



# CONSERVA

Environmental Management Services

## ENVIRONMENTAL IMPACT ASSESSMENT DRAFT SCOPING REPORT (DSR)

PROPOSED 480MW SOLAR PV FACILITY,  
PORTION 1 FARM ZWARTWITPENSBOKFONTEIN 434-KQ,  
KOEDOESKOP, THABAZIMBI LOCAL MUNICIPALITY,  
WATERBERG DISTRICT, LIMPOPO PROVINCE

Department of Forestry, Fisheries and Environment  
(DFFE) Ref. 2023-07-0039

**REPORT DATE: 5 October 2023**

Prepared for:

**Allied Green Energy (Pty) Ltd**

# DRAFT SCOPING REPORT INFORMATION (DSR)

This draft Scoping Report (DSR) has been prepared for the proposed development of an up to 480MW Solar Photovoltaic (PV) Facility with associated infrastructure by Allied Green Energy (Pty) Ltd (AGE) on Portion 1 of the Farm Zwartwitpensbokfontein 434-KQ. The application property is 17km east of Northam Town in Ward 4 of Thabazimbi Local Municipality, within the Waterberg District of Limpopo Province.

The existing Eskom 88kV Northam-Rooiberg and 132kV Spitskop-Mamba power lines including a private 22kV power line cross the application property providing direct access to the Eskom grid. The applicant thus also proposes to develop an 88kV & 132kV Step-up transformer/ substation including 50 to 100-meter 88kV and 132kV Loop-in-Loop-out (LILO) power lines onsite to transfer the electricity generated by the facility into the Eskom grid by connecting to the mentioned 88kV and 132kV power line.

## FOR WHO IS THE ELECTRICITY?

The proposed project **does not form part of the** Department of Mineral Resources and Energy's (DMRE) Renewable Energy Independent Power Producer Procurement Programme (**REIPPPP**). AGE intends to supply 1% of the power generated at the facility to Allied Farms (Pty) Ltd a commercial farming operation at Koedoeskop, 33% will be sold to private users (i.e., nearby farmers, mines), the remaining 66% will be sold to Eskom.

## APPLICATION PROCESS:

The DFFE considers solar pv power generation facilities to typically pose little risk to the surrounding environment. The DFFE has gazetted Renewable Energy Development Zones (REDZs) for South Africa published under GNR 114 of 16 February 2018, GNR 142, 144 and 145 of 26 February 2021, and gazetted strategic power corridors in GNR 113 on 16 February 2018; and GNR 383 on 29 April 2021, where a rapid Environmental Impact Assessment (EIA) Process and decision-making timeframe is followed to obtain environmental authorisation for solar facilities. This is done to expedite the environmental approval element of solar PV projects.

The proposed facility does not fall within any of the gazetted REDZ's or strategic power line corridors. A full Scoping and EIA process is undertaken in line with the requirements of the National Environmental Management Act, 107 of 1998 (NEMA) EIA Regulations of 2014 (GNR 326, as amended) with a 107-day decision making period.

## REPORT BASIS:

The NEMA EIA Regulations requires an independent Environmental Assessment Practitioner (EAP) to undertake the EIA process and submit a series of reports to the DFFE for decision-making, which have each been subjected to a 30-day consultative process i.e., Scoping Report, Environmental Impact Report (EIR) & Environmental Management Programme (EMPR). The DFFE will consider the reports and public submissions to reach a decision on the application and issue an environmental authorisation to the applicant.

This DSR is the first report released as part of the process. It provides the public 30-days to submit their views and comments on the proposed project, its potential impacts, and the intended scope of the EIA process. The report has been compiled in line with the provisions of Appendix 2 of the NEMA EIA Regulations.

# PROJECT DETAILS

## APPLICANT:

**Allied Green Energy (Pty) Ltd**

P O Box 6, Koedoeskop, 0361

Contact person: Roland van Tonder

**DFFE REFERENCE NUMBER: 2023-07-0039**

## REPORT PREPARED BY:

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Maryke André

## STATEMENT OF INDEPENDANCE:

CEMS is an independent environmental consultant with no vested interest (either business, financial, personal, or other) in the proposed activity proceeding other than remuneration for work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA). Our fees are based on the South African Council for Natural Scientific Professionals (SACNASP) Recommended Consultation Fees (Notice 98 of 2021). We do not echo the views of the applicant however provide an independent view formed by regulated tasks conducted under the NEMA and its published EIA Regulations. The payment of our professional fee is not subject to the outcome of the EIA process.

## A. PURPOSE OF REPORT

The DSR is herewith made available for 30-days public and authority review and comment from **9 October to 7 November 2023** to provide registered Interested and Affected Parties (I&APs), abutting landowners, stakeholders and commenting authorities the opportunity to make submissions regarding the application and report content.

The report is available electronically for public download from the following shared **OneDrive Folder Link**:

[https://1drv.ms/f/s!An\\_mexC75HlpgtBgHfwVYt6aopBw9g?e=GYtovY](https://1drv.ms/f/s!An_mexC75HlpgtBgHfwVYt6aopBw9g?e=GYtovY) under folder heading '480MW Solar PV Draft Scoping Report'.

A hard copy of the DSR is also on display in the project area at the public venues detailed in **Table A-1**.

**Table A-1: Details of public venues**

Location	Address	Contact
Allied Farms Offices	1 Main Street, Farm Liverpool Koedoeskop	Tel: 014 785 0600
Northam Public Library	313 Tungsten Street Northam	Tel: 014 784 0128

If you wish to comment on the draft report, you can write a letter, or any additional written submission by email, or contact CEMS at the below given details. Please submit your comments together with your name and contact details to CEMS **on or before 7 November 2023**.

All the comments received will be incorporated into the Final Scoping Report submitted to the DFFE for approval.

### COMMENTS AND QUERIES CAN BE SUBMITTED TO:

Conserva Environmental Management Services

Contact: 084-226-5584 (Marissa Botha) or

072-755-5103 (Maryke André)

Email: [conserva-ems@outlook.com](mailto:conserva-ems@outlook.com)

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## Acronyms

<b>DFFE</b>	Department of Forestry, Fisheries and Environment
<b>EIA</b>	Environmental Impact Assessment
<b>DSR</b>	Draft Scoping Report
<b>CEMS</b>	Conserva Environmental Management Services
<b>AGE</b>	Allied Green Energy (Pty) Ltd
<b>EAP</b>	Environmental Assessment Practitioner
<b>MW</b>	Megawatt
<b>kV</b>	Kilovolt
<b>PV</b>	Photovoltaic
<b>LILO</b>	Loop-in-Loop-out power line
<b>OHPL</b>	Overhead power line
<b>REIPPPP</b>	Renewable Energy Independent Power Producer Procurement Programme
<b>REDZ</b>	Renewable Energy Development Zone/s
<b>GNR</b>	Government Notice Regulation
<b>NEMA</b>	National environmental Management Act, 1998 (Act 107 of 1998)
<b>NEMA EIA Regulations</b>	Environmental Impact Assessment Regulations
<b>EIR</b>	Environmental Impact Report
<b>EMPR</b>	Environmental Management Programme
<b>SACNASP</b>	South African Council for Natural Scientific Profession
<b>EAPASA</b>	Environmental Assessment Practitioners Association South Africa
<b>I&amp;AP</b>	Interested and Affected Party
<b>GA</b>	General Authorisation
<b>WULA</b>	Water Use License Application
<b>DWS</b>	Department of Water and Sanitation
<b>SAIEG</b>	South African Institute for Engineering and Environmental Geologists
<b>SSSSA</b>	Soil Science Society of South Africa
<b>SACLAP</b>	South African Council for Landscape Architects Profession
<b>ASAPA</b>	Association for Southern African Professional Archaeologists
<b>PSSA</b>	Palaeontological Society of Southern Africa
<b>SSV</b>	Site Sensitivity Verification
<b>AC / DC</b>	Alternating current / Direct current
<b>BESS</b>	Battery Energy Storage System
<b>m<sup>3</sup></b>	Cubic metres
<b>ℓ</b>	Liter
<b>masl</b>	Meters above sea level
<b>WHO</b>	World Health Organisation
<b>NEM: WA</b>	National Environmental Management: Waste Act 59 of 2008
<b>NEM: WAA</b>	National Environmental Management: Waste Amendment Act 26 of 2014

<b>NWA</b>	National Water Act 36 of 1998
<b>WMA</b>	Water Management Area
<b>DALRRD</b>	Department of Agriculture Land Reform and Rural Development
<b>PPP</b>	Public Participation Process
<b>CSP</b>	Concentrated Solar Power
<b>IRP</b>	Integrated Resource Plan
<b>CMA</b>	Catchment Management Agency
<b>NEM:AQ</b>	National Environmental Management: Air Quality Act 39 of 2004
<b>NHRA</b>	National Heritage Resources Act, 25 of 1999
<b>WUL / WULA</b>	Water Use License / Water Use License Application
<b>DEAT</b>	Department of Environmental Affairs and Tourism
<b>SANBI</b>	South African National Botanical Institute
<b>IEM</b>	Integrated Environmental Management
<b>SR</b>	Scoping Report
<b>CRR</b>	Comments and Response Report
<b>EA</b>	Environmental Authorisation
<b>km</b>	kilometres
<b>m</b>	metres
<b>mm</b>	millimetres
<b>km<sup>2</sup></b>	Square kilometre
<b>kg</b>	kilograms
<b>ha</b>	Hectare / hectares
<b>°C</b>	Degree Celsius
<b>m/s</b>	Metres per second
<b>m<sup>3</sup>/a</b>	Cubic metres per annum
<b>m<sup>3</sup></b>	Cubic metres
<b>ℓ/s</b>	Litres per second
<b>Mg/m<sup>2</sup>/day</b>	Milligrams / square metre / day
<b>dBA</b>	Decibels A (measurement for sound)
<b>MAP</b>	Mean Annual Precipitation
<b>LEDET</b>	Limpopo Department of Economic Development, Environment and Tourism
<b>SDF</b>	Spatial Development Framework
<b>IDP</b>	Integrated Development Plan

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# 1 INTRODUCTION

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## 1.1 PROJECT OVERVIEW

Allied Green Energy (Pty) Ltd (*herein after* AGE) has applied for environmental authorisation to the Department of Forestry, Fisheries and Environment (DFFE) to develop an up to 480MW Solar Photovoltaic (PV) Facility and grid connection on Portion 1 of the farm Zwartwitpensbokfontein 434-KQ.

The application property<sup>1</sup> is in the jurisdiction of Thabazimbi Local Municipality (Ward 4) in the Waterberg District of Limpopo Province. It is located next to the D1234 Northam-Koedoeskop gravel road, 17km east of Northam town near the Koedoeskop agricultural district. Refer to **Figure 1-1** for the **Municipal and Ward Delimitation Map** and **Figure 1-2** for the **Regional Locality Plan**.

The property is 377-hectares in extent and in its western section comprises a 275-hectare portion of land with a slope of less than 1% which is suitable for the development of the solar pv facility. The existing Eskom 88kV Northam-Rooiberg and 132kV Spitskop-Mamba overhead power lines (OHPL) cross the property at its northern boundary, providing direct access to the Eskom grid.

The applicant will therefore also develop a proposed grid connection comprising a combination 88kV and 132kV Step-up transformer/ substation including an 88kV - and 132kV Loop-in-Loop-out (LILO) power line onsite to connect to the existing 88kV and 132kV OHPLs to transfer the electricity generated by the facility into the Eskom grid.

According to the Annual Solar PV Radiation Plan of South Africa the Northam/Koedoeskop area is a 'High to Moderate' solar resource area of South Africa able to produce 8000 – 8500 Megajoule per square meter (see **Figure 1-3**). The application property by virtue of its slope, direct access to the Eskom grid, location in a 'High to Moderate' solar resource area is desirable for the development of the proposed solar pv facility.

Due to South Africa's continued national energy crisis the agricultural sector, as like many other sectors, is bearing the brunt. AGE intends to supply 1% of the power generated at the facility to Allied Farms (Pty) Ltd a commercial farming operation at Koedoeskop, 33% will be sold to private users (i.e., nearby farmers, mines), the remaining 66% will be sold to Eskom. Accordingly, the proposed project does not form part of the DMRE REIPPP Programme.

The proposed solar pv facility triggers several listed activities scheduled under the Listing Notice 1 (GNR 327), Listing Notice 2 (GNR 325) and Listing Notice 3 (GNR 324) as published under the National Environmental Management Act, 1998 (Act 107 of 1998) EIA Regulations of 2014 (GNR 326) therefore require environmental authorisation before it can be commissioned subject to a full Scoping and Environmental Impact Assessment (EIA) to be carried out by an independent environmental assessment practitioner (EAP).

A General Authorisation (GA) / Water Use License Application (WULA) will also be required under the provisions of the National Water Act, 1998 (Act 36 of 1998) for Section 21 (a) and (g) water uses from the Department of Water and Sanitation (DWS): Crocodile West Proto Catchment Management Agency for the facility water (and sanitation requirements). The requirements are expected to be low thus the possibility exists for a GA.

Conserva Environmental Management Services (CEMS) has been appointed as the independent EAP to conduct the environmental authorisation process and WULA for the project.

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<sup>1</sup> The application property is Portion 1 of the farm Zwartwitpensbokfontein 434-KQ

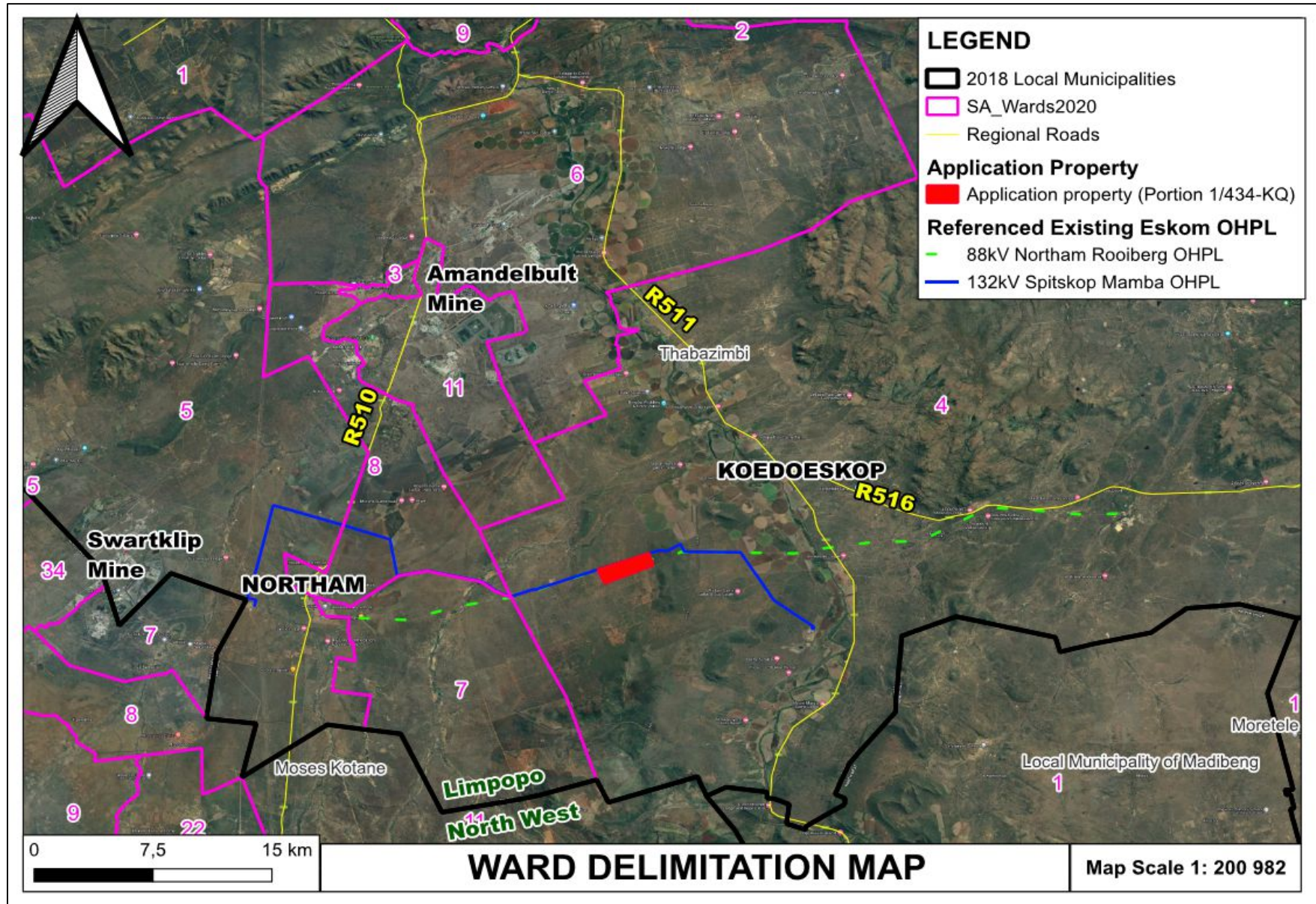


Figure 1-1: Demarcation Board Municipal and Ward Delimitation Map illustrating the position of the application property.

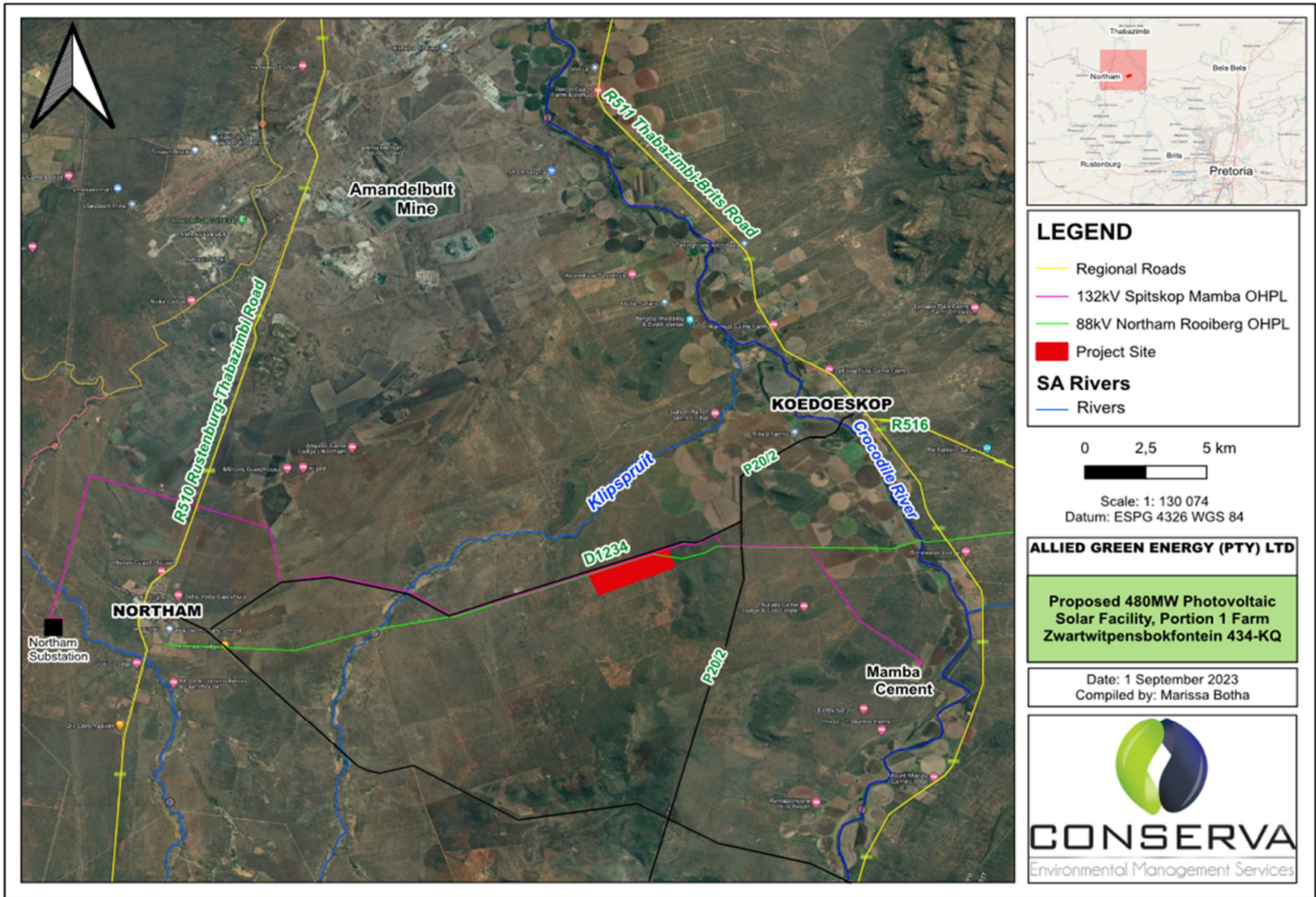


Figure 1-2: Regional Locality Plan

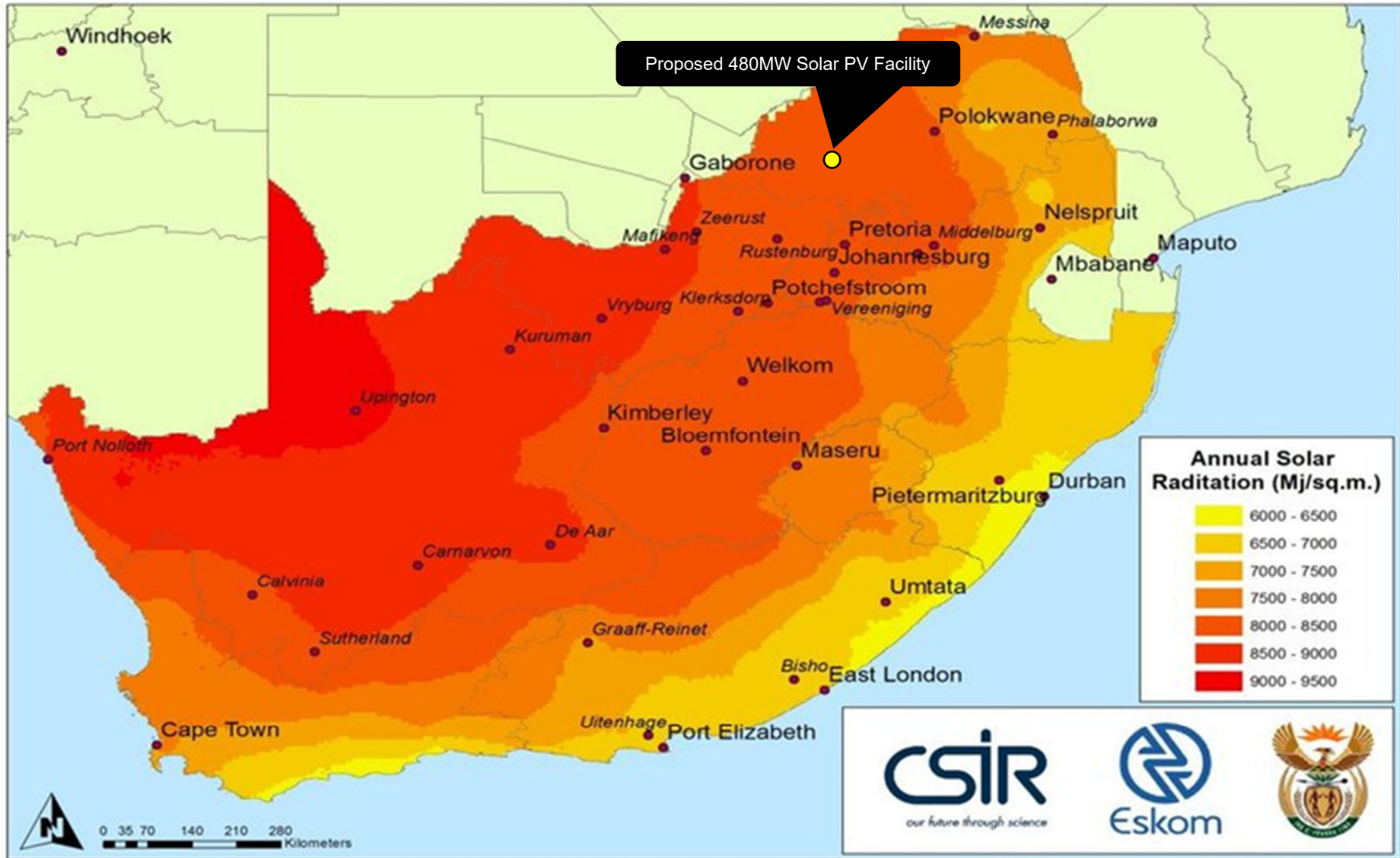
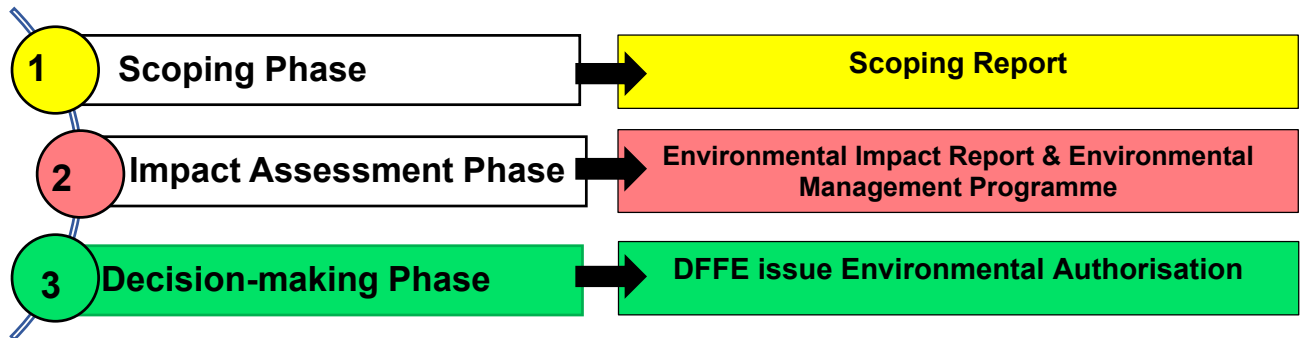


Figure 1-3: Annual Solar PV Radiation Plan of South Africa. The project site is indicated using a yellow dot/circle.

## 1.2 OVERVIEW OF THE EIA PROCESS

The EIA Process is a planning and decision-making tool which will assess the potential environmental, social, and economic consequences of the project, through a consultative process i.e., public participation process (PPP). It fundamentally informs the DFFE and the public of the possible project consequences, should it be authorised.

The EIA process and PPP is conducted in line with regulation 21-24 and 40 – 44 of the NEMA EIA Regulations (GNR 326 as amended in 2017) and has a regulated timeframe of 300-days. It requires the independent EAP to submit a series of reports to the DFFE for decision-making, which have each been subjected to a 30-day consultative process i.e., Scoping Report, Environmental Impact Report (EIR) & Environmental Management Programme (EMPR). The process includes three phases each with its associated environmental reporting:



During the Scoping Phase the potential negative and positive consequences relevant to the project area identified to determine the aspects to be focussed on during the Impact Phase which require more detailed specialist investigations. The findings are presented a **Draft Scoping Report (DSR) and Plan of Study for EIA and will be made available for 30-days public and authority review.**

Once the DSR is approved by the DFFE the Impact Assessment Phase will commence during which detailed specialist investigations will be undertaken for the issues identified during the Scoping Phase. The findings will be presented in a **Draft Environmental Impact Report (EIR)** which provides an overview of the potential impacts and overall significance including the prescribed mitigation measures to be adhered to minimise these to acceptable levels.

An auditable **Environmental Management Programme (EMPR)** will be prepared that recommends the environmental management specifications to be observed by AGE during the construction, operation, and decommissioning phases of the facility. **Both the Draft EIR and EMPR will be released for 30-days public and authority review.** Public submissions will be incorporated and finalised reports will be submitted to the DFFE who will reach a decision on the application within 107 days. I&APs will be notified of the decision and the opportunity to appeal the decision.

## 1.3 PURPOSE OF THIS DRAFT SCOPING REPORT

This Draft Scoping Report is the first report released as part of the process with the aim to solicit public comment on the project, its potential impacts, and the planned scope of the EIA process by giving the public an opportunity to review the report content for 30-days. The content includes the following:

- The project location, details, and its considered alternatives
- Motivation for the project.
- Legal context within which the project is to take place.
- Various environmental and social attributes that may be impacted by the project and vice versa.
- Consideration of the cumulative impacts on the environment considering there is a rollout of several similar solar pv projects in the regional area.
- Describes the specialist studies and level of assessment required as part of the EIA process to further investigate the significant negative project impacts and how positive impacts can be enhanced.

## 1.4 PROJECT TEAM

### 1.4.1 DETAILS OF EAP WHO PREPARED THE REPORT

Regulation 11 and 13(1)(a) and (b) requires that an independent and suitably qualified and experienced EAP must conduct the EIA Process and prepare the statutory reporting. In terms of Regulation 14 of Section 24H Registration Authority Regulations, 2016 (as amended) the appointed EAP must be registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA) and proof of valid registration must be provided.

CEMS is the appointed environmental consultancy and host to two registered EAPS. The details of the registered independent EAP's managing the EIA process, who have authored, co-authored, and reviewed the DSR including their expertise are provided in **Table 1-1**.

The EAP declaration of independence, proof of EAPASA registration and Curriculum Vitae are provided in **Appendix A1 – A3**.

**Table 1-1: Qualifications and professional registration of EAP**

Name	Qualifications and Expertise	Years' experience	Professional Registration
Marissa Botha	Registered EAP (EAPASA) Registered Natural Scientist ( <i>Pri.Sci.Nat</i> ) Wetland Assessment, DWS Wetland Impact Assessment, Rhodes University	19	SACNASP Reg no. 117526 EAPASA Reg no. 2019/1709
Maryke André	Registered EAP (EAPASA) Btech Nature Conservation	16	EAPASA Reg no. 2019/2007

### 1.4.2 INDEPENDENT SPECIALIST TEAM

Regulation 12 (2) of the EIA Regulations state that in addition to the appointment of an EAP, an independent specialist may be appointed if the level of assessment is of a nature requiring specialist involvement to describe and assess specific environment theme. The independent specialists who were involved in providing environmental theme specific data for the preparation of the DSR are detailed in **Table 1-2**. Refer to **Appendix A4** for declaration of independence by specialists.

**Table 1-2: Details of Independent Specialists**

Theme/ Aspect	Company	Professional Registration
Geology	RockSoil Consult (Pty) Ltd Kobus Roux	SACNASP Reg. no. 118640 SAIEG Reg. no. 13/347
Agricultural Potential	Index (Pty) Ltd Dr Andries Gouws	SACNASP Reg. no. 400140/06 SSSSA
Terrestrial Biodiversity	<b>The Biodiversity Company</b> <b>Andrew Husted</b> Ryno Kemp Namitha Singh	SACNASP Reg. no. 400213/11
Aquatic Biodiversity		
Avifauna (Birds)		
Landscape and Visual	Outline Landscape Architects Kathrin-Hammel-Louw	SACLAP Reg. no. 20162
Heritage, Cultural	Ubique Heritage Consultants (Pty) Ltd Heidi Fivaz	ASAPA no. 433
Palaeontology	Banzai Environmental Elize Butler	PSSA



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## 2 PROJECT DESCRIPTION AND SCOPE

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### 2.1 BACKGROUND

AGE is stationed in the agricultural district of Koedoeskop and is associated with several subsidiaries of which one is Allied Farms (Pty) Ltd. Allied Farms is a commercial farming enterprise within the Crocodile West Irrigation Scheme – producing maize, wheat, and soybean. It draws up to 5MW of electricity per day from Eskom and since its dependant on electricity for irrigation it cannot afford to be without electricity for 1-day.

AGE is proposing to develop a solar pv facility with a generating capacity of up to 480MW to wheel 34% of the electricity generated by the facility through the Eskom grid to Allied Farms, nearby commercial farmers and potentially a mine, the rest will be sold to Eskom. Developing the solar facility will ensure a consistent power supply to Allied including nearby commercial farmers and alleviate the pressure on the national grid during the country's electricity shortage.

The company has purchased Portion 1 of the farm Zwartwitpensbokfontein 434-KQ located 6km outside of the Crocodile West Irrigation Scheme for these purposes. The property is crossed by both the Eskom 88kV Northam-Rooiberg and 132kV Spitskop-Mamba OHPLs providing direct access to the Eskom grid.

### 2.2 SOLAR PV FACILITY SITTING AND DESCRIPTION

The initial geological desktop analysis and site sensitivity verification (SSV) conducted by CEMS confirmed that the western section of Portion 1 comprises 275-hectares of flat non-dolomitic land with of a slope of less than 1% considered suitable 'development area' to place the solar pv facility footprint. This development area will be the focus of the EIA process. The eastern section of the property comprises Dolomite outcrops, out of bounds for development and future expansion. Refer to **Figure 2-1** for the Site Locality Plan showing the development area.

A geotechnical investigation is underway by RockSoil Consult (Pty) Ltd to delineate the boundary of the non-dolomitic land to inform the final siting of the facility footprint within the development area. The refined footprint will be presented in the EIR.

The development area would be occupied by several fixed-tilt arrays of 1000-Watt mono-facial solar panels installed on tracked mounting structures/poles across the site standing 5-meters above ground inclusive of inverter stations, internal access roads, main building, guard house and security residence. The solar arrays will be grouped in modules connected through underground cabling (AC/DC) to a string of above ground inverter stations to convert the direct current (DC) electricity from the panel into alternating current (AC) electricity to evacuate to the Eskom grid.

The solar facility will connect to the Eskom grid at the existing 88kV Northam-Rooiberg and 132kV Spitskop-Mamba OHPL's crossing the property through a proposed onsite 88kV and 132kV step-up transformer substation and 50-100 meter in length 88kV and 132kV Loop-in-Loop-out (LILO) overhead powerline/s.

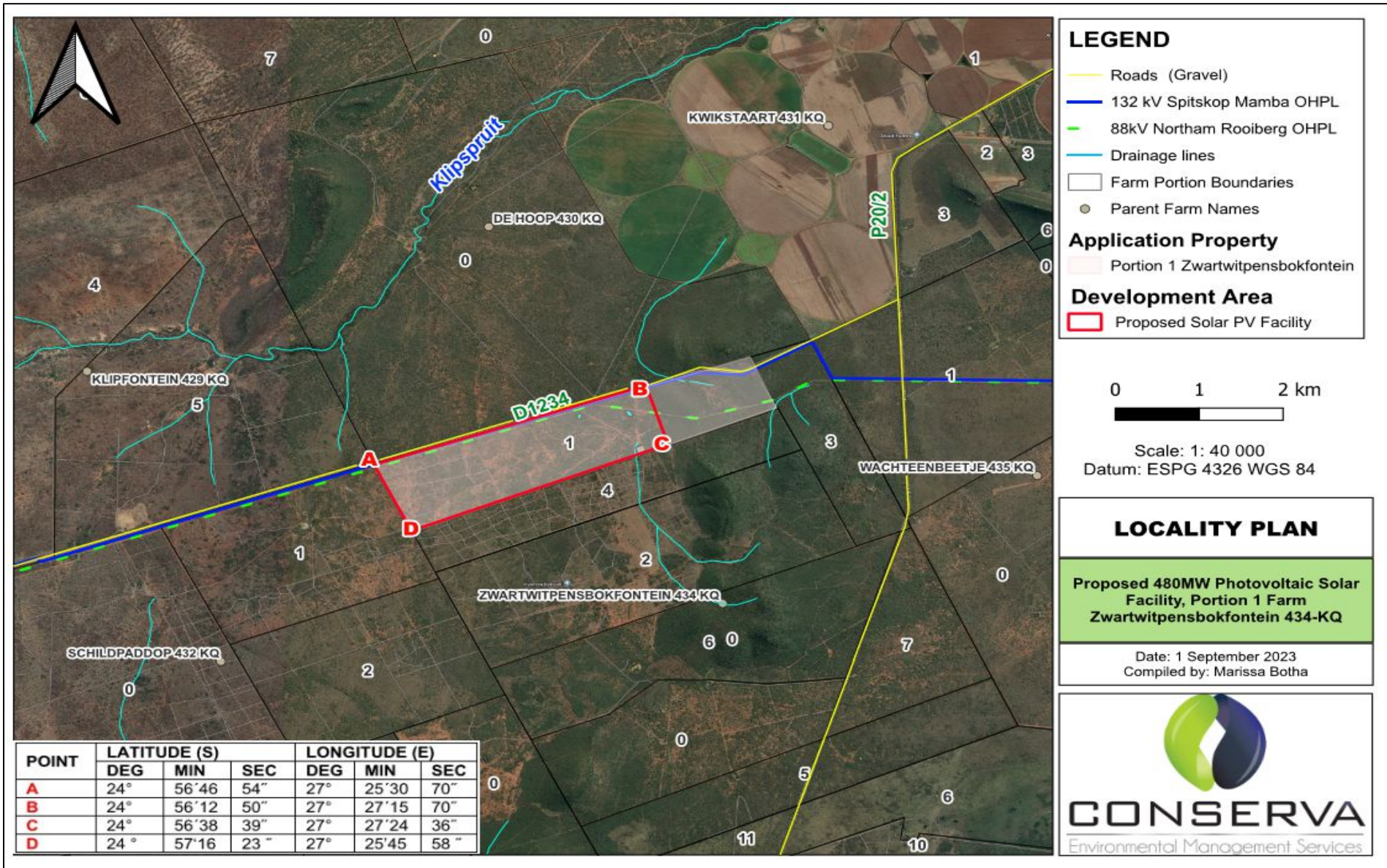


Figure 2-1: Site Locality Plan showing the application property and development area (red polygon) for the proposed solar pv facility and grid connection.

## 2.2 PROJECT COMPONENTS

**Important note:** The project description and scope of works is being described in the Scoping Report to the best of the EAP's knowledge based on the information presented by the applicant at the time. The final specifications of the project components would only be determined during the detailed engineering design phase which will follow once environmental authorisation is issued, if granted by DFFE.

Prior to construction the facility design may be finalised further and could see minor changes on the final placement of components.

The key solar pv facility components will comprise:

- 480 MW Solar PV fixed-tilt arrays consisting of 1000-Watt<sup>2</sup> mono-facial solar panels.
- Mounting structures to support the panels.
- On-site inverters and transformers to step up the power.
- 22kV underground cabling (AC/DC) between the panels, inverters, and transformers.
- 88kV and 132kV Step-up transformer / substation to facilitate the connection between the solar facility and Eskom grid.
- 50 to 100 meter in length 88kV and 132kV LILO OHPLs to connect the facility to the existing Eskom 132kV Spitskop-Mamba and 88kV Northam-Rooiberg power lines.
- Operations building and guard house with auxiliary infrastructure i.e., water, sanitation, and electricity at the main entrance of the solar pv facility.
- Perimeter fence and stormwater infrastructure.
- A direct access road from the D1234 Northam-Koedoeskop Road exists to the property but will be widened and formalised as the main entrance to the facility.
- Widen internal access roads for construction purposes and establish new roads to project components.
- An existing farm residence will be upgraded to be used as a facility security residence.
- Temporary and a 1-hectare permanent laydown area:
  - During construction a temporary laydown area for construction materials and assembling of components will be housed in the cleared areas where panels are to be constructed.
  - For maintenance purposes during the operation phase, a permanent 1-hectare laydown area will be established next to the Security residence.

The facility will EXCLUDE a Battery Energy Storage System (BESS). The applicant<sup>3</sup> is developing the authorised Liverpool Solar Farm and Hydro Plant (DFFE: 14/12/16/3/3/1/969) at Koedoeskop. The hydro plant serves as a 'giant battery' storing energy by pumping water between a top and lower dam. During high demand for electricity the water is released back to the lower dam and turns a turbine, generating electricity. The proposed 480MW Solar PV Facility will also tie into this hydro plant along with the Liverpool Solar Farm.

**Figure 2-2** presents a preliminary site plan for the main components on the development area as provided by the applicant. A summary of the components and dimensions are provided in **Table 2-1** below.

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<sup>2</sup> Currently 600-Watt solar panels are being installed at solar pv farms across South Africa, but the Solar PV Panel Industry is highly variable, and its technology keeps improving. AGE is of the submission that larger panels i.e., 1000-Watt may be available by the time of construction of the proposed solar pv facility and is therefore proposing installation of the higher wattage panels. This will avoid unnecessary environmental authorisation amendments in future.

<sup>3</sup> AGE's affiliate Allied Farms CC is the title holder of the environmental authorisation for the Liverpool Solar and Hydro Plant.

**Table 2-1: Summary of project components and dimensions**

<b>Component</b>	<b>Dimensions</b>
Facility Generating Capacity	Up to 480MW
Proposed technology	Photovoltaic (PV) solar
Number of panels	600 000 – 620 000
Height of installed panels	The pv panel tables are usually raised 0.5m off the ground. Reach height of up to 4-5 meters at maximum tilt.
Access road	The site is accessible directly off the D1234 Northam-Koedoeskop Road
Width and length of internal roads	The existing farm roads are approximately 4-5 meters in wide and will be widened by more than 4-meters and or extended by more than 1-km for construction purposes or as internal roads for the solar pv facility
On-site substation	The power generated at the facility will be transmitted to an 88kV and 132kV step up transformer at the facility on-site substation. An area of approximately 1 hectare is allocated for the substation.
Grid connection	<ul style="list-style-type: none"> <li>• A 50 to 100-meter 88kV LILO OHPL to connect to the existing 88kV Northam-Rooiberg OHPL; and</li> <li>• A 50 to 100-meter 132kV LILO OHPL to connect to the existing 132kV Spitskop-Mamba OHPL</li> </ul>
Battery Energy Storage System	The facility will NOT have a Battery Storage System
Other buildings	<p>The dimensions are unknown at this stage, but a guard house, office and operations building will be accommodated next to the onsite facility substation area.</p> <p>An existing farm residence located on the eastern extreme of the development area will be upgraded for a facility security residence.</p>
Laydown areas	<p>During construction materials will be temporarily housed in the cleared areas where panels are to be constructed.</p> <p>During operation a 1-hectare permanent laydown area will be established next to the Security residence.</p>
Perimeter Fence	Clearview / Palisade or fully electrified fence. The general fence height is 2.5 meters.

## 2.3 PROJECT LOCALITY

As mentioned, the proposed solar pv facility, associated infrastructure and grid connection is proposed on Portion 1 of the farm Zwartwitpensbokfontein 434-KQ as illustrated in Figure 2-1 and 2-2. A detailed description of the affected property/site is provided in **Table 2-2**.

**Table 2-2: Site Detail**

<b>Province/s</b>	Limpopo
<b>District Municipality/ies</b>	Waterberg
<b>Local Municipality/ies</b>	Thabazimbi
<b>Ward number/s</b>	4
<b>Nearest town/s</b>	Northam Town – 17km west
<b>Farm name/s and number/s of property affected by solar facility and grid connection</b>	Zwartwitpensbokfontein 434-KQ
<b>Portion number/s</b>	Portion 1
<b>Surveyor General 21-digit code</b>	T0KQ00000000043400001
<b>Application Property extent</b>	377-hectares
<b>Development area extent</b>	275-hectares
<b>Current zoning</b>	Agriculture
<b>Landowner</b>	Allied Green Energy (Pty) Ltd
<b>Coordinates of site</b>	
<b>Centre point of site:</b>	24°56'43.38"S 27°26'27.89"E
<b>Corner points of development area on the application property as per Figure 1-3</b>	A 24°56'46.54" S 27°25'30.70"E B 24°56'12.50" S 27°27'15.70"E C 24°56'38.39" S 27°27'24.36"E D 24°57'16.23" S 27°25'45.58"E
<b>88kV and 132kV Step up transformer / onsite substation</b>	Sub 1 24°56'25.86" S 27°26'41.40"E Sub 2 24°56'27.20" S 27°26'45.72"E Sub 3 24°56'27.20" S 27°26'46.74"E Sub 4 24°56'28.58" S 27°26'42.61"E
<b>Coordinates of proposed grid connection (88KV and 132kV LILO OHPLs)</b>	LILO 1 24°56'25.88" S 27°26'41.38"E LILO 2 24°56'24.18" S 27°26'40.55"E LILO 3 24°56'22.71" S 27°26'45.21"E LILO 4 24°56'24.43" S 27°26'45.69"E

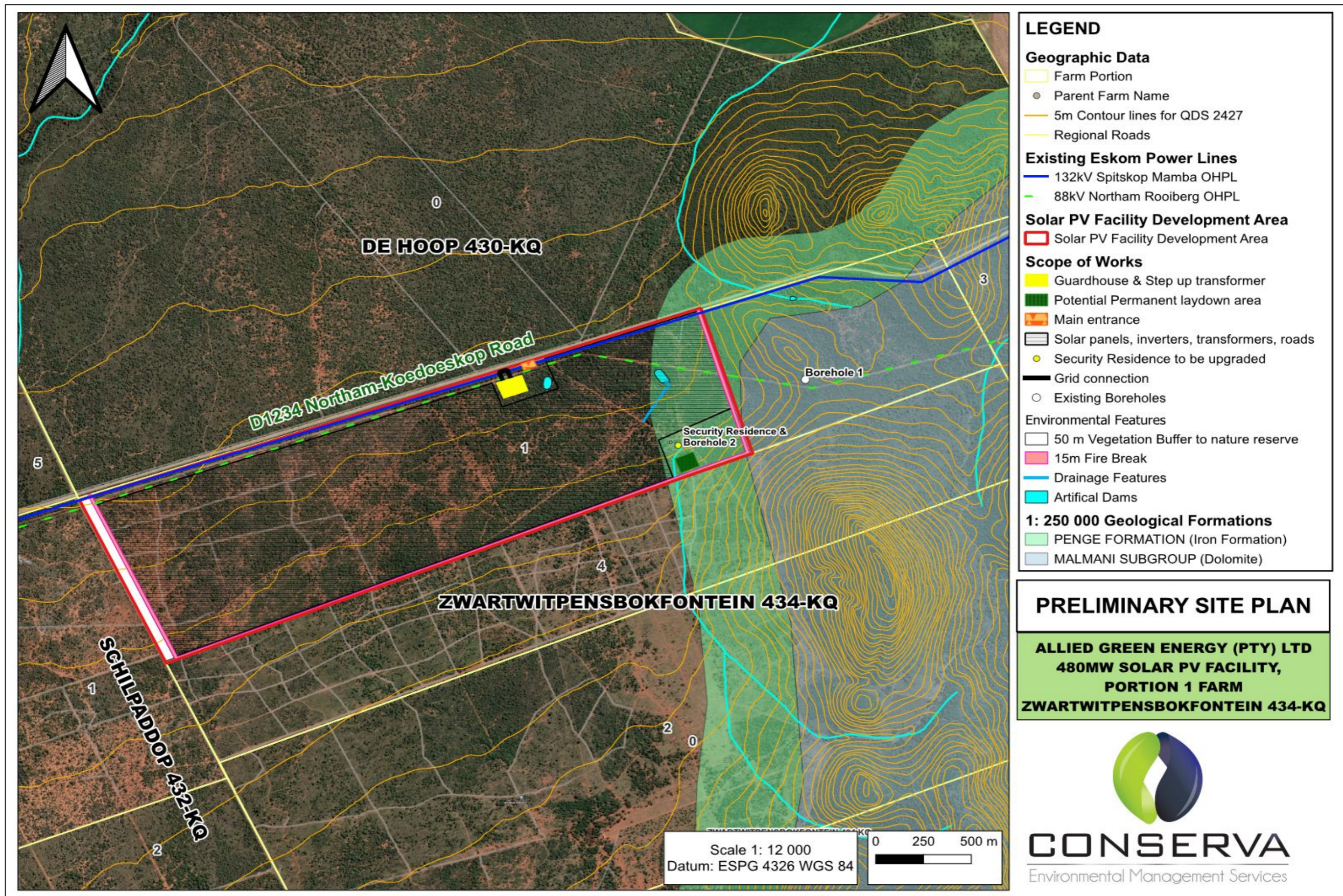


Figure 2-2: Preliminary Site Plan for Solar PV Facility (to be refined in Impact Phase)

## 2.3 PROJECT PHASES

The project will comprise a construction, operation, and decommissioning phase. The relevant activities to be undertaken per phase including the timeframes are detailed in **Table 2-3**.

**Table 2-3: Project phases, relevant activities, and time frames**

Phase	Description	Schedule
Procurement	<ul style="list-style-type: none"> <li>• Finalise facility design and final placement of components.</li> <li>• Contractor procurement</li> <li>• Employment of up to 400 construction workers (i.e., skilled, and semi-skilled labour) of which 300-workers may be present onsite on any given day.</li> <li>• It is anticipated that labourers would lodge and commute to site daily from the nearby town of Northam, Thabazimbi and from labour sending communities.</li> </ul>	6-months
Construction	<ul style="list-style-type: none"> <li>• The construction activities would take place Monday to Friday from 7am to 5pm.</li> <li>• Direct access is available from the D1234 Northam-Koedoeskop Road but would need to be widened for construction purposes i.e., entry by construction vehicles, low-bed truck for transformer etc and formalised for the operational phase.</li> <li>• Site preparation, demarcation and establishing the facility perimeter fence.</li> <li>• Initially the existing 4-5-meter-wide internal farm roads will be used by light construction vehicles to access footprint areas but later widened for larger construction vehicles to access the footprint areas.</li> <li>• Demarcation of the 50-meter vegetation buffer along the western boundary of the development area.</li> <li>• Establishment of the 15-meter fire break along the western, southern, and eastern boundary of the development area.</li> <li>• New internal access roads will be created as required to project components for construction and operational purposes.</li> <li>• Phased clearing of vegetation per 20MW solar block to be constructed.</li> <li>• Stripping and stockpiling of topsoil for later use for the rehabilitation of disturbed areas.</li> <li>• Establishment of stormwater infrastructure.</li> <li>• Establish temporary laydown areas for construction material, equipment and to assemble components on the areas cleared for the solar panels.</li> </ul>	18- 24 months

	<ul style="list-style-type: none"> <li>• Transportation of construction equipment and facility components to the project site via the R 511 Thabazimbi-Brits Road, P20/2 and D1234 Northam-Koedoeskop Road. Some components may be abnormal freight in terms of the Road Traffic Act 29 of 1989.</li> <li>• Construction of panels, substation and inverters, other buildings.</li> <li>• Construction of the grid connection</li> <li>• Waste Management</li> <li>• Undertaking rehabilitation of areas disturbed by constructed.</li> </ul>	
<p>Operation and Maintenance</p>	<p>The overall lifespan of the solar facility will be approximately 20-25 years.</p> <p>The facility will operate continuously 7 days a week transferring electricity to the national grid.</p> <p>During the operational phase, approximately 30 people will be permanently employed to operate and maintain the facility (i.e., full time technicians, electrical engineer).</p> <p>The project will be self-sufficient upon completion however will require maintenance throughout its lifespan i.e.,</p> <ul style="list-style-type: none"> <li>• Replacement of solar panel, small electrical components</li> <li>• Control of natural vegetation below solar panels</li> <li>• Clearing sediment from stormwater management channels</li> <li>• Cleaning of solar panels twice / annum</li> <li>• Waste management</li> </ul>	<p>20-25 years</p>
<p>Decommissioning</p>	<p>Depending on the economic viability of the facility after the 25-years of operation, the facility can either be decommissioned or upgraded to extend its operational life. This would entail either disassembling components and rehabilitating the site to a final land use or replacing the components with new efficient infrastructure.</p> <p>If decommissioned the following activities would take place:</p> <ul style="list-style-type: none"> <li>▪ Transporting decommissioning equipment to site</li> <li>▪ Disassemble, deconstruct, and remove existing facility components.</li> <li>▪ The applicant can pay for the solar panels to be disposed of as electronic waste or pay for it to be recycled at a licensed disposal facility.</li> <li>▪ Remove concrete foundations associated with solar components.</li> <li>▪ The security residence can be beneficial for the end land use and could possibly remain.</li> <li>▪ Rehabilitate site to its original land use i.e., cattle / game grazing.</li> </ul>	<p>12-18 months</p>



## 2.4 SERVICES REQUIREMENTS

### 2.4.1 WATER REQUIREMENTS, SOURCE AND USE

**Requirement:** The water requirements from solar pv facilities are low. The proposed facility will require water for its construction and operational phases. It is assumed that the facility may require a maximum of approximately 11 600 m<sup>3</sup> of water over the 24-month construction period. During the operational phase the facility will not use more than 5000m<sup>3</sup> / annum over the 25-year lifespan of the facility. **Table 2-4** details the calculations of water requirements assumed to be required by the facility.

During the construction phase water will be required for domestic/sanitation for labourers and construction processes. The facility would be constructed in 20MW phases, and it is assumed that 300 workers could be onsite on any given day for a construction period of 520 days<sup>4</sup>. The basic requirement per labourer is assumed at 50 litres/person/day<sup>5</sup> with the addition of 3800m<sup>3</sup> water required for construction processes.

During the operational phase it is expected that a maximum of 30 employees may be at the facility and water would be required for the following purposes i.e.,

- Sanitation (drinking, cooking, cleaning) for the number of employees onsite; and
- Plant maintenance (panel cleaning twice/annum and road maintenance) over the 25-year lifespan.
- Dust suppression along section of D1234 to limit dust settling on solar panels.

During the operational phase the water allocated for dust suppression can be mixed with a biodegradable chemical dust suppressant i.e., Dust-A-Side to reduce the frequency of water spraying and water requirement.

**Table 2-4: Summary of assumed construction and operational phase water requirements**

Phase	Water Use	Consumption ℓ/worker/day	Consumption Duration	Workers onsite	Water Requirement (m <sup>3</sup> )
<b>Construction</b>	Sanitation	50 ℓ/worker/day	520 days	300	7 800
	Construction processes - Road compaction - Concrete curing - Dust suppression	50 ℓ / m <sup>3</sup>	-	Assume 70 000m <sup>3</sup> material	3 500 + 300 for dust suppression
	<b>Total assumed maximum water requirements for Construction</b>				<b>11 600 m<sup>3</sup></b>
<b>Operational</b>	Sanitation	50 ℓ/worker/day	Per annum (260 days)	Max 30	390
	Cleaning of panels (panel = 2m <sup>2</sup> )	3 ℓ/m <sup>2</sup>	Twice / annum	620 000 panels	3,720
	Road maintenance and dust suppression				Assumed at 500
<b>Total assumed maximum water requirements for Operation</b>					<b>4 610 m<sup>3</sup></b>

<sup>4</sup> Working week of 5 days at 52 weeks per annum for two years = 520 days construction period.



<sup>5</sup> According to the World Health Organization (WHO) 50 – 100 litres of water/person/day is required to ensure that the basic needs are met.

[https://www.un.org/waterforlifedecade/pdf/human\\_right\\_to\\_water\\_and\\_sanitation\\_media\\_brief.pdf](https://www.un.org/waterforlifedecade/pdf/human_right_to_water_and_sanitation_media_brief.pdf). But this is a construction crew onsite from 7am to 5pm not therefore 50 litres/person/day is assumed.

**Water Source:** Water for the solar pv facility will be sourced from two existing equipped farm boreholes located on the application property (see **Figure 2-2** and **Table 2-5**). The boreholes will be repaired and the water, in all probability will be pumped to several 5000 ℓ JoJo tanks positioned on the facility at the security residence and buildings.

The borehole water on the property has a high ‘Lime’ content. If used to clean the solar panels, it would accumulate on the panels and affect its efficiency. The applicant would need to install a treatment system to remove the mineral/Lime content from the groundwater. Alternatively, water for cleaning of panels can be sourced from a municipal source/cleaner.

**Table 2-5: Summary of existing boreholes on the application property**

Water source	Property	Co-ordinates	Yield	Photo
Borehole 1	Portion 1 / 434-KQ On Outcrop	24°56'25.22"S 27°27'33.67"E	Unknown	
Borehole 2	Portion 1/ 434-KQ Existing farmhouse	24°56'36.78"S 27°27'12.12"E	Unknown	

#### 2.4.2 SANITATION

During the construction phase it is anticipated that chemical toilets will be used. During the operational phase septic tanks with conservancy tanks will be used. There is an existing septic tank at the farmhouse to be revamped as a Security residence. An additional small septic tank will also be installed at the Guard house / Operations building.

### 2.4.3 WASTE MANAGEMENT

During the construction phase general construction waste will be generated that can be contained in a waste skip that can be removed by an appointed waste removal subcontractor to the Northam Dump Site located 17km west of the project site along the Brits Road at Northam Town. The Northam Landfill Site is licensed and scheduled for an upgrade as an SLP by Limberg Mine.

During the operational phase the facility will generate general waste, limited hazardous waste (grease, oil) and e-waste from maintenance (i.e., replaced components – old/failed panels, cabling, inverters, connectors etc). These would need to be separated and temporarily stored at a designated fenced area at the facility until removed to a permitted disposal site. The general waste can be removed to Northam Landfill Site. In line with the National Environmental Management Act, 2008 (Act 58 of 2008) (NEMWA) the e-waste would be removed/collection scheduled to the nearest electronic recycler facilities i.e., DESCO (Kempton Park) / SD E E-Waste Recyclers (Ekurhuleni) / nearest facility. NEMWA bans all e-waste and electrical equipment from landfill and must be destined for recycling.

During the decommissioning phase when the facility reaches its end of life /is upgraded, solar panels will be discarded / replaced. The solar panels and components are considered hazardous (e-waste) and would need to be removed for recycling as well. Solar recycling plants remove the silver, copper from the cells, and then recycle the contaminated glass and plastic casing by burning in cement ovens. The recyclers or disposal methods would be investigated prior to decommissioning.

### 2.4.4 ELECTRICAL

There is an existing 22kV private power line traversing the property next to the existing 88kV Northam-Rooiberg power line leading up to the existing farmhouse. The facility buildings, security residence and permanent laydown area would be supplied with electricity from the existing 22kV line. Refer to the Photo evidence included in the SSV Report attached under **Appendix C**.

## 2.5 APPLICABLE NEMA LISTED ACTIVITIES

The confirmed listed activities for which application for environmental authorisation has been lodged to the DFFE are detailed in **Table 2-6**. Coordinate points indicating the location of each listed activity is provided under subsection 2.3 (Table 2-2) above.

**Table 2-6: Triggered listed activities applicable to the proposed solar pv facility and grid connection**

Activity No(s):	Description	Describe the portion of the proposed project to which the applicable listed activity relates.
<b>Listing Notice 1 (GNR 327)</b>		
11 (i)	The development of facilities or infrastructure for the transmission and distribution of electricity (i) outside urban areas with a capacity of more than 33 but less than 275 kilovolts.	The construction and operation of 22kV underground cabling between solar arrays and inverters, a combination 88kV and 132kV step-up transformer (onsite substation) including 88kV and 132kV Loop-in-Loop-out (LILO) overhead power lines to connect the facility to the existing 88kV Northam-Rooiberg and 132kV Spitskop-Mamba power lines.

28 (ii)	Residential, mixed, retail, commercial, industrial, or institutional developments where such land was used 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 development area under assessment for the 480MW Solar PV facility is 275 hectares and zoned 'agriculture'. The property will need to be rezoned from 'agriculture' to 'special use / utility'.
<b>Listing Notice 2 (GNR 325)</b>		
1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20MW or more.	The proposed solar pv facility will generate up to 480MW of electricity through a renewable energy resource.
15	The clearance of an area of 20-hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for – (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	The project site comprises disturbed bushveld vegetation. The total area to be cleared of disturbed bushveld vegetation for the solar pv facility is up to 275-hectares.
<b>Listing Notice 3 (GNR 324)</b>		
4(e)(i)(gg)	Development of a road wider than 4-meters with a reserve less than 13.5-meters (e) in Limpopo (i) outside urban areas (gg) Areas within 5-kilometers (km) from any other protected area identified in terms of NEMPA.	The solar pv facility's new internal access roads will be wider than 4-meters and falls within the 5-km buffer zone of the 'Tortoiseshell Private Nature Reserve', 'De Kraal Private Nature Reserve', 'Koerooi Private Nature Reserve' and 'Sharme Private Nature Reserve' in line with the Protected Areas Register (PAR).
10(e)(i)	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 30m <sup>3</sup> but not exceeding 80m <sup>3</sup> . (e) in Limpopo (i) In all areas.	The 88kV and 132kV step-up transformer (onsite substation) will contain oil filled electric components (i.e., reactors, regulators, and circuit breakers) that will have a combined capacity of 30m <sup>3</sup> . The development property is in Limpopo Province.
18(e)(i)(gg)	The widening of a road by more than 4-meters or the lengthening of a road by more than 1-kilometer (e) in Limpopo (i) outside urban areas (gg) Areas within 5-km from any other protected area identified in terms of NEMPA.	Existing farm roads will be widened by more than 4-meters and or extended by more than 1-km for construction purposes or as internal roads for the solar pv facility. The solar pv facility is in Limpopo Province, outside an urban area within 5-km of the 'Tortoiseshell Private Nature Reserve', 'De Kraal Private Nature Reserve', 'Sharme Private Nature Reserve' and 'Koerooi Private Nature Reserve' in line with the Protected Areas Register (PAR).

## 2.6 APPLICABLE SECTION 21 NWA WATER USES

The abstraction of groundwater from the existing boreholes and the disposal of sewage to onsite septic tanks and French drains are Section 21 water uses which require registration or licensing in terms of the National Water Act 36 of 1998 (NWA). AGE will apply for a GA/WULA to the DWS Crocodile West Proto CMA in accordance with the NWA WULA Procedure for following specified section 21 water uses:

- Section 21 (a) – For the abstraction of water from two existing boreholes
- Section 21 (g) – For the disposal of sewage into two septic tanks and French drains at guardhouse and security residence

According to GNR. 538 of 2016 'General Authorisation for Taking and Storing of Water' groundwater may be abstracted based on an abstraction rate of 45m<sup>3</sup>/hectare/annum (based on the application property size) within WMA 1: Limpopo within quaternary catchments A24A – A24J. The solar development site is in quaternary catchment A24C, and the property size is 377.4066 hectares. The abstraction of up to 16 983.3 m<sup>3</sup> / annum may therefore be generally authorized on Portion 1 of the farm Zwartwitpensbokfontein 434-KQ. It may therefore be eligible for registration as a general authorisation with DWS.

According to GNR 665 of 2013 'Revision of General Authorisation for **Section 21 g** for disposal of waste in a manner which may detrimentally impact a water resource' a person who owns the land may dispose of wastewater to an on-site disposal facility for greywater generated by a single household (guardhouse/security house) however it is possible that the exclusion applies to quaternary drainage region A 24 for the Crocodile River Valley.

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### 3 CONSIDERED ALTERNATIVES

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Identifying and confirming preferred project alternatives is one of the objectives of the Scoping Process. Appendix 2 section 2(1)(g)(i) of NEMA EIA Regulations of 2014 (GNR 326) requires that a description of alternatives relevant the proposed project be included in the Scoping Report.

Alternatives are different means of meeting the general purpose and need of a proposed activity, considering location or site alternatives, activity alternatives, design/layout or technology alternatives, and the no-go alternative. Evaluation of alternatives also allows the consideration of the relative impact of different project alternatives on the environment. (DEAT (2006) Guideline 5: Assessment of Alternatives and Impacts in support of the EIA Regulations, 2006-IEM Guideline Series)

The alternatives considered for the project are limited and are described in the below sections.

#### 3.1 SITE ALTERNATIVE

The application property is the only site considered for this application.

AGE has purchased this particular property because it is located just outside the Crocodile West Irrigation Scheme area, and within 6-km of Allied Farms and other commercial farmers to whom it proposes to wheel 34% of the electricity generated at the facility. The intention is to supply Allied Farms and surrounding commercial farmers with consistent power supply and sell the rest to Eskom.

The property was identified based on six (6) factors:

- **Solar Radiation Levels:** The Northam / Koedoeskop area is a 'High to Moderate' solar resource area able to produce 8000 -8500 Megajoule per square meter according to the Annual Solar PV Radiation Plan.
- **Locality:** AGE purchased the property because it is 6-km from its subsidiary Allied Farms commercial farming operations and the other commercial farmers where the electricity is needed. It is also located within proximity of the Liverpool Solar and Hydro Plant. The hydro plant pumped storage scheme will also serve this proposed solar pv facility in lieu of a BESS.

- **Topography and extent:** The property is 377 hectares in extent of which a large track of land (275-ha) in the western portion has a slope of less than 1% which is suitable for the placement of a solar pv facility.
- **Available grid connection:** The existing Eskom 88kV Northam-Rooiberg and 132kV Spitskop-Mamba overhead power lines (OHPL) cross the property at its northern boundary, providing direct access to the Eskom grid.
- **Site access:** The site has direct access from the D1234 Northam-Koedoeskop Road.
- **No loss of Agricultural Potential Land:** Because AGE is directly related to the agricultural sector through Allied Farms, high potential agricultural land within the Crocodile Irrigation Scheme area is conserved for cultivation. Infrastructure developed to support the farming enterprises is developed on land further west outside the Irrigation Scheme where the land does not have any water rights.

Therefore, AGE identified the application property which is located outside the irrigation scheme area. There is no-high potential agricultural land onsite and the property has no water rights aside from the existing boreholes. The climatic conditions (very hot) and crop yield for the area is such that profitable farming is not possible. According to the DALRRD the land is Class 7 or poorer and has a low sensitivity to agricultural development. There will be no impact regarding the loss of sensitive agricultural land.

CEMS also engaged the Waterberg District DALRRD through meeting and site inspection on 20 June 2023. The DALRRD confirmed the site to be of low-agricultural potential requiring no departmental soil-classification. Details of the engagement is included in the PPP under Section 6.

The application property therefore by virtue of its slope, direct access to the Eskom grid, location in a 'High to Moderate' solar resource area, location close to the Koedoeskop farming enterprises, available site access and low-agricultural potential is desirable for the development of the proposed solar pv facility. It will also contribute to food security and benefit the farming enterprises in the Koedoeskop area.

### **3.2 ACTIVITY ALTERNATIVE**

No feasible activity alternatives are assessed. AGE's primary objective is to develop a solar pv facility for the generation of renewable energy. Other alternatives that may be considered for the specific area include concentrated solar power (CSP) and Hydropower, none of which are viable options on the application property.

Hydropower generated through a pump storage scheme requires a substantial drop in elevation over a very short distance between the upper and lower dam including a more substantial water supply. The Dolomite Outcrop on the eastern section of the property is 1030 mabsl and drops within 500-meters to 995 mabsl which is not a sufficient elevation drop for a pumped storage scheme therefore not feasible at the application property. Allied Farms is also already developing a hydro plant at the Liverpool Solar Farm. This proposed solar pv facility will tie into this hydro plant in lieu of a BESS.

CSP was a major technology at a time in SA due to its advantages, but very little allocation is given in the Integrated Resource Plan (IRP) to new CSP beyond 2030. The innovation analysis carried out on CSP technologies in SA shows that its tariff is currently higher than that of PV.<sup>6</sup> CSP is also capital-intensive as the cost of investment is high which increase the risk and often reduces confidence about getting funds required to deploy the technology.<sup>7</sup> Lastly and most importantly CSP plants requires significant volumes of water which is a major constraint on the property as it has no water rights only two existing boreholes.

Solar PV is a much cheaper to roll out compared to CSP therefore it's much easier to find energy investors to deploy the project. Solar pv's require little to no water and are easily scalable on an application property to accommodate the suite of environmental features often encountered onsite.

### **3.3 TECHNOLOGY ALTERNATIVES**

Given the available development area and desired output from the solar pv facility the applicant will use mono-facial 1000-Watt solar panels on fixed tilted mounting structures.

Several solar pv panel options were considered i.e.,

- Panel types i.e., Bi-facial / mono-facial
- Panel technology i.e., Poly-Crystalline photovoltaic, Concentrated photovoltaic (CPV), Thin film PV.
- Fixed mounted PV systems (fixed tiled panels)
- Single or double axel tracking system (follows the sun)

However, the available development area is 275-hectares from which the applicant must generate up to 480MW solar energy. It was therefore pivotal for AGE to identify a panel that could generate a higher energy output over a smaller development area. E.g., Nearby proposals in the area require 500 hectares plus to generate up to 100MW using 500-600-Watt panels. The applicant is optimally employing technology to increase the electricity output over a smaller available development area resulting in a smaller impact area.

Additionally, in lieu of a BESS, the applicant will also tap into the Liverpool hydro plant.

Stormwater and erosion management is also a pivotal aspect in the region to avoid the loss of soils. The use of mono facial will allow for short vegetation growth beneath the panels to bind the soils. Bi-facial panels would require the clearing of vegetation beneath the panels and application of reflective material e.g., stones.

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<sup>6</sup> Stellenbosch University – Concentrating Solar Power (CSP) technology adoption in South Africa by O.O. Craig (Thesis)

<sup>7</sup> Stellenbosch University – The current and future energy economics of concentrating solar power (CSP) in South Africa, 2017 by O.O. Craig, A.C. Brent; F. Dinter.

### 3.4 LAYOUT ALTERNATIVES

The application property is 377-hectares in extent of which approximately 275-hectares is developable for the solar pv facility, grid connection and associated infrastructure, excluding environmental sensitivities and no-go areas.

The development area was identified based on the underlying geology (Dolomite outcrops and non-dolomitic land), and the site topography as mentioned in previous section 2.2 above. The geotechnical investigation is underway and will delineate the boundary of the non-dolomitic land to refine the siting of the facility footprint.

CEMS and the team of specialists also conducted a site sensitivity verification during August 2023 over the development area. Most of the site is of 'Low' Terrestrial sensitivity, but the SSV delineated further environmental sensitivities and no-go areas which need to be excluded from final facility footprint i.e.,

- **High Terrestrial No-go Zones** i.e.,
  - [50-meter Vegetation Buffer on the site western boundary](#). The site is located next to the Tortoiseshell Private Nature Reserve. To mitigate edge effects a 50-m buffer zone is recommended by the specialist which will also act as a screen to abutting land.
  - [Two artificial dams and a non-perennial drainage feature](#) providing habitat for avifauna during the dry season. The applicant can also benefit from these by incorporating the dams as part of the facility stormwater management plan.
- **Medium Sensitivity Terrestrial Dolomite Bushveld**
  - This is a functional Ecological Support Area and must be excluded from the fenced off facility.
- **100-meter Buffer Zone applied to 3 Graves which are of High Heritage significance.**
- **A 15-meter fire break** needs to be applied on the western, southern, and eastern boundaries of the facility for safety purposes and fire management.

The placement of the grid connection and onsite substation is dictated by the location of the existing Eskom power lines where the facility will connect to the grid.

The above exclusions would result in a potential footprint area covering > 255-hectares. The composite map superimposing the delineated sensitivities within the development footprint area is included under Section 8. The final facility layout will be presented in the EIR since the geotechnical results are still pending.



### **3.5 NO-GO ALTERNATIVE**

The no-go option is the option of not executing the project and entails comparing the status quo of the environment against the effect of permitting the project.

The no-go option may result in no potential negative environmental impacts but has direct and indirect negative socio-economic impacts to the Koedoeskop agricultural district and supporting enterprises. The potential employment opportunities anticipated during the construction and operational phases of the project will also not be realised. It also means that the national and local urgent need for renewable energy will not be realised.

SA is in a national energy crisis and government is implementing its Energy Action Plan with the long-term goal to secure continuous, credible energy supply. The socio and economic benefit of implementing the project will therefore far outweigh the environmental benefit of not implementing the project.

In 2022 President Cyril Ramaphosa announced a range of measures to be implemented at the Eskom power stations and to add new generation capacity as quickly as possible. The target is set on generating 18GW of renewable energy by 2030, and solar energy is expected to play a significant role in achieving this target and reducing reliance on fossil fuels (coal). Government has gone as far as scrapping of licensing requirements for private energy projects and relaxing regulations in the sector.

AGE has selected an application property with the desired climate, topography, direct access to the grid connection and which is of low agricultural potential. The areas identified for the placement of the facility comprise Disturbed Bushveld of 'Low' Terrestrial sensitivity due to extensive historic overgrazing which has led to partial desertification in areas (denuded, erosion) and a loss to much of the herbaceous layer.

If the solar facility is not developed on this property AGE would only be able to fall back to the former land use (game grazing, game hunting) and identify other properties for the development of the solar facility which are few and far between since their other properties lie within the Crocodile West irrigation Scheme area considered 'High' potential agricultural land not desirable for development of solar facilities.

The alternative will be assessed in detail in the EIR.

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## **4 POLICY AND LEGISLATIVE REQUIREMENTS**

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Section 2(1) (e) under Appendix 2 of the EIA Regulations of 2014 requires a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to the activity and to be considered in the assessment.

South Africa has a suite of sound environmental legislation aimed at achieving sustainable development, including laws that support public participation, impact assessment and environmental management i.e., National and Provincial legislation, Bioregional Plans, Municipal Planning Frameworks, guideline documents, spatial datasets, and protocols.

**Table 5-1** provides a **summary of the key authorisation requirements** for the project. **Table 5-2** provides a brief description of all the policy and legislative requirements applicable to the proposed solar pv facility including an indication as to how the activity complies with it.<sup>8</sup>

The project location in relation to several geographic areas are referenced in Table 5-2 but the maps illustrating such are provided under Section 7 of this report to avoid duplication.

**Table 4-1: Summary of Key Applicable Authorisation Requirements**

<b>AUTHORISATION REQUIREMENT</b>	<b>LEGISLATION</b>	<b>NEED FOR AUTHORISATION</b>	<b>COMPETENT AUTHORITY (CA)</b>
<b>Environmental Authorisation</b>	NEMA EIA Regulations of 2014 (GNR 326 as amended)	Triggered scheduled listed activities under NEMA EIA Regulations GNR 327, 325 and 325.	DFFE
<b>General Authorisation / Water Use License</b>	Section 21 water uses published under National Water Act, 1998 (Act 36 of 1998)	Section 21 (a) and (g) water uses triggered.	DWS: Crocodile West Proto CMA
<b>Protected Tree Removal Permits</b>	Section 15 (1) protected tree removal in terms of the National Forest Act, 1998 (Act 84 of 1998)	Removal of Marula, Leadwood, and Shepard's Trees within solar footprint	DFFE: Forestry Regulation
<b>Special Consent Use</b>	Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970)	Application for use of 'Agricultural' land for 'Utility' to development solar facility. The permission is expected to be temporary (i.e., 25-years)	DALRRD
<b>Rezoning Application (TBC)</b>	Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) and applicable municipal land use scheme	Rezone from 'Agriculture' to 'Utility' to develop solar facility.	Thabazimbi Local Municipality

<sup>8</sup> The legal requirements stated in this report for this project and how AGE complies with it are by no means a legal opinion but an interpretation of the legislation by the independent EAP.

**Table 4-2: Summary of Relevant Policy and Legislative Requirements**

No	Legislation, policy, or guideline and requirements	CA	Description of Compliance
<b>5.1</b>	<b>INTERNATIONAL TREATIES ON CLIMATE CHANGE (KEY TREATY)</b>		
5.1.1	<p><b><i>The Paris Agreement adopted in 2015, came into force 4 November 2016.</i></b></p> <p>Adopted at UN Climate Change Conference (COP21) in Paris, France. It is a legally binding international treaty on climate change. South Africa signed the treaty to join the world nations in endorsing the Paris Agreement on Climate Change. The requirements include (a) combat climate change and (b) transition to a lower carbon and climate resilient economy and national energy system.</p>	United Nations	<p>This project is a proposal for a renewable energy solar pv facility and is therefore in line with the aims and objectives of the treaty to which SA is party to.</p> <p>Renewable energy sources play a role in mitigating climate change. One of the main pillars in SA's climate change strategy includes the diversification of the generation mix to lower carbon emitting technologies i.e., solar pv.</p>
<b>5.2</b>	<b>NATIONAL LEVEL LEGISLATION AND REGULATIONS (SEMA's)</b>		
5.2.1	<p><b>Constitution of the Republic of South Africa, 1998 (Act 108 of 1996)</b></p> <p>Section 24 states everyone has a right to an environment that is not harmful to their health or well-being and to have an environment that is protected through reasonable legislation measures. Government places a restraint on activities that cause environmental degradation. NEMA is the statutory framework to enforce Section 24 of the Constitution and is discussed below.</p>	Chief Justice	<p>The solar farm uses renewable energy to generate electricity. It does not emit any harmful by-products or pollutants that pose a health risk to users or their well-being. Solar pv facilities typically pose little risk to the surrounding environment.</p>
5.2.2	<p><b>National Environmental Management Act, 1998 (Act 107 of 1998 as amended) [NEMA], came into force 27 November 1998</b></p> <p><b>Section 2 – Principles of NEMA:</b> Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, development, cultural and social interests equitably. Development must be socially, environmentally, economically sustainable.</p> <p><b>Section 24 – Listed activities requiring authorisation:</b> Section 24 (5) makes provision for the identification and assessment of activities that are potentially detrimental to the environment which require authorisation from a competent authority. These specified listed activities requiring environmental authorisation have been</p>	DFFE, LEDET	<p>The principles of NEMA have been considered in this report. Refer to section 4, Table 4-1 EAP response to question 17. The SA government considers the use of renewable energy as a contribution to sustainable development and beneficial to its people i.e., sustainable energy meeting the needs of present society without compromising the ability of future generations to meet theirs.</p> <p>Section 24(5) application for environmental authorisation was lodged to DFFE in October 2023 specifying related triggered activities to be undertaken (refer to section 2.5 of this report). The EIA process is being followed to identify the environmental, social, and economic consequences of the project and prescribe mitigation measures to reduce negative and enhance positive impacts.</p>

	<p>scheduled under. GN 327, 325 and 324 of the NEMA EIA Regulations of 2014 (as amended by GNR 326).</p> <p><b>Section 28 – Polluter Pays Principle</b></p> <p>Section 28 places ‘Duty of care and remediation of environmental damage’ on the develop/applicant</p>		<p>The key outcome of the EIA process will be an auditable EMPR providing environmental management specifications to be observed by AGE during the project phases to give effect to section 28 of NEMA which places ‘Duty of care and remediation of environmental damage’ on the applicant.</p>
5.2.3	<p><b>Environmental Impact Assessment Regulations of 2014 (as amended by GNR 326, 327 and 324 on 7 April 2017)</b></p> <p>Regulation 21 – 24 and 40-44 requires Scoping &amp; EIA process and PPP.</p> <p>Appendix 2 – Preparation of a Scoping Report subjected to 30-day consultative process.</p>	DFFE, LEDET	<p>The EIA and public participation process is underway and conducted in line with section 21 – 24 and 40-44 of the EIA Regulations. The scoping report has been prepared in compliance with Appendix 2 and is currently subject to a 30-day consultative process in line with Regulation 21(1) to incorporate the public’s view and how they anticipate being impacted.</p>
5.2.4	<p><b>NEMA Notice GNR. 960</b> Notice of the Requirement to Submit a Report Generated by the National Web Based Environmental Screening Tool, 5 July 2019</p>	DFFE, LEDET	<p>The DFFE online GIS-based ‘National web-based Environmental Screening Tool’ Report was generated and verified and recorded by the EAP in a Site Sensitivity Verification (SSV) Report. See <b>Appendix B</b>.</p>
5.2.5	<p><b>NEMA GN R. 320 Protocols</b> - Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Section 24 (5)(a) and (h) and 44 of NEMA when Applying for Environmental Authorisation dated 20 March 2020</p> <p><b>GNR 1150 Protocols</b> for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species and Animal Species, 30 October 2020</p>	DFFE, LEDET	<p>The SSV Report and the available specialist studies/site verification reports have been conducted and compiled in adherence to the ‘Protocols for Assessment and Minimum Report Content Requirements for Environmental Themes for Activities requiring Environmental Authorisation. See <b>Appendix C</b> for the SSV Report and <b>Appendix E</b> for the Specialist Investigations.</p> <p>GNR 11502 was applied in the Terrestrial Biodiversity, Avifauna Site Verification Reports attached under <b>Appendix E2 and E3</b>.</p>
5.2.6	<p><b>National Water Act, 1998 (Act 36 of 1998) enacted on 26 August 1998</b></p> <p>The principles and objectives of the NWA are to guide the protection, use, development, conservation, management, and control of water resources in a sustainable and equitable manner for the benefits of all persons. To give effect to the said Section 21 of the NWA calls for licensing of defined water uses.</p> <p><b>National Water Act: Regulations: Procedural requirements for water use license applications and appeals, 2017 (GN R. 267) of 24 March 2017-</b> Sets out the application procedure for a water use license.</p> <p><b>NWA GNR 538, 2016 ‘General Authorisation for Taking and Storing Water’</b></p>	DWS Crocodile West Proto CMA	<p>No natural water features are present onsite. Only two artificial dams in the eastern section of the development area. There is one non-perennial drainage feature owned to surface runoff from the adjacent road draining into one of the artificial dams. An Aquatic Compliance Statement was commissioned. No natural water resources were identified within the PAOI.</p> <p>AGE will however apply to DWS for <b>Section 21 (a) Abstraction of groundwater</b> and <b>(g) disposal of sewage into septic tanks</b> water uses. The volumes are low and may be eligible for GA registration or licensing in terms of the NWA. The application procedure will be conducted in accordance with the NWA WULA Procedure.</p> <p>The application property is in quaternary catchment A24C, and the property size is 377.4066 hectares. The abstraction of up to 16 983.3</p>

	<p>According to GNR 538, 2016 groundwater may be abstracted based on a rate of 45m<sup>3</sup>/hectare/annum (based on the application property size) within WMA 1: Limpopo within quaternary catchments A24A – A24J.</p> <p><b>NWA, GNR 665 of 2013 'Revision of Generation Authorisation for Section 21g disposal of waste in a manner that may detrimentally impact a water resource'</b>. - a person who owns the land may dispose of wastewater to an on-site disposal facility for greywater generated by a single household (guardhouse/security residence).</p>		<p>m<sup>3</sup> / annum may therefore be generally authorized on Portion 1 of the farm Zwartwitpensbokfontein 434-KQ. It may therefore be eligible for registration as a general authorisation with DWS.</p> <p>The applicability of GNR 665 will be confirmed with DWS since it is possible that the exclusion applies to quaternary drainage region A 24 for the Crocodile River Valley.</p>
5.2.7	<p><b>National Heritage Resources Act, 1999 (Act 25 of 1999) enacted 28 April 1999</b></p> <p>NHRA protects all structures and features older than 60 years (Section 24), archaeological sites and material (Section 35) and graves and burial sites (Section 36). Section 38 indicates that any person intending on undertaking any form of development of which the surface area exceeds 0.5-hectares, must notify SAHRA (section 38(1)) and triggers a heritage assessment (section 38(3)), and requires approval from the South African Heritage Resources Agency (SAHRA).</p> <p>SAHRA requires impact assessment reports to comply with the SAHRA 2007 Minimum Standards for Archaeological and Palaeontological Components of Impact Assessment Reports under NHRA.</p>	SAHRA, LIHRA	<p>A section 38 (1) notice of intent to develop application was submitted to SAHRA via the SAHRIS online application system. <b>SAHRIS CASE ID: 22395.</b></p> <p>Three gravesites have been recorded on the property as well as a small stone structure on the eastern-most section of the development area during site verification. CEMS commissioned Heritage and Palaeontological Impact Assessments (see <b>Appendix E6 and E7</b>). The reports comply with the SAHRA Minimum Standards. The three graves are of high significance and will be protected in the development layout. A 100-meter buffer zone will be applied to the graves. See Section 8 for the 'Environmental Sensitivity Map.</p>
5.2.8	<p><b>National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) enacted 7 June 2004</b></p> <p>The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection.</p> <p>Section 52 (1) – List of threatened and protected ecosystems (revised 2022 Red List of Ecosystems)</p> <p>Section 56(1) - Threatened or Protected Species Regulations (TOPS) of 23 February 2007</p>	SANBI, DFFE, LEDET	<p>Most of the project area is covered in Dwaalboom Thornveld and is in a degraded stated. Dwaalboom Thornveld has an ecosystem protection status of 'Least Concern' in terms of the 2022 Revised List of Threatened Ecosystems.</p> <p>Specialist Terrestrial and Avifauna Site Sensitivity Verification Surveys were conducted over the project site. No plant SCC were recorded and there is only a low potential for them to occur, numerous protected trees were recorded. Certain animal SCC species are likely to move through parts of the area regularly. The SABAP 2 data indicate that 317 avifauna species are expected for the project and surrounding habitats. Ten of these are considered SCC. 76 of the expected 317 species were observed during the site visit.</p>

	South Africa also uses the internationally endorsed World Organisation-International Union for Conservation of Nature (IUCN) IUCN Red List Categories and Criteria in the Red List of South African plants.		For Terrestrial Biodiversity only a Compliance Statement will be commissioned given the Low sensitivity of the site. A full Avifauna (Regime 1) Assessment will be commissioned due to the potential presence of Avifauna SCC.
5.2.9	<p><b>National Forest Act, 1998 (Act 84 of 1998)</b></p> <p>Section 15 (1) – Protected tree permits for removal.</p> <p>If any protected trees require removal from a development site a permit needs to be obtained in terms of Section 15(1) from the Department of Forestry, Fisheries and Environment (DFFE): Forestry Regulation Division prior to such removal.</p>	DFFE: Forestry Regulation and Management – Waterberg District	<p>Three nationally protected trees were recorded onsite during the site sensitivity verification i.e., <i>Sclerocarya birrea</i> (Marula), <i>Combretum imberbe</i> (Leadwood), and <i>Boscia albitrunca</i> (Shepherd's tree).</p> <p>A site walkthrough and Search and Rescue will be conducted before development activities commence, to GIS tag all specimen occurring within the site area. A Section 15(1) Destruction permits will be obtained from the DFFE: Forestry Regulation. The permit applications would be lodged during the EIA phase and will be valid for 18-months.</p>
5.2.10	<p><b>National Environmental Management: Protected Areas Act (Act 57 of 2003) (NEMPAA) (effective 2004)</b></p> <p>NEMPAA provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. It calls for the establishment of a national register of all national, provincial, and local protected areas and for the management of those areas in accordance with national norms and standards.</p> <p>DFFE has established the <b>Protected Areas Register (PAR)</b> showing all the national, provincial, and local protected areas.</p>	LEDET	<p>The protected areas register (SAPAD 2022 Q4) has been consulted. The application property <u>does not overlap a protected area</u>.</p> <p>It does however lie adjacent to Tortoiseshell private nature reserve and within the 5-km buffer zone of three other proclaimed private nature reserves (i.e., Sharme, De Kraal, and Koerooi).</p> <p>To mitigate against negative edge effects from the proposed project activities a 50-meter 'high' sensitivity vegetation buffer is imposed between Tortoiseshell nature reserve and the solar pv facility footprint.</p>
5.2.11	<p><b>National Environmental Management: Waste Act (Act 58 of 2008) (NEM: WA) and subsequent amendment act and NEM: Waste Amendment Act (Act 26 of 2014)</b></p> <p>NEMWA Chapter 4 states the developer has a general duty to avoid generating waste and if not avoidable, it must be minimized and managed accordingly, Section 16 states it's the responsibility of the person generating waste to ensure that the waste is treated and disposed in an environmental sound manner.</p> <p>Section 27 calls for the provision of containers for waste management.</p> <p><b>GNR 636 of 23 August 2013 - "National Norms and Standards for Disposal of Waste to Landfill"</b></p>	DFFE, TLM	<p>The project will generate general construction waste and during operation will generate general waste, limited hazardous waste (i.e., grease, fuel, oil) and e-waste which is also considered hazardous.</p> <p>These would need to be separated and temporarily stored at a designated fenced area at the facility until removed to a permitted disposal site. The general waste can be removed to Northam Landfill Site.</p> <p>The e-waste would be removed/collection scheduled to the nearest electronic recycler facilities i.e., DESCO (Kempton Park) / SD E E-Waste Recyclers (Ekurhuleni) / nearest facility.</p>

	NEM: WA defines e-waste as hazardous. GNR 636 set a deadline of 8-years for the ban of all e-waste from landfills. As of 23 August 2021, all e-waste is banned from being disposed into landfills and must be destined for recycling.		
5.2.12	<p><b>National Environmental Management: Air Quality Act (Act 39 of 2004) (NEM: AQA) and Air Quality Amendment Act 20 of 2014</b></p> <p>NEM: AQA is the law regulating air quality to protect the environment by providing reasonable measures for prevention of air pollution. Section 21 lists activities which produce significant air emission requiring an Atmospheric Emission License (AEL).</p> <p>Section 32 of the act calls for dust control regulated in terms of the <b>2013 National Dust Control Regulations (NDCR)</b>. The regulations set a standard for acceptable dust fall rate for residential and non-residential areas (Table 12).</p>	DFFE, Waterberg District	<p>The project <u>does not trigger any Section 21 requirement for an AEL</u>. It's a renewable energy project.</p> <p>The air quality impacts that may occur because of the proposed construction activities (clearing of vegetation, vehicle entrained dust along internal roads and the D1234 etc) relate to the increase in dust fallout in the surrounding environment. The 2013 NDCR's published under this act is applicable to set specific limit values for compliance for dust fallout. During the construction phase when majority of the dust fallout is expected, the project must adhere to the applicable acceptable standard for dust fallout in a non-residential area i.e., 600&lt;D&lt;1200 mg/m<sup>2</sup>/day 30-days average. The permitted frequency of exceedance is two within a year, not sequential months.</p> <p>The dust emissions are easily managed by dust suppression methods i.e., water spraying, biodegradable chemical binders which will be recommended as mitigation measures.</p>
5.2.14	<p><b>Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA)</b></p> <p>CARA is the principal act governing the protection of agricultural resources. The Act provides for the conservation of the natural agricultural resources by the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants. According to Section 1 conservation includes the protection, recovery as well as the reclamation thereof.</p> <p><b>'Regulations on the Evaluation and Review of Applications pertaining to Renewable Energy on Agricultural Land'</b> require that no renewable energy structure is allowed on high potential agricultural land, irrigated cultivated land, dry land cultivation land. No sub-division of agricultural land will be allowed to accommodate renewable energy structures. Change of land use</p>	<b>DALRRD National and DALRRD Waterberg District</b>	<p>An Agricultural Compliance Statement was commissioned for the project (See Appendix E1).</p> <p>The site does not fall within the DAFF 2021 Protected Agricultural Areas. According to the DALRRD the land is Class 7 or poorer and has a low sensitivity to agricultural development. The site falls outside the Crocodile West Irrigation Scheme therefore has no water rights, except for the two existing boreholes. There is no dryland or irrigated cultivated areas on the property.</p>

	of agricultural land will be reviewed on merit, if permitted the change of land use will be temporary, given the lifespan of the project and would revert to agricultural automatically by end of the facility's lifespan.		
5.2.15	<p><b>Sub-division of Agricultural Land (SALA) Act, 70 of 1970</b></p> <p>SALA's main objective is to manage the sub-division of agricultural land to prevent injudicious fragmentation of agricultural land and the creation of uneconomical units and thus manage the use of agricultural land.</p>	<b>DALRRD National</b>	No sub-division of land is proposed, AGE owns Portion 1 which will remain unchanged. There will be no loss of high potential agricultural land in terms of SALA and CARA. A 'special consent use' for the temporary change from 'agricultural' use to 'Utility' will be required from DALRRD. An application for the establishment of a renewable energy project on land demarcated as agricultural land under Act 70 of 1970 will be submitted.
5.2.16	<p><b>Spatial Planning Land Use Management Act, 2013 (Act 16 of 2013) (SPLUMA)</b></p> <p>SPLUMA is a national framework legislation which came into operation on the 1st of July 2015. SPLUMA's primary aim is to provide national, provincial, and municipal spheres of government with a framework relating to the establishment of policies and systems relating to planning and land use management. Municipalities are required to adopt a single land use management scheme by 2020. The purposes of a land use scheme are to promote economic growth, social inclusion, efficient land development and a minimal impact on public health, the environment, and natural resources.</p> <p>Thabazimbi has a draft '2022 Thabazimbi Land Use Management Scheme' in circulation.</p>	<b>Thabazimbi Local Municipality</b>	A suitably quantified town planner will be appointed by AGE to submit a rezoning application in terms of SPLUMA for the rezone of the property from 'Agriculture' to 'Utility'.
5.2.17	<p><b>National Road Traffic Act, 1996 (Act 93 of 1996) as amended (NRTA)</b></p> <p>The Act provides for road traffic matters which shall apply uniformly throughout the Republic and for matters connected therewith.</p> <p>Section 81 (S 81 subs by s 23 of Act 64 of 2008) – Abnormal vehicles and loads.</p> <p><b>SA National Roads Agency Act, 1998 (Act 7 of 1998)</b></p> <p>The South African National Roads Agency (SANRAL) is responsible for the management and control of the national road system i.e., develop, maintain, rehabilitation of national roads.</p>	<b>SANRAL</b>	Abnormal load vehicle permits will be required from SANRAL to move abnormal freight along the R511 Brits/Thabazimbi Road and other road networks. SANRAL will be consulted in this regard.



5.2.18	<p><b>National Energy Act, 2008 (Act 34 of 2008 (NEA))</b></p> <p>The aim of the Act is to ensure that <u>diverse energy resources</u> are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, considering environmental management requirements and interactions amongst economic sectors. It also provides for energy planning, <u>increased generation</u>, and <u>consumption of renewable energies</u>. The act defines 'renewable energy' as <i>energy generated from natural non-depleting resources including solar energy, wind energy, biomass energy, biological waste energy, hydro energy, geothermal energy and ocean and tidal energy.</i></p>	DMRE	<p>The proposed 480MW solar pv facility is in line with the NEA. It is a proposal to generate energy using solar pv technology. 34% of the energy generated will be for private use (agricultural sector of Koedoeskop) the rest (66%) will be transferred to the national grid and sold to Eskom.</p>
5.2.19	<p><b>Electricity Regulation Act, 2006 (Act 4 of 2006) (ERA)</b></p> <p>The aim of the Act is to establish a national regulatory framework for the electricity supply industry and provides for licensing and registration of electricity generation, transmission, distribution, trading and the import and export of electricity.</p> <p>The Act under Section 8 determines that any person who wishes to operate any generation, transmission, or distribution facility; or be involved in trading must apply to the Regulator for registration and licensing.</p>	NERSA	<p>AGE will apply to NERSA for a license/registration to generate, transmit, distribute, and trade renewable energy.</p>
<p><b>5.3 APPLICABLE POLICIES AND PLANS AT NATIONAL LEVEL</b></p>			
5.3.1	<p>South Africa has been promoting renewable energy through the: <b>White Paper on Energy Policy of Republic of South Africa (1998):</b></p> <p>One of the objectives of the policy is to secure energy supply through diversity. One of the identified supply sectors is 'renewable energy sources' as it can provide energy at the lowest social and environmental cost. Government would therefore focus support for the development and applications of renewable energy.</p>	DMRE	<p>The proposed project does not form part of the REIPPPP but is in line with these policies and plans as it proposes to develop a 480MW Solar PV Facility of which 66% will be sold to Eskom and transferred into the national grid.</p>

	<p><b>White Paper on Renewable Energy of South Africa Policy (November 2003)</b></p> <p>This policy supplements the White Paper on Energy Policy and sets out Government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in South Africa. Its aim is to create conditions for the development and commercial implementation of renewable technologies.</p> <p><b>South African Renewable Initiative (2010)</b></p> <p>The aim of the initiative was to develop financing arrangements that enable development of a critical mass of renewable energy sources in South Africa.</p>		
5.3.2	<p><b>National Development Plan 2030</b></p> <p>It aims to eliminate poverty and reduce inequality by 2030. The NDP aims to have an energy sector that provides reliable and efficient energy services. Another objective is to ensure environmental sustainability and an equitable transition to a low-carbon economy.</p>	<b>NPC</b>	
5.3.3	<p><b>Integrated Resource Plan (IRP) (2010 -2030)</b></p> <p>The promulgated IRP 2010-2030 is an electricity infrastructure plan formulated as part of the National Development Plan. It identifies the preferred generation technology required to meet the expected demand growth up to 2030.</p> <p>The IRP target is to add 18GW of renewable energy by 2030 to the national energy mix. Solar PV plays a significant role in achieving the target.</p>	<b>DMRE</b>	
5.3.4	<p><b>Energy Action Plan (July 2022)</b></p> <p>The Energy Action Plan is South Africa's plan to end load shedding and achieve energy security. It outlines a set of actions aimed at fixing Eskom and adding as much new generation capacity as possible, as quickly as possible, to close the gap in electricity supply. One of the key pillars of the plan is to fast-track the procurement of new generation capacity from renewables, gas, and battery storage.</p>	<b>DMRE</b>	

5.3.5	<p><b>GNR 114 OF 16 February 2018 and GNR 142, 144 and 145 of 26 February 2021 – Gazetted Renewable Energy Development Zones (REDZ's)</b></p> <p>DFFE gazetted 13 Renewable Energy Development Zones (REDZs) for South Africa. REDZ are geographical areas where wind and solar photovoltaic power development can occur in concentrated zones. Its key role is for a just energy transition, creating priority areas for investment in the energy grid.</p> <p>If a proposed renewable energy project is located within this zone, the regulations allow for a rapid Environmental Impact Assessment (EIA) Process and decision-making timeframe to obtain environmental authorisation for solar and wind facilities. This is done to expedite the environmental approval element of solar PV projects.</p>	DFFE	<p>The project <b><u>does not fall within</u></b> any of the gazetted <b>REDZ's</b>.</p> <p>A full Scoping and EIA process is undertaken in line with the requirements of the National Environmental Management Act, 107 of 1998 (NEMA) EIA Regulations of 2014 (GNR 326, as amended) with a 107-day decision making period.</p>
5.3.6	<p><b>GNR 113 of 16 February 2018 and GNR 383 of 29 April 2021 – Strategic Power Line Corridors</b>  <b>GNR 435 of March 2019 – Generic EMPR for substations and overhead power lines</b></p> <p>GNR identifies 5 strategic transmission corridors important for the planning of electricity transmission and distribution infrastructure as well as procedure to be followed when applying for environmental authorisation for electricity transmission and distribution expansion when occurring in these corridors.</p> <p>A generic EMPr relevant to an application for environmental authorisation for substations and overhead transmission and distribution electricity transmission infrastructure was published in Government Notice No. 435. The EMPr is relevant to substations or overhead transmission and distribution infrastructure when developed within or outside of the strategic transmission corridors.</p> <p>GNR 383 expanded the eastern and western transmission corridors and gave notice of the applicability of the application procedures identified in Government Notice No. 113, to these expanded corridors.</p>	DFFE	<p>The project <b><u>does not fall within</u></b> the gazetted <b>Strategic Transmission Corridors</b>.</p> <p>But the generic EMPR required in terms of GNR 435 will be attached to the EIR for the proposed onsite substation and LILO OHPL grid connections in the second stage of the EIA process.</p>

	The corridors and their expansion were identified through the undertaking of 2 strategic environmental assessments as was the development of the generic EMPr for substations and overhead powerlines.		
5.3.7	<p><b>GNR 143 of 26 February 2021 – Strategic Corridors for Gas Transmission Pipelines; and GNR 411 of 7 May 2021 and GNR 373 – Application Procedure and generic EMPR</b></p> <p>The purpose of these proposed pipeline corridors is to accelerate the planning for gas to power as part of the IRP, and to create an enabling environment which will allow for the streamlining of development processes in these areas. DFFE also published the applicable application procedure and generic EMPR to be used.</p> <p>The strategic corridors and the Environmental attributes associated with the corridors were determined through the specialist assessments prepared as part of a strategic environmental assessment process. The generic EMPr was also developed through this process.</p>	DFFE	The project does <b>not fall within</b> the gazetted Strategic Corridors for Gas Transmission Pipelines.
<b>5.4</b>	<b>NATIONAL STRATEGIES IN PLACE</b>		
5.4.1	<p><b>2018 National Protected Areas Expansion Strategy Priority Focus Areas</b></p> <p>This is South Africa's national strategy for expansion of the protected area network and has been developed in collaboration with national and provincial conservation authorities.</p>	DFFE, LEDET	According to the 2018 NPAES Priority Focus Area Database the project site does not fall within any Priority Focus Areas.
<b>5.5</b>	<b>PROVINCIAL LEVEL</b>		
5.5.1	<p><b>2015 – 2019 Limpopo Development Plan (LDP)</b></p> <p>The LDP is the overarching strategy for Limpopo Province for the five-year period of 2014/2015 – 2019/2020 financial years. It is the overarching operational medium-term strategy for the province, focused towards achieving the provincial vision. Its strategy is to reduce poverty, unemployment levels and inequality through sustainable economic development and transformation, social development, and transformation, as a means of growing the economy.</p>	PICC	The project is in line with the LDP being a proposal for a solar pv energy generation facility.

	<p>The LDP in section 3.4.1.2 states that 90% of SA energy supply comes from coal and that SA's commitment is to commission clean renewable energy. The plan under Section 4.8 states that 'Solar photovoltaic electricity generation' is one of the priority infrastructure projects that will be promoted within the context of the LDP.</p>		
5.5.2	<p><b>Limpopo Green Economy Plan (LGEP) including Provincial Climate Change Response dated June 2013</b></p> <p>It aims for the province to become a national pioneer in the green economy through leveraging its inherent natural resource advantages. The Plan identifies short-, medium- and long-term goals for the province, with a 2050-time horizon. Focus areas are structures according to national priorities.</p> <p>The goals of the plan are in the short-term to generate jobs, improve environmental quality; in the medium term to create conditions for green growth change behavior and production patterns; in the long term build a new economic/environmental paradigm for Limpopo. Clean energy and energy security is one of the key focus areas of the plan and a major component in the implementation of the plan. According to the plan Limpopo has the potential to develop several tier renewable energy complexes and one priority is the production of electricity through Concentrated Solar Plants.</p>	<b>LEDET</b>	<p>The project is in line with LGEP as it proposes to generate renewable energy through solar however with the use of solar pv technology not CSP because it will require a significant volume of water.</p>
5.5.2	<p><b>2015 Limpopo Provincial Spatial Development Framework (PSDF)</b></p> <p>The Limpopo SDF is part of the broader Limpopo Development Plan. The SDF was adopted in 2017 and reviewed in 2021. It is a macro provincial plan that guides spatial planning and development over a 20-year period from 2015 – 2035. One of the provincial SDF priorities (priority 4) is to broaden the provincial energy mix.</p>	<b>Office of Premier</b>	<p>The proposal is to add solar pv renewable energy to the energy mix for the benefit of the Koedoeskop agricultural sector and the national grid. The application property is 17km from Northam town and does not fall within any of the PSDF provincial, district or municipal growth points or areas set out for urban transformation.</p>
5.5.3	<p><b>Limpopo Environmental Management Act of 2003 (Act 7 of 2003) enacted on 30 April 2004. (LEMA)</b></p> <p>This Act makes provision with respect to the protection and conservation of the environment in the Limpopo Province. It includes Regulations which call for the protection of indigenous plants, animals which require a permit from provincial authority,</p>	<b>LEDET</b>	<p>No specific provincially protected animal or plant (tree) species have been recorded in the specialist Site Sensitivity Verification Reports. Refer to Appendix E2 and E3 for the Avifauna and Terrestrial Biodiversity Site Verification Reports.</p>

	LEDET for its pick, sell, removal, donate, in and or export in the province. The lists of plants and animals are itemized under Schedule 8, 11 and 12 of the act.		
5.5.4	<p><b>Limpopo Conservation Plan 2018</b></p> <p>The LEDET compiled the LCP which comprises two spatial components: maps of terrestrial and freshwater critical biodiversity areas (CBAs); and a set of land-use guidelines that are important for maintaining and supporting the inherent biodiversity values of these critical biodiversity areas.i.e., CBA 1, CBA 2, ESA 1, ESA 2 etc.</p>	LEDET	<p>The development area overlaps with two terrestrial priority biodiversity areas namely 'Other natural area' and ESA 1. It also lies adjacent to the nationally protected Tortoiseshell Private Nature Reserve, which is also largely a CBA1 (Irreplaceable) area.</p> <p>Based on the CEMS and specialist site verification the site was found to be significantly degraded with limited functional ESA vegetation recorded i.e., Dolomite Bushveld. The Dolomite Bushveld is therefore the only functional ESA onsite and is being excluded from the development footprint. A 50-meter buffer is also applied between the solar facility and private nature reserve to mitigate edge effects on the CBA 1 area.</p>
<b>5.6</b>	<b>DISTRICT LEVEL</b>		
5.6.1	<p><b>2021 – 2025 Waterberg District Spatial Development Framework</b></p> <p>The SDF guides spatial planning with the Waterberg District. According to the SDF the project area is in an area earmarked for 'General Farming'.</p>	Waterberg District Municipality	The development area is proposed on low potential agricultural land not feasible to cultivate based on the findings of the Agricultural Compliance Statement. AGE will therefore apply to DALRRD for a special consent use to use 'agricultural' land for utility purposes and will submit a rezoning application (if required) to the local authority.
5.6.2	<p><b>2022 – 2023 Waterberg District IDP (approved 31 May 2023)</b></p> <p>The Waterberg District Integrated Development Plan (IDP) sets out the overall strategy for achieving its developmental objectives within the district. The IDP includes the municipality's strategies for mobilising resources and capacity, and its internal transformation needs and to achieve service delivery for the municipality in an effective and sustainable way.</p> <p>The Waterberg District Municipality vision as per the IDP is "To be the best energy hub and ecotourism destination in Southern Africa".</p> <p>The IDP acknowledges that 'Restoring Energy Security' is a key priority for government. It confirms that new electricity capacity is required, and government is allowing private developers to generate electricity which Eskom can/will procure to close the immediate energy supply gap.</p>		This project is in line with the IDP. The proposal is to generate renewable energy through a solar pv facility for Allied Farms, private users of which 66% is intended for Eskom.

5.6.3	<b>Waterberg District Environmental Management Framework (EMF)</b>  The EMF identifies the best practices for specific land uses and provide performance standards to maintain appropriate use of such land. The tool identifies and maps sensitive ecosystems and resources to pre-empt potential future land use conflicts.		According to the Waterberg District EMF the application property falls within Environmental Management <u>Zone 4 'Game and Cattle Farming (incl. hunting)'</u> .  As per point 5.6.1 above AGE will apply for special consent use from DALRRD and the local authority for rezoning to utility.
5.6.4	<b>Waterberg District Bioregional Plan 04 January 2019 / (2018 Limpopo Critical Biodiversity Areas)</b>  The Waterberg area (the total district) has been declared as a Bioregion according to NEMBA Act 10 of 2004. The Waterberg Bioregional Plan has been gazetted in Provincial Notice 1 of 2019 No. 2966 of 4 January 2019. It is subset to the Limpopo Conservation Plan also setting the same land-use guidelines for critical biodiversity areas i.e., CBA1, CBA 2, ESA 1, ESA 2 and ONA, Protected Areas.	Waterberg District, LEDET	The project site falls within a 'Other Natural Area' (ONA) and 'Ecological Support Area 1' (ESA). The land use management objectives for these areas include: <ul style="list-style-type: none"> <li>• ESA 1 - Maintain in a functional state, avoid intensification of land uses, and rehabilitate to natural or near-natural state where possible. PV farms and solar arrays are not permissible within ESA's.</li> <li>• ONA – Production landscapes: manage land to optimise the sustainable utilisation of natural resources.</li> </ul> Based on the site verification the site was found to be significantly degraded with limited functional ESA vegetation recorded i.e., Dolomite Bushveld. The Dolomite Bushveld is therefore the only functional ESA and is being excluded from the development footprint.
<b>5.7 MUNICIPAL LEVEL</b>			
5.7.1	<b>2022 Thabazimbi Local Municipality Spatial Development Framework</b>  This plan guides spatial planning with the Thabazimbi Municipal area.	Thabazimbi Local Municipality	The application property falls outside of the Northam Town urban edge within an area earmarked for 'agri-tourism'. This is the only land use for which the SDF does not specify land use management controls. The only overarching development guidelines given were: <ul style="list-style-type: none"> <li>• No development to take place on ridges with gradient greater than 10%</li> <li>• Geotechnical and environmental approval must be sought on an individual project basis.</li> <li>• All development proposals are to be assessed on an individual basis by the Municipality.</li> </ul> The solar facility is proposed on land with a slope of less than 1%. A Geotechnical Investigation is underway to refine the limit of the non-dolomitic land to which the solar pv facility should be restricted. The proposed solar pv facility will also be able to provide the 'agri-tourism'

			enterprises in the surrounding area with electricity and contribute to food security and benefit the farming enterprises in the Koedoeskop area. AGE will also appoint a Town Planner to submit any required rezoning application (if required) to the TLM for consideration.
5.7.2	<p><b>2022/2027 Thabazimbi Integrated Development Plan (IDP)</b></p> <p>The IDP sets out the overall strategy for achieving Thabazimbi Local Municipality's developmental objectives. The IDP includes the municipality's strategies for mobilising resources and capacity, and its internal transformation needs and to achieve service delivery for the municipality in an effective and sustainable way over a 5-year period.</p>	<b>Thabazimbi Local Municipality</b>	<p>The IDP is silent on any requirements or development plans within Ward 4 where the project site is located. It may be due to its being 'game farming' area.</p> <p>The IDP does however make mention that the Mining, Agriculture/Farming/Hunting sectors are the most dominant economic sectors in the Municipal area. The agriculture sector in the Municipal area is declining, which poses a threat in terms of jobs on farms.</p> <p>Allied Farms is a large commercial farming enterprise in the Koedoeskop agricultural district. It cannot go 1-day without electricity. Developing the solar facility will ensure a consistent power supply to Allied Farms including nearby commercial farmers and alleviate the pressure on the national grid during the country's electricity shortage.</p>
<b>5.8</b>	<b>SPATIAL DATASETS</b>		
5.8.1	1: 250 000 Council of Geoscience Geological Dataset for South Africa	<b>Council of Geoscience</b>	Most of the site is underlain by non-Dolomitic land (Timeball Hill and Penge Formation. The eastern section of application property may coincide with Dolomitic land (Malmani Formation). The solar pv facility will be developed on the non-dolomitic land. A Geotechnical Investigation has been commissioned to conservatively delineate the Dolomite formation boundary.
5.8.2	2018 South African Inventory of Inland Aquatic Ecosystems (SAIIAE) (as part of National Biodiversity Assessment 2018)	<b>DWS</b>	There are no wetlands or National Freshwater Ecosystem Priority Areas (NFEPA) within the application property and direct area according to the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) wetland and 2011 NFEPA datasets.
5.8.3	2011 National Freshwater Ecosystem Priority Areas (NFEPA)	<b>DWS</b>	
5.8.4	2018 Vegetation Map of South Africa	<b>DFFE, SANBI, LEDET</b>	Application property is predominantly covered in Dwaalboom Thornveld with Madikwe Dolomite Bushveld covering the adjacent areas to the east of the site. Dwaalboom Thornveld has an ecosystem protection status of 'Least Concern' in terms of the 2022 Revised List of Threatened Ecosystems.
5.8.5	2022 Revised List of Threatened Ecosystems	<b>DFFE, SANBI, LEDET</b>	The site does not fall within any threatened or endangered ecosystem.



5.8.6	2015 Important Bird Area (IBA) Dataset	<b>SANBI, BIRDLIFE AFRICA</b>	The project site is located south adjacent to the Northern Turf Thornveld IBA.
5.8.7	SAHRIS Paleontological Sensitivity Map	<b>SAHRIS</b>	The application property is in a 'High' Paleontological sensitivity area. But the specialist confirmed that no fossiliferous outcrop was detected within the development footprint area. The site is of 'Low' palaeontological sensitivity.
<b>5.9</b>	<b>PROTOCOLS</b>		
5.9.1	<ul style="list-style-type: none"> <li>• GNR. 320 of 20 March 2020, Procedures for the Assessment of Minimum Criteria for Reporting on Identified Environmental Themes.</li> <li>• GNR 1150 of 30 October 2020 - Protocol for the Specialist assessment and minimum report content requirements for environmental impacts on terrestrial and animal plant species.</li> </ul>	<b>DFFE, LEDET</b>	The site sensitivity verification and specialist studies (i.e., impact reports or site verification reports) have been conducted and compiled in line with the protocols.
<b>5.10</b>	<b>EIA GUIDELINE DOCUMENTS</b>		
5.10.1	<ul style="list-style-type: none"> <li>• DFFE (DEA &amp; DP) EIA Guideline and Information Document Series, March 2013.</li> <li>• 2017 DFFE Guideline on Need and Desirability</li> <li>• EIA Guideline on Renewable Energy Projects</li> </ul>	DFFE	These guidelines have been considered during the preparation of the Scoping Report.

## 5 NEED AND DESIRABILITY OF THE PROJECT (MOTIVATION)



Appendix 2, section 2(1)(f) of the EIA Regulations of 2014 requires that the Scoping Report include a description of the need and desirability of the proposed activity in the context of the preferred location.

The concept of 'need and desirability' relates to the nature, scale and location of a development being proposed including the *wise use of land*. The need primarily refers to time and 'desirability' to place (i.e., the right time and is it the right place for locating the type of activity).

The need and desirability motivation are based on the principle of sustainable development. Defining it in a way ensures that the triple bottom line is achieved i.e., ecologically, socially, and economically sustainable development. The DFFE, when considering applications, as a minimum must have regard to the need for the and desirability for the activity.

CEMS have used the former DFFE 2014 BAR Template 'Project Motivation' table to motivate the project, in lieu of the lengthy questionnaire from the 2017 DEA Need and Desirability Guideline. The 2017 DEA Guideline questionnaire will be applied in the EIR.

**Table 5-1: Need and Desirability Considerations**

1. Is this the right time for this project?	YES	
<p>South Africa has made the international commitment to transition from a coal-generated electricity system by adding renewable energy and alternative sources to the national energy mix. This calls for a 'Just Energy Transition' from high-carbon emitting energy to a sustainable, low carbon-emission energy system which is better for the environment and the people's health and wellbeing.</p> <p>In line with this national commitment, the Department of Mineral Resources and Energy published the Integrated Resource Plan<sup>9</sup> (IRP 2010 – 2030) in line with the National Development Plan for 2030, with the target to add 18GW of renewable energy by 2030 to the national energy mix. Solar energy plays a significant role in achieving this target.</p> <p>Given South Africa's national energy crisis government has also made an aggressive national commitment by adopting an Energy Action Plan which confronts the immediate energy crisis to end loadshedding and achieve energy security. The goal of the plan is to increase energy efficiency and procure more renewable energy.</p>		

<sup>9</sup> SA's National Electricity Plan directing the expansion of electricity supply over the period of 2010 – 2023

The proposal is thus in line with the IRP as it is a solar pv renewable energy generating facility. The facility will supply electricity to the agricultural sector alleviating pressure on the national grid; and will transfer / sell 66% of the surplus energy generated into the Eskom grid. If permitted the project rollout would be by 2026 and should be complete by 2028/2029 adding to the 18GW target by 2030 therefore would fall within the 'right time' bracket.

<b>2. Is the activity permitted in terms of the property's existing land use rights?</b>		NO
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The application property is zoned 'Agriculture' and was formerly used as a game farm. A 'special consent use' for the temporary change from 'agricultural' use to 'Utility' will be required from DALRRD including a rezoning application in terms of SPLUMA from the Thabazimbi Local Municipality (TLM). The project is intended to support the commercial agricultural activities at Koedoeskop.

The property is crossed by two existing Eskom 88kV and 132kV overhead power lines providing direct access to the Eskom grid. The presence of the 132kV power line across the property has set the precedent for the development of renewable energy generating facilities on properties alongside this power line.

The DALRRD 'Regulations on the Evaluation and Review of Applications pertaining to Renewable Energy on Agricultural Land' require that no renewable energy structure is allowed on high potential agricultural land, irrigated cultivated land, dry land cultivation land. No sub-division of agricultural land will be allowed to accommodate renewable energy structures. Change of land use of agricultural land will be reviewed on merit, if permitted the change of land use will be temporary, given the lifespan of the project and would revert to agricultural automatically by end of the facility's lifespan.

The site does not fall within the DAFF 2021 Protected Agricultural Areas. According to the DALRRD the land is Class 7 or poorer and has a low sensitivity to agricultural development. The site falls outside the Crocodile West Irrigation Scheme therefore has no water rights, except for the two existing boreholes. There is no dryland or irrigated cultivated areas on the property. No sub-division is proposed, AGE owns Portion 1 which will remain unchanged.

40% of the land uses in the TLM area comprise game farming. Accordingly like the application property, the abutting land-uses comprise game farms / game grazing.

<b>3. Will the activity be in line with the following?</b>		
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<b>(a) Provincial Spatial Development Framework (PSDF)</b>	YES	
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<b>(b) Urban edge/Edge of Built environment for the area</b>		NO Its outside the urban edge
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<b>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of Local Municipality (e.g., would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?)</b>		NO See discussion
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The development of the renewable energy facility is in line with the priorities of broadening the national energy mix and need for renewable energy. This is acknowledged in the IDP and SDFs for the district and local municipalities. However, the area proposed for the proposed project is earmarked for 'General Farming / Agri-tourism'.

The Limpopo SDF adopted in 2017 and reviewed in 2021 is a macro provincial plan that guides spatial planning and development over a 20-year period from 2015 – 2035. One of the provincial SDF priorities (priority 4) is to broaden the provincial energy mix. The proposal is to add solar pv renewable energy to the energy mix for the benefit of the Koedoeskop agricultural sector and the national grid. The application property is 17km from Northam town and does not fall within any of the PSDF provincial, district or municipal growth points or areas set out for urban transformation.

The Waterberg SDF 2021 – 2025 earmarks the project area as a 'General Farming' area. According to the 2022 Thabazimbi SDF the application property falls outside of the Northam Town urban edge within an area earmarked for 'agri-tourism'. This is the only land use for which the SDF does not specify land use management controls. The only overarching development guidelines given were:

- No development to take place on ridges with gradient greater than 10%
- Geotechnical and environmental approval must be sought on an individual project basis.
- All development proposals are to be assessed on an individual basis by the Municipality.

The solar facility is proposed on land with a slope of less than 1%. A Geotechnical Investigation is underway to refine the limit of the non-dolomitic land to which the solar pv facility should be restricted. The proposed solar pv facility will also be able to provide the 'agri-tourism' enterprises in the surrounding area with electricity and contribute to food security and benefit the farming enterprises in the Koedoeskop area. AGE will also appoint a Town Planner to submit any required rezoning application (if required) to the TLM for consideration.

The Thabazimbi IDP (2022-2027) 2022/2023 Edition is particularly silent about renewable energy development projects focussing mainly on service delivery issues and places emphasis on the declining agricultural sector. The Waterberg District IDP Final Edition for 2022/2023 does state its vision to *inter alia* "be the best energy hub and ecotourism destination in South Africa". The IDP recognises that one of the key priorities to government is recovery of the economy through 'rapid expansion of the energy generation capacity'. The IDP acknowledges that the air quality in the declared Waterberg Air Quality Priority Area, within which the application property falls, is deteriorating. It further recognises on page 158 the need to transition to a low-carbon economy by prioritising renewable energy sources. The SDF however only earmarks areas around Lephalale for energy generation and omits the growing trend for proposed solar pv generating facilities at Northam. Refer to **Figures 5-1** for the relevant Waterberg SDF and Thabazimbi SDF maps.

**(d) An Environmental Management Framework (EMF) adopted by the Department (e.g., Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)**

NO

The Waterberg District EMF is relevant to the application area as well as the LEDET adopted 2019 Waterberg Bioregional Plan (2018 Limpopo Critical Biodiversity Areas).

According to the Waterberg District EMF the application property falls within Environmental Management Zone 4 ‘Game and Cattle Farming (incl. hunting)’. There are also new proposed EMF zones documented in the district IDP (2022-2023) which places the application property potential Zone 2 ‘Ecologically Sensitive Zone with an Agricultural and Tourism Focus’. See **Figures 5-2** for the Waterberg District EMF map provided after this table.

Based on the Waterberg Bioregional Plan (2018 Limpopo Critical Biodiversity Areas) the project site falls within a ‘Other Natural Area’ (ONA) and ‘Ecological Support Area 1’ (ESA) (see **Figure 5-3** provided after this table). The land use management objectives for these areas include <sup>10</sup>:

- ESA 1 - Maintain in a functional state, avoid intensification of land uses, and rehabilitate to natural or near-natural state where possible.
- ONA – Production landscapes: manage land to optimise the sustainable utilisation of natural resources.

Renewable Energy (PV farms and solar arrays) are not permissible within ESA’s and is actively discouraged. However, the site sensitivity verification by CEMS and the specialists found the site to be significantly degraded with limited functional ESA vegetation recorded i.e., Dolomite Bushveld. The Dolomite Bushveld is therefore the only functional ESA and is being excluded from the development footprint.

<p><b>4. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e., is the proposed development in line with the projects and programmes identified as priorities within the credible IDP?)</b></p>	<p>YES</p>	
<p>As mentioned in question 3(c) above, the Waterberg IDP 2022/2023 does recognise renewable energy projects as a key priority to government, but the SDF and IDP recognise this specific project area as an agri-tourism focus area. The proposed solar pv facility will support the Koedoeskop agricultural sector.</p>		
<p><b>5. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level i.e., is the development a national priority, but with specific local context it could be inappropriate).</b></p>	<p>YES</p>	
<p><b>6. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant authority in this regard must be attached to the report)</b></p>	<p>YES</p>	

<sup>10</sup> Source: Waterberg Bioregional Plan 2016

<p>The facility will not be dependent on municipal services. Domestic and facility process water will be sourced from two existing boreholes. Water for the cleaning of panels would be required twice / annum and would need to be 'Lime' free. This can be supplied by the two onsite boreholes, if fitting with a treatment system, alternatively it can be sourced from a municipal supply around Northam Town. The volumes are low and only required twice/annum.</p> <p>There is an existing septic tank and French drain available at the security residence onsite and additional system will be added for the operations building and guard house.</p>		
<p><b>7. Is this project part of the national programme to address an issue of national concern or importance?</b></p>		<p>NO</p>
<p>The project does not form part of the DMRE REIPPP. But AGE does intend to transfer and sell 66% of the remaining electricity generated by the facility into the Eskom grid.</p>		
<p><b>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context)</b></p>	<p>YES</p>	
<p>The application property has direct access to the Eskom grid, is in a 'High to Moderate' solar resource area, has the desired slope and is in proximity of Allied Farms and other commercial farmers.</p>		
<p><b>9. Is the development the best practicable environmental option for this land/site?</b></p>	<p>YES</p>	
<p>The EMF earmarks the best environmental option for the site as being Game Farming/Hunting/ Agricultural and Tourism Focus area. But Allied Farms and the nearby farmers are dependent on electricity for irrigation and require a consistent power supply. The application property is suitable for the development of the facility. The facility will be placed on 'Low' sensitivity areas and delineated sensitive environmental features will be excluded from the facility footprint.</p>		
<p><b>10. Will the benefit of the proposed land use/development outweigh the negative impacts of it?</b></p>	<p>YES</p>	
<p><b>11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?</b></p>		<p>NO</p>
<p>The EAP is of the submission that it is the national electricity crisis that is setting the precedent for the development of renewable energy generation projects in 'High to Very' Solar resource areas. The existing Eskom 132kV Spitskop-Mamba power line sets a further precedent because it routes through large tracks of rural land providing direct access to the Eskom grid. Any further renewable energy applications popping up in the same area would have identified the same 'need and desirability to place.</p>		
<p><b>12. Will any person's rights be negatively affected by the activity/ies?</b></p>		<p>NO But kindly refer to response below</p>
<p>The solar farm uses renewable energy to generate electricity. It does not emit any harmful by-products or pollutants that pose a health risk to users or observers. It is therefore not expected to impact people's health or well-being.</p>		

But the proposed solar facility and grid connection will be seen as an additional development and will not blend in with the existing land-use and will only be partially absorbed into the landscape and topography. It will be visible from abutting property homesteads. These property owners would experience a degree of visual intrusion.,

- KOP 1 and KOP 2 on Farm Schilpaddop 432-KQ (Portion 1, 2)
- KOP 3 on Portion 4 and 2 of farm Zwartwitpensbokfontein 434-KQ
- KOP 4 on Portion 5 of farm Klipfontein 429-KQ

The landscape has a moderate absorption/screening capacity that should lower the impacts on sensitive receptors. A 50-meter vegetation corridor between Schilpaddop 432-KQ and the solar farm is also proposed on the western periphery to use for screening.

<b>13. Will the proposed activity compromise the 'urban edge' as defined by the local municipality?</b>		<b>NO</b>
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The renewable energy facility will be developed 17km from Northam Town. The EAP is of the submission that renewable energy projects should not be built within the urban edge since this would sterilise large tracks of land which could otherwise have been utilised within the urban edge for urban expansion close to existing service connections.

<b>14. Will the proposed activity contribute to any of the 36 Strategic Infrastructure Projects (SIPS)?</b>		<b>NO</b>
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The project does not form part of the REIPPPP that aims to add to the renewable energy to the Eskom grid. But AGE does intend to transfer and sell 66% of the energy generated at the solar pv facility into the Eskom grid, the rest is for private use which will also alleviate pressure on the national grid.

<b>15. What will be the benefits to society in general and to the local communities?</b>	Explain
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The facility will supply electricity to the Koedoeskop agricultural sector alleviating pressure on the national grid; and will transfer / sell 66% of the surplus energy generated into the Eskom grid adding to the national energy supply.

For the local communities:

- For the Koedoeskop farming community it will have direct and indirect positive socio-economic impacts including supporting enterprises.
- The anticipated employment opportunities during construction and operation of the facility.

<b>16. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been considered.</b>
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Section 23 requires application of environmental management tools to ensure integrated environmental management. Section 24 gives effect to the objectives contained in section 23 of NEMA by identifying activities which require environmental authorisation to be subjected to either a Basic Assessment or full EIA process (EM tool) and subsequent implementation of conditions set out under the authorisation.

The proposed solar pv facility EIA is undertaken according to section 24 of NEMA i.e.

- AGE has applied for environmental authorisation to DFFE for several scheduled activities published under section 24 of NEMA.
- The application is currently subject to a Scoping and EIA process as prescribed under Regulation 21 to 24 and 40-44 of the NEMA EIA Regulations of 2014 (GNR 326, as amended) and is being undertaken by CEMS as the independent EAP.
- The attributes of the site and surrounds have been thoroughly discussed in the Scoping report to inform the identification of potential impacts.
- The 'scoped' potential environmental impacts and risks associated with the phases of the project have been identified and preliminarily been assessed. The necessary specialist input was and is being obtained to inform the actual and potential impacts.
- The specialist studies conducted and underway will ensure that the potential impacts as well as the effects of the proposed activities get due consideration.
- Based on the findings from the investigation and assessments, mitigation measures have been identified that could manage/avoid/stop or reduce the magnitude of such impacts. These are subject to finalisation and confirmation in the upcoming EIR.
- A Public Participation Process is being conducted in line with Regulation 40 -44 of the NEMA EIA Regulations of 2014 (GNR 326 as amended). The DALRRD, other provincial, district, local authority, abutting landowners, irrigation board and farmers union are being engaged as part of the EIA process and this DSR has been release for 30-days public and authority review and comment. Their inputs will be incorporated into the Final Scoping Report for consideration by the DFFE.
- The outcome of the Scoping Phase is to set forward a Plan of Study for the EIA process which is included under section 10 of this report.

**17. Please describe how the principles of environmental management as set out in section 2 of NEMA have been considered.**

The general principles are that environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, development, cultural and social interests equitably. Development must be socially, environmentally, economically sustainable.

The Section 4 'Policy and Legislative Requirements' in a sense already confirms the need and desirability of the project based on how the proposed project responds to the different sets of legislation, environmental and planning strategies including policies in place for the area.

Additionally, renewable energy is sustainable energy which can meet the present and future needs and goals of the population without compromising the ability of future generations to meet theirs.<sup>11</sup> The government of South Africa therefore considers the generation and use of renewable energy as a contribution to sustainable development.

The DSR includes specialist investigations/verification reports for terrestrial, aquatic biodiversity, avifauna, agricultural potential, visual and landscape including heritage (attached under Appendix E) to identify potential features which may be impacted by the project i.e.

<sup>11</sup> EIA Guideline for Renewable Energy Projects



- Disturbance and loss of ecosystems and biological diversity
- Pollution and degradation of the environment
- Disturbance to landscapes and sites of national cultural heritage

Several site environmental sensitivities have been identified as part of the Scoping Phase which will be excluded from the development footprint which relate to the terrestrial biodiversity and heritage features. These are provided under section 8 of this report. The public consultation process will record the issues and or concerns from I&APs (i.e., environmental rights to be considered and protected).

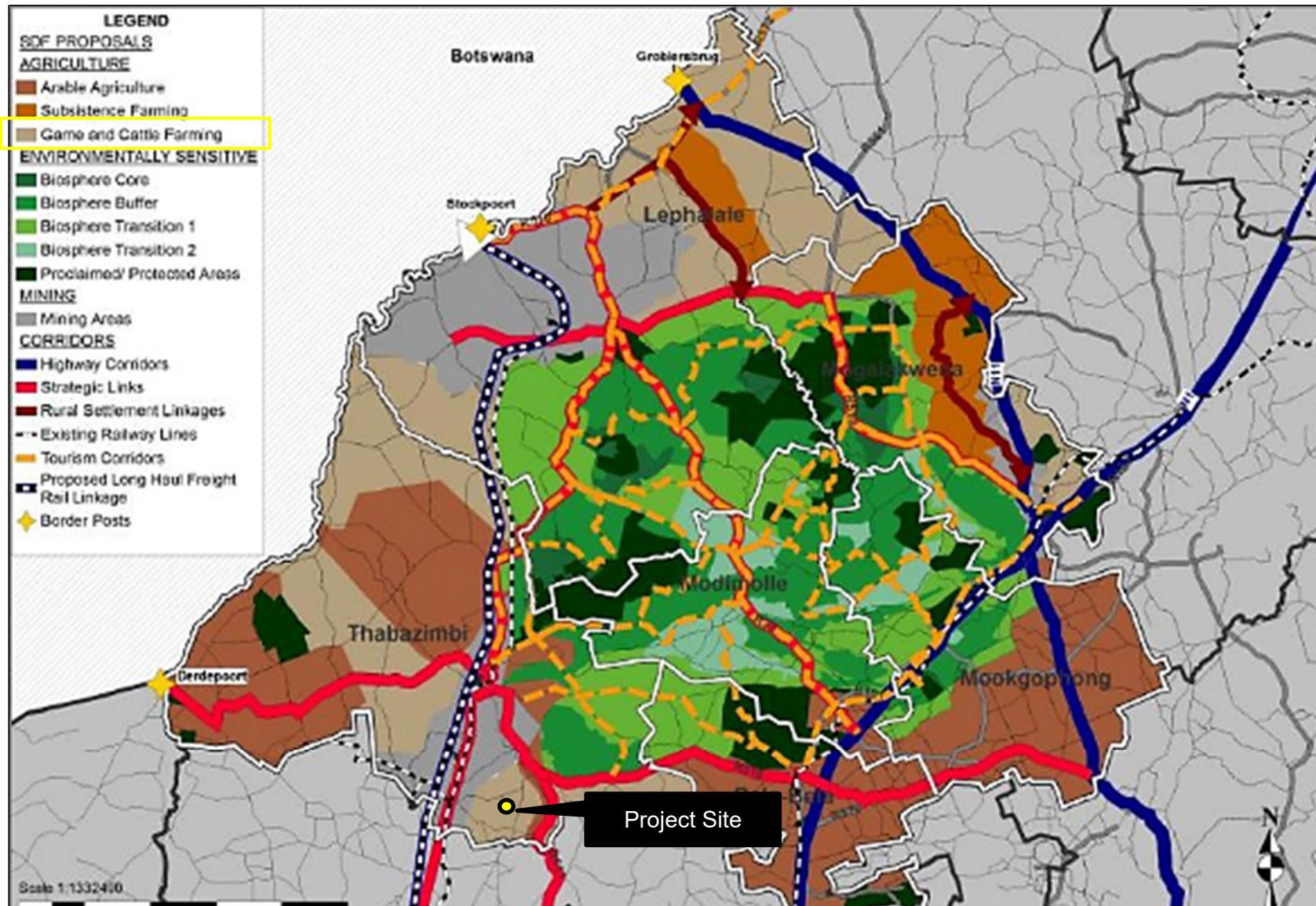


Figure 5-1 : 2010 Waterberg District SDF (source Waterberg SDF). The position of the project site is illustrated by means of a yellow dot/circle.

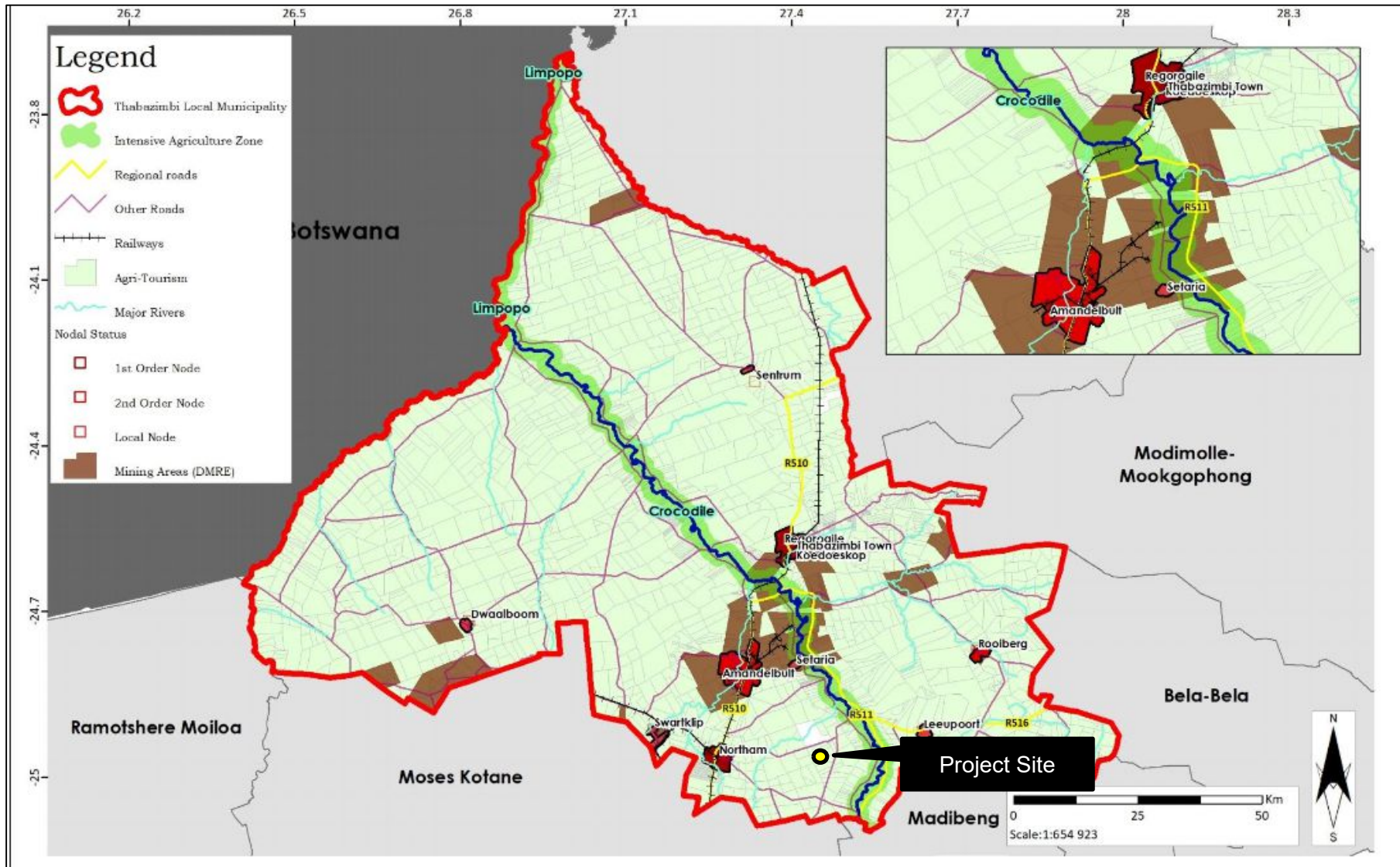


Figure 5-2: 2022 Thabazimbi Local Municipality SDF map (source 2022 TLM SDF). The project site is illustrated by a yellow circle/dot and according to the SDF map its located in an area earmarked for 'Agri-Tourism'.

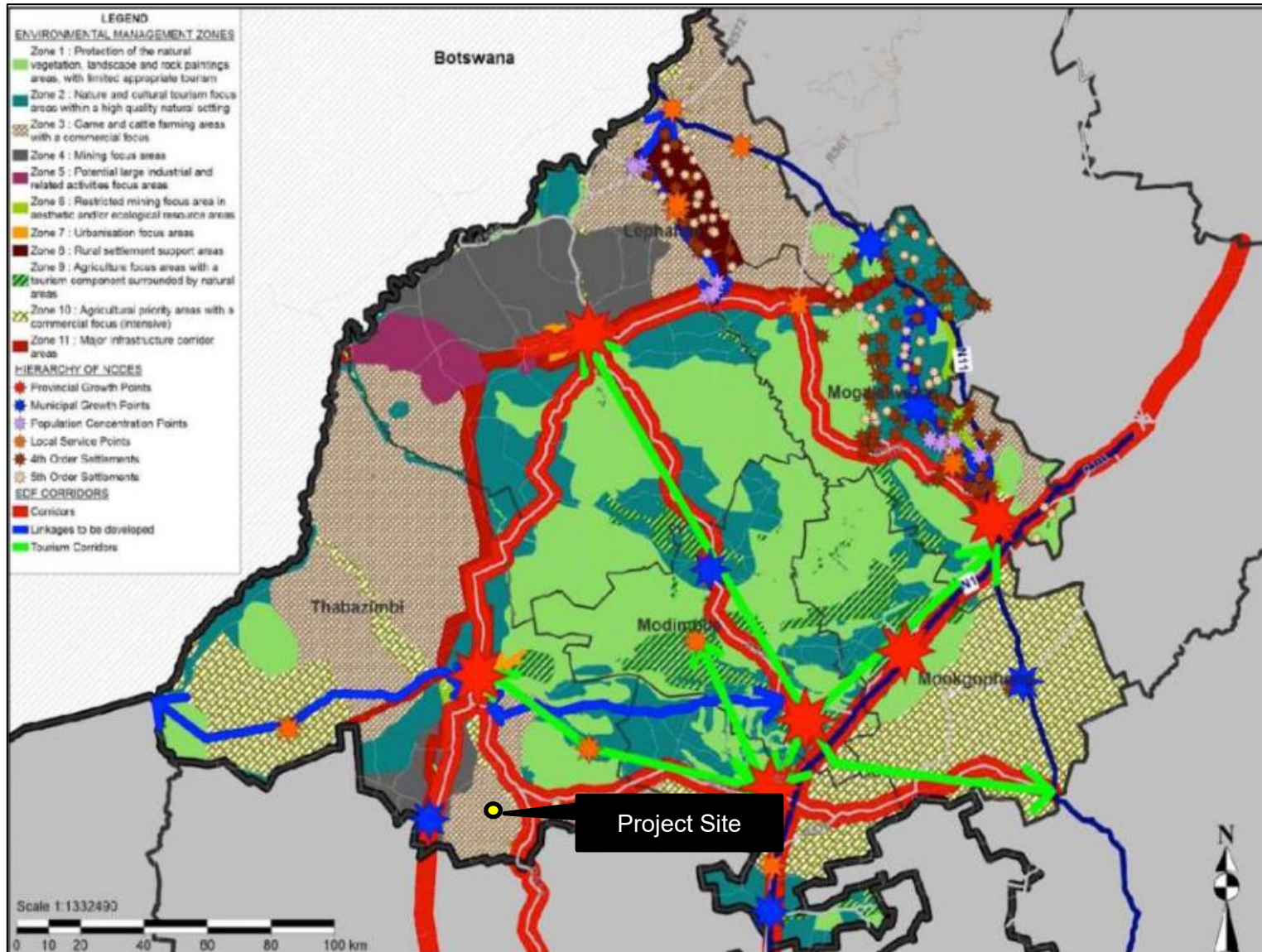


Figure 5-3: Waterberg District EMF Map (source 2010 WDM EMF). The project site is illustrated with yellow dot. According to the EMF the project site is in Zone 3 earmarked for 'Game and Cattle farming with a commercial focus'.

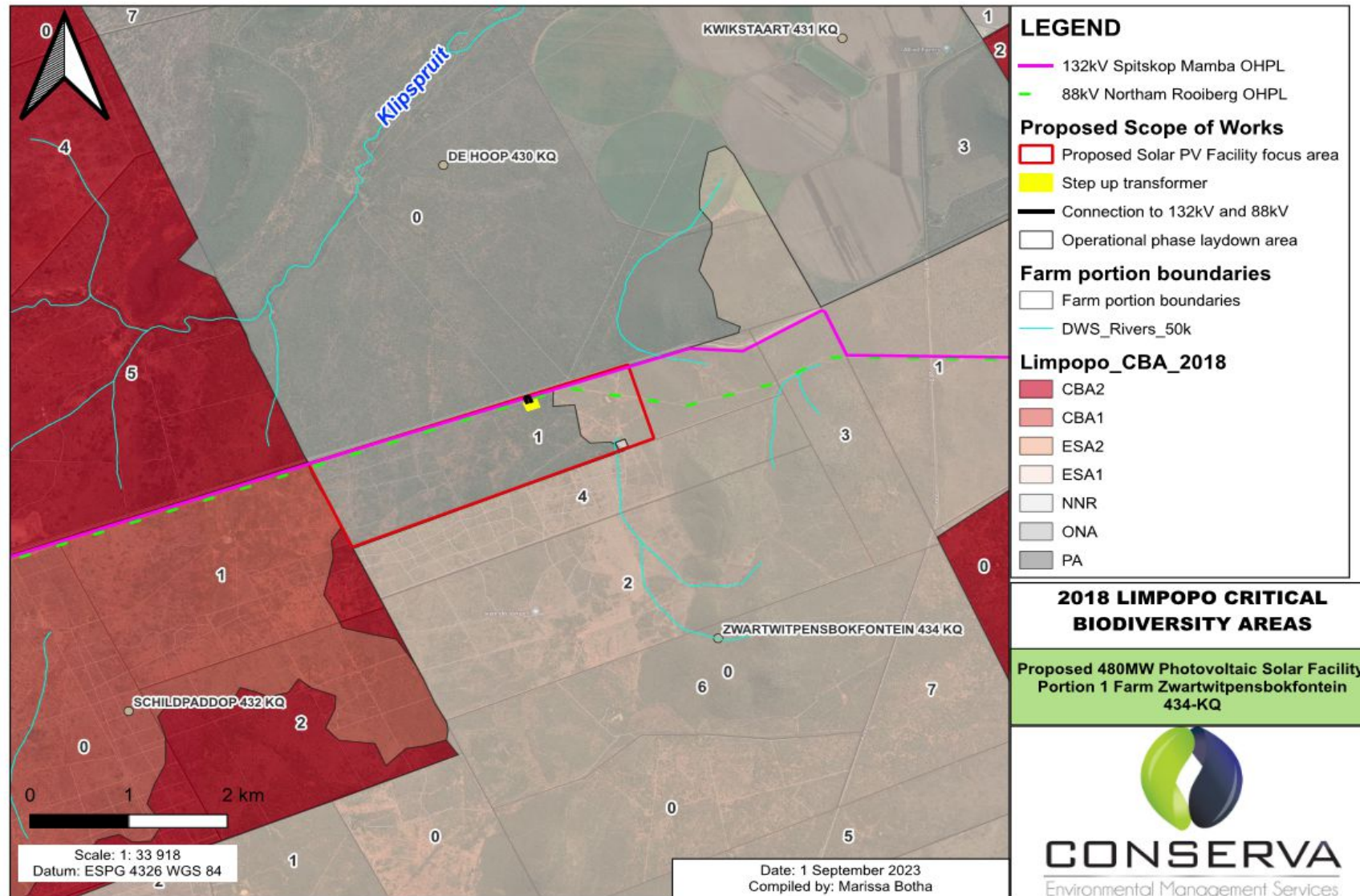


Figure 5-4: Project site superimposed on the 2019 Waterberg District Bioregional Plan Priority Biodiversity Areas (2018 Limpopo Critical Biodiversity Areas)

## 6 PUBLIC PARTICIPATION PROCESS (PPP)

Appendix 2 section 2(1) (h)(ii) requires details of the public participation process (PPP) undertaken in terms of Regulation 41 of the NEMA EIA Regulations. PPP is a key requirement of the EIA Process and needs to satisfy the requirements of Regulation 41, 42,43 and 44 of the said regulations (see **Table 6-1**).

The PPP identifies potential I&APs on the project and provide an opportunity for the expression of public, and state department views on the environmental and social impacts of the application. All public and state department views on impacts are documented, addressed, and responded to in the EIA process and incorporated into the Scoping Report and EIR for consideration by the DFFE.

**Table 6-1: NEMA PPP Requirements**

Requirement	Applicable
<b>Section 39</b> requires landowner consent.	N/A. AGE owner.
<b>Section 40(1)(b)</b> requires all potential I&APs, including the DFFE to be provided an opportunity to review and submit comments on the Scoping Report, EIR and EMPR for a period of 30-days.	YES
<b>Section 41 (2)</b> requires giving notice to all I&APs of the application which is subjected to public participation by:	
a) Fixing a notice board at the place conspicuous to and accessible by the public and at the boundary of the site.	YES
b) Giving written notice to occupiers, owner/person in control of the land, to same parties adjacent to the land, municipal ward councillor of affected area, affected municipality, any organ of state having jurisdiction in respect to the activity and any other party.	YES
c) Place an advertisement in one local newspaper / any official Gazette.	YES
d) Place advertisement in at least one provincial newspaper/national newspaper if the activity extends beyond the border of the district/metropolitan municipality.	N/A. Limited to Waterberg District.
<b>Section 42</b> requires the EAP to open and maintain a register of I&APs and submit such register to the DFFE;	YES
<b>Section 43</b> state that I&APs, and state departments administering a law related to the application, are entitled to comment, in writing, on all reports/plans lodged to such party during the PPP.	YES
<b>Section 44</b> requires recording comments in reports and plans and attached responses to such comments and records of meetings, to the reports and plans submitted to the competent authority.	YES

### 6.1 PPP APPROACH

Based on the above PPP requirements, CEMS have made provision for three rounds of public consultation during the EIA Process, excluding the notification to I&APs regarding the DFFE decision. Two of these rounds are conducted during the Scoping Phase and comprise several individual tasks as provided for in **Table 6-1**.

Due to the regulated timeframe of the EIA Process, it is necessary for the EAP to conduct some preparatory PPP tasks prior to application submission to DFFE and the rest thereafter. The PPP description below is therefore divided into 'Pre-application PPP Tasks' and Post-application PPP Tasks'.

## 6.2 PRE-APPLICATION PPP TASKS

### 6.2.1 AUTHORITY ENGAGEMENT

#### 6.2.1.1 DALRRD Meetings

An online meeting took place with the National DALRRD on 26 May 2023 followed by a one-on-one meeting and site inspection on 20 June 2023 with the Waterberg District DALRRD regarding the project proposal on 'Agricultural' land.

The general outcomes of the DALRRD meetings were:

- **National DALRRD**
  - Generally, supports renewable energy projects limited to low potential agricultural land.
  - Special consent use will be required from DALRRD for the temporary change of 'agricultural' zoned land for 'utility' purposes.
  - The Waterberg District DALRRD must be engaged regarding the soil classification for the site.
  
- **Waterberg District DALRRD (Mr Ben Greef)**
  - Renewable energy projects are generally supported on low potential agricultural land.
  - The application property falls outside the Crocodile West Irrigation Scheme area and formerly used as a game farm. The property has no water rights therefore not plough able.
  - No soil classification is required. An independent specialist may need to prepare an Agricultural Compliance Statement for DFFE.

CEMS commissioned the Agricultural Compliance Statement which confirms that the site is of low agricultural potential.

#### 6.2.1.2 DFFE Pre-application meeting

An online pre-application meeting took place with DFFE on 17 August 2023. The EIA and PPP approach including required specialist studies were discussed and confirmed. The approved meeting minutes are attached under **Appendix D1**. The pre-application DFFE project ref. no is 2023-07-0039.

The application for environmental authorisation and DSR has been submitted to the DFFE for authority inputs before the release of the DSR for public review. The DFFE acknowledge receipt of the application and issue the official project reference number. The DFFE comments will be incorporated into the Final Scoping Report.

### 6.2.2 REGISTER OF I&AP

The EAP is required to provide access to information during the EIA process and must consult with the relevant I&APs. Accordingly an I&AP database has been opened for the project and the relevant abutting landowners, ward councillor, organs of state, local and district authorities including other key stakeholders in the area (i.e., other solar pv applicants, irrigation scheme etc) have been pre-identified and registered on the project database and notified of the project.

The broader public were also given the opportunity to register and participate in the EIA process by means of public notices on 28 July 2023 calling for registration of I&APs until 28 August 2023.

A further opportunity is given to the registered I&APs to review and comment on this DSR is provided from 9 October to 7 November 2023. The register of I&APs is attached under **Appendix D2** in the DSR submitted to DFFE but excluded from the DSR circulated for public review<sup>12</sup>.

The application property in relation to abutting properties and ownership is illustrated in **Figure 6-1**.

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<sup>12</sup> It is prohibited under the Protection of Personal Information Act, 2013 (Act No. 14 of 2013) (POPIA) to share any I&AP/stakeholder information with the public.



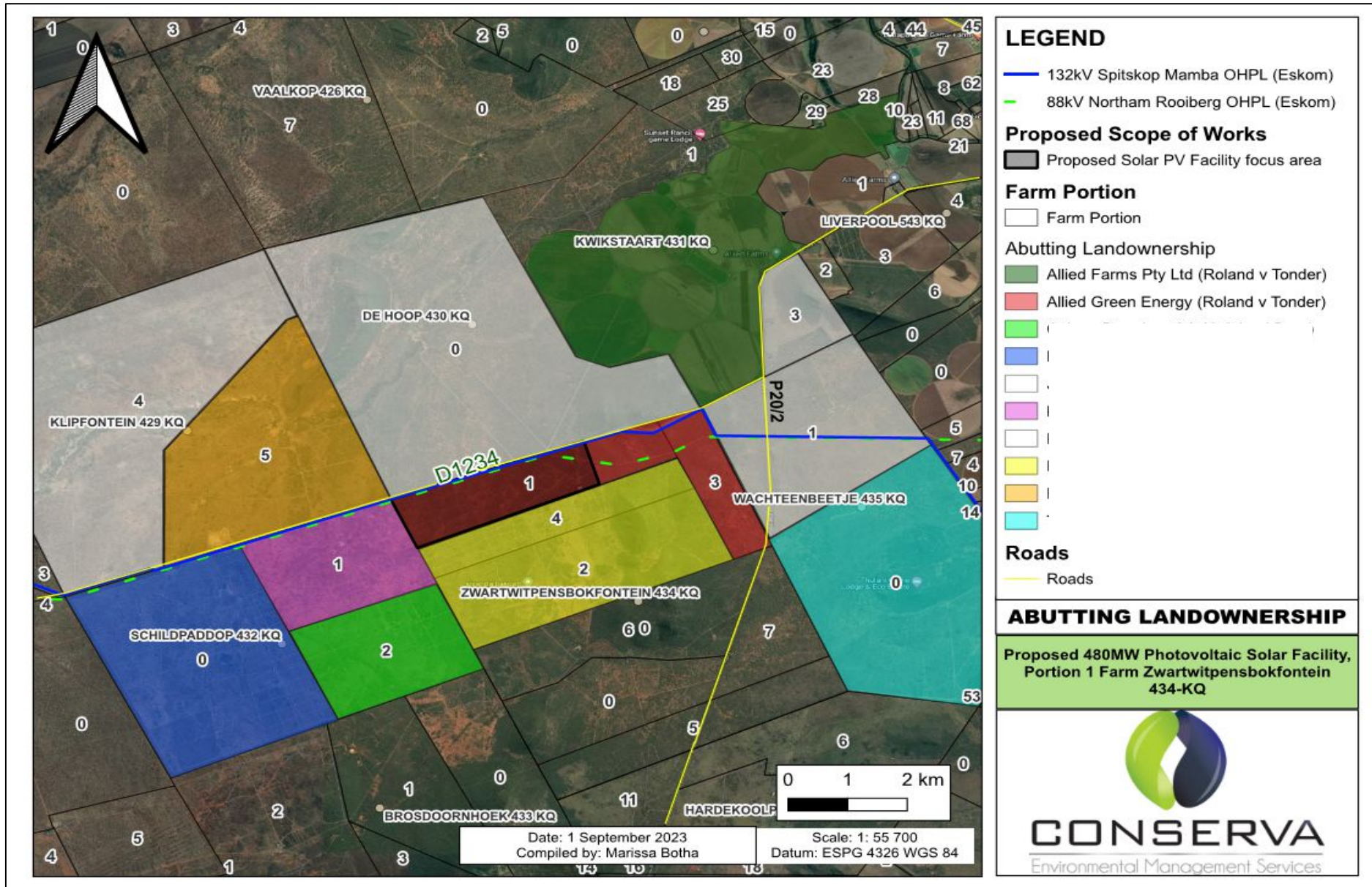


Figure 6-1: The application property in relation to abutting properties and ownership.

### 6.2.3 PRESS ADVERTISEMENT

A press advertisement announcing the proposed 480MW Solar PV Facility EIA process and call for registration of I&APs was published in the Platinum Bushvelder in the issue of Friday, 28 July 2023 in English. The announcement of the availability of the DSR is done via direct notification i.e., email to the register of I&APs and any newly registered I&APs. The newspaper tear sheet is attached under **Appendix D3**.

### 6.2.4 SITE NOTICE

Site notices were placed onsite, on access gates to abutting land along the D1234 and P20/2 road and at places conspicuous to and accessible by the public in the Koedoeskop and Thabazimbi area on 27 July 2023. The notices were placed as part of the EIA process announcement in both English and Afrikaans. The site notice photographs are attached under **Appendix D4**.

### 6.2.5 ROUND 1 PPP - DIRECT NOTIFICATION TO I&APS

With the release of the public notices, the stakeholders (pre-identified) and newly registered I&APS were informed of the proposed project environmental authorisation application and EIA process by means of a Background Information Document (BID) and Comment and Registration Form, requesting registration on the database.

A 30-day comment and registration period on the BID was provided from 28 July to 28 August 2023. The BID was made available in English and Afrikaans and sent via email directly to pre-identified list of I&APs and any subsequent I&AP registrations. A copy of the BID was also uploaded onto SAHRIS online application system as a Notice of Intent to Develop.

Proof of direct notification is provided under **Appendix D5** in the DSR submitted to the DFFE but is excluded from the DSR circulated for public review as per section 6.2.2.

### 6.2.3 CAPTURED I&AP ISSUES

Several registrations were received during the public registration period, none included objections. Two abutting landowners however raised the following concerns telephonically:

- Extent of visual intrusion on abutting properties
- Safety, and security of area may be affected due to the presence of solar infrastructure.

These have been captured in the Comments and Response Report (CRR) attached under **Appendix D6**. These are also addressed under section 7 of the report. The CRR will be updated to incorporate the public submissions received on the DSR.

## 6.3 POST-APPLICATION PPP TASKS

### 6.3.1 ROUND 2 - DRAFT SCOPING REPORT AVAILABLE FOR 30-DAYS PUBLIC REVIEW

This Scoping Report is currently available for 30-days public review and comment from 9 October to 7 November 2023 to the registered I&APs and authorities.

An electronic copy is available for public download from the following dedicated OneDrive folder: [https://1drv.ms/f/s!An\\_mexC75HlpqtBgHfwVYt6aopBw9g?e=GYtovY](https://1drv.ms/f/s!An_mexC75HlpqtBgHfwVYt6aopBw9g?e=GYtovY) under folder heading '480MW Solar PV Draft Scoping Report'.

Printed copies of the DSR are on display in the project area at the following public venues:

- Allied Farms Offices, Koedoeskop
- Northam Public Library on Tungsten Street in Northam Town.

Registered I&APs, commenting authorities and organs of state have been notified of the availability of the Scoping Report and where it can be obtained through email.

Copies of the DSR (i.e., electronic or printed) have also been made available to key commenting authorities i.e.,

- DFFE Directorate Integrated Environmental Authorisations, Biodiversity Conservation, Protected Areas
- DFFE: Forestry Regulation and Management
- LEDET
- DMRE
- Waterberg District Municipality
- Thabazimbi Local Municipality
- National DALRRD and electronically to Waterberg District DALRRD
- DWS (Pretoria – Crocodile West Proto CMA)
- SAHRA via SAHRIS online system
- RAL, Dept. Public Works, Roads, and Transport, SANRAL
- Civil Aviation Authority (CAA), ATNS (Obstacle Evaluator), SANDF
- Eskom (Generation, Land Management Advisors, Transmission, Distribution)

### **6.3.2 TARGETED PUBLIC MEETINGS**

Targeted meetings will also be held with key commenting authorities and stakeholder as required during the EIA process. These would be communicated directly with the register of I&APs.

### **6.3.3 SUBMISSION OF FINAL SCOPING REPORT TO DFFE AND WAY FORWARD**

The public submissions including authorities' comments received on the DSR will be incorporated into the Final Scoping Report and submitted to the DFFE upon the lapse of the public review period.

I&APs will be notified of the commencement of the EIA phase, once the DFFE accepts the Scoping Report. It usually takes 43-days for the department to review and issue the acceptance letter.

Next, the specialist studies will be finalised and the draft EIR and EMPR will be prepared and released for 30-days public review and comment. Registered I&APs, stakeholders and commenting authorities would receive a notification letter announcing the availability of the report. A public meeting and targeted meetings would be arranged (if required) to present the findings of the EIR and EMPR during this period.

## 7 DESCRIPTION OF ENVIRONMENTAL ATTRIBUTES

Section 2 (1)(h)(iv) under Appendix 2 of the EIA Regulations requires a description of the environmental attributes associated with the application property and its alternatives.

This section meets this requirement by providing a description of the environmental and social attributes of the development site (i.e., on Portion 1, farm Zwartwitpensbokfontein 434-KQ) where the solar pv facility is proposed; and how it may be affected by the proposed project and how it may affect the project.

The receiving environment consists of different aspects which CEMS have translated into 'topography, climate, geology, soils, agricultural potential, terrestrial and aquatic biodiversity, avifauna, surface and groundwater, ambient air quality and noise, landscape and visual character, traffic, heritage, and palaeontological features, social and economic context.

Information pertaining to the development area environmental and social attributes have been sourced through the following means:

- a) DFFE Screening Tool Report (STR)
- b) Desktop analysis, literature review and use of Spatial Datasets
- c) Site sensitivity verification (site inspection) conducted by CEMS on 1 August 2023.
- d) Independent specialist field-based surveys conducted during August 2023 including their relevant site sensitivity verification reports and or impact assessment reports.

According to the STR the project site has a five-tier sensitivity theme detailed in **Table 7-1**. The STR provides detail on the environmental sensitivity including specialist studies that may be applicable to a project site, based on the national sector classification and the site sensitivity. The STR is generated from the DFFE national web-based screening tool and is attached under **Appendix B**:

CEMS together with a team of specialists (**Table 7-2**) conducted a site sensitivity verification by means of the desktop analysis and field investigations across the 'development area' to confirm the actual state of the stie compared to what is identified in the STR. The SSV Report is attached under **Appendix C**. A summary of the SSV results (**Table 7-1**) are provided below. These results are considered and included in the description of the environmental attributes in the sections below.

Environmental Theme	STR Sensitivity Rating	STR Recommended Specialist Studies	SSV Results		SSV proposed studies and level of assessment
Agriculture	Very High	<ul style="list-style-type: none"> <li>▪ Geotechnical Investigation</li> <li>▪ Agricultural</li> <li>▪ Visual</li> <li>▪ Terrestrial Biodiversity</li> <li>▪ Avifauna Study</li> <li>▪ Aquatic Biodiversity</li> </ul>	Low		Agricultural Compliance Statement
Terrestrial	Very High & Low		Low		Terrestrial Compliance Statement
Plant	Low		Low		
Animal	Moderate		Moderate		
Avian	Low		Moderate	Very Low	Regime 1 Avifauna Impact Assessment
Aquatic	Low		Low		Aquatic Compliance Statement
Landscape	Very High		Moderate - High		Level 3 Visual Impact Assessment

Heritage	Low	<ul style="list-style-type: none"> <li>▪ Heritage</li> <li>▪ Palaeontology</li> <li>▪ Socio-Economic</li> <li>▪ Civil, Defence, RFI</li> </ul>	Low	High	Phase 1 Heritage Impact Assessment
Palaeontological	High		Low		Palaeontological Impact Assessment
Civil Aviation, Defence, RFI	Mod - Low		Mod-erate (Civil)	Low (Defence, RFI)	Key stakeholder comments

**Table 7-2: Specialist support in describing the biophysical environment and identifying implications.<sup>13</sup>**

Specialist Input / Report Type	Specialist
Geotechnical desktop inputs - full investigation still underway.	Rocksoil Consult – Kobus Roux
Agricultural Compliance Statement	Index (Pty) Ltd – Dr Andries Gouws
Terrestrial Biodiversity SSV Report	The Biodiversity Company – Andrew Husted
Avifauna SSV Report	The Biodiversity Company – Andrew Husted & Namitha Singh
Aquatic Biodiversity Compliance Statement	The Biodiversity Company – Andrew Husted & Ryno Kemp
Visual Impact Assessment Report	Outline Landscape Architects – Kathrin Hammel-Louw
Phase 1 Heritage Impact Assessment Report	Ubique Heritage Consultants – Heidi Fivaz
Paleontological Impact Assessment Report	Banzai Environmental – Elize Butler

## 7.1 CURRENT AND SURROUNDING LAND USE

### 7.1.1 CURRENT LAND USE

The site is located next to the D1234 Northam-Koedoeskop Road. It is zoned for 'Agriculture' but was previously used as a game farm. (i.e., Shimba Hills Safaris). The previous owner has recently sold off all the game.<sup>14</sup>

The site is undeveloped apart from a former farm residence with a dedicated 22kV private power line, outbuildings, septic tank, internal farm roads, two boreholes, as well as two artificial dams used for game watering holes. There is a very small non-perennial drainage feature created by adjacent road surface water runoff feeding one of the artificial dams.

The Eskom 88KV Northam-Rooiberg including 132kV Spitskop-Mamba OHPLs cross the property along its Northern boundary providing direct access to the Eskom grid.

Refer to the statutory photo evidence included in the SSV Report attached under **Appendix C**.

#### **The current land use and zoning of the application property infer the following for the project:**

- The project will change the characteristics of the site but have a minimal impact on the land use..
- The development will result in the temporary (25-year) change in land use from 'Agricultural' to 'Utility' and AGE will therefore need to apply for special consent from DALRRD.
- A rezoning application will be required in terms of SPLUMA to Thabazimbi Local Municipality (if required as per the municipal land use scheme).

<sup>13</sup> Terms of Reference of for specialist studies are provided under Section 10.1.4 of the Plan of Study for EIA, Table 10-2.

<sup>14</sup> The growing trend in the Bushveld is to sell the land exclusive of the game. The game is sold off to auction to other game farm owners for hunting.

## 7.1.2 SURROUNDING LAND USE

The site is located west of the Koedoeskop agricultural district and farming community, in an area predominantly characterised by game farming. All the abutting properties within a 5-km radius of the site are private game farms, of which some were proclaimed as private nature reserves under the old Wildlife Ordinance of 1949. Refer to **Table 7-3** for a summary of the abutting properties and any relevant proclamations. Project site in relation to abutting properties and protected areas are illustrated in **Figure 7-1**.

**Table 7-3: Summary of abutting and surrounding properties including land use and applicable proclamations.**

Abutting Properties	Direction	Land Use	Private Nature Reserve <sup>15</sup>
Farm Schilpaddop 432 KQ (Portions 0, 1 and 2)	West	Game Farm	Tortoiseshell
Farm Zwartwitpensbokfontein 434-KQ (Portion 4, 2, 3)	South and East	Game Farm	No
Farm Klipfontein 429-KQ (Portion 5, 4)	North-west	Game Farm	Koerooi
Farm De Hoop 430-KQ	North	Game Farm	No
<b>Surrounding Properties within 5-km but not abutting</b>			
Wachteenbeetje 435-KQ (Portion 1)	2km east	Game Farm	No
Wachteenbeetje 435-KQ (Portion 0)	2km east	Eco – Estate & lodge	De Kraal
Kwikstaart 431-KQ (Portion 1)	4km northeast	Agriculture - Crops	No
Kwikstaart 431-KQ (Portion 3)	4km east	Game Farm	No
Vlakplaats 427-KQ	5.1km northwest	Agriculture and Game Farm	Sharme

The site therefore falls within the 5km buffer zone of the Koerooi -; Sharme – and Die Kraal Private Nature Reserves and is located adjacent to the Tortoiseshell Private Nature Reserve. According to the 2018 National Protected Areas Expansion Strategy (NPAES) neither the site nor the nearby nature reserves fall within any Protected Areas Priority Focus Areas. See **Figure 7-2** for the project site superimposed on the 2018 NPAES Priority Focus Area Dataset.

The applicant's offices, their associated Allied Farms commercial farming operations as well as their recently authorised Liverpool 10MW solar and hydro plant<sup>16</sup> are located approximately 6km northeast from site at Koedoeskop. The applicant is already developing the Liverpool Solar site. See **Figure 7-3** showing the location of the project site in relation to the Allied Farming commercial farming operations and solar plant.

The DFFE guideline also requires the EIA process to consider other solar developments within a 30-km radius of the application.

<sup>15</sup> Protected Areas Register (PAR) (SAPAD 2022 Q4)

<sup>16</sup> The 10MW Liverpool Solar Plant authorisation was issued to Allied Power (Pty) Ltd also a subsidiary of the Allied Group along with Allied Farms and Allied Green Energy (Pty) Ltd.

According to the DFFE SA Renewable Energy EIA Application Database (REEA)<sup>17</sup> several similar projects have been approved in the greater area. More recently other similar solar applications were lodged towards Northam Town and at Siyanda Bagatla Mine (Swartklip). Refer to **Table 7-4** which provides a list of the other solar projects and applications in the area. **Figure 7-4** shows the proposed AGE application site in relation to the other approved and more recent solar applications.

**Table 7-4: List of approved solar projects and recent applications in the greater project area**

NO	Facility	Capacity	Status
1	Platinum Solar Park	75MW	Authorised
2	Liverpool Solar Plant (Allied Farms)	10MW	Authorised
3	Spitskop Solar Park	75MW	In process
4	Northam Solar Plant	10MW	Authorised
5	SCSC Solar PV Facility	100MW	In process
6	SBPM Solar PV Facility	100MW	In process
7	Dwaalboom Solar PV Facilities (4 Facilities)	150MW, 240MW, 180MW, 180MW	In process

**The surrounding land use data infer the following for the project:**

- The proposal will contribute to changing the characteristics of the greater area but the need for uninterrupted electricity supply is a significant and must be addressed to ensure economic operation in the area and country.
- The current and the surrounding land uses will determine the feasibility of the proposed project.
- There will also be several cumulative impacts (positive and negative) from the proposed project and other known approved solar pv facilities within the spatial area of the 30-km radius i.e.,
  - Positive impacts being:
    - Increased job opportunities over an extended period in the regional area
    - Availability of an additional 1.6 GW of renewable energy supply to a combination of private users, mines, commercial farm and the national grid.
  - Negative impacts:
    - Impact on land use (game hunting, farming, grazing)
    - Impact on landscape connectivity <sup>18</sup>
    - Potential fragmentation/disruption of habitats and ecosystems
    - Visual intrusion and change in landscape characteristics.
    - Loss of vegetation
    - Increased traffic
  - Loss of plant SCC in particular protected tree species i.e., Leadwood, Marula, Sherpards Tree
  - Loss of faunal and avifaunal habitat

<sup>17</sup> REEA Q2 of 2023 released 31 August 2023, capturing data of applications up to 30 July 2023

<sup>18</sup> Renewable energy and its impact on landscape connectivity ....

<https://conservationcorridor.org/digests/2022/03/renewable-energy-and-its-impact-on-landscape-connectivity/>.

The project and other solar projects generally have a positive climate change and socio-economic impact, and it is possible through proper planning and design, to reduce the negative impacts.

Several other environmental and social attributes must be assessed in addition to the description above to inform the impact assessment on the receiving environment and of the environment on the project.



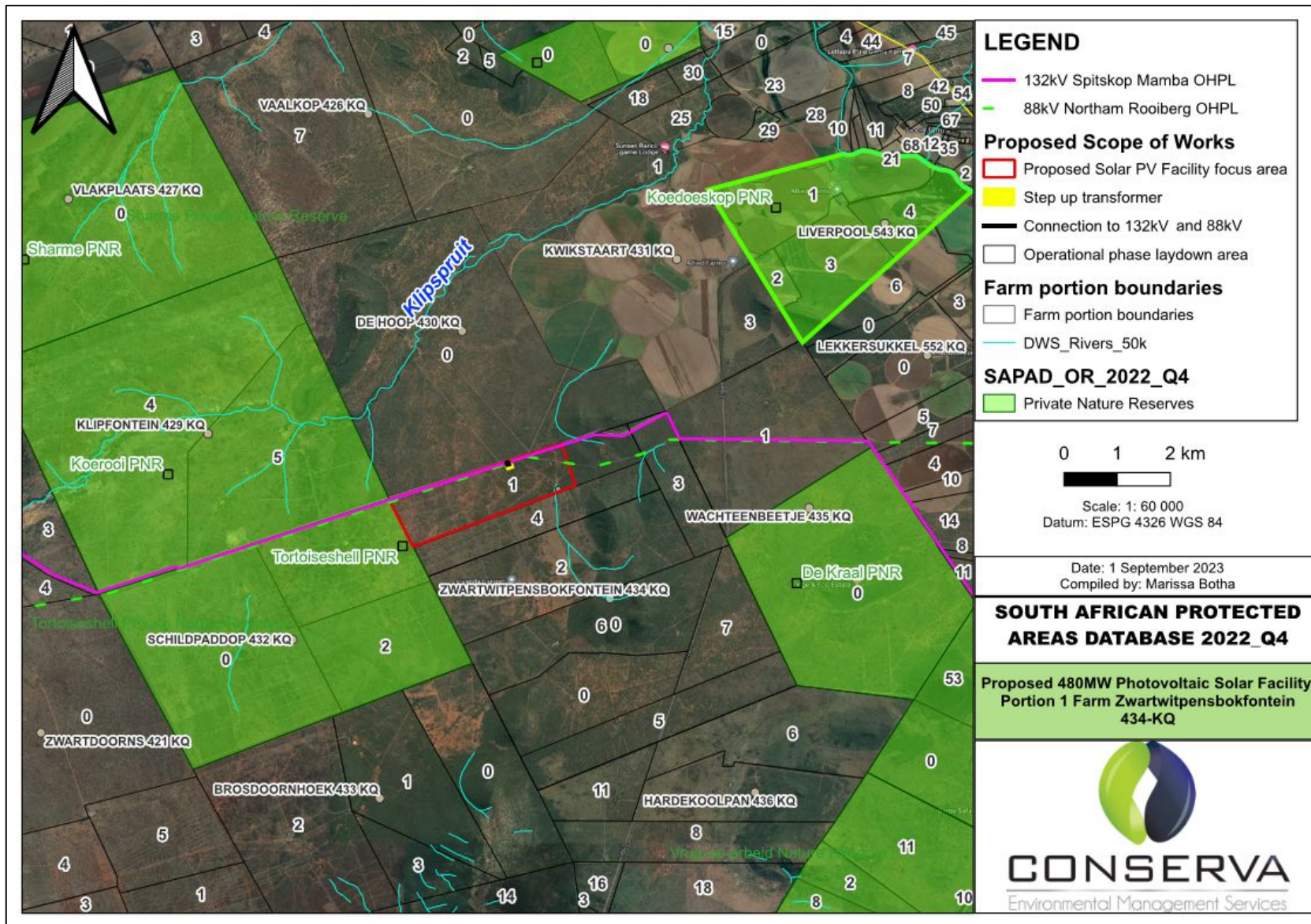


Figure 7-1: Protected Areas in the immediate vicinity of the proposed solar pv development area

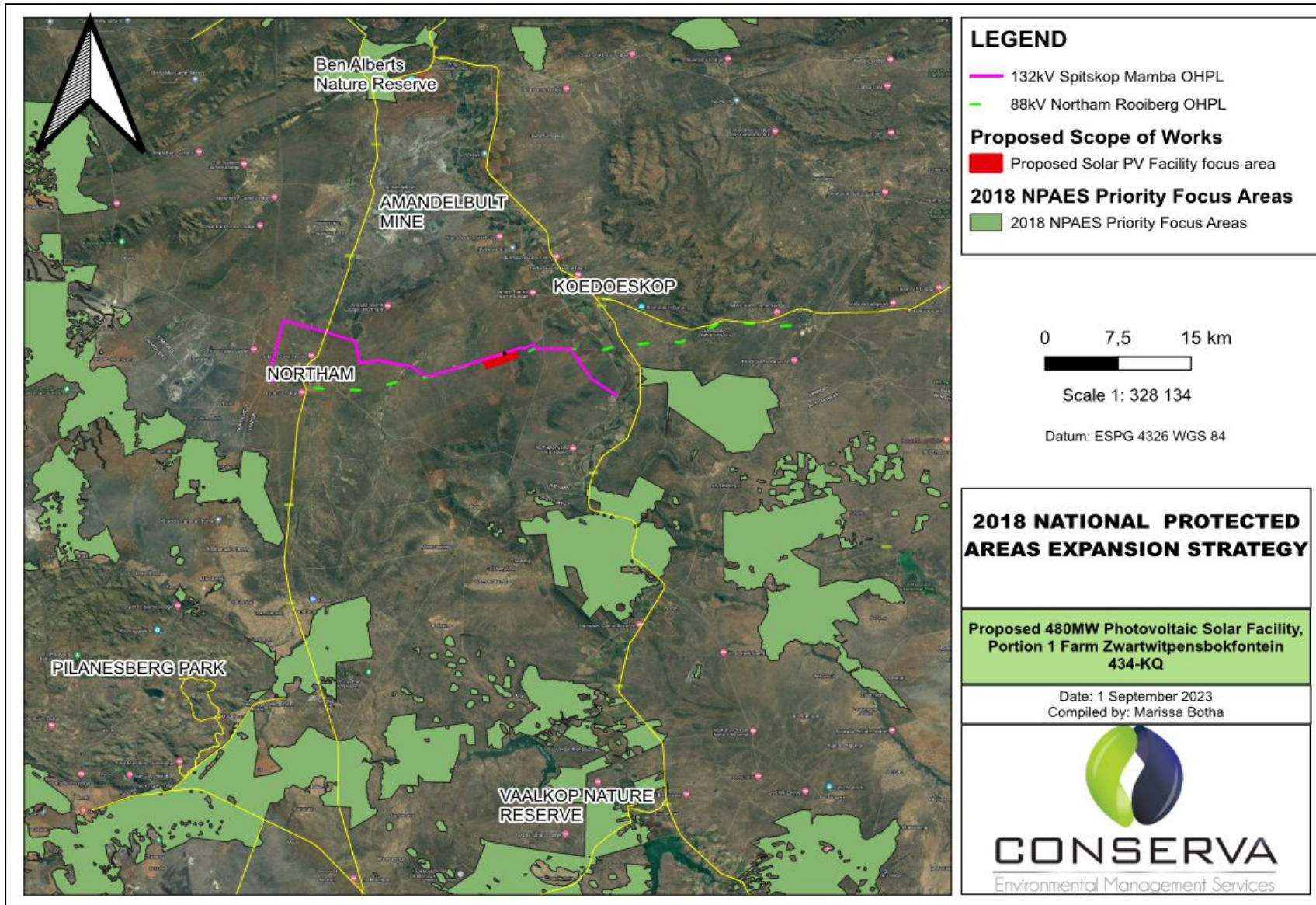


Figure 7-2: Project site superimposed on the 2018 NPAES Priority Focus Areas Dataset.

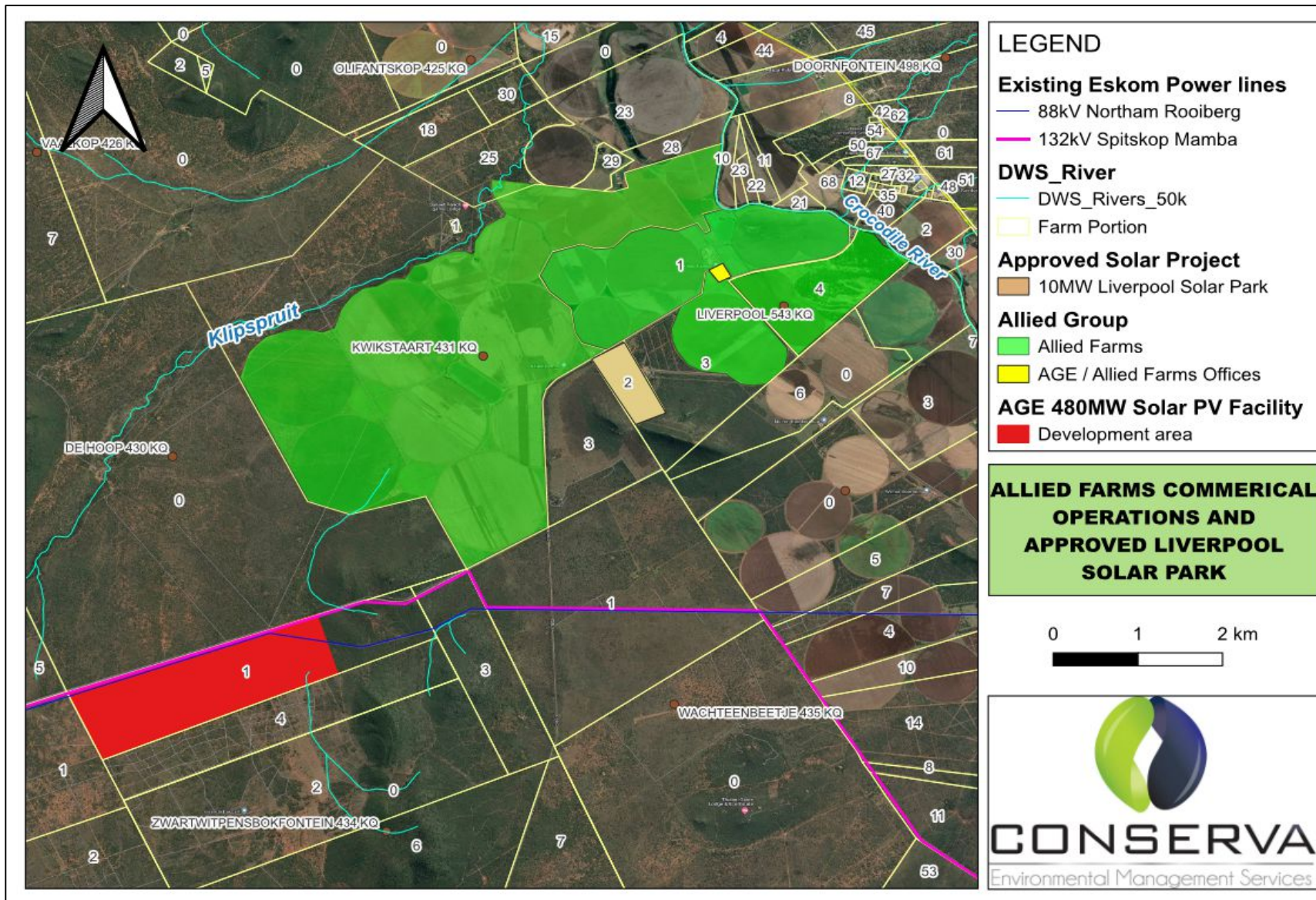


Figure 7-3: Proposed 480MW Solar PV Facility in proximity Allied Farms and Liverpool Solar Park

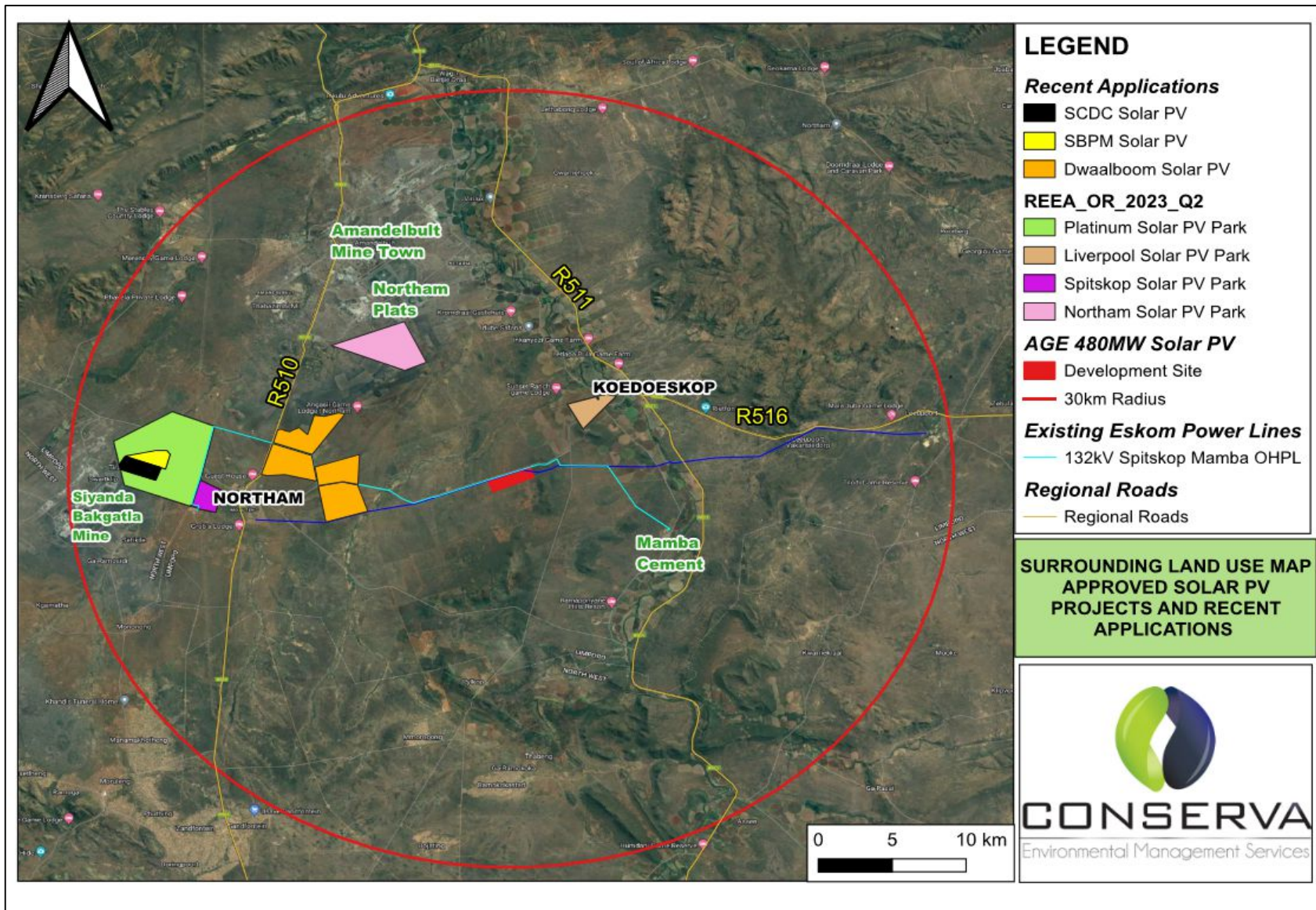


Figure 7-4: Approved Solar PV projects and recent solar applications within 30-km radius of the application property

## 7.2 TOPOGRAPHY

The project site is situated on the valley floor at an elevation ranging between 990 m to 1030 m. The larger part of the application property is predominantly flat (elevation of 990 m to 1000 m) with a slope of less than 1%, and this is the 275-ha development area that is proposed for the placement of the solar pv facility footprint.

There is no development on the site which makes it ideal to construct the solar PV arrays and other associated infrastructure and it will require minimum cut and fill (if necessary).

The topography of this area will also not require any major earthworks that will change the physical landscape of the site.

The eastern section of the application property is however characterised by Dolomite outcrops between the elevation of 1005 m to 1030 m and for this reason is not developable, not for the current application or for future expansion. It will remain undeveloped.

There is a non-perennial drainage feature on the site that is associated with road drainage. The overall site drains in a northerly direction towards the Klipspruit, a tributary which drains to the Crocodile River further east.

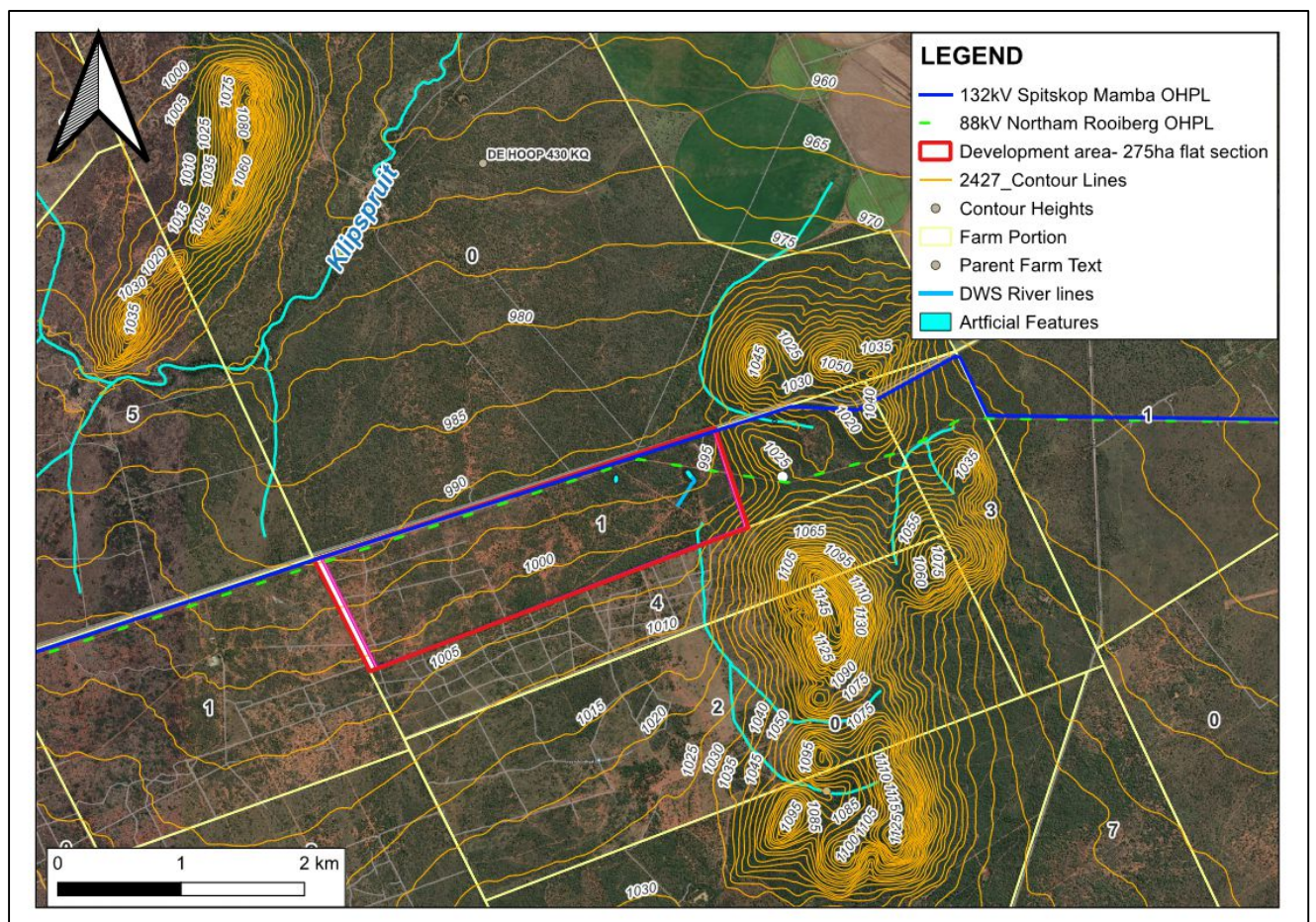


Figure 7-5: NGI 5 m SA Contour Data for QDS 2427 superimposed on the development area/site.

## 7.3 CLIMATE

The project site is in the Central Bushveld Region. The region is characterised by a summer rainfall with a Mean Annual Precipitation (MAP) that ranges between 500 mm and 600 mm. Of the savanna vegetation units that are located outside Kalahari bioregions, this unit has the highest mean annual potential evaporation. In the winter season frost is frequent (Mucina & Rutherford, 2006).

According to the last 30-years of simulated historical climate and weather data obtained from Meteoblue the annual average maximum temperature is 32 - 37 ° C from October to March, with the hottest days recorded in November. Temperatures drop from May to August to an average maximum temperature of 22 ° C in the day with cold nights of 5 ° C. The long-term data for Northam indicates a mean average MAP of 411 mm with the wettest months being from November to January.

The solar radiation for Northam/Koedoeskop is 'High' (8000 – 8500 Megajoule per square meter)<sup>19</sup> making it desirable for renewable energy generation.

**Table 7-5: Average monthly rainfall for Northam (simulated historical MAP data – Weather Atlas)**

Month	Rainfall (mm) <sup>20</sup>	Season
January	83	Summer - Hight of Wet Season
February	53	Summer - Wet Season
March	41	Summer - Wet Season
April	30	Summer - Wet Season
May	5	Winter - Dry Season
June	3	
July	1	
August	1	
September	4	
October	32	Summer – Wet Season
November	63	Summer – Wet Season
December	95	Summer - Hight of Wet Season
<b>Mean average</b>	<b>411 mm</b>	

The climate data for the project area infer the following for the proposed project:

- Adequate stormwater management controls (i.e., trenches, berms etc) will be required to control erosion on site. Runoff from internal roads could report to the two artificial dams onsite.
- The hot climate of the area will require regular dust suppression along the D1234 due to vehicle entrained dust that may settle on the solar panels.

<sup>19</sup> Annual Solar Radiation Map of South Africa

<sup>20</sup> Weather Atlas (<https://www.weather-atlas.com/en/south-africa/northam-weather>)

## 7.4 GEOLOGY

According to the 1: 250 000 Council of Geoscience Geological Dataset for South Africa there are two geological zones underlying Portion 1 of the farm Zwartwitpensbokfontein 434-KQ i.e.:

**Zone A (Majority of site): Non-Dolomitic Land** comprising the following lithologies:

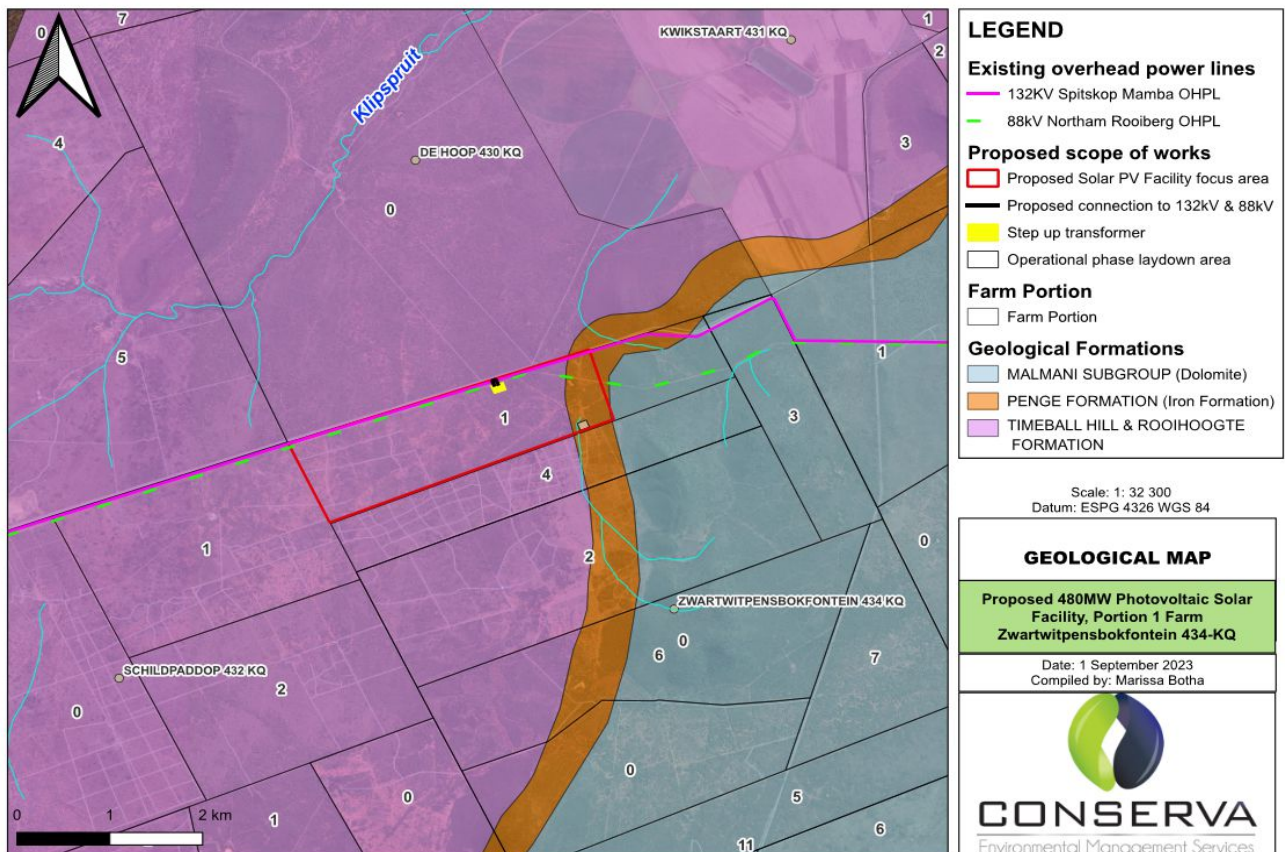
- Time ball Hill formation comprising shale, hornfels, mudrock, quartzite, magnetic ironstone underlays the largest part of the property.
- Penge Formation which comprises iron formation along a narrow strip on the eastern portion of the site.

**Zone B (Rocky outcrop on eastern extreme of Portion 1): Dolomitic Land** comprising the Malmani Formation i.e., dolomite, chert, limestone, and quartzite.

According to the geological maps the dolomite formation dips at approximately 40 degrees (steep dip) to the west below the iron and shale formations. The non-dolomitic land (flat area) covers 75% of the application property and the dolomitic land the remaining 25 % which comprises a rocky outcrop (See **Figure 7-6**).

Since the application property coincides with Dolomitic land, it is important to establish the boundaries and delineate the dolomite contact to exclude this area from the development footprint. This will ensure that costly bedrock drilling required in terms of the Geotechnical Dolomite Standards SANS 1936: 2012 can be avoided. This cannot be postponed till before the commencement of the construction phase as it may have implications for the layout plan and development cost.

The solar development will remain 150 meters clear of the dolomite contact but it is necessary to confirm the dolomite boundary for these purposes. The Basic Shallow Soil Geotechnical Investigation is underway, and the full results will be included in the EIR.



**Figure 7-6: 1: 250 000 CGS Geological Map superimposed on the application property.**

## 7.5 SOILS AND AGRICULTURAL POTENTIAL

The site is zoned for agricultural use and the development of the proposed solar pv facility will change the land use for a period of 25-years (or more). No subdivision of land is required the farming unit will remain unchanged. Thereafter the facility can either be upgraded with a request for renewed consent from DALRRD or decommissioned and the site rehabilitated to its original land use i.e., game / cattle grazing.

The DFFE Screening Tool identifies the site to be of a 'High' agricultural significance assigning it a 9-10 Moderate to High land capability. CEMS inspected the site and found it to be used for limited game grazing. The veld comprises Dwaalboom Thornveld, and the western section of the site is in a degraded state due to severe Sekelbos (*Dichrostachys cinerea*) encroachment making it inaccessible for game. The site is not cultivated because it falls outside the Irrigation Scheme and is too far from the Crocodile River to pump irrigation water. The property thus has no water rights for irrigation.

A suitably qualified specialist<sup>21</sup> was contracted to conduct a site sensitivity verification (SSV). The specialist found no high potential land on site, assigning it a '**Low**' **agricultural sensitivity** rating according to the DALRRD criteria<sup>22</sup> which is a **Class 7 or poorer** owed to the area's low **climate capability**. The degraded veld condition restricts livestock carrying capacity to less than 15 cattle over the 275-ha. In line with GNR 320 Protocols an Agricultural Compliance Statement was prepared and is attached under **Appendix E1** for full details. The statement incorporates the SSV findings and will inform the application for Special Consent Use to the DALRRD. The study findings follow below.

**Table 7-6** details the summary of the site evaluation outcome.

Table 7-6: Summary of Site Evaluation Outcome		
Factor	Description and Type	Potential/Capability
<b>CLIMATE</b>	Long-term average rainfall is 574mm/annum. Annual rainfall is highly variable which is risky for crop production, thus no summer crops production.	<b>Category 5 medium capability.</b> It implies the reliability is too low for commercial rainfed cropping.
<b>SOIL CAPABILITY</b>	Deep sandy loam soil which is reddish/dark brown in colour. The subsoil may have underlying sedimentary rock. <b>Soil types:</b> <u>Shortlands</u> and <u>Hutton</u> <sup>23</sup> with a shallower rocky portion in the northeastern portion of the site.	<b>Class 9/10 (DALRRD)</b> <b>Capability Class 7, which is low/moderate.</b>  But the deciding criterion for land capability is climate and rainfall/water availability.
<b>GRAZING</b>	Due to low annual rainfall the area is not arable or suitable for grazing. Only game browse the site.	The estimated grazing capacity is 7-ha/ large livestock unit (LSU), but the high bush encroachment lowers it to 15-20 ha/LSU.

<sup>21</sup> Agricultural Assessment: Compliance Statement, Index Pty Ltd, Dr A Gouws, August 2023

<sup>22</sup> 2016 DALRRD National Spatial Land Capability Data, approach of Klingebiel and Montgomery (1961) adapted for South Africa.

<sup>23</sup> DALRRD does not support agriculture / crop cultivation on 'Hutton' soils due to its 'Low' capability.



<b>WATER</b>	No irrigation rights for the property, the site falls outside the Irrigation Scheme. Even if granted, irrigation from the Crocodile River will be too costly to make it economic.	Dryland farming is not feasible in this region.
<b>CROP YIELD<sup>24</sup></b>	Long term estimate yield for the region is around 2,8t/ha/year assuming land is arable with high potential.	The yield for the proposed site is too low to cover the production costs for commercial maize farming.
<b>LAND USE CAPABILITY<sup>25</sup></b>	According to the soil capability classification the soils have <b>moderate/high capability</b> .  According to Klingebiel et al, the <b>soil capability is Class V and lower</b> , mainly because of climate that is not conducive to rainfed cropping, regardless of soil properties.	Using the same criteria as AGIS, the farm is <b>Class 7 or poorer</b> and has a <b>low/moderate</b> sensitivity.

**In conclusion apart from the poor capability ratings, agricultural potential data infers the following for the Solar PV Facility:**

- There will be no loss of high potential agricultural land.
  - Any impact would be temporary and totally reversible since PV infrastructure does not alter the soil properties / land conditions, and once removed, will be suitable for farming.
- It will not alter the soil properties of the site.
- Loss of grazing land would be low. i.e.,
  - Only game animals browse the site.
  - There is severe bush encroachment that will require remedial action.
  - Most viable option is to establish the PV facility and replant the site with pastures when the site is rehabilitated.
- No loss of good production capacity. Mitigation can be achieved by replanting the site with pastures post the project end of life.
- There is no farming infrastructure on the portion to be developed.
- No fragmentation of farmland will take place as no subdivision is proposed.
- No land degradation is foreseen due to the flat slope of the site and no industrial activities will take place resulting in polluting activities.

## 7.6 GROUNDWATER

As mentioned in section 2.4.1 of the report, there are two existing boreholes on the farm that supply water to the two artificial dams and onsite farm residence. These just need to be repaired.

It is expected given the lithology of the site that it would be underlain by a weathered and fractured ‘Shale-Limestone-Mudstone Aquifer’. This water bearing formation usually comprise gravely sand, weathered shale and usually weathered and fractured limestone and mudstone. The water chemistry is thus expected to be hard to very hard with a high ‘Lime’ content. The ‘Lime’ content was also confirmed by the landowner. According to the DWS Aquifer Classification the project site is in an area classified as ‘Minor’ with moderately yielding aquifers (0.5 – 2.0 litres/second) with variable quality.

<sup>24</sup> Yield is another indicator of the potential viability of crop production and is calculated by means of the ACRU Maize Yield Model

<sup>25</sup> Land capability is the consideration of difficulties in land use owing to physical land characteristics, climate and the risks of land damage from erosion and other.



During the Site Sensitivity Verification, a suitably qualified specialist<sup>26</sup> was drawn in early in the process to visit the site to ensure that this sensitivity is correctly described and assessed. The findings of the visit have been summarised in a Terrestrial Biodiversity Site Sensitivity Verification Report<sup>27</sup> (see **Appendix E2**). Based on the SSV findings (**Table 7-7** and **Table 7-8**) the level of assessment was determined and due to the degradation of the site a Terrestrial Compliance Statement is proposed for the EIA process impact assessment phase.

Following is an abstract from the report which summarises the SSV findings and main terrestrial ecological attributes of the site to be considered during the impact assessment.

According to the 2018 Limpopo Critical Biodiversity Areas (Adopted 2019 Waterberg Bioregional Plan) the Project Area of Influence (PAOI) overlaps with 'other natural areas', an 'Ecological Support Area 1' and is adjacent to the nationally protected Tortoiseshell Private Nature Reserve (Portion 1 and 2 of Schilpaddop 432-KQ), which is also largely a CBA1 (Irreplaceable) area (see **Figure 7-8**).

The PAOI is located within two vegetation types, namely the Dwaalboom Thornveld (SVcb 1) and the Madikwe Dolomite Bushveld (SVcb 2). Only the SVcb 1 vegetation unit is the predominant vegetation type within the proposed project footprint area (See **Figure 7-10**). In line with the 2022 Red List of Threatened Ecosystems the vegetation type is least threatened, despite a third of the remaining vegetation being degraded (see **Figure 7-9**).

The main landscape features of the Dwaalboom Thornveld consist of plains with a layer of scattered, low to medium high deciduous microphyllous trees and shrubs. Furthermore, a few broad-leaved tree species and a relatively continuous herbaceous layer dominated by grasses.

Three (3) terrestrial habitat types were delineated within the site and based on the sensitivity criteria all habitats within the area were allocated a sensitivity category:

**Table 7-7: Summary of Terrestrial Habitat types of project site (full table can be viewed in Appendix E2, pages 15 – 16)**

Habitat type	Description	Ecosystem Process and Services	Biodiversity Importance (BI)	Site Ecological Importance (SEI)
<b>Degraded Thornveld</b>	<ul style="list-style-type: none"> <li>Low functional savannah habitat. Supports some key ecosystem services at provides habitat connectivity.</li> <li>This unit have been subject to extensive overgrazing and bush encroachment and led to 'desertification' in areas/loss of herbaceous layer.</li> <li>Low potential for SCC.</li> </ul>	Faunal foraging habitat. Erosion control, grazing, nutrient cycling. Nectar resource for pollinators.	<b>Medium</b>	<b>Low</b>

<sup>26</sup> The Biodiversity Company

<sup>27</sup> Proposed Zwartwitpensbokfontein 480MW Solar Photovoltaic Facility – Terrestrial Ecology Site Sensitivity VerificationReport, The Biodiversity Company, August 2023.

Habitat type	Description	Ecosystem Process and Services	Biodiversity Importance (BI)	Site Ecological Importance (SEI)
<b>Dolomite Bushveld</b>	<ul style="list-style-type: none"> <li>• <b>Semi-functional savannah ESA habitat.</b></li> <li>• Has diversity of trees, shrubs, numerous mature trees.</li> <li>• Bush encroachment and erosion is less severe than in Degraded Thornveld.</li> <li>• Has a more defined herbaceous layer.</li> <li>• Animal SCC may move through part of site.</li> </ul>	<p>Faunal foraging habitat incl. likely SCC.</p> <p>Erosion control, grazing, nutrient cycling.</p> <p>Nectar resource for pollinators.</p> <p>Movement corridor for all types of fauna.</p>	<b>Medium</b>	<b>Medium</b>
<b>Two artificial dams</b>	Small isolated depressions supplemented by artificial supply throughout the year.	Permanent and seasonal water source for regional fauna moving through the area.	<b>Medium</b>	<b>High</b>

**Table 7-8 Summary of the screening tool vs specialist assigned sensitivities.**

Screening Tool Theme	Screening Tool	Specialist	Tool Validated or Disputed by Specialist - Reasoning
<b>Terrestrial Theme</b>	Very high	Low - High	<b>Disputed</b> – Most of the area regarded as low sensitivity. Significant degradation was present and only limited functional ESA vegetation was recorded.
<b>Plant Theme</b>	Low	Low	<b>Validated</b> – No SCC were recorded and there is only a low potential for them to occur, numerous protected trees were recorded.
<b>Animal Theme</b>	Medium	Medium	<b>Validated</b> – Certain SCC species are likely to move through parts of the area regularly.

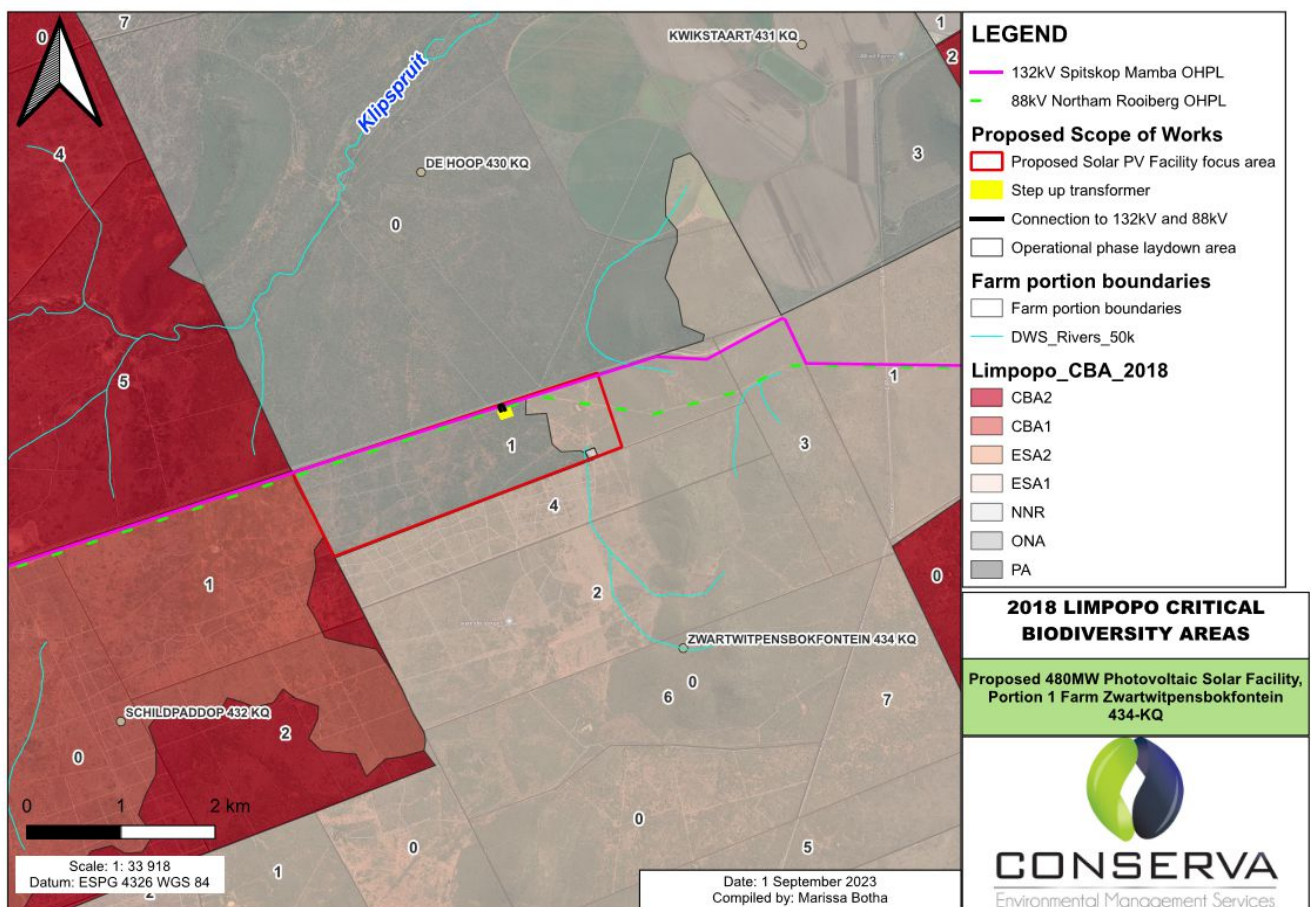
**The data infers the following for the proposed Solar PV Facility:**

- Most of the site is degraded therefore the impact of the solar facility on these areas would be low.
- The Dolomite Bushveld is in a largely functional state and provides limited function as an ESA. It serves as an important foraging corridor and potential nesting habitat for a range of fauna species (including SCC).
  - Removing this vegetation unit will result in the loss of semi-functional savannah ESA habitat (animal and plant) and faunal movement corridor.
  - Loss of diversity of tree species
- The Dams are likely to support these faunal species throughout the drier seasons.
- Loss of several protected trees recorded during the survey, of the species *Sclerocarya birrea* (Marula), *Combretum imberbe* (Leadwood), and *Boscia albitrunca* (Shepherd's tree) will take place with the clearing of ground cover to develop the facility.
- The development of the solar facility may also have negative edge effects (noise, erosion, the spreading of invasive flora and fauna, etc.) on the Tortoiseshell Private Nature Reserve.

The specialist proposes the following key management and mitigation measures:

- A 50-m high sensitivity buffer is to be imposed on the protected area – High sensitivity no-go zone.
- The development footprint should be amended to avoid the dams and Dolomite Bushveld to preserve the functional/important ecology – High and Medium sensitivity no-go zones.
- Due to the recording of protected trees, a site walkthrough and Search and Rescue must be conducted before development activities commence, to GIS tag all specimen occurring within the site area. It is noted that the application of permits will be required for any protected flora that need to be relocated or destroyed.

Refer to **Figure 7-11** for the map illustrating the Site Ecological Importance of the Site Area.



**Figure 7-8: The 2018 Limpopo Critical Biodiversity Areas**

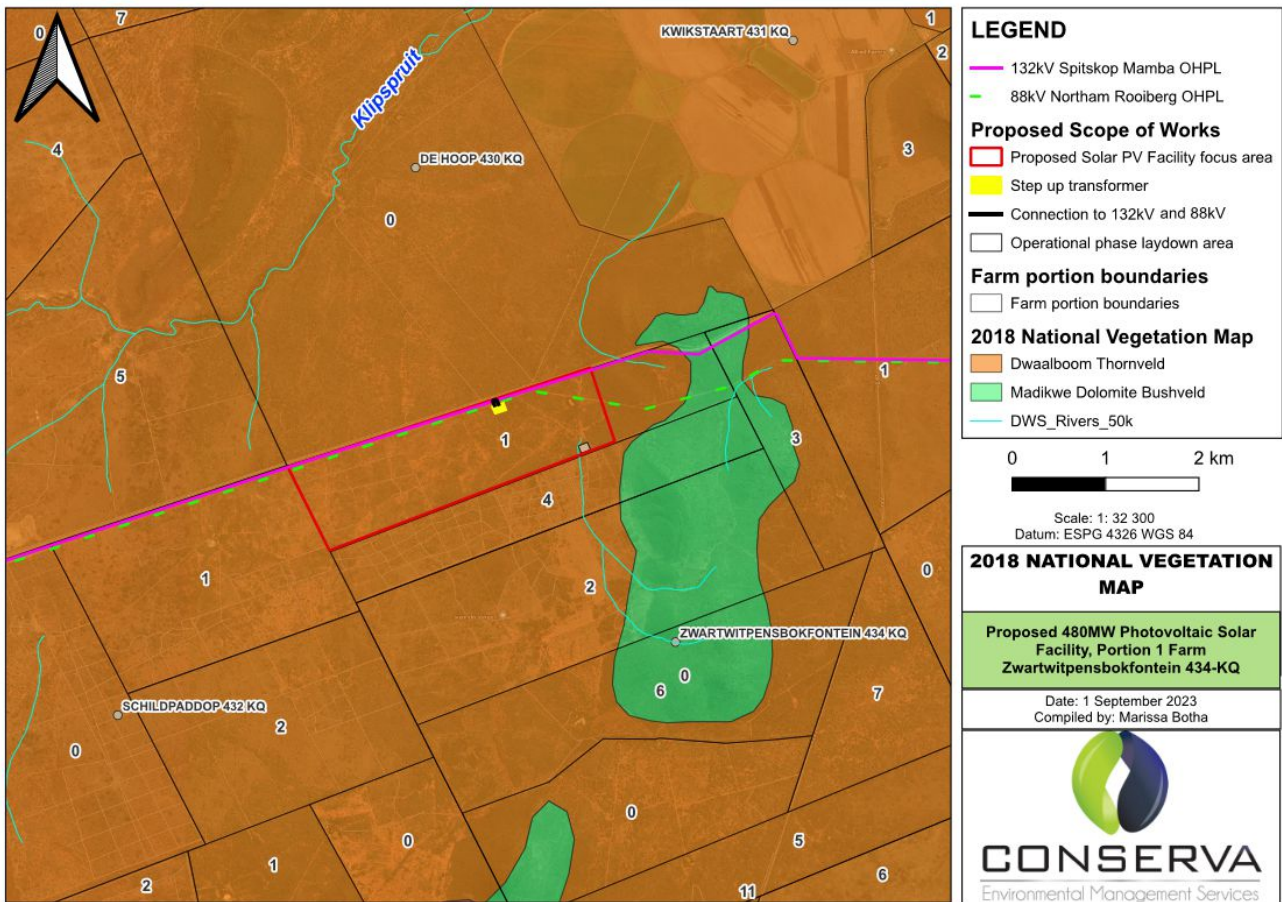


Figure 7-9: 2018 National Vegetation Map superimposed on the project site

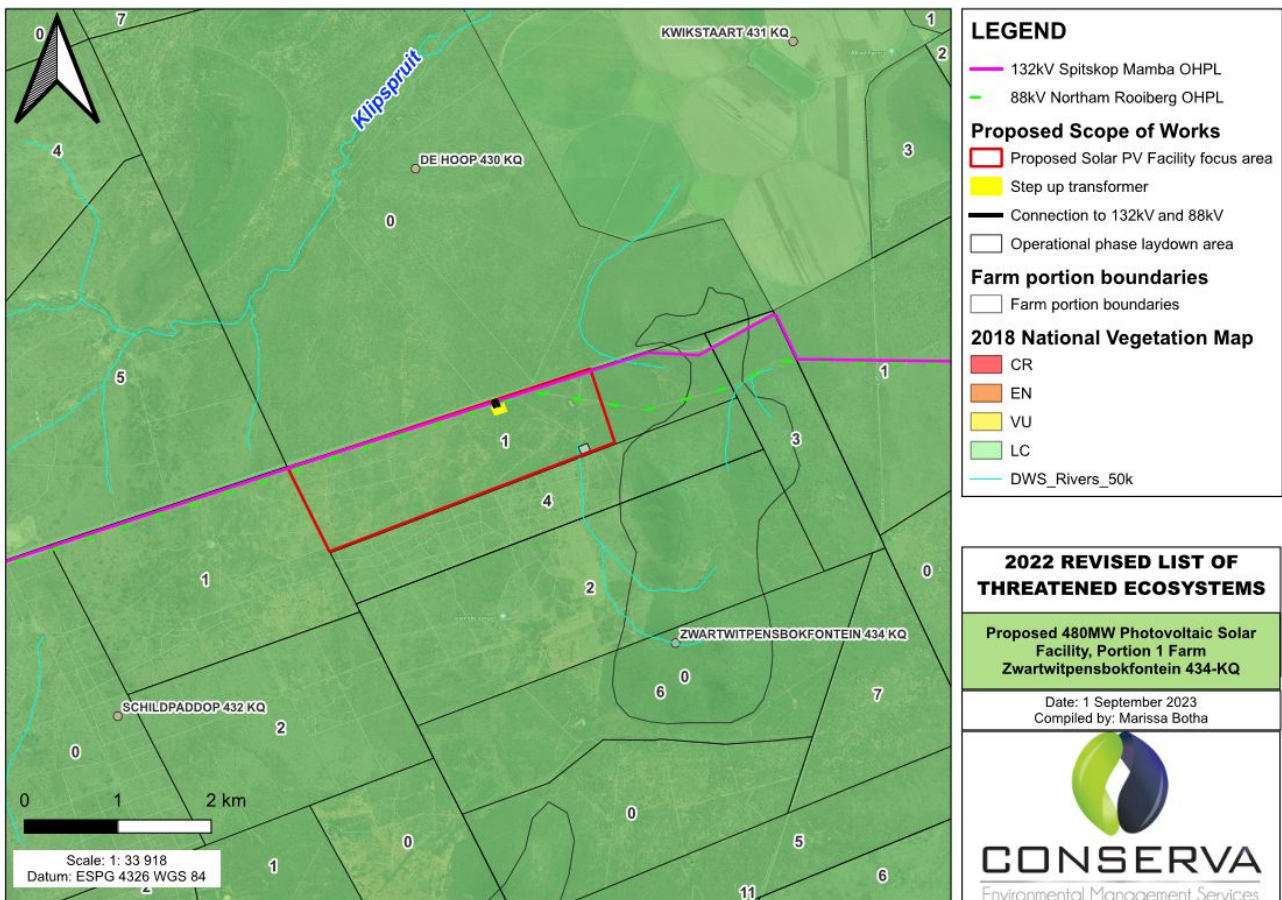
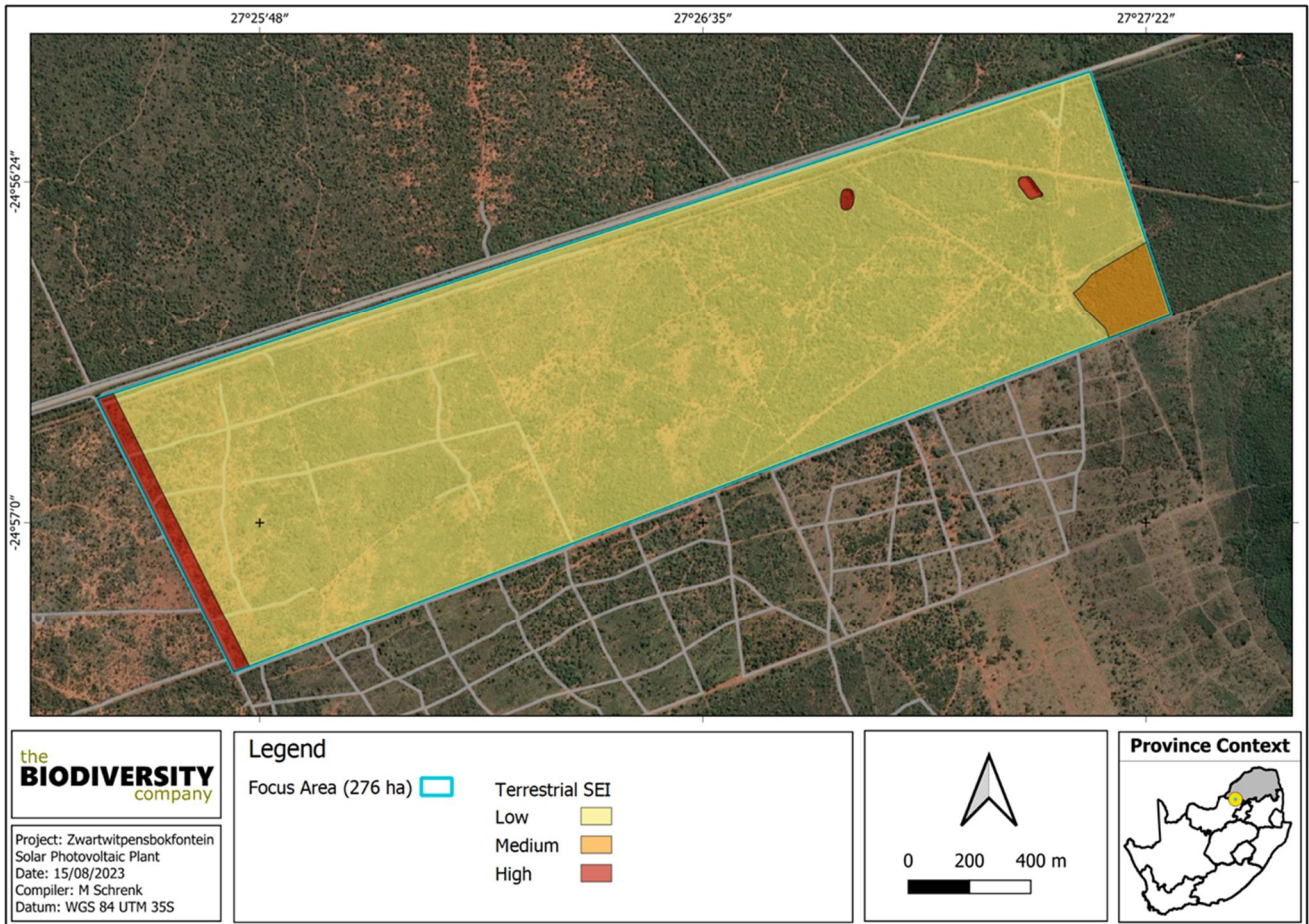


Figure 7-10: 2022 Revised List of Threatened Ecosystems (Threat Status layer) superimposed on the project site.



**Figure 7-11: Map illustrating the Site Ecological Importance of the Site Area.**

## 7.8 AVIFAUNA (BIRDS)

The site is currently undeveloped and does consist of several trees that could be foraging and breeding habitat for avifauna. The presence of any conservation important birds must be determined to assess the impact on the avifauna potentially occurring on site.

The proposed project most likely will have an impact on the avifauna assemblage and it is not expected that the birds will impact on the site. A specialist conducted an Avifauna Site Sensitivity Verification<sup>28</sup> (see **Appendix E3**) and finds that an Avifauna Impact Assessment (Regime 1) (Single season survey) must be conducted for the EIA process impact assessment phase. Following is an abstract of the findings that will be used in the impact assessment:

According to the 2015 Important Bird Area (IBA) Dataset the project site is located south adjacent to the Northern Turf Thornveld IBA. The DFFE STR rates the site to be of 'Moderate' Avifaunal sensitivity and indicate that Avifauna Species of Conservation Concern (SCC) possibly present include *Aquila rapax* (Tawny Eagle). (see **Figure 7-12**).

<sup>28</sup> Zwartwitpensbokfontein Solar Facility – Avifauna Site Sensitivity Verification, The Biodiversity Company, August 2023

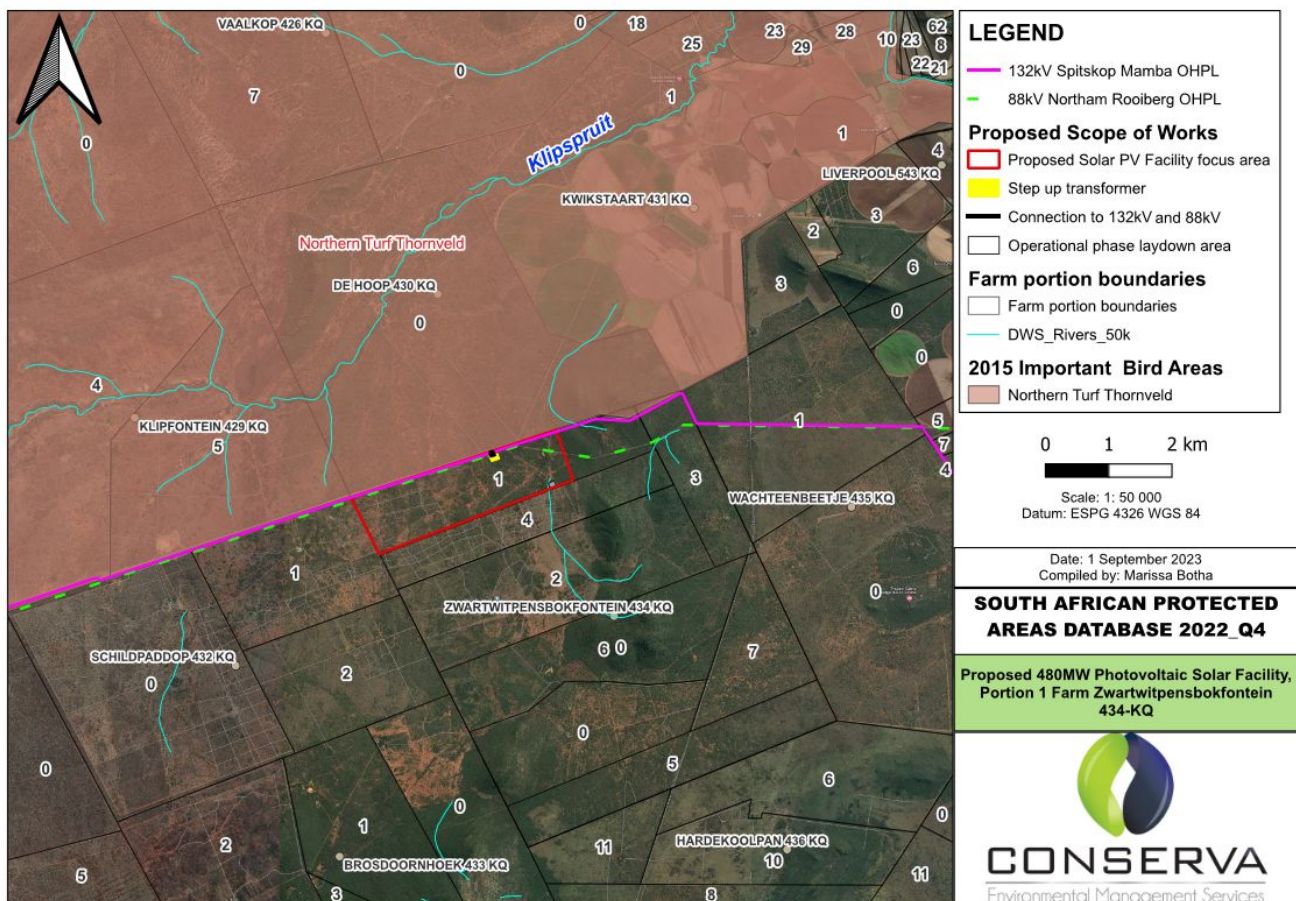


Figure 7-12: Important Bird Area Database superimposed on the project area

### Species of Conservation Concern (SCC)

SABAP2 data indicate that 317 avifauna species are expected for the PAOI and surrounding habitats. Ten (10) of these are considered SCC and include those listed in **Table 7-9**. Seventy-six (76) of the 317 expected species were observed during the single site visit.

**Table 7-9** *Threatened avifauna species that are expected to occur within the project area CR = Critically Endangered, EN = Endangered, LC = Least Concern, NT = Near Threatened and VU = Vulnerable*

Common Name	Scientific Name	Regional*	Global+
Lanner Falcon	<i>Falco biarmicus</i>	VU	LC
European Roller	<i>Coracias garrulus</i>	NT	LC
Secretarybird	<i>Sagittarius serpentarius</i>	VU	EN
Half-collared Kingfisher	<i>Alcedo semitorquata</i>	NT	LC
Abdim's Stork	<i>Ciconia abdimii</i>	NT	LC
Marabou Stork	<i>Leptoptilos crumenifer</i>	NT	LC
Cape Vulture	<i>Gyps coprotheres</i>	EN	VU
Lappet-faced Vulture	<i>Torgos tracheliotos</i>	EN	EN
White-backed Vulture	<i>Gyps africanus</i>	CR	CR
Yellow-throated Sandgrouse	<i>Pterocles gutturalis</i>	NT	LC

\*(Taylor *et al.* 2015), + (IUCN 2021)



### Site Ecological Importance (SEI)

Three different habitats were delineated and identified within the PAOI and were assigned Site Ecological Importance (SEI) categories based on their ecological integrity, conservation value, the presence of species of conservation concern. i.e.,

- Degraded Bushveld, Modified Habitat
- Water Resource (Dam)

The habitat types were delineated within the Project Area, namely Degraded Bushveld and Modified habitat. Their respective SEI are summarised in **Table 7-10**.

**Table 7-10: Avifauna habitat types and respective SEI's (for full table see Appendix 3 pages 14-15)**

Habitat type	Description	Functional Integrity	Biodiversity Importance (BI)	Site Ecological Importance (SEI)
<b>Water Resource (Dam)</b>	Water system <b>Possible SCC occurring:</b> <i>Alcedo semitorquata</i> , <i>Ciconia abdimii</i> , <i>Leptoptilos crumenifer</i> , <i>Pterocles gutturalis</i>	Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.	<b>Medium</b>	<b>Medium</b>
<b>Degraded Bushveld</b>	Bushveld system with some evidence of past agricultural activities. <b>Possible SCC occurring:</b> <i>Falco biarmicus</i> , <i>Coracias garrulus</i> , <i>Sagittarius serpentarius</i> , <i>Leptoptilos crumenifer</i> , <i>Gyps coprotheres</i> , <i>Gyps africanus</i> , <i>Pterocles gutturalis</i> .	Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches.	<b>Medium</b>	<b>Medium</b>
<b>Modified</b>	Homesteads and associated infrastructure including prominent roads, disturbed areas, and current grazing. <b>Possible SCC occurring:</b> <i>Falco biarmicus</i> , <i>Coracias garrulus</i>	Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy used road network surrounds the area.	<b>Medium</b>	<b>Low</b>

The specialist SSV findings compared to the DFFE STR are presented in **Table 7-11** below and is based on the SEI selection process and consideration given to observed / likely presence of SCC followed in Table 7-10.

**Table 7-11: Summary of the Screening Tool Sensitivity versus the Specialist assigned Site Ecological Importance (SEI) for the proposed Solar Power Plant (SPP) Project Area**

Screening Tool Theme	Screening Tool	Habitat	Specialist	Tool Validated or Disputed by Specialist - Reasoning
<b>Animal Theme</b>	Medium	Water Resources	Medium	Validated - Habitat has been altered with potential to support NT SCC.
		Degraded Bushveld	Medium	Validated - Habitat has been altered with potential to support CR, EN and VU SCC.
		Modified Habitat	Very low	Disputed - Habitat is generally intact, possesses Very High resilience to impacts and only two SCC expected to forage within this habitat

**The avifauna data infer the following for the proposed solar pv facility project:**

- Construction phase impacts:
  - Direct loss of habitat due to vegetation clearance and bush cutting
  - Displacement of avifaunal species due to vegetation clearance
  - Disturbance to avifauna due to operation of construction machinery (i.e., noise, dust)
  - Poaching due to human presence
  - Avifauna roadkill due to increased vehicle traffic.
  
- Operation phase impacts due to the presence of fences, chemical pollution due to cleaning of PV panels, power lines:
  - Habitat loss
  - Displacement of various avifauna species since PV sites are kept clear of vegetation to minimise the risk of fire.
  - Potential risk of bird collisions with panels due to:
    - Birds mistaking the panels for waterbodies i.e., lake effect.
    - Migrating or dispersing birds become disorientated by the polarised light reflected by the panels.
    - Most affected species may be passerine species. Larger species are said to be more influenced by the facilities when they were found foraging close by and were disturbed by predators which resulted in collisions.
  - Fencing of the PV site can influence birds in six ways i.e., snagging, snaring, impact injuries, snarling, barrier effect (limit flightless birds from resources)
  - Poisoning of avifauna due to chemical pollution from PV panel cleaning.

The following pertinent mitigation measures can be applied to minimise the impact:

- Indigenous vegetation would be maintained under solar panels to ensure biodiversity and prevent soil erosion; (to be overseen by the ECO)
- Avoid 'High' SEI's including appropriate buffer zones (refer to Figure 7-11).
- A Rehabilitation Plan would be implemented.
- Implement a Fire Management Plan to minimise risk of veld fires. A 15-meter Fire break is already imposed on the proposed facility boundaries.
- Solid Waste Management Plan
- Install insulators/conductor covers, brushing covers, arrester covers, cutout covers and jumper wire covers.
- Fencing – The top 2 strands must be smooth wire, routinely retention loose wires and allow a minimum of 30-cm between wires.
- Environmental awareness.

## 7.9 AQUATIC BIODIVERSITY

It is important to describe and consider the aquatic ecology and biodiversity to ensure that any sensitive features are excluded from the proposed footprint or is adequately protected. This would be of particular importance should there be any important wetlands or other water resources on site.

Apart from the potential impact of the project on the aquatic ecology, the solar PV plant cannot be constructed on wet soils and as these are associated with aquatic features, such need to be identified and delineated.

The National Web based Environmental Screening Tool has characterised the aquatic theme sensitivity of the project area as “Low”. A specialist was involved from early in the process to verify the DFFE screening tool ratings and surveyed the area. The survey confirmed the absence of natural wetland features within the development footprint and the findings are presented in the attached Aquatic Compliance Statement<sup>29</sup> (see **Appendix E4**) in line with the GNR 320 Protocols. Following is an abstract of the results:

The application property falls with the Lower Crocodile River Catchment in quaternary drainage region A24C within the Lower Crocodile West Water Management Area. The desktop analysis identified three non-perennial drainage features within the PAOI, of which only one of which partially falls within the ‘focus area’ of the project. These are well illustrated in the site maps provided in Figures 2-1, 2-2 and 7-1 earlier in report.

During the site survey **no wetlands were identified** only the following features:

- Three (3) artificial dam features assumed to be used as game watering holes.
  - Two dams were dry with no distinct inflow channels or overflow areas and none of the systems were vegetated with hydrophytes.
  - One dam feature contained water with a minor inflow channel present.
- The one (1) drainage feature (i.e., inflow channel) comprised a sandy eroded non-perennial flow path which drains surface runoff from the adjacent roads and surrounding land towards the dam basin.

Apart from this, other artificial features included old, bricked ponds used for the provisioning of water for livestock or game.

The DFFE STR aquatic biodiversity sensitivity theme is therefore validated as ‘Low’ due to the absence of natural water resources. **No impact assessment is necessary (or feasible) for the proposed project.**

As good practice it is recommended that general stormwater management with erosion control or flow dissipation techniques be implemented, where applicable, during the construction and operational phases of the development.

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<sup>29</sup> Freshwater Compliance Statement for the proposed Zwartwitpensbokfontein 480MW Solar Photovoltaic Facility, The Biodiversity Company, August 2023

## 7.10 LANDSCAPE AND VISUAL ASPECTS

According to the DFFE STR the site is classified to have a very high visual significance rating. The site is located next to the Tortoiseshell Nature Reserve and within 5km of Koerooi, De Kraal and Sharme PNRs. During the public registration period no objections were received but one of the abutting landowners on farm Schilpaddop enquired as to the potential visual intrusion on their property.

Therefore, a Level 3 Visual Impact Assessment<sup>30</sup> (see **Appendix E5**) was commissioned to verify the landscape and visual impacts and to analyse the visibility of the facilities to sensitive receptors. Following is an abstract from the report:

The project site has the following visual attributes:

- **Landscape character** - The study area consists primarily of agricultural land, undisturbed bushveld landscape and small human settlements.
- **Visual character** - The overall landscape varies between agricultural landscape, which is undulating to flat, to pristine bushveld landscape and few degraded, polluted landscapes around homesteads and towns. Large mines in the larger study area present a negative effect on the visual character of the landscape. The proposed study area has historically been used for agriculture.
- **Moderately High visual quality** since the project site is remote, away from large towns and developments and is situated in a pristine bushveld landscape.
- **Moderately High visual absorption capacity** due to the slightly undulating topography and agricultural landscape, and bushveld thornveld vegetation.

There are very few visual receptors, but due to the activity size and type it will have an impact on the visual character of the area and result in intrusion of the landscape.

The solar facility and grid connection will be seen as an additional development and will not blend in with the existing land uses and will only be partially absorbed into the landscape and topography, despite the landscapes moderate absorption/screening capacity.

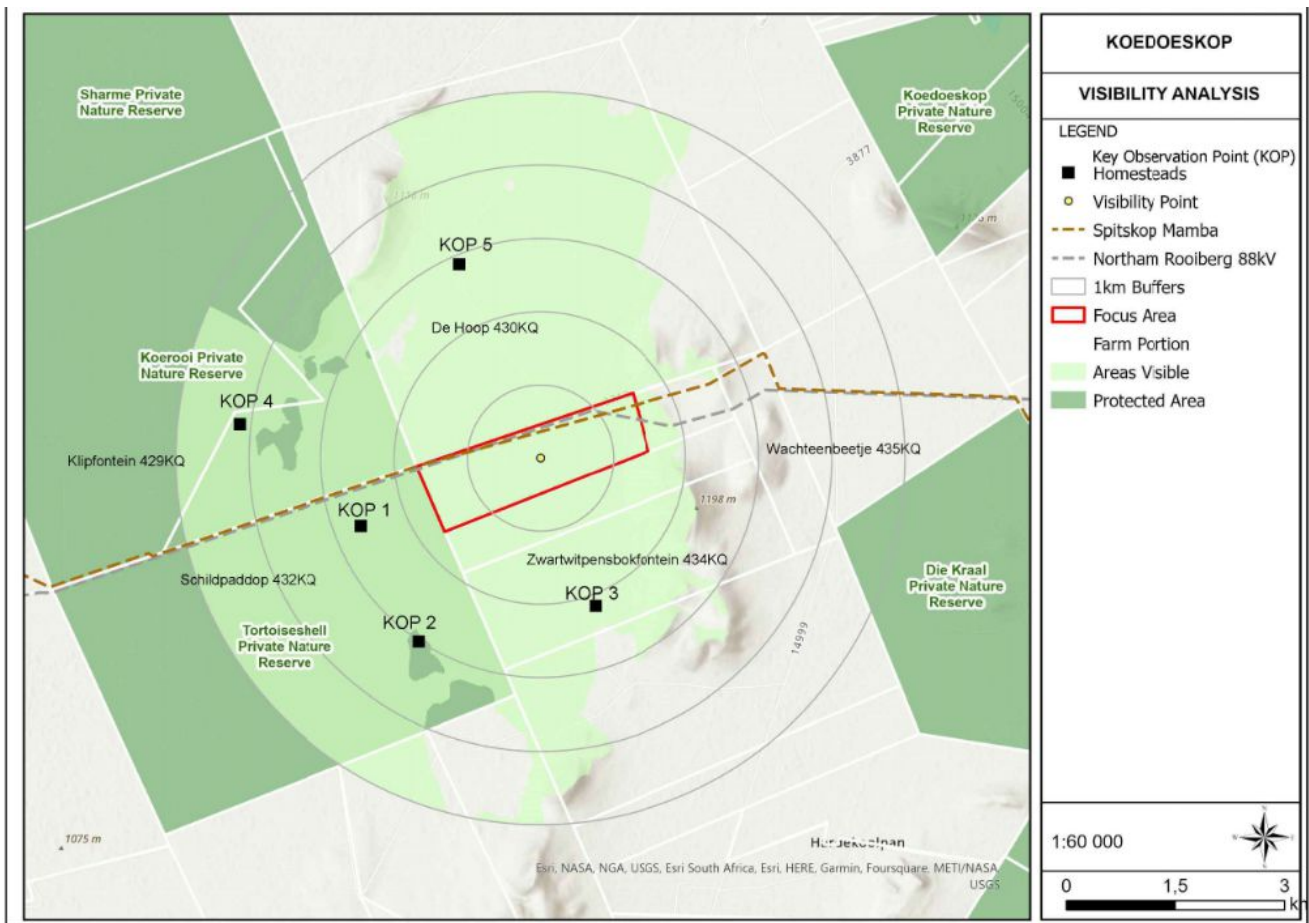
The identified visual receptors who may be affected include:

- **Residents of abutting property homesteads** i.e., 5 Key Observation Points (KOP's) on:
  - Schilpaddop 432-KQ (Portion 1, 2) referred to as KOP 1 and KOP 2.
  - Zwartwitpensbokfontein 434-KQ (Portion 4 and 2) referred to as KOP 3 and KOP 4.
  - Klipfontein 429-KQ (Portion 5) referred to as KOP 4
  - De Hoop 430-KQ referred to as KOP 5
- **Tourists and game farm visitors**
- **Motorist travelling along the R511, R 516 including secondary routes P20/2 and D1234**
- **Aircraft, pilots, passengers**

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<sup>30</sup> Landscape & Visual Impact Assessment, Outline Landscape Architects CC, August 2023

**Figure 7-13** reflects the results of the viewer sensitivity visibility assessment, carried out using GIS software. The results provide a clear interpretation of the extent of visual influence and provide an indication of the land use that can be expected in the affected areas.



**Figure 7-13 : Visibiliyt Analysis**

**The following can be inferred from the landscape and visual impact data:**

- **Impact on residents of homesteads (KOP 1 – 5)** - The facility will be visible from abutting property homesteads. These property owners would experience a degree of visual intrusion.
- **Impact on tourists and game farm visitors** – The study area has very little tourist activities and the site is not located next to a major to prominent tourist destinations. The number of visitors to the game farms, aside from residents, are expected to be low. The nature reserves are not operated as such and are technically private games farms.
- **Impact on road (motorists)**
  - The major routes to the study area are the R511 and R 516 connecting the towns and mines. Secondary routes include the P20/2 and D1234 in the study area carrying a much lower volume of traffic and are mostly gravel roads used by residents.
  - The views of motorists along these routes would only be temporarily interrupted and the visual intrusion that they will experience will be low.
- **Impact on air travel (aircraft, pilots, passengers) (see overleaf)**

- The glint and glare of solar panels could be a potential visual distraction and possible hazard to air travel.
- However, the proposed solar farm is not located near any airport / airfield.
- The significance of the potential visual impact will be low.

From the above it can be deduced that the residents on homesteads on the abutting properties (as per **Figure 7-13**) will be most affected by the construction and operation of the proposed solar farm and therefore inevitable. The advantage of the facility is that it generates energy from a renewable energy source that does not emit any harmful by-products/pollutants that may pose a health risk to users/observers.

The landscape has a moderate absorption/screening capacity that should lower the impacts on sensitive receptors. A 50-meter vegetation corridor between Schilpaddop 432-KQ and the solar farm is also proposed on the western periphery to use for screening.

If the recommended mitigation measures are undertaken it can be concluded that the visual significance will remain 'Low', and the impact can be reduced to acceptable levels.

## **7.11 AMBIENT AIR QUALITY**

The site is currently undeveloped with only a former farm residence and the only onsite source of potential air pollution would have been vehicle entrained dust from internal farm roads which are not currently being used.

The site is however located adjacent to the D1234-Northam/Koedoeskop Road which is a busier road used by all the surrounding land users to access their properties and by many other road users in the area. This road also links to more prominent provincial roads and towns in the greater area. Dust pollution is thus an existing and ongoing impact from the road on the proposed site and it could greatly impact the functionality and maintenance of the PV panels. This can however easily be mitigated by application of dust suppression binding liquids i.e., Dust-A-Side instead of constant water spraying.

Most of the impacts from the proposed project could be expected during the construction phase with the clearing of vegetation.

The additional dust that will be generated by the proposed construction and later operation of the project must also be considered considering the existing impacts on and from the D1234.

## **7.12 AMBIENT NOISE LEVELS**

The site is situated in a rural district and the ambient noise levels are typical of rural game farming area. As an undeveloped site with an existing former farm residence there are currently no noise sources from the proposed project site except for natural noises (i.e., birds chirping, wind etc) and vehicle noise from the abutting D1234 road.

It can be expected that with the influx of workers and vehicles and use of heavy vehicles and machinery during the construction phase a change in the ambient noise levels will occur.

The same visual sensitive receptors identified under section 7.10 (i.e., residents of homesteads on abutting properties) will be noise sensitive receptors potentially affected by the construction noise. This phase will however be of a short duration (18 – 24 months) and the nearest receptors is 1-km away. The impact is expected to be moderate to low.

There are other similar projects proposed in the greater area at least 5-km from the project site which will contribute to the increase in ambient noise levels during the construction phase. It will be considered as a cumulative noise impact. The impact of the expected sources would be assessed in the EIA process impact assessment phase.

## **7.13 TRAFFIC**

As discussed, the site is accessed from the D1234 Northam/Koedoeskop Road. The current use of the D1234 is responsible for a fair volume of traffic on the road to all the surrounding farms and other towns and roads. The 88kV Northam-Rooiberg and 132kV Spitskop-Mamba overhead power lines (OHPLs) cross the application property and has routine maintenance done which entails a traffic impact.

The construction, operation, and decommissioning of the solar pv facility will increase the traffic to the area along the national and regional road network and specific site (P20/2 and D1234) but is expected to be 'Low'.

The most traffic is expected during the construction phase and since AGE intends to develop the facility in 20MW phases, the impact should be low on the surrounding road network. The operational phase traffic should be negligible since it would be limited to operational staff and maintenance vehicles using the local road network. The decommissioning phase should have a similar impact as the construction phase.

### **Construction Phase**

AGE is affiliated with Allied Farms and Allied Power (Pty) currently developing the 10MW Liverpool Solar Park and hydro plant. In a briefing, AGE explained the logistics of bringing components and abnormal load components to Koedoeskop for its current development. It was explained that for the proposed solar pv facility 1000-Watt solar panels and components may be imported from China (newest technology available) entering at the Port of Durban and is transported via the N3, N1, N4 and R511 (or R516), 810km to Koedoeskop. From the R511 the goods are transported via the P20/2 and D1234 to the project site.

CEMS has studied typical expected traffic impacts from the construction phase of the solar pv facilities. From these typical impacts it can be deduced that an increase in vehicle trips along the following routes are expected during construction from:

- R511, P20/2, D1234
  - Light vehicles / bakkies for senior construction personnel

- Public transport bringing construction workers to site (perhaps also the combination of the Brits Road and D
- Yellow machinery/construction vehicles
- R511, R 516, N1, N4, N3
  - Normal heavy load vehicles bringing solar panels and components to site from the Port of Durban along any or a combination of these routes.
  - It is possible that some construction equipment (e.g. mobile crane) and the step-up transformer may require transportation via abnormal load vehicle/s.

### **Operational Phase**

- Increase in traffic from light vehicles i.e., staff vehicles and maintenance crew.

There may be a cumulative impact on traffic and along the D1234 due to the development of several proposed solar facilities 'Dwaalboom Solar PV' at/near the farm Einde 420-KQ 5-6km further west of the project site towards Northam Town. The possibility exists that the 'Dwaalboom Solar PV' construction traffic may use the R510 Rustenburg/Northam/Thabazimbi and D1235 to access their site whereas the AGE proposed solar pv facility will use the R511 and D1234 to access the site.

This impact will need to be assessed further during the impact assessment phase.

AGE will implement additional safety precautions to ensure road safety i.e.,

- Temporary construction road signage along the D1234
- Safe drop off and collection area at the construction site for daily commuters on public transport
- Permanent road signage along the D1234 for the operational phase
- The application property has an existing access from the D1234. It will however be necessary to determine if any access approval would be required from the local authority for the formalisation of the proposed facility access from the D1234.
- Abnormal load vehicle permits will be obtained from the relevant road's authority (SANRAL, RAL / Limpopo Dept. Public Works, Roads, and Transport)

## **7.14 HERITAGE AND CULTURAL RESOURCES**

According to the SAHRIS database there are no specific heritage resource sites recorded on the application property. The DFFE STR therefore gives it a low rating. Three gravesites were however recorded on the property as well as a small stone structure and cultural material on the eastern-most section of the PAOI near the existing farm residence. The proposed activities could pose a risk to these features and a Phase 1 Heritage Impact Assessment<sup>31</sup> (see **Appendix E6**) has been conducted to confirm the relevance and significance of these.

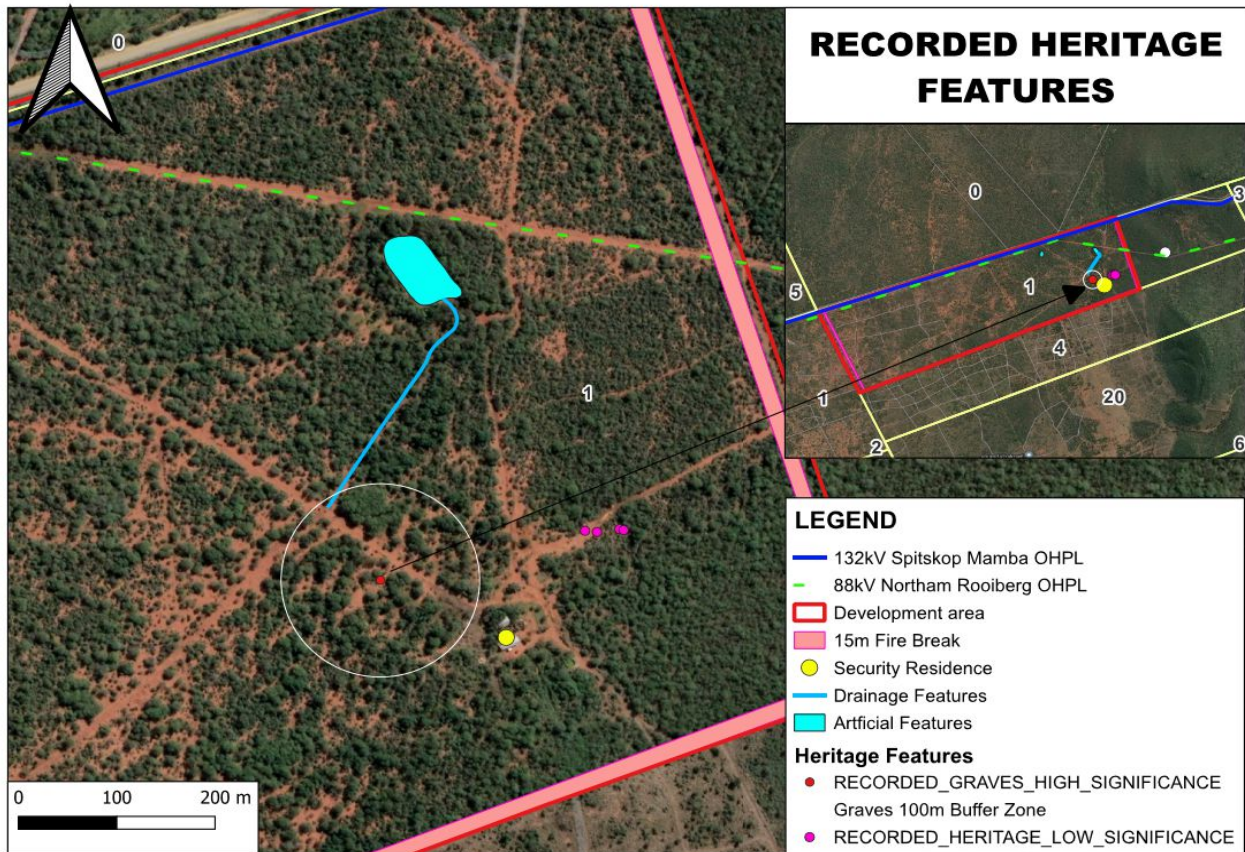
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<sup>31</sup> Phase 1 HIA Solar PhotoVoltaic Facility Koedoeskop, Ubique Heritage Consultants, August 2023



The specialist confirmed the three graves to be of high significance, but the small stone structures and cultural material are of low significance within no historical/cultural value. The specialist recommends for the graves to be protected. A 100-m heritage no-go buffer radius is to be upheld from the graves and must be excluded from the development footprint area (see **Figure 7-14**).

The report will be submitted to the SAHRA via the SAHRIS online application system. No other in-situ heritage resources of high significance are expected on the site but should any heritage or palaeontological features be found the necessary protocol will be followed.



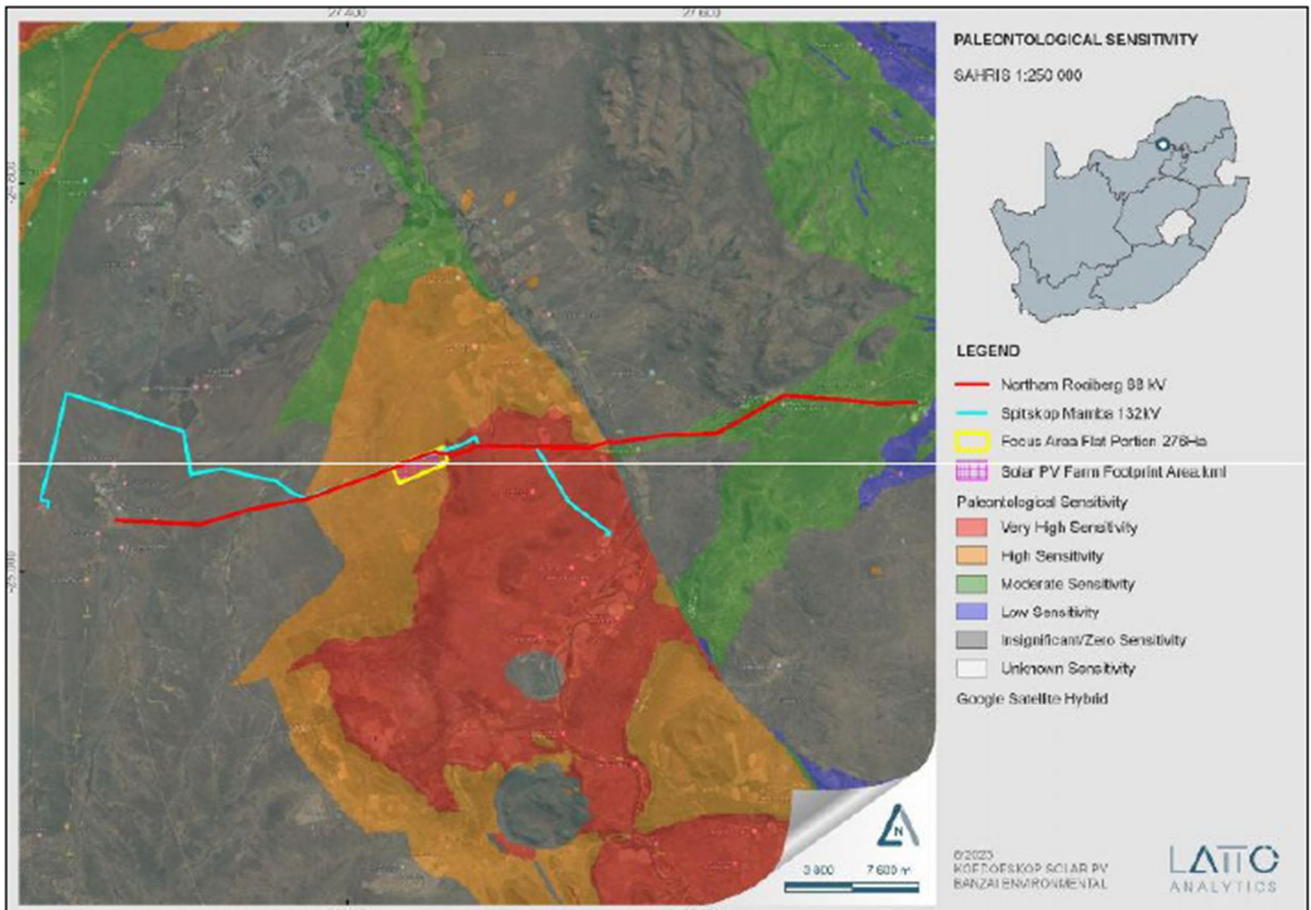
**Figure 7-14: Heritage features recorded in the development area.**

## 7.15 PALAEOLOGICAL (FOSSIL) RESOURCES

The DFFE STR rates the palaeontology of the project site to be of a high significance. The SAHRIS Palaeontological Sensitivity Map indicates that site is of 'High' Palaeontological sensitivity (**Figure 7-15**) due to the presence of the Timeball and RooiHoogte Formations. Stromalites are known to be present in these formations.

A palaeontological field survey and study<sup>32</sup> (see **Appendix E7**) was commenced to confirm if fossil material could possibly be present and to evaluate the potential impact of the proposed project on such features. The specialist confirmed that no fossiliferous outcrop was detected within the development footprint area. The apparent rarity of fossil heritage in the development footprint suggests 'Low' palaeontological sensitivity. No impacts are foreseen, but protocols for finds will be observed during the project phases.

<sup>32</sup> Palaeontological Impact Assessment, Banzai Environmental, August 2023



**Figure 7-15: PalaeoSensitivity Map superimposed on the application property (source: Palaeontological Impact Study, Banzai Environmental)**

## 7.16 SOCIAL AND ECONOMIC CONTEXT

### 7.16.1 REGIONAL SCALE

The project site is in Ward 4 (Koedoeskop) of Thabazimbi Local Municipality in the Waterberg District Municipality of the Limpopo Province. The economic centre and head office for the local municipality is in Thabazimbi Town with a satellite office in Northam Town.

The municipal area has a population of 104 781 people<sup>33</sup>, residing in 5 urban towns, 5 rural area, 3 mining towns and 9 informal settlements comprising a total of 38 175 households<sup>34</sup>. The population growth rate from 2016 to 2020 was 15%.

The 2020 data shows that the Municipality has a relatively young population with majority of the population aged between 10-59 years old. The gender is split almost in half with 60.6% males and 39.4% females.

<sup>33</sup> Stats SA, 2021 projection for TLM (Source Thabazimbi Local Municipality, 2022 SDF)

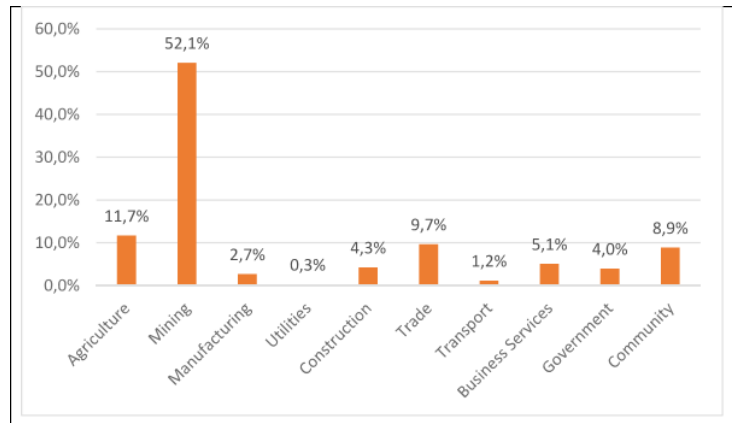
<sup>34</sup> independent Data, 2020 (Source Thabazimbi Local Municipality, 2022 SDF)

## Economic Profile

According to the 2020 data<sup>35</sup>, the TLM economy is driven by mining (89.3%). The agricultural sector contributes 1.3%. Tourism has been on the increase over the years and is a promising sector (i.e., game farms, hunting, lodges, natural resource, and environmental conservation tourism).

## Level of employment

Based on the statistics from 2011 to 2020, mining is the predominant economic activity and employer in the Municipality, followed by agriculture and tertiary activities (trade, tourism, professional services). In terms of the Community Survey, 2016, 22% of the population of Thabazimbi Local Municipality live in poverty. From the same survey, 31.3% of people receive grants and subsidies.



**Figure 7-16: Employment level in TLM, 2020 (2022 TLM SDF)**

## Education level

According to the 2020 data under 25% of the population completing secondary school, and 7% completing higher education.

## Nearest town to project site

The project site 17km east of Northam Town. Northam is the second largest town in the municipal area with a well-established business sector and caters for residents of the Northam town, as well as for the wider farming and mining areas.

## 7.16.2 LOCAL SCALE

The proposed site is in a farming area (game and cattle) and used for game farming until recently. It is located 6km northwest of the Koedoeskop agricultural area used for commercial irrigation farming. Agriculture is the main driver in this local area.

Mamba Cement (factory and mine) is located approximately 10km southeast from the site. The Eskom 132kV Spitskop-Mamba power line crossing the application property is a dedicated power line from Northam substation to Mamba Cement.

The commercial irrigation farming, game farms and the cement mine and factory drive the local economy. The game farms establish the nature conservation ambiance of the region with several private nature reserves.

The applicant is part of the agricultural sector through its affiliation with Allied Farms a commercial farming enterprise producing maize, wheat, and soybean beside the Crocodile River. There are several farm workers working and staying in this area<sup>36</sup>.

<sup>35</sup> Demacon, TLM 2022 SDF

<sup>36</sup> TLM 2022 SDF

Allied Farms and the surrounding commercial farmers are dependent on electricity for irrigation from Eskom. Allied Farms draw up to 5MW / day from the national grid. The national energy crisis and the continued implementation of loadshedding has a major negative economic impact on the agricultural sector as they cannot irrigate their crops as required. Allied Power, also an affiliate of AGE and Allied Farms, is busy developing a 10MW Liverpool Solar Plant to partially supply for Allied Farms daytime electricity requirements. At night it still draws from the Eskom grid.

However, since 2014, when Allied Farms applied for the Liverpool Solar Park, the national energy crisis has worsened. AGE will develop this further solar pv facility to ensure a consistent power supply to Allied Farms and surrounding commercial farmers and alleviate the pressure on the national grid. The surplus (66%) electricity will be sold to Eskom.

There is also an increase in solar energy facility proposals in the regional area and all along the 132kV Spitskop-Mamba power line driven by the national, regional, and local economy's urgent need for additional renewable energy supply.

### **7.16.3 POTENTIAL / ENVISAGED SOCIAL AND ECONOMIC IMPACTS**

The development of the renewable energy facility is in line with the priorities of broadening the national energy mix and need for renewable energy. The rapid expansion of the energy generation capacity of SA is a key priority to SA government to recover the economy.

This proposal will in general have a positive social and economic impact for the local, regional, and national economies. The solar farm also does not emit any harmful by-products or pollutants that pose a health risk to abutting landowners. It is therefore not expected to impact people's health or well-being. Developing the project will ensure food security, job security for the agricultural sector (i.e., workers, farm managers, production managers etc). It will also create several direct and indirect job opportunities throughout the construction (short term) and operation phases (long-term).

But to realise these positive socio-economic benefits the game farms along the D1234 will see a gradual change in the sense of place to industrial. The current socio-economic and political conditions in South Africa are such that people living in isolated areas such as farms are extremely vulnerable to crime and violence.<sup>37</sup>

There are severally typically known socio economic impacts related to the construction and decommissioning phase of any development including more specific impacts related to the type of development during the operational phase. These include the following for the proposed solar pv facility:

- **Construction Phase impacts:**
  - Positive impacts:
    - Potential to generate an income for Koedoeskop, Northam and Thabazimbi through the purchasing of goods and services (i.e., accommodation at guest houses, fuel, supplies etc).

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<sup>37</sup> Equispectives Research & Consulting Services, 2018 (Dr Ilse Aucamp) – Transnet Railway Yard Social Impact Assessment conducted in a similar game farm setting.

- The construction of the project will require anything from 400 construction works (i.e., specialist engineers, manager, skilled and unskilled labour) which will result in direct and indirect job opportunities for the period of 24 months.
  - Negative impacts:
    - The prospect of development in the region and job opportunities will result in the influx of construction workers to the area.
    - The presence of construction material, solar components, increased people movement may pose a safety and security risk both for the project (theft) and abutting game farm owners.
    - There is also a risk that there may be an increase in poaching. All the farms adjacent to the proposed solar pv facility are game farms. Poaching can be done through snares in the fences, or people cutting the fences and entering the properties.
    - The sense of place for the abutting game farms may be affected through the change in land use and nuisance impacts (noise, traffic, security lights, presence of construction work force).
    - There is also the potential risk of veld fires spreading from the construction works area (in the event of fire on the premises) to abutting land.
    - The overall impact is of moderate significance given the remoteness of the project area and the few game farm homesteads present.
- **Operational Phase impacts:**
  - Positive impacts:
    - Consistent electricity supply to the agricultural sector once the solar pv facility is operational will result in food security and job security for the Koedoeskop agricultural sector.
    - Approximately 30 job opportunities will become available in the market once the facility is operational. The facility will be self-sufficient but will require a facility manager, electricity technician and perhaps also an Electrical Engineer to operate and maintain the facility.
  - Negative impacts:
    - The presence of solar components in the local area will continue to pose a safety and security risk for both the project (theft) and abutting farms and may introduce opportunities criminals to the area.
    - Despite the facility not including a Battery Energy Storage System (BESS) there is still a risk for fire to spread into the abutting farms.
- **Decommissioning Phase impacts:**
  - Positive impact:
    - The e-waste recycling facilities will receive old plant components which would be recycle and made to money.
  - Negative impact:
    - When the facility is decommissioned the 30 operational phase job opportunities and associated income will be lost.

## 7.17 OTHER RELEVANT SOCIAL FEATURES

Other social aspects include civil aviation and the military defence theme under the DFFE STR.

The DFFE STR states that the application property is within 8km of another civil aviation aerodrome. There is a landing strip on the Farm Liverpool 543-KQ 5.5 km northeast of the proposed application property. This is a rural landing strip owned and operated by Allied Green Energy's director. There is also a solar park next to the landing strip. The next landing strip is located 15km from site at Northam (Mawala Lodge Landing strip) on farm De Put 412-KQ. The Thabazimbi Landing field is located 40km north of the site in Thabazimbi Town.

A Solar Obstacle Application will be lodged with the Air Traffic and Navigation Services (ATNS) Obstacle Evaluator. The ATNS will conduct an assessment on the risk of the development to civil aviation. The outcome will be included in the final Scoping Report and EIR.

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## 8 ENVIRONMENTAL SENSITIVITY MAP

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The preliminary environmental sensitivity map is provided in **Figure 8-1**.

The environmental sensitivity map defines the sensitive environmental features highlighted by the independent specialist site sensitivity verifications and impact reports. These environmental sensitivities need to be avoided in the final placement of the facility footprint within the identified development area.

A geotechnical investigation is underway to delineate the boundary of the non-dolomitic land to inform the final siting of the facility footprint within the development area. The refined footprint will therefore be presented in the EIR.

Majority of the development area is of 'Low' sensitivity and there are no natural water resource features. But the following environmental sensitivities have been highlighted by specialists and CEMS to be either excluded from or incorporated into the facility layout:

- **High significance terrestrial no-go zones:**
  - The two dams (indicated in red shading) must be excluded from the solar array footprint area.
  - A 50-meter vegetation buffer will be upheld between the solar facility footprint and the adjacent Tortoiseshell Private Nature Reserve along the western periphery of the development area.
- **Medium significance terrestrial no-go zone:**
  - The specialist requires the Dolomite Bushveld vegetation patch (indicated in orange shading) to be excluded from the facility footprint area and any of its associated infrastructure as this is still a functional ESA.
  - The three recorded graves must be protected, and a 100-m buffer must be upheld to these in the facility layout and excluded from the footprint.
- **15-meter fire break** is to be implemented on the western, southern, and eastern periphery between the abutting farms and the solar facility to minimise the potential risk of veld fires spreading to abutting land and any veld fires from abutting land to spread to the facility.

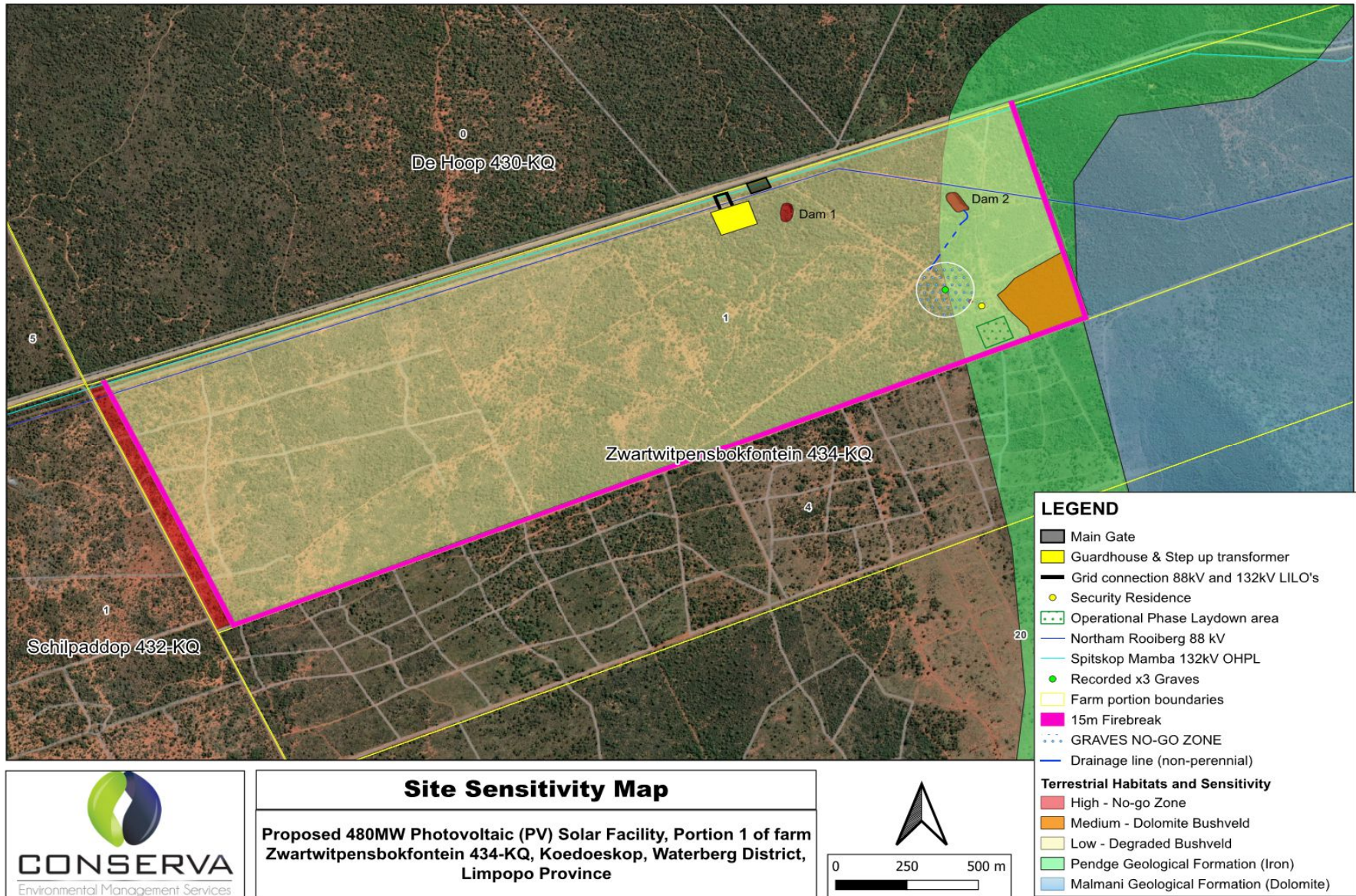


Figure 8-1: Site Sensitivity Map superimposed on application property.

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## 9 PRELIMINARY ENVIRONMENTAL IMPACT DETERMINATION AND EVALUATION

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The Scoping Report lists the potential impacts for the proposed solar pv facility identified as follows:

- Informed by typically known impacts for such an activity.
- As identified by I&APs during the public registration and comment period
- As identified by the specialists based on their site sensitivity verifications and any full specialist impact assessment reports already available.

The list of impacts detailed in **Table 9-1** are the potential impacts anticipated to take place throughout the project phases (i.e., construction, operation, decommissioning) based on the information gathered during the Scoping Phase. There are some gaps in knowledge regarding the preliminary evaluation (i.e., Terrestrial Ecology, Avifauna). The mitigation measures provided for these impacts are pertinent measures.

The list of impacts is currently subject to a 30-day consultative process to identify or record any additional impacts not previously anticipated/known/highlighted by stakeholders/abutting landowners. The list guides the EAP in determining which impacts are the most significant how it can be best managed.



## 9.1 PRELIMINARY POTENTIAL IMPACTS RELATED TO THE 480MW SOLAR PV PROJECT

Table 9-1: Preliminary potential impacts related to the 480MW Solar PV project.

NO	PROJECT ACTIVITY	POTENTIAL IMPACT	INFORMED BY	SIGNIFICANCE WITHOUT MITIGATION							SIGNIFICANCE WITH MITIGATION (REVERSABILITY)	MITIGATION MEASURES	
				Status	Probability	Extent	Duration	Intensity	Significance Score	Rating	Rating		
<b>1 GEOLOGY</b>													
<b>CONSTRUCTION, OPERATIONAL PHASES</b>													
1	Development of Solar PV facility on Dolomitic land (Malmani Formation) and operation of waterpipes that may leak	Risk of sinkhole or dissolution of dolomite	Engineering Geologist	(-)	2	1	3	3	14	Moderate	Very Low (2)	<ul style="list-style-type: none"> <li>A Geotechnical Investigation is underway to conservatively delineate the boundary of the non-dolomitic land. The recommendations from the investigation will be used to refine the placement of the facility footprint on the development area.</li> <li>The proposed Solar PV footprint will be limited to non-dolomitic land.</li> </ul>	
<b>2 TOPOGRAPHY</b>													
<b>CONSTRUCTION, OPERATIONAL PHASES</b>													
No major earthworks or cut and fill required that would physically change the landscape of the site.											2		
<b>3 SOIL AND AGRICULTURAL POTENTIAL</b>													
<b>CONSTRUCTION, OPERATION, DECOMMISSIONING PHASES</b>													
3.1	Clearing of vegetation, stripping of topsoil, development of Solar PVs and associated infrastructure, operation of facility and subsequent decommissioning	Loss of high potential agricultural land	Specialist	NO IMPACT							No loss of high potential agricultural land. No mitigation applicable.		
3.2		Loss of grazing land	Specialist	(-)	2	1	5	0	12	Low	Low (6)	<ul style="list-style-type: none"> <li>Reclaim land. <ul style="list-style-type: none"> <li>But its costly</li> </ul> </li> <li>Most viable option is to establish the Solar PV Facility.</li> <li>Replant site with pastures when the site is reclaimed.</li> </ul>	
3.3		Loss of food security and farming income	Specialist	(-)	1	1	5	1	7	Low	Low (5)		
3.4		Loss of agricultural infrastructure	Specialist	NO IMPACT. There is no farm infrastructure on the portion to be developed.									
3.5		Fragmentation of farmland	Specialist	NO IMPACT. Farmland will remain a unit.									
3.6		Clearing of vegetation, runoff from hardened surfaces	Land degradation (loss of soil due to erosion)	Specialist	NO IMPACT. The land portion is on even slopes where no industrial activities will take place. No additional impact is foreseen from polluting activities.								
<b>4 TERRESTRIAL BIODIVERSITY</b>													
<b>CONSTRUCTION, OPERATION AND DECOMMISSIONING PHASE</b>													
4.1	Vegetation clearance, site establishment, excavations, development of components	Destruction and loss of approximately 255 ha of indigenous vegetation of 'Low' SEI	Ecologist	(-)	3	1	4	1	18	Moderate	Low (12)	<ul style="list-style-type: none"> <li>Restrict Solar PV facility 'Low' SEI indigenous vegetation.</li> <li>Exclude the two dams from the solar array footprint area (Figure 8-1).</li> <li>Uphold a 50 m vegetation buffer between the facility footprint and adjacent Tortoiseshell Private Nature Reserve.</li> <li>Exclude Dolomite Bushveld (medium significance terrestrial no-go zone) from facility footprint.</li> </ul>	
4.2		Loss of protected tree species (i.e., Leadwood, Marula, Shepards Tree)		(-)	3	1	5	2	24	Moderate	Moderate (18)		
4.3		Loss of faunal habitat and disturbance to fauna		(-)	3	1	4	1	18	Moderate	Low (10)		
4.5		Edge effects on Tortoiseshell Private Nature Reserve		(-)	3	1	2	4	21	Moderate	Low (5)		



6.4	Construction camp, laydown area and development of associated infrastructure	Visual impact on air and road travel	Specialist	(-)	1	2	2	1	5	Low	Low (5)
	Construction of solar PV arrays and on-site grid connection			(-)	1	2	2	2	6	Low	Low (5)
<b>OPERATIONAL PHASE</b>											
6.5	Surface disturbance from construction activities may remain for extended period	Impact on visual quality of landscape	Specialist	(-)	3	2	4	2	24	Moderate	Low (12)
	Presence of associated infrastructure			(-)	3	2	4	3	27	High	Moderate (24)
6.6	Glint and glare from Solar PV arrays (panels)	Visual intrusion and spoiling of the landscape views of residents on homesteads (abutting property owners)	Specialist	(-)	3	2	4	3	27	High	Moderate (24)
6.7	Presence of Solar PV farm			(-)	3	2	4	3	27	High	Moderate (24)
	Grid connection			(-)	2	1	4	2	14	Moderate	Low (12)
	Associated infrastructure and permanent laydown area			(-)	1	1	4	1	6	Low	Low (5)
6.8	Presence of Solar PV farm	Potential visual impact on tourists and game farm visitors	Specialist	(-)	3	1	4	3	24	Moderate	Moderate (14)
	Grid connection and associated infrastructure			(-)	2	1	4	2	14	Moderate	Low (6)
	Associated infrastructure and permanent laydown area			(-)	1	1	4	1	6	Low	Low (5)
6.9	Presence of Solar PV Farm	Potential visual impact on air and road (D1234) travel	Specialist	(-)	3	1	4	2	21	Moderate	Low (12)
<b>DECOMMISSIONING PHASE</b>											
6.10	Solar PV Facility	Improvement of visual aesthetics due to removal of infrastructure and rehabilitation of affected	Specialist	(+)	3	2	5	3	30	High	n/a
<b>7 IMPACT ON HERITAGE AND PALAEOLOGICAL RESOURCES</b>											
7.1		Potential impact on stone structure foundation and isolated metal heritage resources	Archaeologist	Neutral	1	1	5	1	7	Low	n/a
7.2	Vegetation clearance, site establishment, excavations	Potential impact on three fenced graves (high significance features)	Archaeologist	(-)	3	1	5	3	27	High	Low (7)

- Where new access roads are required, the disturbance area should be kept to a minimum. A two-track dirt road will be the most preferred option.
- Locate access routes to limit modification to the topography and to avoid the removal of established vegetation.
- If it is necessary to clear vegetation for a road, avoid doing so in a continuous straight line. Alternatively, curve the road to reduce the visible extent of the cleared corridor.

#### CLEARED SERVITUDES

- Avoid a continuous linear path of cleared vegetation that would strongly contrast with the surrounding landscape character. Feather the edges of the cleared corridor to avoid a clearly defined line through the landscape.

#### CONSTRUCTION CAMPS AND LAY DOWN YARDS

- If practically possible, locate construction camps in areas that are already disturbed or where it isn't necessary to remove established vegetation like for example naturally bare areas.
- Utilise existing screening features such as dense vegetation stands or topographical features to place the construction camps and lay-down yards out of the view of sensitivity visual receptors.
- Keep the construction sites and camps neat, clean and organised in order to portray a tidy appearance.



9 TRAFFIC IMPACTS												
CONSTRUCTION PHASE												
9.1	Construction vehicles, bakkies, machinery movement on local and regional road network including public transport bringing construction workers to site.	Increase in traffic along R511, P20/2 and D1234 (perhaps also D1235)	Typical	(-)	1	3	2	2	7	Low	n/a	<ul style="list-style-type: none"> <li>Temporary construction road signage along the D1234</li> <li>Safe drop off and collection area at the construction site for daily commuters on public transport</li> <li>The application property has an existing access from the D1234. It will however be necessary to determine if any access approval would be required from the local authority for the formalisation of the proposed facility access from the D1234.</li> <li>Abnormal load vehicle permits will be obtained from the relevant road's authority (SANRAL, RAL / Limpopo Dept. Public Works, Roads, and Transport).</li> </ul>
9.2	Normal heavy load vehicles brining solar panels and components to site including once off abnormal loads	Multiple trips to collect solar panels and components from Durban Port along the R511 or R 516, N1, N4 and N3.	Typical	(-)	1	4	2	2	8	Low	n/a	
OPERATIONAL PHASE												
9.3	Staff vehicles and maintenance crew travelling to the facility daily	Increased traffic along D1234, P20/2 and R511 and R510 (to Thabazimbi	Typical	(-)	1	3	4	1	8	Low	n/a	<ul style="list-style-type: none"> <li>Permanent road signage along the D1234 regarding the facility access for the operational phase.</li> </ul>
10 GROUNDWATER												
10.1	Contamination of soil surfaces due to spills, leaks of fuel and hydrocarbons.	Impact on groundwater quality	Known	(-)	2	2	4	2	16	Moderate	Low (10)	<ul style="list-style-type: none"> <li>Leaking equipment and vehicles must be repaired immediately or taken off-site to facilitate repair.</li> <li>Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment not in use.</li> <li>Avoid any servicing of vehicles onsite.</li> <li>The contractor shall be in possession of an emergency spill kit that must always be complete and available onsite.</li> <li>Clean small oil or fuel spills with an approved absorbent material (e.g., Sawdust, "Drizit" or "Spill-sorb")</li> <li>Immediately clean any accidental oil or fuel spillages or leakages.</li> <li>Carefully control all on-site operations that involve the use of cement and concrete.</li> <li>Contain any diesel storage tanks/machinery spills (e.g., accidental spills of hydrocarbons, oils, and diesel) in such a way as to prevent it from leaking into the environment.</li> </ul>
10.2	Abstraction of groundwater for construction and operational phases	Impact on groundwater quantity/lowering of groundwater table	Known	(-)	1	1	4	1	6	Low	Low (6)	<ul style="list-style-type: none"> <li>Monitor groundwater usage (abstraction) by installing a flowmeter. Adhere to the borehole's safe yield.</li> <li>Where possible reuse and recycle water during the construction and operational phases.</li> <li>Collect rainwater from roofs, however possible since this would be optimal for cleaning of solar panels.</li> <li>Boreholes must be correctly yield tested according to the National Standard (SANS 10299-4:2003, Part 4 – Test pumping of water boreholes). This includes a Step Test, Constant Discharge Test and recovery monitoring</li> </ul>
10.3	Use of septic tanks during the operation of the facility and use of solar panel cleaning agents.	Impact on groundwater quality, but low volumes to be disposed to onsite disposal facilities	Known	(-)	1	1	4	2	7	Low	Low (6)	<ul style="list-style-type: none"> <li>Use environmentally safe cleaning agents that breakdown naturally and do not cause adverse effects (if any to be used).</li> </ul>





## 9.2 METHODOLOGY USED IN IDENTIFYING AND RANKING THE IMPACTS

As mentioned in section 9.2, the impacts were informed by typically known impacts for the activity, I&APs/stakeholder concerns raised during the public registration period and identified by specialists site sensitivity verifications and impact studies where available.

The methodology used in ranking the impacts and assigning a significance is presented in the Plan of Study under Section 10, subsection 10.1.5.

## 9.3 POTENTIAL CUMULATIVE IMPACTS

With reference to section 7.1.2, there are seven (7) similar solar projects i.e., either approved or being applied for within a 30-km radius of the proposed project.

The positive social impact from the combined projects include:

- Increased job opportunities over an extended period in the regional area
- Availability of an additional 1.6 GW of renewable energy supply to a combination of private users, mines, commercial farm and the national grid.

The negative impact from the combined projects include:

- Impact on land use (game hunting, farming, grazing)
- Impact on landscape connectivity<sup>38</sup>
- Potential fragmentation/disruption of habitats and ecosystems
- Visual intrusion and change in landscape characteristics.
- Loss of vegetation
- Increased traffic
- Loss of plant SCC in particular protected tree species i.e., Leadwood, Marula, Sherpards Tree
- Loss of faunal and avifaunal habitat

The project and other solar projects generally have a positive climate change and socio-economic impact, and it is possible through proper planning and design, to reduce the negative impacts.

For the purposes of the EIA Study CEMS will investigate the most significant potential cumulative impacts in the EIR namely:

- Impact on Soil and Agricultural Potential
- Terrestrial Biodiversity (i.e., impact on landscape connectivity, fragmentation/disruption of habitat/ecosystems, loss of vegetation)
- Avifauna
- Visual

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<sup>38</sup> Renewable energy and its impact on landscape connectivity ....  
<https://conservationcorridor.org/digests/2022/03/renewable-energy-and-its-impact-on-landscape-connectivity/>.



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## 10 PLAN OF STUDY FOR EIA

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Appendix 2 (1)(i) of the EIA Regulations require a plan of study (PoS) for the EIA process (i.e., Impact Assessment Phase) to be included in the Scoping Report.

The primary aim of the EIA Scoping Phase is thus to determine the level of assessment requirement during the Impact Assessment Phase. This phase entails the undertaking various specialist studies used to develop and inform the EIR. The EIR findings are used to inform and develop an auditable project EMPR which recommends how to plan, construct, and operate the proposed project in compliance with several sets of environmental regulations/legislation.

Implementation of the EMPr during the phases of the solar pv facility will ensure that AGE comply with the environmental legislation and undertake the project in an environmentally and socially responsible manner.

### 10.1 DESCRIPTION OF THE ASPECTS TO BE CONSIDERED IN THE EIA

The EAP must undertake to assess the aspects affected by proposed solar pv facility.

#### 10.1.1 PROJECT COMPONENTS AND LAYOUT

AGE will be required to specify the 'preliminary' final main components for the project and provide a concept layout plan which considers the specialist identified environmental site sensitivities presented in section 8. The project components to be assessed will include the solar pv facility and grid connection (i.e., onsite substation, step-up transformer and 88/132kV LILO OHPL).

CEMS and the team of independent specialist will conduct the impact assessment based on these confirmed main components and AGE concept layout plan. It is possible that further environmental sensitivity or design recommendations are made by the specialists. AGE will then refine the placement of the final facility footprint based on these final specialist recommendations.

#### 10.1.2 DESCRIPTION OF THE ALTERNATIVES TO BE ASSESSED

With reference to section 10.1.1 above, the following alternatives will be considered during the EIA phase:

- **Design and layout alternatives** i.e., final placement of the facility footprint within the development area based on the geotechnical findings and delineated environmental sensitivities.
- **No-go option** i.e., if the project is not executed.

### 10.1.3 DESCRIPTION OF THE ENVIRONMENTAL ASPECTS TO BE ASSESSED

Several of the environmental aspects have already been assessed in full in this Scoping Report for which either specialist compliance statements or full impact reports have been included under Appendix E. These would not be duplicated in the EIA Phase, but information reused and pulled into the EIR.

**Table 10-1** provides a summary of the aspects assessed / to be assessed, who would assess it, the level of study proposed including the justification. Table 10-2 under section 10.1.4 provides the terms of reference of such specialist studies.

**Table 10-1: Summary of environmental aspects to be assessed.**

No	Aspect	Who will assess the aspect: CEMS / Specialist	Status	Study type and level	Justification
1	<b>Geology</b>	Rocksoil Consult (Pty) Ltd Engineering Geologist	<b>Underway for EIA Phase</b>	<ul style="list-style-type: none"> <li>• <b>Basic Shallow Geotechnical Investigation</b></li> <li>• 20 Test Pits have positioned throughout the development area with several pits focussed on the eastern section of the site to delineate a conservative development boundary restricted to confirmed non-dolomitic land.</li> </ul>	<ul style="list-style-type: none"> <li>• Majority of solar facility applications leave this study for the design stage after the environmental authorisation is issued.</li> <li>• But this application property is underlain by both Dolomitic and non-Dolomitic Land.</li> <li>• The aim is to limit the facility to non-dolomitic land to avoid any costly drilling requirements from the Council of Geoscience as this would have a significant financial implication for the project.</li> <li>• DFFE has requested in the pre-application to confirm that the facility will be limited to non-dolomitic land. By way of the study CEMS will be able to confirm this.</li> </ul>
2	<b>Soil and Agricultural Potential</b>	Index (Pty) Ltd Agricultural Scientist, Dr Andries Gouws	<b>Complete</b> Included in Scoping Report	<ul style="list-style-type: none"> <li>• <b>Agricultural Compliance Statement</b></li> </ul>	<ul style="list-style-type: none"> <li>• The project site was found to be of 'Low' agricultural potential.</li> <li>• GNR 320 Protocols therefore require a compliance statement.</li> <li>• The Agricultural Compliance Statement will support the application for specialist consent use to DALRRD in terms of the SALA and the rezoning application (if necessary) to Thabazimbi Local Municipality.</li> </ul>

3	<b>Groundwater</b>	CEMS	<b>In EIA Phase</b>	<ul style="list-style-type: none"> <li>No specialist study.</li> <li>CEMS will request AGE to confirm depth and yield of existing boreholes and available certificates.</li> </ul>	<ul style="list-style-type: none"> <li>The groundwater requirements for the solar facility are anticipated to be low and the risk to groundwater for the two small septic tanks negligible due to very low anticipated disposal volumes.</li> <li>It is envisaged that DWS may permit such through a general authorisation.</li> <li>The DWS NWA requirement for placement of disposal facilities relative to boreholes will be recommended in the EMPR.</li> </ul>
4	<b>Terrestrial Biodiversity</b>	The Biodiversity Company Ecological Specialist	<b>EIA Phase</b> A SSV report included in Scoping Report	<ul style="list-style-type: none"> <li><b>Terrestrial Compliance Statement</b></li> </ul>	<ul style="list-style-type: none"> <li>Most of the project site was found to be of 'Low' sensitivity.</li> <li>The specialist also recommends for the exclusion of any high and medium sensitivity terrestrial features. Thus, the facility footprint would be limited to 'Low' sensitivity areas.</li> <li>GNR 320 and GNR 1150 Protocols therefore require a Terrestrial Compliance Statement.</li> </ul>
5	<b>Avifauna</b>	The Biodiversity Company	<b>EIA Phase</b> SSV report included in Scoping Report	<ul style="list-style-type: none"> <li><b>Avifauna Impact Assessment Report (Regime 1) (Single season survey)</b></li> </ul>	<ul style="list-style-type: none"> <li>The site ecological importance for avifauna is moderate and there is a possibility of SCC to occur in the identified habitats.</li> <li>The identified habitats have been altered/ modified and existing power line infrastructure is present.</li> <li>The terrestrial high and medium significance areas are already being excluded from the layout footprint.</li> </ul>
6	<b>Aquatic Biodiversity</b>	The Biodiversity Company	<b>Complete</b> Included in Scoping Report	<ul style="list-style-type: none"> <li><b>Aquatic Biodiversity Compliance Statement</b></li> </ul>	<ul style="list-style-type: none"> <li>The specialist confirmed there is no natural water resources on site. No impact assessment is necessary for the project.</li> <li>The sensitivity theme is confirmed to be 'Low'.</li> <li>GNR 320 Protocols require an Aquatic Compliance Statement if the sensitivity is confirmed to be low.</li> </ul>

7	<b>Landscape and Visual</b>	Outline Landscape Architects CC	<b>Complete</b> Included in Scoping Report	<ul style="list-style-type: none"> <li>• <b>Level 3 Visual Impact Assessment</b></li> </ul>	<ul style="list-style-type: none"> <li>• In terms of the “<i>Guideline for involving visual &amp; aesthetic specialists in EIA processes: Edition 1</i>”, prepared for the Provincial Government of the Western Cape, Department of Environmental Affairs &amp; Development Planning the proposed Solar Farm and associated infrastructure is a Category 5 development, and a Level 3 assessment is recommended.</li> <li>• The DFFE STR rated the landscape sensitivity as ‘Very’ High’ the specialist confirmed the sensitivity to be ‘Moderate to High’. Accordingly, a full impact assessment was conducted, particular completed for the Scoping Phase since this was a concern from an abutting landowner which the EAP could not respond to without the study outcomes.</li> </ul>
8	<b>Air Quality</b>	CEMS	<b>In EIA Phase</b>	<ul style="list-style-type: none"> <li>• No specialist study recommended</li> </ul>	<ul style="list-style-type: none"> <li>• This is a renewable energy project; no air emissions will emanate from it.</li> <li>• Dust will however be generated from construction activities; the receptors are remote from the site and the impact can be easily quantified by the EAP and mitigated easily.</li> </ul>
9	<b>Noise</b>	CEMS	<b>In EIA Phase</b>	<ul style="list-style-type: none"> <li>• No specialist study recommended</li> </ul>	<ul style="list-style-type: none"> <li>• This is a renewable energy project (solar pv), not a noise generating activity.</li> <li>• Noise will be limited to general typical construction noise and no significant noise is expected from the operational phase.</li> <li>• Noise receptors are remote from the site.</li> </ul>
10	<b>Traffic</b>	CEMS	<b>In EIA Phase</b>	<ul style="list-style-type: none"> <li>• Currently no specialist study is proposed</li> </ul>	<ul style="list-style-type: none"> <li>• The national, regional, and local network to be used is considered adequate for the transportation of goods and project components to site i.e., N3, N1, N4, R511 or R516, P20/2 and D1234.</li> <li>• AGE also proposes to develop the solar pv facility in 20MW phases keeping the construction activities and need for high volumes of traffic lower.</li> </ul>

					<ul style="list-style-type: none"> <li>• AGE's director is also involved in the development of the Liverpool Solar Park and have been able to bring goods and construction crew to site along these specific routes.</li> <li>• Necessary permits for movement of abnormal freight will be obtained from the relevant authorities prior to shipment to site and adequate construction signage will be placed along the D1234 and P20/2.</li> <li>• In terms of the cumulative impact, it is envisaged that the nearest other solar proposal will make use of the R510 and Brits Road (D1235) not the route proposed by for this proposal.</li> </ul>
11	<b>Heritage, Cultural Resources</b>	Ubique Heritage Consultants CC	<b>Complete</b> Included in Scoping Report	<ul style="list-style-type: none"> <li>• <b>Phase 1 Heritage Impact Assessment</b></li> </ul>	<ul style="list-style-type: none"> <li>• The development extent exceeds 0.5 hectares.</li> <li>• Three graves were recorded onsite and other low significance features.</li> <li>• A Phase 1 Heritage Impact Assessment was commissioned in line with Section 38(3) of the NHRA. The outcomes will be submitted to the SAHRA for approval.</li> </ul>
12	<b>Palaeontological Resources</b>	Ubique Heritage Consultants CC and Banzai Environmental	<b>Complete</b> Included in Scoping Report	<ul style="list-style-type: none"> <li>• <b>Field Survey and Palaeontological Impact Assessment</b></li> </ul>	<ul style="list-style-type: none"> <li>• The SAHRIS Palaeontological Sensitivity Map indicated the area to be of 'High' Palaeontological sensitivity.</li> <li>• Timeball and RooiHoogte Formations are present on site. Stromalites are known to be present in these formations.</li> <li>• The specialist found no fossiliferous outcrop onsite. And suggests the site to be of 'Low' palaeontological sensitivity.</li> <li>• This report will be submitted to SAHRA together with the Phase 1 HIA.</li> </ul>
13	<b>Social and Economic</b>	CEMS	<b>In EIA phase</b>	<ul style="list-style-type: none"> <li>• No specialist study proposed.</li> </ul>	<ul style="list-style-type: none"> <li>• The project will generally have a positive socio-economic impact.</li> <li>• The negative socio-economic impacts from solar pv plants generally take place during the construction phase and decommissioning (job losses) and are well known by now.</li> </ul>

					<ul style="list-style-type: none"> <li>The typically expected impacts from the construction phase have been identified and are included under section 7.16 of this report.</li> <li>No objections have been lodged by any of the abutting landowners.</li> <li>Any stakeholder and or abutting landowner comments received on the Scoping Report will be addressed as part of the EIA Phase.</li> <li>CEMS will recommend good practice guidelines for the construction and operational phase socio economic impacts for inclusion in the EMPR.</li> </ul>
14	Civil Aviation	CEMS	In Final Scoping Report and EIA Phase	<ul style="list-style-type: none"> <li>Civil Aviation Compliance Statement</li> </ul>	<ul style="list-style-type: none"> <li>DFFE STR rates the civil aviation theme as 'moderate'.</li> <li>A Solar Obstacle Application will be lodged with the Air Traffic and Navigation Services (ATNS) Obstacle Evaluator (Graham Mondzinger) at obstacles@atns.co.za or contacted at 062-002-1621.</li> <li>The ATNS will conduct an assessment on the risk of the development to civil aviation. The outcome will be included in the final Scoping Report and EIR.</li> </ul>
15	Defence	CEMS	In Final Scoping Report and EIA Phase	<ul style="list-style-type: none"> <li>No study required</li> </ul>	<ul style="list-style-type: none"> <li>There are no SANFD military bases near the application property.</li> <li>The site sensitivity verification confirms the site to be of low sensitivity and according to the GNR 320 Protocols no further assessment is required.</li> <li>CEMS will consult the SANDF National and Provincial stakeholders to solicit further inputs.</li> </ul>

#### 10.1.4 TERMS OF REFERENCE FOR SPECIALIST STUDIES

Table 10-2 provides a summary of the terms of reference that were used to complete the specialist studies included in the scoping report, and still to be completed for inclusion in the EIR.

**Table 10-2: Summary of Specialists Studies Terms of Reference**

No	Aspect	Specialist	Status	Terms of Reference
1	<b>Basic Shallow Geotechnical Investigation</b>	Rocksoil Consult (Pty) Ltd Engineering Geologist	<b>EIA Phase</b>	<p>The specialist is appointed to conduct a basic shallow soil assessment and basic index testing with the objective to:</p> <ul style="list-style-type: none"> <li>• Identify any potential hazards that may affect the development.</li> <li>• Define the shallow ground conditions, soil profile and groundwater occurrences (TLB Test pit excavations) <ul style="list-style-type: none"> <li>○ Test pits are excavated down to 2.5 to 3 mbgl for visual inspection, sampling, and logging.</li> </ul> </li> <li>• Provide geotechnical evaluation addressing at least the following: <ul style="list-style-type: none"> <li>○ Geotechnical hazards / constraints associated with solar pv facilities.</li> <li>○ Shallow soil excavatability and installation of cables</li> <li>○ Expected material suitability for re-use in different applications.</li> </ul> </li> <li>• Road construction</li> <li>• Pipe bedding and backfilling where and if required.</li> <li>• Earth mattresses/structures and if required.</li> <li>• Groundwater control</li> <li>• Erosion and drainage</li> <li>• Anticipated construction conditions and difficulties</li> <li>• Establish the development area suitable for the proposed solar facility from a geotechnical perspective.</li> </ul> <p>20 Test Pits have positioned throughout the development area with several pits focussed on the eastern section of the site to delineate a conservative development boundary restricted to confirmed non-dolomitic land.</p> <p>The investigation methodology includes:</p> <ol style="list-style-type: none"> <li>a) Desk study of available information and maps.</li> <li>b) Test pitting with a TLB (No. 20 Test Pits Spaced across the site).</li> <li>c) Soil profile logging (SANS633, 2012) (Jennings, Brink, &amp; Williams, 1973).</li> </ol>

				<p>d) Selective material sampling (refer to laboratory test budget).</p> <p>e) Selective material testing at soil testing laboratories (refer to laboratory test budget. Physical and chemical testing).</p> <p>f) Evaluation of the data.</p> <p>g) technical reporting.</p>
2	<b>Agricultural Compliance Statement</b>	Index (Pty) Ltd Agricultural Scientist, Dr Andries Gouws	<b>Completed</b>	<p>Appointment was for an Agricultural Compliance Statement to support the specialist consent use application to DALRRD and application for environmental authorisation to DFFE.</p> <p>The compliance statement had to be undertaken following the Protocols for assessment and minimum criteria published under GNR 320 and GNR 1150 of NEMA.</p> <p>The ToR included:</p> <ul style="list-style-type: none"> <li>• Determine the agricultural potential of the project development/footprint area.</li> <li>• Determine the impacts of the project from an agricultural perspective.</li> <li>• Suggest suitable mitigation measures to address the identified impacts.</li> </ul>
3	<b>Terrestrial Biodiversity SSV and upcoming Compliance Statement</b>	The Biodiversity Company (TBC) Ecological Specialist	<b>EIA Phase</b>	<p><b>For the SSV TBC was requested to do the following:</b></p> <ul style="list-style-type: none"> <li>• Site inspection and thorough survey to confirm the site sensitivity against the DFFE STR.</li> <li>• Compile a SSV Report in line with GNR 320 and GNR 1150. In the SSV Report confirm the following: <ul style="list-style-type: none"> <li>○ Development area, type and components assessed.</li> <li>○ Conduct desktop analysis of relevant available spatial datasets.</li> <li>○ Details site inspection findings.</li> <li>○ If a compliance statement of full assessment is required including level of assessment</li> <li>○ Provide justification for findings and if any fatal flaws.</li> <li>○ Provide preliminary findings in shape/google kml files for overlay onto the proposed development area i.e., important habitats, high sensitivity areas, no go areas etc.</li> </ul> </li> </ul> <p>The TBC has recommended that the footprint avoid 'High sensitivity no-go zones, medium sensitivity Dolomite Bushveld and 50m-vegetation buffer between the site and private nature reserve. The development must thus only be developed on the 'Low' sensitivity areas. Accordingly, the specialist recommended a <b>'Terrestrial Compliance Statement. i.e.,</b></p>



				<ul style="list-style-type: none"> <li>• Statement on duration, date and season of site visit including relevance of season to the outcome of the study.</li> <li>• Confirm the description of vegetation units present and condition.</li> <li>• Confirm the Biodiversity, Conservation and Ecological Importance of the available vegetation units.</li> <li>• List the protected trees present onsite and density (National Forest Act and LEMA).</li> <li>• Impact assessment of consequences of project to site terrestrial biodiversity, and consideration of the cumulative impacts and their significance to terrestrial biodiversity within the 30-km radius to the site.</li> <li>• Proposed impact management actions and outcomes or monitoring requirements for inclusion in the EMPR.</li> <li>• Any assumptions or gaps in data</li> <li>• The mean density of observations/number of sampling sites/unit area.</li> <li>• Statement conditions.</li> </ul>
4	<b>Avifauna SSV and upcoming Impact Assessment</b>	The Biodiversity Company	<b>EIA Phase</b>	<p><b>For the SSV TBC was requested to do the following:</b></p> <ul style="list-style-type: none"> <li>• Site inspection and thorough survey to confirm the site sensitivity against the DFFE STR.</li> <li>• Compile a SSV Report in line with GNR 320 and GNR 1150. In the SSV Report confirm the following: <ul style="list-style-type: none"> <li>○ Development area, type and components assessed.</li> <li>○ Conduct desktop analysis of relevant available spatial datasets for the landscape and available habitat.</li> <li>○ Details site inspection findings i.e., available habitat, SEI and potential for SCC as per STR.</li> <li>○ Provide a map showing the preliminary findings in shape/google kml files for overlay onto the proposed development area i.e., important avifaunal habitats, sensitivity areas, no go areas etc.</li> <li>○ If a compliance statement of full assessment is required including level of assessment</li> <li>○ Provide justification for findings and if any fatal flaws.</li> </ul> </li> </ul> <p>The TBC has confirmed that the avifauna sensitivity is 'moderate' and 'very low'. Accordingly, an <b>Avifauna Impact Assessment (Regime 1 – single season survey)</b> will be conducted. Regime 1 comprises one site visit over a minimum 1-5 days.</p> <p>Choosing the type of regime to be followed is based on the size of the property and technology type. See below criteria from the Birdlife Africa, Best Practice Guideline for Birds, and Solar Energy.</p>

Type of technology <sup>1</sup>	Size <sup>2</sup>	Avifaunal Sensitivity <sup>3</sup>		
		Low	Medium	High
All except CSP power tower	Small (<30 ha)	Regime 1	Regime 1	Regime 2
	Medium (30-150 ha)	Regime 1	Regime 2	Regime 2
	Large (>150 ha)	Regime 2 <sup>4</sup>	Regime 2	Regime 3
CSP power tower	All	Regime 3		

The criteria require a Regime 2 for development areas >150 ha on low and medium sensitivity areas with the exception that Regime 1 may be applied to some large sites, but only in instances where there is abundant existing data to support the assessment of low sensitivity.

But CEMS is of the submission that given the urgency of renewable energy projects, spanning the assessment over two seasons (i.e., summer and winter) would be time consuming and delay the approval process. A winter survey was done and Koedoeskop has to date (October 2023) not received substantial rains and would only be expected towards November – December 2023 for TBC to do a summer season survey. There are already existing power lines on the property and the solar pv layout will exclude the two artificial dams on the property and ESA.

The Regime 1 assessment ToR includes i.e.,

- Provide the status of the bird habitats and identification of all ecologically sensitive areas
- Identify any SCC and their locations (preferred habitats)
- Identify conservation worthy areas and how development can avoid these.
- Identify the potential impacts and mitigation measures for the proposed solar pv and associated infrastructure on the avifauna.
- Identify the cumulative impact from the proposed project and similar projects within a 30-km radius of the site on the avifauna.
- Recommend mitigation, management and monitoring measures for inclusion in the EMPR.
- Any monitoring requirements for the operation phase of the facility.

5	<b>Aquatic Biodiversity Compliance Statement</b>	The Biodiversity Company	<b>Complete</b>	<ul style="list-style-type: none"> <li>• Confirm the site sensitivity rating against the DFFE STR. Once confirmed recommend the level of assessment required.</li> <li>• The specialist confirmed no natural features onsite therefore a compliance statement was prepared based on the following ToR: <ul style="list-style-type: none"> <li>○ Provide a statement of the duration, date and season of site inspection and relevance of season to outcome of assessment.</li> <li>○ Provide a baseline profile description of the biodiversity and ecosystems on site.</li> <li>○ Methodology used to verify the site sensitivity of the aquatic biodiversity including equipment and modelling used where relevant.</li> <li>○ Provide a map of identified aquatic features and supply shape files / Google kmls to superimpose on environmental sensitivity map. Suggest an no-go areas or buffer zones to be applied.</li> <li>○ Determine the impacts of the project on the aquatic features and include a DWS GNR 509 Risk Assessment to determine if a GA or full WULA would be required.</li> <li>○ Propose mitigation measures or any monitoring requirements for inclusion in the EMPR.</li> <li>○ Any gaps and conditions relevant to the statement.</li> </ul> </li> </ul>
6	<b>Landscape and Visual Impact Assessment</b>	Outline Landscape Architects CC	<b>Complete</b>	<p>Level 3 VIA was conducted due to the project being a Category 5 development. The ToR included:</p> <ul style="list-style-type: none"> <li>• Assess the baseline conditions of the visual context within which the project will take place.</li> <li>• Describe the received environment and project.</li> <li>• Provide topographical and GIS generated map for the description of the receiving environment.</li> <li>• Establish a view catchment area, view corridors, viewpoints (KoPs)</li> <li>• Visit the site to establish a photographic record (to be included in report) of the site, views and visual quality and value.</li> <li>• Determine which visual receptors (KoPs) will be affected by the project.</li> <li>• Describe and assess the project components and activities as potential elements of visual and landscape impacts.</li> <li>• Establish what visual impacts will arise due to the project and determine their social significance.</li> <li>• Investigate possible methods with which the potential impacts may be mitigated.</li> <li>• Complete a visual analysis and provide a map superimposing the analysis on abutting properties and KOPs and sensitive receptors.</li> </ul>

				<ul style="list-style-type: none"> <li>• Provide a reasoned opinion if the project should be approved or not based on the theme investigated.</li> </ul>
7	<b>Phase 1 Heritage Impact Assessment</b>	Ubique Heritage Consultants CC	<b>Complete</b>	<p>The HIA was to be prepared in line with the report minimum requirements was to comply with the SAHRA 2007 Minimum Standards for Archaeological and Palaeontological Components of Impact Assessment Reports under NHRA. It also had to comply with Appendix 6 of the NEMA EIA Regulations since there are no protocols for this theme.</p> <p>The ToR included:</p> <ul style="list-style-type: none"> <li>• Review existing SAHRIS databases.</li> <li>• Conduct a systematic field survey of the proposed site to locate, identify, record, photograph and describe archaeological, historical or cultural interest sites.</li> <li>• Inspect the project site and surrounding areas through a pre-planned pedestrian and vehicular survey</li> <li>• Trace the survey tracks using handheld Garmin GPS / Smart phone using any other relevant app.</li> <li>• Record any significant areas by taking GPS points of identified resources. Take photos of such resources and include any detailed field notes of relevance.</li> <li>• Transfer survey tracks, GPS points and coordinates of all recorded heritage resources in the project area that may be affected to Google Earth, QGIS and map these for use in the environmental composite map.</li> <li>• Provide an assessment of the significance of such resources in terms of the heritage assessment criteria.</li> <li>• Provide an impact assessment of the project on heritage resources.</li> <li>• If resources adversely affected provide any consideration of alternatives and or the required application of heritage buffer zones / no go areas.</li> <li>• Plans for mitigation of any adverse effects throughout the project phases.</li> <li>• Detail any implications of specialist findings for the proposed development i.e., permits, licenses etc.</li> </ul>
8	<b>Field Survey and Palaeontological Impact Assessment</b>	Ubique Heritage Consultants CC and Banzai Environmental	<b>Complete</b>	<p>Because the SAHRIS PalaeonSensitivity Map rates the site to be of 'High' sensitivity the specialist was requested to conduct a field survey and full Palaeontological Impact Assessment. As per the HIA the report must comply with the SAHRA minimum reporting requirements and Appendix 6 of the EIA Regulations. The report had to consider:</p> <ul style="list-style-type: none"> <li>• Provide overview of applicable legislation and guidelines</li> <li>• Describe and provide maps of the location of the proposed project in terms of the key geological and topographical features of palaeontological interest as per SAHRIS sensitivity map.</li> </ul>

				<ul style="list-style-type: none"><li>• Provide palaeontological and geological history of the affected area.</li><li>• Identify sensitive areas where fossil resources may be present which must be avoided (providing shape files / kml's) in the proposed development area.</li><li>• Provide an assessment of the significance of such resources in terms of the palaeontological assessment criteria.</li><li>• Provide an impact assessment of the project on palaeontological resources in terms of direct, indirect and cumulative impacts.</li><li>• Assessment of alternatives (if necessary).</li><li>• Recommendation of mitigation measures to minimise the impact of the development on palaeontological resources / chance find protocol.</li><li>• Detail any implications of specialist findings for the proposed development i.e., permits, licenses etc.</li></ul>
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### 10.1.5 PROPOSED METHOD OF ASSESSING ENVIRONMENTAL ASPECTS

After the list of potential impacts has been identified and finalised the aim of the EIA phase is to predict the nature of the impact, rank and quantify it. From the rating system the impacts of most significance can be highlighted. The list of impacts will be further assessed and developed based on engagement and comments solicited from I&APs and any further recommendations by specialists.

The list of identified impacts for the proposed solar pv facility will be evaluated by considering several rating scales as listed below (**Table 10-3**). These ratings include extent, duration, intensity, significance, status of impact, probability. The significance of impacts will be calculated as follows:

$$\text{Significance} = (\text{Extent} + \text{Duration} + \text{Intensity}) \times \text{Probability}$$

**Table 10-3: Assessment Methodology**

Evaluation Components	Ranking Scale and Description (Criteria)
<p><b>Extent</b></p> <p>Defines the physical extent or spatial scale of the potential impact</p>	<p><b>1- Site specific:</b> Impacts extending only as far as the activity, limited to the site and its immediate surroundings</p> <p><b>2 – Local:</b> Impacts extending within 5km from site boundary</p> <p><b>3 – Regional:</b> Impacts extending to the district (20km from boundary of the site)</p> <p><b>4 – Provincial:</b> Impacts extending to provincial scale e.g., Limpopo Province</p> <p><b>5 – National:</b> Impacts extending to within the country i.e. South Africa.</p> <p><b>6 – International:</b> Impacts extending beyond international border / the borders of South Africa/Botswana</p>
<p><b>Duration</b> defines the temporal scale</p>	<p><b>1 – Immediate:</b> Less than 1 year</p> <p><b>2 - Short term:</b> 1-5 years</p> <p><b>3 - Medium term:</b> 6-15 years</p> <p><b>4 - Long term:</b> Between 16 – 30 years</p> <p><b>5 – Permanent:</b> Over 30 years. Where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient.</p>
<p><b>Intensity</b></p> <p>“Intensity” establishes whether the impact would be destructive or benign.</p> <p>Negative (-) / Positive (+)</p>	<p><b>NEGATIVE (-)</b></p> <p><b>0 – Negligible:</b> Where impacts do not really affect the environment and no mitigation is required</p> <p><b>1 – Low:</b> Where impacts will result in short term effects on the social and/or natural environment. These impacts are not deemed largely substantial and are likely to have little real effect. (marginally affected)</p> <p><b>2 – Medium:</b> Where impacts will result in medium term effects on the social and/or natural environment. These impacts will need to be considered as constituting a fairly important and usually medium-term change to the environment, these impacts are real but not substantial. Impacts are easy to mitigate.</p> <p><b>3 – High:</b> Whereby effects will be long term on social, economic and/or bio-physical environment. These will need to be considered as constituting usually long-term change to the environment. Mitigation is considered challenging and expensive.</p>

	<p><b>4 - Very High:</b> Where impacts should be considered as constituting major and usually permanent changes to the environment, and usually results in severe to very severe effects. Mitigation would have little to now effect on irreversibility.</p> <hr/> <p><b>POSITIVE (+)</b></p> <p><b>0 - Negligible:</b> Where impacts affect the environment in such a way that natural, cultural and social functions and processes are not greatly and in instances no mitigation measures will be required. (environment not really affected)</p> <p><b>1 – Low:</b> Minor improvement is anticipated over a short term on the social and/or natural environment.</p> <p><b>2 – Medium:</b> Where moderate improvements are anticipated over a medium- to long-term on the social and/or natural environment.</p> <p><b>3 – High:</b> Where large improvements are anticipated over a long term on social, economic and/or bio-physical environment.</p> <p><b>4 - Very High:</b> This results in permanent improvements of the social/or natural environment.</p>									
<p><b>Probability</b> describes the likelihood of the impact occurring</p>	<p><b>0 – Improbable:</b> Where the possibility of the impact occurring is low.</p> <p><b>1 – Probable:</b> Where there is a distinct possibility that the impact will occur.</p> <p><b>2 - Highly probable:</b> Where it is most likely that the impact will occur.</p> <p><b>3 – Definite:</b> Where the impact will occur regardless of any prevention measures.</p>									
<p><b>Status</b></p> <p>“Status of impact” - describes whether the impact would have a negative, neutral or positive effect on the affected environment.</p>	<table border="0"> <tr> <td style="padding-right: 10px;">+</td> <td style="padding-right: 10px;"><b>Positive</b></td> <td>Benefit to the environment</td> </tr> <tr> <td style="padding-right: 10px;">=</td> <td style="padding-right: 10px;"><b>Neutral</b></td> <td>Standard / impartial</td> </tr> <tr> <td style="padding-right: 10px;">-</td> <td style="padding-right: 10px;"><b>Negative</b></td> <td>Cause damage to the environment</td> </tr> </table>	+	<b>Positive</b>	Benefit to the environment	=	<b>Neutral</b>	Standard / impartial	-	<b>Negative</b>	Cause damage to the environment
+	<b>Positive</b>	Benefit to the environment								
=	<b>Neutral</b>	Standard / impartial								
-	<b>Negative</b>	Cause damage to the environment								
<p><b>Criteria: SIGNIFICANCE</b></p> <p>“Significance”- attempts to evaluate the importance of a particular impact with mitigation measures included and also excluded. The significance was calculated using the following formula:</p> <p><b>Significance = (Extent + Duration + Intensity) X Probability</b></p>										
<p><b>0-4: Very Low</b></p>	<p>Where the impacts will not influence the development, social, cultural, or natural environment</p>									
<p><b>5 -12: Low</b></p>	<p>Where impacts will result in short term effects on the social and / or natural environment. The impacts merits attention however is not deemed largely substantial are likely to have little real effect</p>									
<p><b>13-25: Medium</b></p>	<p>Where impacts will have a medium-term effect on the social and/or natural environment. These impacts need to be considered as constituting a fairly important and usually medium-term change to the environment, these impacts can be mitigated by implementing effective mitigation measures.</p>									
<p><b>26-44: High</b></p>	<p>Whereby effects will be long term on social economic and or bio-physical environment. The impacts could have a major effect on the environment. This may bring forth the consideration of no-go areas/open areas on the development land regardless of mitigations implemented. Mitigation is however possible.</p>									
<p><b>45: Very High</b></p>	<p>Whereby effects will be permanent on the social economic and or bio-physical environment. Such impacts cannot be mitigated.</p>									

## 10.1.6 PROPOSED METHOD OF ASSESSING CUMULATIVE IMPACTS

Cumulative impacts are defined as the combination of multiple impacts from existing projects, the proposed project, and/or anticipated future projects that may result in significant adverse and/or beneficial impacts that would not be expected in case of a stand-alone project.

An assessment of cumulative impacts therefore considers the proposed project within the context of other similar land uses, in the local study area and greater regional context.

Accordingly, the DFFE guideline requires the EIA process to consider other solar developments within a 30-km radius of the application. According to the DFFE SA Renewable Energy EIA Application Database (REEA, 31 May 2023) several similar projects have been approved in the greater area. More recently, other similar solar applications were lodged towards Northam Town and at Siyanda Bagatla Mine (Swartklip). These are provided in Table 7-4 under section 7.1.2 of the Scoping Report. Figure 7-4 shows the proposed AGE application site in relation to the other approved and more recent solar applications.

Based on the description of the receiving environment (i.e., section 7.1.2) CEMS will investigate the most significant potential cumulative impacts in the EIR namely:

- Impact on Soil and Agricultural Potential
- Terrestrial Biodiversity (i.e., impact on landscape connectivity, fragmentation/disruption of habitat/ecosystems, loss of vegetation)
- Avifauna
- Visual

Residual impacts are those impacts that remain significant following the application of mitigation measures. The specialist studies have / will identify these.

## 10.2 STAGES AT WHICH THE DFFE WILL BE CONSULTED

The Draft Scoping Report has been submitted to the DFFE together with the application for environmental authorisation for initial comment. A 30-day comment period is afforded from 9 October to 7 November 2023. Same is provided to organs of state with jurisdiction in matters pertaining to the project.

The DFFE will be consulted as follows:

- Submission of the finalised Scoping Report by mid to end of November 2023 which was subjected to a 30-day consultative process i.e., all consultation results will be included final report.
- DFFE will review the Plan of Study contained in the Scoping Report and indicate whether the plan is accepted within 43 days of submission. If accepted the DFFE will issue an acceptance letter instructing the EAP to continue to the EIA Phase. Specialist studies will be finalised.
- The Draft EIR and EMPR will be prepared based on specialist field investigations and recommendations and be subjected to another 30-day public review and comment period.



- Thereafter, the final EIR and EMPR inclusive of public submissions will be submitted to the DFFE for decision making, within 106 days of acceptance of the Scoping Report.
- During the Draft and or Final EIR and EMPr review or consideration period the DFFE may request a site inspection. CEMS will be available for such.
- DFFE will reach a decision on the application and notify the applicant and EAP.

## **10.3 PLANNED PUBLIC PARTICIPATION PROCESS**

### **10.3.1 STEPS TO BE TAKEN TO NOTIFY INTERESTED AND AFFECTED PARTIES**

- An advertisement of the availability of the Draft EIR and EMPr including any planned public engagements will be published in the Platinum Bushvelders;
- Emailed notifications will be sent to the register of interested and affected parties ranging from stakeholders, organs of state, local and district authorities including ward councillor.
- Key commenting authorities (state departments) will receive a written notification and will be furnished with a copy (hard/electronic) of the draft EIR and EMPr for comments.
- SAHRA will be notified by uploading the draft EIR and EMPr onto the SAHRIS online application system.
- Copies of the Draft EIR and EMPR will be made available for the public review at Allied Farm Offices at Koedoeskop another copy will be placed at Northam Library.
- The Draft EIR and EMPr will also be available for public download via a WeTransfer/OneDrive folder shared with the register of I&APs via email.
- Public engagements / target meetings will be conducted (as required). i.e., DFFE, DWS, abutting landowners (if required).

### **10.3.2 DESCRIPTION OF INFORMATION TO BE PROVIDED TO I&APS**

- Draft EIR and EMPr reports, final layout plan, copies of specialist studies and supporting information for the solar pv facility.
- The competent authority recommendations and all the specialist investigations findings and recommendations will be included in the draft EIR and EMPr.
- The details of engagements with the DWS and details of the WULA will also be communicated to I&APs;
- A copy of the decision (environmental authorisation and water use license/GA) will also be made available to I&APs via email to the register of I&APs.
- The commenting period on the draft reports (i.e., Scoping, EIR and EMPR) will be 30-days as per the NEMA EIA Regulations.

### 10.3.3 NOTIFICATION OF AUTHORITY DECISION

During this phase DFFE will review the Final EIR and EMPR and consult with any other key organs of state e.g. the Department of Water & Sanitation (DWS) before granting or refusing an environmental authorisation.

The environmental authorisation will be made available for public review for a period of 20 consecutive calendar days i.e., sent via email and advertised in the Platinum Bushvelder. This provides I &APs with an opportunity to verify that the decision taken have considered their comments and concerns raised. I&APs are also then informed of the appeal procedure, should they have a reason to appeal.

### 10.4 TASKS TO BE UNDERTAKEN DURING THE EIA PHASE

- Finalisation of specialist studies
- The specialist studies will be reviewed, and recommendations summarised to gauge any necessary revisions required to the facility layout plan.
- Next, the EIR will be compiled, and the findings and recommendations outlined by the specialist studies will be incorporated by the EAP into a single report, the EIR and will contain the following:
  - An assessment of the biophysical and social environment encompassed by the development and direct surroundings and consider the impacts of the development thereon and vice versa.
  - Identify and assess the significance of potential impacts the development may have on the dual environments.
  - Provide mitigation measures to curb negative impacts and enhance positive impacts.
  - Provide an environmental statement of findings of the assessment to the authorising authority for decision making.
  - Final layout plan which avoids delineated environmental sensitivities.
- The EMPr will be prepared for the construction, operation, and decommissioning phases of the project. The EMPR will ensure compliance with environmental regulations during the cycle of the project and recommend how to operate and implement the project in form of efficient mitigation measures. Mitigations and recommendations will be resultant from the findings and recommendations contained of the EIR.
- Submission of a final EIR and EMPR inclusive of public submissions to DFFE for decision making.

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## 11 CONCLUSION AND RECOMMENDATIONS

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This Draft Scoping Report has been compiled in compliance with Appendix 2 of the NEMA EIA Regulations of 2014 (GNR 326 as amended). It summarises the Scoping tasks undertaken to date, the alternatives considered, and the issues raised by I&APs thus far. CEMS and the specialists have confirmed the actual state of the site and its associated environmental sensitivity themes. The required specialist studies and level of assessment have been identified.

The following specialist studies already been conducted and included are scheduled for the Scoping Report:

- Agricultural Compliance Statement
- Aquatic Biodiversity Compliance Statement
- Terrestrial Biodiversity Site Sensitivity Verification
- Avifauna Site Sensitivity Verification
- Level 3 Visual Impact Assessment
- Phase 1 Heritage Impact Assessment
- Palaeontological Field Survey and Impact Assessment

The following specialist studies are still to be conducted or completed for the EIA Phase:

- Geotechnical Investigation (underway)
- Terrestrial Biodiversity Compliance Statement
- Avifauna Regime 1 Impact Assessment (single survey)

Very few public issues have been raised to date. It is thus essential to record any potential public issues and concerns during the DSR public review and comment period. Public submissions made during the DSR public review and comment period will be incorporated in the Final Scoping Report and will be addressed during the EIA phase.

The public and authority submissions will be essential in finalising the Plan of Study for EIA submitted as part of the Final Scoping Report to DFFE.

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## 12 UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

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I **Marissa Ilse Botha**, the registered EAP, herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and interested and affected parties have been correctly recorded in the draft report.<sup>39</sup>



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SIGNATURE OF EAP 1: Marissa Ilse Botha

DATE: 5 October 2023

I **Maryke André** the supporting EAP, herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and interested and affected parties have been correctly recorded in the report.



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SIGNATURE OF EAP 2: Maryke André

DATE: 5 October 2023

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<sup>39</sup> This is the Draft Scoping Report subject to a 30-days consultative process wherein the stakeholders and I&APs can verify that all comments and inputs have been recorded correctly. Additional comments may be raised during the review period that need to be addressed and will be recorded in the Final Scoping Report for submission to DFFE.

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## 13 UNDERTAKING REGARDING LEVEL OF AGREEMENT

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I **Marissa Ilse Botha**, herewith undertake that the information provided in the foregoing report is correct, and the level of agreement of the interested and affected parties and stakeholders have been correctly recorded and reported herein.



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SIGNATURE OF EAP 1: Marissa Ilse Botha

DATE: 5 October 2023

I **Maryke André** herewith undertake that the information provided in the foregoing report is correct, and the level of agreement of the interested and affected parties and stakeholders have been correctly recorded and reported herein.



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SIGNATURE OF EAP 2: Maryke André

DATE: 5 October 2023

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## 14 REFERENCES

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- SAPAD2 Dataset

Other datasets or guidelines documents that were referenced by specialists are included in those reports under Appendix E.

**APPENDIX A1 - EAP DECLARATION**



**APPENDIX A2 –  
EAPASA AND SACNASP CERTIFICATES**

**APPENDIX A3 –  
CURRICULUM VITAE OF PROJECT EAPS**

**APPENDIX A4 –  
SPECIALIST DECLARATIONS**

**APPENDIX B –  
DFFE SCREENING TOOL REPORT**

**APPENDIX C –  
CEMS SITE SENSITIVITY VERIFICATION REPORT**

**APPENDIX D –  
PUBLIC PARTICIPATION PROCESS**

**APPENDIX D1 –  
DFFE APPROVED PRE-APPLICATION MINUTES**

**APPENDIX D2 –  
REGISTER OF INTERESTED & AFFECTED PARTIES**

**APPENDIX D3 –  
NEWSPAPER TEAR SHEET**



**APPENDIX D4 –  
SITE NOTICE PHOTOS**

**APPENDIX D5 –  
PROOF OF I&AP NOTIFICATION**

**APPENDIX D6 –  
COMMENTS AND RESPONSE REPORT**

**APPENDIX E – SPECIALIST STUDIES**

**APPENDIX E1 –  
AGRICULTURAL COMPLIANCE STATEMENT**

**APPENDIX E2 –  
TERRESTRIAL SITE SENSITIVITY VERIFICATION  
REPORT**

## **APPENDIX E3 –**

# **AVIFAUNA SITE SENSITIVITY VERIFICATION REPORT**

**APPENDIX E4 –  
AQUATIC COMPLIANCE STATEMENT**

**APPENDIX E5 –  
VISUAL IMPACT ASSESSMENT**



**APPENDIX E6 –  
HERITAGE IMPACT ASSESSMENT**

**APPENDIX E7 –  
PALAEOONTOLOGICAL IMPACT ASSESSMENT**