed to reach the preferred alternative within the site as per Appendix 1(3)(1)(h)(i) of the EIA Regulations (2014), as amended, must be incorporated into the final EIAr.	Please refer to section 2.10 (site selection process) and section 2.11.
(vii) You indicated that no technology alternatives are under consideration in this application. Please investigate BESS technology alternatives. You are requested to explain which technology alternative preferable, and the other alternatives are not viable.	The reference to technology alternatives relates to alternative generation technologies (i.e. that PV is the only generation technology under investigation). BESS technology alternatives (Solid State, Redox Flow and Liquid metal technologies) were considered and the risk associated with each considered (Please refer to the BESS risk assessment compiled by ISHEcon attached in Appendix E8). The preferred BESS technology was determined to be: Solid State Lithium or Sodium Ion technologies. This will be containerised technology and no assembly of individual components will take place on site.
c) Locality, Site Layout and Sensitivity Maps	
(i) Please ensure that the site layout map to be submitted with the final EIAr must provide the following:	
A clear description of all associated infrastructure.	All infrastructure reflected on the preferred site layout plan (Appendix D1) is described in the tables above.
substation;	The substation (IPP side and Eskom side) is depicted on the site layout plan in appendix D1.
powerline	The powerline is depicted on the site layout plan in Appendix D1.
The locality map must depict the pipeline	As noted above, the pipelines and water storage tanks referred to are limited to rainwater storage tanks (typical JoJo type Tanks) and plumbing reticulation at the Operations and Maintenance building. The Pipeline, which is essentially plumbing between the rainwater storage tank and the O&M building will not trigger any Listed Activity and is situated entirely within the area depicted for O&M buildings on the Site Layout Plan in Appendix D1.
Internal roads infrastructure; and;	The internal roads infrastructure is depicted on the site layout plan in Appendix D1.
All supporting onsite infrastructure such as laydown area and auxiliary buildings, dangerous goods facility etc.	All supporting infrastructure is depicted on the site layout plan in appendix D1.
All necessary details regarding all possible locations and sizes of the proposed solar PV infrastructure.	The location and sizes of all infrastructure are shown on the preferred site layout plan in Appendix D1 and are also reflected in the technical description tables above.
A copy of the final preferred layout map. 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:	
Permanent laydown area footprint;	The laydown area is depicted in the site layout plans attached in appendix D1. Please note that as per the EMPr, a 1ha

Comment	Response
	permanent laydown has been allowed for within the extent of the temporary laydown.
Internal roads indicating width (construction period width and operation period width) and with numbered sections between the other site elements which they serve (to make commenting on sections possible);	The width of the internal and access roads are depicted in in the site layout plan attached in Appendix D1 and detailed in the technical descriptions above. Incompliance with the EMPr (Appendix I) the Construction phase roads and the operational phase roads will be developed on the same alignment.
Wetlands, drainage lines, rivers, streams and water crossings of roads and cables indicating the type of bridging structures that will be used;	All of the delineated water courses and the associated buffers delineated by the aquatic biodiversity specialist have been excluded from the preferred layout alternative. There are instances where access roads and construction tracks need to cross these to cross these delineated watercourses for the purposes of construction and operation of the facility. These crossings form part of the application for water use in terms of the National Water Act(NWA), which has been submitted to the Department of Water and Sanitation. The type of structure for these crossings will most like be a Low level Water Crossing. The final type of structure however will be determined as part of the ongoing process in terms of the NWA.
The location of sensitive environmental features on site e.g. CBAs, heritage sites, wetlands, drainage lines etc. that will be affected by the facility and its associated infrastructure;	All sensitive environmental features, including no go areas and buffers are depicted on in the site layout plan for the preferred alternative attached in Appendix D1.
Substation(s) and/or transformer(s) sites, including their entire footprint;	The substation and Transformer sites are depicted in the site layout plan attached in Appendix D1.
Location of access and service roads;	The location of all roads, including internal roads, perimeter roads and access roads is shown on the site layout plan attached in Appendix D1.
Connection routes (including pylon positions) to the distribution/transmission network;	The position of pylons cannot be determined until such time as the detailed design is undertaken. The pylon positions are determined by Eskom in consultation with the project engineers after the Budget Quote Process is completed. This budget quote process can only take place once the project receives an environmental authorisation. For the purposes of this environmental application, it should be noted that the pylons will all be within the proposed grid connection corridor and will be situated more than 32m from any of the delineated watercourses.
All existing infrastructure on the site, especially railway lines and roads;	There is no railway infrastructure present on the proposed footprint for the facility. All other existing infrastructure, most notably roads and Eskom Powerline infrastructure is depicted on the Site Layout Plan attached in Appendix D1.
Buffer areas;	All buffer areas recommended by the participating specialists (Aquatic Biodiversity, Avifauna and Visual) are included.
Buildings, including accommodation;	All buildings are reflected in the Site Layout Plan attached in Appendix D1. No accommodation is proposed as part of this application.
All “no-go” areas; and	All no go areas along with the buffers on the no go areas are depicted in the Site Layout Plan attached in Appendix D1.
A north arrow and legend/key, to enable the Department to interpret the layout map.	The site layout plan attached in appendix D1 includes a North Arrow.
An environmental sensitivity map indicating environmentally sensitive areas and features identified during the assessment process.	The site layout plan attached in Appendix D1 includes all sensitive features and buffer areas recommended by the specialists.

Comment	Response
A map combining the final layout map superimposed (overlain) on the environmental sensitivity map.	
d) Coordinates	
(i) The EIAr must include coordinates of the proposed project including all associated infrastructures as shown on the layout map submitted with the draft EIAr. i.e. BESS, IPP substation, onsite substation, laydown area, O&M buildings, Diesel storage, access point and access road.	All the co-ordinates provided in the section above are in WGS-84 projection. The co-ordinates of the PV footprint are included for each bend point in the footprint. Associated infrastructure is reflected as centre points and linear infrastructure is depicted as start, middle and end points. Please note that the co-ordinates reflected depict the infrastructure associated with the preferred alternative only.
e) Public Participation Process	
(i) Please ensure that comments from all relevant stakeholders are submitted to the Department with the EIAr.	Please refer to Appendices F5 and F7.
(ii) 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. 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.	Please refer to appendix F5 for all comments received on the Draft Scoping Report and appendix F7 for all comments received on the Draft Environmental Impact Report. The responses to these comments are included in the comments and responses report attached in appendix F2.
(iii) Copies of comments received must be submitted to the Department. Copies of responses provided to all comments received must also be submitted. In addition, the EIAr must also include proof that responses were sent to Interested and Affected Parties.	Please refer to appendix F5 for all comments received on the Draft Scoping Report and appendix F7 for all comments received on the Draft Environmental Impact Report. The responses to these comments are included in the comments and responses report attached in appendix F2.
(iv) 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 Appendix 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. Please ensure that the comments and trail report is in the format provided by the department. This must include all comments received on this application.	A comment and responses report is attached in appendix F2.
(v) Comments from I&APs must not be split and arranged into categories. Comments from each submission must be responded to individually.	Comments and responses are reflected verbatim per comment received and have not been arranged into categories.
(vi) 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 the EIR as well as appendices F1 - F7, which shows how the public participation complies with of Regulations 39, 40, 41, 42, 43 and 44 of the EIA Regulations 2014, as amended.

Comment	Response
(vii) 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 did contact the department to arrange a site visit prior to the submission of the Final EIR. A site visit was undertaken with Ms Makhosi Yeni and Olivia Letlalo on Wednesday, 01 October. This site visit was largely applicable to the Klipput PV Project and the preferred grid connection alternative for all 4 of the projects.
(viii) All evidence of public participation must be included in the final EIR including site notices and newspaper articles	Please refer to Appendix F1 – F7 for all details regarding the public participation that was undertaken.
f) Cumulative Assessment	
(i) During the pre-application meeting, it was indicated that the applicant intends to develop three (3) × 240 MW solar PV facilities and one (1) × 75 MW solar PV facility, including the associated grid connections. These applications have already been submitted to the Department and allocated to different officials. However, the draftt EIAr does not make reference to these clustered applications. You are therefore requested to include these projects in the introduction of the EIAr and provide the reference numbers for each. Furthermore, a map showing the location of these projects must also be included. This information must be consistently reflected in all EIArs to be submitted.	The introduction section in all 4 of the reports has been updated to reflect all projects (including the reference numbers) that form part of this cluster.
(ii) Please ensure that EIR must include cumulative impact assessment for all identified and assessed impacts and must be refined to indicate the following.	
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.	All specialists have included mitigation measures to address cumulative impacts of the proposed facility. This includes both mitigation measures to address the cumulative effects of the four projects in this cluster as well as those with other projects within the greater area.
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.	
The cumulative impacts significance rating must also inform the need and desirability of the proposed development.	The significance of cumulative impacts have been considered and included as part of the need and desirability of the project. Please refer to section 2.9 in the EIR for further details in this regard.
A cumulative impact environmental statement on whether the proposed development must proceed.	A cumulative impact statement is included in section 6.11.
A cumulative map that shows all the neighbouring PV Developments.	Please refer to appendix D2.
g) Specialists	

Comment	Response
(i) Specialist studies must provide a detailed description of their methodology, as well as all other associated infrastructures that they have assessed and are recommending for the authorisation.	The methodology for the specialist studies are included in their respective reports in appendices E1 to E8. The general assessment methodology is outlined in section 6.1
(ii) The specialist studies must also provide a detailed description of all limitations to their studies. All specialist studies must be conducted in the right season and providing that as a limitation, will not be accepted.	All limitations to the specialist studies are included in their respective reports in appendices E1 to E8 and summarised in section 1.3 of the EIR.
(iii) Should the appointed specialists specify contradicting recommendations, the EAP must clearly indicate the most reasonable recommendation and substantiate this with defendable reasons; and where necessary, include further expertise advice.	No contradicting recommendations have been suggested by participating specialist and all Environmental Impact Management Outcomes and Actions between specialists are aligned and have been incorporated into the EMPr.
(iv) It is brought to your attention that Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation, which were 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, except where the applicant provides proof to the competent authority that the specialist assessment affected by these protocols had been commissioned before the date on which the protocols came into effect, in which case Appendix 6 of the Environmental impact Assessment Regulations, 2014, as amended, will apply. Please indicate in the EIAr whether or not the protocols were applied or provide the necessary proof where the exception applies. Please note further that the protocols, if applicable, require certain specialists' to be SACNASP registered.	All relevant specialist studies included in Appendices E1 – E8 of the EIR have been prepared in terms of the Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998. Please not that in terms of these studies, the Terrestrial Biodiversity, Plant Species, Animal Species, Aquatic Biodiversity and Agricultural assessments have been undertaken in terms of the relevant protocols. All other studies, namely the Heritage Impact Assessment, Visual Impact Assessment, Social Impact Assessment and BESS Risk Assessment.
v) For ease of reference, please provide a table in the EIAr's, indicating the studies required by the Department's screening tool, a column indicating whether these studies where undertaken or not, a column with the requisite motivation if a study was not undertaken (confirmed by a site sensitivity verification, where the protocols are applicable and require such); a column(s) indicating whether the protocols are applicable and if they were complied with for the relevant study.	Please refer to section 5.11 for the table indicating studies required by the Department's screening tool and whether these studies where undertaken or not.
h) Environmental Management Programme	
(i) The generic EMPrs are not signed by the applicant holder of EA. You are required to ensure that the generic EMPrs are signed by the applicant.	The generic EMPr's for both powerline and substation infrastructure as attached in Appendix I have been signed by the applicant.
(ii) Please ensure that all recommended mitigation measures recorded in the EIAr and specialist studies are carried through to the site-specific section of the Generic EMPrs. The EMPrs must also include an environmental sensitivity map indicating	The recommendations recorded in the EIR (Section 7) have been incorporated into the EMPR as well as the Generic EMPr's for powerline and substations as attached in Appendix I.

Comment	Response
environmental sensitive areas and features identified during the assessment process, overlaid with the development footprint site map.	
(iii) Please also include in the EMPr, the recommended frequency for the auditing of compliance with the conditions of the EA and EMPr for the construction, post-construction monitoring, and operational (where relevant) phases of the activity, and for the submission of such compliance reports to the competent authority.	The recommended frequency for auditing is included in section 15.2 of the EMPr as attached in Appendix I. In terms of this section, In addition to the internal environmental audit (which takes place as part of the monthly environmental control report), the following external audits are required to be undertaken: - Annually during the construction phase. - Within 1 month of completion of construction activities. - Within 1 year of commencement of operations. - Every 3 years thereafter.
(iv) The facility EMPr must include measures to protect hydrological features such as streams, rivers, pans, wetlands, dams and their catchments, and other environmental sensitive areas from construction impacts including the direct or indirect spillage of pollutants	Such measures are included in the EMPr in Appendix I
(v) You must ensure that the facility EMPr complies with Appendix 4 of the EIA Regulations, 2014, as amended.	A table indicating compliance with Appendix 4 of the EIA regulations is included in the EMPr in Appendix I.
General	
Where the proposed activity does not include operational aspects, please also ensure that the final EIAr includes 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, as per Appendix 3 of the NEMA EIA Regulations, 2014, as amended.	This is included in section 2.12 of the EIR. 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 Years 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.
You are reminded that the final EIAr to be submitted to this Department must comply with Regulation 23 of the NEMA EIA Regulations, 2014, as amended. The EIAr must contain all information set out into the Regulations or comply with a protocol or minimum information requirements relevant to the application as identified and gazetted by the Minister in a government notice.	The submission of this Final EIR is within the timeframes outlined in Regulation 23(1)(a) of the NEMA EIA Regulations, 2014. All comments received during both of the comment periods have been included.
Regulation 23(1)(a) of the NEMA EIA Regulations, 2014, as amended, states that: "The applicant must within 106 days of the acceptance of the scoping report submit to the competent authority -(a) an environmental impact assessment report inclusive of any specialist reports, and an EMPr, which must have been subjected to a public participation process of at least 30 days and which reflects the incorporation of comments received, including any comments of the competent authority."	The submission of this Final EIR is within the timeframes outlined in Regulation 23(1)(a) of the NEMA EIA Regulations, 2014. All comments received during both of the comment periods have been included.
Should there be significant changes or new information that has been added to the EIAr's or EMPr which changes or information	No significant changes or new information is included in the Final EIR. The changes between the Draft and Final EIR are

Comment	Response
was not contained in the reports or plans consulted on during the initial public participation process, you are required to comply with Regulation 23(1)(b) of the NEMA EIA Regulations, 2014, as amended, which states: "The applicant must within 106 days of the acceptance of the scoping report submit to the competent authority – (b) a notification in writing that the reports, and an EMPr, will be submitted within 156 days of acceptance of the scoping report by the competent authority, or where regulation 21(2) applies, within 156 days of receipt of application by the competent authority, as significant changes have been made or significant new information has been added to the environmental impact assessment report or EMPr, which changes or information was not contained in the reports or plans consulted on during the initial public participation process contemplated in subregulation (1)(a) and that the revised environmental impact assessment report or EMPr will be subjected to another public participation process of at least 30 days.	mostly related to incorporation of the comments received on the Draft EIR and inclusion of all the relevant proof of public participation that was undertaken on the Draft EIR.
Should you fail to meet any of the timeframes stipulated in Regulation 23 of the NEMA EIA Regulations, 2014, as amended, your application will lapse.	The EAP and the Applicant are aware of the timeframes outlined in regulation 23 and the submission of this Final EIR is within the allowable timeframes.
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.	No significant changes or new information is included in the Final EIR. The changes between the Draft and Final EIR are mostly related to incorporation of the comments received on the Draft EIR and inclusion of all the relevant proof of public participation that was undertaken on the Draft EIR.

ORDER OF REPORT

Report Summary

Revised 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
Appendix D1	:	Site Layout Plans
Appendix D2	:	Cluster Map showing proximity of Bethel Solar PV and associated infrastructure to other projects in the vicinity.
Appendix E	:	Supplementary Reports (Specialist Reports and Technical Reports)
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Appendix E2	:	Avifaunal Impact Assessment[4] (The Biodiversity Company, 2025)
Appendix E3	:	Aquatic Biodiversity Impact Assessment[5] (The Biodiversity Company, 2025)
Appendix E4	:	Heritage Impact Assessment (CTS Heritage, 2025)
Appendix E5	:	Agricultural Compliance Statements (Terra Africa, 2025)
Appendix E6	:	Visual Impact Assessment (VRMA, 2025)
Appendix E7	:	Social Impact Assessment (Barbour, 2025)
Appendix E8	:	BESS Risk Assessment (ISHECON, 2025)
Appendix F	:	Public Participation Process
Appendix F1	:	I&AP Register
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Appendix F3	:	Adverts & Site Notices
Appendix F4	:	Draft Scoping Report Notifications
Appendix F5	:	Draft Scoping Report Comments
Appendix F6	:	Draft EIR Notifications
Appendix F7	:	Draft EIR Comments

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

[4] The specialist has prepared separate Avifaunal Impact Assessments for the PV and Grid Connection Infrastructure. Both of these assessments are included in this appendix.

[5] The specialist has prepared separate Aquatic Biodiversity Impact Assessments for the PV and Grid Connection Infrastructure. Both of these assessments are included in this appendix.

Appendix F8	:	Final EIR Notifications and Comments
Appendix F9	:	Revised Draft EIR Notifications (to be included in Final EIR)
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NON-TECHNICAL SUMMARY

I. INTRODUCTION

Kindly note, that a Final Environmental Impact Assessment Report (EIR) was submitted for this project on 06 October 2025. Following the submission of the Final EIR, an I&AP submitted a comment on the Final EIR. The final EIR was subsequently withdrawn and a notice in terms of regulation 23(1)(b) was submitted to the competent authority. In compliance with the requirements of regulation 23(1)(b), a revised Draft Environmental Impact Report has been prepared and is herewith available for a further 30 day review and comment period extending from Friday 07 November 2025 – Monday 08 December 2025. An information sharing session / public open day will be held at the Vleifontein Community Hall on 25 November 2025. Details of the information sharing / open day have been communicated to registered and potential I&AP's.

Cape EAPrac has been appointed by Bethel Solar PV (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 Bethel Solar PV and associated infrastructure, (hereafter referred to as Bethel Solar PV) on Farm 431 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province.

The project includes associated electrical grid connection infrastructure required to connect the PV facility to the National Grid via the Eskom Tabor Substation. Three powerline alternatives are under consideration as part of this environmental application process, and these affect the following additional properties:

POWERLINE ALTERNATIVE 1		
Remainder of Farm 466	Portion 1 of Farm 466	Portion 1 of Farm 425
Portion 2 of Farm 425	Remainder of Farm 424	Portion 2 of Farm 470
Farm 1211	Remaining Extent of Portion 2 of Farm 472	Farm 1209
Portion 1 of Farm 473	Farm 431	
POWERLINE ALTERNATIVE 2		
Remainder of Farm 466	Farm 431	Portion 1 of Farm 425
Remainder of Farm 430	Remainder of Farm 426	Portion 2 of Farm 425
Remainder of Farm 423	Portion 1 of Farm 423	Portion 1 of Farm 424
Remainder of Farm 420	Farm 1211	Remainder of Farm 418
Remainder of Farm 1210	Farm 1209	Portion 1 of Farm 473
POWERLINE ALTERNATIVE 3		
Remainder of Farm 466	Portion 1 of Farm 466	Farm 431
Portion 1 of Farm 425	Portion 2 of Farm 425	Remainder of Farm 426
Remainder of Farm 423	Portion 1 of Farm 423	Portion 1 of Farm 424
Remainder of Farm 420	Remainder of Farm 424	Farm 1211
Portion 2 of Farm 470	Remaining Extent of Portion 2 of Farm 472	Farm 1209
Portion 1 of Farm 473		

The project will consist of a PV Facility and associated infrastructure, including Battery Energy Storage System (BESS) and Electrical Grid Connection Infrastructure (EGI). The total generation capacity of the PV facility will be up to 240MW. Both the PV and BESS facilities will input into the national Eskom grid via the existing Eskom Tabor Substation situated approximately 10km to the East of the proposed PV facility.

It must be noted that the Bethel Solar PV project forms part of a cluster of 4 projects on adjacent land portions. The following separate applications have been submitted to the Department for other projects forming part of this cluster[6]:

- Draailoop Solar PV – 240MW,
- Klipput Solar PV – 240MW, and
- Makoppa Solar PV – 75MW.

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

In compliance with Chapter 6 of the 2014 EIA regulations (as amended), the Draft Scoping Report was available for a 30 - Day period extending from **Friday 25 April 2025 – Tuesday 27 May 2025.** The Draft Environmental Impact Report was available for a 30 day review and comment period from **22 August 2025 – 25 September 2025.** A revised Draft Environmental Impact Report is available for a further comment period extending from **07 November 2025 – Monday 08 December 2025.**

All comments received on the Draft EIR will be incorporated into the Final EIR that will be submitted to the Department of Forestry, Fisheries and the Environment (DFFE) for consideration and decision making. All registered I&AP's will be notified of the outcome of the decision making process.

II. 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 Bethel Solar PV and Associated Infrastructure. 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 3) and Grid Connection Alternative 1 can be considered for approval by the competent Authority on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr, requirements of the BESS risk assessment and the Generic EMPr for substation infrastructure 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, Limpopo Province and globally is considered in section 1, while the project specific need and desirability is considered in section 2.8 of this report.

[6] As agreed during the pre-application meeting, separate applications and assessments are being undertaken for each of these projects. A combined public participation process is however being undertaken.

IV. ENVIRONMENTAL LEGISLATIVE REQUIREMENTS

The current assessment is being undertaken in terms of the **National Environmental Management Act** (NEMA, Act 107 of 1998)[7]. 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[8]. Cape EAPrac has been appointed to undertake this process.

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

Table 1: NEMA 2014 (As amended in April 2017) listed activities applicable to the Bethel Solar PV Project**.**

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	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 proposed development will include electrical grid infrastructure to connect the solar PV facility to the Tabor substation. This Electrical Grid Infrastructure, inclusive of Powerline and Substation Infrastructure will be up to 132 KV.
12	The development of – (ii) infrastructure or structures with a physical footprint of 100 square metres or more; Where such development occurs – (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	Portions of the proposed development will be located within 32 metres of a watercourse exceeding 100 square metres.
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.	Portions of the proposed development (internal access roads) will entail the movement of more than 10 cubic metres of soil within a watercourse.
24	The development of a road – (ii) with a reserve wider than 13.5 metres, or where no reserve exists where the road is wider than 8 metres.	The proposed development will entail the construction of access roads wider than 8m. These access roads will not have a road reserve.

[7] 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.

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

28	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 development will be located on land that was used for game farming outside an urban area. The total footprint of the facility will exceed 1ha.
56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre – (i) where the existing reserve is wider than 13.5 metres; or (ii) where no reserve exists, where the existing road is wider than 8 metres.	The intersection between site access roads and provincial roads will require widening by more than 6 metres.
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 project entails the development of an up to 240 Megawatt PV Facility.
15	The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed development will entail the clearance of an area exceeding 20 hectares in size 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	The development of a road wider than 4 metres with a reserve less than 13.5 metres. Limpopo i. Outside urban areas: (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.	The proposed development will entail the development of roads wider than 4 metres with a reserve less than 13.5 metres. The nearest protected area is the Blijdschap Private Nature Reserve located approximately 8,5km north of the proposed development site.
10	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 30 but less than 80 e. Limpopo i. All areas.	The temporary storage of fuels during construction will exceed 30 cubic metres.

14	The development of – (ii) infrastructure or structures with a physical footprint of 10 square metres or more; Where such development occurs – (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. Limpopo i. Outside urban areas: (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;	The proposed development will entail the development of infrastructures or structures with a physical footprint of 10 square metres or more that may be within 32 metres of a watercourse. The nearest protected area is the Blijdschap Private Nature Reserve located approximately 8,5km north of the proposed development site.
18	The widening of a road by more than 4 metres, or the lengthening of a road buy more than 1 kilometre. Limpopo i. Outside urban areas: (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; or (hh) Areas within a watercourse; or within 100 metres from the edge of a watercourse;	The proposed development will entail the widening of a road by more than 4 metres and/or the lengthening of a road by more than 1 kilometre. The nearest protected area is the Blijdschap Private Nature Reserve located approximately 8,5km north of the proposed development site.

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 Bethel Solar PV (Pty) Ltd are proposing the construction of a Solar Photovoltaic (PV) Energy Facility and associated infrastructure, known as Bethel Solar PV, on Farm 431 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province.

A study site of approximately 625ha is being assessed as part of this Environmental Process and the infrastructure associated with an up to 240 Megawatt (MW) PV facility.

The proposed Bethel Solar PV Project will include the following components:

- Solar Field
    - Solar Arrays: PV modules
    - Single axis tracking technology maximum height of 5m (aligned north-south);
    - Solar module mounting structures comprised of galvanised steel and aluminium;
    - Foundations which will likely be drilled and concreted into the ground; and
    - Solar measurement and weather stations.
    - Central/string Inverters and MV transformers in in field
    - DC coupled Battery Energy Storage system (BESS) containers distributed through PV field located adjacent to inverters
        - Lithium Ion battery Cells, Modules, Racks and containers
        - Power Conversion Equipment
        - Battery Management System
        - Energy Management System
- Associated Infrastructure
    - Medium Voltage (MV =22/33 kV) overhead powerlines and underground cables;
    - MV Collector stations
    - Access road;
    - Internal gravel roads;
    - Fencing;
    - General maintenance area;
    - Storm water channels and berms;
    - Water storage tanks and pipelines;
    - Temporary work area during the construction phase (i.e. laydown area).
    - O&M buildings, store
- Project IPP Substation;
    - 132kV substation 200m x 200m
    - HV transformer
    - Substation Control Building
    - HV metering, Scada and protection building
    - MV collector switchgear buildings
    - Compensation equipment (Filters capacitors reactors statcoms)
- AC coupled BESS installation at project substation and laydown area:
    - Solid Sate Battery technology - either Lithium-Ion or Sodium Sulphide (NaS)
        - Battery Cells, Modules, Racks and containers
        - Power Conversion Equipment
        - Battery Management System
        - Energy Management System
        - MV transformers
        - MV cabling and collector stations
        - Fencing
        - Offices, workshop
        - Fire Protection systems

This environmental application process includes Electrical Grid Connection Infrastructure required to connect the Bethel Solar PV to the National Grid via the existing Tabor Main Transmission Substation (MTS). This Electrical Grid Infrastructure includes:

- Onsite Switching Station (SS), adjacent to the IPP Substation.
- 132kV Overhead Power Line (OHPL) – 30m height from the switching station to the existing Eskom Tabor Substation.
- Access Road to Switching Station
- Maintenance access road below or adjacent to the power line.

Three Grid connection alternatives are under investigation as part of this environmental process. Different land portions are affected by the various grid connection alternatives. These are discussed in further detail in section 2 of this report.

VI. SPECIALIST INPUT

The following specialists have provided input into this environmental process:

1.	Terrestrial Ecology	-	Biodiversity Africa
2.	Plant Species	-	Biodiversity Africa
3.	Animal Species	-	Biodiversity Africa
4.	Avifaunal	-	The Biodiversity Company
5.	Heritage	-	CTS Heritage
6.	Archaeology	-	CTS Heritage
7.	Agricultural	-	Terra Africa
8.	Visual	-	Visual Resource Management Africa
9.	Aquatic Biodiversity	-	The Biodiversity Company
10.	Social	-	Tony Barbour Environmental Consulting

VII. 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. This Draft Environmental Impact Report provides details on all issues and concerns raised in the Scoping Phase of the Environmental Process and presents the outcome of the specialist impact assessments to all stakeholders for review and comment.

Cape EAPrac is of the opinion that the information contained in the Draft Environmental Report and the documentation attached as well as the preceding Draft Scoping Report 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. The Bethel Solar PV project (including the associated infrastructure) and the proposed Grid Connection infrastructure has been analysed from Ecological (terrestrial, aquatic and avifauna), 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 preferred PV alternative (Layout Alternative 3) not the preferred Grid Connection alternative (Grid Alternative 1) 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 and the EMPr in Appendix I are adopted and implemented.

All specialists concur that the development as proposed (PV Layout Alternative 3 and Grid Connection alternative 1 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 were requested to review the Draft Scoping Report and Draft EIR and the associated appendices, and provide comment, or raise issues of concern, directly to Cape EAPrac within the specified comment period. Any additional comments received during the current comment period have been considered, addressed and incorporated into the Final Environmental Impact Report which will be submitted to the competent authority for consideration and decision making. The outcome of the decision making will be communicated to all stakeholders.

The Draft Environmental Impact Report was available for a 30 Day Review and comment period extending from 22 August 2025 – 22 September 2025. A revised Draft Environmental Impact Report is available for a further comment period extending from Friday 07 November 2025 – Monday 08 December 2025. All registered and

potential I&AP's are requested to review the Revised Draft Environmental Impact Report and supplementary information (including the independent specialist impact assessments attached in appendices E1 – E8) and provide and provide any comment by no later than 08 December 2025.

It is Cape EAPrac's reasoned opinion that the mitigated preferred PV Layout Alternative (Layout Alternative 3) and preferred Grid Connection Alternative (Grid Alternative 1) can be considered for approval by the competent Authority, subject to the outcome of the public participation process, on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr, BESS Risk Assessment and Generic EMPr for substation and powerline infrastructure be strictly adhered to.

DRAFT ENVIRONMENTAL IMPACT REPORT

1 INTRODUCTION

Kindly note, that a Final Environmental Impact Assessment Report (EIR) was submitted for this project on 06 October 2025. Following the submission of the Final EIR, an I&AP submitted a comment on the Final EIR. The final EIR was subsequently withdrawn and a notice in terms of regulation 23(1)(b) was submitted to the competent authority. In compliance with the requirements of regulation 23(1)(b), a revised Draft Environmental Impact Report has been prepared and is herewith available for a further 30 day review and comment period extending from Friday 07 November 2025 – Monday 08 December 2025. An information sharing session / public open day will be held at the Vleifontein Community Hall on 25 November 2025. Details of the information sharing / open day have been communicated to registered and potential I&AP's.

Cape EAPrac has been appointed by Bethel Solar PV (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 Bethel Solar PV and associated infrastructure, (hereafter referred to as Bethel Solar PV) on Farm 431 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province.

The project includes associated electrical grid connection infrastructure required to connect the PV facility to the National Grid via the Eskom Tabor Substation. Three powerline alternatives are under consideration as part of this environmental application process, and these affect the following additional properties:

Table 2: Properties affected by the relevant powerline alternatives.

POWERLINE ALTERNATIVE 1 (Preferred Alternative)		
Remainder of Farm 466	Portion 1 of Farm 466	Portion 1 of Farm 425
Portion 2 of Farm 425	Remainder of Farm 424	Portion 2 of Farm 470
Farm 1211	Remaining Extent of Portion 2 of Farm 472	Farm 1209
Portion 1 of Farm 473	Farm 431	
POWERLINE ALTERNATIVE 2		
Remainder of Farm 466	Farm 431	Portion 1 of Farm 425
Remainder of Farm 430	Remainder of Farm 426	Portion 2 of Farm 425
Remainder of Farm 423	Portion 1 of Farm 423	Portion 1 of Farm 424
Remainder of Farm 420	Farm 1211	Remainder of Farm 418
Remainder of Farm 1210	Farm 1209	Portion 1 of Farm 473
POWERLINE ALTERNATIVE 3		
Remainder of Farm 466	Portion 1 of Farm 466	Farm 431
Portion 1 of Farm 425	Portion 2 of Farm 425	Remainder of Farm 426
Remainder of Farm 423	Portion 1 of Farm 423	Portion 1 of Farm 424
Remainder of Farm 420	Remainder of Farm 424	Farm 1211
Portion 2 of Farm 470	Remaining Extent of Portion 2 of Farm 472	Farm 1209

Portion 1 of Farm 473		

The project will consist of a PV Facility and associated infrastructure, including Battery Energy Storage System (BESS) and Electrical Grid Connection Infrastructure (EGI). The total generation capacity of the PV facility will be up to 240MW. Both the PV and BESS facilities will input into the national Eskom grid via the existing Eskom Tabor Substation situated approximately 10km to the East of the proposed PV facility.

It must be noted that the Bethel Solar PV project forms part of a cluster of 4 projects on adjacent land portions. The following separate applications have been submitted to the Department for other projects forming part of this cluster[9]:

- Draailoop Solar PV (14/12/16/3/3/2/2699) – 240MW,
- Klipput Solar PV (14/12/16/3/3/2/2700) – 240MW, and
- Makoppa Solar PV (14/12/16/3/3/2/2701)– 75MW.

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

In compliance with Chapter 6 of the 2014 EIA regulations (as amended), the Draft Scoping Report was available for a 30 - Day period extending from **Friday 25 April 2025 – Tuesday 27 May 2025** and the Draft Environmental Impact Report was available for a further 30-Day comment period extending from **22 August 2025** – **22 September 2025.** A revised Draft Environmental Impact Report is available for a further 30 day period extending from **07 November 2025** – **08 December 2025**.

All comments received on the Draft EIR will be incorporated into the Final EIR that will be submitted to the Department of Forestry, Fisheries and the Environment (DFFE) for consideration and decision making. All registered I&AP's will be notified of the outcome of the decision making process.

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 Bethel Solar PV and Associated Infrastructure. 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 3)and Grid Connection Alternative 1 can be considered for approval by the competent Authority on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr, requirements of the BESS risk assessment and the Generic EMPr for substation infrastructure 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 LIMPOPO PROVINCE[10]

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

[9] As agreed during the pre-application meeting, separate applications and assessments are being undertaken for each of these projects. A combined public participation process is however being undertaken.

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

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)[11] 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[12]), including interest during construction, of projects under construction and projects in the process of closure is R209.7 billion (this includes total debt and equity of R209.2 billion, as well as early revenue and VAT facility of R0.5 billion).

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

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

On average, black local communities own 9% of projects that have reached financial close. This is well above the 5% target. In addition, an average of 21% shareholding by black people in engineering, procurement, and construction (EPC) contractors has been attained for projects that have reached financial closure. This is higher than 20% target. The shareholding by black people in operating

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

[12] Total project costs mean 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).

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

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

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

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

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

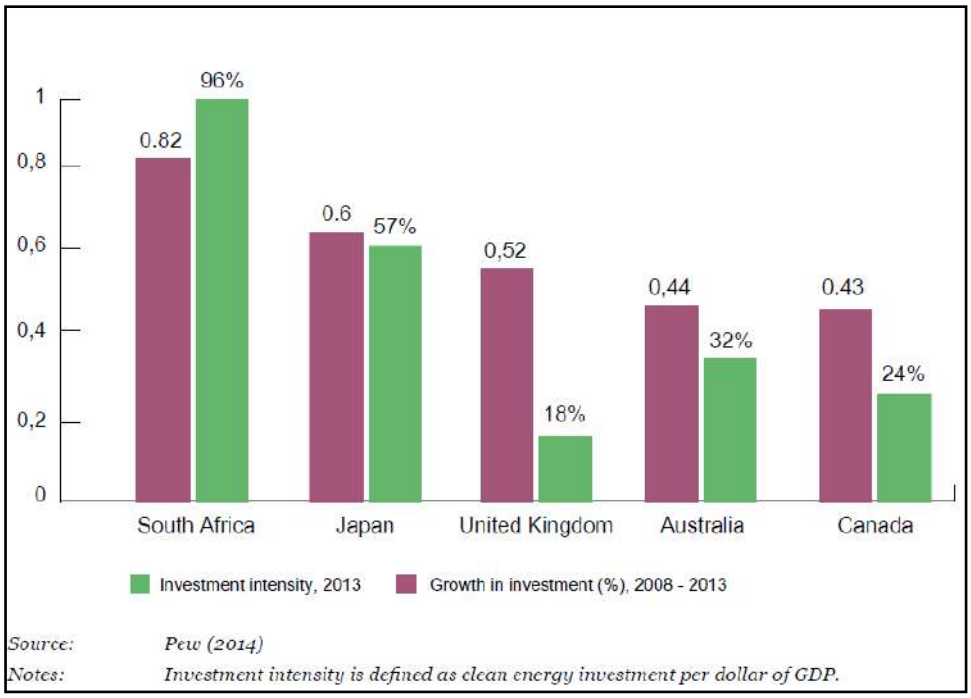

Figure 1: South Africa as a global lead clean energy investment destination.

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

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

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

1.3 ASSUMPTIONS & LIMITATIONS

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

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

1.3.1 Assumptions and Limitations of Visual Specialist

- Digital Elevation Models (DEM) and viewsheds were generated using ASTER elevation data (NASA, 2009). Although every effort to maintain accuracy was undertaken, as a result of the DEM being generated from satellite imagery and not being a true representation of the earth's surface, the viewshed mapping is approximate and may not represent an exact visibility incidence. Thus, specific features identified from the DEM and derive contours (such as peaks and conical hills) would need to be verified once a detailed survey of the project area has taken place.
- The use of open-source satellite imagery was utilised for base maps in the report.
- Some of the mapping in this document was created using Bing Maps, Open-Source Map, ArcGIS Online and Google Earth Satellite imagery.

- The project deliverables, including electronic copies of reports, maps, data, shape files and photographs are based on the author's professional knowledge, as well as available information.
- VRM Africa reserves the right to modify aspects of the project deliverables if and when new/additional information may become available from research or further work in the applicable field of practice or pertaining to this study.
- As access to farms and private property is often limited due to security reasons, limiting access to private property in order that photographs from specific locations are taken. 3D modelling is used to reflect the expected landscape change area where applicable.
- Mapping makes use of the SANBI BGIS webmap (SANBI, 2018).
- The slopes analysis is approximate and is subject to detailed survey and detailed slopes analysis.

1.3.2 Assumptions and Limitations of Terrestrial Biodiversity Specialist

- SCC are difficult to find and may be difficult to identify, thus species described in this report do not comprise an exhaustive list. It is possible that additional SCCs are present. However, every effort was made to identify SCC present on site during the field survey. Furthermore, a desktop assessment to identify SCC that could occur within the project area was undertaken, and the likelihood of occurrence assessed based on the species known distribution, available habitat recorded during the field survey within the project area, and previous recorded observations near the project area.
- Sampling was carried out at two stages in the annual or seasonal cycle. The initial survey was undertaken from the 18-21 June 2024 at the start of the dry season when most species were fruiting, and a second survey was undertaken during the peak flowering season on the 13th of February 2025 when most species are in flower or fruiting. Although it is possible that some early flowering species, such as geophytes, have gone undetected, the time available in the field and information gathered during the survey was sufficient to provide enough information to determine the status of the affected area and provide comment on the likelihood of occurrence of SCC with a high level of confidence.
- This assessment includes plants, mammals, amphibians and reptiles. It does not include the assessment of birds or invertebrates. Birds have been assessed separately by a qualified avifaunal specialist.
- The faunal assessment is based on a desktop assessment coupled with a field survey to assess available habitat and active searching.
- The assessment has been undertaken in line with the Protocol for the Specialist Assessment and Minimum Report Requirements for Environmental Impacts on Terrestrial Biodiversity (2020) and Terrestrial Animal and Plant Species (GN R. 1150) as well as the Species Environmental Assessment Guideline (2020).

1.3.3 Assumptions and Limitations of Avifaunal Specialist

- The PAOI was based on the project footprint area as provided by the client. Any alterations to the area and/or missing GIS information pertaining to the assessment area would have affected the area surveyed and hence the results of this assessment;
- The first avifaunal field survey was conducted from the 6th to the 8th of August 2024, whilst the second survey second survey was conducted from the 6th to the 9th of January 2025. These surveys were conducted at the same time as the proposed associated PV, resulting in a wet and dry season survey; These assessments include a wet and dry season survey and are deemed sufficient for a Regime 2 assessment;
- Whilst every effort was made to cover as much of the PAOI as possible it is possible that some species that are present within the PAOI were not recorded during the field investigations due to their secretive behaviour;

- The GPS used in the assessment has an accuracy of 5 m and consequently any spatial features delineated may be offset by up to 5 m;
- Access within the greater area were at times limited to only the development sites and not the entirety of the 2 km buffer associated with the PAOI.

1.3.4 Assumptions and Limitations of Agricultural Specialist

Site visit access was unavailable in two areas of the proposed grid connection corridors. However, the analysis of desktop data, in addition to the site data gathered, is considered sufficient to analyse the sensitivity of these areas.

No other uncertainties and gaps have been identified that may affect the conclusions made in this report.

1.3.5 Assumptions and Limitations of Aquatic Specialist

- It is assumed that the client has provided the specialist with all available data and information surrounding the project at the time of writing and it is assumed that all this information is relevant and accurate;
- It is assumed that the extent of the project area provided to the specialist is accurate;
- All datasets accessed and utilised for this assessment are considered to be representative of the most recent and suitable data for the intended purposes;
- The assessment area was based on the footprint areas as provided by the client, and any alterations to the area and/or missing GIS information pertaining to the assessment area would have affected the area surveyed and hence the results of this assessment;
- Standard aquatic methodologies that require presence of water could not be conducted due to the ephemeral nature of the watercourses within the PAOI;
- The survey was limited to sites that were accessible;
- A single-season survey was conducted for the respective study, which would constitute a wet season/high flow survey. Thus, temporal trends were not investigated. Despite this it is the specialist's opinion that the findings are conclusive, and no further fieldwork would be required; and
- The GPS used for water resource delineations is accurate to five meters. Therefore, the delineation plotted digitally may be offset by a maximum of five meters to either side.

1.3.6 Assumptions and Limitations of Heritage Specialist

- The significance of the sites and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.
- It should be noted that archaeological and palaeontological deposits often occur below ground level. Should artefacts or skeletal material be revealed at the site during construction, such activities should be halted, and it would be required that the heritage consultants are notified for an investigation and evaluation of the find(s) to take place.

1.3.7 Assumptions and Limitations of Social Specialist

Assumptions:

- ***Land claims:*** The SIA acknowledges that the project area is subject to land claims. However, it is beyond the scope of the SIA to assess and or comment on the status of the land claims.

- ***Technical suitability:*** It is assumed that the development site represents a technically suitable site for the establishment of the proposed PV SEF and associated infrastructure.
- ***Strategic importance of the project:*** The strategic importance of promoting renewable and other forms of energy is supported by the national and provincial energy policies.
- ***Fit with planning and policy requirements:*** Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard, a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents. As such, if the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported.

Limitations:

- ***Demographic data:*** Ward level data from the 2022 Census was not available at the time of preparing the report. This limitation does not have a material bearing on the findings of the SIA.

2. PROPOSED ACTIVITY

The applicant Bethel Solar PV (Pty) Ltd are proposing the construction of a Solar Photovoltaic (PV) Energy Facility and associated infrastructure, known as Bethel Solar PV, on Farm 431 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province.

A study site of approximately 625ha is being assessed as part of this Environmental Process and the infrastructure associated with an up to 240 Megawatt (MW) PV facility.

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    - Solar Arrays: PV modules
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    - Solar measurement and weather stations.
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    - DC coupled Battery Energy Storage system (BESS) containers distributed through PV field located adjacent to inverters
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    - General maintenance area;
    - Storm water channels and berms;
    - Water storage tanks and pipelines;
    - Temporary work area during the construction phase (i.e. laydown area).

    - O&M buildings, store
- Project IPP Substation;
    - 132kV substation 200m x 200m
    - HV transformer
    - Substation Control Building
    - HV metering, Scada and protection building
    - MV collector switchgear buildings
    - Compensation equipment (Filters capacitors reactors statcoms)
- AC coupled BESS installation at project substation and laydown area:
    - Solid Sate Battery technology - either Lithium-Ion or Sodium Sulphide (NaS)
        - Battery Cells, Modules, Racks and containers
        - Power Conversion Equipment
        - Battery Management System
        - Energy Management System
        - MV transformers
        - MV cabling and collector stations
        - Fencing
        - Offices, workshop
        - Fire Protection systems

This environmental application process includes Electrical Grid Connection Infrastructure required to connect the Bethel Solar PV to the National Grid via the existing Tabor Main Transmission Substation (MTS). This Electrical Grid Infrastructure includes:

- Onsite Switching Station (SS), adjacent to the IPP Substation.
- 132kV Overhead Power Line (OHPL) – 30m height from the switching station to the existing Eskom Tabor Substation.
- Access Road to Switching Station
- Maintenance access road below or adjacent to the power line.

Three Grid connection alternatives are under investigation as part of this environmental process. Different land portions are affected by the various grid connection alternatives. These are discussed in further detail in section 2 of this report.

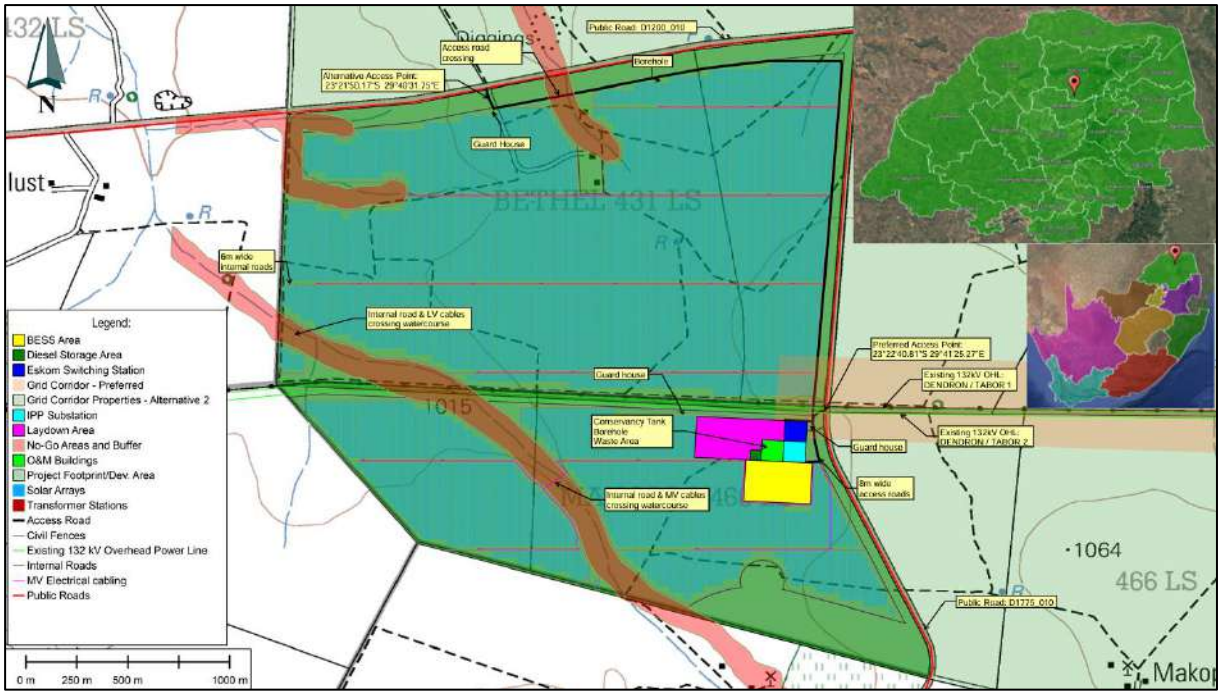


Figure 2: Proposed Bethel Solar PV study site and associated infrastructure indicating national and regional locality.

The Bethel Solar PV project anticipates connecting to the National Grid via the existing Eskom Tabor substation located approximately 10 kilometres east of the project. Three powerline corridor alternatives are under consideration. These are discussed in further detain in section 2.4 below.

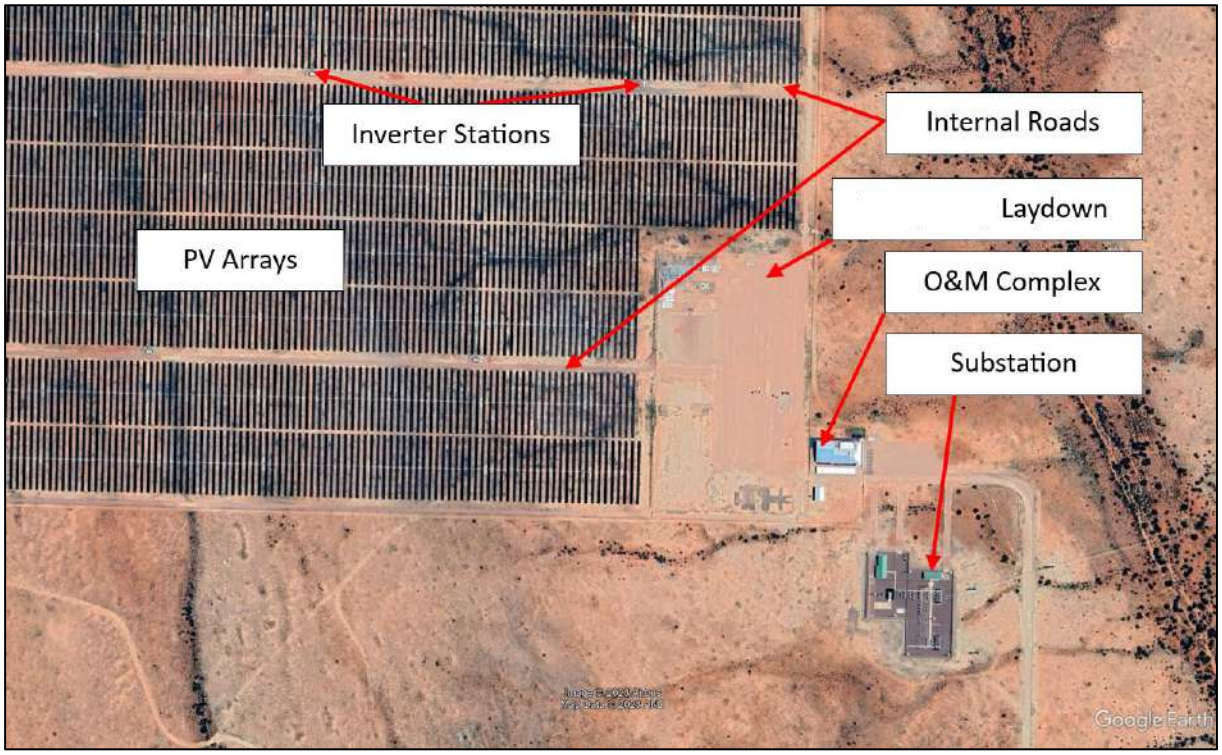


Figure 3: Typical configuration of a Solar PV Energy Facility (Google Earth Image, 2025).

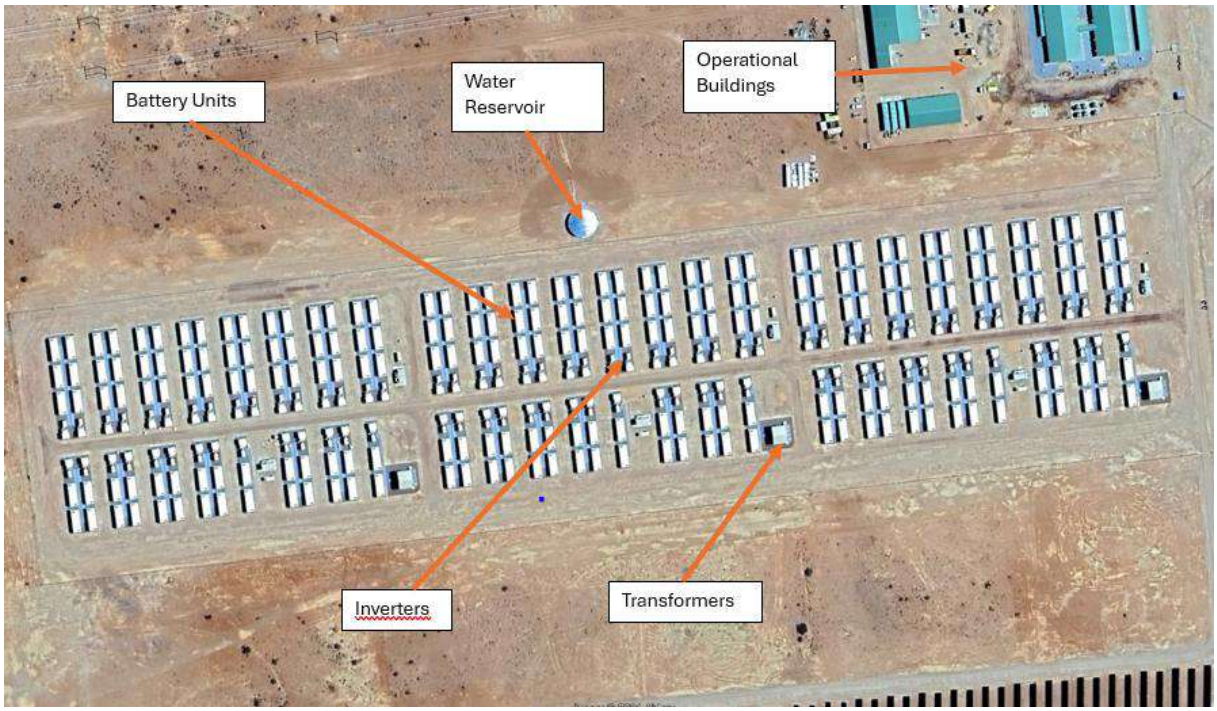


Figure 4: Typical configuration of a Solid-State Lithium BESS (Google Earth Image, 2025).

The Bethel Solar PV facility will have a net generating capacity of up to 240 MW. The total size and configuration of the overall facility have been informed by specialists and the stakeholder engagement process that have taken place as part of this Scoping Phase of the Environmental process.

The following main components will form part of this facility. Photographic examples of the typical infrastructure associated with the project are included in the descriptions.

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. The applicant has advised that single access trackers are the preferred mounting technology for this project.

2.2 MOUNTING STRUCTURES

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

Figure 5: Example of cast concrete mounting systems (BVI International, 2023).

Figure 6: Example of Earth Screw Mounting Technology (HQ Mount, 2023).

The impact on of these mounting options are considered to be similar, however the use of concrete foundations 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.

Bethel 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 7: 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 (Cape EAPrac, 2022).

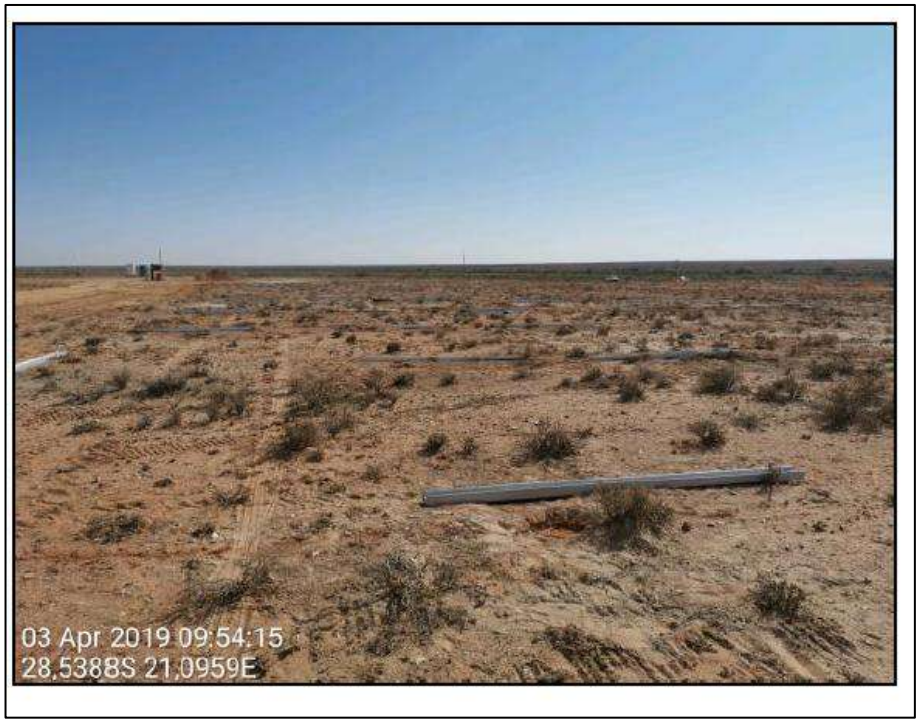


Figure 8: pre-drilled holes are backfilled with a wet sand mixture and steel piles placed in position ready for ramming.

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

Figure 9: 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 10: Completed ramming and assembly showing vegetation remaining intact beneath the modules.

Figure 11: 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.

Figure 12: Example of typical newly constructed Auxiliary building with offices, warehouse, store and rainwater storage (Photo: Cape EAPrac, 2024).

2.4 GRID CONNECTION AND CABLING

Bethel Solar PV intends to connecting to the Existing Eskom Tabor substation situated approximately 10km to the east of the project.

The proposed On-Site Substation (i.e. the project IPP Substation) will be up to 4ha and feature step-up transformer/s to transmit electricity via a 132 kV Overhead Powerline between Eskom switching station and the existing Eskom Tabor Substation.

Grid connection infrastructure will also include the Eskom side of the substation (i.e. the Eskom Switching Station) and the grid connection corridor to the existing Eskom Tabor Substation.

Figure 13: Example of typical substation with the Eskom Portion in the foreground and IPP Portion in the background (Photo: Cape EAPrac, 2024).

It must be noted that three powerline alternative corridors will be assessed as part of this environmental application.

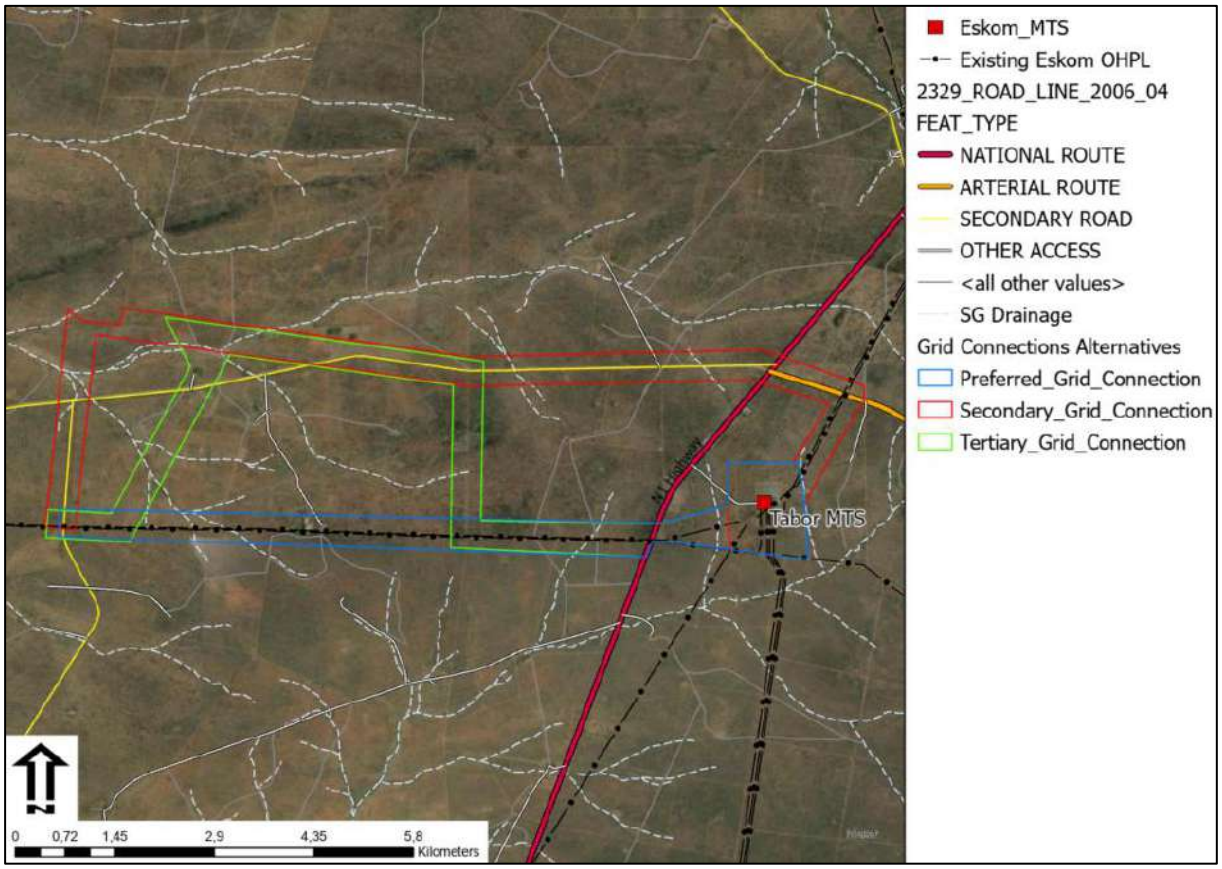


Figure 14: Alternative powerline corridors currently under consideration.

2.5 BATTERY ENERGY STORAGE SYSTEM

A BESS Health, Safety and Environment Risk Assessment will be completed by an independent specialist ISHECON and will be included in the Environmental Impact Assessment Phase of the Environmental Process.

Renewable energy can currently achieve lower costs than fossil fuels. By incorporating battery energy storage systems (BESS) into renewable energy facilities, electricity can be stored during generation peaks and supplied during demand peaks. In this instance, the applicant is proposing both DC coupled BESS within the PV field as well as AC coupled BESS adjacent to the substation.

The table below outlines the BESS Technology Alternatives that will be considered and assessed during the Environmental Impact Reporting Phase of this Environmental Process.

Table 3: Details of the Proposed BESS that will be considered and assessed in the EIA stage of the Environmental Process.

Capacity of BESS facility (in MWh)	BESS of up to 6ha.
Type of technology (preferred)	Solid State (SS) Batteries (Lithium-Ion or Sodium-Ion SS batteries),
Type of technology (alternatives)	No technology alternatives are under consideration in this application.
Structure height	Containerised batteries less than 4m high except for lightening conductors and vent pipes.
Surface area to be covered (including associated infrastructure such as roads)	Up to 6ha.
Structure locations	BESS Centrepoint Co-ordinates: Latitude: -23° 22.865' ; Longitude: 29° 41.303'

Figure 15: Example of typical newly constructed Solid State Lithium Ion BESS (Photo: Cape EAPrac, 2024).

2.6 ACCESS ROUTES AND INTERNAL ROADS

The proposed project site is accessible directly from existing roads off the N1 (at the N1 / R36 intersection).

The internal road network will follow existing farm tracks as far as possible and will consist of gravelled roads, up to 5 m in width.

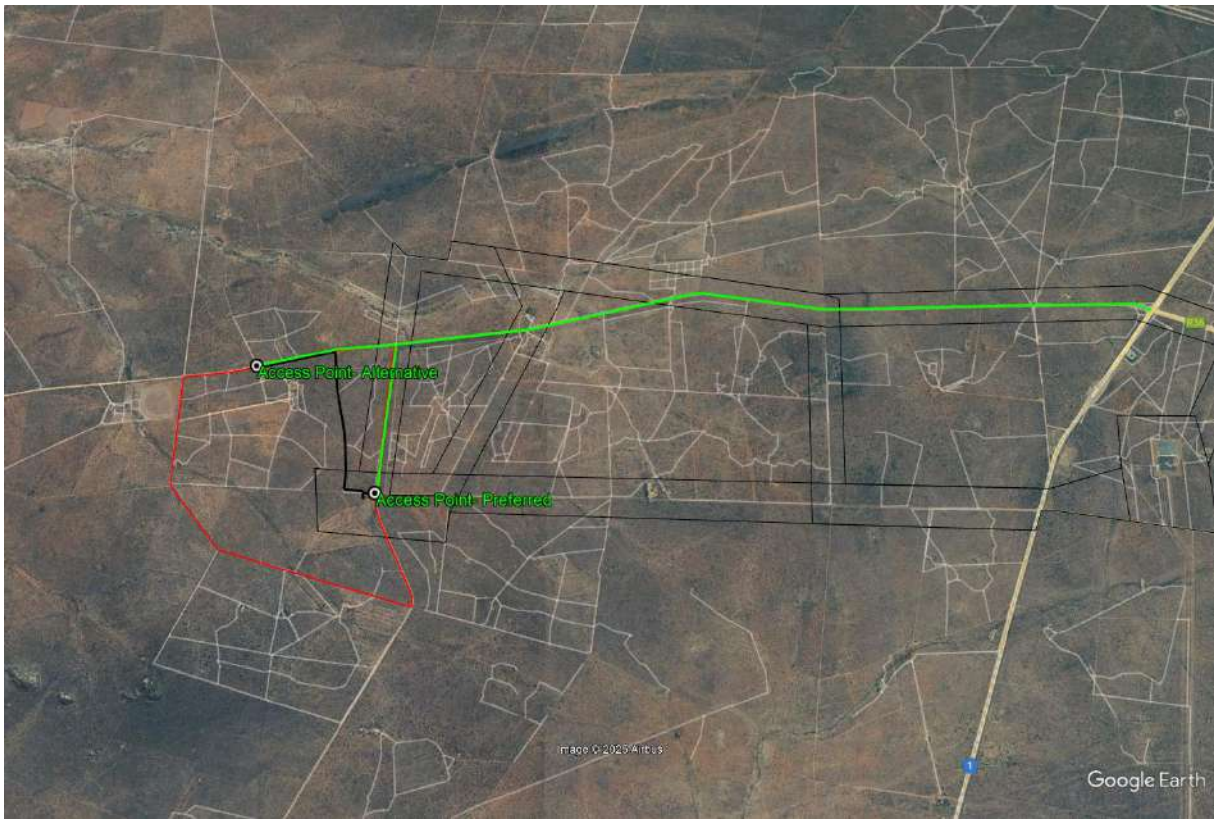


Figure 16: Showing access from the N1 / R36 Intersection via existing roads (Green Line).

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 be transported as abnormal loads.

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

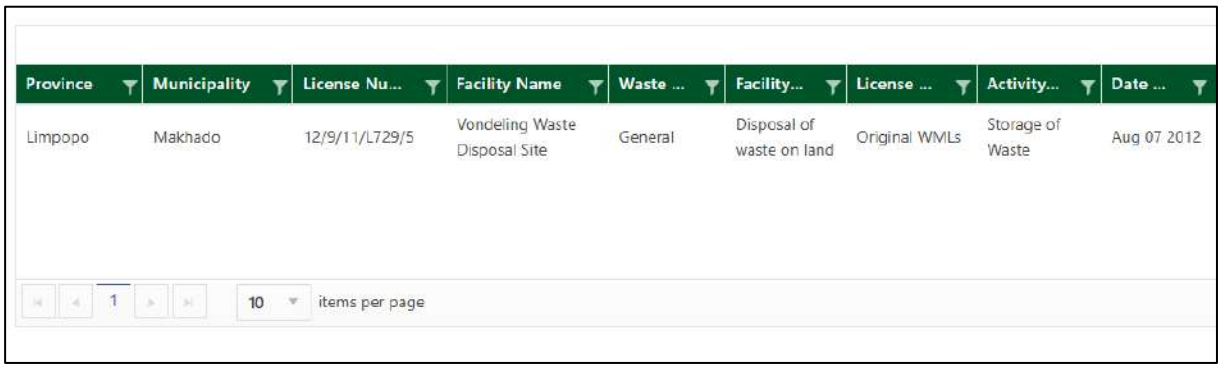
It is envisaged that most materials, water, plant, services and people will be procured within a 120km radius from the proposed site; however, this would be informed by the procurement requirements.

2.8 SERVICES REQUIRED

The services required for the construction and operation of the proposed Bethel Solar PV 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. In terms of the EMPr, 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 to a licenced waste management facility. 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[14] within the overall PV footprint. There is only one registered General Waste Site in the Makhado Municipal Area as per below.



Province	Municipality	License Nu...	Facility Name	Waste ...	Facility...	License ...	Activity...	Date ...
Limpopo	Makhado	12/9/11/L729/5	Vondeling Waste Disposal Site	General	Disposal of waste on land	Original WMLs	Storage of Waste	Aug 07 2012

1 10 items per page

Figure 17: Licenced General Waste Disposal Facilities in proximity to the proposed project (SAWIC, 2025)

There are no Hazardous waste disposal facilities in the Makhado municipal area and as such, the holder of the EA will be required to enter into a service level agreement with a hazardous waste service provider.

2.8.2 Sewerage

During the construction phase, chemical ablution facilities and conservancy tanks 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. According to SAWIC, there are no licenced Wastewater treatment facilities in the Limpopo province. There are however a number of licenced facilities in the Limpopo Province as per the figure below.

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

Province	Municipality	License Number	Facility Name	Waste Classification	Facility Type
Limpopo		12/9/11/L1135/5	KRANSKOP ENGEN ONE STOP	General	Effluent, waste water or sewage treatment works
Limpopo		12/9/11/L871/5	MOGALAKWENA	General	Effluent, waste water or sewage treatment works
Limpopo	Lephalale	12/9/11/L783/5	CHAR	General	Effluent, waste water or sewage treatment works
Limpopo		12/9/11/L1233/5	RHODIUM REEFS LTD	General	Effluent, waste water or sewage treatment works
Limpopo		12/9/11/L934/5	MARAPONG	General	Effluent, waste water or sewage treatment works
Limpopo		12/9/11/L633/5/V1	TUBATSE ESTATE	General	Effluent, waste water or sewage treatment works
Limpopo		12/9/11/346/5	GROENFONTAIN ECO	General	Effluent, waste water or sewage treatment works
Limpopo		12/9/11/L342/5	HERTEBEESBULT ECO ESTATE	General	Effluent, waste water or sewage treatment works
Limpopo	Maruleng	12/9/11/L459/5	KAMPERSRUS	General	Effluent, waste water or sewage treatment works
Limpopo	Makhuduthamaga	12/9/11/L922/5	JANE FURSE CROSSING	General	Effluent, waste water or sewage treatment works

Figure 18: Licenced Wastewater treatment works in proximity to the proposed project (SAWIC, 2025).

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 buildings, on-site/ facility substations, guard houses and the BESS control rooms.

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 and BESS;
- Petrol/ diesel for construction plant;
- Electrolytes associated with the BESS and
- 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. The management objectives for the storage of Hazardous substances associated with the BESS is provided as part of the BESS risk assessment that forms part of the Environmental Impact Assessment Phase of the Environmental Process.

Figure 19: Hydrocarbon Spill Kits must be in place within the site camp, at each work area and in the field within 500m of any drilling or ramming activity.

2.8.4 Water Supply

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

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

2.9 PROJECT NEED AND DESIRABILITY

In keeping with the requirements of an integrated Environmental Impact process, the DEA&DP *Guidelines on Need and Desirability (2010 & 2011)*[15] 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 Limpopo Province) 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

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

currently being generated. Associated aspects such as air pollution, water use, and carbon tax are discussed in order to further explain the need and desirability for 'green energy' projects in general. This section however considers the need and desirability of this specific project at this point in time.

From a cumulative perspective, considering the number of applications in the greater area, it is clear that the area in proximity to the Eskom Tabor Substation desirable as a renewable energy investment destination. It is important to note that due to transmission and distribution capacity challenges on the Eskom Transmission and Distribution network, it is extremely unlikely that all of these facilities (i.e. those authorised as well as those under investigation) will be constructed and as such the cumulative impacts of these in relation to transformation of habitat will likely be significantly less that what has been assessed in this environmental procerss.

2.9.1 Feasibility consideration

The commercial feasibility for the proposed up to 200MW$_{AC}$ Bethel Solar PV to be built on private land near Louis Trichardt, has been informed by its contextual location, and economic, social and environmental impacts and influence. The project will gather sufficient information and conduct studies of the site and the region to make qualified and reliable assumptions on the project's various impacts.

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.

The Makhado Municipal Area receives relatively high Global Horizontal Irradiation (GHI). The GHI for the site is in the region of approximately 1787 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.

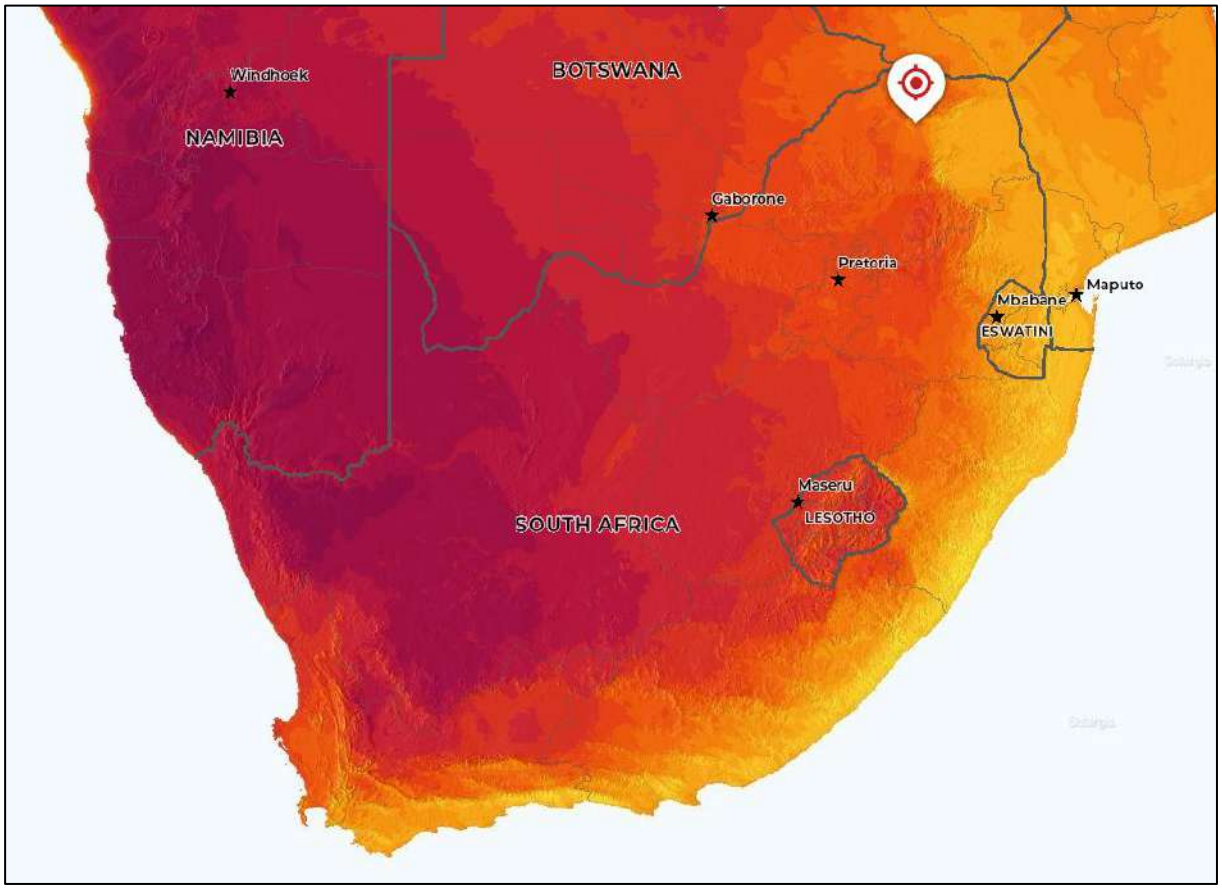


Figure 20: Global Horizontal Irradiation of the Bethel Solar PV (Solar Atlas, 2025).

2.9.3 Access to Grid

The existing Eskom Tabor substation is situated approximately 10km to the east of the project site.

Ease of access into the Eskom electricity grid is vital to the viability of a solar PV facility. Projects which are in relatively 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 international corridor[16] is one of these.

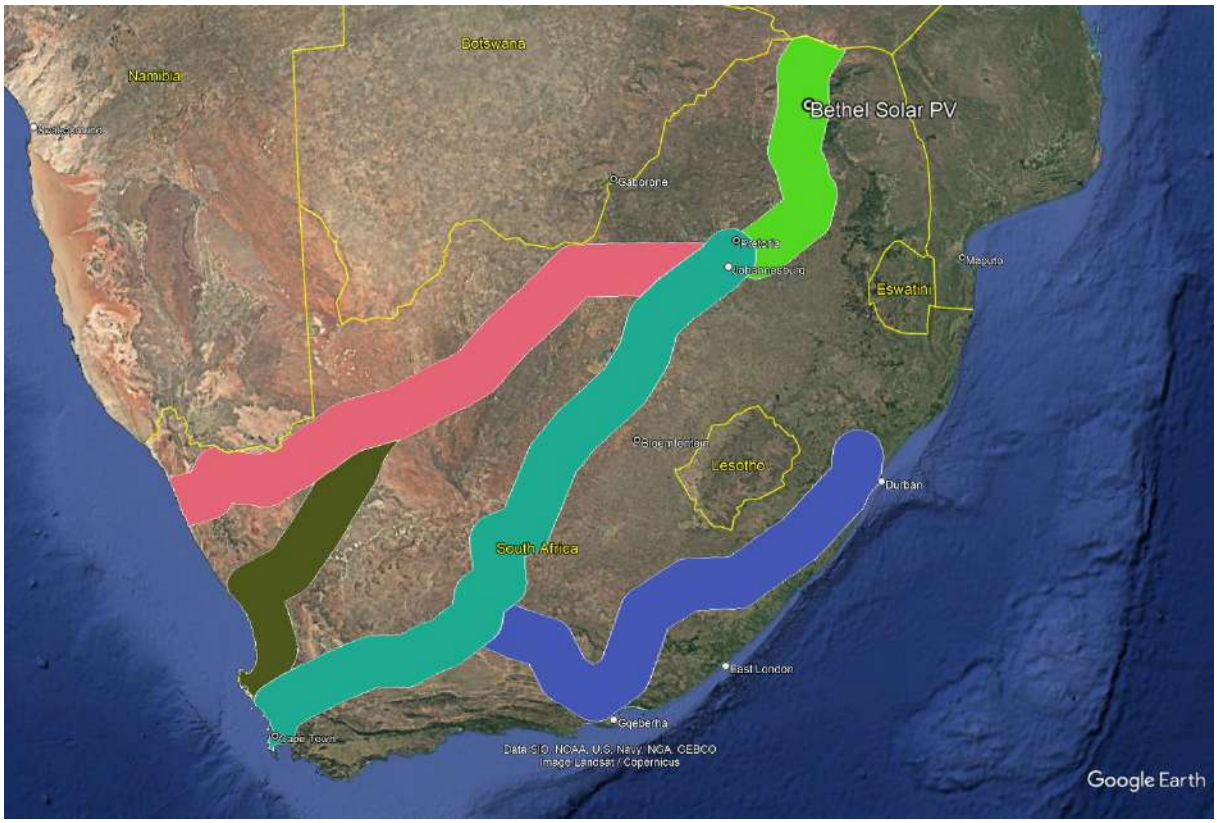


Figure 21: Plan showing Bethel Solar PV within the International Electrical Grid Corridor.

Further to the positioning of the project within the International Strategic Electrical Grid Corridor, it is also important to note that there are a number of existing Eskom HV powerlines in close proximity of the study site.

[16] The Bethel Solar PV and the associated grid connection falls within the International EGI Corridor.

Figure 22: Photographic examples of existing Eskom Grid Infrastructure on and adjacent to the study site.

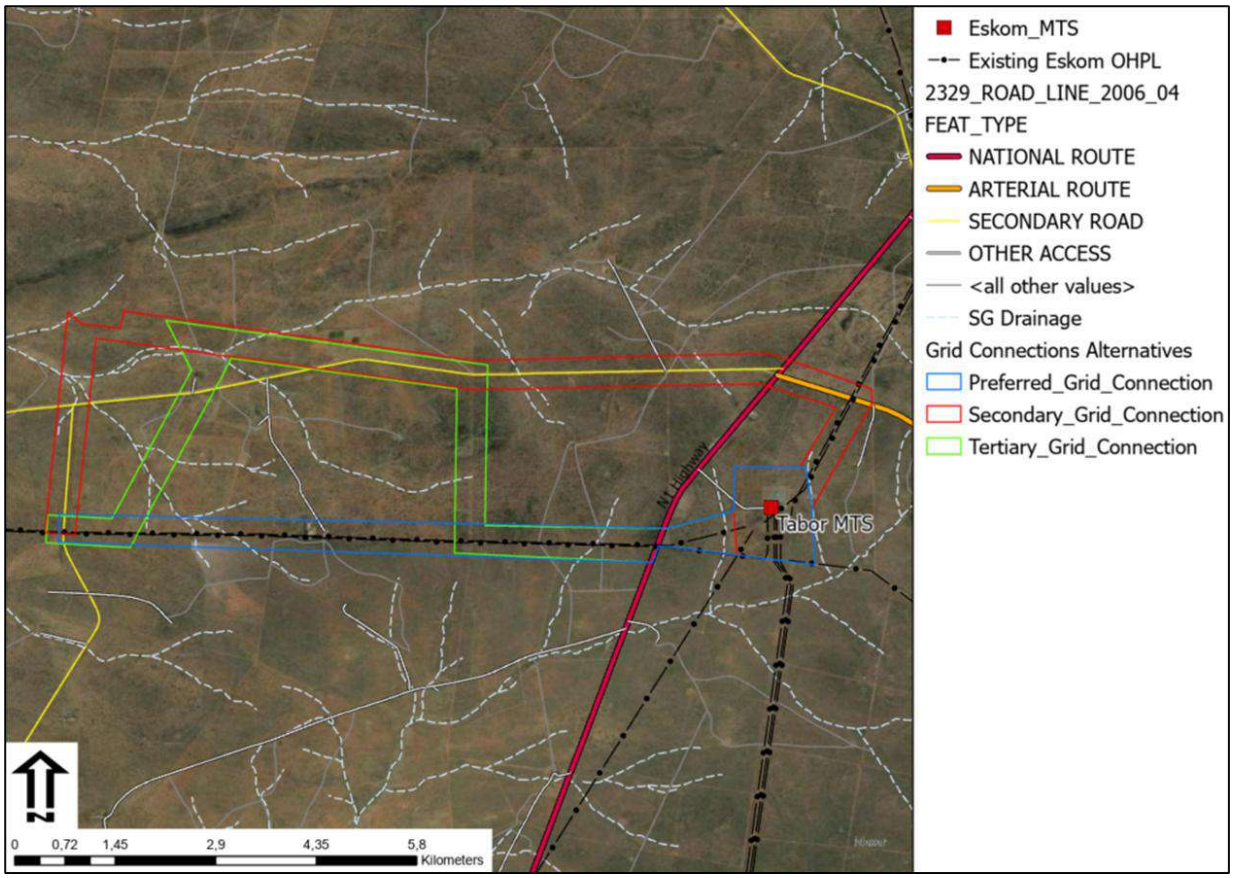


Figure 23: Position of existing Eskom Grid Infrastructure on and adjacent to the study site.

2.9.4 Site Suitability

Among the positive characteristics of the Bethel 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 existing main gravel road (directly off the N1) decreases the impact on secondary roads from the traffic going to and from Bethel Solar PV during construction and operations.

The relatively close proximity of the Eskom Tabor Substation also allows for connection via a short distribution line. As the site is not used for intensive agricultural purposes, Bethel Solar PV will therefore not significantly interfere with the agricultural productivity of the area. The solar resources and landowner consent are also both important factors towards the suitability of the site.

2.9.5 Social and Economic Impact

A social impact assessment has been undertaken by Mr Tony Barbour from Tony Barbour consulting and has been included in this Draft Environmental Impact Report as Appendix E7.

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.

Bethel Solar PV will have a positive impact on local employment. During the construction phase, the project will employ approximately 300 individuals per 50 Megawatts (i.e. for the full development, one

could expect up to 1200 job opportunities at various stages) of various qualifications. The majority will be provided by the local labour market.

During operations, Bethel Solar PV is expected to have up to 20 employment opportunities per 50MW (i.e. up to 80 opportunities in total) area ranging from security staff to administration and artisans[17].

2.9.7 Need

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 Limpopo Growth and Development Strategic Plan 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 Bethel Solar PV facility is to be located outside the Louis Trichardt urban edge, but within a legislated EGI corridor, and would promote diversification to the local economy as well as serve as a catalyst for further expansion in the stream of sustainable renewable energy development within this Corridor.
Does the community / area need the activity, and the associated land use concerned?	Yes	The Makhado Local Municipality identified the opportunity for renewable energy projects through their SDF and IDP processes, which include public participation. The proposed Bethel 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 Bethel Solar PV development will contribute electricity to the constrained Limpopo Province and National electrical network, contributing to a provincial and national need. The proposed Bethel Solar PV development will produce electricity from a renewable resource (solar energy) thus assisting to reduce the reliance on non-renewable energy sources, and contribute positively towards combating climate change. Negative impacts of the climate change crisis, are expected to intensify and impact negatively on rural populations such as those in the Limpopo Province, therefore, renewable energy projects are needed urgently to meet our power demands.
Are the necessary services with adequate capacity currently available?	partially	Bethel Solar PV requires the installation of an overhead power line to connect to the existing Eskom Tabor Substation (feed into the national grid system), as well as part of the access road to the development site from the existing gravel road.

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

Need	Discussion	
		The cost of supplying the new infrastructure will be covered by the Applicant, and the impacts thereof have been assessed in this environmental process and the additional process to be initiated. The water required for the construction and operation of Bethel Solar PV and BESS will be sourced from the Makhado 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 PV 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 240MW of electricity from the proposed Bethel Solar PV, for input into the national grid via the existing Eskom Tabor Substation. The proposed Bethel Solar PV is also situated within a legislated strategic EGI Corridor.

2.9.8 Desirability (place)

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

Table 5: Project Desirability Analysis

Desirability	Discussion	
Is the development the best practicable environmental option for this land / site?	Yes	The target properties are outside the Louis Trichardt Urban Edge, within a legislated EGI Corridor. The property has a relatively poor agricultural potential due to the 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 Makhado IDP aligns with the National Development Plan which states that at least 20 000 MW of renewable energy should be contracted by 2030. The IDP identifies renewable energy investment as a strategic objective for the region.
Would the approval of this application compromise the integrity of the existing approved environmental management priorities for the area?	Unlikely	According to the terrestrial biodiversity specialist, the study site falls within areas ranging from high to very low sensitivity. The project will avoid all the High sensitivity areas and associated buffers recommended by the specialist.
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;

Desirability	Discussion	
		• Very close to existing main transport routes and access points; • 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 will inform 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 and grid connection will be iteratively designed and informed by various investigations & assessments that considered both the natural and cultural landscapes. The natural and culturally sensitive areas will be identified and where possible, avoided to prevent negative impacts on such areas. The outcome of the public participation process will also be used to inform the configuration of the preferred alternative that will be presented in the impact assessment phase of the environmental process.
How will the development impact on people's health and wellbeing?	Yes	The site is located outside of the Louis Trichardt Urban Edge and as a result is unlikely to impact negatively on the community's health and wellbeing.
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 (with the exception of a single cultivated land that has been excluded from the development footprint). The development of the proposed solar facility would constitute the loss of approximately 360ha of the overall properties. 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 Bethel Solar PV are within acceptable bounds if one considers the minimal demand on the resources.
Will the proposed land use result in unacceptable cumulative impacts?	Unlikely	The sites are within the legislated Strategic EGI corridors which have been identified as an area with high potential for Electrical Grid Infrastructure. The potential for further, renewable energy developments in the area cannot be discounted (as several have already been approved or are in progress). The significance of the cumulative impacts will be assessed in detail in the Environmental Impact reporting Phase of this environmental Process.

2.10 SITE SELECTION PROCESS

The site selection process followed a two-stage approach; firstly, to select the property for the proposed development (Farm 431 and the Remainder of Farm 466) and secondly, to select the footprint of the proposed development within the farm portion.

Three Grid connection alternatives are also under consideration as part of this environmental process. The following main criteria were utilised to determine the position of the grid connection alternatives.

- Positioning along landscape and cadastral divides;
- Positioning adjacent to existing infrastructure such as existing Eskom powerlines and existing roads.

The grid connection alternatives are positioned on a number of properties in addition to those affected by the PV facility. Please refer to Table 2 in this report for a list of properties affected by the Grid Connection alternatives.

2.10.1 Property Selection

The following criteria were taken into account by the applicant when selecting the properties for the proposed development of the Bethel Solar PV.

2.10.1.1 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.

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

The proposed Bethel Solar PV is situated approximately 10 km South West of Bandelierskop and approximately 4km South of Louis Trichardt in the Limpopo Province.

Louis Trichardt is a relatively large centre and 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.

2.10.1.3 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 Bethel Solar PV falls into the International Corridor (see figure above).

The proposed Bethel Solar PV is furthermore situated close to a point of connection, via the existing Eskom Tabor Substation.

2.10.1.4 Current land use

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

2.10.1.5 Proximity to access road for transportation of material and components

The proximity of the site to the well-maintained existing road network (including the N1 National Highway) decreases the impact on secondary roads from traffic during the construction and operation phases.

2.10.1.6 Landowner support

The selection of a site where the landowner is supportive of the development of renewable energy is essential for ensuring the success of the project. The landowners do not view the development as a conflict with their current land use practices. The landowners have provided written consent for the proposed Bethel Solar PV (please refer to Appendix G2). Further to these consents and in compliance

with the EIA regulations, the landowners where the proposed powerline alternatives are situated will be given an opportunity to provide input in this environmental process to ensure any concerns relating to the position of the powerlines are considered and addressed.

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 as well as further alternatives that forms part of the Impact Assessment phase of the Environmental Process.

2.11 CONSIDERATION OF ALTERNATIVES

Bethel Solar PV will consist of a PV project and associated infrastructure net generation (contracted) capacity of up to 240MW$_{AC}$. It will furthermore include DC and/or AC coupled BESS components.

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 will be considered and assessed.

2.11.1 Layout Alternatives

The following layout alternatives have been considered thus far in this environmental process.

2.11.1.1 Alternative 1 - Initial Site

Farm 431 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, was selected as the preferred site for the Development of the Bethel Solar PV (see the site selection process outlined in section 2.10). The initial site consisted of the entire extent of these properties as shown in the map below.

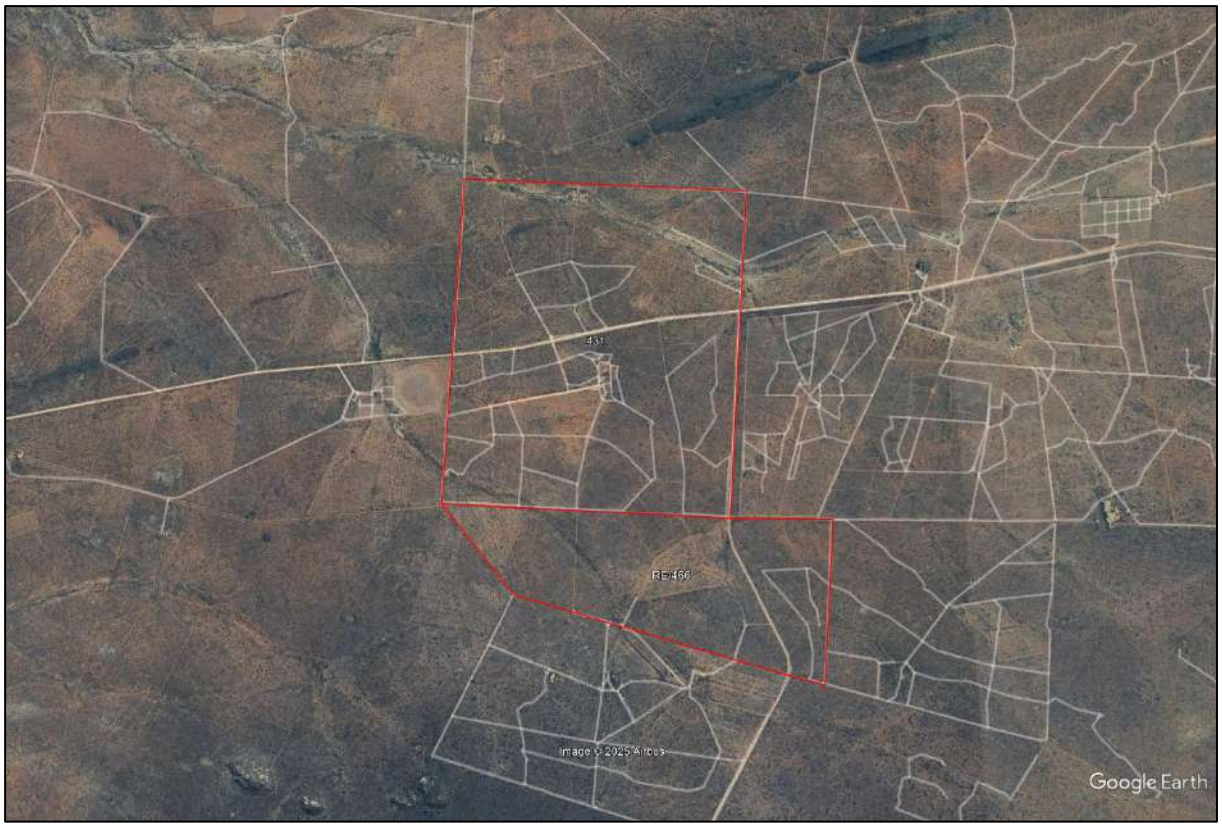


Figure 24: Alternative 1 – Initial site.

The initial site did not consider any environmental sensitive areas and was driven primarily by the factors outlined in section 2.10 above.

2.11.1.2 Alternative 2 – Study Area

Following the identification of the initial site, the study area was determined by excluding all obvious constraints and physical attributes such as main roads. The study area is depicted in the images below.

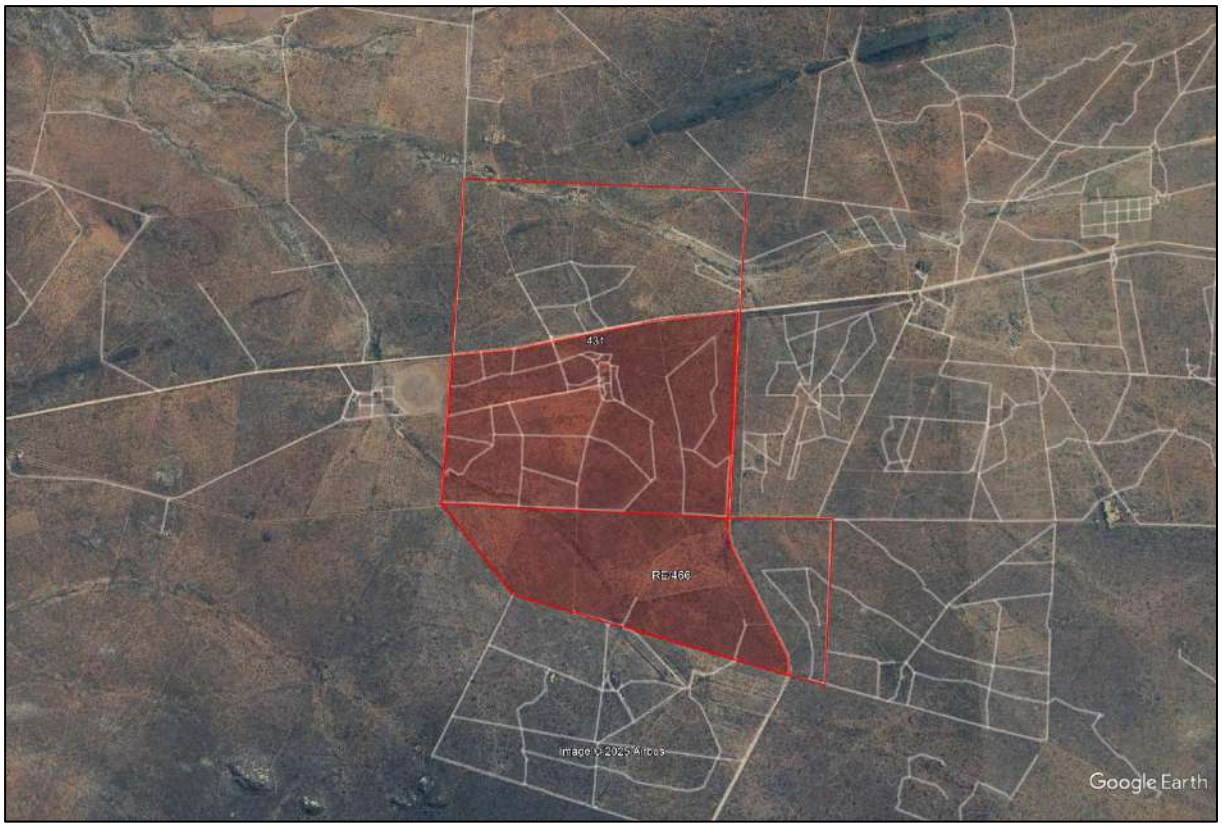


Figure 25: Alternative 2 – Study area within the initial site.

The Alternative 2 study area was provided to all specialists as part of their scope of works to undertake site sensitivity assessments.

2.11.1.3 Alternative 3 – Preferred Layout

The Preferred Layout alternative was refined in the Scoping Phase of the Environmental Process in order to incorporate all sensitive features identified through specialist studies.

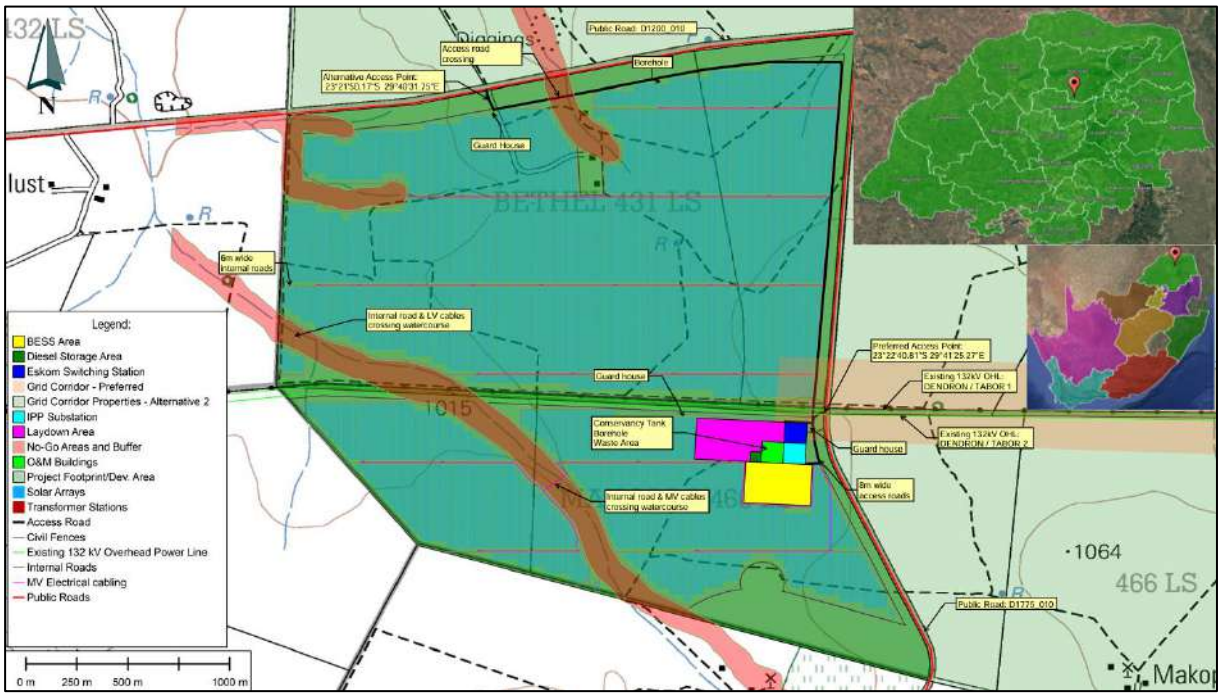


Figure 26: Alternative 3 – Preferred Layout.

2.11.1.4 Site Sensitivity Assessment

Following the identification study area, the following specialists undertook Site sensitivity verifications of this area.

- Visual – Mr Stephen Stead of Visual Resource Management Africa (VRMA)
- Botanical – Biodiversity Africa
- Terrestrial Biodiversity – Biodiversity Africa
- Animal Species – Biodiversity Africa
- Avifauna – The Biodiversity Company
- Aquatic Biodiversity – The Biodiversity Company
- Heritage – CTS Heritage
- Agriculture – Terra Africa

These participating specialists undertook a site sensitivity analysis of the extent of the study area. This site sensitivity analysis along with the outcome of the initial public participation process were used to inform the preferred alternative that is presented in this Draft Environmental Impact Report.

2.11.2 Grid Connection Alternatives

The EGI (Eskom component) for Bethel Solar PV is being assessed as part of this environmental impact assessment process. Three alternative grid connection alternatives are under consideration as described below:

Grid Connection Alternative 1 – Preferred Alternative.

Grid Connection Alternative 1 affects the following properties:

Table 6: Properties affected by grid connection alternative 1.

POWERLINE ALTERNATIVE 1		
Remainder of Farm 466	Portion 1 of Farm 466	Portion 1 of Farm 425
Portion 2 of Farm 425	Remainder of Farm 424	Portion 2 of Farm 470
Farm 1211	Remaining Extent of Portion 2 of Farm 472	Farm 1209
Portion 1 of Farm 473		

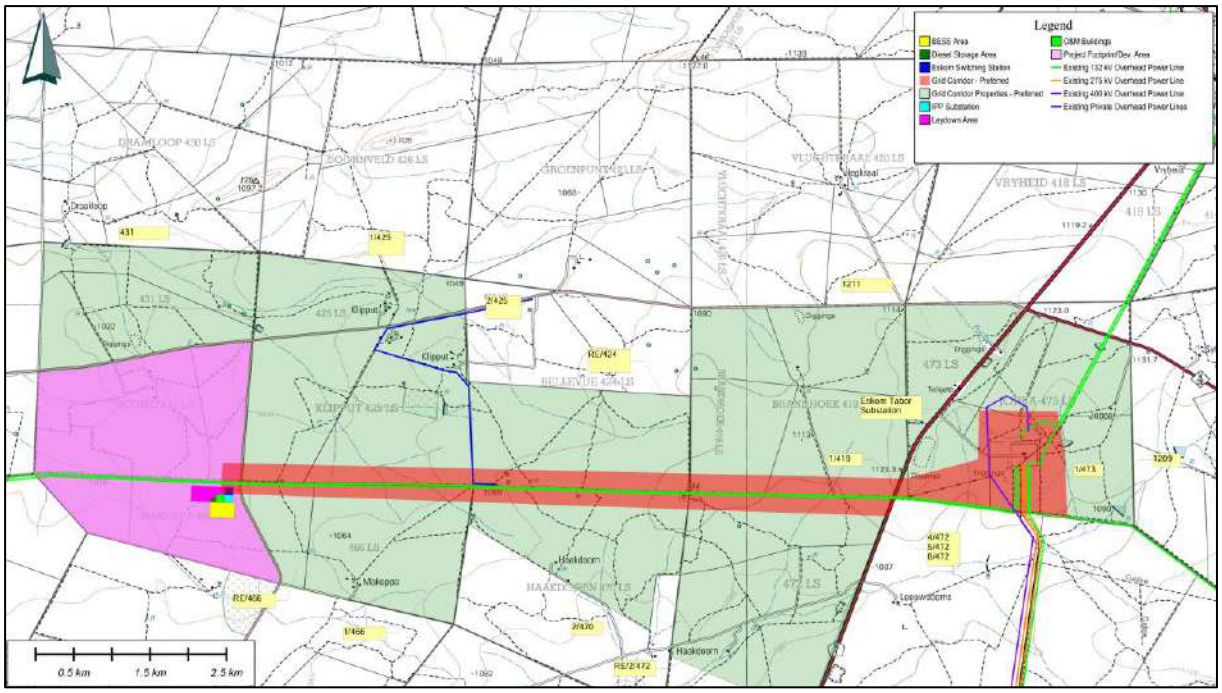


Figure 27: Grid Connection Alternative 1.

It must be noted that grid connection alternative 1 is the preferred grid connection at this stage. This may change, depending on the outcome of this environmental process.

Grid Connection Alternative 2.

Grid Connection Alternative 2 affects the following properties:

Table 7: Properties affected by grid connection alternative 2.

POWERLINE ALTERNATIVE 2		
Remainder of Farm 466	Farm 431	Portion 1 of Farm 425
Remainder of Farm 430	Remainder of Farm 426	Portion 2 of Farm 425
Remainder of Farm 423	Portion 1 of Farm 423	Portion 1 of Farm 424
Remainder of Farm 420	Farm 1211	Remainder of Farm 418
Remainder of Farm 1210	Farm 1209	Portion 1 of Farm 473

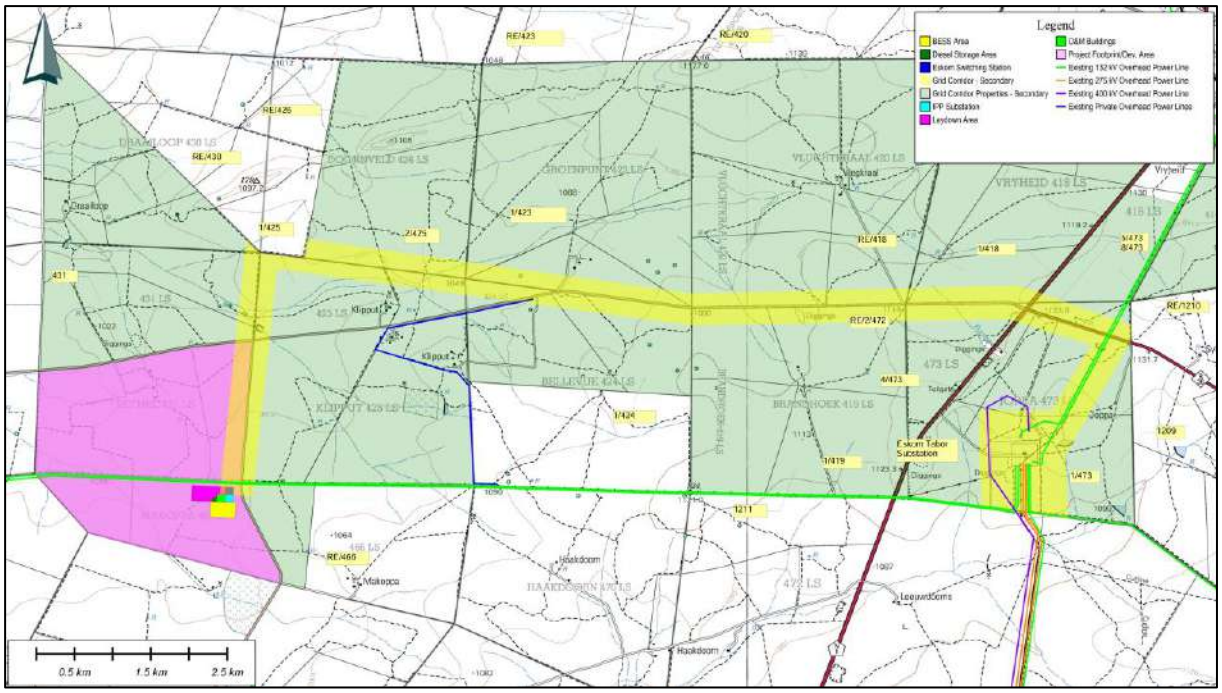


Figure 28: Grid Connection Alternative 2.

Grid Connection Alternative 3.

Grid Connection Alternative 3 affects the following properties:

Table 8: Properties affected by grid connection alternative 3.

POWERLINE ALTERNATIVE 3		
Remainder of Farm 466	Portion 1 of Farm 466	Farm 431
Portion 1 of Farm 425	Portion 2 of Farm 425	Remainder of Farm 426
Remainder of Farm 423	Portion 1 of Farm 423	Portion 1 of Farm 424
Remainder of Farm 420	Remainder of Farm 424	Farm 1211
Portion 2 of Farm 470	Remaining Extent of Portion 2 of Farm 472	Farm 1209
Portion 1 of Farm 473		

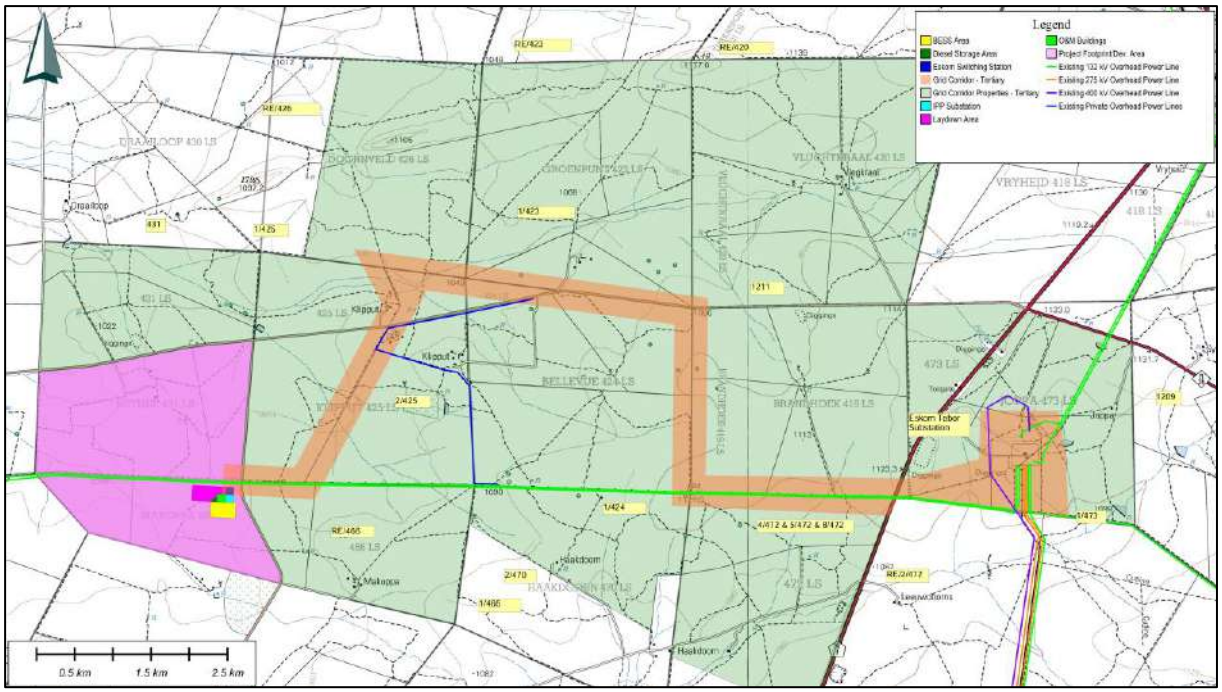


Figure 29: Grid Connection Alternative 3.

2.11.3 Access Road Alternatives

As discussed in section 2.6 above, the proposed access intends to utilise the existing access point from the North via the existing S129 between Louis Trichardt and Fauresmith or from the South via S560 or S132.

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

2.11.4 The no-go alternative

The no-go Alternative (or status quo) proposes that Bethel Solar PV does not go ahead and that the area in proximity to the existing Eskom Tabor Substation and within the Strategic EGI corridor will remain undeveloped as it is currently.

The land on which the Bethel Solar PV is proposed is currently vacant and used for limited game and livestock grazing activities, however due to a combination of factors, it has little potential for irrigated crop cultivation (this has been confirmed by the Agricultural Specialist).

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

The no-go alternative will limit the potential associated with the land and the area as a whole for ensuring energy security locally, as well as the meeting of renewable energy targets on a provincial and national scale. Should the no-go alternative be approved, the positive impacts associated with Bethel 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 Bethel Solar PV.

2.11.5 Comparison of alternatives

The table below reflects the key environmental advantages and disadvantages of the three layouts[18].

Table 9: Comparison of Advantages and Disadvantages of Layout Alternatives described above.

Alternative	Preference	Reasons (incl. potential issues)
PV Layout Alternatives		
Layout Alternative 1 – Initial Site	Least Preferred	- Portions of the initial site alternative are topographically unsuitable for the development of PV. - Portions of the initial site alternative consist of high and very high ecologically sensitive areas. - Portions of the initial site alternative consist of high sensitivity areas.
Layout Alternative 2 – Study Area	To be refined during the Environmental Impact Assessment Phase of the Environmental Process.	- Topographically suitable. - Avoids the topographically sensitive areas - Aligns with natural landscape divides.
Layout Alternative 3 – Refined Layout	Preferred	- Avoids all sensitive features and no-go areas identified by specialist studies. - Avoids all hydrologically sensitive areas.

2.12 PROJECT PROGRAMME AND TIMELINES

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

Table 10: Preliminary implementation schedule.

	Description	Timeline
1	Finalisation of Environmental and other Pre-Construction programmes	First Quarter 2026
2	Bidding process	Second Quarter 2026
3	Finalisation of agreements	Fourth Quarter 2026
4	Procurement of infrastructure	First Quarter 2027
5	Construction	2027 - 2028
6	Commissioning	2028

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 Years from the date of the Environmental Authorisation.

[18] The comparative assessment of the EGI alternatives is not included in this report as the sensitivities are largely similar. The selection of the preferred EGI alternative will be largely driven by the input from the affected landowners.

- Completion of all non-operational aspects of the Environmental Authorisation within 10 years of commencement of construction activities[19].

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 Bethel Solar PV Facility.

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)[20]. 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

[19] The applications for the projects contain both construction and operational aspects.

[20] 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.

independent registered EAP[21]. Cape EAPrac has been appointed to undertake this process. The figure below depicts a summary of the Scoping and Environmental Impact Reporting Process.

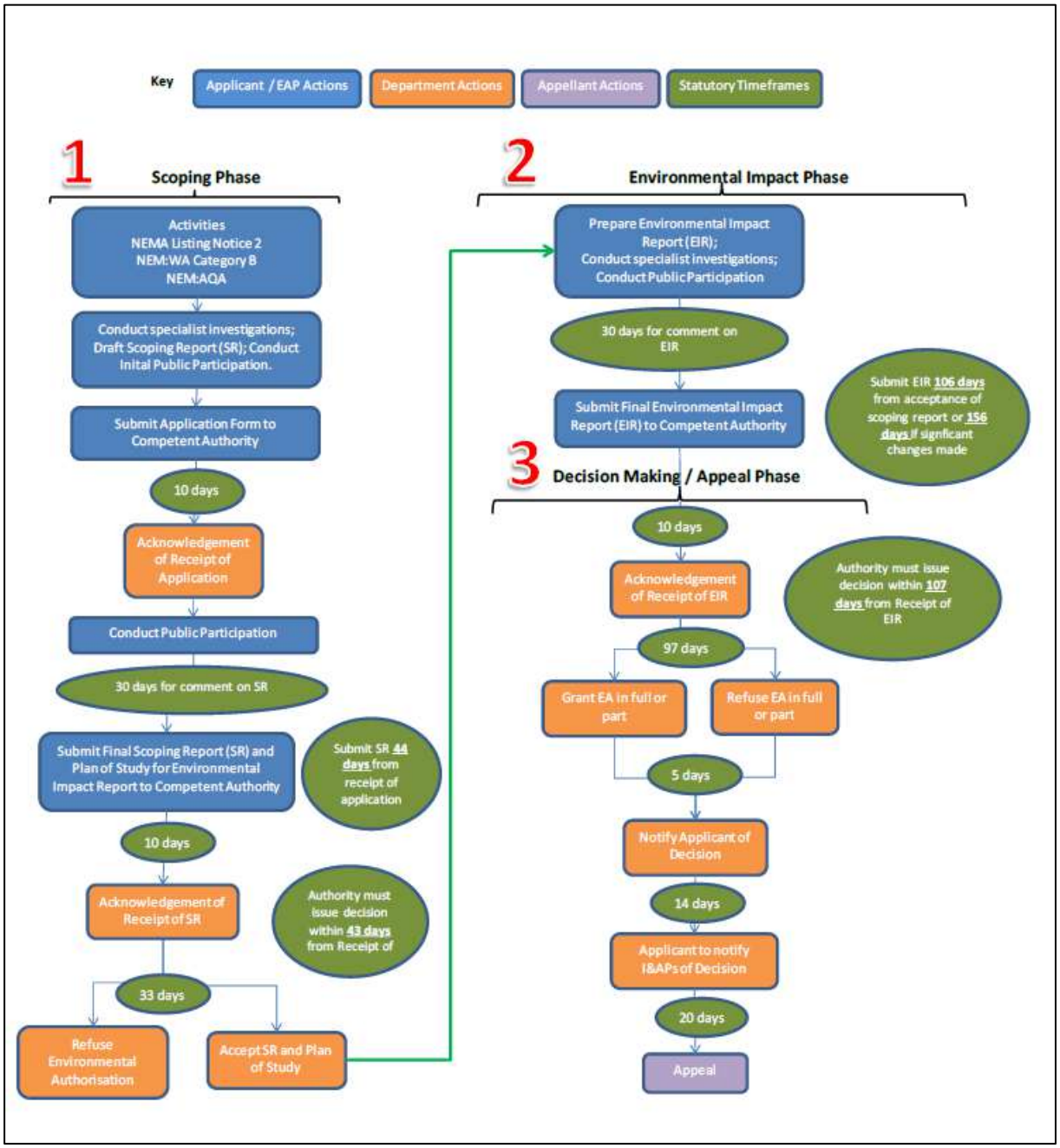


Figure 30: Summary of Scoping and Environmental Impact Reporting Process in terms of the 2014 EIA Regulations (as amended).

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

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

Table 11: NEMA 2014 (As amended in April 2017) listed activities applicable to Bethel Solar PV Facility.[22]

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	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 proposed development will include electrical grid infrastructure to connect the solar PV facility to the Tabor substation. This Electrical Grid Infrastructure, inclusive of Powerline and Substation Infrastructure will be up to 132 KV.
12	The development of – (ii) infrastructure or structures with a physical footprint of 100 square metres or more; Where such development occurs – (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	Portions of the proposed development will be located within 32 metres of a watercourse exceeding 100 square metres.
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.	Portions of the proposed development (internal access roads) will entail the movement of more than 10 cubic metres of soil within a watercourse.
24	The development of a road – (ii) with a reserve wider than 13.5 metres, or where no reserve exists where the road is wider than 8 metres.	The proposed development will entail the construction of access roads wider than 8m. These access roads will not have a road reserve.
28	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 development will be located on land that was used for game farming outside an urban area. The total footprint of the facility will exceed 1ha.
56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre –	The intersection between site access roads and provincial roads will require widening by more than 6 metres.

[22] A revised Application will be submitted with the Final Environmental Impact Report to include the updated Listed Activities applied for.

	(i) where the existing reserve is wider than 13.5 metres; or (ii) where no reserve exists, where the existing road is wider than 8 metres.	
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 project entails the development of an up to 240 Megawatt PV Facility.
15	The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed development will entail the clearance of an area exceeding 20 hectares in size 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	The development of a road wider than 4 metres with a reserve less than 13.5 metres. <u>Limpopo</u> i. Outside urban areas: (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.	The proposed development will entail the development of roads wider than 4 metres with a reserve less than 13.5 metres. The nearest protected area is the Blijdschap Private Nature Reserve located approximately 8,5km north of the proposed development site.
14	The development of – (ii) infrastructure or structures with a physical footprint of 10 square metres or more; Where such development occurs – (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. <u>Limpopo</u> i. Outside urban areas:	The proposed development will entail the development of infrastructures or structures with a physical footprint of 10 square metres or more that may be within 32 metres of a watercourse. The nearest protected area is the Blijdschap Private Nature Reserve located approximately 8,5km north of the proposed development site.

	(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;	
18	The widening of a road by more than 4 metres, or the lengthening of a road buy more than 1 kilometre. Limpopo i. Outside urban areas: (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; or (hh) Areas within a watercourse; or within 100 metres from the edge of a watercourse;	The proposed development will entail the widening of a road by more than 4 metres and/or the lengthening of a road by more than 1 kilometre. The nearest protected area is the Blijdschap Private Nature Reserve located approximately 8,5km north of the proposed development site.

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.

Government 4558 and Government Notice 4557 published in terms of the National Environmental Management Act, promulgated regulations for the exclusion of the need to obtain Environmental Authorisation for the PV and BESS projects (hereafter referred to as the exclusion norms) under certain criteria. The proposed Bethel Solar PV was analysed in terms of these criteria. The requirements outlined in the exclusion norms were not met by Bethel Solar PV for the reasons outlined in the matrix below. In terms of the exclusion regulations, the Bethel Solar PV is required to follow an environmental application process as outlined in the 2014 EIA regulations.

Table 12: PV and BESS Exclusion regulations applicability Matrix.

Theme	Screening Tool Sens	Verified Sensitivity	Presence of SCC	LN3 Triggers
Plant Species	Medium	Med & Low as long as riparian areas are avoided.	1 species of conservation concern with a likelihood of occurring on site.	NA
Terrestrial Biodiversity	Very High	Med & Low as long as riparian areas are avoided.	NA	Potential LN3 Triggers. BESS can't authorise via norms for LN3 Activities.
Agriculture	Very High	Medium or low – excluding cultivated areas which have high sensitivity.	NA	NA

Aquatic Biodiversity	Very High	Low, as long as watercourses and depression wetlands are avoided.	None	Potential LN3 Triggers. BESS can't authorise via norms for LN3 Activities.
Animal Species	High	Med & Low as long as riparian areas and buffers are avoided.	6 species of conservation concern confirmed, 2 very likely and 3 Medium likelihood.	NA

It is important to note that the project has been classified as a SIP by the Department of Infrastructure (Appendix G1f). In terms of regulation 30(2)(c), landowner consent is not required for Strategic Integrated Projects contemplated in the Infrastructure Development Act.

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 specialist, Biodiversity Africa, the broad scale vegetation of the project area is Makhado Sweet Bushveld.

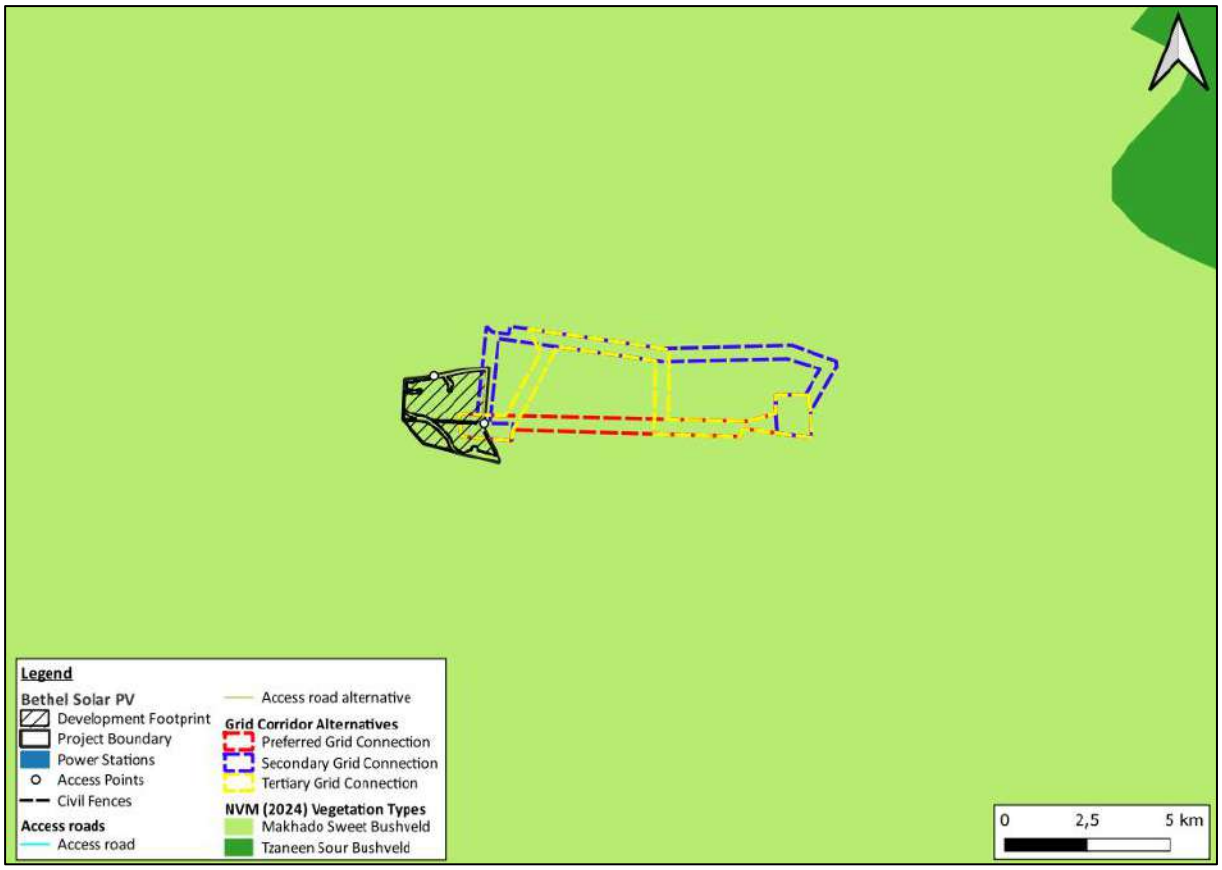


Figure 31: Broad Scale Vegetation type of the study area (Biodiversity Africa, 2025)

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 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 attached in Appendix E3 has identified surface water resources within the assessment area. The preferred layout, which will be determined during the

environmental impact assessment phase of the environmental process will avoid these aquatic features by all non-linear infrastructure.

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 Provincial (Limpopo Province) Department of Agriculture have been registered as key stakeholders 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 Bethel Solar PV is to be sourced from the Makhado Local Municipality (who will be engaged with to provide confirmation of availability). Should the applicant in the future, wish to utilise groundwater for the purposes of construction or operation of the facility, such use will require a licence in terms of Section 21(a) of the NWA.

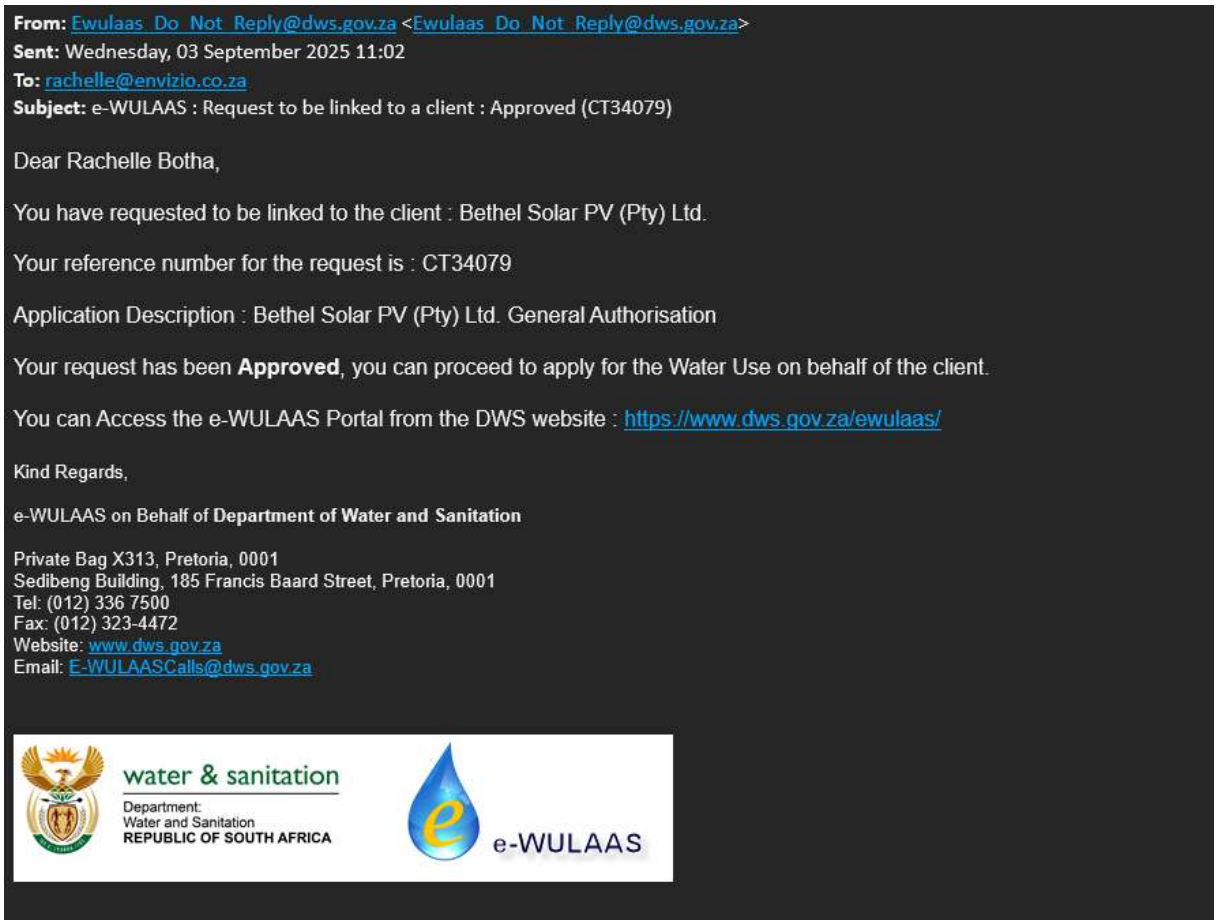
The freshwater specialist has identified a number of surface water resources within the study site. The Preferred Layout Alternative avoids these features along with the buffer areas identified by the specialist. The proposal does however include infrastructure within the regulated zone of these features and as such will require a Water Use Licence / General Authorisation in terms of the NWA[23].

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.

A Water Use Licence Application (WULA) has been submitted to the Department of Water and Sanitation for consideration and decision making.

Figure 32: Proof of Submission of Water Use Licence Application.

[23] Envizio Group have been appointed to apply for authorization in terms of Section 21(a) of the National Water Act..



From: Ewulaas_Do_Not_Reply@dws.gov.za <Ewulaas_Do_Not_Reply@dws.gov.za>
Sent: Wednesday, 03 September 2025 11:02
To: rachelle@envizio.co.za
Subject: e-WULAAS : Request to be linked to a client : Approved (CT34079)

Dear Rachelle Botha,

You have requested to be linked to the client : Bethel Solar PV (Pty) Ltd.

Your reference number for the request is : CT34079

Application Description : Bethel Solar PV (Pty) Ltd. General Authorisation

Your request has been **Approved**, you can proceed to apply for the Water Use on behalf of the client.

You can Access the e-WULAAS Portal from the DWS website : https://www.dws.gov.za/ewulaas/

Kind Regards,

e-WULAAS on Behalf of **Department of Water and Sanitation**

Private Bag X313, Pretoria, 0001
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Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

e-WULAAS

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

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

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

3.1.8 National Heritage Resources Act, 25 of 1998

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

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

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

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

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

- In terms of Section 36 (3), no person may destroy, damage, alter, exhume or remove from its original position, or otherwise disturb, any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority, without a permit issued by the SAHRA, or a provincial heritage authority (in this case, SAHRA).
- In terms of Section 35 (4), no person may destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object, without a permit issued by the SAHRA, or the responsible resources authority (In this Case, SAHRA).

CTS Heritage has compiled a Heritage Impact Assessment has been submitted to SAHRA. A copy of this Heritage Impact Assessment is attached in Appendix E4.

In response to the submission, SAHRA issued a Case ID:25892. SAHRA issued an approval for the project in terms of section 38 (8) of the National Heritage Resources Act on 17 October 2025.

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.

3.1.10 Just Energy Transition Investment Plan (2023 -2027)

Following consultation amongst government, business, organised labour, and civil society, the Presidential Climate Commission (PCC) concluded the Just Transition Framework which was adopted by Cabinet in August 2022 to guide South Africa's overall approach to the climate transition. The Political Declaration was signed between the Government of South Africa and the Governments of France, Germany, United Kingdom (UK), United States (US), and the European Union (EU) (collectively, the International Partners Group [IPG]) at COP26, gave rise to the establishment of the Just Energy Transition Partnership (JETP). The JETP undertakes to

"Establish an ambitious long-term partnership to support South Africa's pathway to low emissions and climate resilient development, to accelerate the just transition and the decarbonisation of the electricity system, and to develop new economic opportunities such as green hydrogen and electric vehicles amongst other interventions to support South Africa's shift towards a low carbon future."

South Africa's Just Energy Transition Investment Plan (JET IP) for the five-year period, 2023–2027, sets out the scale of need and the investments required to support the decarbonisation commitments made by the Government of South Africa. The JET IP is premised on South Africa's National Development Plan (NDP) 2030 with its focus on tackling the country's systemic challenges of poverty, inequality, and unemployment. The document notes that South Africa's energy transition represents an opportunity for the country to drive industrial development, innovation, and economic diversification.

To support the goals of energy security, just transition, and economic growth, the JET IP identifies the priority investment requirements over the next five years in the electricity, NEVs, and GH2 sectors.

In terms of the electricity sector, the infrastructure investment priorities are:

- To manage the decommissioning of the retiring coal generation fleet, in line with a revised Integrated Resource Plan (IRP), and in tandem with the development of renewable energy generation at scale and pace.
- To timeously strengthen the transmission grid infrastructure to accommodate the shift to renewable energy.
- To modernise the electricity distribution system.

3.1.11 Restitution of Land Rights Act, 1994 (Act No. 22 of 1994)

The Restitution of Land Rights Act, 1994 (Act No. 22 of 1994) is a cornerstone of South Africa's post-apartheid land reform programme. It was enacted to address the injustices of racially discriminatory land dispossession that occurred after 19 June 1913, the date recognized in the Constitution as the starting point for restitution claims.

The Act aims to:

- Provide for the restitution of rights in land to individuals or communities dispossessed due to racially discriminatory laws or practices.
- Establish the Commission on Restitution of Land Rights and the Land Claims Court to manage and adjudicate land claims

The EIA process acknowledges that the project area is subject to land claims, however it is beyond the scope of the EIA process to assess and/or comment on the status of the land claims. Please refer to Appendix F5 attached to the Draft Environmental Impact Report for letters received from the land claimant, Chatleka CPA, Office of the Regional Land Claims Commissioner, regarding land claims in terms of the Restitution of Land Rights Act, 1994 (Act No. 22 of 1994). It is noted that while the ownership of the affected properties may change depending on the outcome of the land claims, the social benefits of the proposed development project as outlined by the social specialist will not be affected by the change of ownership.

The proposed Tabor Cluster consists of the 4 individual proposed Solar PV facilities, impacting on the following properties:

Table 13: Properties affected by properties forming part of the Tabor Cluster of Projects.

Farm Description	Proposed Bethel Solar PV Facility (14/12/16/3/3/2/2698)	Proposed Draailoop Solar PV Facility (14/12/16/3/3/2/2699)	Proposed Klipput Solar PV Facility (14/12/16/3/3/2/2700)	Proposed Makoppa Solar PV Facility (14/12/16/3/3/2/2701)
Farm 431	X	X		
Remainder of 466	X		X	
Portion 1 of 425		X	X	
Remainder 430		X		
Portion 1 of 466			X	
Portion 1 of 465				X

The Applicant confirms engagement with The Commission on Restitution of Land Claims (Office of the Regional Land Claims Commissioner: Limpopo) – further referred to as the Commission, are the decision making authority on the land claims matter. The following communications were noted:

- Appendix G1b - on the 19th of September 2024, the Commission indicated that there are restitution land claims lodged prior to 1998. The land claim on Draailoop RE/430 was dismissed.

Property/ Farm Name	Claimant(s)	KRP(s)	Claim Status
Portion 1 of Klippuit 425 LS	Dithakone Community	5564	Research Report Approved
Remainder and Portion 1 of Makoppa 466 LS			
Portion 0 of Bethel 431 LS	Matjuda Family	536	
Portion 1 of Kaffernek 465 LS	Mokororwane Community	690/9342	Settled
Remainder of Draailoop 430 LS	Batlokwa Tribe	2336	Dismissed

- Appendix G1c - on the 9th of October 2024, the Commission indicated that there are no land claims against the properties in question and confirm that they have no objection to the proposed development.
- Appendix G1d - on the 10th of June 2025, the Commission indicated that that there are restitution land claims lodged prior to 1998.

Property/ Farm Name	Claimant (s)	KRP(s)	Claim Status
Remainder of the farm Draailoop 430 LS	Moeketse Ga Chatleka	693	Research Report Approved
	Batlokwa Tribe	2336	Dismissed
Portion 0 of the farm Bethel 431 LS	Matjuda Family (EL Matjuda & RM Matjuda)	536	Research Report Approved
Portion 1 of farm Kaffernek 465 LS	Mokorowane Community	690/9342	Research Report Approved
Reminder and Portion 1 of the farm Makoppa 466 LS	Dithakone Community	5564	Research Report Approved
Portion 1 of the farm Klipput 425 LS			

The comment received during scoping, was from a Mr Motz Ntimo and Mr Motshewa Matimolane, the latter response indicated that he is a representatives of the Chatleka CPA, it's assumed that they do represent Moeketse GA Chatleka (identified as the land Claimant by the Decision Making Authority). Mr Mtimo indicated that he represented a CPA, but did not indicate which CPA he represents. It must be noted has not been made clear whether or not the Chatleka CPA has the authority to comment on behalf of Dithakone Community or the Matjuda Family. No further comments were received during the public participation period on the Draft Environmental Impact Report.

Appendix G1e- Mrs Megan Dennis of Mulilo contacted The Commission on Restitution of Land Claims (Office of the Regional Land Claims Commissioner: Limpopo), via telephonic communication, on 22 September 2025, to enquire on their availability to have a meeting to address the land claims matter, and obtain contact details for the Claimants, however Mrs Dennis confirmed that the following outcome was obtained:

> "…*we were advised not to engage directly with the claimants at this stage.*
>
> *The Department's primary concern is that such engagement could create an expectation that the claim will be finalized soon and in the claimants' favour. They emphasized that the process is extensive and can often take several years to conclude. To avoid misunderstandings and potential disputes if the claim is not successful, the Department recommended that we refrain from direct engagement with the claimants for now.*".

Despite attempts at contacting the Land Claims Department to receive this correspondence in writing, no response has been received.

Considering the above and the comment received:

- The Claimant as identified have been contacted to the EAPs and Applicants best ability.
- The Applicant confirms that the decision maker on the land claims matter is The Commission on Restitution of Land Claims (Office of the Regional Land Claims Commissioner: Limpopo), all measures have been taken to engage with this decision maker.
- It is understood that the matter is being addressed by this the Commission in line with the Restitution of Land Rights Act, 1994 (Act 22 of 1994), furthermore, the decision maker has indicated that there has been no formal issue of success of the land claim, to the Claimant, and the decision can take years. Further to this the decision maker/Commission has not objected to the development, but have instructed the applicant to not directly contact the Claimant/s.
- Mr Ntimo comment indicates that the way forward is "*Our communities do not oppose solar development in principle; we oppose the notion that it can be planned and implemented without*

our participation and prior consent. We resist the assumption that empowerment means leasing ancestral land to outside developers while remaining peripheral to the long-term benefits." Claimants have been provided with equal opportunity as all I&AP's to provide comment, and did not comment in the DEIA public participation. Prior consent is not required from the Claimants, as the Commission has yet to finalize the decision on the land claim, therefore the current landowner and title deed holder, remains the landowner. Permission has been granted from the landowner (Appendix G2).

- This comment was received during the Scoping Phase. The Final Scoping CRR and the Draft EIAr was shared with the Claimant, however no further comments have been received from the Claimant.

The awarding of an Environmental Authorisation does not constitute the right to construct and must meet other land permit requirements at which point this matter will be properly addressed and formalized. The land claims letters include the following:

Note that the property in question must not be disposed of, sold, or leased without express permission from the Office of the Regional Land Claims Commissioner: Limpopo.

Considering this, the Applicant agrees to the following condition:

"Should the Claimant be awarded a successful Land Claim by The Commission on Restitution of Land Claims (Office of the Regional Land Claims Commissioner: Limpopo), (decision making authority), and should:

- this decision not be subjected to a valid appeal;
- and an EA awarded for the affected properties, in terms of this application.

the Applicant will undertake to engage with the successful Claimant as a valid landowner and negotiate an option to lease."

Notwithstanding the above, it is also important to note that in terms of Regulation 39(2)(c) of the 2014 EIA Regulations as amended, landowner consent is not required for strategic integrated projects as contemplated in the Infrastructure Development Act, 2014. Kindly note that this project has been classified as a strategic integrated project. Please refer to Appendix G1f for a letter from Infrastructure SA confirming the project as a SIP.

3.1.12 National Infrastructure Plan (NIP) 2050

The NIP 2050 is South Africa's long-term strategy to guide infrastructure development aligned with the National Development Plan (NDP). It aims to:

- Support inclusive economic growth.
- Transition to a low-carbon economy.
- Strengthen institutional capacity and private sector participation.

The NIP includes several Strategic Integrated Projects (SIPs) that directly support renewable energy development, particularly Solar PV namely:

SIP 8: Green Energy in Support of the South African Economy

This SIP focuses on rolling out the Integrated Resource Plan (IRP). Supports the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). Aims to attract private investment in solar and wind energy.

This project has been classified as a Strategic Integrated Project in terms of the IRP. Please refer to Appendix G1f for a copy of the letter from the Department of Infrastructure confirming that the project is a SIP.

3.1.13 National Infrastructure Plan (NIP) 2050

The NIP 2050 is South Africa's long-term strategy to guide infrastructure development aligned with the National Development Plan (NDP). It aims to:

- Support inclusive economic growth.
- Transition to a low-carbon economy.
- Strengthen institutional capacity and private sector participation.

The NIP includes several Strategic Integrated Projects (SIPs) that directly support renewable energy development, particularly Solar PV namely:

SIP 8: Green Energy in Support of the South African Economy

This SIP focuses on rolling out the Integrated Resource Plan (IRP). Supports the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). Aims to attract private investment in solar and wind energy.

This project has been classified as a Strategic Integrated Project in terms of the IRP. Please refer to Appendix G1f for a copy of the letter from the Department of Infrastructure confirming that the project is a SIP.

3.2 PROVINCIAL LEGISLATION

This section deals with provincially promulgated or provincially applicable legislation associated with the proposed Bethel 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 Bethel Solar PV facility fall outside of the Northern Cape Province and were furthermore found to be situated more than 1000km from the closest Astronomy Advantage Area.

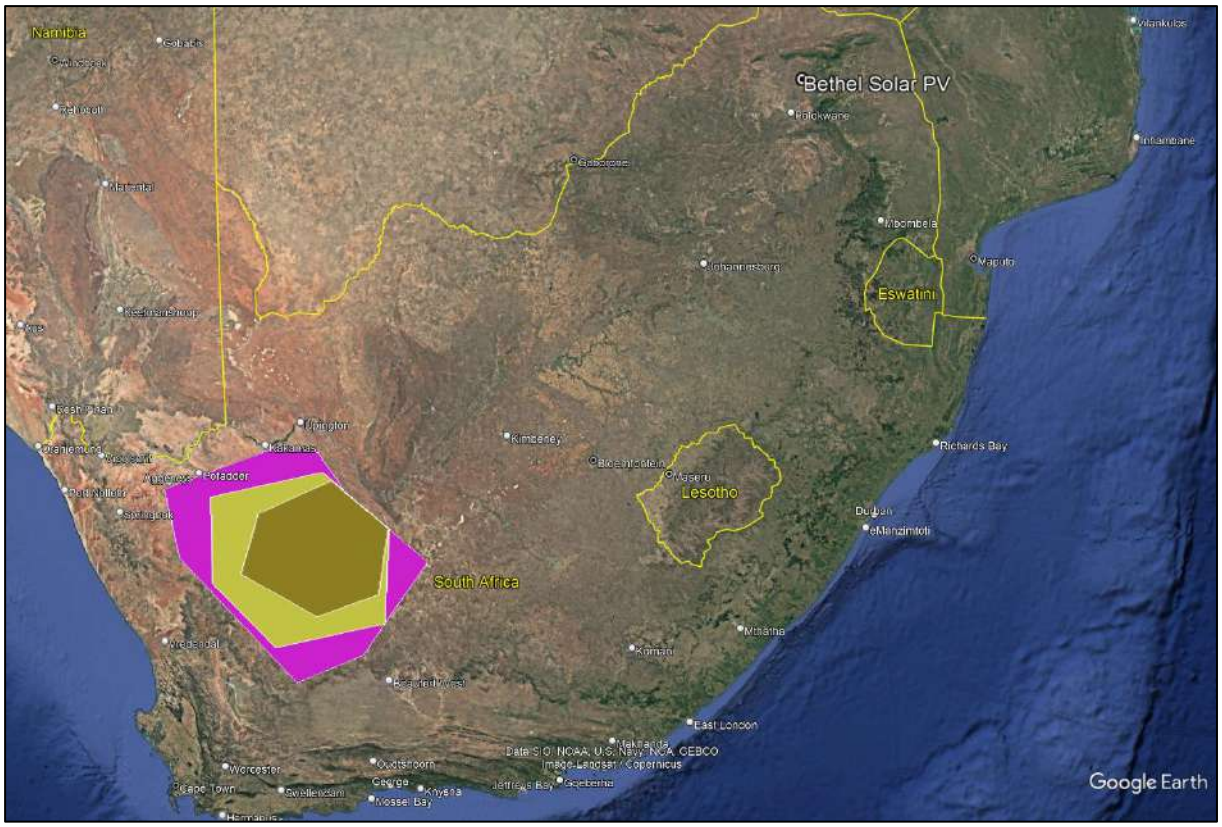


Figure 33: Proposed Bethel Solar PV in relation to the Central Astronomy Advantage Areas.

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

3.2.2 Limpopo Province Green Economy Strategy (2014)

The Green Economy Strategy for the Limpopo province (2014) was developed in alignment with the national green economy strategy elaborated in the National Green Economy Framework and Green Economy Accord, as well the Free State Provincial Growth and Development Strategy. The development process was spearheaded by the Department of Economic Development, Tourism and Environmental Affairs (DETEA).

The objective was to develop a green economy strategy to assist the province to:

- Improve environmental quality and economic growth;
- Develop green industries and energy efficiency;
- Expand productive capacity and service delivery;
- Adopt sustainable consumption and production processes;
- Improve policy making, permitting, monitoring and enforcement on Green Economy Initiatives/Programmes; and
- Create decent green jobs and build capacity of relevant personnel from DETEA, municipalities and other relevant stakeholders.

The proposed Bethel Solar PV will contribute to the objective of energy efficiency and the development of green industries while consequently promoting economic growth and is therefore consistent with the Limpopo Green Economy Strategy of 2014.

3.3 REGIONAL AND MUNICIPAL LEGISLATION

This section deals with regionally and municipally promulgated or regionally or municipally applicable legislation associated with the proposed Bethel Solar PV Facility[24].

3.3.1 Makhado Local Municipality Integrated Development Plan (2024-2025)

The Makhado IDP has identified the following key performance areas for the municipality. For each and every Key Performance Area, the Makhado Local Municipality developed the strategic objectives in line with the National Development Plan (NDP) and Limpopo Province Growth and Development Strategies (FSGDS) to give clear guidance of the municipal strategic direction on the level of service delivery in all areas.

1. **Service Delivery and Infrastructure Development**

Priority Area: Electricity and Energy –

- National Development Plan Objective - The proportion of people with access to the electricity grid should rise to at least 90 percent by 2030, with non-grid options available for the rest. The country would need an additional 29 000MW of electricity by 2030. About 10 900MW of existing capacity is to be retired, implying new build of more than 40 000MW. At least 20 000MW of this capacity should come from renewable sources.
- Limpopo Province Growth and Development Strategies - Provide new basic infrastructure at local level (Water, Sanitation, and electricity). Provide and upgrade bulk services. Implement alternative electricity infrastructure.
- Makhado IDP Strategic Objective - To provide and maintain sustainable and improved capacity of electricity services to all households, schools, clinics, public facilities, and businesses.

2. **Financial Viability and Management**

To enhance the revenue base of the municipality, improved audit outcome, promote sound financial governance and management.

3. **Local Economic Development**

Create an environment that promotes development of the local economy and facilitate job creation.

4. **Public Participation and Good Governance**

To promote and improve effective linkage between the community, stakeholders, and the municipality to ensure accountability and responsive governance structures.

5. **Municipal Transformation and Institutional Development**

To promote corruption free environment, enhance responsiveness to citizen's priorities and capabilities of delivery of quality services, quality management and administrative practices.

6. **Spatial Development Framework**

The main purpose of the SDF is to guide the form and location of future physical development within a municipal area in order to address the imbalances of the past.

It is envisioned that the proposed Bethel Solar PV Facility can contribute to Key Performance Areas 1, 2, 3 and 6 of the IDP.

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

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

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

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

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

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

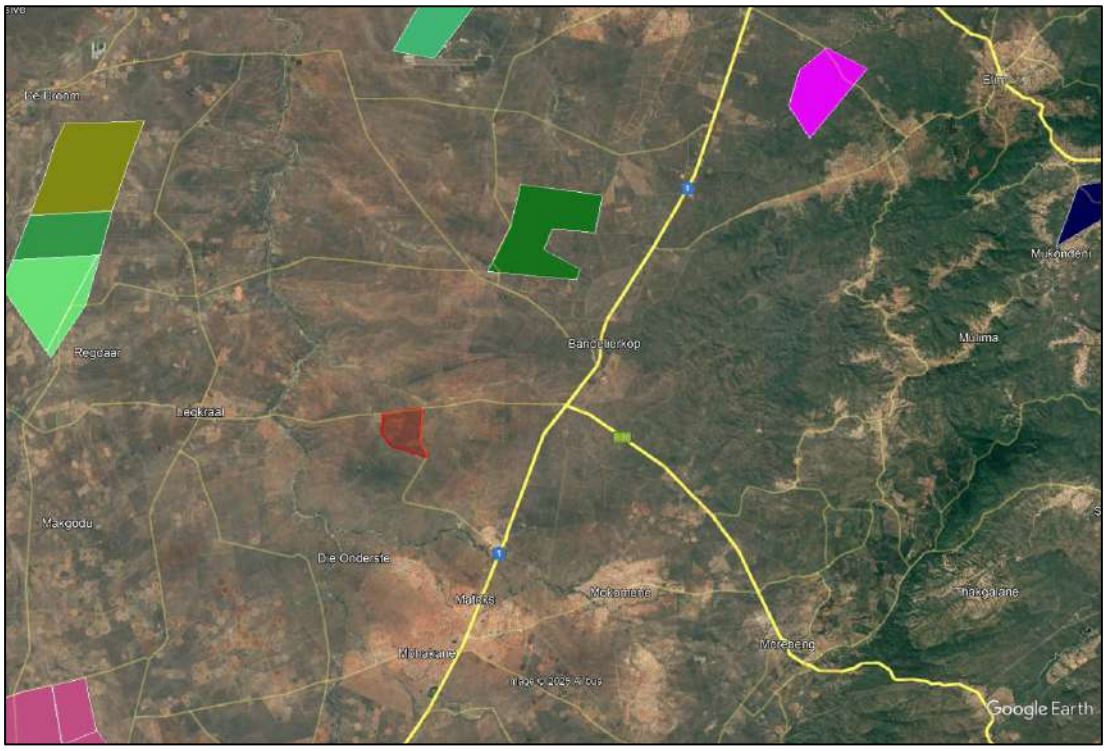


Figure 34: Proximity of Bethel Solar PV to Protected areas as identified in the South African Protected Areas Database.

The nearest protected areas is the "Blijdschap Private Nature Reserve" area located approximately 9km north of the Bethel Solar PV project area.

3.4.2 Limpopo Province Biodiversity Plan (2016)

The Limpopo Province Biodiversity Plan classifies areas within the province on the basis of their contributions to reaching the associated conservation targets within the province. These areas are primarily classified as either Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs). These biodiversity priority areas, 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.

CBAs are areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and healthy functioning of important species and ecosystems and the delivery

of ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then provincial biodiversity targets cannot be met (SANBI, 2017).

ESAs are areas that are not essential for meeting biodiversity representation targets but play an important role in supporting the ecological functioning of ecosystems as well as adjacent Critical Biodiversity Areas, and/or in delivering ecosystem services that support socio-economic development (SANBI, 2017).

Provincial CBAs and ESAs are often further classified into sub-categories, such as CBA1 and CBA2 or ESA1 and ESA2. The highest categorisation level is often referred to as an 'Irreplaceable Critical Biodiversity Area' which usually represents pristine natural habitat that is very important for conservation.

According to LEDET (2016), ONAs are all remaining natural areas not included in the CBA or ESA categories while NNRs are areas that have been irreversibly modified and do not contribute significantly to maintaining biodiversity pattern or ecological processes and include urban and rural settlements; croplands; mining areas; and forest plantations.

No management guidelines are offered for areas classified as ONA and NNR, however these are considered 'production landscapes' and land management objectives for these areas is to manage land to optimize sustainable utilization of natural areas (LEDET, 2016).

The project development will not impact on any CBAs and falls entirely within an ONA (Other Natural Area).

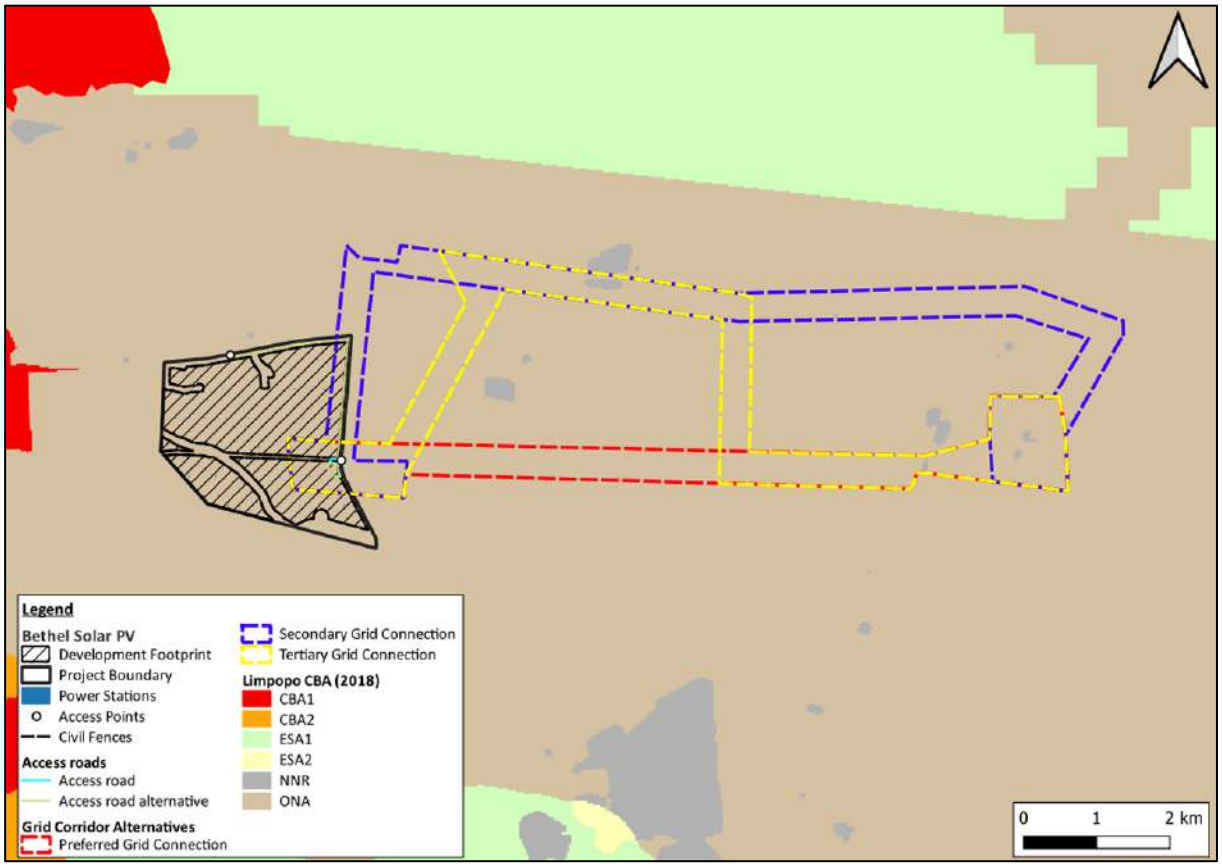


Figure 35: Bethel Solar PV in relation to CBA's and ESA's.

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 Bethel Solar PV are SIP 8, 9 and 10.

Table 14: Strategic Infrastructure related to Bethel Solar PV and BESS.

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, a letter from the SIP co-ordinator has not yet been received.

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 Bethel Solar PV and BESS 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 Bethel Solar PV (Annexure E2). Birdlife Africa South Africa has also been given an opportunity to comment on the Scoping Report and the Draft Environmental Impact 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 Bethel Solar PV (Annexure E2). 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 E2 for a copy of the Avifaunal Impact Assessment Report. In compliance with regime 2 of these guidelines, a second season of avifaunal monitoring and Avifaunal Impact Assessment have taken 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 15: 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 E6.
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 E5.
Impacts on Cultural Heritage	NEMA, NHRA	Heritage SSVR is attached in Annexure E4. 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 - E3 (Terrestrial Biodiversity, Avifauna and Aquatic Biodiversity)
Impacts on Water Resources	NEMA, NEMICMA, NWA, WSA	The project will obtain water directly from the local municipality. A freshwater ecologist has assessed the potential impacts on freshwater resources (Annexure E3). All Aquatic Biodiversity Features as well and associated buffers identified by the Aquatic Biodiversity Specialist will be incorporated into the preferred layout in the impact assessment phase of the environmental process.
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. This will form part of the scope of the BESS Risk Assessment attached in Annexure E8.

Impact Description	Relevant Legislation	Applicability to this project
Electromagnetic Interference	NEMA	The nearest SKA station has been identified as, at approximately 1000km from the proposed Bethel 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 E5.
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 have also been incorporated into the EMPr that will be included in this Draft Environmental Impact Report as Appendix I.

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*."

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.*[25]

It is believed that the proposed 240MW Bethel Solar PV supports the notion of sustainable development by presenting a reasonable and feasible alternative to the existing vacant land use type, which has limited agricultural potential due the lack of water and infrastructure.

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

3.4.16 National Freshwater Ecosystem Priority Area Status

The National Freshwater Ecosystem Priority Areas (NFEPA) database forms part of a comprehensive approach to the sustainable and equitable development of South Africa's scarce water resources. This database guides how many rivers, wetlands and estuaries, and which ones, should remain in a natural or near-natural condition to support the water resource protection goals of the National Water Act (Act 36 of 1998). This directly applies to the National Water Act, which feeds into Catchment Management Strategies, water resource classification, reserve determination, and the setting and monitoring of

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

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).

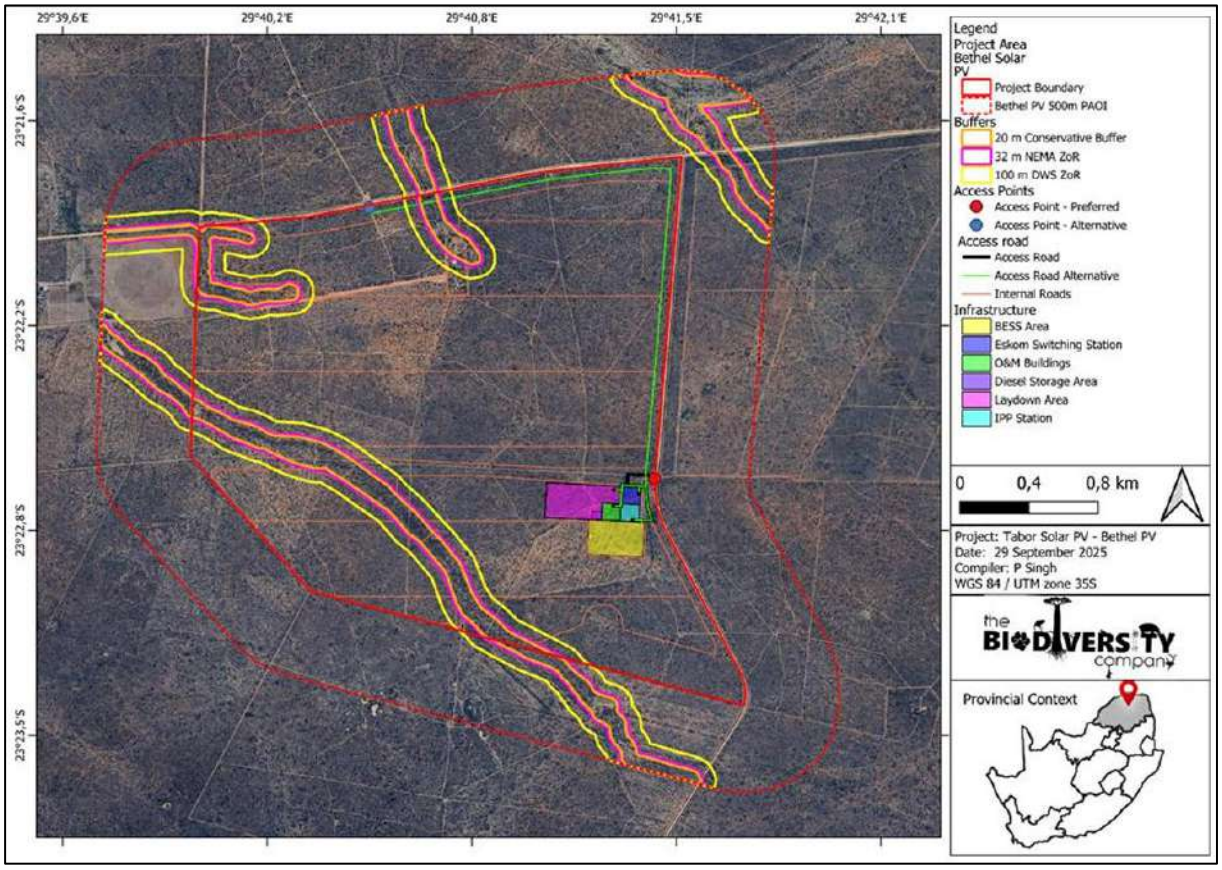


Figure 36: Delineated Surface Water Resources within the study site (The Biodiversity Company, 2025).

3.4.17 DFFE Screening Tool and Protocols

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

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

Further to this, the Screening Tool identifies related exclusions and/ or specific requirements including specialist studies applicable to the proposed site and/or development, based on the national sector classification and the environmental sensitivity of the site.

Finally, the Screening Tool allows for the generating of a Screening Report referred to in Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended whereby a Screening Report is required to accompany any application for Environmental.

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

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

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

Table 16: Specialist Studies recommended in the DFFE Screening Tool.

Study Recommended in Screening Tool	Discussion
Agricultural Compliance Statement	Attached as Appendix E5.
Landscape/Visual Impact Assessment	Attached as Appendix E6.
Heritage Impact Assessment (including Cultural Heritage, Archaeology and Palaeontology)	Attached as Appendix E4.
Terrestrial Biodiversity Impact Assessment	Attached as Appendix E1.
Aquatic Biodiversity Impact Assessment	Attached as Appendix E3.
Avifaunal Impact Assessment	Attached as Appendix E2.
Civil Aviation Compliance Statement	Undertaken by EAP – The closest airstrip was identified as the Petersburg Civil Aerodrome situated approximately 60 km to the south-east of the site. The South Avian Civil Aviation Authority and ATNS, were given an opportunity to comment on this scoping Process. The applicant will also submit an obstacle application (Part 30-27) to the South African Civil Aviation Authority.
Defence Compliance Statement	Undertaken by EAP – the South African National Defence Force were provided with an opportunity to comment on this Environmental Process.
RFI Assessment	Not undertaken – The Bethel Solar PV facility falls outside of the Northern Cape Province and were furthermore found to be situated more than 1000km from the closest Central Astronomy Advantage Area. The South African SKA Project Office and the South African Radio Astronomy Observatory (SARAO) have been registered as a key stakeholder on this environmental process and have been requested to provide input in terms of the Astronomy Geographic Advantage Act and potential impact to SKA.
Geotechnical Assessment	Will be undertaken during the detailed design, once the final Equipment Supplier has been selected.
Socio-Economic Impact Assessment	Attached as Appendix E7.
Plant Species Compliance Statement	Attached as Appendix E1.
Animal Species Impact Assessment	Attached as Appendix E1.

4. PLANNING CONTEXT

The land use planning process for the Bethel Solar PV 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 Makhado Local Municipality, in terms of the Makhado land Use Scheme Regulations, 2022

- Application in terms of the Subdivision of Agricultural Land Act (Act 70 of 1970).

According to the scheme regulations Renewable Energy Structures are not explicitly listed as a consent use in agricultural areas. The planning context needs to be informed by comment from the local authority during the Impact Assessment phase of the Environmental Process.

Table 17: Allowable Consent use Agriculture Land according to the Makhado Land Use Scheme Regulations, 2022.

	C	AGRICULTURAL AREAS		
AGRICULTURAL ZONES	C.a	**Agriculture** *(Read together with Overlay Zone 2)*	Agricultural Use Dwelling House Additional Dwelling House Workers Dwelling	As determined by the relevant Agricultural, Environmental Authority and the Municipality
	C.b	**Smallholding**	Dwelling House Additional Dwelling House Agricultural Use Workers Dwelling	Animal Establishment Caravan Park Guesthouse Home Industry Nursery Self-storage Facility Shooting Range Telecommunication Infrastructure

The following planning processes are likely to be required for the proposed Bethel Solar PV:

- The property is located within the Makhado 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 Makhado 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 Makhado 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 431 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province, with particular focus on the Study Site for the proposed Bethel Solar PV.

5.1 LOCATION & BUILT ENVIRONMENT

The target properties, Farm 431 and the Remainder of Farm 466 are located South of Louis Trichardt in the Makhado Local Municipality within the Vhembe District of the Limpopo Province.

The project footprint size is approximately 625ha and three grid connection alternatives are under investigation..

The proposed Bethel Solar PV is accessed from the N1 via a well established gravel road.

The study is sparsely developed and considered rural in character. Various farmsteads/homesteads and agricultural field are located throughout the proposed development properties with associated fences and access roads.

5.2 GEOLOGY & CLIMATE

The proposed development is underlain with Matok Granite (Coarse-grained, porphyritic, pink and grey biotite granite, in places hornblende granite), and Goudplaats-Hout River Gneiss(Leucocratic, strongly migmatised biotite gneiss and greyish, weakly migmatised biotite gneiss; minor leucogneiss and dark grey biotite gneiss).

The third formation that is present in the study area is the Bandelierkop Formation (Predominantly volcanic igneous rocks, plus some igneous intrusions, minor sediments such as banded iron formation, chert, quartzite, conglomerate, and schists) which has Low Palaeontological Sensitivity. According to the Palaeotechnic report for Limpopo (Groenewald & Groenewald, 2014

According to the South Africa Weather Services, the general area around the Bethel Solar PV study site is subject to between 300mm and 500mm of rainfall per year with the possibility of increased rainfall during the months of July to January (data obtained from the South African Weather Service for the month of July 2022 to January 2024).

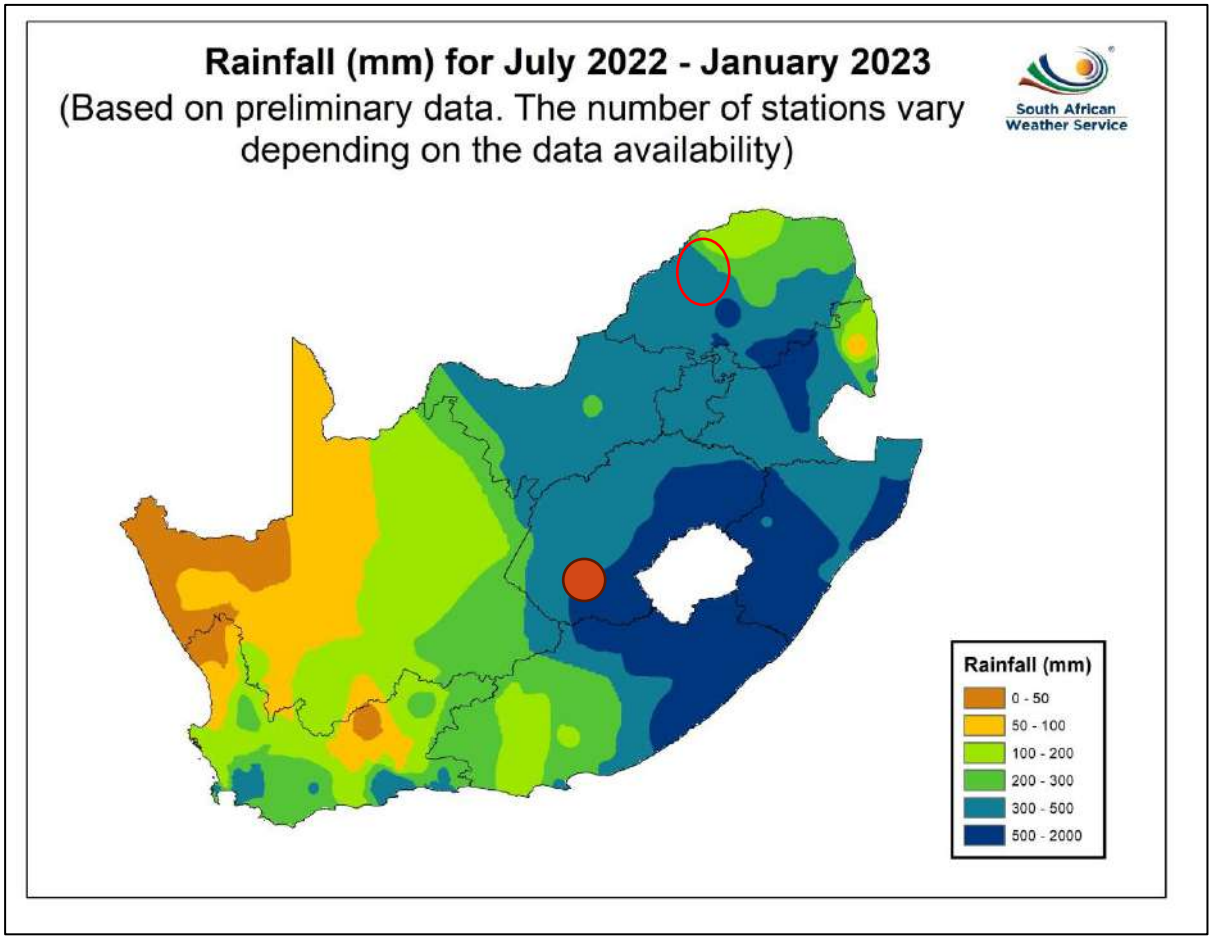


Figure 37: Average Annual and monthly Rainfall for the Louis Trichardt area where the Bethel Solar PV facility is proposed (South African Weather Service).

The average annual temperatures range from 2° in July to 32° in December to January.

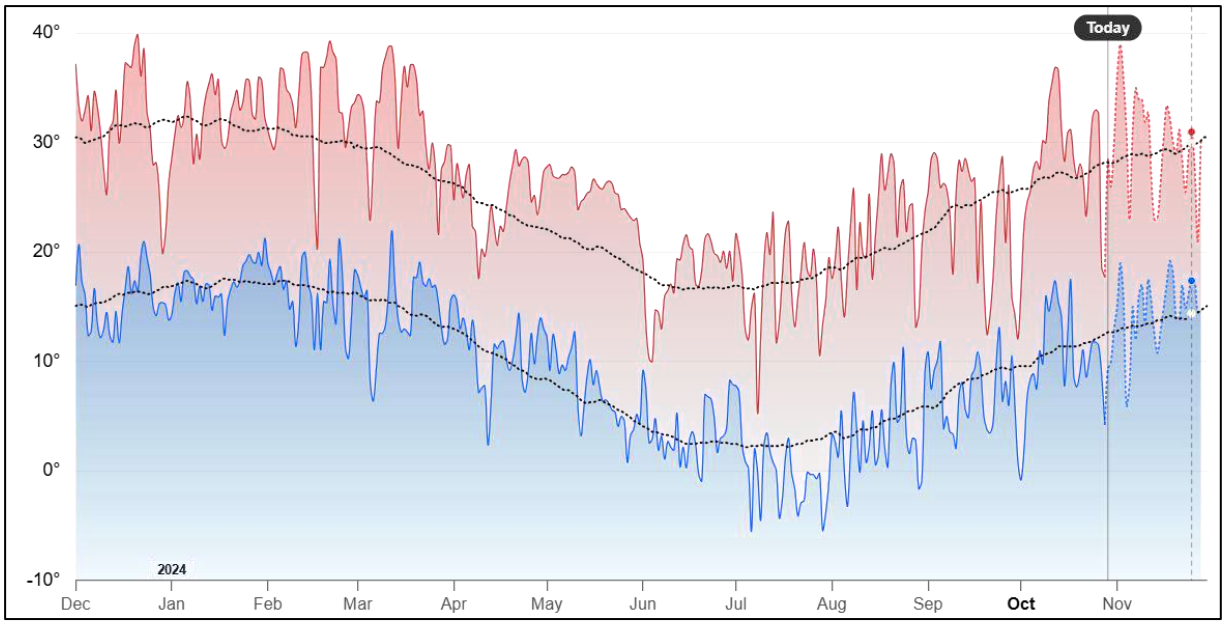


Figure 38: Average Monthly Temperatures for the Louis Trichardt Area.

5.3 TOPOGRAPHY

According to the Visual Specialist, The general topography of the region is defined as undulating and without any dominating landforms that would create landscape significance. The drainage from the site is to the west and into the Sand River. In terms of elevation, the study area has an average elevation of approx. 1000mamsl and falls mid-way within the broader topography. The regional high point is 15km approx. to the east of the site with elevation of 1229mamsl. The regional low point is the northwest along the Sand River with elevation of 819mamsl.

North to South Profile depicts the study area with a north facing aspect, on moderately undulating terrain. There is a high point to the south of the study area that will effectively contain the viewshed in this direction, but with more open views to the lower lying lands to the north. West to East Profile depicts more slopes than the north to south profile, but with a westerly aspect. There is local high ground to the west of the study area that would mainly contain the viewshed to the site and to the lower lying areas along the Sand River.

The profiles for the three grid alternatives were generated with the finding that all the proposed routes do not cross prominent ridgelines where higher levels of visual intrusion would take place.

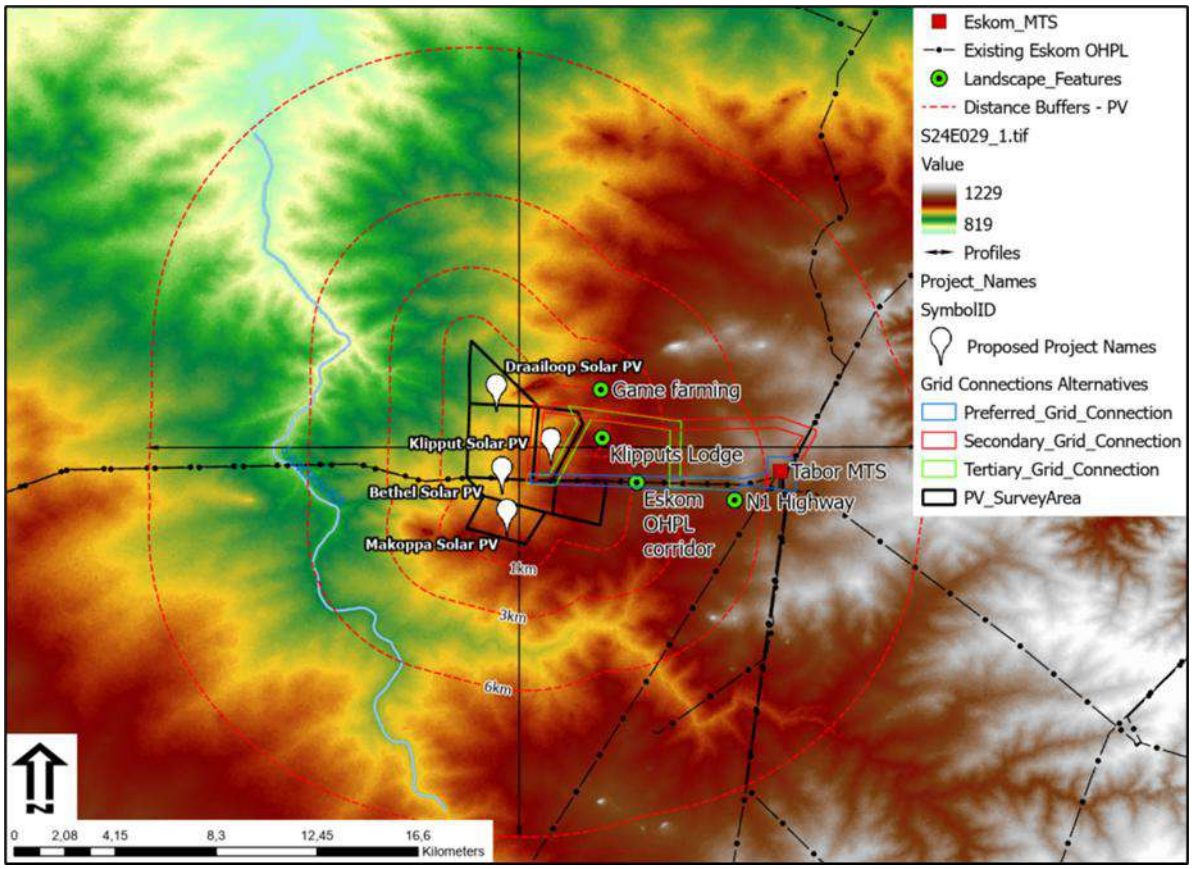


Figure 39: Main landscape features and elevation within the Bethel Solar PV Study Site within the Tabor Solar Cluster(VRMA, 2025).

5.4 Botanical Composition Of The Site

Biodiversity Africa undertook a Terrestrial Biodiversity Impact Assessment 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 findings of the Terrestrial Biodiversity specialist, the project area occurs within the Savanna Biome which constitutes the southernmost extent of the most widespread biome in Africa. In South Africa, it is estimated to cover 32.8% of the total land surface area (399 600 km^2) with the largest portion of the biome occurring in the north of the country, and extending down the eastern seaboard interior and valleys, where it grades into Albany Thicket in the Eastern Cape (Mucina et al., 2011).

According to the National Vegetation Map (2018), which was compiled to provide a greater level of detail for floristically based vegetation units in South Africa, the project area occurs within one vegetation type, namely Makhado Sweet Bushveld.

The field survey confirmed that the major vegetation type within the project area is Makhado Sweet Bushveld but vegetation communities within this vegetation type has been mapped at a finer scale.

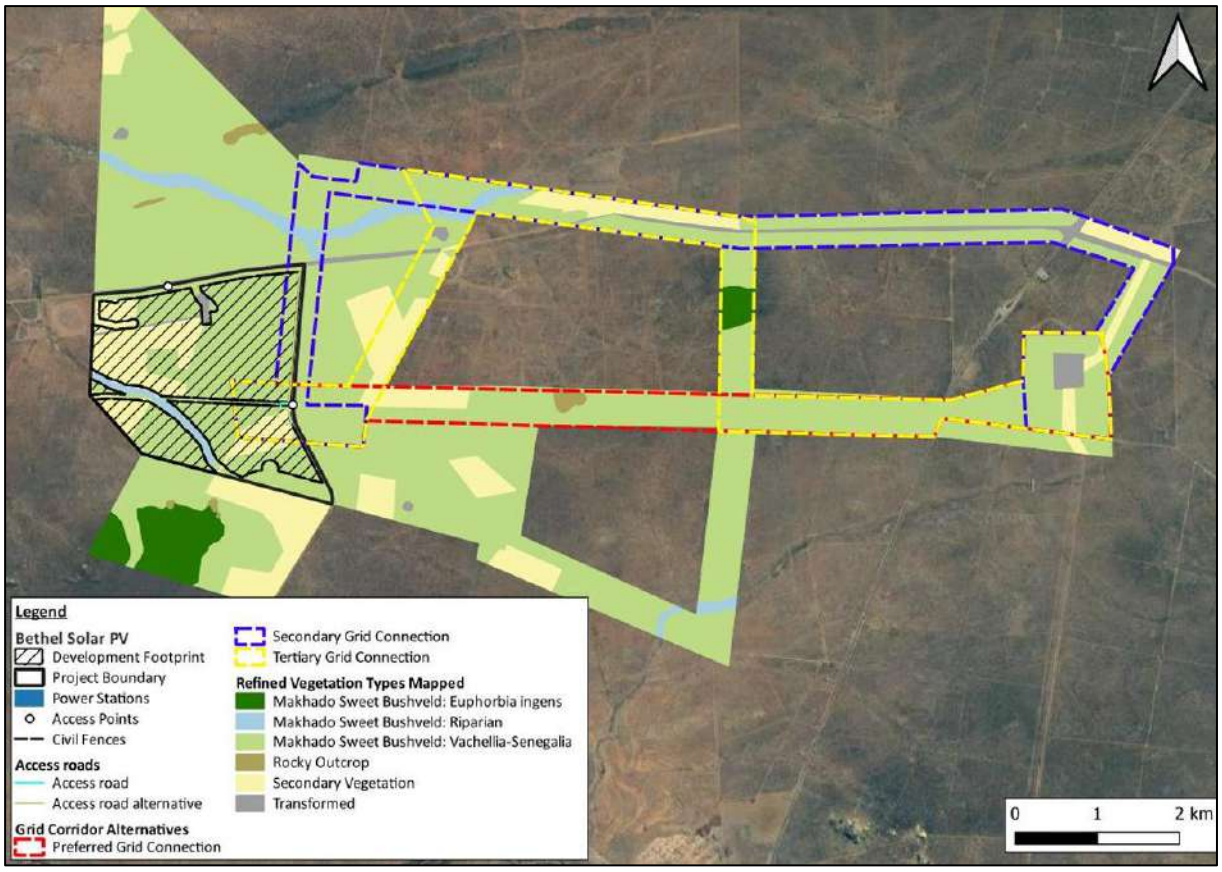


Figure 40: Refined Vegetation Types Associated with Bethel Solar PV (Biodiversity Africa, 2025).

5.4.2 Habitats & Plant Communities

The Terrestrial Biodiversity Specialist identified four (4) Vegetation Communities present within the study site. These vegetation communities are described below.

5.4.2.1 Makhado Sweet Bushveld Communities.

According to the Terrestrial Biodiversity Specialist, Makhado Sweet Bushveld occurs on plains and slopes of the Soutspanberg, east of the Waterberg and surrounding the Blouberg and Lerataupje Mountains, and north of the Polokwane Plateau and west of the escarpment, extending south to Mokopane and north to Vivo in the Limpopo Province. The landscape is characterised by slightly to moderately undulating plains, with altitude ranging from 850-1200 m. The vegetation is described as short stubby bushveld with a poorly developed grass layer.

Makhado Sweet Bushveld is classified as Least Concern with 63% (~6370 km2) of the historical extent remaining. The conservation target is 19% and it is considered poorly protected (Government of South Africa, 2022).

The specialist further subdivided the Makhado Sweet Bushveld into three (3) vegetation communities based on the dominant plant species present:

Makhado Sweet Bushveld: *Euphorbia ingens* community characterised by relatively open bushveld with a cover of 50-60% and canopy height of roughly 3-5 m dominated by **trees** and **shrubs** such as *Commiphora glandulosa, C. Africana, C. mollis, Senegalia burkei, Grewia bicolor, Combretum apiculatum, Ormocarpum trichocarpum, Sclerocarya birrea* (Marula), *Dichrostachys cinerea, Boscia albitrunca* (Sheperd's tree), *Grewia bicolor, G. flavescens, G. flava, Peltophorum africanum, Ziziphus mucronata, Ormocarpum trichocarpum, Vachellia tortilis, Ozoroa paniculosa, Senegalia mellifera*, with an abundance of *E. ingens*, surrounded by a matrix of **grasses**, such as *Chloris virgata, Schmidtia pappophoroides, Digitaria eriantha, Urochloa trichopus, Setaria pumila, Dactyloctenium aegyptium,*

Melinis repens, Themeda triandra, Pogonarthria squarrosa, and **herbs** such as *Tephrosia capensis, Afrosolen sandersonii, Indigofera filipes, Emilia transvaalensis, Clerodendrum ternatum, Dicoma tomentosa, Hibiscus calyphyllus, Ipomoea obscura, Rhynchosia totta*, and *Commelina* spp.

Figure 41: Makhado Sweet Bushveld: *Euphorbia ingens* community within the project area (Biodiversity Africa, 2025).

Makhado Sweet Bushveld: Riparian characterised by dense, semi-closed bushveld with a cover of 80-90% and canopy height of roughly 3-5 m present along the banks of dry rivers, drainage lines, and streams. This vegetation type is characterised by a similar species composition to that listed for Makhado Sweet Bushveld: *Euphorbia ingens* community however with a lower abundance of *E. ingens* and a higher abundance of *Senegalia mellifera*. Some scattered grasses, low shrubs and pioneer species are present within the dry riverbeds.

Figure 42: Makhado Sweet Bushveld: River community within the project area (Biodiversity Africa, 2025).

Makhado Sweet Bushveld: *Vachellia senegalia* community characterised by relatively open bushveld with a cover of 50-60% and canopy height of roughly 3-5 m characterised by a similar species composition to that listed for Makhado Sweet Bushveld: *Euphorbia ingens* community however with a lower abundance of *E. ingens* surrounded by a matrix of grasses and herbs. *Vachellia senegalia* is a dominant species in this community.

Figure 43: Makhado Sweet Bushveld: *Vachellia senegalia* community within the project area (Biodiversity Africa, 2025).

5.4.2.2 Rocky Outcrops

Rocky Outcrops within the project area include large gneiss and granite boulders and flats interspersed with trees and shrubs such as *Ficus tettensis, Boscia albitrunca, Dichrostachys cinerea, Sclerocarya birrea, Pappea capensis*, *Euphorbia ingens* and other species typical to Makhado Sweet Bushveld. Vegetation cover ranged from dense (70-80%) to open (10-20%) depending on the spacing between flats and boulders.

Figure 44: Rocky outcrops vegetation communities within the project area (Biodiversity Africa, 2025).

5.4.2.3 Secondary Vegetation

Secondary vegetation occurs in areas that were previously cultivated. This vegetation community was characterised by low to medium shrubveld dominated by *Vachellia tortilis* and *Dichrostachys cinerea* with a grassy understorey. Species diversity was low.

Figure 45: Secondary vegetation within the project area (Biodiversity Africa, 2025).

5.4.2.4 Transformed

These include areas that have been modified areas that are devoid of natural vegetation.

5.4.2.5 Water Resources

Please refer to section 5.6 below for a discussion on the Aquatic habitats present in the study site.

5.4.3 Botanical Species of conservation concern

The Terrestrial Biodiversity specialist identified 3 species of conservation concern that may occur on site as indicated in the table below.

Table 18: Botanical species of conservation concern that may occur in the study area (Biodiversity Africa, 2025).

Species	Threat Status	Distribution and Habitat Requirements	Likelihood of Occurrence (Low, Medium, High or Confirmed)
Sensitive Species	VU A2cd	This species is widely distributed throughout South Africa (EOO not specified), occurring in the Western Cape, Eastern Cape, Free State, Gauteng, Limpopo, Mpumalanga, and KwaZulu-Natal. Its habitat includes forested and fairly moist environments, including wetter bushveld regions, coastal thickets, and wooded mountain ravines (Williams *et al*., 2022). Although this species has been recorded 33 km southeast of the project area (iNaturalist, 2025), there was no suitable habitat present in the project area for this species.	LOW
Merwilla plumbea	NT A2bd	This species is fairly widely distributed, occurring in the Eastern Cape, Free State and Mpumalanga Province. It has been recorded 28 km southeast of	MEDIUM

Species	Threat Status	Distribution and Habitat Requirements	Likelihood of Occurrence (Low, Medium, High or Confirmed)
		the project area (iNaturalist, 2025). *M. plumbea* occurs in a wide variety of habitats including forest, grassland, bushveld (Williams *et al*., 2008).	
Mystacidium brayboniae	NT D2	This species is an epiphyte that typically occurs in the Soutspanberg Mountains (EOO 1050 km², AOO <30 km²). It is known from less than 10 subpopulations where it occurs in moist, high altitude misbelt forests and woodland (van Staden, 2008). This species has been recorded 13 km southeast of the project area (iNaturalist, 2025). Although a research grade observation, it is likely that the coordinates are misplaced as this species is typically restricted to the Soutpansberg Mountains and its preferred habitat is not present in the project area or surrounding PAOI.	LOW

5.5 TERRESTRIAL FAUNAL COMPONENT OF THE SITE

Biodiversity Africa, undertook a Terrestrial Biodiversity Impact Assessment (Appendix E1) which included consideration of the Faunal component.

The following has been summarised from the Terrestrial Biodiversity Impact Assessment.

5.5.1 Faunal Species of conservation concern

The specialist confirmed that the Screening Tool indicates that five faunal species of conservation concern that are predicted to occur within the project area of influence. Four of these are avifauna species and are assessed in a separate avifauna report (please refer to Appendix E2 and section 5.7 below).

Nine Faunal Species of Conservation Concern are predicted to occur within the project area of influence as shown in the table below.

Table 19: Faunal Species of conservation that may occur within the project area (Biodiversity Africa 2025).

Common Name	Scientific Name	Threat Status	Likelihood of occurrence within project area	Habitat within the Project Area
African Striped Weasel	*Poecilogale albinucha*	NT	High	All vegetation types
Black-footed Cat	*Felis nigripes*	VU	High	Makhado Sweet Bushveld
Brown Hyena	*Parahyaena brunnea*	NT	High	Makhado Sweet Bushveld
Leopard	*Panthera pardus*	VU	High	Makhado Sweet Bushveld and Rocky Outcrops
Southern African Hedgehog	*Atelerix frontalis*	NT	High	Rocky Outcrops
Temminick's Pangolin	*Smutsia temminckii*	VU	High	Makhado Sweet Bushveld
Tsessebe	*Damaliscus lunatus*	VU	Confirmed but this species has been stocked by the landowner	Makhado Sweet Bushveld

Common Name	Scientific Name	Threat Status	Likelihood of occurrence within project area	Habitat within the Project Area
Maquassie (Makwassie) Musk Shrew	*Crocidura maquassiensis*	VU	Medium	No suitable habitat
Serval	*Leptailurus serval*	NT	Medium	No suitable habitat
Gunnings Golden Mole	*Neamblysomus gunningi*	EN	Medium	No suitable habitat
Swamp Musk Shrew	*Crocidura mariquensis*	NT	Medium	No suitable habitat
African Marsh Rat	*Dasymys incomtus*	VU	Low	Limited habitat available.
African Clawless Otter	*Aonyx capensis*	NT	Low	No permanent water sources available
Grey Rhebok	*Pelea capreolus*	NT	Low	Limited suitable habitat present
Mountain Reedbuck	*Redunca fulvorufula*	EN	Low	Limited suitable habitat present
Spotted Hyena	*Crocuta crocuta*	NT	Low	Species is largely confined to protected areas.
Nyika Climbing Mouse	*Dendromus nyikae*	NT	Low	No suitable habitat
South East African Vlei Rat	*Otomys auratus*	NT	Low	No suitable habitat
Spotted -necked Otter	*Hydrictis maculicollis*	NT	Low	No suitable habitat
Sensitive Species 5		VU	Low	Low unless stocked

5.5.2 Faunal Habitats

The faunal habitats present within the study are directly linked to the terrestrial botanical habitats. Please refer to section 5.4.2 above for a description of the habitats present on site.

5.6 AQUATIC COMPOSITION OF THE STUDY SITE

An Aquatic Specialist, The Biodiversity Company, prepared an Aquatic Impact Assessment, which is appended to this Draft Environmental Impact Report (Appendix E3). According to the Aquatic Biodiversity Specialist, following water resources were identified within the project area:

- Rivers – None.
- Wetlands – None.
- Non-perennial/ephemeral watercourses:
    - Tributaries of the Sand River; and
    - Drainage areas.

The on-site assessment of the watercourses presented largely dry conditions in the tributaries of the Sand River as well as the drainage areas, with surface water presence in isolated pools and instream impoundments. Cumulatively these non-perennial systems displayed ephemeral characteristics which is typical for watercourses in a semi-arid region. The watercourses drain the project area westward, eventuating in the Sand River. Portions of the watercourses intersect terrestrial habitat, highlighting their interdependence. Despite their current level of modification and ephemeral nature, the watercourses are sensitive to further modification as these systems do provide drinking opportunities (following rainfall) and habitat for foraging, nesting and refugia for terrestrial biota and avifauna. Therefore, the

watercourses in the project area are regarded as sensitive environments in relation to changes in habitat integrity, flow and water quality (ecological drivers) requiring avoidance from the project related disturbance activities and as well as maintenance of baseline conditions.

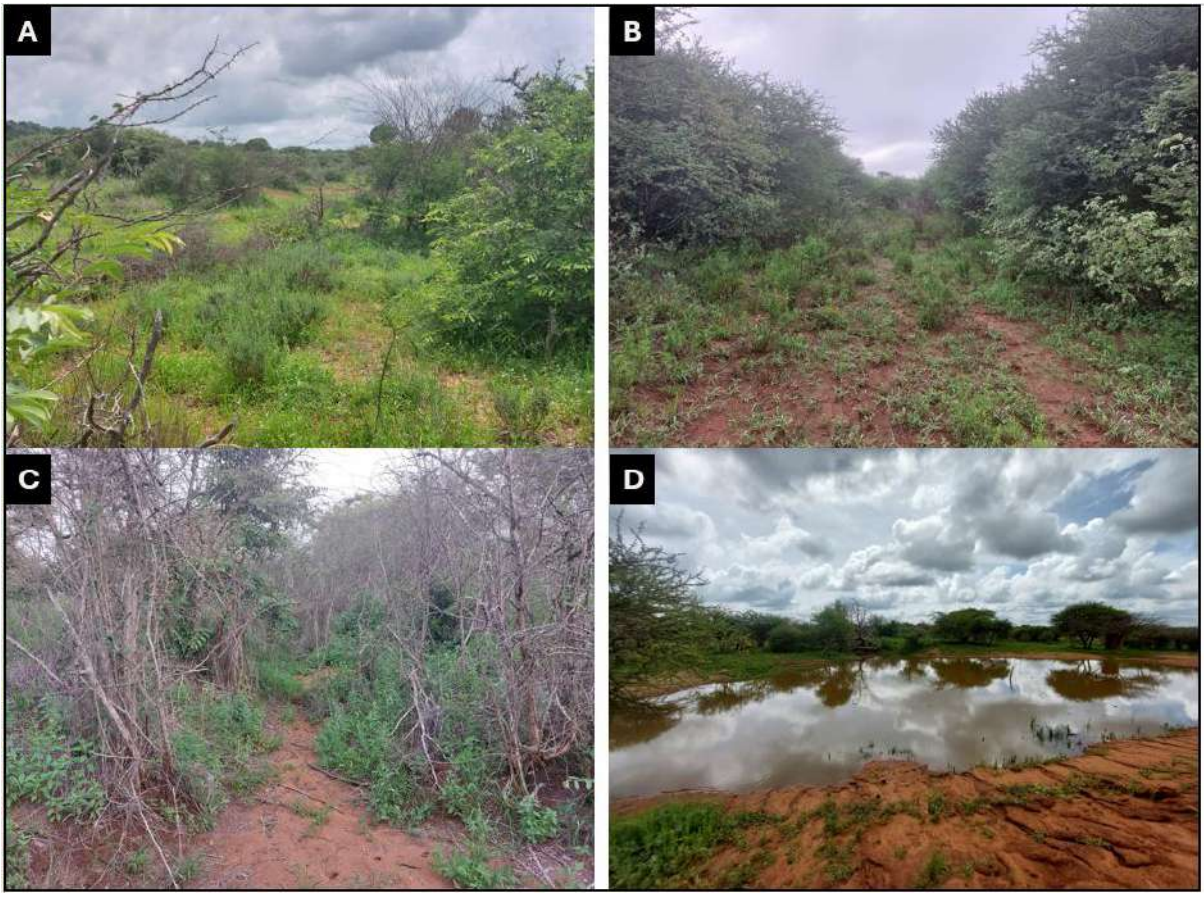


Figure 46: Example of Water Resource Habitat Types (The Biodiversity Company, 2025).

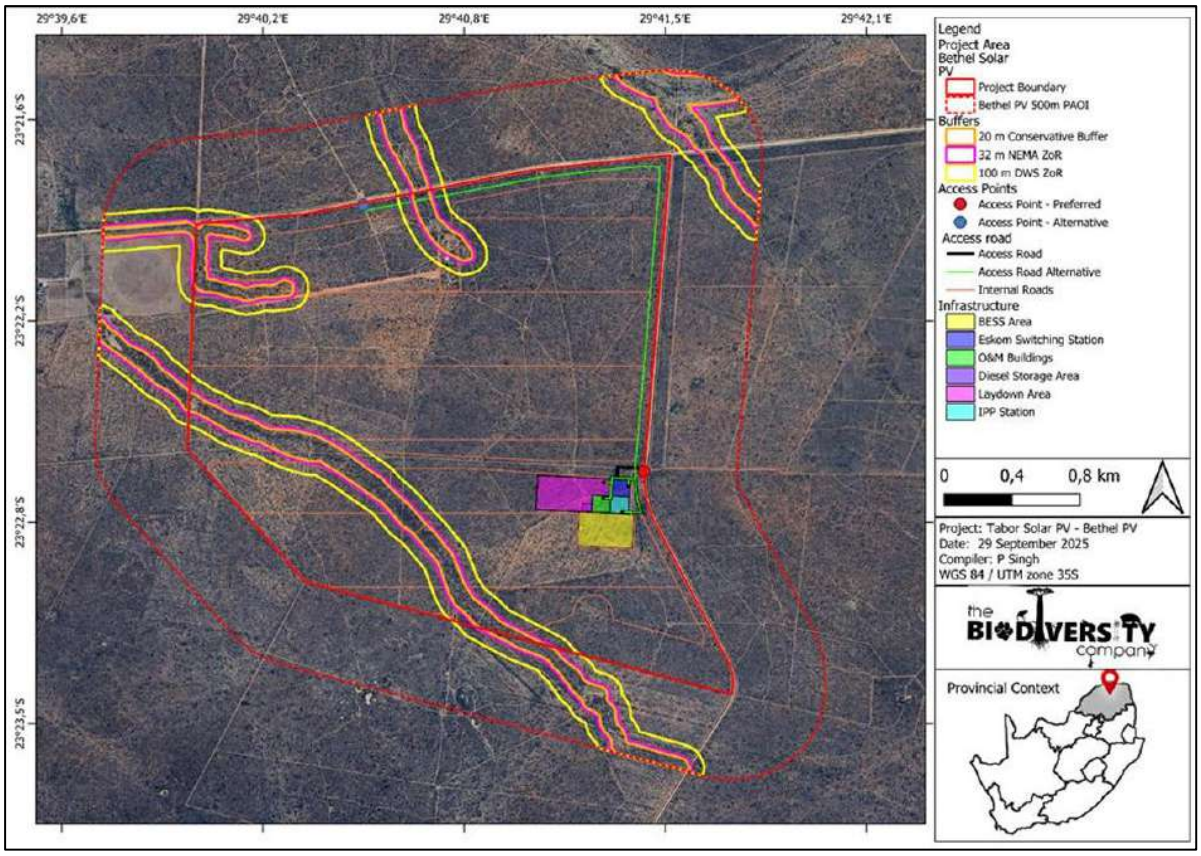


Figure 47: Delineated aquatic features in relation to the Solar PV site (The Biodiversity Company, 2025).

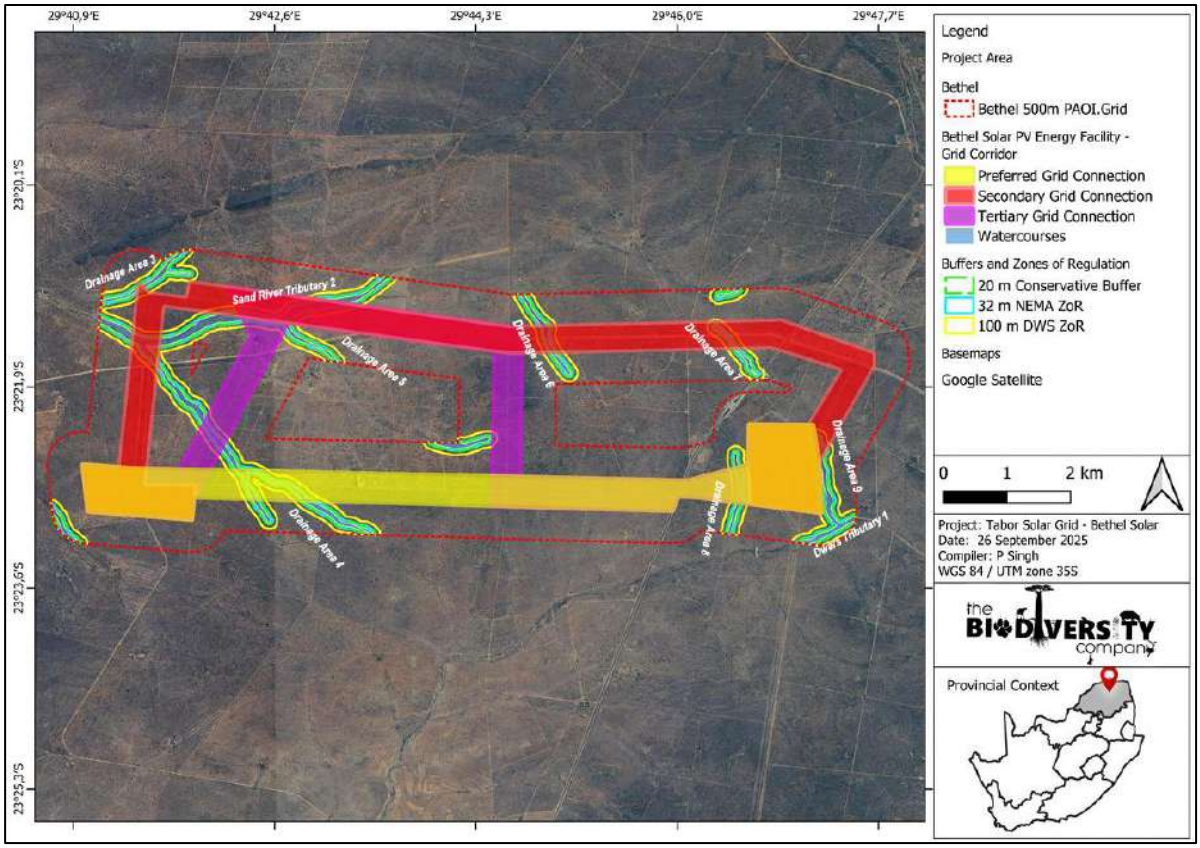


Figure 48: Delineated aquatic features in relation to the Grid Connection Corridor alternatives (The Biodiversity Company, 2025).

5.7 AVIFAUNAL COMPOSITION OF THE SITE

An Avifaunal specialist, The Biodiversity Company, was appointed to undertake an Avifaunal Impact Assessment of the proposed Bethel Solar PV. Please refer to Appendix E2 for a copy of the Avifauna Impact Assessment. The following section has been summarised from the Avifaunal Impact Assessment in Appendix E2. The first survey took place from 6th to the 8th of August 2024 (dry season survey) to determine the presence and relative abundance of avifauna species within the project area, as well as likelihood of occurrence within the assessed area. the second survey second survey was conducted from the 6th to the 9th of January 2025. These assessments are deemed sufficient for a Regime 2 assessment.

5.7.1 Avifaunal Species of conservation concern

According to the specialist, SABAP2 data indicate that 207 avifauna species are expected for the project area and surrounds. Of these, 8 are considered Species of Conservation Concern. The screening tool identifies two additional avifauna SCC, Secretarybird (*Sagittarius serpentarius*) and Tawny Eagle (*Aquila rapax*). The likelihoods of occurrence within the Project Area are included in the below table. One (1) Species of Conservation Concern was recorded during the assessment, Cape Vulture (*Gyps coprotheres*).

Figure 49: Threatened avifauna species that are expected to occur within the Project Area (The Biodiversity Company, 2025)

Common Name	Scientific Name	Regional*	Global+	Likelihood of occurrence
Black Stork	*Ciconia nigra*	VU	LC	Low
Cape Vulture	*Gyps coprotheres*	EN	VU	Confirmed
European Roller	*Coracias garrulus*	NT	LC	Moderate
Lanner Falcon	*Falco biarmicus*	VU	LC	Moderate
Lappet-faced Vulture	*Torgos tracheliotos*	EN	EN	High
Secretarybird	*Sagittarius serpentarius*	VU	EN	Moderate
Short-clawed Lark	*Certhilauda chuana*	NT	LC	Low
Tawny Eagle	*Aquila rapax*	EN	VU	Moderate
Verreaux's Eagle	*Aquila verreauxii*	NA	LC	Low
White-backed Vulture	*Gyps africanus*	CR	CR	High

5.7.2 Avifaunal Habitats

According to the specialist, fine-scale habitats within the landscape are important in supporting a diverse avifauna community as they provide differing nesting, foraging and reproductive opportunities.

The main habitat types identified across the project area of influence were initially delineated largely based on aerial imagery, and these main habitat types were then refined by the specialist based on the field coverage and data collected during the survey. Four avifaunal habitat types were delineated within the study area.

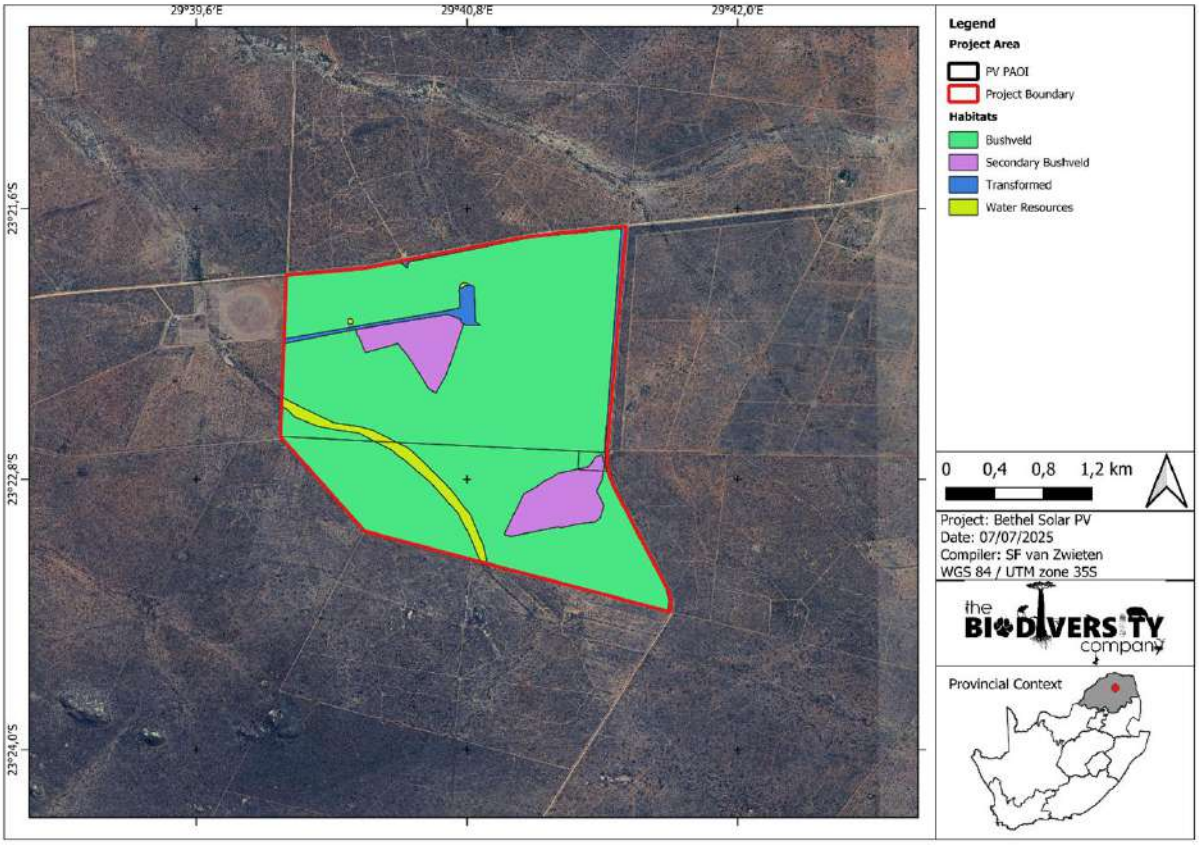


Figure 50: Avifaunal Habitats delineated for the Bethel Solar PV (The Biodiversity Company, 2025).

The sensitivity of each of these delineated habitats is discussed in section 2.10 of this report.

5.7.2.1 Bushveld

This habitat consists of savannah with dominance of both trees and grass, with various densities of trees. This habitat is somewhat disturbed by grazing by livestock and game. This habitat provides breeding and foraging habitat for most of the expected species of conservation concern.

Species of Conservation concern possibly occupying this habitat are Cape Vulture, European Roller, Lanner Falcon, Lappet-faced Vulture, Tawny Eagle and White-backed Vulture.

Figure 51: Bushveld Habitat (The Biodiversity Company, 2025).

5.7.2.2 Secondary Bushveld

This habitat is like bushveld habitat but has been affected by historical and current effects such as clearing for agriculture and is in a secondary successional state. Despite these effects, similar Species of Conservation Concern are likely to occur in this habitat, both for breeding and nesting.

Species of conservation concern possibly occupying this habitat include Cape Vulture, European Roller, Lanner Falcon, Lappet-faced Vulture, Tawny Eagle and White-backed Vulture.

Figure 52: Secondary Bushveld Habitat (The Biodiversity Company, 2025).

5.7.2.3 Transformed

The transformed areas have little to no remaining natural vegetation due to land transformation by historic and current housing, roads and electrical infrastructure. These habitats exist in a constant disturbed state as it cannot recover to a more natural state due to ongoing disturbances and impacts it receives.

Figure 53: Transformed Habitat (The Biodiversity Company, 2025).

5.7.2.4 Water Resources

This habitat provides crucial habitat for waterbirds. In the project area these consist of artificial water holes and drainage lines which are temporarily inundated. Only one expected Species of Conservation Concern is dependent on water resources as a habitat for foraging, Black Stork (*Ciconia nigra*). However, the water resources on the site are unlikely to be inhabited by this species. The water resources may be used by other Species of Conservation Concern as a source of drinking water, but not as a habitat for foraging or breeding.

Figure 54: Water Resources Habitat (The Biodiversity Company, 2025).

5.8 SOCIAL CONTEXT

This section below provides a summary of the social context of the local municipality as contained in their 2020-2023 IDP. The appointed social specialist, Mr Tony Barbour will provide further details in this regard during the impact assessment Phase of the environmental process (Appendix E7).

The objectives of this Social Impact Study (SIA) will be to provide the EIA with a detailed description of the local socio-economic conditions affected by the proposed projects and to identify the potential social opportunities and risks associated with the projects. In so doing the SIA will seek to identify measures that can be implemented to avoid and or minimize the potential social risks. The SIA will also identify measures to enhance the potential social benefits associated with the proposed projects.

The SIA will be undertaken in terms of the Guidelines for SIA endorsed by Western Cape Provincial Environmental Authorities (DEA&DP) in 2007. The Guidelines are based on accepted international best practice guidelines, including the Guidelines and Principles for Social Impact Assessment (Inter-organizational Committee on Guidelines and Principles for Social Impact Assessment, 1994) and IAIA Guidance for Assessing and Managing Social Impacts (2015). The approach for the SIA which will take place as part of the impact assessment phase of the environmental process will entail the following key steps.

- Project initiation and review of project information etc.
- Collection and review of reports and baseline socio-economic data on the area. This includes socio-economic characteristics of the affected areas, current and future land uses, and land uses planning documents relating to the study area and surrounds.
- Identification of the components associated with the construction and operational phase of the proposed project, including estimate of total capital expenditure, number of employment

opportunities created, breakdown of the employment opportunities in terms of skill levels (low, medium and high skilled), breakdown of wages per skill level, assessment procurement policies etc.;
- Interviews with key affected parties, including local communities, local landowners, key government officials (local and regional), non-government organizations, the client, local chamber of commerce, tourism organisations, etc.
- Identification and assessment of key social issues and assessment of potential impacts (negative and positive) associated with the construction and operational phase of the proposed development.
- Identification of appropriate measures to avoid, mitigate, enhance, and compensate for potential social impacts.
- Preparation of Draft SIA Reports for comment.
- Incorporate comments and prepare SIA Final Reports.

5.8.1 Social Context of the Local Municipality

The Makhado Municipality is a Category B local municipality located in the Xhariep District of the Limpopo Province in South Africa. It's part of a larger district that covers an area of 34,250km², making up about a third of the province's geographical area.

- Demographics and Socio-Economic Profile

The municipality has a diverse population, and specific demographic details are not readily available. However, the municipality aims to promote local business and support emerging enterprises through initiatives like the SMME development program, which received R2.9 million in funding for the 2011-2012 financial year [2].

- Economic Development

The municipality envisions being a responsive and excellent service provider, promoting industrial, small business development, social enterprises, and cooperatives. This vision is outlined in the Makhado Local Municipality Integrated Development Plan 2022/2024.

- Challenges and Opportunities

While there are challenges, the municipality's focus on local business development and service excellence presents opportunities for growth and improvement.

5.8.2 Social Context of the District Municipality

The Vhembe Municipality is a category C District municipality has a population of 121,687 people, accounting for 4.2% of the Limpopo Province's total population, with an annual growth rate of 0.1% [1]. This district is strategically located, boasting high levels of connectivity to other parts of the Limpopo Province.

Key Socio-Economic Indicators:

- Population Growth Rate: 0.1% per annum.
- Population Distribution: 4.2% of the Limpopo Province's total population.
- Economic Priorities: Local Economic Development, job creation, and infrastructure investment.

The district municipality aims to create a favourable business environment, attract investment, and promote job creation to improve residents' social and economic livelihoods. To achieve this, the IDP focuses on:

- Infrastructure Development: Upgrading and maintaining infrastructure to support economic growth.

- Local Economic Development: Encouraging small businesses, social enterprises, and cooperatives.

5.8.3 Social Context of the Province

The Limpopo province in South Africa is a vast and diverse region, covering 10.6% of the country's total land area. With a population of around 2.9 million residents, it accounts for approximately 5% of the national population.

- Economic Overview

The Limpopo Province's economy grows at a rate slightly lower than the national average, with a GDP growth rate of 1.5% compared to 1.9% nationally. The finance sector drives the province's GDP, contributing around 19%. The province does struggle with high poverty rates.

- Demographics and Poverty

The Limpopo province is home to about 6% of South Africa's population and has the second-lowest total current household income among all provinces. In terms of per capita income, the province ranks fifth. The population growth rate is relatively slow, averaging 0.6% per year [2].

To address these challenges, the province focuses on local economic development, job creation, and infrastructure investment. Initiatives like the SMME development program aim to support emerging enterprises and promote economic growth.

5.9 ECONOMIC CONTEXT

Please also refer to the Social Impact Assessment undertaken by Mr Tony Barbour and attached to this Draft Environmental Impact Report as Appendix E7.

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 including Solar PV and BESS 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. The BESS projects are likely to have higher operational costs than the PV projects.

5.9.2 Project specific costs

The Bethel 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.

Costs for BESS have decreased significantly over the past few years, with some projects reaching as low as R3.6M per megawatt/hour. Economies of scale and technological advancements are expected to continue driving down costs. Costs can vary depending on location, with South Africa being a notable market for utility-scale battery storage.

5.9.3 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), the Battery Energy Storage Independent Power Producers Procurement Programme (BESIPPPP) or through private power purchase agreements.

Both of these 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 programmes 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 are applicable to a private power purchase agreement.

5.10 VISUAL CONTEXT

Mr Stephen Stead of Visual Resource Management Africa (VRMA) undertook a Visual Impact Assessment of the proposed Bethel Solar PV (See Appendix E6). The following visual context was determined from this study.

The DFFE Screening tool indicated Very High Landscape Sensitivity due to:

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

The visual specialists confirmed these sensitivities for certain parts of the site which will be excluded from the preferred layout alternative. The visual specialist furthermore identified the following risks from a visual perspective. These areas that have been identified are excluded from the Preferred Layout Alternatives.

Table 20: Key Landscape Themes of the Study Site and Surrounding Area (VRMA, 2025).

Theme	Description
Eskom Tabor MTS and OHPL corridors	A large Main Transmission Substation is located 6.6km to the east of the study area. As a result of the MTS, numerous OHPL are routed through the area. The is a multiple powerline corridor running through the study area that does degrade local landscape resources to some degree.
	

Theme	Description
	
Klipputs Farm Lodge and Game Farming	The Klipputs farm lodge is located 877m to the east of the project area, with views looking to the northeast. There is elevated terrain (a small rocky outcrop) directly to the west of the lodge that excludes the proposed PV areas from view. This farm is also considering PV development as a long strip along the Eskom powerline corridor. This area is also out of the view of the lodge, allowing for multiple land uses for the property owner.
	
Game Farming and Hunting	The areas to the north of the study area reflect undulating bushveld landscapes that significantly add to the regional sense of place. This land use is in alignment with the local and regional eco-tourism planning. To ensure that these type of eco-tourism related landscapes are not degraded, suitable setbacks from the northern areas as well as road buffers should be incorporated where applicable.

Theme	Description

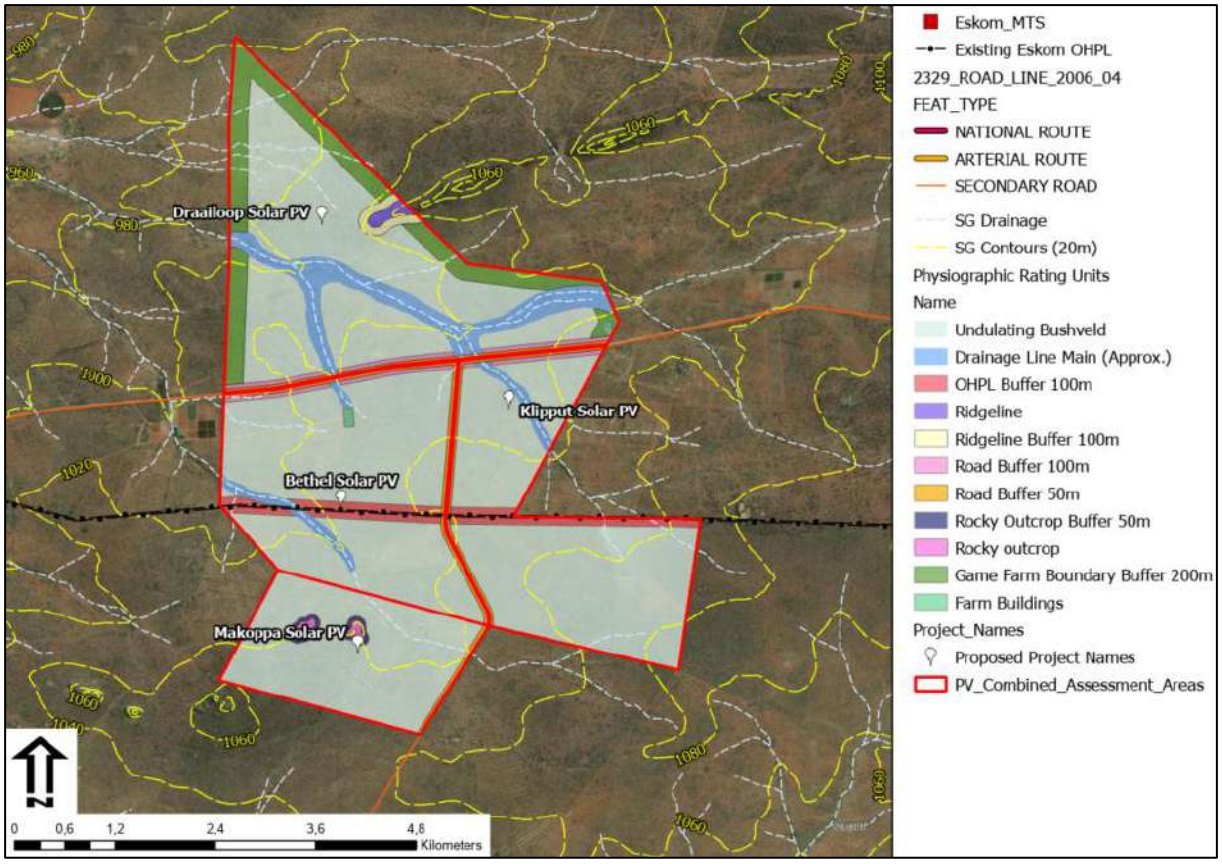


Figure 55: Visual Buffers recommended by the specialist for the Bethel Solar PV Project (VRM Africa, 2025).

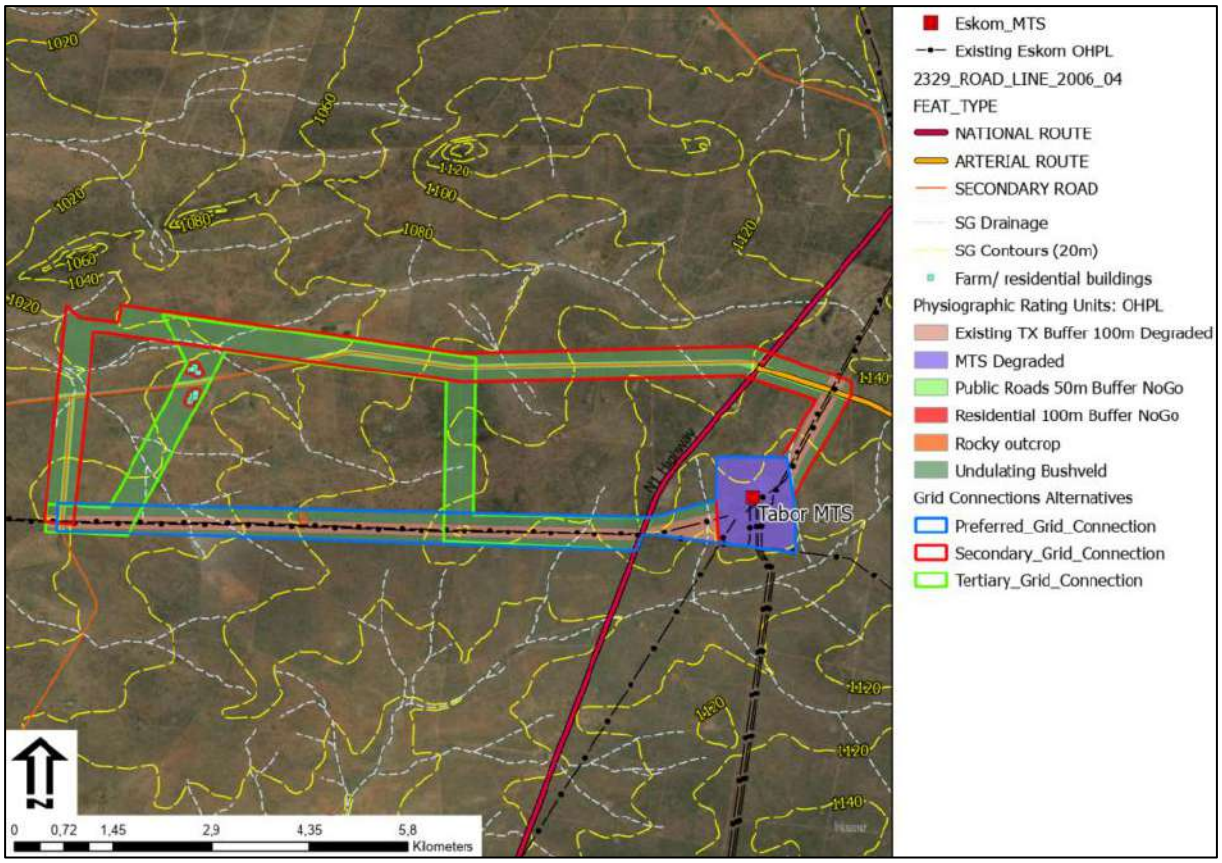


Figure 56: Visual Buffers recommended by the specialist for the Grid connection alternatives (VRM Africa, 2025).

5.11 SITE SENSITIVITY VERIFICATION

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. Site sensitivity verifications have been undertaken by relevant specialists for the following themes identified in the regulations:

- Animal Species (Appendix E1 and Appendix E2);
- Plant Species (Appendix E1);
- Terrestrial Biodiversity (Appendix E1);
- Aquatic Biodiversity (Appendix E3); and
- Agriculture (Appendix E5).

In addition to the SSVE undertaken in term of the Environmental Themes identified in the regulations, SSVR's have also been undertaken for the following specialist disciplines.

- Visual;
- Heritage, inclusive of Archaeology and Palaeontology.

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).

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

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

Table 21: General requirements for site sensitivity verifications in terms of GN43110.

SSVr Requirement	Discussion
The SSV must be undertaken by an EAP or a specialist	This SSV report (SSVr) has been compiled by the EAP and the Specialists. Specialist SSVR's were included in the Scoping Phase submissions of this Environmental Process.
A preliminary on-site inspection must be undertaken	A site Inspection was undertaken by the EAP in January 2025. All specialists have undertaken site inspections between June 2024 and March 2025. Please refer to the Specialist Reports attached in Appendix E1-E6 for dates in which each specialist undertook field work.
A desktop analysis must be undertaken, alongside any other applicable/ relevant information.	Consideration has been given to the datasets available on the SANBI BGIS spatial application. All relevant spatial biodiversity layers were consulted, including: - Limpopo Province Biodiversity Sector plan. - National Freshwater Ecosystems Priority areas. - National Spatial Biodiversity Assessment. - National Protected Areas Expansion Strategy. - Important Bird Areas - South African Bird Atlas Project (SABAP 2) dataset.

5.11.1 General Site Information

The General site information for the proposed Bethel Solar PV is discussed in detail in sections 5.1 – 5.10 of this report. These sections on the general site have been informed by the specialist studies attached in appendices E1 – E6.

5.11.2 Screening Tool Results

According to the Screening Tool Report that was run on **30 March 2025**, the following summary of the environmental sensitivities were identified in the screening tool[26].

For easy of reference and comparison, the sensitivities identified in the screening tool as well as the verified sensitivities confirmed by the EAP and the participating specialists have been colour coded as follows:

[26] The screening tool was run on the full extent of the property boundaries as per layout alternative 1 (initial site) as described in section 2.11 of this report.

Very High	High
Medium	Low

Table 22: Summary of the development footprint environmental sensitivities for Bethel Solar PV as per the screening tool report.

Theme	Sensitivity as per Screening Tool
Agricultural Theme	High
Animal Species Theme	High
Plant Species Theme	Low
Aquatic Biodiversity Theme	Very High
Archaeology and Cultural Heritage Theme	Low
Civil Aviation Theme	High
Defence Theme	Low
Landscape Theme	Very High
Palaeontology Theme	Medium

In addition to the Screening Tool Report for the proposed PV Site, Screening tool reports were also generated for each of the Grid Connection Alternatives. The theme sensitivities in these screening tool reports are identified in the tables below.

Table 23: Summary of the development environmental sensitivities for Grid Connection Alternative 1 as pet the screening tool report.

Theme	Sensitivity as per Screening Tool
Agricultural Theme	High
Animal Species Theme	Medium
Plant Species Theme	Low
Aquatic Biodiversity Theme	Low
Archaeology and Cultural Heritage Theme	Low
Civil Aviation Theme	High
Defence Theme	Very High
Palaeontology Theme	Low
Terrestrial Biodiversity	Low

Table 24: Summary of the development environmental sensitivities for Grid Connection Alternative 2 as per the screening tool report.

Theme	Sensitivity as per Screening Tool
Agricultural Theme	High
Animal Species Theme	Medium
Plant Species Theme	Low
Aquatic Biodiversity Theme	Low
Archaeology and Cultural Heritage Theme	Low
Civil Aviation Theme	High
Defence Theme	Very High
Palaeontology Theme	Medium

Theme	Sensitivity as per Screening Tool
Terrestrial Biodiversity	Low

Table 25: Summary of the development environmental sensitivities for Grid Connection Alternative 3 as per the screening tool report.

Theme	Sensitivity as per Screening Tool
Agricultural Theme	High
Animal Species Theme	Medium
Plant Species Theme	Low
Aquatic Biodiversity Theme	Low
Archaeology and Cultural Heritage Theme	Low
Civil Aviation Theme	High
Defence Theme	Very High
Palaeontology Theme	Medium
Terrestrial Biodiversity	Low

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 and the specialist SSVRs in appendices E1 – E6.

5.11.2.1 Agriculture

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

Figure 57: Image from Screening Tool identifying agricultural theme sensitivity for the PV Site.

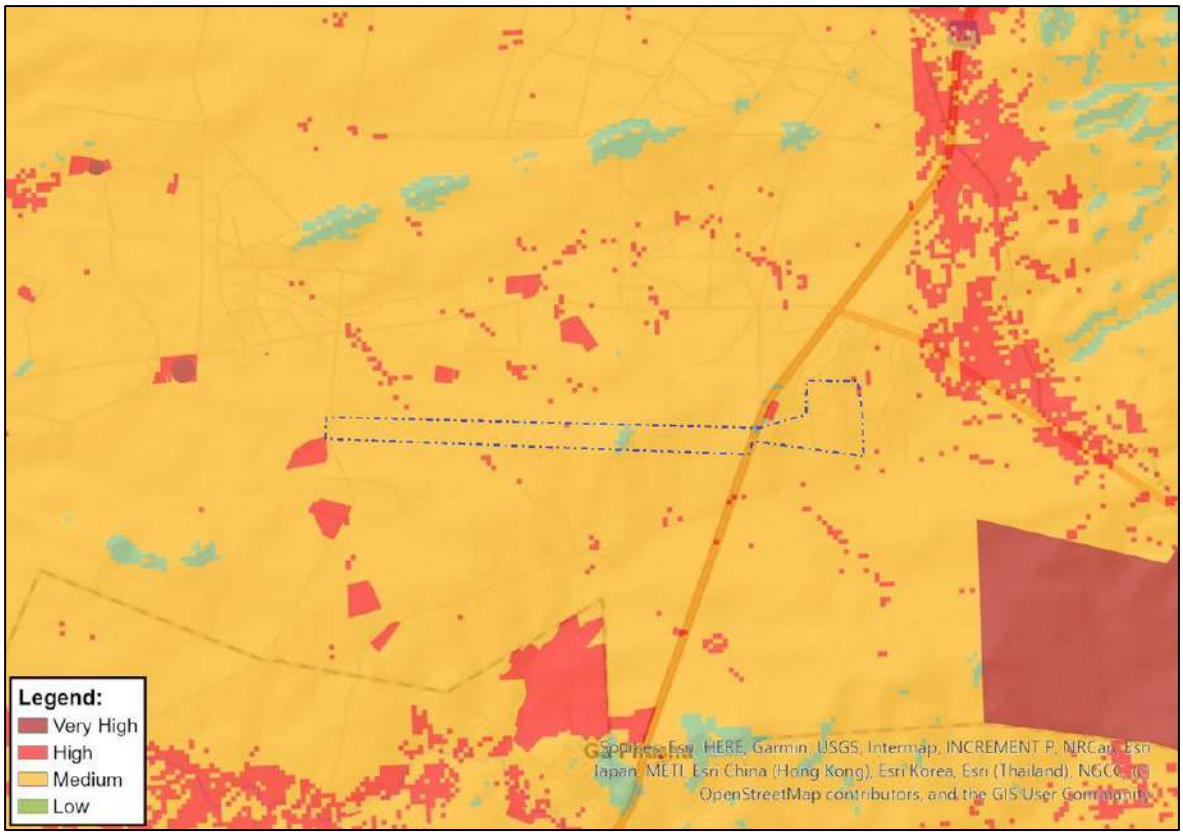


Figure 58: Image from Screening Tool identifying agricultural theme sensitivity for the Grid Connection Alternative 1.

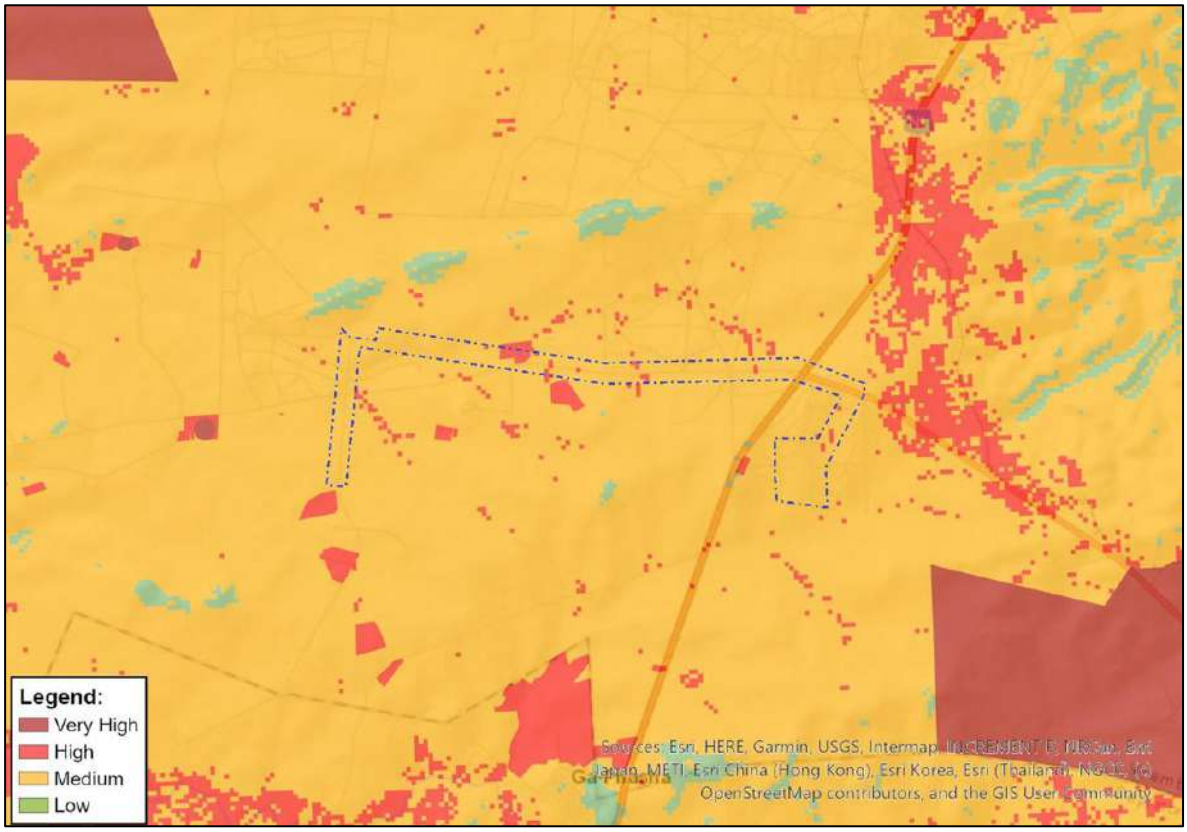


Figure 59: Image from Screening Tool identifying agricultural theme sensitivity for the Grid Connection Alternative 2.

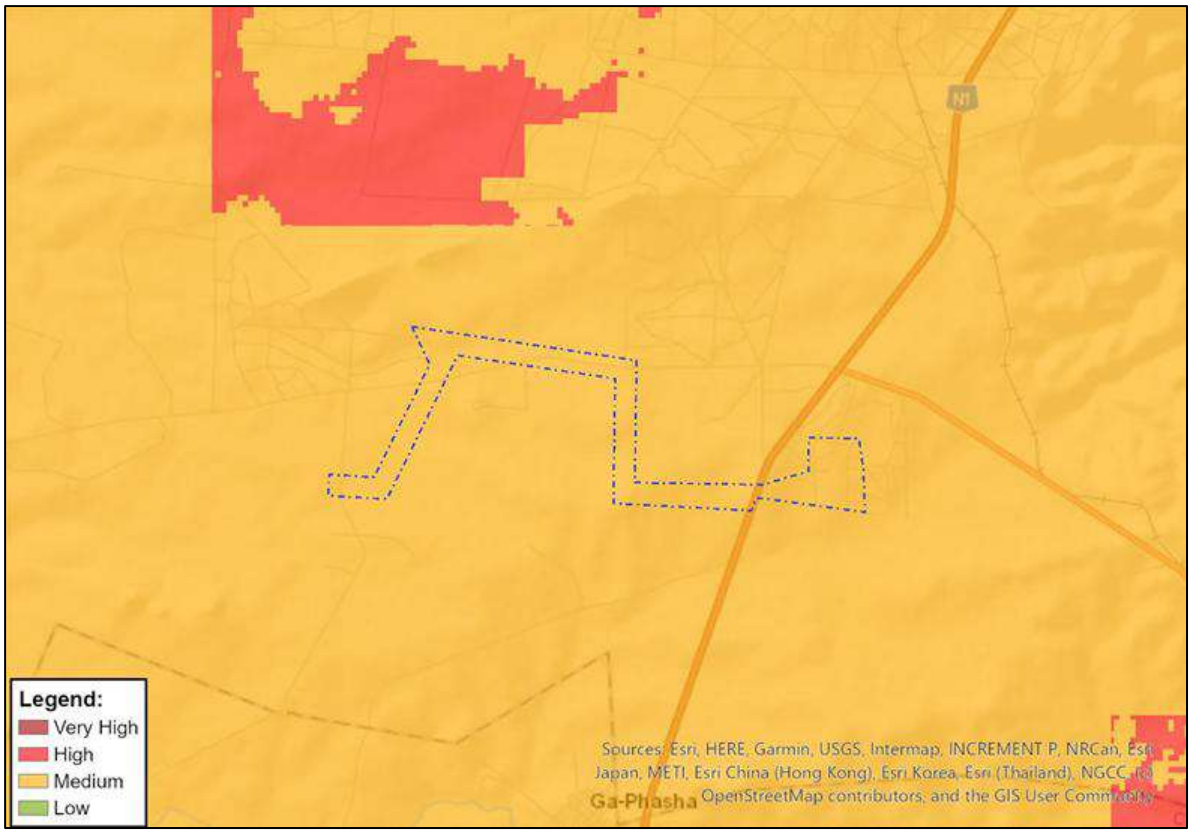


Figure 60: Image from Screening Tool identifying agricultural theme sensitivity for the Grid Connection Alternative 3.

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

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

The agricultural specialist has disputed this sensitivity depicted in the screening tool. The specialist confirmed that most of the assessment area has Low agricultural sensitivity. The soils in this area has Low-Moderate and Low agricultural potential and is not suitable for crop production under rainfed conditions. There are no crop fields in these areas; the only land use is game and livestock farming. Soils with Moderate agricultural potential have been assigned Medium sensitivity because they are suitable for supporting vegetation for grazing but not highly suitable for crop production. No areas with High agricultural sensitivity has been identified in either the PV area or the grid corridor area.

5.11.2.2 Animal Species

The Screening Tool identifies the Animal Species sensitivity theme as “Medium”. The sensitivity of all 3 grid connection alternatives as medium.

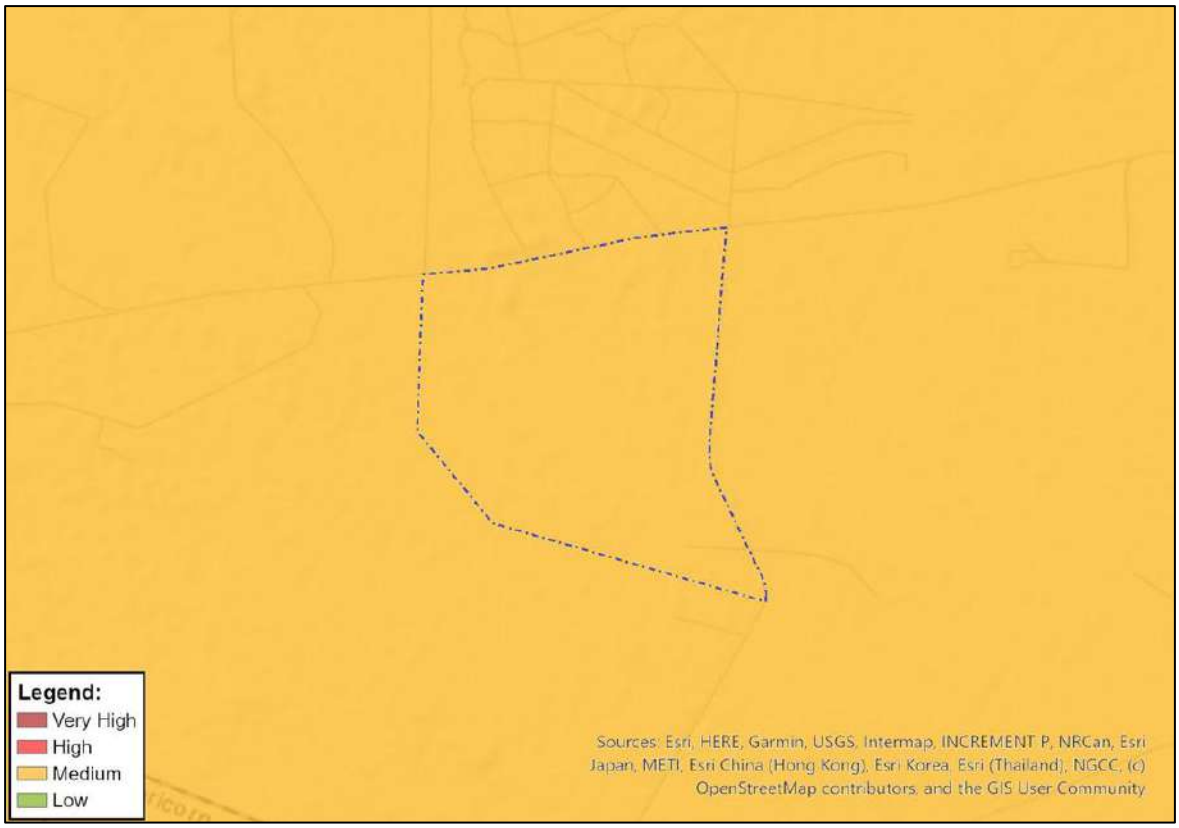


Figure 61: Image from Screening Tool identifying Animal Species theme sensitivity for the PV Site.

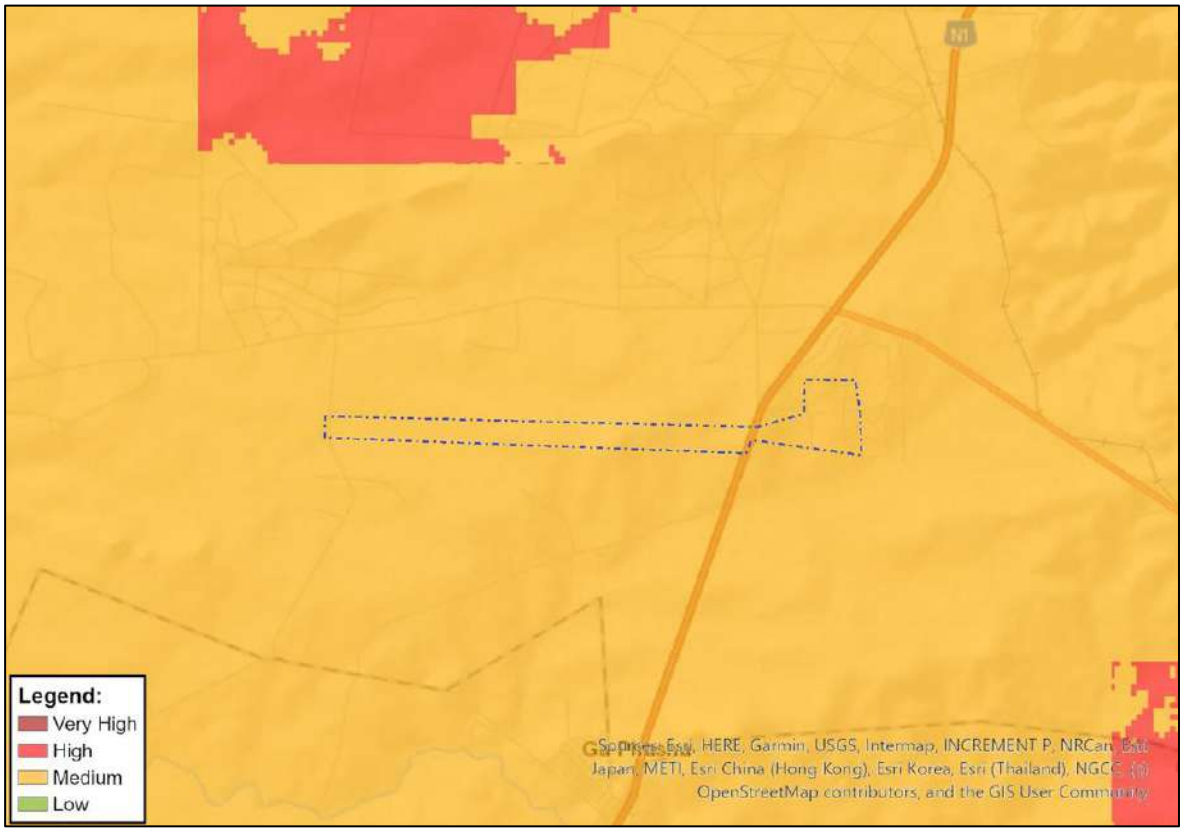


Figure 62: Image from Screening Tool identifying Animal Species theme sensitivity for the Grid Connection Alternative 1

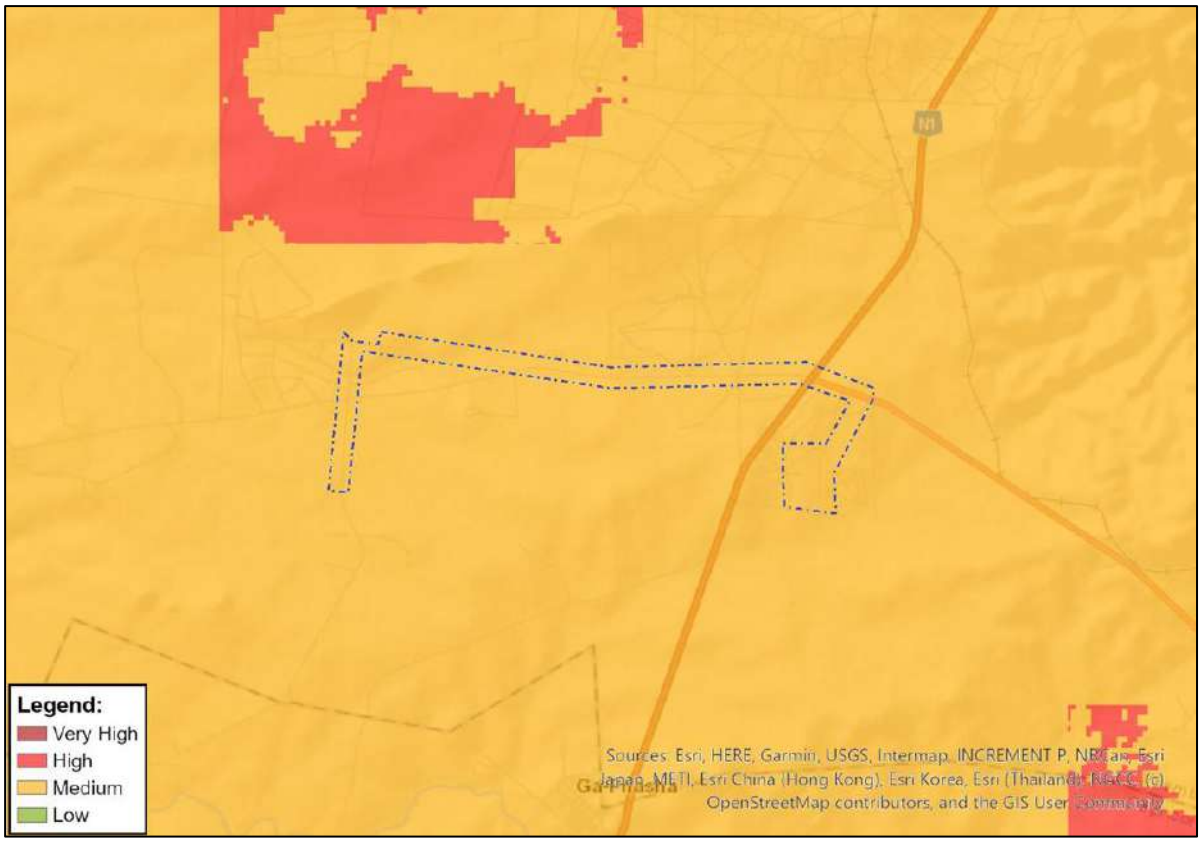


Figure 63: Image from Screening Tool identifying Animal Species theme sensitivity for the Grid Connection Alternative 2.

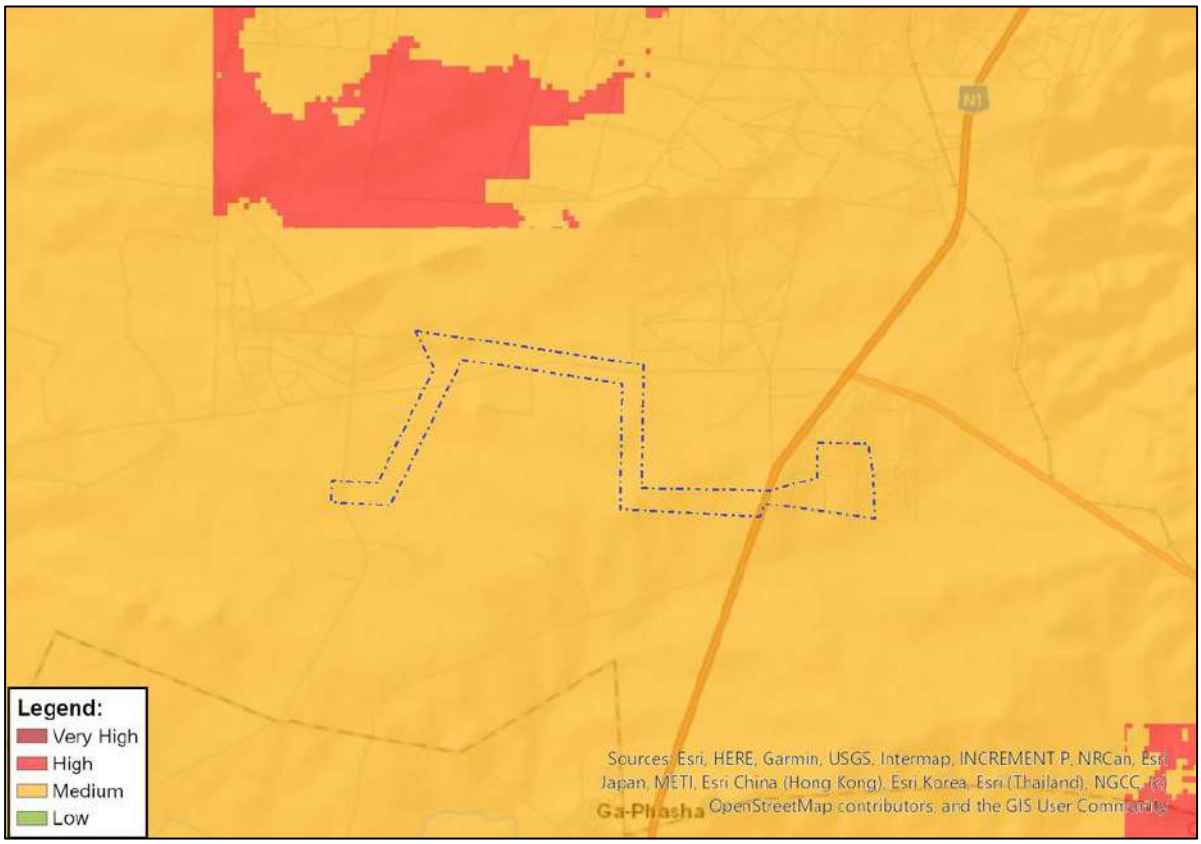


Figure 64: Image from Screening Tool identifying Animal Species theme sensitivity for the Grid Connection Alternative 3.

The High sensitivity in the screening tool was attributed to the possible presence of the following Species of Conservation Concern:

- Torgos tracheliotos
- Aquilla rapax
- Sensitive species 5
- Crocidura maquaessiensis
- Thoracitus viridicrus

The avifaunal specialist refuted the High sensitivity allocated to the site and delineated sensitivities based on the habitat types present. The sensitivities verified by the Avifaunal specialist for each habitat type are depicted in the table below.

Table 26: Animal Species Theme Sensitivities as verified by the Avifaunal specialist.

Screening Tool Theme	Screening Tool	Habitat	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Animal Theme	High	Bushveld	Medium	Disputed – Habitat shows some negative impacts, but still provide suitable habitat for SCC.
		Secondary Bushveld	Low	Disputed – Habitat has been severely altered, but still has the potential to support SCC.
		Ridge Bushveld	High	Validated – Habitat is generally intact, and high likelihood of SCC.
		Transformed	Very Low	Disputed – Habitat has been severely altered with limited potential to support SCC.
		Water Resources	Medium	Disputed – Habitat has limited potential to host SCC but provides important ecological function and has little resource resilience.

The Terrestrial Biodiversity specialist also refuted the High sensitivity for the animal species theme as per the screening tool and confirmed that the PV site and Grid Connection Alternatives to have a medium and very low sensitivity as per the image below:

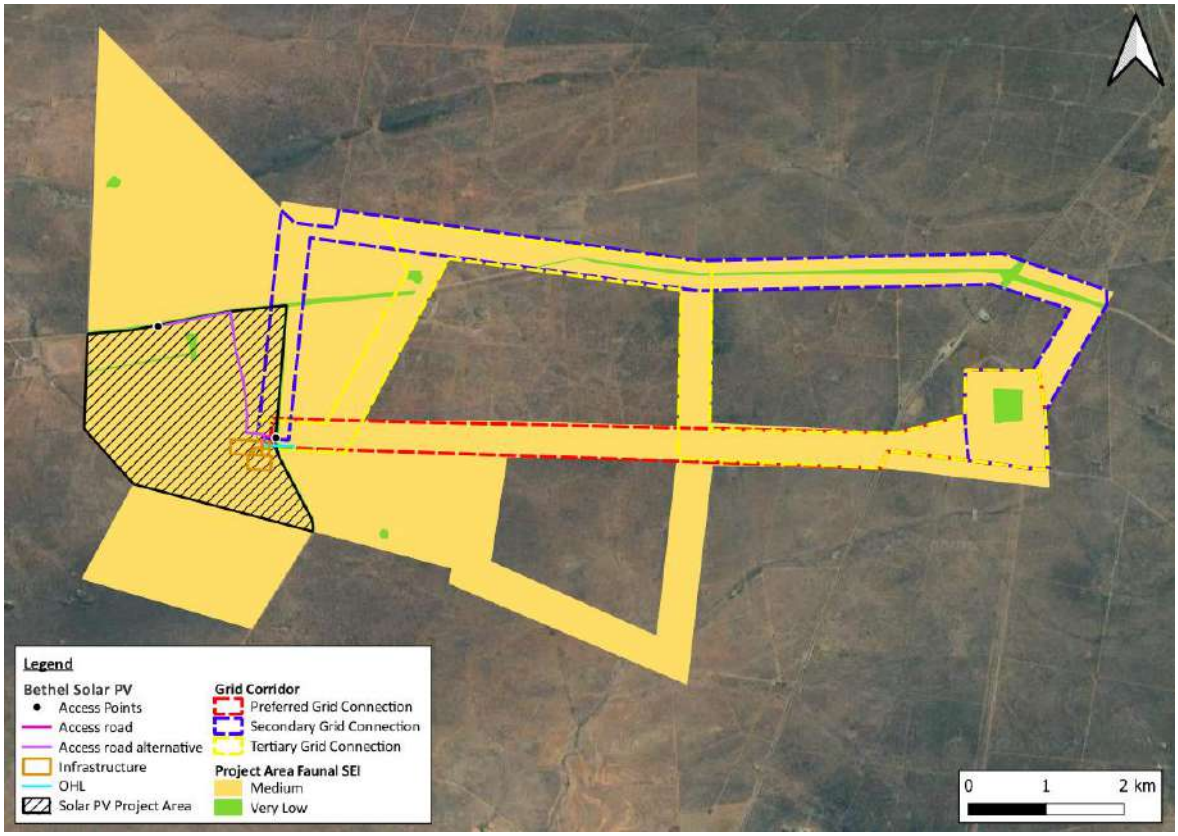


Figure 65: Verified Site Ecological Importance for the Animal Species theme (Biodiversity Africa, 2025).

5.11.2.3 Aquatic Biodiversity

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

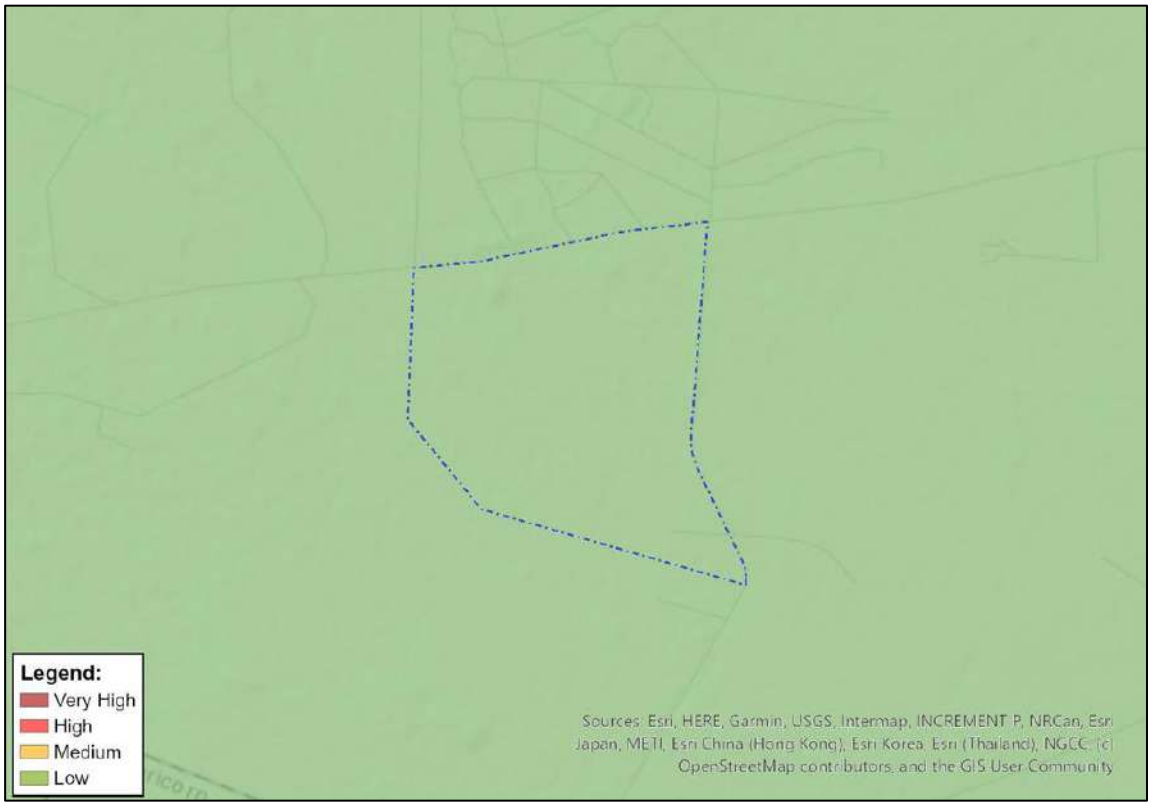


Figure 66: Image from Screening Tool identifying Aquatic Biodiversity theme sensitivity for the PV Site.

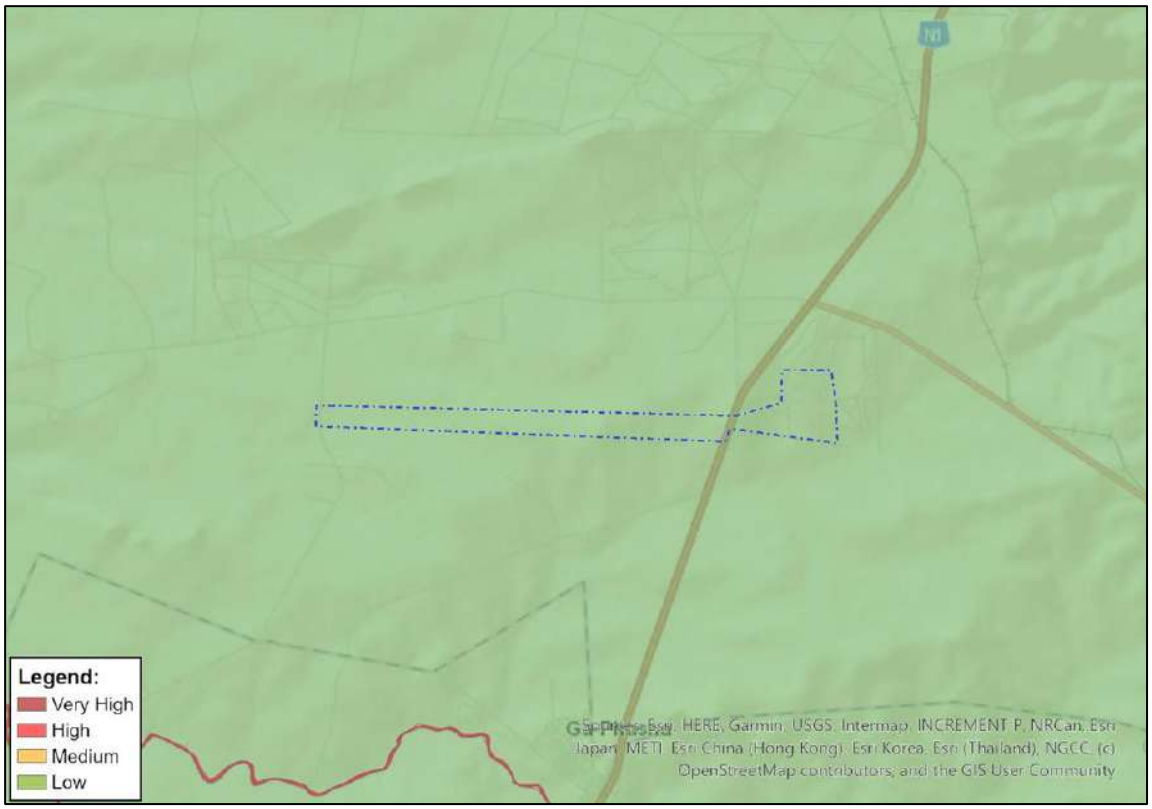


Figure 67: Image from Screening Tool identifying Aquatic Biodiversity theme sensitivity for Grid Connection Alternative 1.

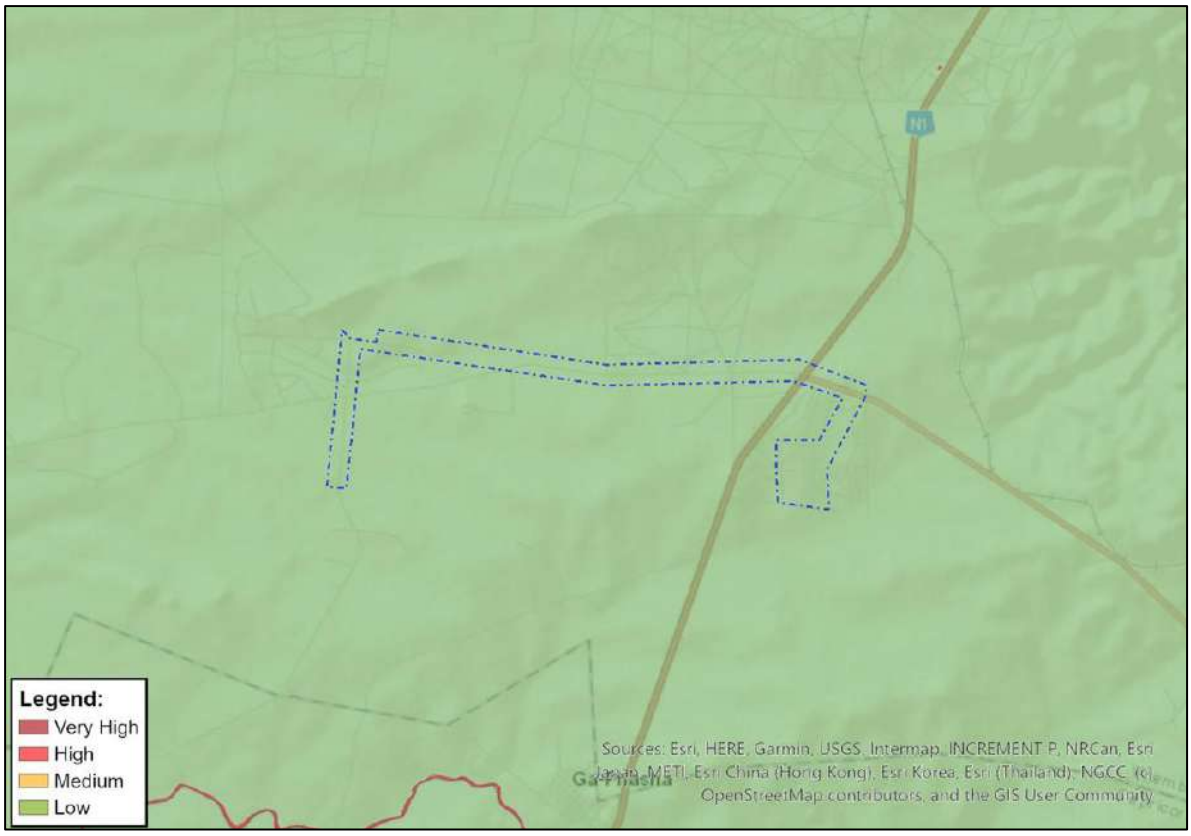


Figure 68: Image from Screening Tool identifying Aquatic Biodiversity theme sensitivity for Grid Connection Alternative 2.

Figure 69: Image from Screening Tool identifying Aquatic Biodiversity theme sensitivity for Grid Connection Alternative 3.

The Aquatic Biodiversity specialist has confirmed the Aquatic theme to be of Low and Medium sensitivity, but has refuted the presence of the wetland seep referred to in the Screening tool Report. It is the specialist's opinion that the NBA2018 seep wetland within the project site may be an error due to the irregular spatial delineation within the dataset.

5.11.2.4 Archaeology and Cultural Heritage

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

Figure 70: Image from Screening Tool identifying Archaeology and Cultural Heritage theme sensitivity for the PV Site.

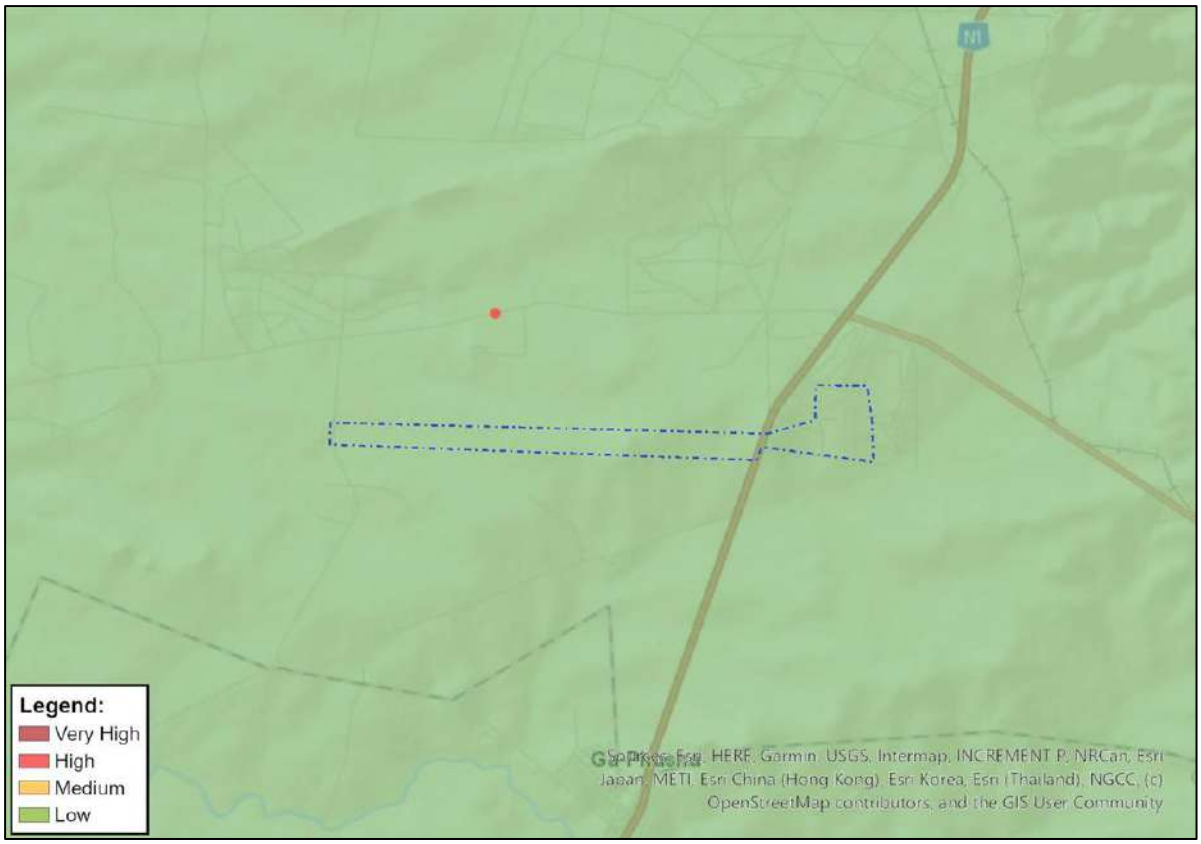


Figure 71: Image from Screening Tool identifying Archaeology and Cultural Heritage theme sensitivity for Grid Connection Alternative 1.

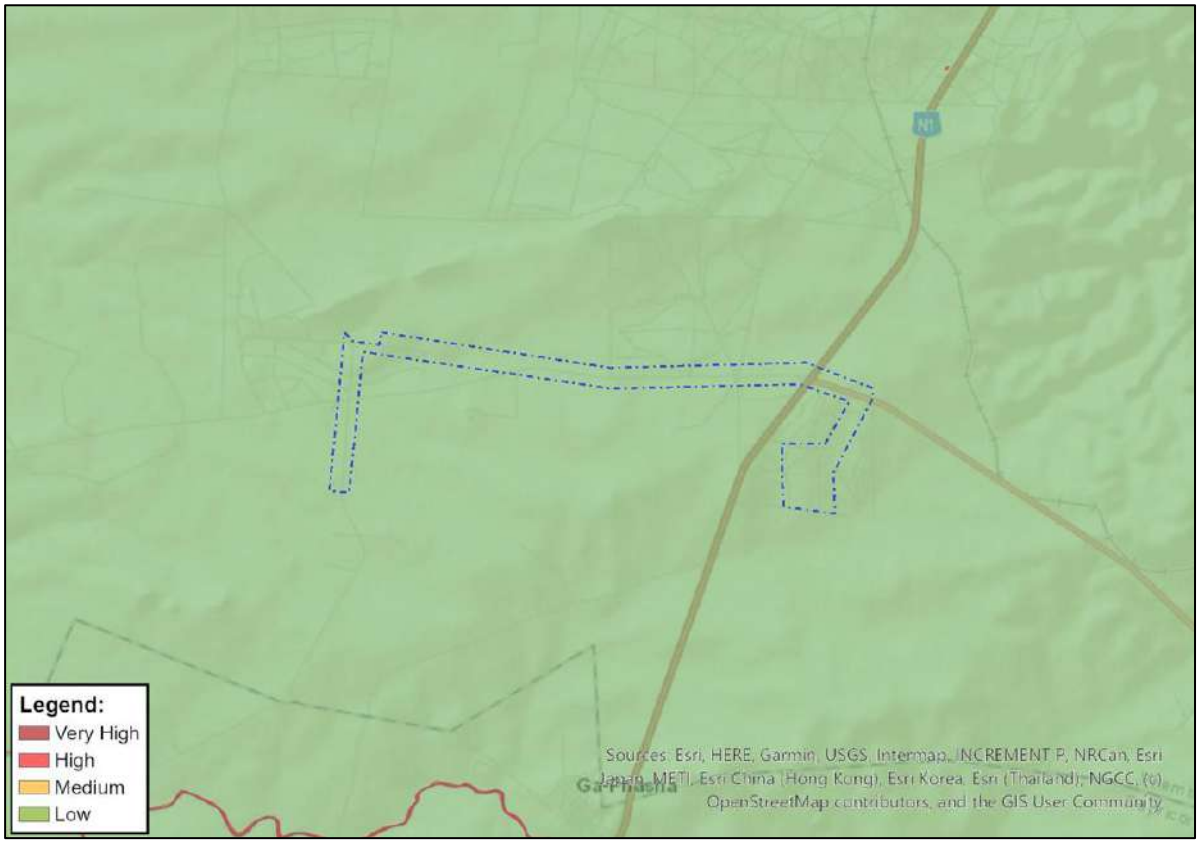


Figure 72: Image from Screening Tool identifying Archaeology and Cultural Heritage theme sensitivity for Grid Connection Alternative 2.

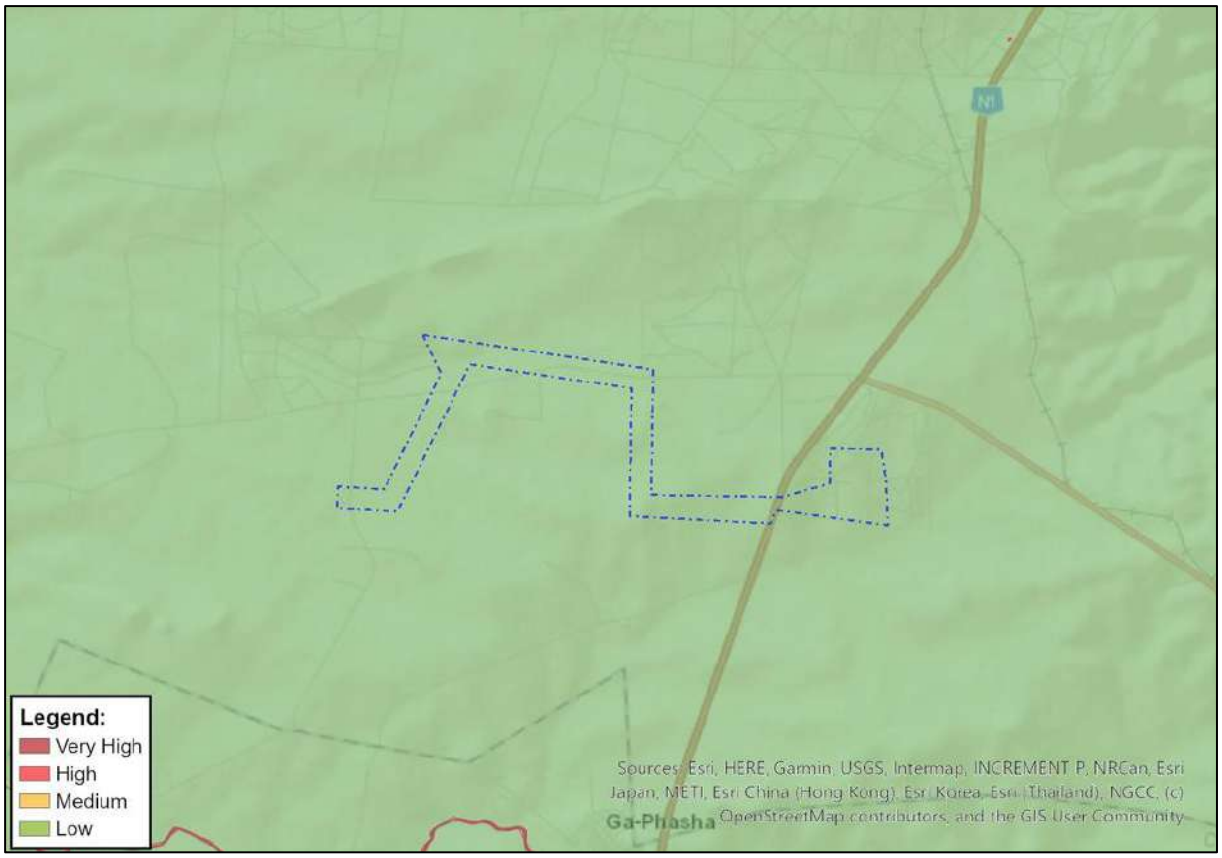


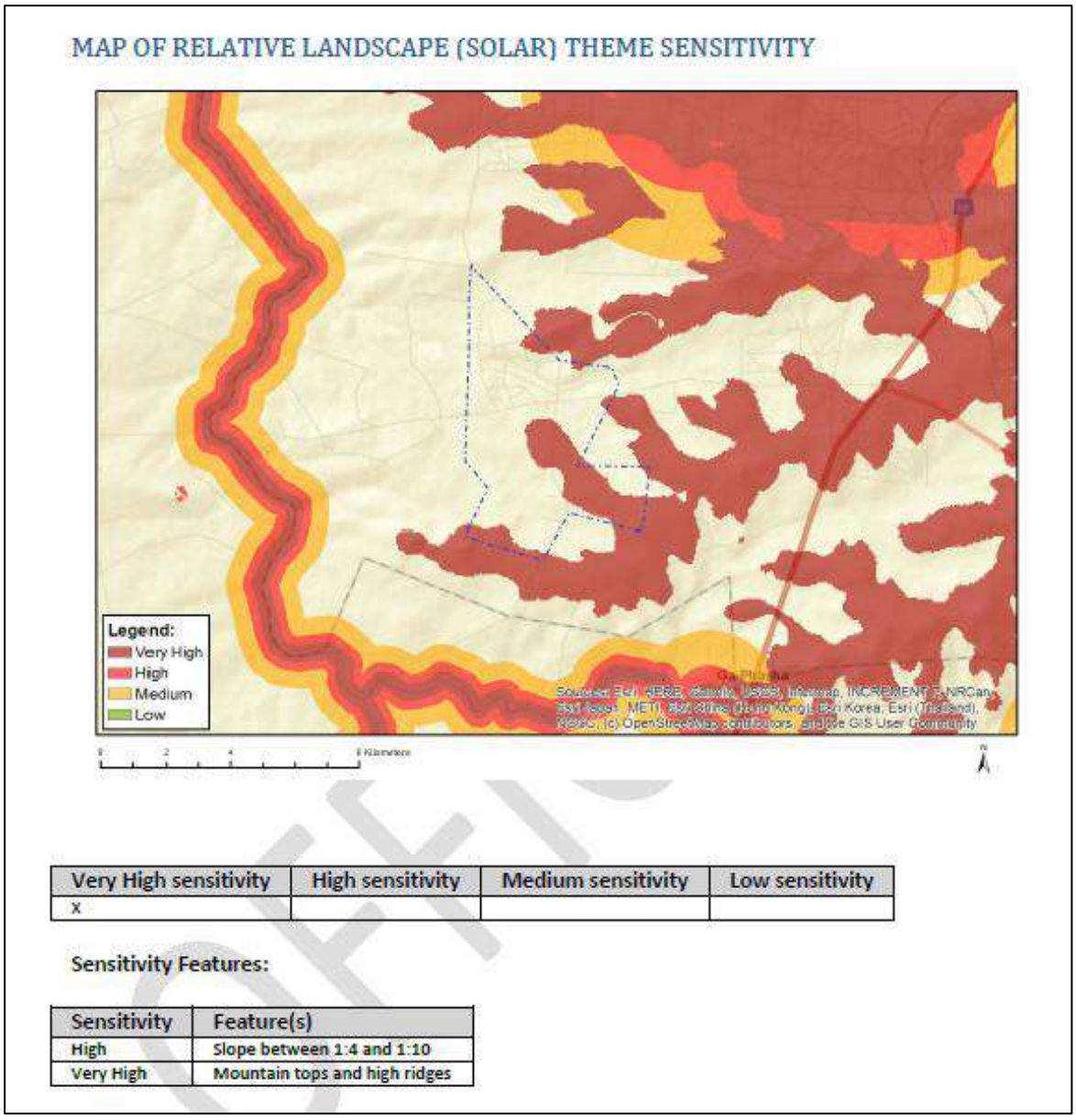
Figure 73: Image from Screening Tool identifying Archaeology and Cultural Heritage theme sensitivity for Grid Connection Alternative 3.

The Heritage Specialist (Annexure E4) has confirmed the low sensitivity identified in the screening tool.

5.11.2.5 Visual and Landscape

The Screening Tool reports for the PV and Grid Connection Alternative do not flag the Visual and Landscape Theme as one of the themes requiring consideration. If one however generates a screening tool for the total area of all PV facilities in the cluster, along with all three grid connections, then the screening tool does flag the visual and landscape theme. Notwithstanding, a Visual Specialist has been appointed to provide input into this environmental process.

The Screening Tool identifies the Visual and landscape sensitivity theme as “Very High”, in parts, but with the some of the study area consisting of medium sensitivity areas. The very high sensitivity is related to mountain tops and high ridges.



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Slope between 1:4 and 1:10
Very High	Mountain tops and high ridges

Figure 74: Image from Screening Tool identifying Visual and Landscape theme sensitivity for the Total area affected by the PV Cluster.

The visual specialist (appendix E6) confirmed the high sensitivity in the Screening Tool for the steep slopes and mountain tops. These areas will be avoided by the proposed development footprint.

Table 27: Verified Visual sensitivities.

DFFE Feature	DFFE Sensitivity	Risk Verification	Motivation
Slope between 1:4 and 1: 10	High	High	There are limited steep slope areas that are associated with a prominent ridgeline. These areas should be excluded from the development footprint. The rating would be Low with mitigation.
Mountain tops and high ridges	Very high	High	There are a few moderately sized landforms that reflect rocky outcrops/ prominent ridgelines. These areas should be excluded from the development footprint. The rating would be Low with mitigation.

5.11.2.6 Palaeontology

The Screening Tool identifies the Palaeontology sensitivity theme as “Medium” due to features with a Medium-Low Palaeontology sensitivity.

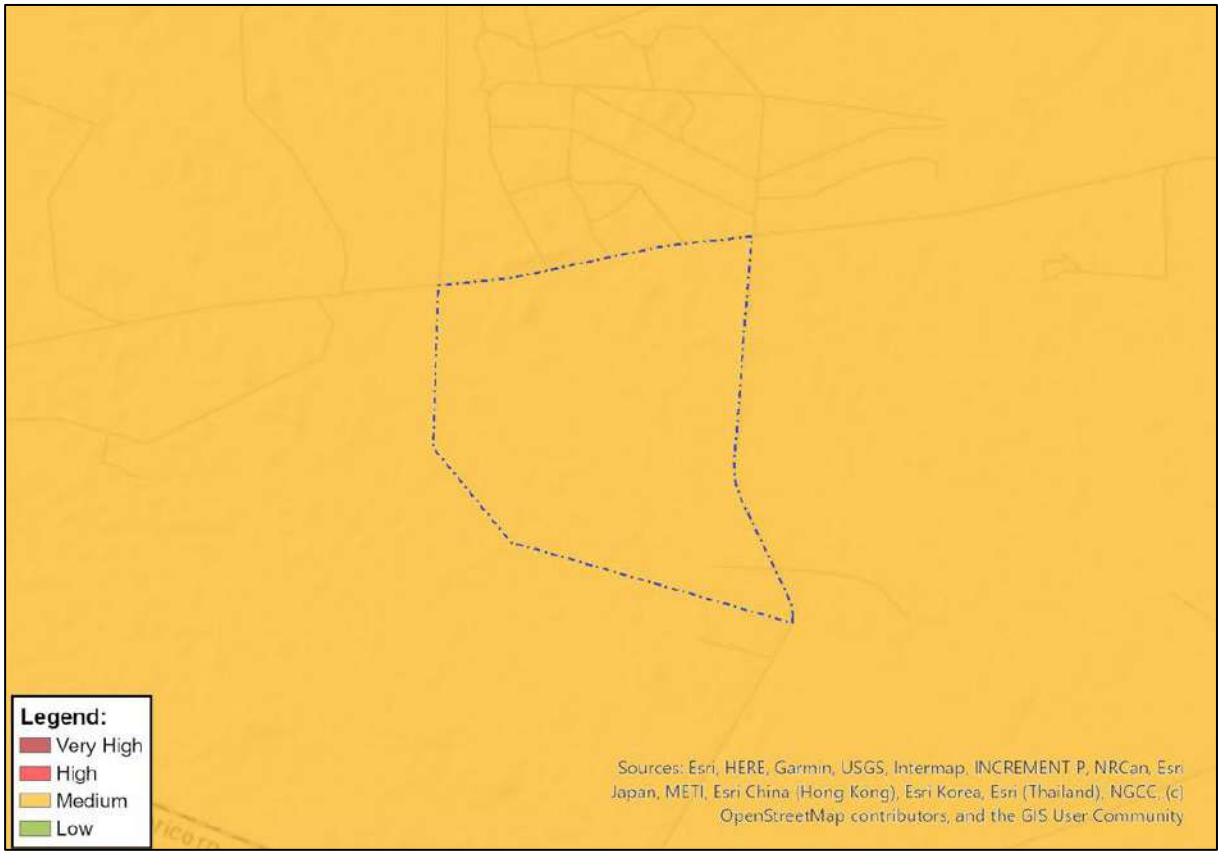


Figure 75: Image from Screening Tool identifying Palaeontology theme sensitivity for the PV Site.

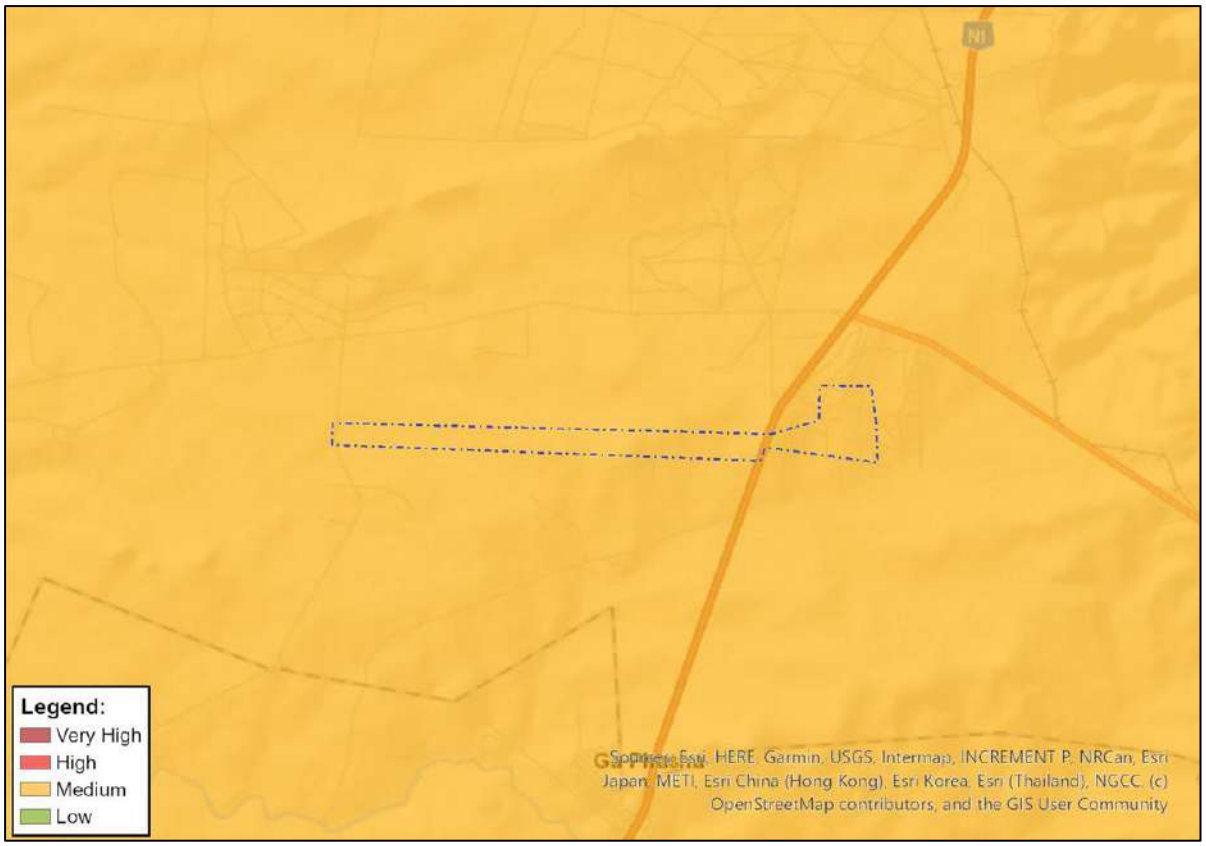


Figure 76: Image from Screening Tool identifying Palaeontology theme sensitivity for Grid Connection Alternative 1.

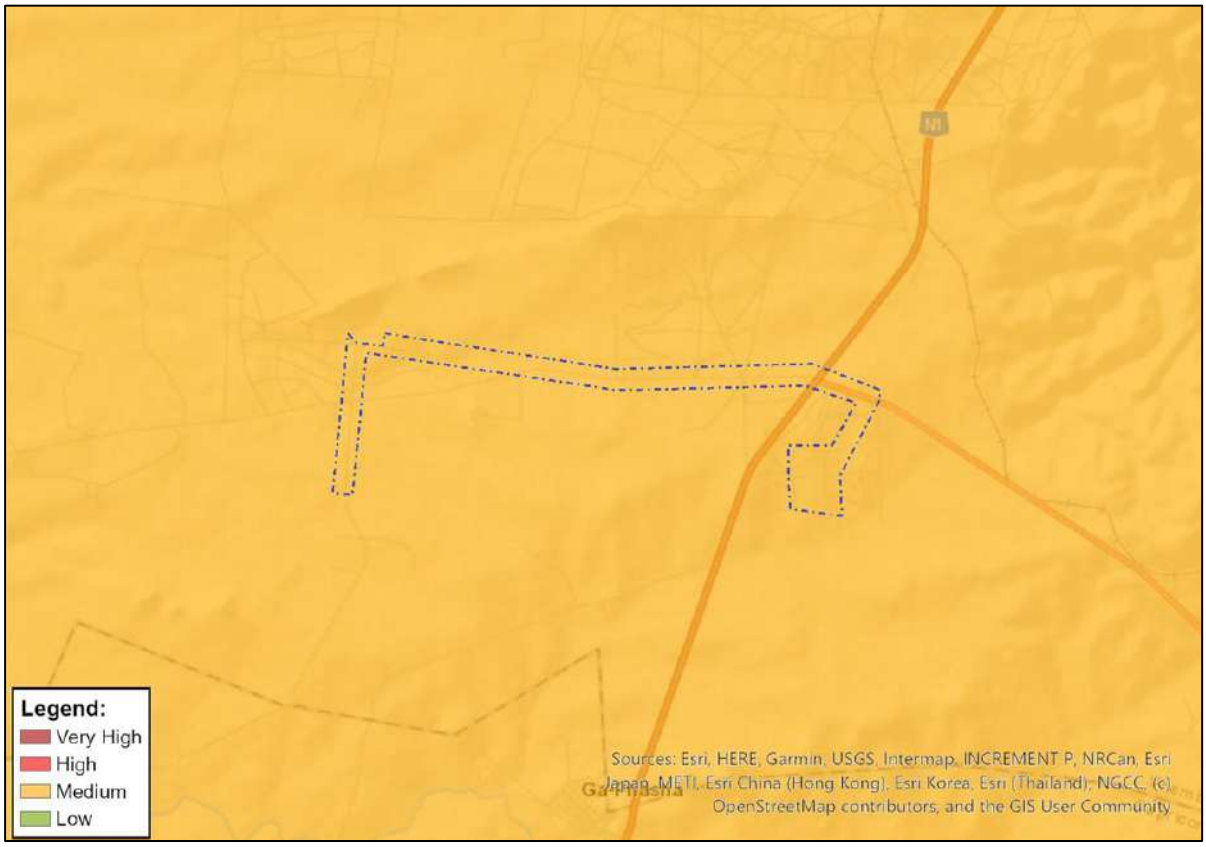


Figure 77: Image from Screening Tool identifying Palaeontology theme sensitivity for Grid Connection Alternative 2.

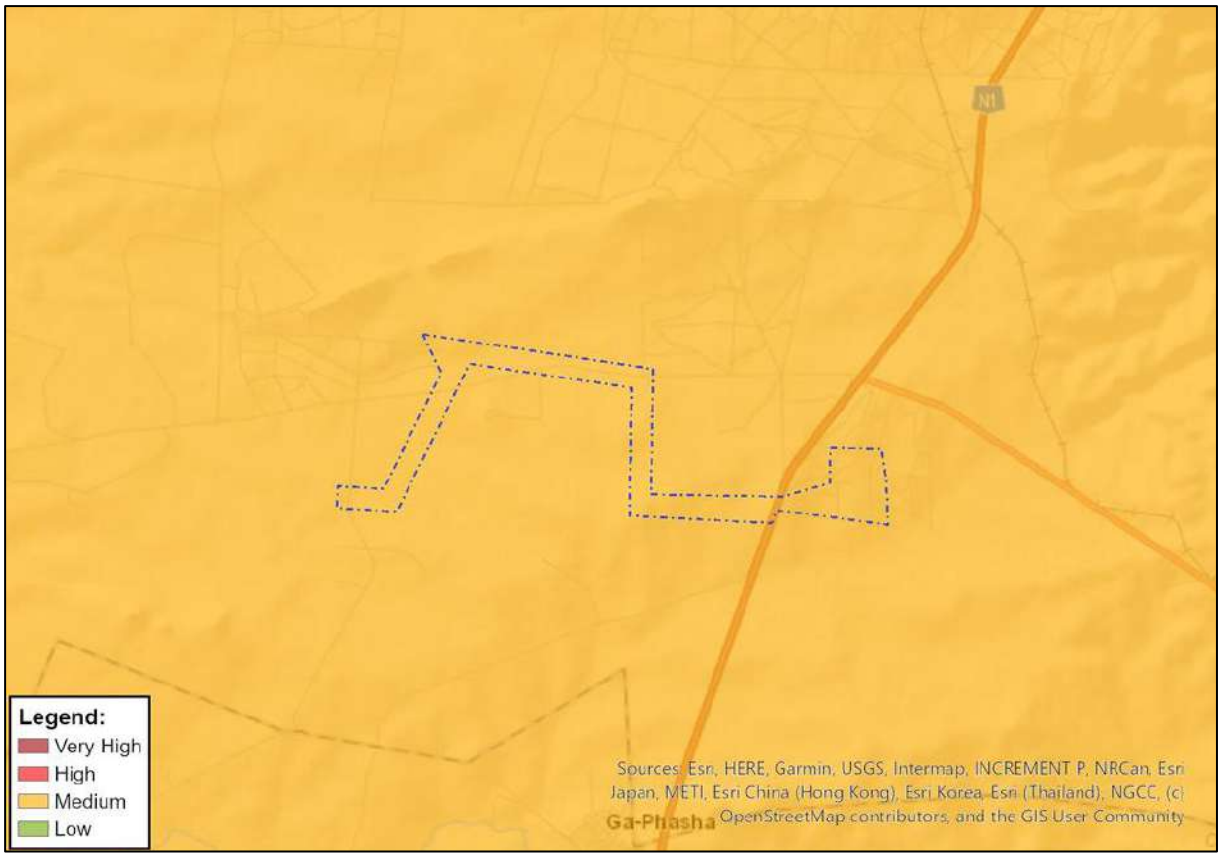


Figure 78: Image from Screening Tool identifying Palaeontology theme sensitivity for Grid Connection Alternative 3.

The Heritage Specialist (Appendix E4) confirmed that the study area ranges from low to moderate paleontological sensitivity based on the SAHRA paleontological sensitivity map.

5.11.2.7 Plant Species

The Screening Tool identifies the Plant Species sensitivity theme as “low” for the entire study area.

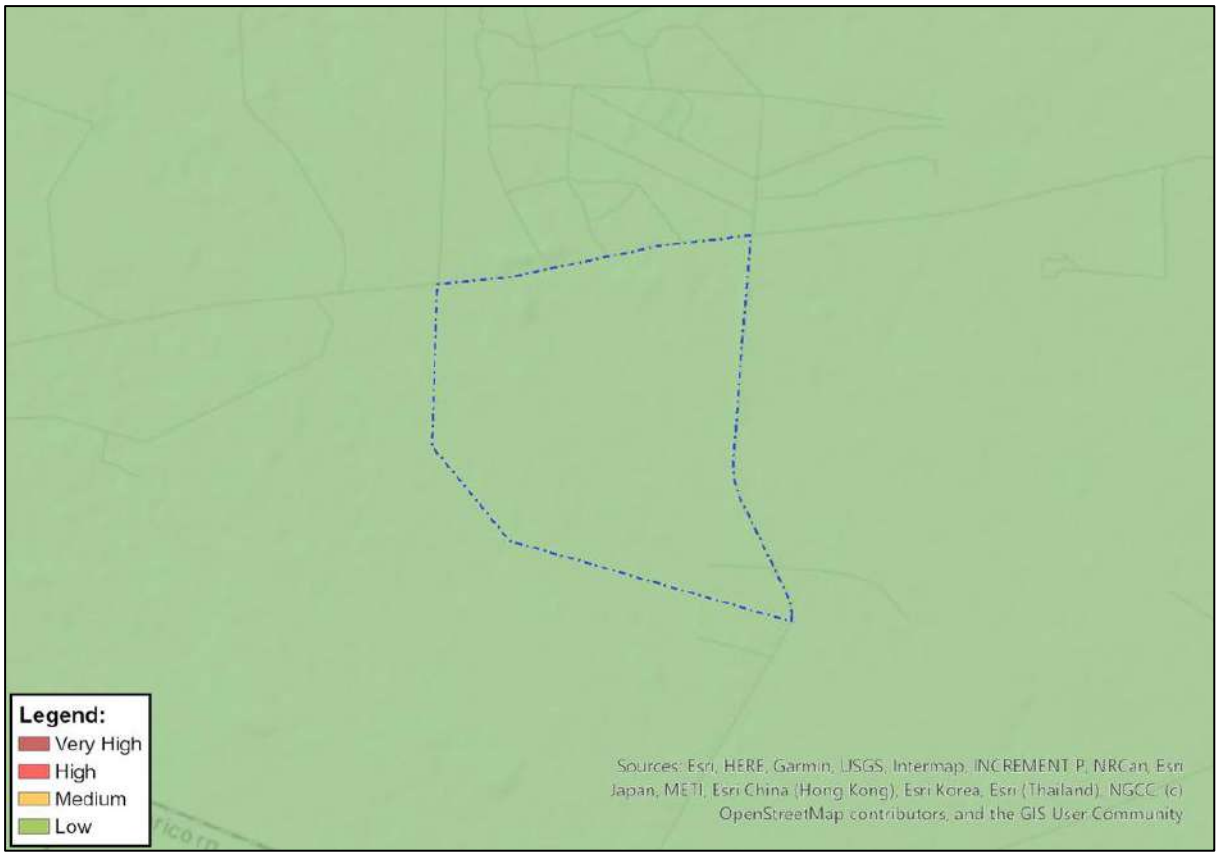


Figure 79: Image from Screening Tool identifying Plant Species theme sensitivity for the PV Site

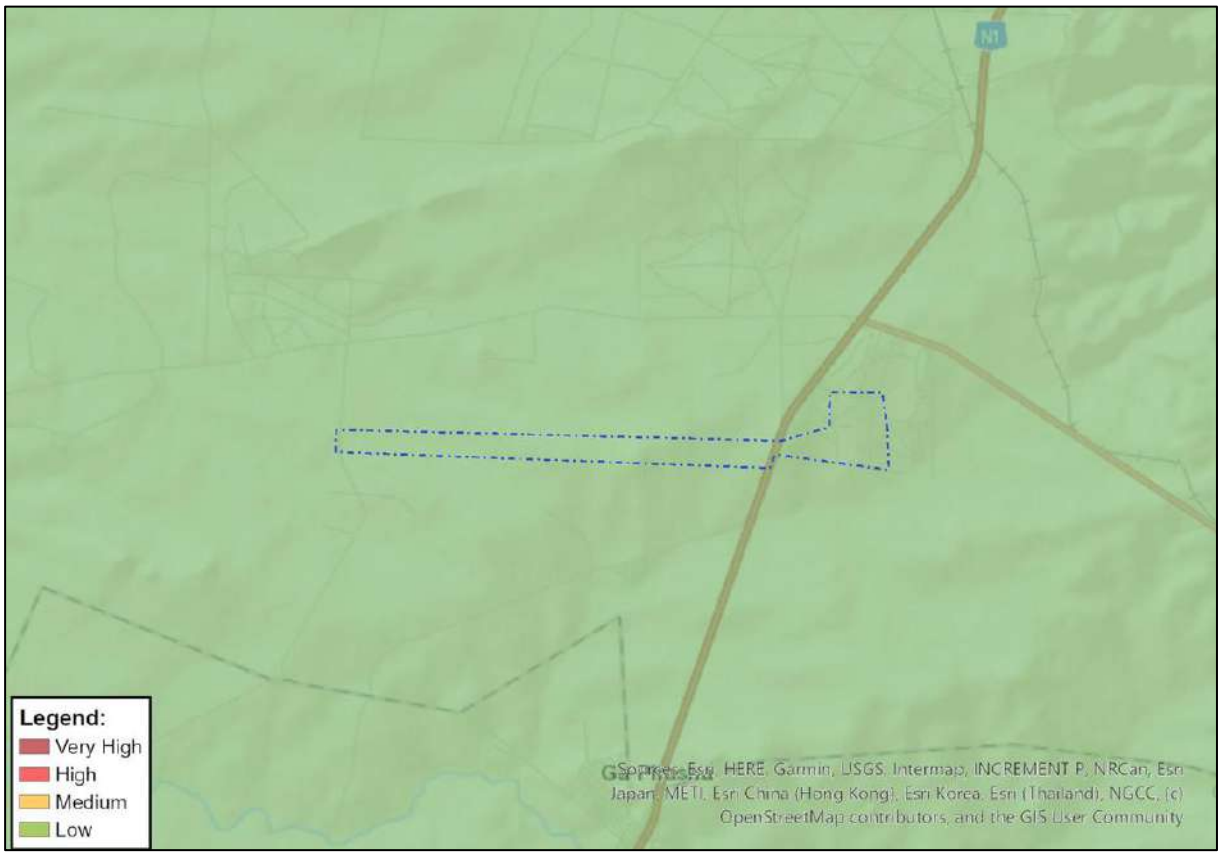


Figure 80: Image from Screening Tool identifying Plant Species theme sensitivity for Grid Connection Alternative 1.

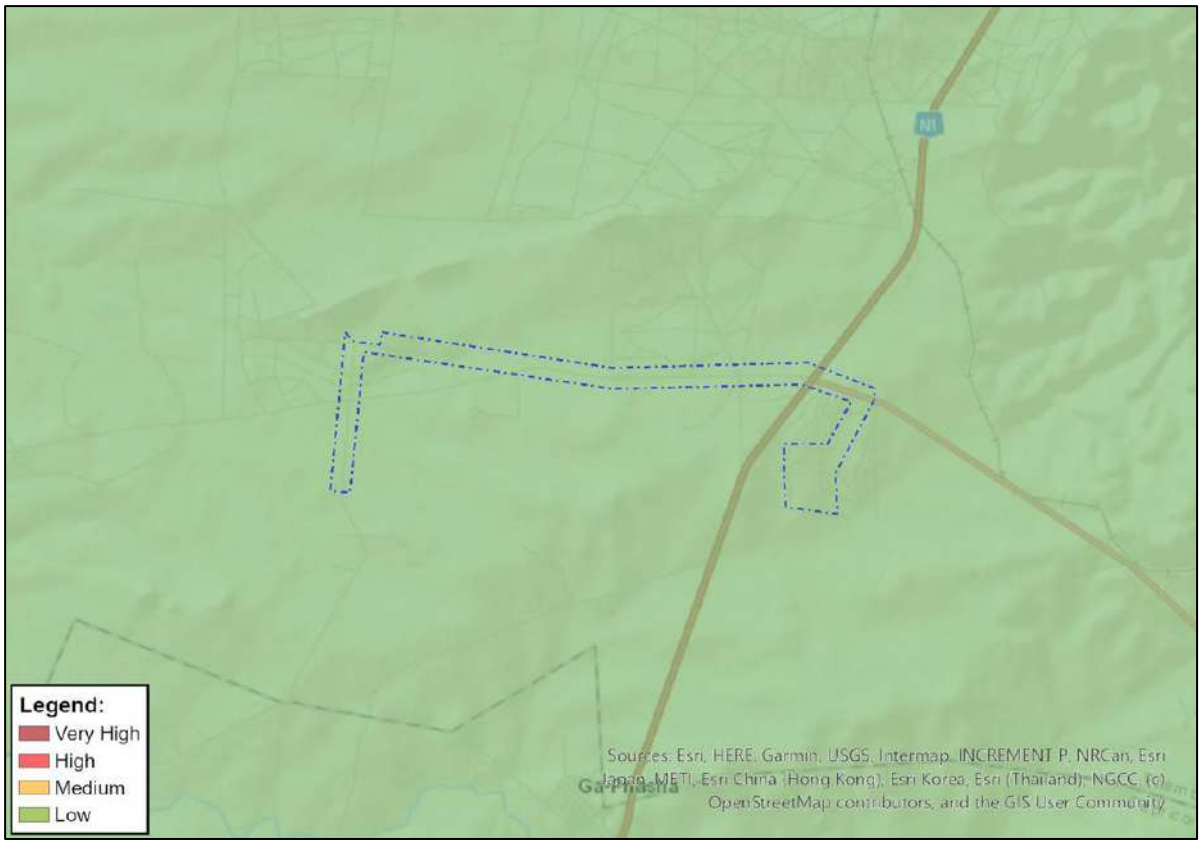


Figure 81: Image from Screening Tool identifying Plant Species theme sensitivity for Grid Connection Alternative 2.

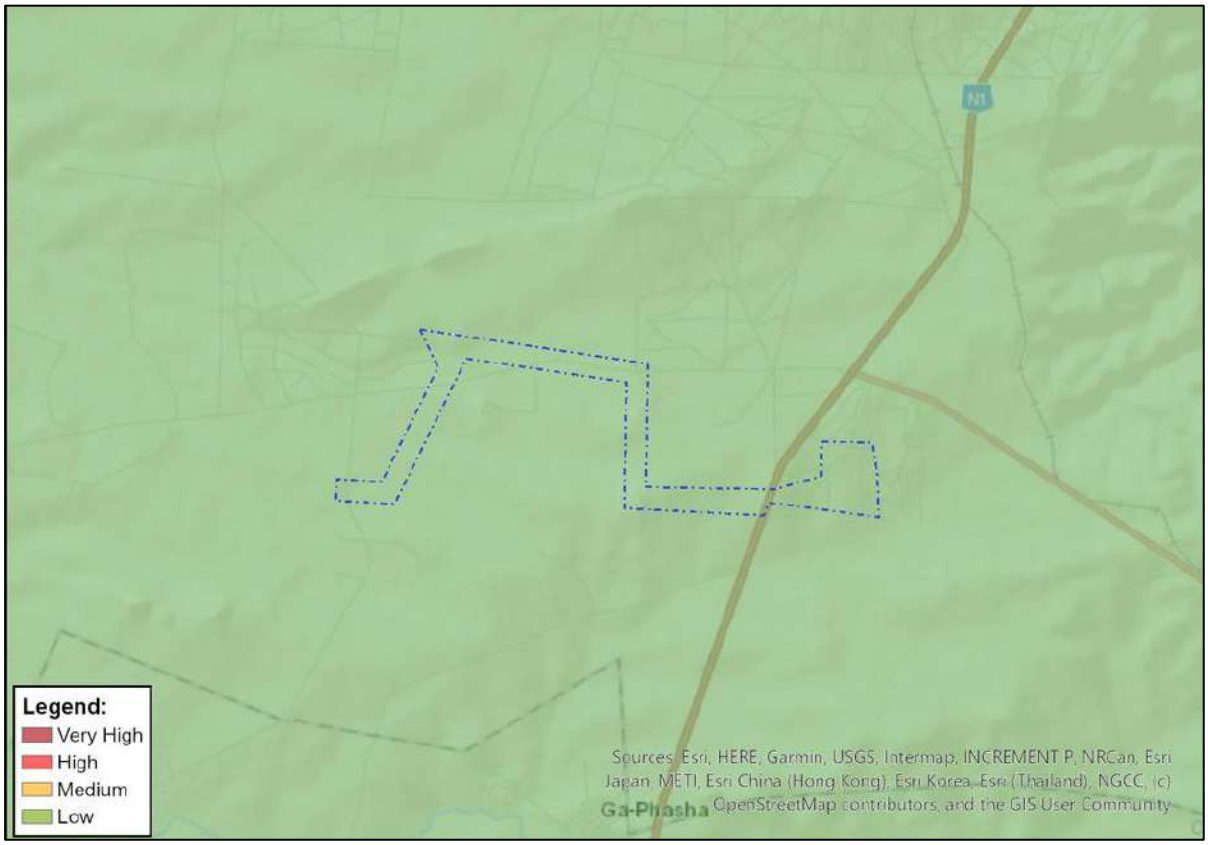


Figure 82: Image from Screening Tool identifying Plant Species theme sensitivity for Grid Connection Alternative 3.

The Terrestrial Biodiversity Specialist (Appendix E1) has confirmed the sensitivity to be Medium and Low as per the image below.

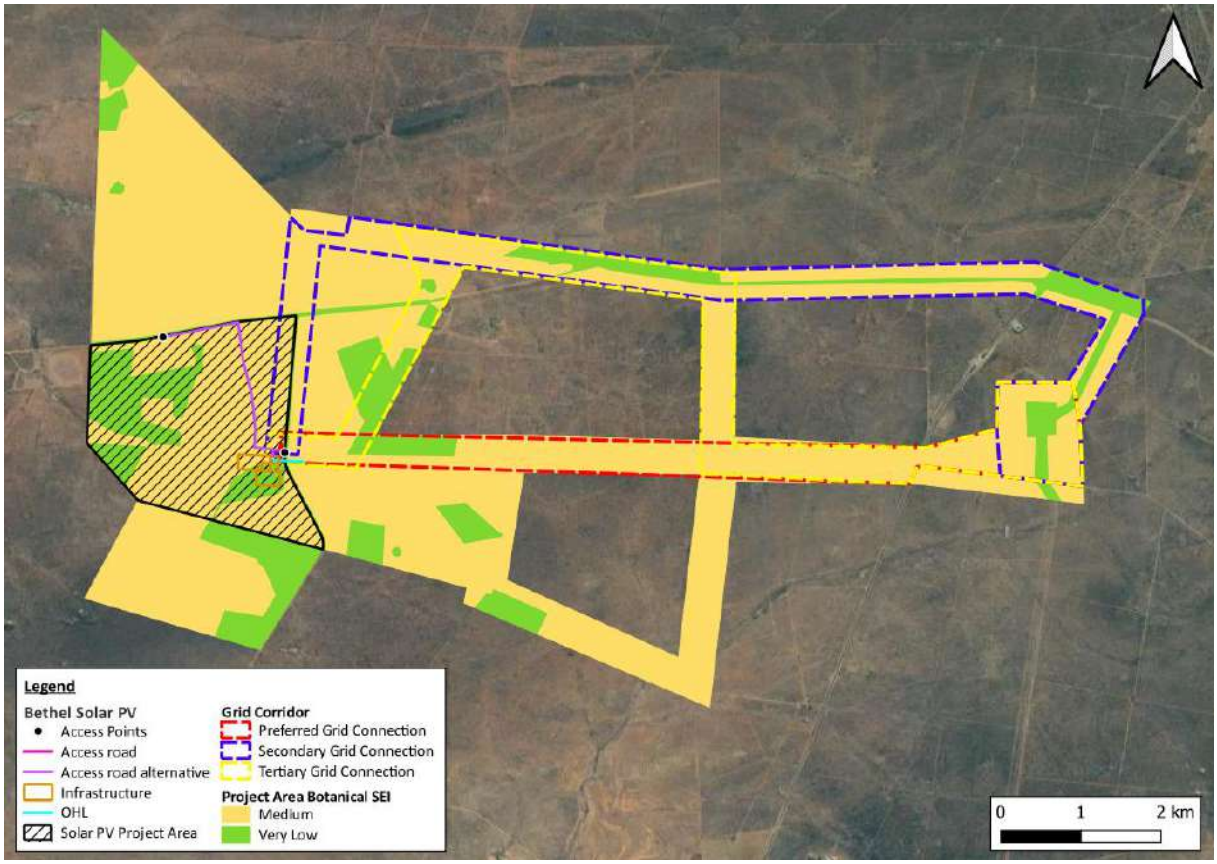


Figure 83: Plant Species Theme Sensitivity as verified by the Terrestrial Biodiversity Specialist.

5.11.2.8 Terrestrial Biodiversity

The Screening Tool identifies the Terrestrial Biodiversity sensitivity theme for the PV Site as “Low”.

Figure 84: Image from Screening Tool identifying Terrestrial Biodiversity theme sensitivity for the PV Site.

Figure 85: Image from Screening Tool identifying Terrestrial Biodiversity theme sensitivity for Grid Connection Alternative 1.

Figure 86: Image from Screening Tool identifying Terrestrial Biodiversity theme sensitivity for Grid Connection Alternative 2.

Figure 87: Image from Screening Tool identifying Terrestrial Biodiversity theme sensitivity for Grid Connection Alternative 3.

The specialist disputed the Low sensitivity and verified the sensitivity to range between Medium and Very Low for the different habitat types identified in the table below.

Table 28: Verified Terrestrial Biodiversity Sensitivities per habitat type.

Habitat	BOTANICAL SEI	FAUNAL SEI	OVERALL COMBINED SEI
Makhado Sweet Bushveld: Euphorbia ingens community & Makhado Sweet Bushveld: Vachellia-Senegalia community	Medium	Medium	Medium
Makhado Sweet Bushveld: Riparian	Medium	Medium	Medium
Rocky Outcrop	Medium	Medium	Medium
Secondary Vegetation	Medium	Very Low	Medium
Transformed	Very Low	Very Low	Very Low

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 SSVr above read in conjunction with the Specialist SSVr's presented in the Scoping Phase of this Environmental Process, the following specialist assessments have been undertaken as part of the Impact Phase of the environmental process:

1. Aquatic Biodiversity Impact Assessment.
2. Terrestrial Biodiversity Impact Assessment.
3. Plant Species Impact Assessment.
4. Animal Species Impact Assessment.
5. Avifaunal Impact Assessment
6. Heritage Impact Assessment (including Cultural Heritage, Archaeology and Palaeontology)
7. Landscape and Visual Impact Assessment
8. Agricultural Compliance Statement.
9. Socio-Economic Impact Assessment.
10. Geotechnical Assessment (to be completed once the final equipment suppliers are selected).

In addition to these, it is important to note that the following additional studies (not identified in the screening tool) have been undertaken by relevant specialists.

11. BESS Risk Assessment.

6. ASSESSMENT OF IMPACTS

The Plan of Study for the environmental Impact Assessment (PosEIA) was approved by the DFFE on 23 July 2025. In compliance with the approved PosEIA, the following aspects have been assessed in this EIR.

Table 29: Impacts Assessed in the Environmental Impact Report.

Specialist Discipline	Nature of impact to be assessed.	Project phase	Specialist appointed.	Protocols / Appendix 6
Terrestrial Biodiversity	Habitat loss due to placement of infrastructure, habitat fragmentation & reduced connectivity within the landscape	Construction, Operation and Decommissioning	Biodiversity Africa .	Protocols
	Increased presence of alien invasive plant species due to soil disturbance and movement during the construction phase;			
	Soil erosion and compaction			
	Pollution			
Aquatic Biodiversity	Direct impacts attributed to linear road infrastructure which may require the implementation of culverts and drifts	All Phases	The Biodiversity Company	Protocols
	Indirect hydrological process impacts stemming from watershed roughness change.			
Avifauna	The removal or alteration of large expanses of habitat specifically utilised by avifauna species of conservation concern;	Construction, Operation and Decommissioning	The Biodiversity Company	Protocols
	Collisions with solar panels from the effects of polarized light and/or the "lake effect";			
	Collisions/electrocutions with auxiliary infrastructure, specifically electrical transmission lines and security fences (vehicle induced flushing);			
	Disturbance due to noise such as, machinery movements and maintenance operations during the construction and operational phase of the proposed PV Facility;			
	Attraction of certain bird species due to the development of facility and infrastructure associated infrastructure such as perches, nest and shade opportunities; and			
	Chemicals used to keep the PV panels clean from dust (suppressants) may cause poisoning and or exacerbate habitat loss.			
Agriculture	Loss of areas of grazing areas where livestock can be produced	Construction and Operation.	Terra Africa	Protocols
	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	CTS Heritage	Appendix 6
Visual	Loss of site landscape character from the removal of vegetation and the	Construction		Appendix 6

Specialist Discipline	Nature of impact to be assessed.	Project phase	Specialist appointed.	Protocols / Appendix 6
	construction of the PV structures and associated infrastructure;		Visual Resource Management Africa	
	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.	Appendix 6
	Impacts associated with the presence of construction workers on local communities.	Construction		
	Impacts related to the potential influx of jobseekers	Construction, Operation and Decommissioning		
	Increased risks to livestock and farming infrastructure associated with the construction related activities and presence of construction workers on the site.	Construction and Decommissioning		
	Increased risk of grass fires associated with construction related activities	Construction		
	Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles.			
	Impact on productive farmland	Operation		
Battery Energy Storage System Risk	The following potential risks of Lithium-ion or sodium ion batteries will be assessed: 1. the proximity to occupied residences; 2. the layout to prevent domino effects of fires/explosions between facilities; 3. suitable emergency response during all phases of the project; and 4. suitable end of life plan to be in place.	Construction, Operation and Decommissioning.	ISHEcon Ms Debbie Mitchell.	Appendix 6

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

- Terrestrial Biodiversity (Biodiversity Africa, 2025)
- Avifauna (The Biodiversity Company, 2025)

- Plant Species (Biodiversity Africa, 2025)
- Animal Species (Biodiversity Africa, 2025)
- Aquatic Biodiversity (The Biodiversity Africa, 2025)
- Agricultural (Terra Africa, 2025)
- Archaeology and Heritage (CTS Heritage, 2025)
- Visual (VRMA, 2025)
- Socio Economic (Tony Barbour, 2025)

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 mitigated preferred layout(Layout Alternative 3) and the No-Go Alternative using the abovementioned general methodology as a basis. Please note that each specialist utilises rating and weighting 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[27].

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	

6.2 TERRESTRIAL BIODIVERSITY IMPACTS

A Terrestrial Biodiversity Impact Assessment (covering Animal Species (excluding Avifauna, Plant Species and Terrestrial Biodiversity) was undertaken by Biodiversity Africa and is attached in Annexure E1.

The specialist identified ten terrestrial biodiversity impacts for the construction phase, two impacts for the operational phase, and three impacts for the decommissioning phase. The identified Terrestrial Biodiversity Impacts are as follows:

Construction Phase Impacts

- Loss of Makhado Sweet Bushveld and associated plant species
- Loss of Secondary Vegetation and associated plant species
- Loss of individuals of protected plant species
- Fragmentation of Vegetation and Disruption of Ecosystem Processes
- Introduction and Spread of Weeds and Alien Plant Species
- Loss and transformation of natural habitat within the Vhembe Biosphere Reserve
- Loss of Faunal Habitat
- Loss of Faunal SCC
- Disturbance to Faunal Species and their Livelihood due to Project Related Activities
- Mortality of Faunal Species due to Earthworks, Roadkill and Persecution

Operational Phase Impacts

- Spread of Weeds and Alien Plant Species.

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

- Disturbance and Mortality of Faunal Species During Operation.

Decommissioning Phase

- Loss of indigenous vegetation
- Infestation of Alien Plant Species
- Disturbance and Mortality of Faunal Species During Decommissioning

These impacts as assessed by the specialist for each phase of the development are assessed in the sections below[28].

6.2.1 Construction Phase Terrestrial Biodiversity Impacts

During the construction phase, the Key Terrestrial Biodiversity impact will be the Loss of Makhado Sweet Bushveld, loss of Secondary Vegetation, loss of individuals of protected plant species, fragmentation of vegetation, introduction and spread of alien plant species, loss and transformation of natural habitat within the Vhembe Biosphere Reserve, loss of faunal habitat, loss of faunal SCC's, disturbance to faunal species and mortality of faunal species. These impacts are assessed in the tables below.

Table 30: Assessment of Construction Phase Terrestrial Biodiversity Impacts.

Nature: Loss of Makhado Sweet Bushveld and associated plant species.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Permanent	Permanent
Magnitude / Severity	Moderate	Moderate.
Probability	Definite	Definite
Significance	**Moderate**	**Moderate**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment.	Limited	Limited
Can impact be mitigated?	Moderate	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Loss of Secondary Vegetation and associated plant species		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Permanent	Permanent
Magnitude / Severity	Slight	Slight
Probability	Definite	Definite
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate

[28] The impact tables in this section reflect those of the preferred alternative (Layout Alternative 3 and Grid Connection Alternative 1). Cumulative and no-go impacts are assessed in following separate sections

Irreplaceable loss of resources / Sensitivity of receiving environment.	Limited	Limited
Can impact be mitigated?	Moderate	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Loss of individuals of protected plant species		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Permanent	Permanent
Magnitude / Severity	Moderate	Moderate
Probability	Definite	Definite
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment.	Limited	Limited
Can impact be mitigated?	Moderate	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Fragmentation of Vegetation and Disruption of Ecosystem Processes		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Permanent	Long Term
Magnitude / Severity	Slight	Slight
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment.	Limited	Limited
Can impact be mitigated?	Moderate	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Introduction and Spread of Weeds and Alien Plant Species		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Long Term	Long Term
Magnitude / Severity	Moderate	Moderate
Probability	Probable	Probable

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

Nature: Loss and transformation of natural habitat within the Vhembe Biosphere Reserve		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Permanent	Permanent
Magnitude / Severity	Moderate	Moderate
Probability	Definite	Definite
Significance	**Moderate**	**Moderate**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment.	Limited	Limited
Can impact be mitigated?	Moderate	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Loss of Faunal Habitat		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Permanent	Permanent
Magnitude / Severity	Slight	Slight
Probability	Definite	Definite
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment.	Moderate	Moderate
Can impact be mitigated?	Moderate	
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	Regional	Regional

Duration	Medium Term	Medium Term
Magnitude / Severity	Moderate	Moderate
Probability	Likely	Likely
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment.	Moderate	Moderate
Can impact be mitigated?	Moderate	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Disturbance to Faunal Species and their Livelihood due to Project Related Activities		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Regional	Regional
Duration	Medium Term	Medium Term
Magnitude / Severity	Slight	Slight
Probability	Likely	Likely
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment.	Moderate	Moderate
Can impact be mitigated?	Moderate	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Mortality of Faunal Species due to Earthworks, Roadkill and Persecution		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Regional	Regional
Duration	Permanent	Permanent
Magnitude / Severity	Moderate	Moderate
Probability	Probable	Probable
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources / Sensitivity of receiving environment.	Limited	Limited
Can impact be mitigated?	Moderate	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

6.2.2 Operational Phase Terrestrial Biodiversity impacts

During the Operational Phase the key Terrestrial Biodiversity impacts will be the spread of weeds and Alien Plant Species as well as the disturbance and mortality of faunal species. These impacts are assessed in the tables below.

Table 31: Assessment of Operational Phase Terrestrial Biodiversity Impacts.

Nature: Spread of Weeds and Alien Plant Species.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Long Term	Long Term
Magnitude / Severity	Moderate	Moderate
Probability	Probable	Probable
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment.	Moderate	Moderate
Can impact be mitigated?	Moderate	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Disturbance and Mortality of Faunal Species During Operation		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Regional	Regional
Duration	Medium Term	Medium Term
Magnitude / Severity	Limited	Limited
Probability	Definite	Highly probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources / Sensitivity of receiving environment.	Slight	Slight
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

Duding the closure and decommissioning phase of the project, the key terrestrial biodiversity impacts will be the loss of indigenous vegetation, infestation of alien plant species and the disturbance and mortality of faunal species. The assessment of these impacts are included in the tables below.

Table 32: Assessment of Decommissioning Phase Terrestrial Biodiversity Impacts.

Nature: Loss of indigenous vegetation		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area

Duration	Long Term	Long Term
Magnitude / Severity	Slight	Slight
Probability	Definite	Definite
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment.	Limited	Limited
Can impact be mitigated?	Moderate	
Mitigation:	Please refer to section 7 for summary of all mitigation measures.	

Nature: Disturbance and Mortality of Faunal Species During Decommissioning		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Short Term	Short Term
Magnitude / Severity	Slight	Slight
Probability	Probable	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment.	Limited	Limited
Can impact be mitigated?	Moderate	
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 proposed PV facility and associated Grid Connection Infrastructure is located within an area of generally medium to low ecological sensitivity. The vegetation type affected, Makhado Sweet Bushveld, is classified as Least Concern, and no Critical Biodiversity Areas, Ecological Support Areas, or other formally protected features occur within the project footprint.

Although several faunal Species of Conservation Concern may utilise the area, no highly sensitive ecological features was identified that would require major changes to the project layout.

The impact assessment concluded that, with the implementation of the recommended mitigation measures, most ecological impacts can be reduced to low significance. Residual moderate impacts remain due to the permanent loss of a portion of Makhado Sweet Bushveld and the cumulative habitat loss within the Vhembe Biosphere Reserve, although these impacts are considered limited in the context of the regional extent of these habitats.

The specialist concluded that the proposed development can proceed from an Terrestrial Biodiversity perspective, provided that all recommended mitigation and management measures are strictly implemented and monitored for the duration of the project lifecycle.

6.3 AQUATIC BIODIVERSITY IMPACTS

An Aquatic Impact Assessment for the proposed PV facility and associated infrastructure was undertaken by The Biodiversity Company. A separate Aquatic Impact Assessment for the Grid Connection Infrastructure alternatives was also undertaken by The Biodiversity Company. Both of these assessments are attached in Appendix E3.

The Aquatic specialist identified a number of impacts associated with all phases of the PV Development as follows:

Construction Phase

- Loss, disturbance and degradation of watercourse;
- Increased bare surfaces, flood peaks and potential erosion;
- Introduction and spread of alien and invasive vegetation;
- Decreased flow inputs to the watercourses;
- Increased sediment loads to downstream reaches.

Operational Phase

- Proliferation of alien and invasive species;
- Nutrient enrichment of watercourse;
- Introduction and spread of alien and invasive vegetation.

Decommissioning Phase

- Degradation of vegetation and proliferation of alien and invasive species;
- Increased bare surfaces, runoff and potential for erosion.

Further to the above, the avifaunal specialist also identified the following impacts associated with the Electrical Grid Infrastructure.

Construction Phase

- Loss, disturbance and degradation of riparian systems;
- Loss or degradation in ecosystem services;
- Altered hydrological regimes;
- Increase in erosion and sedimentation of receiving systems;
- Introduction and spread of alien and invasive vegetation;
- Impaired water quality.

Operational Phase

- Loss or degradation in ecosystem services;
- Altered hydrological regimes;
- Increase in erosion and sedimentation of receiving systems;
- Introduction and spread of alien and invasive vegetation.

Decommissioning Phase

- Degradation of vegetation and proliferation of alien and invasive species;
- Increased bare surfaces, runoff and potential for erosion.

The assessment of these impacts by the specialist are included in the Tables below.

An aquatic risk assessment was undertaken to address the minimum requirements of the Department of Water and Sanitation (DWS). The DWS risk assessment was conducted in accordance with the requirements of the DWS General Authorisation (GA) legislation in terms of Section 39 of the NWA for water uses as defined in Section 21(c) or Section 21(i) (GN 49833 of 2023).

Table 33: Summary of Aquatic Risk Assessment for the Construction, Operation and Decommissioning Phase of the Bethel Solar PV and BESS project.

Phase	Activity	Impact	Risk Ratings
CONSTRUCTION	Site clearing and preparation. Earthworks and Vehicle Movement. Road Construction. Civil Works. Transportation and Installation of towers. Wiring to Central Inverters. Storage and Use of Hazardous substances and Equipment.	Loss, disturbance and degradation of watercourse	Low
		Increased bare surfaces, flood peaks and potential erosion	Low
		Introduction and spread of alien and invasive vegetation	Low
	Excavation and installation of PV Infrastructure	Decreased flow inputs to the watercourses	Low
		Increased sediment loads to downstream reaches	Low
OPERATIONAL	Routine operation and maintenance of PV farm	Proliferation of alien and invasive species	Low
		Nutrient enrichment of watercourse	Low
		Introduction and spread of alien and invasive vegetation	Low
DECOMMISSIONING	Removal of infrastructure	Degradation of vegetation and proliferation of alien and invasive species	Low
		Increased bare surfaces, runoff and potential for erosion	Low

Table 34: Summary of Aquatic Risk Assessment for the Construction, Operation and Decommissioning Phase of the Bethel Solar PV Grid Connection Infrastructure.

Phase	Activity	Impact	Risk Ratings
CONSTRUCTION	Site clearing and preparation. Earthworks and Vehicle Movement. Route Construction. Civil Works. Transportation and installation of pylon towers. Construction of new OHLs. Wiring to Central Inverters. Storage and Use of Hazardous substances and Equipment.	Loss, disturbance and degradation of riparian systems	Low
		Loss or degradation in ecosystem services	Low
		Altered hydrological regimes	Low
		Increase in erosion and sedimentation of receiving systems	Low
		Introduction and spread of alien and invasive vegetation	Low
		Impaired water quality	Low
OPERATIONAL	Operation of the Grid Corridor. Established Grid Corridor Area.	Loss or degradation in ecosystem services	Low
		Altered hydrological regimes	Low

Phase	Activity	Impact	Risk Ratings
	Vehicle Traffic (Security Monitoring and Maintenance). Operation of on-site Stormwater Management.	Increase in erosion and sedimentation of receiving systems	**Low**
		Introduction and spread of alien and invasive vegetation	**Low**
DECOMMISSIONING	Removal of infrastructure	Degradation of vegetation and proliferation of alien and invasive species	**Low**
		Increased bare surfaces, runoff and potential for erosion	**Low**

The outcomes of the risk assessment undertaken by the aquatic specialist indicate minor impacts from the proposed activities. The minor impacts can be attributed to the avoidance of the sensitive habitats and implementation of buffer zones. Should avoidance and basic mitigation actions be implemented, limited impacts to aquatic biodiversity can be expected.

6.4 AVIFAUNAL IMPACTS

An Avifaunal Impact Assessment for the proposed PV facility and associated infrastructure was undertaken by The Biodiversity Company. A separate Avifaunal Impact Assessment for the Grid Connection Infrastructure alternatives was also undertaken by The Biodiversity Company. Both of these assessments are attached in Appendix E2.

The Avifaunal specialist identified a number of impacts associated with all phases of the PV Development as follows:

Construction Phase

- Habitat destruction within the project footprint;
- Destruction, degradation and fragmentation of surrounding habitats due to noise pollution;
- Displacement/emigration of avifauna community (including SCC);
- Direct mortality from persecution or poaching of avifauna species and collection of eggs; and
- Direct mortality from increased vehicle and heavy machinery traffic.

Operational Phase

- Collisions with infrastructure associated with the PV Facility;
- Electrocution due to infrastructure associated with the PV Facility;
- Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs;
- Direct mortalities and hinderance of movement from fencing infrastructure;
- Pollution of water sources and surrounding habitat due to cleaning products of the PV panels; and
- Heat radiation from the PV panels.

Decommissioning Phase

- Direct mortality due to earthworks, vehicle collisions and persecution;
- Direct mortality due to infrastructure including collisions with PV infrastructure, fences, etc; and
- Continued habitat degradation due to Invasive Alien Plant encroachment and erosion.

Further to the above, the avifaunal specialist also identified the following impacts associated with the Electrical Grid Infrastructure.

Construction Phase

- Habitat destruction within the project footprint;
- Destruction, degradation and fragmentation of surrounding habitats due to noise pollution;
- Displacement/emigration of avifauna community (including SCC);
- Direct mortality from persecution or poaching of avifauna species and collection of eggs; and
- Direct mortality from increased vehicle and heavy machinery traffic.

Operational Phase

- Collisions with powerlines;
- Electrocution due to powerlines;
- Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs; and
- Displacement or death of SCCs.

Decommissioning Phase

- Habitat Loss (Destroy, fragment, and degrade habitat, ultimately displacing avifauna);
- Sensory disturbances (e.g. noise, dust, vibrations);
- Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs; and
- Collisions with powerlines.

The assessment of these impacts by the specialist are included in the Tables below.

6.4.1 Construction Phase Avifaunal Impacts.

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

Table 35: Assessment of construction Phase Avifaunal Impacts for the proposed PV Facility and Associated Infrastructure.

Nature: Habitat Loss (Destroy, fragment, and degrade natural habitat, ultimately displacing avifauna		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Lifespan of operations	Lifespan of operations
Magnitude / Severity	Ecosystem structure largely altered	Ecosystem structure largely altered
Probability	Definite	Highly Likely
Significance	**Moderately High**	**Moderate**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecosystem moderately sensitive
Can impact be mitigated?	Partially	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Destruction, degradation and fragmentation of surrounding habitats		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area

Duration	Lifespan of operations	One to five years
Magnitude / Severity	Ecosystem structure largely altered	Ecosystem structure largely altered
Probability	Highly Likely	Likely
Significance	**Moderate**	**Moderate**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecology Moderately sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Displacement/emigration of avifauna community (including SCC) due to noise pollution		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	One to five years	One to five years
Magnitude / Severity	Ecosystem structure moderately altered	Ecosystem Structure Largely unchanged
Probability	Highly Likely	Likely
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Ecology Moderately sensitive	Ecology Moderately sensitive
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecology Moderately sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Direct mortality from persecution or poaching of avifauna species and collection of eggs		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of operations	One to five years
Magnitude / Severity	Ecosystem structure moderately altered	Ecosystem Structure Largely unchanged
Probability	Highly Likely	Possible
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecology Moderately sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Direct mortality from increased vehicle and heavy machinery traffic		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of operations	One to five years
Magnitude / Severity	Ecosystem structure moderately altered	Ecosystem Structure Largely unchanged
Probability	Highly likely	Possible
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecology Moderately sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

The following Avifaunal Impacts were assessed for the construction phase of the proposed Grid Connection Infrastructure..

Table 36: Assessment of construction Phase Avifaunal Impacts for the proposed Grid Connection Infrastructure.

Nature: Habitat Loss (Destroy, fragment, and degrade natural habitat, ultimately displacing avifauna		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Lifespan of operations	Lifespan of operations
Magnitude / Severity	Ecosystem structure largely altered	Ecosystem structure largely altered
Probability	Definite	Highly Likely
Significance	**Moderately High**	**Moderate**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecosystem moderately sensitive
Can impact be mitigated?	Partially	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Destruction, degradation and fragmentation of surrounding habitats		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	Lifespan of operations	One to five years
Magnitude / Severity	Ecosystem structure largely altered	Ecosystem structure largely altered
Probability	Highly Likely	Likely
Significance	**Moderate**	**Moderate**
Status	Negative	Negative
Reversibility	Moderate	Moderate

Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecology Moderately sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Displacement/emigration of avifauna community (including SCC) due to noise pollution		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Area	Study Area
Duration	One to five years	One to five years
Magnitude / Severity	Ecosystem structure moderately altered	Ecosystem Structure Largely unchanged
Probability	Highly Likely	Likely
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Ecology Moderately sensitive	Ecology Moderately sensitive
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecology Moderately sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Direct mortality from persecution or poaching of avifauna species and collection of eggs		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of operations	One to five years
Magnitude / Severity	Ecosystem structure moderately altered	Ecosystem Structure Largely unchanged
Probability	Highly Likely	Possible
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecology Moderately sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Direct mortality from increased vehicle and heavy machinery traffic		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of operations	One to five years

Magnitude / Severity	Ecosystem structure moderately altered	Ecosystem Structure Largely unchanged
Probability	Highly likely	Possible
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecology Moderately sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

6.4.2 Operational Phase Avifaunal Impacts

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

Table 37: Assessment of Operational Phase Avifaunal Impacts associated with the PV Facility and associated infrastructure.

Nature: Collisions with infrastructure associated with the PV Facility		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Permanent	Lifespan of operations
Magnitude / Severity	Ecosystem structure largely altered	Ecosystem structure largely altered
Probability	Highly Likely	Likely
Significance	**Moderately High**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately Sensitive	Ecology Moderately Sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Electrocution due to infrastructure associated with the PV Facility		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of operations	Lifespan of operations
Magnitude / Severity	Ecosystem Structure Moderately Altered	Ecosystem Structure Moderately Altered
Probability	Highly Likely	Possible
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately Sensitive	Ecology Moderately Sensitive

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

Nature. Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	One to five years	One to five years
Magnitude / Severity	Ecosystem Structure Moderately Altered	Ecosystem structure largely unchanged
Probability	Likely	Highly unlikely
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately Sensitive	Ecology Moderately Sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature. Direct mortalities and hinderance of movement from fencing infrastructure		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of Operations	Lifespan of Operations
Magnitude / Severity	Ecosystem Structure Moderately Altered	Ecosystem structure largely unchanged
Probability	Likely	Possible
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately Sensitive	Ecology Moderately Sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature. Pollution due to chemicals used to keep the PV panels clean		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of operations	Lifespan of operations
Magnitude / Severity	Ecosystem Structure Moderately Altered	Ecosystem structure largely unchanged
Probability	Likely	High Unlikely

Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecosystem Moderately Sensitive	Ecosystem Moderately Sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature. Heat radiation from the PV panels.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Stude
Duration	Lifespan of operations	Lifespan of operations
Magnitude / Severity	Ecosystem Structure Moderately Altered	Ecosystem Largely unchanged
Probability	Likely	Possible
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecosystem Moderately Sensitive	Ecosystem Moderately Sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

The following Avifaunal Impacts were assessed for the Operational phase of the proposed grid connection infrastructure.

Table 38: Assessment of Operational Phase Avifaunal Impacts associated with the proposed grid connection infrastructure.

Nature: Collisions with infrastructure associated with the Grid Connection		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Permanent	Lifespan of operations
Magnitude / Severity	Ecosystem structure largely altered	Ecosystem structure largely altered
Probability	Highly Likely	Likely
Significance	**Moderately High**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately Sensitive	Ecology Moderately Sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Electrocution due to infrastructure associated with the Grid Connection.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of operations	Lifespan of operations
Magnitude / Severity	Ecosystem Structure Moderately Altered	Ecosystem Structure Moderately Altered
Probability	Highly Likely	Possible
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately Sensitive	Ecology Moderately Sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature. Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	One to five years	One to five years
Magnitude / Severity	Ecosystem Structure Moderately Altered	Ecosystem structure largely unchanged
Probability	Likely	Highly unlikely
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately Sensitive	Ecology Moderately Sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature. Direct mortalities and hinderance of movement from fencing infrastructure		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of Operations	Lifespan of Operations
Magnitude / Severity	Ecosystem Structure Moderately Altered	Ecosystem structure largely unchanged
Probability	Likely	Possible
Significance	**Moderate**	**Low**
Status	Negative	Negative
Reversibility	Moderate	Moderate

Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately Sensitive	Ecology Moderately Sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

6.4.3 Decommissioning Phase Avifaunal Impacts

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

Table 39: Assessment of Closure and Decommissioning Phase Avifaunal Impacts for the PV facility and associated infrastructure.

Nature: Direct mortality from persecution or poaching of avifauna species and collection of eggs		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of operations	One month
Magnitude / Severity	Ecosystem structure moderately altered	Ecosystem Structure Largely unchanged
Probability	Likely	Highly unlikely
Significance	**Moderate**	**Absent**
Status	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecology Moderately sensitive
Can impact be mitigated?	Moderate	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Direct mortality due to infrastructure including collisions with PV infrastructure, fences etc		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of operation	One month to one year
Magnitude / Severity	Structure and function moderately altered.	Structure and function largely unchanged
Probability	Highly likely	Highly unlikely
Significance	**Moderate**	**Absent**
Status	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecology Moderately sensitive
Can impact be mitigated?	High	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Direct mortality due to infrastructure including collisions with PV infrastructure, fences etc

	Without Mitigation	With Mitigation
Extent / Spatial Scope	Study Site	Study Site
Duration	Lifespan of operation	One month to one year
Magnitude / Severity	Structure and function moderately altered.	Structure and function largely unchanged
Probability	Highly likely	Highly unlikely
Significance	**Moderate**	**Absent**
Status	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources / Sensitivity of receiving environment	Ecology Moderately sensitive	Ecology Moderately sensitive
Can impact be mitigated?	High	
Mitigation:	Mitigation measures outlined in section 7	

6.4.4 Concluding Statement – Avifaunal Impacts

The avifaunal specialist has confirmed that based on the SABAP2 data and National Web-based Environmental Screening Tool, 285 avifauna species are expected for the project area of influence and surrounds. Of these, 18 are considered SCC. A regime 2 assessment requires two field assessments to be performed. The first avifaunal field survey was on the 6th to the 8th of August 2024 (dry season survey), whilst the second survey was conducted on the 6th to the 9th of January 2025 (wet season survey). This is deemed sufficient for a Regime 2 survey.

During this assessment five species of conservation concern were recorded during the survey, being Black-crowned Night Heron (*Nycticorax nycticorax*), Black-winged Kite (*Elanus caeruleus*), the Cape Vulture (*Gyps coprotheres*), European Roller (*Coracias garrulus*), and Knob-billed Duck (*Sarkidiornis melanotos*).

An additional 6 species of conservation concern have a high likelihood of occurrence within the project area. A further twenty-six (26) risk species were also recorded. These risk species are susceptible to collisions, electrocutions and habitat loss.

Four habitat types were delineated within the Project Area, namely Bushveld, Ridge Bushveld, Transformed, and Water Resources. Majority of the project area was determined to be a medium sensitivity habitat, bring the Bushveld habitat and Water Resources. The Transformed habitat was determined to be of very low sensitivity respectively. The Ridge Bushveld was determined to be high sensitivity, validating the screening tool. This rating is based on the resource resilience and the overall disturbed state of the habitat. The collision risk, electrocution risk and loss of habitat are the main impacts should these be successfully mitigated the overall impact rating can be reduced.

The main expected impacts of the proposed PV and infrastructure will include habitat loss and fragmentation, as well as electrocutions and collisions resulting in bird mortalities including SCCs.

The overall residual impacts for the project range from moderate to low. The cumulative impact is moderate. Mitigation measures, as described in this report, can be implemented to reduce the significance of the impacts to an acceptable level.

The avifaunal specialist concluded that the development can be favourably considered as long as the mitigation measures and management actions be implemented. Of the three alternative grid corridors proposed, the preferred power grid corridor is also the preferred option from an avifaunal perspective, as it follows existing powerlines for almost the entirety of the line and is expected to have marginally lower impacts to the surround avifaunal community.

6.5 AGRICULTURAL IMPACTS

An Agricultural Compliance Statement was undertaken by Terra Africa and is attached in Annexure E5.

The Agricultural specialist identified a number of impacts associated with all phases of the PV Development as follows:

Construction Phase

- Reduction of land with natural vegetation for livestock grazing;
- Soil erosion;
- Soil pollution;
- Soil compaction;

Operational Phase

- Soil erosion;
- Soil pollution;

6.5.1 Construction Phase Agricultural Impacts

Table 40: Assessment of Construction Phase Agricultural Impacts associated with the PV Facility and associated infrastructure.

Nature: Reduction of land with natural vegetation for livestock grazing. The availability of grazing land that can be used for livestock and game farming will be reduced during the construction phase. It is anticipated that the impact will remain as long the infrastructure is present and the impact will only cease once all surface infrastructure has been decommissioned and vegetation has re-established in these areas.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Short duration (2-5 years)	Very short duration (0-1 year)
Magnitude / Severity	Low	Minor
Probability	Definite	Probable
Significance	**Low**	**Low**
Status	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources / Sensitivity of receiving environment	Yes	No
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Soil erosion. The clearing and levelling of land within the proposed development area will increase the risk of soil erosion. The risk is anticipated to naturally reduce as grass and lower shrubs re-establishes in the area once the construction has been completed and the operation phase commences.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Medium-term	Medium-term
Magnitude / Severity	Moderate	Low
Probability	Probable	Improbable

Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources / Sensitivity of receiving environment	Yes	No
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Soil pollution. The following construction activities can result in the chemical pollution of the soil:
1. Petroleum hydrocarbon (present in oil and diesel) spills by machinery and vehicles during earthworks and the removal of vegetation as part of site preparation;
2. Spills from vehicles transporting workers, equipment, and construction material to and from the construction site;
3. The accidental spills from temporary chemical toilets used by construction workers;
4. The generation of domestic waste by construction workers;
5. Spills from fuel storage tanks during construction;
6. Pollution from concrete mixing;
7. Accidental damaging of batteries through transport and handling;
8. Pollution from road-building materials; and
9. Any construction material remaining within the construction area once construction is completed.

	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Short-term	Short-term
Magnitude / Severity	Moderate	Low
Probability	Low	Improbable
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources / Sensitivity of receiving environment	Yes	No
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Soil compaction. Earthworks for preparing the terrain where the PV modules, supporting infrastructure and the access roads will be installed, will result in soil compaction. In the area where the access road will be constructed, topsoil will be removed and the remaining soil material will be deliberately compacted to ensure a stable road surface.

	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Medium-term	Medium-term
Magnitude / Severity	Moderate	Low
Probability	Probable	Improbable
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Low	Low

Irreplaceable loss of resources / Sensitivity of receiving environment	Yes	No
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 7	

6.5.2 Operational Phase Agricultural Impacts

Nature: Soil erosion. The areas where vegetation was cleared will remain at risk of soil erosion, especially during a rainfall event when runoff from the cleared surfaces will increase the risk of soil erosion in the areas directly surrounding the Development area.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Medium-term	Medium-term
Magnitude / Severity	Moderate	Low
Probability	Probable	Improbable
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources / Sensitivity of receiving environment	Yes	No
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 7	

Nature: Soil pollution. During the operational phase, potential spills and leaks from maintenance vehicles and equipment and waste generation on site can result in soil pollution. Also, any spillages around the workshop area or damaged infrastructure, such as batteries, inverters and transformers, can be a source of soil pollution.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local	Local
Duration	Short-term	Short-term
Magnitude / Severity	Moderate	Low
Probability	Low	Improbable
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources / Sensitivity of receiving environment	Yes	No
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 7	

6.5.3 Decommissioning Phase Agricultural Impacts

It is noted that the decommissioning phase will have the same impacts as the construction phase pertaining to soil erosion, soil compaction and soil pollution. The risk of erosion will persist until such time as vegetation growth has re-established in areas where infrastructure have been decommissioned.

6.5.4 Concluding statement – Agricultural Impacts

The overall conclusion of the agricultural specialist is that the proposed development is acceptable due to the project area being located on different soil forms that mostly have a Low and Low-Moderate agricultural potential and is not suitable for crop production under rainfed conditions. The majority of the project area is used for extensive grazing of livestock and game, with no crop production.

The assessed area is classified as predominantly Medium Agricultural Sensitivity by the DFFE Screening Tool. This has been disputed by the agricultural specialist who has classified the sensitivity as being predominantly of Low Agricultural Sensitivity with a small portion of Medium Agricultural Sensitivity.

It is noted that soils with Moderate agricultural potential have been assigned a Medium Agricultural Sensitivity as these areas are suitable for supporting vegetation for grazing, although not highly suitable for crop production.

From an agricultural impact point of view, the specialist considered the project favourable, permitting that the mitigation measures are applied in order to prevent soil erosion and soil pollution and to minimise impacts on the veld quality of the land parcels that will be affected by the project.

6.6 HERITAGE IMPACTS

A Heritage Impact Assessment was undertaken by CTS Heritage and is attached in Annexure E4. The following has been summarised from this assessment.

6.6.1 Construction Phase Heritage Impacts

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

Table 41: Assessment of Construction Phase Archaeological Impacts.

Nature: The construction phase of the project will require excavation, which may impact on archaeological heritage resources if present.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Localised within the site boundary	Localised within the site boundary
Duration	Permanent	Permanent
Magnitude / Severity	High	Low
Probability	Possible	Unlikely
Significance	**Low**	**Low**
Status	Neutral	Neutral
Reversibility	Low – Any impacts to heritage resources that do occur are irreversible.	Low – Any impacts to heritage resources that do occur are irreversible.
Irreplaceable loss of resources / Sensitivity of receiving environment	Possible	Unlikely
Can impact be mitigated	Yes	
Mitigation:	Mitigation measures outlined in section 7.	

Table 42: Assessment of Construction Phase Palaeontological Impacts.

Nature: The construction phase of the project will require excavation, which may impact on palaeontological heritage resources if present.

	Without Mitigation	With Mitigation
Extent / Spatial Scope	Localised within the site boundary	Localised within the site boundary
Duration	Permanent	Permanent
Magnitude / Severity	Low	Low
Probability	Low	Low
Significance	**High**	**High**
Status	Negative	Positive
Reversibility	Low – Any impacts to heritage resources that do occur are irreversible.	Low – Any impacts to heritage resources that do occur are irreversible.
Irreplaceable loss of resources / Sensitivity of receiving environment	Possible	Possible
Can impact be mitigated	Yes	
Mitigation:	Mitigation measures outlined in section 7.	

6.6.2 Operational Phase Heritage Impacts

All impact on heritage resources will occur during the construction phase and are deemed to be permanent.

6.6.3 Closure and Decommissioning Phase Heritage Impacts

All impact on heritage resources will occur during the construction phase and are deemed to be permanent.

6.6.4 Concluding Statement – Heritage Impacts

The sensitivity study did not identify any fatal flaws to the Project from a heritage point of view, although heritage resources are expected in the study area. An archaeological and Fossil Chance find procedure must be incorporated into the Environmental Management Programme for the project.

6.7 VISUAL IMPACTS

A Visual Impact Assessment was undertaken by Mr Stephen Stead from Visual Resource Management Africa and is attached in Annexure E6.

The following impact have been assessed:

Construction Phase:

- Loss of site landscape character due to the removal of vegetation and the construction of the project infrastructure.
- Wind-blown dust due to the removal of large areas of vegetation.
- Possible soil erosion from temporary roads crossing drainage lines.
- Wind-blown litter from the laydown and construction sites.
- Movement of large earth moving vehicles.
- Construction of PV panels, laydowns site, construction camps and maintenance areas.

Operation Phase:

- Massing effect in the landscape from a large-scale landscape modification.
- On-going soil erosion.

- On-going windblown dust.

Decommissioning Phase:

- Movement of vehicles and associated dust.
- Wind-blown dust from the disturbance of cover vegetation / gravel.

The following has been summarised from this assessment.

6.7.1 Construction Phase Visual Impacts

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

Table 43: Assessment of construction phase visual impacts of the proposed PV & BESS facilities.

Nature: Loss of landscape character from the construction of the PV development and associated infrastructure.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Wide Area (contained within the foreground/ mid ground – approximately 6km from site).	Local (contained within the foreground/ mid ground – approximately 3km from site).
Duration	Short term – approximately 12 months.	Short term – approximately 12 months.
Magnitude / Severity	High	Medium
Probability	Sure	Sure
Significance	**Medium - High**	**Medium**
Status	Negative	Negative
Reversibility	Possible	Possible
Can impact be mitigated	Yes – Medium.	
Mitigation:	Mitigation measures outlined in section 7.	

Table 44: Assessment of construction phase visual impacts of the OHPL Preferred Alternative – Alternative 1.

Nature: Loss of landscape character from the construction of the OHPL infrastructure.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Local (contained within the foreground/ mid ground – approximately 3km from site).	Local (contained within the foreground/ mid ground – approximately 3km from site).
Duration	Short term – approximately 12 months.	Short term – approximately 12 months.
Magnitude / Severity	Medium	Low
Probability	Sure	Sure
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Possible	Possible
Can impact be mitigated	Yes – Medium.	
Mitigation:	Mitigation measures outlined in section 7.	

Table 45: Assessment of construction phase visual impacts of the OHPL Secondary Alternative – Alternative 2.

Nature: Loss of landscape character from the construction of the OHPL infrastructure.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Wide Area (contained within the foreground/ mid ground – approximately 6km from site).	Local (contained within the foreground/ mid ground – approximately 3km from site).
Duration	Short term – approximately 12 months.	Short term – approximately 12 months.
Magnitude / Severity	Medium - High	Medium
Probability	Sure	Sure
Significance	**Medium - High**	**Medium**
Status	Negative	Negative
Reversibility	Possible	Possible
Can impact be mitigated	Yes – Medium.	
Mitigation:	Mitigation measures outlined in section 7.	

Table 46: Assessment of construction phase visual impacts of the OHPL Tertiary Alternative – Alternative 3.

Nature: Loss of landscape character from the construction of the OHPL infrastructure.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Wide Area (contained within the foreground/ mid ground – approximately 6km from site).	Local (contained within the foreground/ mid ground – approximately 3km from site).
Duration	Short term – approximately 12 months.	Short term – approximately 12 months.
Magnitude / Severity	High	High
Probability	Sure	Sure
Significance	**Medium - High**	**Medium - High**
Status	Negative	Negative
Reversibility	Possible	Possible
Can impact be mitigated	Yes – Medium.	
Mitigation:	Mitigation measures outlined in section 7.	

6.7.2 Operational Phase Visual Impacts

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

Table 47: Assessment of operational phase visual impacts of the proposed PV & BESS facilities.

Nature: Loss of landscape character from the long-term operation of the PV development and associated infrastructure.		
	Without Mitigation	**With Mitigation**

Extent / Spatial Scope	Wide Area (contained within the foreground/ mid ground – approximately 6km from site).	Local (contained within the foreground/ mid ground – approximately 3km from site).
Duration	Long term – approximately 20 years.	Long term – approximately 20 years.
Magnitude / Severity	Medium	Medium to Low
Probability	Sure	Sure
Significance	**Medium**	**Medium-Low**
Status	Negative	Negative
Reversibility	Possible	Possible
Can impact be mitigated	Yes – Medium.	
Mitigation:	Mitigation measures outlined in section 7.	

Table 48: Assessment of operational phase visual impacts of the OHPL Preferred Alternative – Alternative 1.

Nature: Loss of landscape character from the long-term operation of the OHPL infrastructure.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Wide Area (contained within the foreground/ mid ground – approximately 6km from site).	Local (contained within the foreground/ mid ground – approximately 3km from site).
Duration	Long term – approximately 20 years.	Long term – approximately 20 years.
Magnitude / Severity	Medium	Low
Probability	Sure	Sure
Significance	**Low**	**Very Low**
Status	Negative	Negative
Reversibility	Possible	Possible
Can impact be mitigated	Yes – Medium.	
Mitigation:	Mitigation measures outlined in section 7.	

Table 49: Assessment of operational phase visual impacts of the OHPL Secondary Alternative – Alternative 2.

Nature: Loss of landscape character from the long-term operation of the OHPL infrastructure.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Wide Area (contained within the foreground/ mid ground – approximately 6km from site).	Local (contained within the foreground/ mid ground – approximately 3km from site).
Duration	Long term – approximately 20 years.	Long term – approximately 20 years.
Magnitude / Severity	Medium	Medium - Low
Probability	Sure	Sure
Significance	**Medium**	**Medium - Low**
Status	Negative	Negative
Reversibility	Possible	Possible

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

Table 50: Assessment of operational phase visual impacts of the OHPL Tertiary Alternative – Alternative 3.

Nature: Loss of landscape character from the construction of the OHPL infrastructure.		
	Without Mitigation	**With Mitigation**
Extent / Spatial Scope	Wide Area (contained within the foreground/ mid ground – approximately 6km from site).	Local (contained within the foreground/ mid ground – approximately 3km from site).
Duration	Short term – approximately 12 months.	Short term – approximately 12 months.
Magnitude / Severity	High	High
Probability	Sure	Sure
Significance	**Medium - High**	**Medium - High**
Status	Negative	Negative
Reversibility	Possible	Possible
Can impact be mitigated	Yes – Medium.	
Mitigation:	Mitigation measures outlined in section 7.	

6.7.3 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 51: Assessment of decommissioning phase visual impacts of the proposed PV & BESS facilities.

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 (contained within the foreground/ mid ground – approximately 3km from site).	Local (contained within the foreground/ mid ground – approximately 3km from site).
Duration	Short term – approximately 8 months.	Short term – approximately 8 months.
Magnitude / Severity	Medium	Medium
Probability	Likely	Likely
Significance	**Medium**	**Neutral**
Status	Negative	Negative
Reversibility	Medium	Medium
Can impact be mitigated	Yes – Medium.	
Mitigation:	Mitigation measures outlined in section 7.	

6.7.4 Concluding Statement - Visual

The visual specialist recommended that the proposed development should commence with mitigation for the following key reasons:

- The ZVI is contained to some degree that would result in a moderate zone of visual influence.
- The area is remote with only a single lodge in the locality (Klipputs Lodge) that is located outside of the combined PV project viewshed. The farm Klipputs is also looking at the possibility of PV development (EIA pending).
- No other Renewable Energy projects are currently visible from this location reducing potential cumulative effects from massing of PV infrastructures. This, however, is likely to change over time.
- Potential for Medium magnitude visual impact with mitigation
- National energy objectives for renewable energy and job creation will be met.
- Good alignment with regional and local planning.

6.8 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 E7. The following has been summarised from this assessment.

6.8.1 Construction Phase Social Impacts

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

Table 52: Assessment of Construction Phase Social Impacts.

Nature: Creation of employment and business opportunities during the construction phase facility.		
	Without Enhancement	**With Enhancement**
Extent	Local – Regional	Local – Regional
Duration	Short term	Short term
Magnitude	Moderate	Moderate
Probability	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 7.	

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	Short term
Magnitude	Moderate	Low
Probability	Probable	Probable

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	
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be eliminated	
Mitigation:	Mitigation measures outlined in section 7.	

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	Short term	Short term
Magnitude	Moderate	Low
Probability	Probable	Probable
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	
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be eliminated	
Mitigation	Mitigation measures outlined in section 7.	

Nature: Potential safety and security risks and impact on farming operations associated with the presence and movement 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 7.	

Nature: Potential loss of livestock, crops and 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	Low
Probability	Probable	Probable
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	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 7.	

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
Significance	**Medium**	**Low**
Status	Negative	Negative
Reversibility	Yes	
Irreplaceable loss of resources?	No	No
Can impact be mitigated?	Yes	
Mitigation:	Mitigation measures outlined in section 7.	

6.8.2 Operational Phase Social Impacts

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

Table 53: Assessment of social impacts during the operational phase of the development.

Nature: Development of infrastructure to improve energy security and support the renewable sector.

	Without Enhancement	With Enhancement
Extent	Local, Regional and National	Local, Regional and National
Duration	Long term	Long term
Magnitude	Moderate	Moderate
Probability	Highly Probable	Definite
Significance	**Medium**	**High**
Status	Positive	Positive
Reversibility	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 7.	

Nature: Creation of employment and business opportunities associated with the operational phase.		
	Without Enhancement	**With Enhancement**
Extent	Local and Regional	Local and Regional
Duration	Long term	Long term
Magnitude	Low	Moderate
Probability	Highly Probable	Highly Probable
Significance	**Medium**	**Medium**
Status	Positive	Positive
Reversibility	N/A	
Irreplaceable loss of resources?	No	
Can impact be enhanced?	Yes	
Enhancement: See below	Mitigation and Enhancement measures outlined in section 7.	

Nature: The generation of additional income represents a significant benefit for the local project landowners and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for game, farming inputs, such as feed, fuel etc.		
	Without Enhancement	**With Enhancement**
Extent	Local	Local
Duration	Long term	Long term
Intensity	Moderate	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 7.	
Nature: Benefits associated with support for local community's form SED contributions.		

	Without Enhancement	With Enhancement[29]
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 7.	

Nature: Visual impact associated with the proposed facility and associated infrastructure and the potential impact on the area's rural sense of place.		
	Without Mitigation	**With Mitigation**
Extent	Local	Local
Duration	Long term	Long term
Magnitude	Moderate	Low - Moderate
Probability	Probable	Probable
Significance	**Medium**	**Low - Medium**
Status	Negative	Negative
Reversibility	Yes, SEF components and other infrastructure can be removed.	
Irreplaceable loss of resources?	No	
Can impact be mitigated?	Yes	
Mitigation	Mitigation measures outlined in section 7.	

Nature: Potential impact of the PV on property values.		
	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	

[29] Enhancement assumes effective management of the SED contributions.

Mitigation:	Mitigation measures outlined in section 7.

Nature: Potential impact of the PV on local tourism.		
	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	Yes
Irreplaceable loss of resources?	No	No
Can impact be enhanced?	Yes	
Mitigation:	Mitigation measures outlined in section 7.	

6.8.3 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.

6.8.4 Concluding Statement – Social

The findings of the Social Impact Assessment indicate that the proposed Bethel Solar PV and associated infrastructure will create social and socio-economic benefits for the Makhado Municipality, including creation of employment and business opportunities during both the construction and operational phases. The project will also create socio-economic development opportunities for the Makhado Municipality and local community. 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 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 foreign Direct Investment, local employment and procurement and investment in local community initiatives. The findings also indicate that the potential negative impacts associated with both the construction and operational phase are likely to be Low Negative with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented (Barbour, 2025).

6.9 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.

6.9.1 Construction Phase Traffic Impacts

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

Table 54: 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 7.	

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 7.	

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 7.	

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 7.	

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 7.	

6.9.2 Operational Phase Traffic Impacts

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

Table 55: 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 7.	

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 7.	

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 7.

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 7.	

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 7.	

6.9.3 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 56: 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 7.	

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 7.	

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:	Mitigation measures outlined in section 7.	

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 7.	

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 7.	

6.9.4 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.

6.10 BATTERY ENERGY STORAGE RISK ASSESSMENT

The BESS Specialist ISHEcon prepared a risk assessment for the Two 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 Environmental Impact Report (Appendix E8).

Table 57: Summary of BESS Risk Assessment For Solid State Battery Technologies (ISHEcon, 2025).

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 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	Low	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 - exposure to noise	Operations	Moderate	Low

Impact / Receptor	Project Phase	Raw Risk	Residual Risk
Human Health - exposure to temperature extremes and/or humidity	Operations	Low	Very Low
Human Health - exposure to psychological stress	Operations	Low	Very Low
Human Health - exposure to ergonomic stress	Operations	Moderate	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 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
Environment - emissions to air	Operations	Low	Very Low
Environment - emissions to water	Operations	Low	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
Emergencies	Operations	Moderate	Low
Investors - Legal	Operations	Moderate	Low
Environment – emissions to earth	Decommissioning	Moderate	Low
Investors - Legal	Decommissioning[30]	Moderate	Low

[30] The Significance ratings of the remainder of all Decommissioning impacts are identical to the Significance ratings for the Construction and Operational Impacts.

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 58: Summary of BESS Risk Assessment for Sodium Sulphide BESS technologies (ISHEcon, 2025).

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
Human and Equipment Safety - exposure to fire radiation	Construction	Moderate	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
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

Impact / Receptor	Project Phase	Raw Risk	Residual Risk
Human Health - chronic exposure to toxic chemical or biological agents	Operation	Moderate	Low
Human Health - exposure to temperature extremes and/or humidity	Operation	Low	Very 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 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
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	Low	Very 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
Emergencies	Operation	Moderate	Low
Investors - Legal	Operation	Moderate	Low
Environment – emissions to earth	Decommissioning	Moderate	Low
Investors - Legal	Decommissioning	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 Sodium Sulphide BESS technologies.

6.10.1 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:

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 for the BESS installations at the proposed Solar PV project.

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. 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.

For most projects, from an acute health and safety point of view, the No-Go option will usually be a preferred option since there are no immediate health and safety risks associated with not doing a project, i.e. no one can get hurt if something does not exist. However, some projects aim to reduce adverse effects elsewhere and can be viewed at offsetting either current or future risks. In this case, renewable energy projects should help to mitigate possible adverse impacts of climate change, create jobs and contribute to sustainable energy, i.e. the project risks are offset against future social risk reduction.

6.10.2 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 Bethel Solar PV, the BESS location is over 500m from any occupied farmhouse and in this context the location is therefore considered suitable in terms of toxic gas risks.

6.10.3 Sodium-sulphide Solid State Containerized Batteries

With sodium-sulphide solid-state batteries, the most significant hazard with battery units is the presence of sodium and the possibility of some failure (mechanical or electrical) leading to a sodium and sulphur fire. In addition to an intense localized fire there could be generation of toxic gases. There have been a few such incidents in the early days of these batteries. Modern technology providers include many preventative and mitigative features in their designs. This type of event also generates heat which may possibly thermal instability neighbouring batteries propagate if suitable state of the art technology is not employed.

The fire, explosion and toxic smoke events are not expected to be significantly worse than those estimated for the lithium batteries and similar on site separation distances should be applied, e.g. to occupied buildings, electrical infrastructure etc.

For the Bethel Solar PV, the BESS location is over 500m from any occupied farmhouse and in this context the location is therefore considered suitable in terms of fire, explosion and toxic gas risks to the public outside the site.

Suitable Battery Management System (BMS), safety procedures, operating instructions, maintenance procedures, trips, alarms and interlocks should be in place. (Refer to tables in section 4 under preventative and mitigative measures).

6.10.4 Technology and location of BESS facilities

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. The current chosen location is suitably far from the above with a very low risk of any significant impacts.

6.11 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 E1 – E8**.

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 Bethel Solar PV as shown in the Figure below.

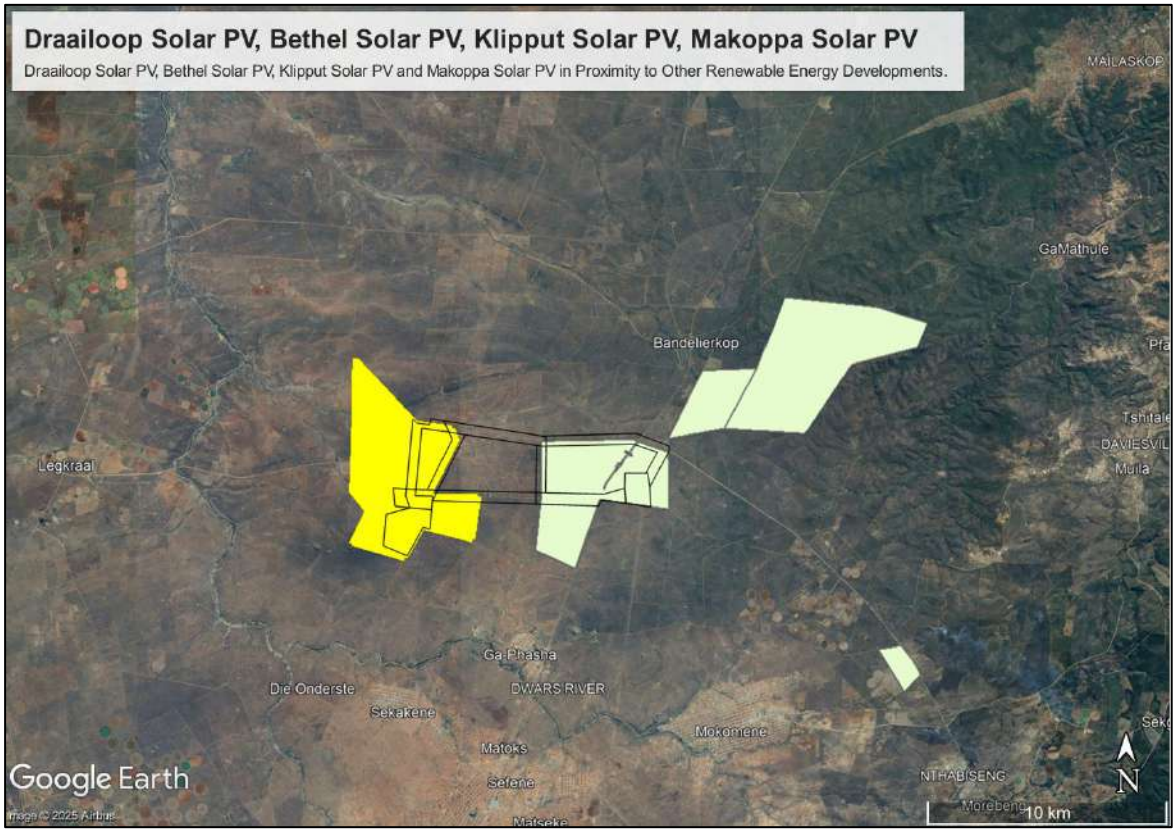


Figure 88: Renewable Energy Facilities within proximity of the proposed Tabor Cluster of projects, including Bethel Solar PV.

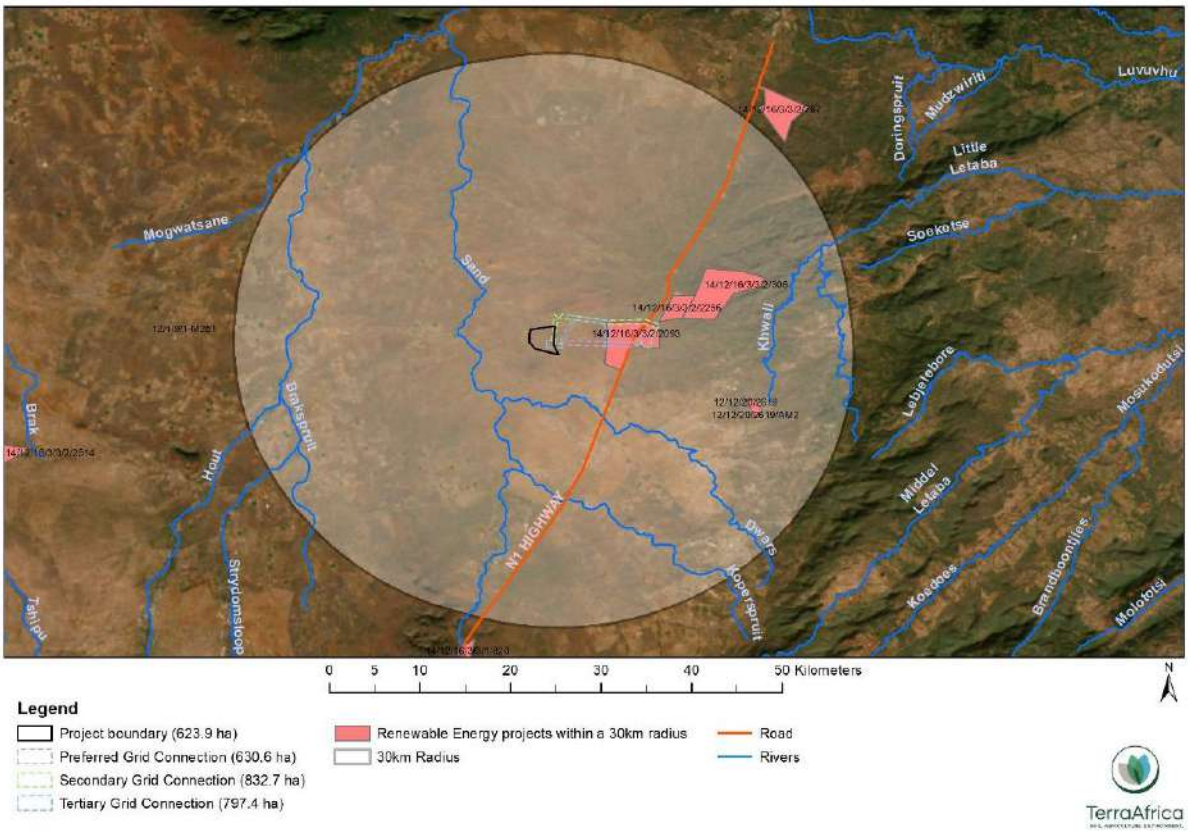


Figure 89: Renewable Energy Projects within 30 Km of the Proposed Bethel Solar PV (Terra Africa, 2025)

According the DFFE Database of renewable energy facilities as well as additional projects known to Cape EAPrac and the applicant, there are 5 other renewable energy projects (with a total generation capacity of 480MW) within 30km of Bethel Solar PV. This can be attributed to the large number of HV and TX powerlines as well as the location of the Tabor MTS.

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:

a. Cumulative impacts due to the cumulative effects of Bethel Solar PV added to all other renewable energy facilities in the Louis Trichardt area. These impacts however need to be managed through strategic spatial planning documents such as an SEA and SDF and not through individual EIA processes.

b. Cumulative impacts due to the cumulative effects of the 4 PV Projects proposed as part of the current Tabor Cluster of projects (Draailoop Solar PV, Klipput Solar PV, Bethel Solar PV and Makoppa Solar PV) project to be co-located on adjacent sites.

c. Cumulative impact of the Bethel Solar PV along with its Electrical Grid Connection Infrastructure.

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[31].

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

Table 59: Potential cumulative habitat transformation associated with renewable energy within 30km of Bethel Solar PV.

Status	Transformation Area in Hectares
In operation	0
Under construction	0
Authorised	624
EIA in Progress (including Bethel Solar PV)	1033

It is impossible to foresee how many of these projects will reach preferred bidder status in terms of the REIPPPP or other procurement projects and will eventually be constructed. Due current and future Transmission capacity associated with the new MTS, it is highly unlikely that all these projects will be constructed. As a worst-case scenario one can assume a total transformation of 1657ha habitat.

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 Bethel Solar PV in conjunction with all other proposed facilities within 30km.

Table 60: Assessment of Cumulative Impacts Associated with the Proposed Bethel Solar PV

Nature of Cumulative Impact	Description	Significance[32]	Status
Cumulative Agricultural Impact			
Additional PV and other renewable energy projects will increase the areas that are fenced off and where farming activities can no longer continues.	This will result in a decrease in areas with suitable land capability for food production	**Medium**	Negative
Increase in areas susceptible to soil erosion as there will be new areas where there will be clearing and levelling of land for the construction of the infrastructure.	Additional traffic on the existing gravel roads (that are already at risk of soil erosion) will further increase the risk of soil erosion.	**Medium**	Negative
Increase in areas with compacted soils because any additional access roads, PV array areas and	The increased size of compacted areas will increase the risk surface water run-off and reduced water infiltration into soil profiles.	**Low**	Negative

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

Nature of Cumulative Impact	Description	Significance[32]	Status
buildings will require deliberate compaction to ensure a stable surface prior to construction.			
Increase in areas at risk of soil pollution, especially during the construction phase. Each of the projects that contribute to cumulative impacts will require construction workers to traverse the area in vehicles and use equipment.	The vehicles and equipment pose the risk of leaks that add petroleum hydrocarbons to soil. The construction phase will include cement mixing and the generation of general waste on site, with all unmanaged waste a potential source of soil contaminants.	**Medium**	Negative
Cumulative Aquatic Impacts			
Loss / Degradation to Local Ecology	Localised cumulative impacts include the cumulative effects from anthropogenic activities that are close enough (such as nearby farming activities and approved Solar PV projects) to potentially cause additive effects on the environment or sensitive receivers. These include disruption of ecological corridors or habitat such as watercourses, impacts to groundwater and surface water quality, and transport of soils and instream habitat smothering impacts. Long-term cumulative impacts due to the proposed PV cluster footprint combined with the low-density anthropogenic activities currently present has the potential to degrade watercourse habitat across the catchment.	**Medium**	Negative
Cumulative Avifaunal Impacts			
Loss of habitat, and disruption of SCC home ranges	Localised cumulative impacts include those from operations that are close enough to potentially cause additive effects on the local environment or any sensitive receivers (such as nearby large road networks, other solar PV facilities, and power infrastructure). Relevant activities and impacts include dust deposition, noise and vibration, loss of corridors or habitat, disruption of waterways, groundwater drawdown, groundwater and surface water depletion, and transport activities. Long-term cumulative impacts associated with the site development activities can lead to the loss of endemic and threatened species, including natural habitat and vegetation types, and these impacts can even lead to the degradation of conserved areas such as the adjacent game parks and reserves.	**Medium**	Negative
Loss of habitat, and disruption of SCC home ranges		**Medium**	Negative
Cumulative Heritage Impacts			
Cumulative Impacts on cultural landscape.	The area proposed for development is presently dominated by agricultural activities and as such, the pattern of settlement within this landscape reflects this. At this stage, there is the potential for the cumulative impact of proposed renewable energy facilities and its associated grid infrastructure to negatively impact the cultural landscape due to a change in the landscape	**Low**	Negative

Nature of Cumulative Impact	Description	Significance[32]	Status
	character from rural to semi-industrial. That being said, the area proposed for development has insufficient value to warrant formal protection.		
Cumulative Social Impacts			
Cumulative impacts on the area's sense of place	Visual impacts associated with the establishment of more than one PV and the potential impact on the area's rural sense of place and character of the landscape.	**Medium**	Negative
Cumulative impact on the local services and accommodation.	The establishment of a number of renewable energy facilities and associated projects, such as the proposed PV, in the MM has the potential to place pressure on local accommodation and services (medical, etc).	**Medium**	Negative
The cumulative impact on the local community.	The construction workers associated with the establishment of a number of renewable energy facilities, including the Tabor PV SEF Cluster, have the potential to impact negatively on local communities in the area.	**Medium**	Negative
Cumulative Impact on Local Economy.		**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 Grid Capacity and the highly competitive bid process, it is a reasonable assumption that not all the projects in the area will be developed.

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 Bethel solar PV (including associated infrastructure) and Grid Connection Infrastructure.

Construction Phase Terrestrial Biodiversity Impacts for the Proposed PV Facility and associated Grid Connection Infrastructure.		
Nature: Loss of Makhado Sweet Bushveld and associated plant species. (negative)		
Significance	**Moderate without mitigation**	**Moderate with mitigation**
Nature: Loss of Secondary Vegetation and associated plant species(negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Loss of individuals of protected plant species(negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Fragmentation of Vegetation and Disruption of Ecosystem Processes(negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Introduction and Spread of Weeds and Alien Plant Species(negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Loss and transformation of natural habitat within the Vhembe Biosphere Reserve(negative)		

Significance	**Moderate without mitigation**	**Moderate with mitigation**
Nature: Loss of Faunal Habitat		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Loss of Faunal Species of Conservation Concern		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Disturbance to Faunal Species and their Livelihood due to Project Related Activities(negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Mortality of Faunal Species due to Earthworks, Roadkill and Persecution(negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Operational Phase Terrestrial Biodiversity Impacts for the Proposed PV Facility and associated Grid Connection Infrastructure		
Nature: Spread of Weeds and Alien Plant Species. (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Disturbance and Mortality of Faunal Species During Operation(negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Decommissioning Phase Terrestrial Biodiversity Impacts for the Proposed PV Facility and associated Grid Connection Infrastructure		
Nature: Loss of indigenous vegetation		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Disturbance and Mortality of Faunal Species During Decommissioning (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Construction Phase Aquatic Biodiversity Impacts for the proposed PV Facility[33]		
Nature: Loss, disturbance and degradation of watercourse. (negative)		
Significance		**Low with mitigation**
Nature: Increased bare surfaces, flood peaks and potential erosion. (negative)		
Significance		**Low with mitigation**
Nature: Introduction and spread of alien and invasive vegetation. (negative)		
Significance		**Low with mitigation**
Nature: Decreased flow inputs to the watercourses. (negative)		
Significance		**Low with mitigation**
Nature: Increased sediment loads to downstream reaches. (negative)		
Significance		**Low with mitigation**
Operational Phase Aquatic Biodiversity Impacts for the proposed PV Facility		
Nature: Proliferation of alien and invasive species (negative)		
Significance		**Low with mitigation**
Nature: Nutrient enrichment of watercourse (negative)		
Significance		**Low with mitigation**

[33] The identified aquatic features were avoided by all PV infrastructure and as such, only the post mitigation impact is reflected in this summary.

Nature: Introduction and spread of alien and invasive vegetation (negative)		
Significance		**Low with mitigation**
Decommissioning Phase Aquatic Biodiversity Impacts for the proposed PV Facility		
Nature: Degradation of vegetation and proliferation of alien and invasive species (negative)		
Significance		**Low with mitigation**
Nature: Increased bare surfaces, runoff and potential for erosion (negative)		
Significance		**Low after mitigation**
Construction Phase Aquatic Biodiversity Impacts for the proposed Grid Connection Infrastructure		
Nature: Loss, disturbance and degradation of riparian systems (negative)		
Significance		**Low with mitigation**
Nature: Loss or degradation in ecosystem services (negative)		
Significance		**Low with mitigation**
Nature: Altered hydrological regimes (negative)		
Significance		**Low with mitigation**
Nature: Increase in erosion and sedimentation of receiving systems (negative)		
Significance		**Low with mitigation**
Nature: Introduction and spread of alien and invasive vegetation (negative)		
Significance		**Low with mitigation**
Nature: Impaired water quality (negative)		
Significance		**Low with mitigation**
Operational Phase Aquatic Biodiversity Impacts for the proposed Grid Connection Infrastructure		
Nature: Loss or degradation in ecosystem services (negative)		
Significance		**Low with mitigation**
Nature: Altered hydrological regimes (negative)		
Significance		**Low with mitigation**
Nature: Increase in erosion and sedimentation of receiving systems (negative)		
Significance		**Low with mitigation**
Nature: Introduction and spread of alien and invasive vegetation (negative)		
Significance		**Low with mitigation**
Decommissioning Phase Aquatic Biodiversity Impacts for the proposed Grid Connection Infrastructure		
Nature: Degradation of vegetation and proliferation of alien and invasive species (negative)		
Significance		**Low with mitigation**
Nature: Increased bare surfaces, runoff and potential for erosion (negative)		
Significance		**Low with mitigation**
Construction Phase Avifaunal Impacts for the PV Facility and associated infrastructure.		
Nature: Habitat Loss (Destroy, fragment, and degrade natural habitat, ultimately displacing avifauna (negative)		
Significance	**Moderately High without mitigation**	**Moderate with mitigation**
Nature: Destruction, degradation and fragmentation of surrounding habitats (negative)		
Significance	**Moderate without mitigation**	**Moderate with mitigation**

Nature: Displacement/emigration of avifauna community (including SCC) due to noise pollution (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Direct mortality from persecution or poaching of avifauna species and collection of eggs (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Direct mortality from increased vehicle and heavy machinery traffic (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Construction Phase Avifaunal Impacts for the Grid connection Infrastructure.		
Nature: Habitat Loss (Destroy, fragment, and degrade natural habitat, ultimately displacing avifauna (negative)		
Significance	**Moderately High without mitigation**	**Moderate with mitigation**
Nature: Destruction, degradation and fragmentation of surrounding habitats (negative)		
Significance	**Moderate without mitigation**	**Moderate with mitigation**
Nature: Displacement/emigration of avifauna community (including SCC) due to noise pollution (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Direct mortality from persecution or poaching of avifauna species and collection of eggs (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Direct mortality from increased vehicle and heavy machinery traffic (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Operational Phase Avifaunal Impacts for the PV Facility and associated infrastructure.		
Nature: Collisions with infrastructure associated with the PV Facility (negative)		
Significance	**Moderately High without mitigation**	**Low with mitigation**
Nature: Electrocution due to infrastructure associated with the PV Facility (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature. Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature. Direct mortalities and hinderance of movement from fencing infrastructure (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature. Pollution due to chemicals used to keep the PV panels clean (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature. Heat radiation from the PV panels. (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Operational Phase Avifaunal Impacts for the Grid Connection infrastructure.		
Nature: Collisions with infrastructure associated with the Grid Connection (negative)		
Significance	**Moderately High without mitigation**	**Low with mitigation**
Nature: Electrocution due to infrastructure associated with the Grid Connection. (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature. Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature. Direct mortalities and hinderance of movement from fencing infrastructure (negative)		

Significance	**Moderate without mitigation**	**Low with mitigation**
Decommissioning Phase Avifaunal Impacts for the PV Facility and associated infrastructure.		
Nature: Direct mortality from persecution or poaching of avifauna species and collection of eggs (negative)		
Significance	**Moderate without mitigation**	**Absent**
Nature: Direct mortality due to infrastructure including collisions with PV infrastructure, fences etc (negative)		
Significance	**Moderate without mitigation**	**Absent**
Nature: Direct mortality due to infrastructure including collisions with PV infrastructure, fences etc (negative)		
Significance	**Moderate without mitigation**	**Absent**
Construction Phase Agricultural Impacts of the PV Facility, associated infrastructure and grid connection infrastructure.		
Nature: Reduction of land with natural vegetation for livestock grazing. (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Soil erosion (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Soil pollution. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Soil compaction. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Operational Phase Agricultural Impacts of the PV Facility, associated infrastructure and grid connection infrastructure.		
Nature: Soil erosion. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Soil pollution. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Decommissioning Phase Agricultural Impacts of the PV Facility, associated infrastructure and grid connection infrastructure.		
Nature: Reduction of land with natural vegetation for livestock grazing. (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Soil erosion (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Soil pollution. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Soil compaction. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Construction Phase Archaeological Impacts of the PV Facility, associated infrastructure and grid connection infrastructure.		
Nature: The construction phase of the project will require excavation, which may impact on archaeological heritage resources if present. (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Construction Phase Palaeontology Impacts of the PV Facility, associated infrastructure and grid connection infrastructure.		

Nature: The construction phase of the project will require excavation, which may impact on palaeontological heritage resources if present. (negative)		
Significance	**High without mitigation**	**High with mitigation**
Construction Phase Visual Impacts of the PV Facility and associated infrastructure		
Nature: Loss of landscape character from the construction of the PV development and associated infrastructure. (negative)		
Significance	**Medium – High without mitigation**	**Medium with mitigation**
Construction Phase Visual Impacts of the Grid Connection Infrastructure		
Nature: Loss of landscape character from the construction of the OHPL infrastructure. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Operational Phase Visual Impacts of the PV Facility and associated infrastructure		
Nature: Loss of landscape character from the long-term operation of the PV development and associated infrastructure. (negative)		
Significance	**Medium without mitigation**	**Medium-Low with mitigation**
Operational Phase Visual Impacts of the Grid Connection Infrastructure.		
Nature: Loss of landscape character from the long-term operation of the OHPL infrastructure. (negative)		
Significance	**Low without mitigation**	**Very Low with mitigation**
Decommissioning Phase Visual Impacts of the PV Facility and associated infrastructure		
Nature: Short-term landscape change from the removal of the PV structures, followed by rehabilitation of the impacted areas back to agricultural lands. (negative)		
Significance	**Medium without mitigation**	**Neutral**
Status	Negative	Negative
Construction Phase Social Impacts of the PV Facility, associated infrastructure and Grid Connection Infrastructure.		
Nature: Creation of employment and business opportunities during the construction phase facility. (positive)		
Significance	**Medium without mitigation**	**Medium with mitigation**
Nature: Potential impacts on family structures and social networks associated with the presence of construction workers. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Potential impacts on family structures, social networks and community services associated with the influx of job seekers. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Potential safety and security risks and impact on farming operations associated with the presence and movement of construction workers on site. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Potential loss of livestock, crops and damage to farm infrastructure and threat to human life associated with increased incidence of grass fires. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Potential noise, dust and safety impacts associated with construction related activities. (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Operational Phase Social Impacts of the PV Facility, associated infrastructure and Grid Connection Infrastructure		

Nature: Development of infrastructure to improve energy security and support the renewable sector. (positive)		
Significance	**Medium without mitigation**	**High with mitigation**
Nature: Creation of employment and business opportunities associated with the operational phase. (positive)		
Significance	**Medium without mitigation**	**Medium with mitigation**
Nature: The generation of additional income represents a significant benefit for the local project landowners and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for game, farming inputs, such as feed, fuel etc. (positive)		
Significance	**Medium without mitigation**	**High with mitigation**
Nature: Benefits associated with support for local community's form SED contributions. (positive)		
Significance	**Medium without mitigation**	**High with mitigation**
Nature: Visual impact associated with the proposed facility and associated infrastructure and the potential impact on the area's rural sense of place. (negative)		
Significance	**Medium without mitigation**	**Low - Medium with mitigation**
Nature: Potential impact of the PV on property values. (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Potential impact of the PV on local tourism. (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Construction Phase Traffic Impacts of the PV Facility, associated infrastructure and Grid Connection Infrastructure		
Nature: Increase in Traffic (negative)		
Significance	**Medium without mitigation**	**Medium with mitigation**
Nature: Increase of Incidents with pedestrians and livestock (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Increase in Dust from gravel roads (negative)		
Significance	**High without mitigation**	**Medium with mitigation**
Nature: Increase in Road Maintenance (negative)		
Significance	**Medium without mitigation**	**Medium with mitigation**
Nature: Additional Abnormal Loads (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Operational Phase Traffic Impacts of the PV Facility, associated infrastructure and Grid Connection Infrastructure		
Nature: Increase in Traffic (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Increase of Incidents with pedestrians and livestock (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Increase in Dust from gravel roads (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Increase in Road Maintenance (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Additional Abnormal Loads (negative)		
Significance	**Low without mitigation**	**Low with mitigation**

Decommissioning Phase Traffic Impacts of the PV Facility, associated infrastructure and Grid Connection Infrastructure		
Nature: Increase in Traffic (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Increase of Incidents with pedestrians and livestock (negative)		
Significance	**Medium without mitigation**	**Low with mitigation**
Nature: Increase in Dust from gravel roads (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Increase in Road Maintenance (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Additional Abnormal Loads (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Construction Phase Risks Associated with the preferred BESS Alternative.		
Nature: Human Health - chronic exposure to toxic chemical or biological agents (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Human Health - exposure to noise (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Human Health - exposure to temperature extremes and/or humidity (negative)		
Significance	**Low without mitigation**	**Very Low with mitigation**
Nature: Human Health - exposure to psychological stress (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Human Health - exposure to ergonomic stress (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Human and Equipment Safety - exposure to fire radiation (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Human and Equipment Safety - exposure to explosion over pressures (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Human and Equipment Safety - exposure to acute toxic chemical and biological agents (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Human and Equipment Safety - exposure to violent release of kinetic or potential energy (negative)		
Significance	**High without mitigation**	**Low with mitigation**
Nature: Human and Equipment Safety - exposure to electromagnetic waves (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Environment - emissions to air (negative)		
Significance	**Low without mitigation**	**Very Low with mitigation**
Nature: Environment - emissions to water (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Environment - emissions to earth (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Environment - waste of resources e.g., water, power etc (negative)		

Significance	**Low without mitigation**	**Very Low with mitigation**
Nature: Public - Aesthetics (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Investors - Financial (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Employees and investors - Security (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Emergencies (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Investors - Legal (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Operational Phase Risks Associated with the preferred BESS Alternative.		
Nature: Human Health - chronic exposure to toxic chemical or biological agents (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Human Health - exposure to noise		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Human Health - exposure to temperature extremes and/or humidity (negative)		
Significance	**Low without mitigation**	**Very Low with mitigation**
Nature: Human Health - exposure to psychological stress (negative)		
Significance	**Low without mitigation**	**Very Low with mitigation**
Nature: Human Health - exposure to ergonomic stress (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Human and Equipment Safety - exposure to fire radiation (negative)		
Significance	**High without mitigation**	**Low with mitigation**
Nature: Human and Equipment Safety - exposure to explosion over pressures (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Human and Equipment Safety - exposure to acute toxic chemical and biological agents (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Human and Equipment Safety - exposure to acute toxic chemical and biological agents (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Human and Equipment Safety - exposure to violent release of kinetic or potential energy (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Human and Equipment Safety - exposure to electromagnetic waves (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Environment - emissions to air (negative)		
Significance	**Low without mitigation**	**Very Low with mitigation**
Nature: Environment - emissions to water (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Environment - emissions to earth (negative)		
Significance	**Low without mitigation**	**Very Low with mitigation**

Nature: Environment - waste of resources e.g., water, power etc (negative)		
Significance	**Low without mitigation**	**Very Low with mitigation**
Nature: Public - Aesthetics (negative)		
Significance	**Low without mitigation**	**Low with mitigation**
Nature: Investors - Financial (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Employees and investors - Security (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Emergencies (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Investors - Legal (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Environment – emissions to earth (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**
Nature: Investors - Legal (negative)		
Significance	**Moderate without mitigation**	**Low with mitigation**

6.13 IMPACT STATEMENT

As can be seen in the table above, all impacts (after mitigation) associated with the proposed Bethel Solar PV and Grid Connection Infrastructure range from High – Positive to Medium – Negative. A single high post mitigation was identified by the palaeontology specialist, which would only occur if palaeontological resources are unearthed during excavations. A palaeontology chance find procedure has been incorporated into the EMPr (Appendix I) to outline the procedure to follow, should any palaeontology resources be unearthed during construction activities. All other medium to high, 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 alternative (Layout Alternative 3) avoids the main sensitive features including visual setbacks, aquatic features, heritage sites and avifaunal buffers. The preferred grid connection alternative (Grid Alternative 1) has also avoided all the main sensitive features (powerlines will straddle the aquatic biodiversity features).

The Terrestrial Biodiversity specialist concluded that 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 Visual Specialist has concluded that the proposed development can commence subject to the implementation of mitigation measures.

The Heritage specialist confirmed that the proposed development can continue subject to the avoidance of the identified heritage features (Already avoided by the preferred layout)

The Aquatic biodiversity specialist confirmed that the minor impacts on Aquatic features can be attributed to the avoidance of the sensitive habitats and implementation of buffer zones by the preferred layout alternative. Should avoidance and basic mitigation actions be implemented, limited impacts to aquatic biodiversity can be expected.

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.

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 Grid Capacity and the highly competitive bid process, it is a reasonable assumption that not all the projects in the area will be developed.

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, Bethel Solar PV and its associated Grid Connection Infrastructure 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 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 PV Layout Alternative (Layout Alternative 3) and preferred Grid Connection Alternative (Grid Alternative 1) can be considered for approval by the competent Authority, subject to the outcome of the public participation process, on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr, BESS Risk Assessment and Generic EMPr for substation and powerline infrastructure be strictly adhered to.

7. MANAGEMENT AND MITIGATION OF IMPACTS

In order to achieve the post mitigation impact significance summarised in section 6.12 above, the following mitigation measures as identified by the participating specialists must be adopted and implemented. These mitigation measures have all been incorporated into the EMPr in appendix I.

Table 61: Mitigation measures identified by participating specialists.

Impact / Aspect	Mitigation / Management Action
Construction phase Terrestrial biodiversity impacts, including: - Loss of Makhado Sweet Bushveld and associated plant species - Loss of Secondary Vegetation and associated plant species - Loss of individuals of protected plant species - Fragmentation of Vegetation and Disruption of Ecosystem Processes	- Clearly demarcate the approved development footprint (including the SEF, access roads, laydown areas, and associated infrastructure) using visible markers such as danger tape or stakes. Construction activities must remain strictly within these boundaries, and no-go zones must be enforced for construction staff, vehicles, and equipment to protect surrounding sensitive or intact areas. - Strip and stockpile topsoil (to a depth of 20 cm, where feasible) from disturbed areas. Store this soil in a designated low-sensitivity area. The stockpile should be stabilised using shade cloth, hessian sheeting, a tarpaulin, or other suitable erosion-control material to prevent wind and water erosion. The stockpiled soil must be used for post-construction rehabilitation.

Impact / Aspect	Mitigation / Management Action
- Introduction and Spread of Weeds and Alien Plant Species - Loss and transformation of natural habitat within the Vhembe Biosphere Reserve - Loss of Faunal Habitat - Loss of Faunal SCC - Disturbance to Faunal Species and their Livelihood due to Project Related Activities - Mortality of Faunal Species due to Earthworks, Roadkill and Persecution	- Rehabilitate all temporary construction areas (e.g., widened road verges) using locally indigenous species. Only indigenous species must be used in all rehabilitation efforts. - Laydown areas must be sited within the demarcated development footprint and may not encroach on surrounding natural vegetation. - Open fires must be strictly prohibited on-site during construction to prevent the risk of wildfires. - Develop and implement an Alien Invasive Plant Management Plan or Method Statement that includes regular site inspections, early detection, rapid response protocols, and manual or chemical control methods. Areas disturbed during construction must be monitored regularly and cleared of invasive species promptly. - Implement appropriate erosion control measures such as berms, fibre mats, or brush packing on disturbed soils to prevent erosion and facilitate vegetation recovery. - Establish a vegetation monitoring programme to assess recovery success of rehabilitation and restoration post construction and identify the need for further intervention. - Prohibit the collection or removal of plant material by any site personnel (other than the vegetation clearance required for the project footprint). Conduct regular spot checks to ensure compliance with this requirement. - Provide site-specific environmental training to all construction personnel, focusing on the ecological sensitivity of the bushveld and associated protection and mitigation measures. - Ensure strict enforcement and protection of the buffer zones around riparian areas as established by the aquatic specialist to maintain their function as ecological corridors. - Obtain a Protected Species Removal Permit from the Department of Forestry, Fisheries and the Environment (DFFE) and Limpopo Department of Economic Development, Environment and Tourism (LEDET) prior to removing any protected trees. - Clearly demarcate and avoid individuals of protected species where possible. - Relocate viable individuals of smaller species (Boscia foetida, young Sclerocarya birrea, etc.) to nearby suitable habitat prior to clearing. - Incorporate some protected species into rehabilitation/landscaping where appropriate. - Educate construction staff on protected species and no-go areas. - Avoid individuals of Adansonia digitata (Baobab) around the Makoppa Lodge. - Confine all construction and associated activities strictly to the approved development footprint to prevent unnecessary loss of additional vegetation. - Stabilise and revegetate disturbed areas not required for permanent infrastructure using fast-growing, locally indigenous plant species. - The site must be checked regularly for the presence of alien invasive species and weeds. When alien invasive species are found, immediate action must be taken to remove them. - Alien Invasive Plant Species and Weeds must be disposed on in line with the recommendations outlined in the Working for Water Programme. - Any equipment brought onto site must be clean to ensure no transfer or introduction of seeds. - No exotic species are permitted to be planted on site. Only indigenous plant species can be used for rehabilitation/landscaping. - The ECO must create a list with accompanying photographs of possible alien invasive species that could occur on site prior to construction. This photo guide must be used to determine if any alien invasive species are present. - An alien invasive method statement must be incorporated into the EMPr. - Focus rehabilitation efforts on restoring general vegetation structure and cover using hardy, locally appropriate secondary grassland species, rather than restoring exact pre-clearance diversity.

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	- All construction and construction related activities (including parking of vehicles and machinery) must remain within the approved project footprint.
	- Rehabilitation efforts of temporary construction areas must also provide habitat for faunal species by placing log stacks and rock piles to provide shelter for small mammals and reptiles.
	- Refer to mitigation measure listed for the impact "Loss of Makhado Sweet Bushveld and associated plant species" above.
	- A clause must be included in contracts for ALL construction personnel (i.e. including contractors) working on the project stating that: "no wild animals will be hunted, killed, poisoned or captured. No wild animals will be imported into, exported from or transported in or through the province. No wild animals will be sold, bought, donated and no person associated with the development will be in possession of any live wild animal, carcass or anything manufactured from the carcass." A clause relating to fines, possible dismissal and legal prosecution must be included should any of the above transgressions occur for SCC.
	- Should any fauna SCC be encountered during construction and operation, these must be recorded (i.e. be photographed, GPS co-ordinates taken) and placed on iNaturalist, where possible.
	- The ECO must create a list with accompanying photographs of possible faunal SCC that could occur in the project area prior to construction. This photo guide must be used to determine if faunal SCC are encountered.
	- Provide environmental awareness training for construction personnel on the identification and importance of SCC, including Pangolins and Black-footed Cats.
	- Train staff in protocols for reporting wildlife encounters and handling any injured or trapped animals promptly and humanely.
	- If the development requires electric fencing ensure that it is wildlife-friendly electric fencing that is designed to minimise injury or mortality to nocturnal and burrowing species such as pangolins and black-footed cats. Specific specification include:
	  - Ensure the lowest live wire is no less than 30–40 cm above the ground.
	  - If additional wires below 40 cm are needed for security, use plain (non-electrified) wire or coated fencing wire at ground level to prevent electrocution.
	  - Ensure regular fence check to locate and free any fauna that are stuck (e.g., tortoises, pythons, etc.).
	  - Install smart energizers that regulate the electrical current in the fence, limiting the duration and frequency of the current flow through specific strands, to reduce the risk of faunal electrocution.
	  - Consider attaching small reflective markers or tags at pangolin head height (~30 cm) to increase visibility, reducing the chance of accidental contact at night.
	  - Provide wildlife gaps or crawl-unders in strategic locations such as riparian buffer zones/ecological corridors to allow safe wildlife movement where possible, particularly in non-sensitive operational zones.
	  - Conduct pre-construction surveys and burrow checks by qualified reputable ecologists to identify active dens, burrows, and resting sites used by Pangolins, Black-footed Cats, and other SCC.
	  - Where active burrows or dens are found within the construction footprint,
	  - delay clearing,
	  - Implement exclusion zones (no-go areas) around confirmed dens during construction to avoid disturbance and
	  - If not breeding, and where feasible, relocate these structures and/or individuals, under expert guidance, to nearby suitable habitat.
	  - If young are present and relocation is unfeasible adhere to exclusion zone until young move away from den/burrow.

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	- Schedule ground disturbance activities outside sensitive periods such as breeding or rearing seasons for these species to reduce impacts on reproduction and juvenile survival. - Establish a monitoring programme throughout construction and early operation phases to detect any wildlife injuries or mortalities linked to fencing or machinery, snares (poaching) or road kill. - Adapt mitigation measures as necessary based on monitoring results to reduce risks to these species. - Rehabilitate disturbed areas post-construction with native vegetation to restore foraging and shelter habitat for these species and support their long-term persistence near the site. - Ensure strict enforcement and protection of the buffer zones around riparian areas as established by the aquatic specialist to maintain their function as ecological corridors. - Liaise with the landowner to ensure all game species currently stocked within the project footprint are translocated outside of the development footprint prior to construction. - In addition to the mitigation measures listed for the Loss of Faunal SCC, the following mitigation measures must be implemented: - Where possible, limit construction to daylight hours to reduce nocturnal faunal disturbance. - The ECO should appoint a member of staff to walk ahead of construction machinery directly prior to vegetation clearance. Should any faunal species be identified during the walk through, these should be allowed to move out of harm's way prior to vegetation clearance. - Dust suppression measures must be implemented in the dry and/or windy months. - All machinery, vehicles and earth moving equipment must be maintained and the noise these create must meet industry minimum standards. e.g. the sound generated by a machine must be below a certain decibel as prescribed in the relevant noise control regulations. - A Storm Water Management Plan must be drafted and implemented to prevent runoff entering aquatic systems and causing siltation and pollution of this faunal habitat. Hard surfaces should be avoided. - No construction night lighting must be allowed. If required, minimise lighting in open space areas within development and any external lights must be down lights placed as low to the ground as possible and installation of low UV emitting lights, such as most LEDs. Alights should also be on a sensor to minimise disturbance - Development must be designed to allow unencumbered movement, especially of small faunal species. - Internal and external fences/walls (if any) must allow for the movement of fauna through the development. These must have ground level gaps of 10cm x 10cm at 10m intervals. These gaps must be kept free of obstructions, including plant growth and debris. - All guttering and kerbstones must be sloped i.e. must be less than 45~~o~~° on either side or kerbstones should be slanted or lowered (less than 10cm) at 10m intervals to allow for easy movement of toads - Steep sided drains, gutters, canals and open pits/trenches must be covered with mesh (5mm x 5mm) to prevent fauna falling in and getting stuck alternatively long trenches (e.g. cabling) must have exit ramps (< 45~~o~~° slope) at 10m intervals. - No unnecessary structures that would act as pitfall traps for animals must be constructed - If there are retaining walls, steps should be formed to allow for small animals to move over them. These must be vegetated with plant species that offer cover. - Speed restrictions must be implemented on all vehicles within the development footprint (30km/h is recommended) to reduced faunal mortalities on the project roads.

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	- Any faunal SCC that may die as a result of construction the ECO must keep a record (i.e. be photographed, GPS co-ordinates taken) and if the carcass is somewhat intact preserved (placed in a plastic bag and frozen) and donated to the nearest university, museum or SANBI. - A trained snake handler must be on call during construction to remove any snakes within construction areas. - A clause relating to fines, possible dismissal and legal prosecution must be included in all contracts for ALL personnel (i.e. including contractors) working on the project should any speeding or persecution of animals occur. - On-site induction must include an awareness section on the safety of animals and personnel aimed at preventing persecution and injury.
Operational Phase Terrestrial Biodiversity impacts including: - Spread of Weeds and Alien Plant Species. - Disturbance and Mortality of Faunal Species During Operation.	- Stabilise and revegetate disturbed areas not required for permanent infrastructure using fast-growing, locally indigenous species. - The site must be checked regularly for the presence of alien invasive species and weeds. When alien invasive species are found, immediate action must be taken to remove them. - Alien Invasive Plant Species and Weeds must be disposed on in line with the recommendations outlined in the Working for Water Programme. - Any equipment brought onto site must be clean to ensure no transfer or introduction of seeds. - No exotic species are permitted to be planted on site. Only indigenous plant species can be used for rehabilitation/landscaping. - The ECO must create a list with accompanying photographs of possible alien invasive species that could occur on site prior to construction. This photo guide must be used to determine if any alien invasive species are present. - Develop and implement an Alien Invasive Plant Management Plan or Method Statement that includes regular site inspections, early detection, rapid response protocols, and manual or chemical control methods. - Speed restrictions must be implemented on all vehicles within the project area (30km/h is recommended) to reduced faunal mortalities on the project roads. - Design and maintain perimeter fencing to allow safe passage of small and medium-sized wildlife (e.g., include wildlife gaps or crawl-unders), minimizing entrapment and movement barrier (refer to fence specifications listed above for construction phase impacts). - Use wildlife-sensitive lighting such as downward-facing, low-intensity, and motion-activated lights to reduce disturbance to nocturnal fauna. - Conduct periodic inspections to identify and release any trapped animals and repair fence damage to prevent mortality or injury. - Provide ongoing training for operational staff on wildlife protection, including how to report and respond to wildlife sightings or incidents. - Maintain ecological corridors such as the buffers around riparian areas that have been delineated by the aquatic specialist. - Keep the contact details of a qualified snake handler readily available at the operations and maintenance building for prompt removal of any snakes found within buildings or infrastructure. - Speed restrictions must be implemented on all vehicles within the project area (30km/h is recommended) to reduced faunal mortalities on the project roads. - Design and maintain perimeter fencing to allow safe passage of small and medium-sized wildlife (e.g., include wildlife gaps or crawl-unders), minimizing entrapment and movement barrier (refer to fence specifications listed above for construction phase impacts). - Use wildlife-sensitive lighting such as downward-facing, low-intensity, and motion-activated lights to reduce disturbance to nocturnal fauna. - Conduct periodic inspections to identify and release any trapped animals and repair fence damage to prevent mortality or injury. - Provide ongoing training for operational staff on wildlife protection, including how to report and respond to wildlife sightings or incidents. - Maintain ecological corridors such as the buffers around riparian areas that have been delineated by the aquatic specialist.

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	- Keep the contact details of a qualified snake handler readily available at the operations and maintenance building for prompt removal of any snakes found within buildings or infrastructure.
Decommissioning Phase Terrestrial Biodiversity Impacts, including: - Loss of indigenous vegetation - Infestation of Alien Plant Species - Disturbance and Mortality of Faunal Species During Decommissioning	- Appoint a suitably qualified specialist to compile a rehabilitation management plan for the site. - Plan decommissioning activities to avoid unnecessary disturbance to re-established vegetation, restricting heavy machinery movement to designated areas. - Clearly mark and fence off sensitive areas with recovering vegetation to prevent accidental damage during infrastructure removal. - Salvage and stockpile topsoil and seed banks from disturbed areas prior to decommissioning for use in rehabilitation. - Implement phased removal of infrastructure to minimize large-scale disturbance at any one time. - Use low-impact machinery and techniques wherever possible to reduce soil compaction and vegetation damage. - Rehabilitate disturbed areas immediately after infrastructure removal using locally indigenous plant species reflective of the pre-disturbance vegetation. - Monitor rehabilitated areas for at least two years post-decommissioning to assess vegetation recovery and address any erosion or invasive species issues. Ensure funds are placed aside and earmarked for monitoring post decommissioning. - Develop and implement an invasive alien plant management plan or method statement throughout the decommissioning and rehabilitation phases to prevent colonization of disturbed soils. - Provide environmental training for all personnel involved in decommissioning on the importance of protecting recovering vegetation and adhering to rehabilitation protocols. - Stabilise and revegetate disturbed areas using fast-growing, locally indigenous grassland species. - The site must be checked regularly for the presence of alien invasive species and weeds. When alien invasive species are found, immediate action must be taken to remove them. - Alien Invasive Plant Species and Weeds must be disposed on in line with the recommendations outlined in the Working for Water Programme. - Any equipment brought onto site must be clean to ensure no transfer or introduction of seeds. - No exotic species are permitted to be planted on site. Only indigenous plant species can be used for rehabilitation/landscaping. - The ECO must create a list with accompanying photographs of possible alien invasive species that could occur on site prior to construction. This photo guide must be used to determine if any alien invasive species are present. - An alien invasive method statement must be incorporated into the EMPr. - Focus rehabilitation efforts on restoring general vegetation structure and cover using hardy, locally appropriate secondary grassland species, rather than restoring exact pre-clearance diversity. - Develop and implement an Alien Invasive Plant Management Plan or Method Statement that includes regular site inspections, early detection, rapid response protocols, and manual or chemical control methods. Disturbed areas must be monitored regularly and cleared of invasive species promptly. - The ECO should appoint a member of staff to walk ahead of machinery directly prior to decommissioning. Should any faunal species be identified during the walk through, these should be allowed to move out of harm's way prior to vegetation clearance. - External lighting should be avoided. If required, this should be down lighting and/or of low wattage. - Dust suppression measures must be implemented in the dry and/or windy months.

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	- All machinery, vehicles and earth moving equipment must be maintained and the noise these create must meet industry minimum standards. e.g. the sound generated by a machine must be below a certain decibel as prescribed in the relevant noise control regulations. - Limit decommissioning to daylight hours to reduce nocturnal faunal disturbance. - Enforce speed limits on-site (30 km/hr). - Provide environmental awareness training for decommissioning personnel. - Rehabilitate disturbed areas.
Construction Phase Agricultural Impacts Including: - Reduction of land with natural vegetation for livestock grazing; - Soil erosion; - Soil pollution; - Soil compaction;	- Vegetation clearance must be restricted to infrastructure and access road areas. - Materials and equipment must only be stored in the pre-determined laydown areas. - Prior arrangements must be made with the landowner and neighbouring landowners to ensure that farm animals are moved to areas where they cannot be injured by vehicles traversing the area. - No boundary fence must be opened without the landowner or neighbouring landowners' permission. - No open fires are allowable during the construction phase. - The supporting infrastructure must be constructed as closely as possible to avoid fragmentation of the entire development area. - Land clearance must only be undertaken immediately prior to construction activities and only within the development footprint/servitude; - Unnecessary land clearance must be avoided; - Level any remaining soil removed from excavation pits that remained on the surface instead of allowing small stockpiles of soil to remain on the surface. - Regularly monitor the site to check for areas where signs of soil erosion may start to appear. - Should any soil erosion be detected, it must be addressed immediately through rehabilitation and surface stabilisation techniques. - 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; and - Compile (and adhere to) a procedure for safely handling battery cells during transport and installation. - Apart from the drilling and piling machines that need to install the PV arrays, all other vehicles and machines must utilise the internal access road network and not travel outside of it. - High impact construction activities (i.e. road construction, trenching etc) should be done outside of the rainy season and - Vehicles and equipment must park in designated parking areas.
Operational Phase Agricultural Impacts, including: - Soil erosion; - Soil pollution;	- The area around the project, including the internal access roads, must regularly be monitored to detect early signs of soil erosion on-set; and - 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 and - Regularly monitor areas alongside the roads, parking area and workshop for any signs of oil, grease and fuel spillage or waste.

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Construction Phase Heritage Impacts, including: - Loss of Archaeological Resources. - Loss of Palaeontology resources.	- The conservation of these sites into the future must be ensured. This can be managed through the development of a Heritage Management Plan to be implemented for the duration of the project. - Should any buried archaeological resources or human remains or burials be uncovered during the course of development activities, work must cease in the vicinity of these finds. The South African Heritage Resources Agency (SAHRA) must be contacted immediately in order to determine an appropriate way forward.
Construction Phase Visual Impacts, including: - Loss of site landscape character due to the removal of vegetation and the construction of the project infrastructure. - Wind-blown dust due to the removal of large areas of vegetation. - Possible soil erosion from temporary roads crossing drainage lines. - Wind-blown litter from the laydown and construction sites. - Movement of large earth moving vehicles. - Construction of PV panels, laydowns site, construction camps and maintenance areas.	- Stockpiling of topsoil from impact areas for later use in rehabilitation. - Wind blown dust mitigation. - Dust mitigation for moving vehicles. - BESS structures should be painted a light green colour with a mid-grey hue to allow for reduce colour contrast while still allowing some reflectivity effect to reduce heat buildup (subject to BESS design specifications). - General buildings and structures should have walls painted a mid grey-green colour so as to better blend in with the bushveld vegetation. Roof sheeting should be a slightly darker mid-grey, green colour and preferably rough textured to reduce reflectivity. (Architectural / design variation around the grey-green colour would be acceptable). - Substation structures to be built to Eskom specification. The visual preference is that these smaller structures be constructed from a brown, rough-textured face brick with roof colour a grey hue material. - Light spillage mitigations and no overhead lighting. - Strict enforcement of non-littering with monthly checking of fencing for wind swept litter. - The laydown needs to be well set back from the adjacent roads and not located on prominent terrain with a minimum buffer of 100m from roads. - 50m setback from roads for monopole/ pylon placement. - Preference for routing to the north of Botteliers Road. - Review proposed routing so as to not enclose the adjacent property where eco-tourism activities are taking place.
Operational Phase Visual Impacts, Including: - Massing effect in the landscape from a large-scale landscape modification. - On-going soil erosion. - On-going windblown dust.	- Continued dust monitoring and management as needed. - Continued monitoring and management for possible soil erosion along drainage channels. - Continued management of the bushveld buffers areas along the road to ensure that these areas do not become a fire risk, and that the bushveld vegetation can continue to grow. - Continued light spillage monitoring and no overhead lighting. - Moderate signage along the main access road with no excessive advertising banners displayed. - Continued monitoring for wind blown litter.
Decommissioning Phase Visual Impacts, Including: - Movement of vehicles and associated dust. - Wind-blown dust from the disturbance of cover vegetation / gravel.	- Dust suppression measures. - Litter management measures. - Removal of all structures and processing in terms of according to NEMWA specifications. - Rehabilitation of impacted areas to veld grasses.
Construction Phase Social Impacts, including: - Creation of employment and business opportunities, and the	- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. - Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories.

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opportunity for skills development and on-site training (Positive). - Impacts associated with the presence of construction workers on local communities. - Impacts related to the potential influx of jobseekers. - Increased safety and security risks to landowners and farming operations associated with presence of construction workers on the site. - Increased risk of grass fires associated with construction related activities. - Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles.	- 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 MM to establish the existence of a skills database for the area. If such a database exists, it should be made available to the contractors appointed for the construction phase. - The local authorities, CPAs 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 MM 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 companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work. - In the event of a construction camp being established, it should conform to Guidance Note for Worker Accommodation by the IFC and European Bank for Reconstruction and Development (EBRD) (August 2009) and a Construction Camp Management Plan should be prepared. - Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. - Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. - The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents. - Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories. - The proponent should consider the option of establishing a Monitoring Committee (MC) for the construction phase that representatives from local landowners, farming associations, and the local municipality. This MC should be established prior to commencement of the construction phase and form part of the SEP. - The proponent and contractor should develop a Code of Conduct (CoC) for construction workers. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation. The CoC should be signed by the proponent and the contractors before the contractors move onto site. The CoC should form part of the CHSSP. - The proponent and the contractor should implement an HIV/AIDS, COVID-19 and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. The programmes should form part of the CHSSP. - 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 for their contract coming to an end. - Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.

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	- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase. - The proponent, in consultation with the MM should investigate the option of establishing a MC to monitor and identify potential problems that may arise due to the influx of job seekers to the area. - The proponent should implement a "locals first" policy, specifically with regard to unskilled and low skilled opportunities. - The proponent should implement a policy that no employment will be available at the gate. - The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end. - Install CCTV cameras at key intersection points and access roads to the PV sites. - Fence off the PV sites prior to the start of the construction phase. Where feasible the option of fencing in the entire property should be investigated. - The proponent should enter into an agreement with the local landowners 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. - All farm gates must be closed after passing through. - Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers that are not accommodated in the construction camp to and from the site. - The proponent should consider the option of establishing a MF (see above) that includes local farmers and develop a Code of Conduct for construction workers. This committee should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before construction activities commence. - Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms. - The Environmental Management Programme (EMPr) 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 who are 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. - The proponent should become a member of the local Fire Protection Association. - 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. - As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities.

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	- The impact on road surfaces and repair thereof should be discussed with the Limpopo Provincial Roads Department. - Establishment of a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads. - The movement of heavy vehicles associated with the construction phase should be timed to avoid times and 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.
Operational Phase Social Impacts, Including: - Establishment of infrastructure to improve energy security and support renewable sector (Positive). - Creation of employment and business opportunities (Positive). - Benefits for project landowners (Positive). - Benefits associated with socio-economic contributions to community development (Positive). - Visual impacts and associated impacts on sense of place. - Potential impact on property values. - Potential impact on tourism.	- 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. - Where reasonable and practical, the proponent should appoint local service providers and implement a 'locals first' policy, especially for semi and low-skilled job categories. - Where feasible, efforts should be made to employ local service providers that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria. - Before the operational phase commences the proponent should meet with representatives from the MM to establish the existence of a skills database for the area and list of service providers. - Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the operational phase. - The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. - The proponent should liaise with the MM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers. - The proponents should liaise with the MM and CPAs 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. - Strict financial management controls, including annual audits, should be instituted to manage the SED contributions.
Aquatic Impacts associated with the PV Facility and Road Works, including internal and access roads.	- The watercourses and recommended buffer zones must be strictly adhered to during the construction phase of the project, with exception of any authorised activities and structures required to traverse an aquatic resource. Any supporting aspects and activities not required to be within the buffer area must adhere to the buffer zone; - Both sensitive and construction areas must be clearly demarcated. No activities should be allowed in the sensitive areas. - Landscape and re-vegetate all cleared areas as soon as possible to limit erosion potential; - It is strongly recommended that the project make use of existing road networks, before new areas are cleared for new access roads; - Install sedimentation/erosion protection measures prior to construction in the form of several rows of sand bags, silt traps and fences, this is particularly important in the access roads leading to/in proximity of any drainage channel and around active working areas for foundations; - Energy dissipation, such as stone berms or blocks must be strategically placed along the road margins as surface runoff leaves the roads and enters the

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	surrounding environment with the potential for severe erosion and damage to road margins. The steeper the slope of the road, the more regular the berms should be spaced and can be as close as one meter apart where necessary; - Where passive re-establishment of vegetation along road margins is insufficient to stabilise soils and prevent erosion, hydroseeding, drought-tolerant indigenous grasses may be considered as a supplementary measure, provided it is feasible and available; - The section of roads which will traverse the lowest lying areas/potentially wet areas or steeper slopes will be subjected to traffic from vehicles for inspections and maintenance on site with the potential for damage to habitat and erosion and may require permeable paving as a solution. The permeable paving provides a stable platform to carry the loads of service vehicles whilst the vegetation growing through the permeable pavers compliments the surrounding vegetation, preventing erosion in these key areas; - An environmental control officer (ECO) inspection of the project area/development footprint and surrounding influenced areas must be completed during construction and within 1 month following the end of construction activities and within a week after the first rainfall event. Thereafter, routine monitoring should take place for the life of the project. Should erosion be developing this must be immediately addressed through appropriate and adaptive measures; - Modify security fencing to minimise barrier effects for small- and medium-sized animals. Modifications to fencing can involve maintaining a gap between the base of the fence and the ground. This could occur across the full extent of, or at regular intervals, along the fence line. This can also involve creating passageways by modifying the fence weave to facilitate animal movement; - Utilise non-reflective solar panels; and - If reflective solar panels are used, then reduce reflection effects for aquatic insects. Non-polarising white tape can be used around and/or across panels to minimise reflection which can attract aquatic insects as it mimics reflective surfaces of waterbodies.
Aquatic Impacts Associated with Erosion.	- All removed soil and material must not be stockpiled within any watercourses. Stockpiling should take place outside of the water resources. All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds; - Install sandbags around soil stockpiles to prevent soils washing into the watercourses; - Document the soil profile on removal and ensure the soil is backfilled in the same horizon order in which it was removed; - Ensure that topsoil is appropriately stored and re-applied; and - Make sure that the soil is backfilled and compacted to appropriate geotechnical specifications for the project area. - Signs of erosion must be addressed immediately to prevent further erosion of the upgraded infrastructure; - Temporary and permanent erosion control methods, such as silt fences, flotation silt curtains, retention basins, detention ponds, interceptor ditches, seeding and sodding, riprap, erosion mats, and mulching will be implemented where necessary, in accordance with the Stormwater Management Plan; - Any exposed earth should be rehabilitated during the construction phase by establishing suitable vegetation (e.g., vigorous indigenous grasses) to protect the soil and minimise erosion; and - Landscape and re-vegetate all cleared areas before the operational phase to limit erosion potential.
Aquatic Impacts associated with the establishment of Alien Vegetation.	- Quarterly vegetation rehabilitation surveys need to be conducted of the vegetation within the project footprint; and - An alien invasive plant management plan needs to be compiled and implemented prior to construction to control and prevent the spread of invasive aliens.

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	- Keep disturbances to within footprints and outside of buffer zones; - Control new stands of alien species as they arise; - Land users are required by law, to remove and / or control Category 1 alien and invasive vegetation according to the National Environmental Management: Biodiversity Act (NEMBA: Act 10 of 2004) (September 2020 List – GN1003). Additionally, unless authorised, in terms of the National Water Act, 1998 (Act No. 36 of 1998), no land user shall allow Category 2 plants to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland. Category 3 plants are also prohibited from occurring in proximity to a watercourse; - It is recommended that Category 1 species are prioritised for control, with control of herbaceous weedy species (which would need to include follow-up control); - Foliar herbicide spray must not be used within any of the sensitive riparian areas, rather opt for mechanical removal or direct dribbled application to stumps (use a dye); and - Wet season vegetation rehabilitation surveys need to be conducted of the vegetation within the project footprint to stay on top of the alien vegetation for the life of the project. This will improve the biotic integrity over the long term. - Preventing the introduction, movement and spread of invasive species on and off the construction site.
Aquatic Impacts associated with the Operation of Vehicles and Heavy Machinery	- Operating heavy machinery in watercourse areas require careful consideration to minimise environmental impact; - Due to the scope of work, heavy machinery should only be operated in authorised water resource areas and under supervision of an ECO; - Where possible, schedule operations during the dry season when ground conditions are more stable and less prone to damage; - No heavy machinery shall be permitted within unauthorised water resource areas for any purpose, without the prior approval of the ECO (except emergency procedures); - All construction vehicles required for the proposed activities should only be allowed to use existing roads (including dirt roads); - The route for vehicles (including heavy machinery) must be planned to avoid sensitive habitats, watercourse vegetation, buffer areas and other water bodies as far as feasibly possible; - Operators must be trained in operating machinery in sensitive environments and aware of the sensitivity of the area; - Sensitive areas must be demarcated so as to guide operators, labourers and contractors; - To minimise soil compaction and damage to wetland or riparian vegetation, a pioneer layer should be used when traversing wetland areas. The use of low ground pressure machinery (e.g., tracked vehicles or specialised tyres) may be alternatively considered where feasible and appropriate; - Sediment and erosion control measures—including silt fences, erosion control blankets, and sediment traps—to prevent soil runoff into water bodies associated with vehicular movements and disturbed surfaces will be implemented as part of the Stormwater Management Plan; - Spill prevention and response plans for potential leaks or spills of fuels, oils, or other hazardous substances will be implemented in accordance with Occupational Health and Safety (OH&S) protocols; - Have spill containment materials readily available on-site and train personnel in proper spill response procedures; - The contractor is responsible for cleaning up any spillages (e.g. concrete, oil, fuel), immediately; - Develop a restoration and rehabilitation plan to mitigate any long-term impacts of operating heavy machinery in wetlands and/or riparian areas; and

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	- Implement measures such as revegetation of disturbed areas or habitat enhancement to restore the ecological functions of the water resource(s).
General Impacts of all activities on the identified aquatic resources.	- All work in and around watercourse areas, including those outside the specific project site, will be conducted in accordance with the Environmental Authorisation (EA) requirements to minimise impacts; - Aspects of the site development plan (SDP) such as laydown area and site camp should be located outside of the buffer zone, which would significantly reduce potential impacts; - Construction activities must take place during the low flow period (as much as possible). In addition to this, basic stormwater structures such as berms must be designed and implemented prior to and throughout the duration of the construction activities; - Stormwater runoff from the development area should enter drainage systems through diffuse channels fitted with flow attenuation/energy dissipation structures in the form of green infrastructure; - The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly; - Construction activities should, if possible, be scheduled during the dry season to reduce the erosion potential of exposed surfaces; - Temporary stormwater channels and preferential flow paths will be managed using measures such as aggregate or logs to dissipate and slow flows, this will be detailed in the Stormwater Management Plan; - Prevent uncontrolled access of vehicles through the river system that can cause a significant adverse impact on the hydrology and alluvial soil structure of these areas; - All chemicals, construction materials and toxicants to be used for the construction must be stored within bunded areas; - All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced in a designated area; - All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good “housekeeping”; - Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel throughout the project area. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation); - Have action plans on site, and training for contactors and employees in the event of spills, leaks and other impacts to the aquatic systems; - All removed soil and material must not be stockpiled within the system. Stockpiling should take place away from the watercourse and buffer area. All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds; - Any exposed earth should be rehabilitated during construction by planting suitable vegetation, such as vigorous indigenous grasses, to protect the soil; - No dumping of construction material on-site may take place; - All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported; - An alien invasive plant management plan needs to be compiled and implemented post construction to control current invaded areas and prevent the growth of AIPs on cleared areas. Alien vegetation must not be allowed to encroach onto the sites and must be continually removed during construction. Construction must not promote further alien plant disturbances in the surrounding area; - Heavy vehicles must be parked outside of the watercourse buffer zones except where needed for the construction process; - Erosion prevention and sediment control measures, including temporary and permanent methods such as silt fences, interceptor ditches, seeding and

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	sodding, riprap, and mulching, will be implemented in accordance with the Stormwater Management Plan; - Rehabilitation of the watercourse areas, bed and banks must be budgeted for and should incorporated into the project life cycle and must be completed as soon as construction is completed. Rehabilitation must be done following an approved Rehabilitation Plan and in consultation with a suitably qualified SACNASP professional; - All areas outside the defined construction footprint shall be designated as 'no-go' zones during the construction phase, with strict restrictions on access by construction personnel to prevent disturbance of sensitive habitats upstream and downstream of the site; - Access to internal areas outside the active construction footprint that are essential for operational needs (such as firebreak maintenance and plant operation) should be controlled and managed in accordance with environmental best practices to minimise any impacts; - Clear demarcation and signage must be installed to delineate construction zones and no-go areas, and all site staff should be trained on access restrictions and environmental protection measures; - Areas exposed to erosion will be protected using appropriate measures such as sandbags, berms, and efficient construction practices, such as limiting the footprint and duration of exposed areas. This should be outlined in the Stormwater Management Plan; - All alterations or hardened surfaces associated with such structures or works are structurally stable, do not induce sedimentation, erosion or flooding, do not cause a detrimental change in the quantity, velocity, pattern, timing, water level and assurance of flow in a watercourse, do not cause a detrimental change in the quality of water in the watercourse, do not cause a detrimental change in the stability or geomorphological structure of the watercourse; and does not create nuisance condition, or health or safety hazards; and - Measures must be implemented at alterations (including at existing structures or activities) to 1) prevent detrimental changes to the breeding, nesting or feeding patterns of aquatic biota, including migratory species (if present), 2) allow for the free up and downstream movement of aquatic biota, including migratory species (if present), and 3) prevent a decline in the composition and diversity of the indigenous and endemic aquatic biota (if present).
Aquatic biodiversity impacts associated with the construction and operation of the Grid Connection Infrastructure. These impacts include the access track associated with the Grid Connection Infrastructure.	- The watercourses and recommended buffer zones must be strictly adhered to during the construction phase of the project, with exception of any authorised activities and structures required to traverse an aquatic resource. Any supporting aspects and activities not required to be within the buffer area must adhere to the buffer zone; - Both sensitive and construction areas must be clearly demarcated. No activities should be allowed in the sensitive areas. - Landscape and re-vegetate all cleared areas as soon as possible to limit erosion potential; - Once the final line and associated pylon have been confirmed, a walkthrough is required for these areas, to ensure that sensitive areas are excluded for construction of pylons, through 'micro siting' of the proposed pylon locations; - The use of minimum pylons or pylons that spans wide enough to avoid sensitive areas is recommended; - The placement of pylons must avoid all delineated water resources and buffer; - Mixing of concrete must under no circumstances take place within the watercourses. Scrape the area where mixing and storage of sand and concrete occurred to clean once finished; and - Any water resources outside of the specific project site area and PAOI must be avoided. - It is strongly recommended that the project make use of existing road networks, before new areas are cleared for new access roads;

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	- Install sedimentation/erosion protection measures prior to construction in the form of several rows of sand bags, silt traps and fences, this is particularly important in the access roads leading to/in proximity of any drainage channel and around active working areas for foundations; - Energy dissipation, such as stone berms or blocks must be strategically placed along the road margins as surface runoff leaves the roads and enters the surrounding environment with the potential for severe erosion and damage to road margins. The steeper the slope of the road, the more regular the berms should be spaced and can be as close as one meter apart where necessary; - Where passive re-establishment of vegetation along road margins is insufficient to stabilise soils and prevent erosion, hydroseeding, drought-tolerant indigenous grasses may be considered as a supplementary measure, provided it is feasible and available; - The section of roads which will traverse the lowest lying areas/potentially wet areas or steeper slopes will be subjected to traffic from vehicles for inspections and maintenance on site with the potential for damage to habitat and erosion and may require permeable paving as a solution. The permeable paving provides a stable platform to carry the loads of service vehicles whilst the vegetation growing through the permeable pavers compliments the surrounding vegetation, preventing erosion in these key areas; - An environmental control officer (ECO) inspection of the project area/development footprint and surrounding influenced areas must be completed during construction and within 1 month following the end of construction activities and within a week after the first rainfall event. Thereafter, routine monitoring should take place for the life of the project. Should erosion be developing this must be immediately addressed through appropriate and adaptive measures.
Aquatic biodiversity impacts associated with changes to water quality as a result of the construction and operation of the Grid Connection Infrastructure.	- All construction activities must be undertaken during the low flow (dry season) period as much as possible to limit surface flow transporting contaminants to the surrounding watercourse habitat; - All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good “housekeeping”; - During construction contractors used for the project must have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly; - Have action plans on site, and training for contactors and employees in the event of spills, leaks and other impacts to the freshwater systems - Where feasible, as much material must be prefabricated and then transported to site to avoid the risks of contamination associated with mixing, pouring and the storage of chemicals and compounds on site; - No vehicle or machinery is allowed to be washed within a watercourse or its buffer area, and should preferably take place off site; - All chemicals and toxicants during construction must be stored in bunded areas; - All machinery and equipment should be inspected regularly for faults and possible leaks; these should be serviced off-site; - No indiscriminate dumping of construction material is permitted on-site. Any waste temporarily stored on-site must be placed in designated, contained areas in accordance with the approved waste management plan; and - All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported.
Aquatic biodiversity impacts associated with erosion as a result of the construction and operation of the Grid Connection Infrastructure.	- All removed soil and material must not be stockpiled within any watercourse. Stockpiling should take place outside of water resources. All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds and/or any other appropriate erosion protection measures; - Install sandbags around soil stockpiles to prevent soils washing into the system;

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	- Document the soil profile on removal and ensure the soil is backfilled in the same horizon order in which it was removed; - Ensure that topsoil is appropriately stored and re-applied; and - Make sure that the soil is backfilled and compacted to appropriate geotechnical specifications for the project area. - Signs of erosion must be addressed immediately to prevent further erosion of the upgraded infrastructure; - Temporary and permanent erosion control methods may include silt fences, flotation silt curtains, retention basins, detention ponds, interceptor ditches, seeding and sodding, riprap of exposed embankments, erosion mats, and mulching; - Any exposed earth should be rehabilitated promptly by planting suitable vegetation (vigorous indigenous grasses) to protect the exposed soil; and - Landscape and re-vegetate all cleared areas as soon as possible to limit erosion potential.
Aquatic biodiversity impacts associated with the establishment of invasive alien vegetation as a result of the construction and operation of the Grid Connection Infrastructure.	- Quarterly vegetation rehabilitation surveys need to be conducted of the vegetation within the project footprint; and - An alien invasive plant management plan needs to be compiled and implemented prior to construction to control and prevent the spread of invasive aliens. - Keep disturbances to within footprints and outside of buffer zones; - Control new stands of alien species as they arise; - Land users are required by law, to remove and / or control Category 1 alien and invasive vegetation according to the National Environmental Management: Biodiversity Act (NEMBA: Act 10 of 2004) (September 2020 List – GN1003). Additionally, unless authorised, in terms of the National Water Act, 1998 (Act No. 36 of 1998), no land user shall allow Category 2 plants to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland. Category 3 plants are also prohibited from occurring in proximity to a watercourse; - It is recommended that Category 1 species are prioritised for control, with control of herbaceous weedy species (which would need to include follow-up control); - Foliar herbicide spray must not be used within any of the sensitive riparian areas, rather opt for mechanical removal or direct dribbled application to stumps (use a dye); and - Wet season vegetation rehabilitation surveys need to be conducted of the vegetation within the project footprint to stay on top of the alien vegetation for the life of the project. This will improve the biotic integrity over the long term. - Preventing the introduction, movement and spread of invasive species on and off the construction site, for example by washing down vehicles before they enter the site on designated areas.
Aquatic biodiversity impacts associated with the operation of heavy machinery and plant associated with the construction and operation of the Grid Connection Infrastructure.	- Operating heavy machinery in watercourse areas require careful consideration to minimise environmental impact; - Due to the scope of work, heavy machinery should only be operated in authorised water resource areas and under supervision of an ECO; - Implement seasonal restrictions on operations to avoid sensitive periods such as breeding seasons for wildlife or periods of high water levels (if applicable); - Schedule operations during the dry season when ground conditions are more stable and less prone to damage; - No heavy machinery shall be permitted within unauthorised water resource areas for any purpose. An exception being emergency procedures, however this must be done with the approval and supervision of the ECO; - Construction vehicles (including heavy machinery) must, as far as feasibly possible, use existing roads (including dirt roads). Where alternative routing is unavoidable, planned routes must avoid sensitive habitats, watercourse vegetation, buffer areas, and other water bodies;

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	- Operators must be trained in operating machinery in sensitive environments and aware of the sensitivity of the area; - Sensitive areas must be demarcated so as to guide operators, labourers and contractors; - Use machinery with low ground pressure to minimise soil compaction and damage to wetland/riparian vegetation. Tracked vehicles or specialised low-ground-pressure tyres can be used if feasible/available; - Machinery can be equipped with attachments like swamp mats or bog mats to distribute weight and minimise disturbance to the watercourse areas; - Implement sediment and erosion control measures such as silt fences, erosion control blankets, or sediment traps to prevent soil runoff into water bodies associated with vehicular movements and disturbed/hardened surfaces; - Develop spill prevention and response plans to address potential leaks or spills of fuels, oils, or other hazardous substances; - Have spill containment materials readily available on-site and train personnel in proper spill response procedures; - The contractor is responsible for cleaning up any spillages (e.g. concrete, oil, fuel), immediately; - Develop a restoration and rehabilitation plan to mitigate any long-term impacts of operating heavy machinery in wetlands and/or riparian areas; and - Implement measures such as revegetation of disturbed areas or habitat enhancement to restore the ecological functions of the water resource(s).
General Aquatic biodiversity impacts associated with the construction and operation of the Grid Connection Infrastructure.	- The watercourse areas outside of the specific project site area must be avoided where possible; - Aspects of the site development plan (SDP) such as laydown area and site camps should be located outside of the buffer zone, which would significantly reduce potential impacts; - Construction activities must take place during the low flow period (as much as possible). In addition to this, basic stormwater structures such as berms must be designed and implemented prior to and throughout the duration of the construction activities; - Stormwater runoff from the development area should enter drainage systems through diffuse channels fitted with flow attenuation/energy dissipation structures in the form of green infrastructure such as vegetated swales, or grassed channels; - The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly; - It is preferable that construction takes place during the dry season to reduce the erosion potential of the exposed surfaces; - Temporary storm water channels and preferential flow paths should be filled with aggregate and/or logs (branches included) to dissipate and slow flows limiting erosion; - Prevent uncontrolled access of vehicles through the river system that can cause a significant adverse impact on the hydrology and alluvial soil structure of these areas; - All chemicals, construction materials and toxicants to be used for the construction must be stored within bunded areas; - All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced in a designated area; - All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good “housekeeping”; - Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel throughout the project area. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation);

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	- Have action plans on site, and training for contactors and employees in the event of spills, leaks and other impacts to the aquatic systems; - All removed soil and material must not be stockpiled within the system. Stockpiling should take place away from the watercourse and buffer area. All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds and/or any other appropriate erosion protection measures; - Any exposed earth should be rehabilitated promptly by planting suitable vegetation (vigorous indigenous grasses) to protect the exposed soil; - No indiscriminate dumping of construction material is permitted on-site. Any waste temporarily stored on-site must be placed in designated, contained areas in accordance with the approved waste management plan; - All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported; and - An alien invasive plant management plan needs to be compiled and implemented post construction to control current invaded areas and prevent the growth of AIPs on cleared areas. Alien vegetation must not be allowed to encroach onto the sites and must be continually removed during construction. Construction must not promote further alien plant disturbances in the surrounding area. - Heavy vehicles must be parked outside of the watercourse buffer zones except where needed for the construction process. - Erosion prevention and sediment control measures must be implemented. Temporary and permanent erosion control methods may include silt fences, interceptor ditches, seeding and sodding, riprap of exposed embankments, and mulching. - Rehabilitation of the watercourse areas, bed and banks must be budgeted for and should incorporated into the project life cycle and must be completed as soon as construction is completed. Rehabilitation must be done following an approved Rehabilitation Plan and in consultation with a suitably qualified SACNASP professional. - All areas upstream and downstream of construction footprint must be demarcated as a 'no-go' zone for the duration of the construction process. No activities or site staff are permitted to enter these areas. - Areas exposed to erosion must be protected through the use of sandbags, berms and efficient construction processes i.e., limiting the extent (footprint) and duration period that areas are exposed. - All alterations or hardened surfaces associated with such structures or works are structurally stable, do not induce sedimentation, erosion or flooding, do not cause a detrimental change in the quantity, velocity, pattern, timing, water level and assurance of flow in a watercourse, do not cause a detrimental change in the quality of water in the watercourse, do not cause a detrimental change in the stability or geomorphological structure of the watercourse; and does not create nuisance condition, or health or safety hazards. - All mitigation measures must be implemented at alterations (including at existing structures or activities) to 1) prevent detrimental changes to the breeding, nesting or feeding patterns of aquatic biota, including migratory species (if present), 2) allow for the free up and downstream movement of aquatic biota, including migratory species (if present), and 3) prevent a decline in the composition and diversity of the indigenous and endemic aquatic biota
Avifaunal Impacts associated with the loss of Habitat during the lifespan of the PV facility.	- All High sensitivity areas must be avoided for development. Only low impact developments can be implemented in the High sensitivity areas, such as upgrading existing roads. - A nest walkdown must be performed prior to clearance of the site. If nests are found, necessary permits and appropriate relocation mitigations should be followed under the consultation with a qualified specialist. - Solar panels must be mounted on pile driven or screw foundations, such as post support spikes, rather than heavy foundations, such as trench-fill or mass

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	concrete foundations, to reduce the negative effects on natural soil functioning, such as its filtering and buffering characteristics, while maintaining habitats for both below and above-ground biodiversity where possible. - The areas to be developed must be specifically demarcated to prevent movement into surrounding environments. - Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, must under no circumstances be fragmented or disturbed further. - Non-woody indigenous vegetation to be maintained under the solar panels if possible to ensure biodiversity is maintained and to prevent soil erosion (Beatty et al, 2017; Sinha et al, 2018). - Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien invasive plant species. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are indigenous to this vegetation type. - 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 equipment when not in use. No routine servicing of equipment to be conducted on site, unless in necessary situations. 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. - Cement must be mixed in a designated area on a liner away from water sources and buffers and that successful rehabilitation of the construction areas can take place. - Leaking equipment and vehicles must be repaired immediately or be removed from PAOI to facilitate repair. - A fire management plan needs to be complied to restrict the impact of fire. - Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all areas of construction. This includes wetting of exposed soft soil surfaces. No non-environmentally friendly suppressants may be used as this could result in the pollution of water sources. - Only environmentally friendly substances may be used for the cleaning/washing of the panels
Direct Avifaunal Impacts during the lifespan of the PV facility.	- The No-Go Buffer areas must be avoided for development. Only low impact developments can be implemented in the High sensitivity areas, such as upgrading existing roads. - All personnel should undergo environmental induction with regards to avifauna and in particular awareness about not harming, collecting, or hunting terrestrial species, and owls, which are often persecuted out of superstition. Signs must be put up to enforce this. - The duration of the construction must be kept to a minimum to avoid disturbing avifauna. - Latest technology solar panels with an anti-reflective coating must be used. This will also improve the light transmittance and therefore increases the overall efficiency. - All areas to be developed must be walked through prior to any activity to ensure no nests or avifauna species are found in the area. Should any Species of Conservation Concern be found and 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. - All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution

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	- Outside lighting must 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 (red/green) lights should be used. - Wire mesh fencing should be used, with markers placed on the fence to enhance visibility. Additionally, openings of up to 30cm by 30cm if possible, must be incorporated at the bottom of the fence to facilitate the free movement of ground-favouring species. - As far as possible and feasible, power cables within the PAOI should be thoroughly insulated and preferably buried. - Any exposed parts must be covered (insulated) to reduce electrocution risk - All infrastructure, must be removed if the facility is decommissioned. - All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limit (40 km/h), to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited. - All project activities must be undertaken with appropriate noise mitigation measures to avoid disturbance to avifauna population in the region - Infrastructure must be consolidated where possible in order to minimise the amount of ground and air space used. - Use environmentally friendly cleaning and dust suppressant products
Avifaunal Impacts associated with habitat loss during the lifespan of the Grid Connection Infrastructure.	- A nest walkdown must be performed prior to clearance of the site. If nests are found, necessary permits and appropriate relocation mitigations should be followed under the consultation with a qualified specialist. - The areas to be developed must be specifically demarcated to prevent movement into surrounding environments. - Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, must under no circumstances be fragmented or disturbed further. - Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien invasive plant species. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are indigenous to this vegetation type. - 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 equipment when not in use. No routine servicing of equipment to be conducted on site, unless in necessary situations. 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. - Cement must be mixed in a designated area on a liner away from water sources and buffers and that successful rehabilitation of the construction areas can take place. - Leaking equipment and vehicles must be repaired immediately or be removed from PAOI to facilitate repair. - Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all areas of construction. This includes wetting of exposed soft soil surfaces. No non-environmentally friendly suppressants may be used as this could result in the pollution of water sources.
Direct Avifaunal Impacts during the lifespan of the Grid Connection Infrastructure.	- All personnel should undergo environmental induction with regards to avifauna and in particular awareness about not harming, collecting, or hunting terrestrial

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	species, and owls, which are often persecuted out of superstition. Signs must be put up to enforce this. - The duration of the construction must be kept to a minimum to avoid disturbing avifauna. - Bird Flappers and diverters must be placed on all new overhead powerlines, this must be conducted in accordance with industry standards. - Overhead cables/lines must be fitted with industry standard bird flight diverters in order to make the lines as visible as possible to collision-susceptible species. Shaw et al (2021) demonstrated that large avifauna species mortality was reduced by 51% (95% CI: 23–68%). Recommended bird diverters such as flapping devices (dynamic device) and thickened wire spirals (static device) that increase the visibility of the lines should be fitted in accordance with the industry standards. A bird diverter with high visibility under low light conditions is highly recommended when most species move from roosting to feeding sites. - Any OHLs must be of a design that minimizes electrocution risk by using adequately insulated 'bird friendly' monopole structures as per the Eskom/EWT guidelines. - Ensure that the phase cables are spaced far enough apart to reduce the risk of large birds (vultures) touching both simultaneously. If such separation (isolation) cannot be provided, exposed parts must be covered (insulated) to reduce electrocution risk. - All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution - Any exposed parts must be covered (insulated) to reduce electrocution risk - A maintenance schedule must be followed twice yearly to ensure that all components are still intact and does not pose an electrocution risk, this must be done for the extent of the lifetime of the powerline. - All infrastructure, must be removed if the facility is decommissioned. - Post-construction monitoring should follow the BirdLife South Africa best practice guidelines for solar energy facilities (BirdLife South Africa, 2017). If monitoring results indicate excessive bird fatalities, then adaptive mitigations should be implemented. Before implementation, these should be discussed with the avifaunal specialist and ECO and could include the retrofitting/incorporation of additional visual cues/diverters to existing infrastructure. - Post construction monitoring must be performed for one year quarterly, following the construction phase by an avifauna specialist. Following this the results of the monitoring must be used to inform whether another year of monitoring is necessary. This should include collision monitoring for vultures due to the high density of vultures found in the area.
Impacts and Risks Associated with the construction phase of the preferred BESS technology (Solid State Lithium Ion BESS)[34]	- The construction phase will be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993 specifically the Construction Regulations. - SHEQ policy in place. - A detailed construction Risk Assessment prior to work. - SHE procedure in place. - PPE to be specified. - SHE appointees in place. - Contractor's safety files in place and up to date. - All necessary health controls/ practices to be in place, e.g., ventilation of welding and painting areas. - SHE monitoring and reporting programs in place.

[34] The mitigation measures detailed in the following sections are only those associated with the preferred BESS Technology (i.e. Solid State Lithium ion). Should alternative technologies be selected, different mitigation measures would apply.

Impact / Aspect	Mitigation / Management Action
	- Emergency response plan to be in place prior to beginning construction and to include aspects such as appointment of emergency controller, provision of first aid, first responder contact numbers. - Health Risk Assessment to determine if equipment noise exceeds 85dB at workstation and 61dB at boundary of the site. - Employees to be provided with hearing protection if working near equipment that exceeds the noise limits. - Construction site facilities to comply with Occupational Health and Safety Act 85 of 1993 specifically the thermal, humidity, lighting and ventilation requirements of the Environmental Regulations for Workplaces. - Adequate potable water for employees to be provided during all phases of the project. Bore hole, bowser and tank or small water treatment plant may be required to provide potable water for the BESS installation staff during all phases of the project. - Refer to Social Specialist Study for this project. - Training in lifting techniques. - Ensure that despite the isolated location all the necessary equipment is available (and well maintained) during construction. - Otherwise employees may revert to unsafe practices. - Isolated location, maintenance of construction equipment to ensure safe operation is critical. - Ensure this is in place prior to project beginning. - First aid provision on site. - Fuels stored on site in dedicated, demarcated and bunded areas. - Suitable fire-fighting equipment on site near source of fuel, e.g., diesel tank, generators, mess, workshops etc. - The company responsible for the facility at this stage is to have: 1. Emergency plan to be in place prior to commencement of construction. 2. Fuel spill containment procedures and equipment to be in place. 3. Hot-work permit and management system to be in place. - Solid state battery design includes abuse tests such as drop test, impact, rapid discharge etc. Propagation tests for systems, e.g., heat insulating materials between cells/modules. - Factory acceptance test prior to prior to leaving manufacture. - Batteries are usually stored at 50% charge to prolong life but may be shipped fully discharged. - This level of detail should be understood so as to assess the risk during transport and storage. - The company responsible for the battery installation should ensure suitably competent transport companies are appointed. - The company responsible for transportation should ensure: - Compliance with National Road Traffic Act regulation 8 – dangerous goods. - Port Authorities should be alerted to the overall project and the hazardous nature of the contents of battery containers being imported. Note. If, as per one of the typical suppliers (Tesla) indications, the containers are classified as IMDG Class 9 – the containers will not receive any special care in the ports and may be stored next to flammables. Port emergency response in particular need training on mitigating battery hazards. - Prior to bringing any containers into the country, the company responsible for the battery installation (possibly via appointed contractors) should ensure that an Emergency response plan is in place for the full route from the ship to the site. Drivers trained in the hazards of containerized batteries. - The Emergency plan must determine and address: - What gases would be released in a fire and are there inhalation hazards. - Extinguishing has two important elements, put out fire and to provide cooling. Different approaches may be needed for small fire – e.g., put out, and for large fires e.g., cool with copious quantities of water. Note inert gases and foam may put out the initial fire but fail to control thermal runaway or to cool the batteries resulting in reignition. - What initial fire extinguishing medium should be used. - Whether

Impact / Aspect	Mitigation / Management Action
	there are any secondary gases or residues from use of extinguishers. - If water is appropriate, determine if the system needs outside connections to sprinklers inside the container. - First responders need to know what media to use, especially if water totally unsuitable and if there are no connection points for water etc. - Must the container be left unopened or opened. - PPE to be specified including possible exposure to chemicals and fumes as well as radiate heat. - Containment of residues/water/damaged equipment. - Suitable safe making and disposal plan for after the event i.e. how do responders deal with partially charged damage units, contaminated surfaces (e.g., HF residues). - During transport this is only likely to happen due to possible inappropriate emergency response, e.g., opening containers when they may be the type that should be left to burn out. - For simplicity one transport route would be preferable. - The route needs to be assessed in terms of responding local services, rest places for drivers, refuelling if required, break down services available etc. - Once an import route has been chosen, e.g., Richards Bay or Durban and along N2/N3/N11 etc, then the appointed transport company should ensure key emergency services on route could be given awareness training in battery fire/accident response. Emergency response planning and training referred to above may be important for key locations such as the mountain passes / tunnels. - All necessary good hygiene practices to be in place, e.g., provision of toilets, eating areas, infectious disease controls. - Policies and practice for dealing with known vectors of disease such as Aids, TB, COVID 19 and others. - Awareness training for persons on site, safety induction to include animal hazards. - First aid and emergency response to consider the necessary anti-venom, anti-histamines, topical medicines etc. - Due to isolated locations some distance from town, the ability to treat with anti-venom and extreme allergic reactions on site is critical to mitigate the impacts. - Appointed transport company to ensure transport in accordance with Regulation 8 of the National Road Traffic Act 93 of 1996, Dangerous Goods. Not permitted to transport prescribed goods in manner not consistent with the prescriptions, e.g., consignor and consignee responsibilities. Prescription found in SANS 10228/29 and international codes for battery transport etc. - Transport in sealed packages that are kept upright, protected from movement damage etc. Also packaged to ensure no short-circuiting during transport. - Transport to prevent excessive vibration considerations as battery internal may be damaged leading to thermal run-away during commissioning. Pre-assembled containers will most likely be supplied. These will be fitted with the necessary protective measures by the supplier considering marine and road transport as well as lifting, setting down etc. Route selection to consider possible incidents along the way and suitable response, e.g., satellite tracking, mobile communication, 24/7 helpline response. Standard dangerous goods requirements for Hazmat labels, Trem cards, driver trained in the hazards of the load. - Likelihood similar to fire above. - The construction phase will be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993 specifically the Construction Regulations. - SHEQ policy in place. - A detailed construction Risk Assessment prior to work. SHE procedure in place. - PPE to be specified. - SHE appointees in place. - Contractors safety files in place and up to date. - SHE monitoring and reporting programs in place. - Standard construction site rules regarding traffic, reversing sirens, rigging controls, cordoning off excavations etc.

Impact / Aspect	Mitigation / Management Action
	- Civil and building structures to National Building Regulations and building Standards Act 103 of 1977 SANS 10400 and other relevant codes. - Other constructions such as roads, sewers etc also to relevant SANS standards. - All normal procedures for working at heights, hot work permits, confined space entry, cordon off excavations etc to be in place before construction begins. - Emergency response plan to be in place before construction begins. - Standard maintenance of condition of electrical equipment and safe operating instructions. Ability to shut off power to systems in use on site. - If persons are decanting fuels or dealing with other highly flammable materials care should be taken regarding possible static discharge, installations to be suitably designed and maintained. - Lightning strike rate in the study area is moderate. - Outside work must be stopped during thunderstorms. Lighting conductors may be required for the final installation, to be confirmed during design phase. - Dust suppression as per normal construction practices, e.g. dampening on roads. - PPE for specific construction workers, e.g. dust masks depending on conditions on site. - Normal construction site practices for preventing and containing fuels/paint/oil etc spills. - Bunding under any temporary tanks, curbing under truck offloading areas and sealed surfaces (e.g., concrete) under truck parking area is particularly important. - Spill clean-up procedures to be in place before commencing construction. - Sewage and any kitchen liquids - containment and suitable treatment/disposal e.g. septic tank and soak away system. - There will be packaging materials that will need to be disposed of after the entire system is connected and commissioned as well as after regular maintenance. - There will need to be waste segregation (e.g., electronic equipment, chemicals) and management on the site. - Water usage to be monitored on site during construction. - Handling protocols to be provided by battery supplier. - End of Life plan needs to be in place before any battery containers enter the country as there may be damaged battery unit from day 1. - Water management plan and spill containment plans to be in place. - Refer to visual impact assessment. - Design by experienced contractors using internationally recognized and proven technology. - Project management with deviation monitoring. - Fencing around electrical infrastructure to SANS standard and Eskom Guidelines. - The hazardous nature of the electrical and battery equipment should be clearly indicated – e.g., Skull and Cross Bones or other signs. Isolated location both helps and hinders security. - Night lighting to be provided both indoors and outdoors where necessary. - All safety measures listed above. - Emergency procedures need to be practiced prior to commencement of construction. - In addition, if involved in an external fire thermal runaway can happen even with uncharged batteries. Except during shipping, ideally the units should not be stored any closer to each other than they would be in the final installation so that propagation is prevented, i.e. laydown area needs to be considered. - The company in charge of the containers at each stage in the transport process needs to be very clear so that responsibility for the integrity of the load and protection of the persons involved in transfer and coordination of emergency response on-route. E.g., if purchased from Tesla where does hand over occur to the South African contractor / owner, at the factory door in USA, at the port

Impact / Aspect	Mitigation / Management Action
	in RSA, at the site fence. For example, who will be accountable if there's thermal runway event on a truck with a container that stops in a small town for driver refreshments. - Use only internationally reputable battery suppliers who comply with all known regulations/guideline at the time of purchasing. - Ensure only state of the art battery systems are used and not old technologies prone to fires/explosions etc.
Impacts and risks Associated with the operational phase of the preferred BESS technology (Solid State Lithium Ion BESS)	- The operation and maintenance phase will be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993. SHEQ policy in place. - A detailed Risk Assessment of all normal operating and maintenance activities on site to be compiled, and form the basis of operating instructions, prior to commencing commissioning. - SHE procedure in place, e.g., PPE specified, management of change, integrity monitoring. - SHE appointees in place. - Training of staff in general hazards on site. - All necessary health controls/ practices to be in place, e.g., ventilation of confined areas, occupational health monitoring if required and reporting programs in place. - Emergency response plan for full operation and maintenance phase to be in place prior to beginning commissioning and to include aspects such as: - appointment of emergency controller, - emergency isolation systems for electricity, - -emergency isolation and containment systems for electrolyte, - provision of PPE for hazardous materials response, - provision of emergency facilities for staff at the main office building, - provision of first aid facilities, - first responder contact numbers etc. - Solid state batteries sealed, individual batteries in modules which are also sealed, pre-packed in the container. - Maintenance procedures will be in place should equipment need to be opened, e.g., pumps drained and decontaminated prior to repair in workshop etc. - PPE will be specified for handling battery parts and other equipment on site. - Training of staff in hazards of chemicals on site. - Possible detectors with local alarms if regulated occupational exposure limits are exceeded etc prior to entry for inspection of battery containers. - Labelling of all equipment. - Confined space entry procedures if entering tanks. - There needs to be careful thought given to procedures to be adopted before entering into the BESS or a container particularly after a BMS shut down where there may be flammable or toxic gases present, a fire etc. - Safety Data Sheets (SDSs) to be available on site. - Operating manuals to be provided including start-up, shut-down, steady state, monitoring requirements. - Maintenance manuals with make safe, decontamination and repair procedures. Proposed maintenance schedules e.g., checklists for weekly, monthly, annual etc. - Provided portable equipment for calibration and for testing/verification of defective equipment, e.g., volt/current meters, infrared camera. - Design to ensure continuous noise does not exceed 85dB within the facilities or at any other location on site or 61 dB at the site boundary, e.g., emergency generator, air compressor etc. - Employees to be provided with hearing protection if working near equipment that exceeds the noise limits. - Building and container facilities to comply with Occupational Health and Safety Act 85 of 1993 specifically the thermal, humidity, lighting and ventilation requirements of the Environmental Regulations for Workplaces. - Ensure containers are temperature controlled as required to remain within the optimal battery operating temperature range.

Impact / Aspect	Mitigation / Management Action
	- Lighting to be provided inside any buildings, inside the containers, possibly linked to the door opening and outdoors where necessary. - Adequate potable water to be provided during all phases of the project. - Suitable lighting to be provided including emergency lighting for safe building exit in the event of power failure. - PPE for operations and maintenance staff to be suitable for the weather conditions. - Staff rotation to other activities within the site may be necessary. - Performance monitoring of inspections / maintenance tasks in particular will be necessary. - Training in lifting techniques. - Training in working at heights. - If equipment is at height (see OHS Act General Safety Regulation 6), ensure suitable safe (electrically and physically) ladders / harnesses etc. are available. - Working at height procedure to be in place. - Grass cutting and fire breaks around the BESS installations to prevent veld fires. - No combustible materials to be stored in or near the batteries or electrical infrastructure. - Separation of site diesel tank, transformers from BESS and vice versa. - There are BESS design codes from the USA and standards of practice that can be used e.g., UL9540, NFPA 855 and DNV GL RP 43. - Detailed FMEA/Hazop/Bowtie to done during design at the component level and system levels. Safety integrity level rating of equipment (failure probably) with suitable redundancy if required. Site Acceptance Testing as part of commissioning of each unit and the overall system. - Abuse tests conducted by supplier. - BMS should be checking individual cell voltage as well as stack, module, container, system voltages/current etc. BMS tripping the cell and possibly the stack/ building unit or module/rack/container, if variations in voltage. - Diagnostics easily accessible. Diagnostics able to distinguish cell from stack or cell from module faults. Protective systems are only as good as their reliability and functionality testing is important, e.g., testing that all battery trips actually work. - Fire resistant barrier between the batteries and the PCS side if in the same container, or separate containers. Suitable ingress protection level provided for electrical equipment, e.g., IP55 - 66. - If air cooling into container, suitable dust filters to be provided. - Smoke detectors linked to BMS & alerts in control room. - Effects of battery aging to be considered. - Solid state battery life starts to be impacted above 40 °C and significant impacts above 50 °C with thermal run away starting at 65-70 °C. BMS trips system at 50 °C. - Temperature monitoring to be in place. - Regular infrared scanning. Data needs to be stored for trend analysis. - Data indicates an event frequency of 0.001 per installation and with 300 units this would mean an event once 3 years, i.e. a high probability event. Most events will be small not resulting in injuries, but this is possible if the event is not controlled. - Prior to commencement of cold commissioning, emergency plan from transport and construction phase to be extended to operational phase and to include the hazards of the electrically live system. Procedure to address solid state container fires - extinguishing, ventilating, entering as appropriate or not. PPE for container firefighting include fire retardant, chemically resistant, nitrile gloves, antistatic acid resistant boots, fill face shields, BA sets. - A planned fire response to prevent escalation to an explosion or an environmental event.

Impact / Aspect	Mitigation / Management Action
	- Suitable supply of fire extinguishing medium and cooling medium Consider fire water for cooling adjacent equipment – BESS units. - Can use fogging nozzles to direct smoke. - Ensure procedures in place for clean up after event Lingering HF and other toxic residues in the soil and on adjacent structures. - Procedures to be in place for IR scanning (or other suitable method) to determine if batteries are still smouldering / are sufficient cooled to handle as batteries may still be active some weeks after an event. - Smoke or gas detector systems that are not part of the original battery container package, need to be linked to the main control panel for the entire system so that issues can be detected and responded to rapidly. - Modern lithium container design put the PCS in another part of the container with a fire rated wall separating it from the battery. Alternately the PCS is another container altogether. - Electrical equipment will be specified to suit application. - Emergency response plan and employee training referred to above is to be in place. - This is only really likely to happen due to possible inappropriate emergency response, e.g., opening containers when they may be the type that should be left to burn out. - Modern state of the art containers have ventilation systems for vapours. - Undertake a hazardous area classification of the inside of the container to confirm the rating of electrical equipment, due to possible leaks of electrolyte or generation of flammable gases under thermal run away. - Emergency response plan and employee training referred to above is critical. - Suitable training of selected emergency responders who may be called out to the facilities is critical. - NOTE. Refer to Appendix A for an initial approximation of worst-case possible explosion impact zones. - All necessary good hygiene practices to be in place, e.g., provision of toilets, eating areas, infectious disease controls. - Policies and practice for dealing with known vectors of disease such as Aids, TB, COVID 19 and others. - Awareness training for persons on site, safety induction to include animal hazards. - First aid and emergency response to consider the necessary anti-venom, anti-histamines, topical medicines etc. - Due to isolated locations some distance from town, the ability to treat with anti-venom and extreme allergic reactions on site is critical to mitigate the impacts. - Acid resistant PPE (e.g., overalls, gloves, eyeglasses) to be specified for all operations in electrolyte areas. PPE to be increased (e.g., full-face shield, aprons, chemical suits) for operations that involve opening equipment and potential exposure, e.g., sampling, maintenance. - All operators/maintenance staff trained in the hazards of chemicals on site. - Batteries contained, modules contained and all inside a container that acts as bund. - Refer to fire above as all the protective measures apply to prevent toxic smoke. Refer to fire above as all the measures apply to mitigate toxic smoke. - 24/7 helpline response. - Standard dangerous goods requirements for Hazmat labels. - All operators/maintenance staff trained in the hazards. - NOTE Refer to Appendix A for an initial approximation of worst case possible noxious smoke impact zones. - Apart from pumps, no major moving parts during operation. - Maintenance equipment to be serviced and personnel suitably trained in the use thereof.

Impact / Aspect	Mitigation / Management Action
	- Normally just small vehicles on site, bakkies, grass cutting, cherry-pickers etc. Possibly large cranes if large equipment or elevated structure removed/replaced. - Traffic signs, rules etc in place on site. - All normal working at heights, hot work permits, confined space entry, cordon off unsafe areas/works etc to be in place. - Emergency response plan. - Civil design to take seismic activity into account. - Codes and guidelines for electrical insulation. - Suitable PPE to be specified. - Low voltage equipment (e.g., batteries) separated from high voltage (e.g., transmission to grid). - Ensure trained personnel and refer to guideline – IEE 1657 – 2018. - Ensure compliance with Eskom Operating Regulations for high voltage systems including access control, permit to work, safe work procedures, live work, abnormal and emergency situations, keeping records. - Electromagnetic fields, impact on other equipment e.g., testing devices, mobile phones – malfunction, permanent damage. - Software also need to be kept as update to date as reasonably practicable. - Consider suitably located Emergency stop buttons for the facility and the other equipment on site. - PPE to consider static accumulation for entering the facility, and particularly the battery containers especially after a high temperature shut down where there could possibly be flammable materials. - The procedures for responding to alarm and auto shut down on containers, needs to consider that there may be a dangerous environment inside and how to protect personnel who may enter to respond. - Lightning strike rate in proposed development area is moderate. - All outside work must be stopped during thunder storms. - Lighting conductors may be required for the installation, to be confirmed during design. - Especially after any warning alarms have gone off, but possibly even normally the container could be treated as entering a confined space and similar procedures could be in place, e.g., do not enter alone, gas testing prior to entering, ensure adequate ventilation. - Bunding under any outdoors tanks, curbing under truck offloading areas and sealed surfaces (e.g., concrete) under truck parking area is particularly important. - Sewage and any kitchen liquids - containment and suitable treatment/disposal e.g. septic tank and soak away. - Procedures for dealing with damaged/leaking equipment as well as clean-up of spills. - Normal site practices for preventing and containing diesel/paint etc spills. - Waste management plan to be in place e.g., liquid waste treatment or suitable removal and disposal will be provided. - Spill clean-up procedures to be in place before bringing container on site, including spill kits – non combustible materials, hazmat disposal. - The National Environment Management Act (NEMA) has a list of substances with Reportable spill Quantities, ensure compliance with this. - Implement waste segregation (e.g., electronic equipment, chemicals, domestic) and management on the site. - Water usage to be monitored on site. Handling protocols to be provided by supplier of batteries. - Water management plan and spill containment plans to be in place. - Investigate end of Life plan for solid state batteries - reuse / recovery / reconditioning. - Similarly, for decommissioned containers – reuse / recovery / repurpose.

Impact / Aspect	Mitigation / Management Action
	- Refer to Visual Impact Assessment which is to include the BESS installation once design details are available. - Design by experienced contractors using internationally recognized and proven technology. Project management with deviation monitoring. - Fencing around electrical infrastructure to SANS standard and Eskom Guidelines. - Consider motion detection lights and CCTV. - The hazardous nature of the electrical and battery equipment should be clearly indicated – e.g., Skull and Cross Bones or other signs. - Isolated location both helps and hinders security. - Night lighting to be provided both indoors and outdoors where necessary. - Cyber security needs monitoring. - Remote access to system needs to be negotiated and controlled. - Password controls, levels of authority etc. Protection of the National Electricity Grid from Cyber-attacks accessing through the BESS. - Cyber emergency procedures – should be in place prior to commissioning. - All safety measures listed above. - Emergency procedures need to be practiced prior to commencement of operations. - Escape doors should swing open outwards and not into the container. Doors should be able to be hooked open when persons are inside the container, i.e. they should not be automatically self-closing. - More than one exit from buildings. - Storage of spare batteries (e.g., in stores on site or elsewhere) also needs to consider possible thermal run away. - Use only internationally reputable battery suppliers who comply with all known regulations/guideline at the time of purchasing. - Ensure only state of the art battery systems are used and not old technologies prone to fires/explosions etc.
Impacts and Risks Associated with the decommissioning phase of the preferred BESS technology (Solid State Lithium Ion BESS)	- End of Life shutdown procedure including a Risk Assessment of the specific activities involved. - Where possible re-purpose the solid-state batteries / containers and equipment with associated environmental impact considered. - Disposal according to local regulations and other directives such as the European Batteries Directive. - End of life, which is affected by temperature and time, cycles etc, should be predefined and the monitoring should be in place to determine if it has been reached. - Applicants should seek the opinion from a waste consultant on how to correctly dispose of hazardous waste.

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 62: 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	Proof of landowner consents for Bethel Solar PV is attached in **Annexure G2.** It must be noted that separate consents are provided from each landowner. Landowner consents for

Regulated Requirement	Description
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;	the three powerline alternatives are not provided as these constitute linear activities. .
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 4 positions along the boundaries of the affected properties in locations that are visible from the existing road network. Photographic evidence and the location of these notices is attached in **Annexure F3**.
(b) giving written notice, in any of the manners provided for in section 47D of the Act, to -	
(i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	There are no occupiers on the study site other than the current landowners who have provided consent for the development. The landowners will be requested to notify tenants of other occupiers that may reside elsewhere on the property/
(ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	Owners of adjacent properties have been notified of this environmental process. Such owners have been requested to inform the occupiers of the land of this environmental process. Please refer to **Annexure F4** for copies of these notifications
(iii) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;	The ward councillor has been notified of this environmental process and provided with an opportunity to comment on the Draft Scoping Report and Draft Environmental Impact Report. Please refer to **Annexure F4** for copies of these notifications
(iv) the municipality which has jurisdiction in the area;	The Makhado municipality (Planning and Technical Services) as well as the Vhembe District Municipality have been notified of this environmental process and have been provided with an opportunity to comment on the Draft Scoping Report and Draft Environmental Impact Report. Please refer to **Annexure F4** for copies of these notifications.
(v) any organ of state having jurisdiction in respect of any aspect of the activity; and	Please refer to section **Annexure F1** showing the list of organs of state that were notified as part of this environmental process. Please refer to **Annexure F4** for copies of these notifications.
(vi) any other party as required by the competent authority;	The DFFE has been given an opportunity to comment on this Draft Scoping Report and Draft Environmental Impact Report. Any other parties identified by the competent authority will be given an opportunity to comment on this Draft Environmental Impact Report.
(c) placing an advertisement in - (i) one local newspaper; or	An advert calling for registration of I&APs and notifying of the availability of the Draft Scoping Report has been placed in "The Limpopo Mirror" local newspaper on 25 April 2025.

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

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

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 63: Key Stakeholders automatically registered as part of the Environmental Process

Stakeholders Registered		
Neighbouring property owners	Limpopo Province Department of Agriculture and Rural Development.	Department of Water and Sanitation
Limpopo Provincial Department of Transport and Public Works	Makhado Local Municipality	Department of Science and Technology
Makhado Local Municipality: Ward Councillors	South African National Roads Agency Limited	The Council for Scientific and Industrial Research
South African Heritage Resources Agency	Limpopo Provincial Heritage Resources Agency	The South African Square Kilometre Array
Catchment Management Agency	Department of Health	The South African Civil Aviation Authority

Stakeholders Registered		
Department of Forestry, Fisheries and the Environment: Biodiversity Conservation Directorate	Department of Mineral Resources	Department of Infrastructure
Vulpro	Eskom	Department of Communications
Endangered Wildlife Trust.	Department of Mineral Resources	SENTECH
Department of Economic Development, Tourism and Environmental Affairs	Birdlife South Africa.	South African National Department of Defence.
Vhembe District Municipality	Affected Landowners	Department of Energy
Vhembe Biosphere Reserve	Department of Forestry, Fisheries and the Environment: Protected Areas Directorate	Land Claimants

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 **Friday 25 April 2025 – Tuesday 27 May 2025.**

Copies of the report were available at the following locations:

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

All notifications (including the site notice and advert) have made provisions for potential I&APs 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 90: Site Notice board placed at various positions along the boundaries of the affected properties.

Please refer to appendix F3 for a location plan showing the position of these notices as well as full scale photographs.

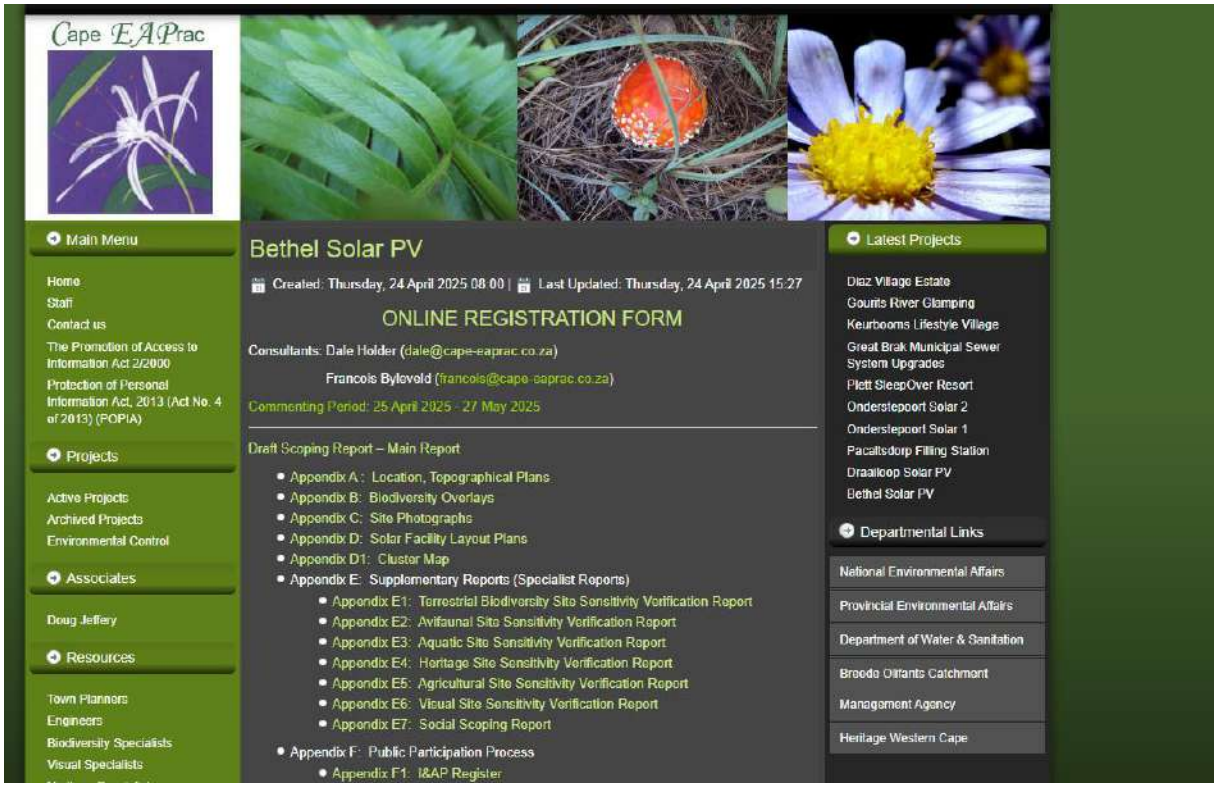


Figure 91: Draft Scoping Report as available on the Cape EAPrac Website.

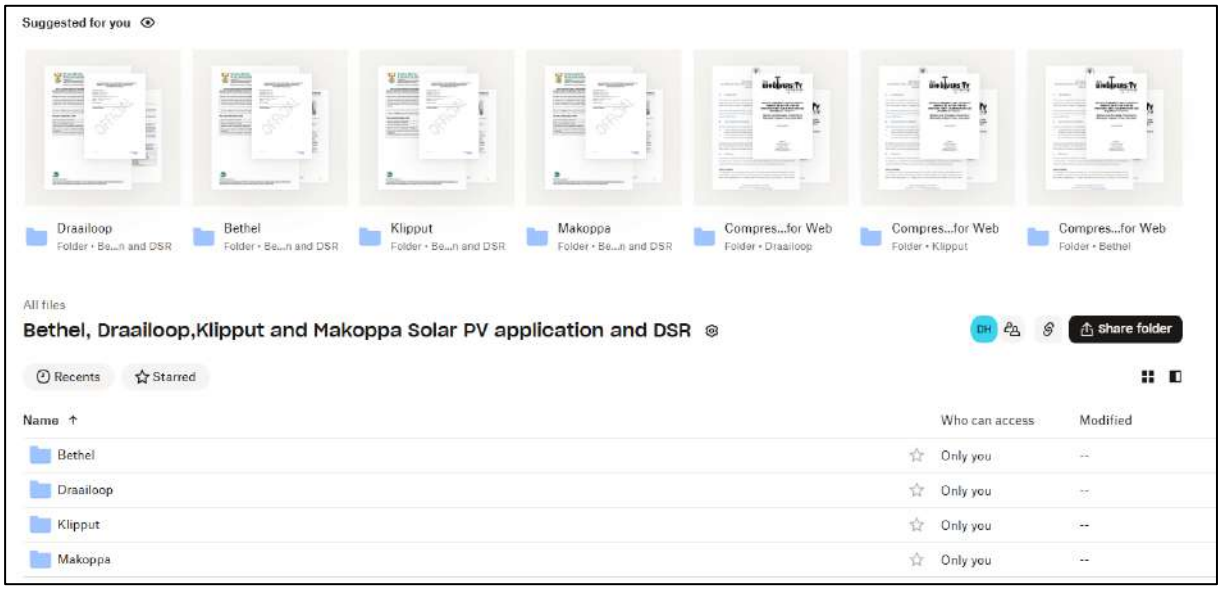


Figure 92: Draft Scoping Report as available via Dropbox Direct Download.

8.3 COMMENTS AND RESPONSES ON DRAFT SCOPING REPORT

All comments received on the Draft scoping report have been considered, responded to and included in the final scoping report that has been submitted to the DFFE for consideration and acceptance.

During the comment period comments were received from:

- The Competent Authority (Department of Forestry, Fisheries and the Environment: Chief Director: Integrated Environmental Authorisations).
- Vulpro
- Eskom
- Adjacent Project Developers.
- Chatleka Community Property Association.

In addition to these comments, a number of I&AP's registered interest in the project.

8.4 AVAILABILITY OF DRAFT ENVIRONMENTAL IMPACT REPORT

All registered I&AP's were notified in writing of the availability of the Draft Environmental Impact Report for review and comment.

The Draft Environmental Impact Report was available from 22 August 2025 – 26 September 2025. This document was available on the Cape EAPrac Website as well as a dedicated file download site.

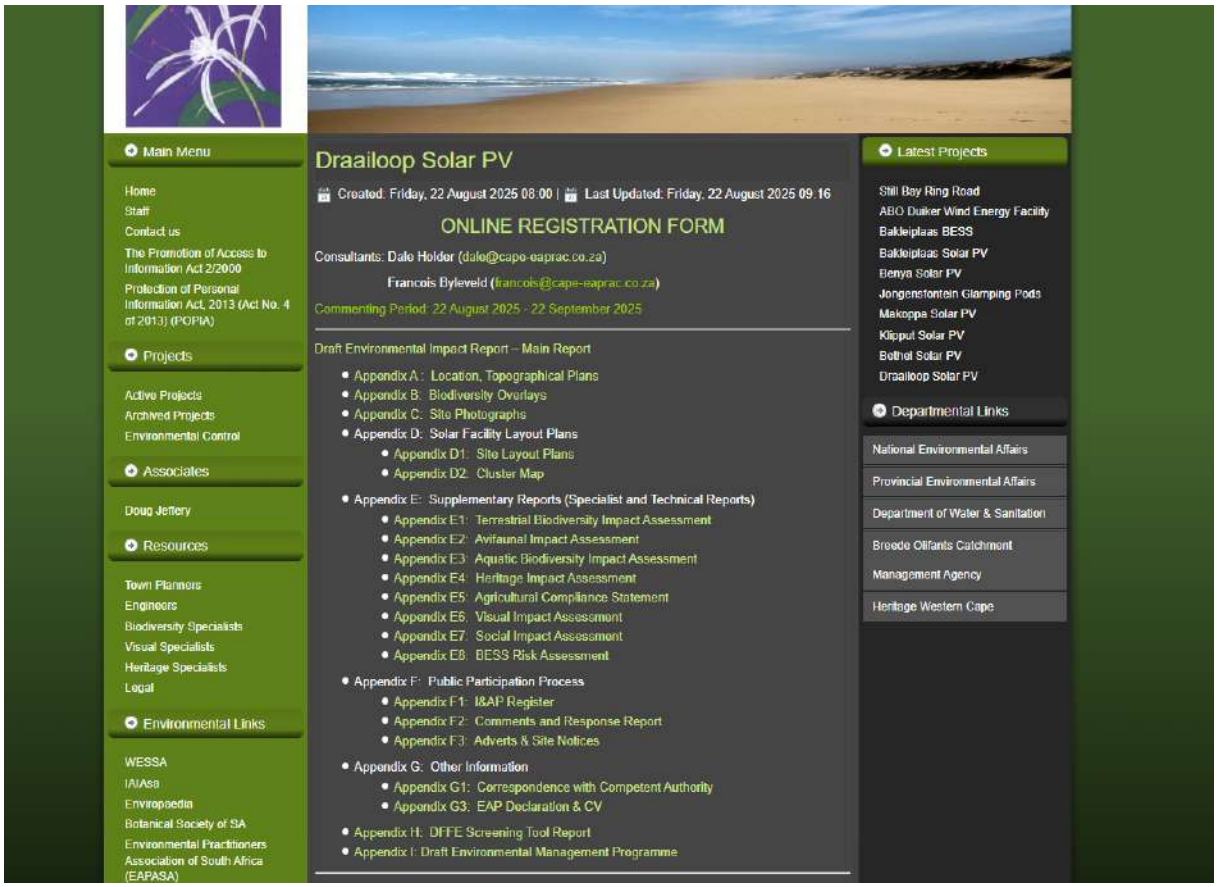


Figure 93: Draft Environmental Impact Report as available on the Cape EAPrac Website.

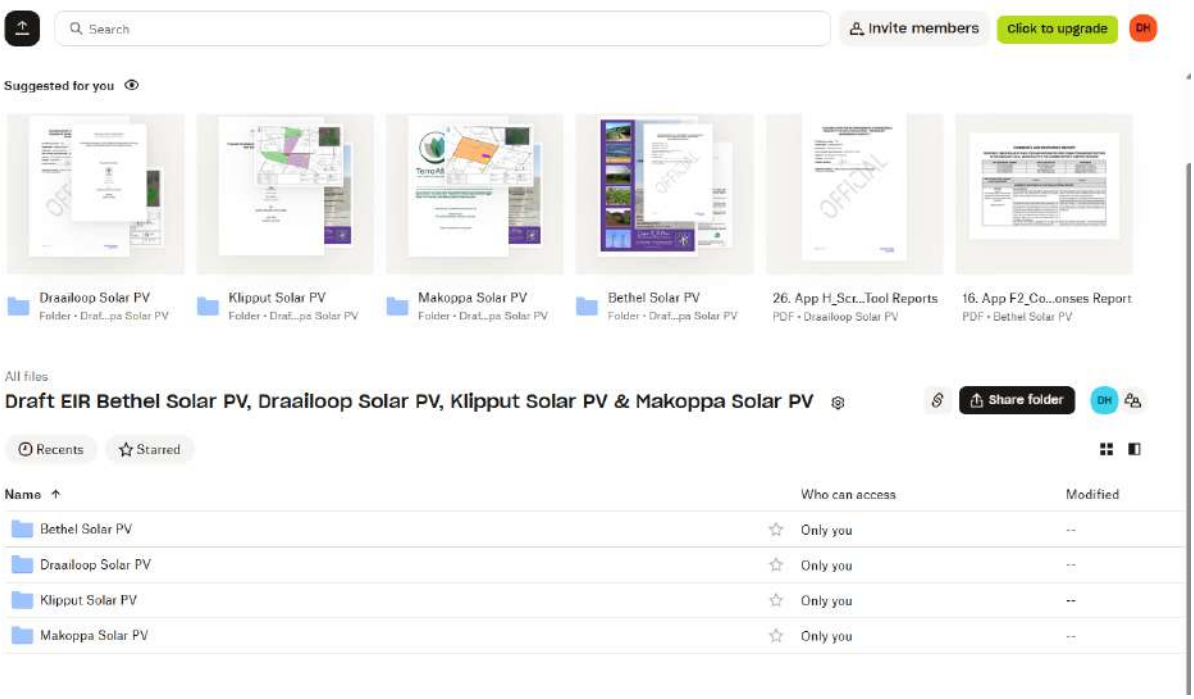
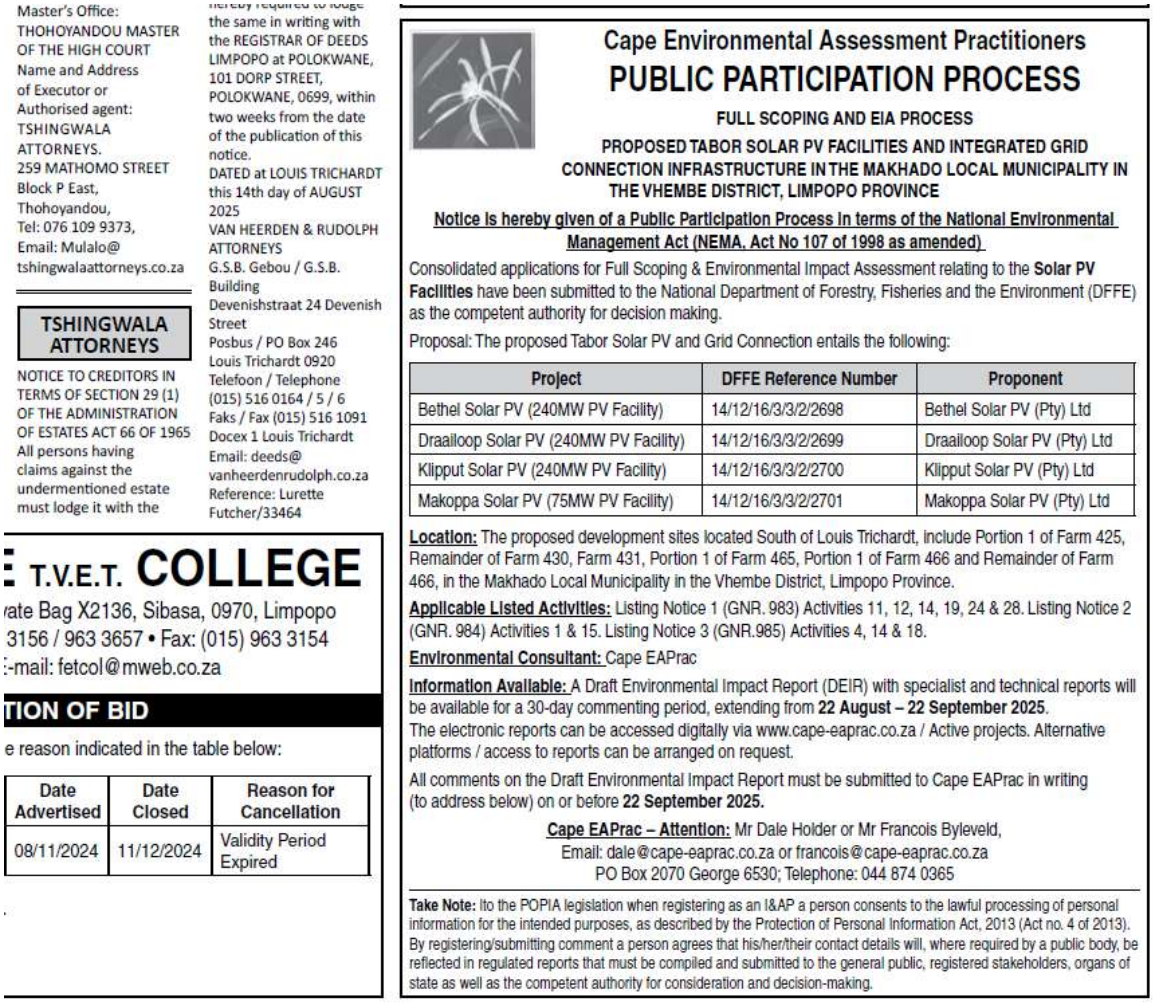


Figure 94: Draft EIR as available via direct download.



Master's Office:
THOHOYANDOU MASTER OF THE HIGH COURT
Name and Address of Executor or Authorised agent:
TSHINGWALA ATTORNEYS.
259 MATHOMO STREET
Block P East,
Thohoyandou,
Tel: 076 109 9373,
Email: Mulalo@tshingwalaattorneys.co.za

TSHINGWALA ATTORNEYS

NOTICE TO CREDITORS IN TERMS OF SECTION 29 (1) OF THE ADMINISTRATION OF ESTATES ACT 66 OF 1965
All persons having claims against the undermentioned estate must lodge it with the

the same in writing with the REGISTRAR OF DEEDS LIMPOPO at POLOKWANE, 101 DORP STREET, POLOKWANE, 0699, within two weeks from the date of the publication of this notice.
DATED at LOUIS TRICHARDT this 14th day of AUGUST 2025
VAN HEERDEN & RUDOLPH ATTORNEYS
G.S.B. Gebou / G.S.B. Building
Devenishstraat 24 Devenish Street
Posbus / PO Box 246
Louis Trichardt 0920
Telefoon / Telephone (015) 516 0164 / 5 / 6
Faks / Fax (015) 516 1091
Docex 1 Louis Trichardt
Email: deeds@vanheerdenrudolph.co.za
Reference: Lurette Futcher/33464

T.V.E.T. COLLEGE
vate Bag X2136, Sibasa, 0970, Limpopo
3156 / 963 3657 • Fax: (015) 963 3154
:-mail: fetcol@mweb.co.za

TION OF BID
e reason indicated in the table below:

Date Advertised	Date Closed	Reason for Cancellation
08/11/2024	11/12/2024	Validity Period Expired

Cape Environmental Assessment Practitioners

PUBLIC PARTICIPATION PROCESS

FULL SCOPING AND EIA PROCESS

PROPOSED TABOR SOLAR PV FACILITIES AND INTEGRATED GRID CONNECTION INFRASTRUCTURE IN THE MAKHADO LOCAL MUNICIPALITY IN THE VHEMBE DISTRICT, LIMPOPO PROVINCE

Notice is hereby given of a Public Participation Process in terms of the National Environmental Management Act (NEMA, Act No 107 of 1998 as amended)

Consolidated applications for Full Scoping & Environmental Impact Assessment relating to the **Solar PV Facilities** have been submitted to the National Department of Forestry, Fisheries and the Environment (DFFE) as the competent authority for decision making.

Proposal: The proposed Tabor Solar PV and Grid Connection entails the following:

Project	DFFE Reference Number	Proponent
Bethel Solar PV (240MW PV Facility)	14/12/16/3/3/2/2698	Bethel Solar PV (Pty) Ltd
Draailoop Solar PV (240MW PV Facility)	14/12/16/3/3/2/2699	Draailoop Solar PV (Pty) Ltd
Klipput Solar PV (240MW PV Facility)	14/12/16/3/3/2/2700	Klipput Solar PV (Pty) Ltd
Makoppa Solar PV (75MW PV Facility)	14/12/16/3/3/2/2701	Makoppa Solar PV (Pty) Ltd

Location: The proposed development sites located South of Louis Trichardt, include Portion 1 of Farm 425, Remainder of Farm 430, Farm 431, Portion 1 of Farm 465, Portion 1 of Farm 466 and Remainder of Farm 466, in the Makhado Local Municipality in the Vhembe District, Limpopo Province.

Applicable Listed Activities: Listing Notice 1 (GNR. 983) Activities 11, 12, 14, 19, 24 & 28. Listing Notice 2 (GNR. 984) Activities 1 & 15. Listing Notice 3 (GNR.985) Activities 4, 14 & 18.

Environmental Consultant: Cape EAPrac

Information Available: A Draft Environmental Impact Report (DEIR) with specialist and technical reports will be available for a 30-day commenting period, extending from **22 August – 22 September 2025**.
The electronic reports can be accessed digitally via www.cape-eaprac.co.za / Active projects. Alternative platforms / access to reports can be arranged on request.

All comments on the Draft Environmental Impact Report must be submitted to Cape EAPrac in writing (to address below) on or before **22 September 2025.**

Cape EAPrac – Attention: Mr Dale Holder or Mr Francois Byleveld,
Email: dale@cape-eaprac.co.za or francois@cape-eaprac.co.za
PO Box 2070 George 6530; Telephone: 044 874 0365

Take Note: Ito the POPIA legislation when registering as an I&AP a person consents to the lawful processing of personal information for the intended purposes, as described by the Protection of Personal Information Act, 2013 (Act no. 4 of 2013). By registering/submitting comment a person agrees that his/her/their contact details will, where required by a public body, be reflected in regulated reports that must be compiled and submitted to the general public, registered stakeholders, organs of state as well as the competent authority for consideration and decision-making.

Figure 95: Advertisement in the Limpopo Mirror regarding the Availability of the Draft Environmental Impact Report

8.5 COMMENTS AND RESPONSES ON DRAFT ENVIRONMENTAL IMPACT REPORT

During the comment period comments were received from:

- The Competent Authority (Department of Forestry, Fisheries and the Environment: Chief Director: Integrated Environmental Authorisations).
- Request from KMZ's from various parties.
- Acknowledgement of receipt of documentation from the DFFE Biodiversity Conservation Directorate.

These comments are all included in Appendix F7 and the responses thereto are included in the comments and responses report in Appendix F2.

8.6 COMMENTS AND RESPONSES ON FINAL ENVIRONMENTAL IMPACT REPORT

Following the submission of the Final Environmental Impact Report to the competent authority for decision making, an I&AP provided comment on the Final Environmental Impact Report. In order to address the concerns raised in this comment, this Revised Draft Environmental Impact Report has been prepared and is available for a further 30 Day review and comment period extending from Friday 07 November 2025 – Monday 08 December 2025. All comments received during this period will be responded to, addressed and included in the Final Environmental Impact Report that will be submitted to the Competent Authority for Decision Making.

8.7 AVAILABILITY OF REVISED ENVIRONMENTAL IMPACT REPORT

All registered and potential I&AP's have been notified of the availability of the Revised Environmental Impact Report.. Additional Adverts and Site notices have also been placed regarding the availability of this report.

The Revised Draft EIR is available both digitally on the Cape EAPrac Website and Direct Download site as well as physically at:

- Viva Bandelierkop (Fuel Station) – N1-Main Road, Bandelierkop.
- Munzhedzi Post Office at Chris Hani Street, Vleifontein, Louis Trichardt.

A public open day/ information sharing session will be held on Tuesday 25 November 2025 at the Vleifontein Community Hall.

8.8 REMAINDER OF THE ENVIRONMENTAL ASSESSMENT PROCESS

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

-
- 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. The Draft Environmental Impact Report provides details on all issues and concerns raised in the Scoping Phase of the Environmental Process and presents the outcome of the specialist impact assessments to all stakeholders for review and comment.

Cape EAPrac is of the opinion that the information contained in the Draft Environmental Report and the documentation attached as well as the preceding Draft Scoping Report was 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. The Bethel Solar PV project (including the associated infrastructure) and the proposed Grid Connection infrastructure has been analysed from Ecological (terrestrial, aquatic and avifauna), 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 preferred PV alternative (Layout Alternative 3) not the preferred Grid Connection alternative (Grid Alternative 1) 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 and the EMPr in Appendix I are adopted and implemented.

All specialists concur that the development as proposed (PV Layout Alternative 3 and Grid Connection alternative 1 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 were requested to review the Draft Scoping Report and Draft EIR and the associated appendices, and provide comment, or raise issues of concern, directly to Cape EAPrac within the specified comment period. Any additional comments received during the current comment period will be considered, addressed and incorporated into the Final Environmental Impact Report which will be

submitted to the competent authority for consideration and decision making. The outcome of the decision making will be communicated to all stakeholders.

The Draft Environmental Impact Report was available for a 30 Day Review and comment period extending from 22 August 2025 – 22 September 2025. A revised Draft Environmental Impact Report is available for a further 30 Day comment period extending from 07 November 2025 – 08 December 2025. A revised Draft Environmental Impact Report is available for a further 30 Day comment period extending from 07 November 2025 – 08 December 2025.

It is Cape EAPrac's reasoned opinion that the mitigated preferred PV Layout Alternative (Layout Alternative 3) and preferred Grid Connection Alternative (Grid Alternative 1) can be considered for approval by the competent Authority, subject to the outcome of the public participation process, on condition that all the suggested mitigation measures are implemented, all other legislative approvals be obtained, and that the final EMPr, BESS Risk Assessment and Generic EMPr for substation and powerline infrastructure be strictly adhered to.

10. ABBREVIATIONS

AIA	Archaeological Impact Assessment
BGIS LUDS	Biodiversity Geographic Information System Land Use Decision Support
BESS	Battery Energy Storage System
CBA	Critical Biodiversity Area
CDSM	Chief Directorate Surveys and Mapping
CEMPr	Construction Environmental Management Programme
DFFE	Department of Forestry, Fisheries and the Environment
DEA&NC	Department of Environmental Affairs and Nature Conservation
DME	Department of Minerals and Energy
DSR	Draft Scoping Report
EAP	Environmental Impact Practitioner
EHS	Environmental, Health & Safety
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GPS	Global Positioning System

GWh	Giga Watt hour
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
kV	Kilo Volt
LUDS	Land Use Decision Support
LUPO	Land Use Planning Ordinance
MW	Mega Watt
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act
NPAES	National Protected Area Expansion Strategy
NSBA	National Spatial Biodiversity Assessment
NWA	National Water Act
PM	Post Meridiem; “Afternoon”
PSDF	Provincial Spatial Development Framework
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
S.A.	South Africa
SACAA / CAA	South African Civil Aviation Authority
SAHRA	South African National Heritage Resources Agency
SANBI	South Africa National Biodiversity Institute
SANS	South Africa National Standards
SDF	Spatial Development Framework
TOPS	Threatened and Protected Species

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