

# Zondereinde Solar PV Facility

Limpopo Province

Draft Scoping Report

October 2022

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## PROJECT DETAILS

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**When used as a reference this report should be cited as:** Savannah Environmental (2022) Scoping Report Zondereinde Solar PV Facility, Limpopo Province

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## PURPOSE OF THE SCOPING REPORT AND INVITATION TO COMMENT

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Letsatsi PV (Pty) Ltd has appointed Savannah Environmental as the independent environmental consultant to undertake the Scoping and Environmental Impact Assessment Process for the Zondereinde Solar PV Facility. The EIA process is being undertaken in accordance with the requirements of the 2014 EIA Regulations promulgated in terms of the National Environmental Management Act (NEMA; Act No. 107 of 1998). This Scoping report has been compiled in accordance with Appendix 2 of the EIA Regulations, 2014 (as amended) and consists of the following sections:

This Scoping Report represents the findings of the Scoping Phase of the EIA process and contains the following chapters:

- » **Chapter 1** provides background to the ZONDEREINDE Solar PV Facility project and the environmental impact assessment.
- » **Chapter 2** provides a project description of the ZONDEREINDE Solar PV Facility project.
- » **Chapter 3** provides the site selection information and identified project alternatives.
- » **Chapter 4** outlines strategic regulatory and legal context for energy planning in South Africa and specifically for the proposed facility.
- » **Chapter 5** describes the need and desirability of ZONDEREINDE Solar PV Facility.
- » **Chapter 6** outlines the process which was followed during the scoping phase of the EIA process.
- » **Chapter 7** describes the existing biophysical and social environment within and surrounding the study and development area.
- » **Chapter 8** provides an identification and evaluation of the potential issues associated with the proposed solar PV facility and associated infrastructure.
- » **Chapter 9** presents the conclusions of the scoping evaluation for the ZONDEREINDE Solar PV Facility.
- » **Chapter 10** describes the Plan of Study (PoS) for the EIA phase.
- » **Chapter 11** provides references used to compile the Scoping report.

The Scoping Report was made available for review from 07 October to 07 November 2022. All comments received and recorded during the 30-day review and comment period was included, considered, and addressed where possible within the final Scoping report for the consideration of the DESTEA

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## EXECUTIVE SUMMARY

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Letsatsi PV (Pty) Ltd ("Letsatsi") is proposing to develop a solar photovoltaic (PV) facility and associated infrastructure (the "Zondereinde PV Facility"), including a power line connecting the PV facility to existing substations (collectively the "Project").

The Zondereinde PV Facility is proposed on the Remainder of Portion 1 of the Farm Kopje Alleen 422 KQ ("PV Site") and the power line on the aforesaid property and Portion 2 of the Farm Zondereinde 384 KQ (collectively "Project Site"), approximately 30km south of Thabazimbi and 18km north-east of Northam, between the R510 in the west and the R511 in the east, in the Thabazimbi Local Municipality and Waterberg District Municipality in the Limpopo Province (refer to **Figure 1.1**).

The Zondereinde PV Facility will have a contracted capacity of up to 100MW and use single or double axis tracking PV technology to harness the solar resource on the Development area Zondereinde PV Facility. The purpose of the Facility is to generate electricity for use by Zondereinde Mine, which is owned and operated by Northam Platinum Ltd (Northam), but there is a remote possibility that if there is excess energy then it will be fed into the national grid but is seemingly highly unlikely. The construction of the Solar PV Energy Facility aims to increase Zondereinde Mine's security of electricity supply and reduce its carbon emissions. The Zondereinde PV Facility is central to achieving these goals, while simultaneously generating employment opportunities through the construction and operation of the Facility.

From a regional perspective, the Limpopo Province, and particularly the area under investigation, is considered favourable for the development of a commercial solar PV energy facility, by virtue of prevailing climatic conditions; topography; the extent of the PV Site; and the availability of a grid connection point and land on which the development can take place.

This Scoping Report is aimed at detailing the nature and extent of the proposed development, identifying and describing potential issues associated with developing Zondereinde PV Facility the Project on the Project Site; potential environmental fatal flaws and/or areas of sensitivity; and defining the extent of studies required to be undertaken as part of the detailed EIA Phase. This was achieved through an evaluation of the Project, involving the project proponent, and specialist consultants. This Scoping Report has been compiled in terms of the 2014 EIA Regulations (GNR 326) published in terms of Section 24(5) of NEMA.

The potentially sensitive areas which have been identified through the environmental scoping study are listed below and illustrated in **Figure 9.1**. The detail is based on the desktop review of available baseline information for the development area; and sensitivity data from specialist studies undertaken during the Scoping Phase, which included field surveys. During the site and desktop surveys, the affected area was investigated in sufficient detail to provide definitive insight into the potential for constraining factors on the Site. The sensitivity map must be used as a tool by the developer to avoid any areas flagged to be of higher risk or sensitivity and inform the location/layout of the Project's development footprint. The development footprint is the area which will be assessed further in detail in the EIA Phase, in order to provide an assessment of environmental acceptability and suitability of the Project layout.

### **Ecological Sensitive Features (including flora, fauna and avifauna)**

Based on the desktop assessment, it can be said that the development area is moderately sensitive, with a moderate-high likelihood of SCC occurring. This assumption is based on the ONA, proximity (less than 5 km)

to a NPAES protected area (Sharme Private Nature Reserve), The expectant anthropogenic activities are likely to drive habitat destruction, causing displacement of fauna and flora and possibly event direct mortality. Land clearing destroys local wildlife habitat and can lead to the loss of local breeding grounds, nesting sites and wildlife movement corridors, such as rivers, streams and drainage lines, or other locally important features. The removal of natural vegetation may reduce the habitat available for fauna species and may reduce animal populations and species compositions within the area. Based on the number of avifauna SCCs with a high likelihood of occurrence, the risk of collisions and electrocutions needs to be considered.

These findings will be assessed in the EIA phase.

### **Freshwater Sensitive Features**

As per the DFFE screening report, the aquatic biodiversity theme sensitivity indicates "Very High" sensitivity. This is attributed to the associated FEPA quinary catchment, as well as the presence of wetlands. A key consideration for the impact assessment is the presence of the identified water resources in relation to the development area. The available data also suggests the presence of features in proximity to the development area, with wetland systems expected for the 500m regulation area. Construction could result in the encroachment into water resources and loss or degradation of these system, most of which are functional and provide ecological services. These disturbances could also result in the infestation and establishment of alien vegetation, which would affect the functioning of the systems. Leaks and/or spillages could result in contamination of the receiving water resources. Contaminated water resources are likely to influence the associated biota. An increase in stormwater runoff could result in physical changes to the receiving systems caused by erosion, run-off and also sedimentation, and the functional changes could result in changes to the vegetative structure of the systems.

### **Soils and Agricultural Potential Sensitive Features**

Various soil forms are expected throughout the development area, of which some are commonly associated with higher land capabilities. Even though the soil depth, texture and permeability of these soils ensure higher land capability, the climatic capability of the area often reduces the land potential considerably. Areas characterised by "High" land potential are expected for selected areas. The Project can result in the loss of land capability. The disturbances could further also result in the infestation and establishment of alien vegetation, which in turn can have a detrimental impact on soil resources. The development of the development area could also result in compaction and/or erosion. Further to this, these activities could also cause leaks and/or spillages resulting in contamination of soil resources, which could affect the salinity or pH of the soil, which can render the fertility of the soil unable to provide nutrition to plants.

### **Heritage Sensitive Features (including archaeology, palaeontology, and cultural landscape)**

The development area fall within areas that have been previously identified as having low and zero archaeological sensitivity. In the zero sensitivity area, the ground has been completely ploughed in the past by crop agriculture. No archaeological sites have been found in this area either. Furthermore, development of the Project here does not leapfrog the industrial development across an area of undisturbed bushveld and contains it within the vicinity of the existing infrastructure, which is preferable to areas located further away. The 33kV power line routes follow existing power line routes and the alternative route falls outside of the very sensitive archaeology areas. The development area is desirable from a sprawl perspective, and

there are no archaeological objections to the proposed location of the Project. The preferred alternative for the 33kV power line route is preferred from a heritage perspective.

### **Visual Sensitive Features**

As some components of the Project may be visible does not necessarily imply a high visual impact. Sensitive visual receptors within (but not restricted to) a 3km buffer zone from the facility need to be identified and the severity of the visual impact assessed within the EIA phase of the project.

It is recommended that additional spatial analyses be undertaken, to create a visual impact index that will further aid in determining potential areas of visual impact. This exercise should be undertaken for the core PV plant, ancillary infrastructure and the power line, as these structures (e.g. the BESS structures) are envisaged to have varying levels of visual impact at a more localised scale. The site-specific issues (as mentioned earlier in the report) and potential sensitive visual receptors should be measured against this visual impact index and be addressed individually in terms of nature, extent, duration, probability, severity, and significance of visual impact.

### **Overall Conclusion and Fatal Flaw Analysis**

The findings of the desktop Scoping Study indicate that no environmental fatal flaws are associated with the Zondereinde PV Facility Project Site. While some impacts of potential significance do exist, it is anticipated that the implementation of appropriate mitigation measures would assist in reducing the significance of such impacts to acceptable levels. It is however recommended, that the Project's development footprint be considered outside of the identified areas of a high sensitivity as far as possible in order, to ensure that it does not have a detrimental impact on the environment.

With an understanding of which areas within the Project Site are considered sensitive to the development of the Project, the Applicant can prepare a detailed infrastructure layout for consideration within the EIA Phase. During the EIA phase, more detailed environmental studies will be conducted in line with the PoS for EIA contained in **Chapter 10** of this Scoping Report. These studies will consider the detailed layout produced by the Applicant and make recommendations for the implementation of avoidance strategies (if required), and mitigation and management measures to ensure that the final assessed layout retains an environmental impact within acceptable limits. The sensitivity map will be further refined in the EIA Phase based on these specialist studies, to provide an assessment of environmental acceptability of the final design of the Project.

## CHAPTER 1: INTRODUCTION

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Letsatsi PV (Pty) Ltd ("Letsatsi") is proposing to develop a solar photovoltaic (PV) facility and associated infrastructure (the "Zondereinde PV Facility"), including a power line connecting the PV facility to existing substations (collectively the "Project").

The Zondereinde PV Facility is proposed on the Remainder of Portion 1 of the Farm Kopje Alleen 422 KQ ("PV Site") and the power line on the aforesaid property and Portion 2 of the Farm Zondereinde 384 KQ (collectively "Project Site"), approximately 30km south of Thabazimbi and 18km north-east of Northam, between the R510 in the west and the R511 in the east, in the Thabazimbi Local Municipality and Waterberg District Municipality in the Limpopo Province (refer to **Figure 1.1**).

The Zondereinde PV Facility will have a contracted capacity of up to 100MW and use single or double axis tracking PV technology to harness the solar resource on the Development area Zondereinde PV Facility. The purpose of the Facility is to generate electricity for use by Zondereinde Mine, which is owned and operated by Northam Platinum Ltd (Northam), but there is a remote possibility that if there is excess energy then it will be fed into the national grid but is seemingly highly unlikely. The construction of the Solar PV Energy Facility aims to increase Zondereinde Mine's security of electricity supply and reduce its carbon emissions. The Zondereinde PV Facility is central to achieving these goals, while simultaneously generating employment opportunities through the construction and operation of the Facility.

From a regional perspective, the Limpopo Province, and particularly the area under investigation, is considered favourable for the development of a commercial solar PV energy facility, by virtue of prevailing climatic conditions; topography; the extent of the PV Site; and the availability of a grid connection point and land on which the development can take place.

This Scoping Report consists of eleven chapters, which include:

- » **Chapter 1** provides background to the Project and the environmental impact assessment (EIA) process.
- » **Chapter 2** provides a description of the Project.
- » **Chapter 3** provides the site selection information and identified project alternatives.
- » **Chapter 4** outlines strategic regulatory and legal context for energy planning in South Africa.
- » **Chapter 5** describes the need and desirability of the Project.
- » **Chapter 6** outlines the process which was followed during the Scoping Phase of the EIA process.
- » **Chapter 7** describes the existing biophysical and social environment within and surrounding the study area and Project Site.
- » **Chapter 8** provides an identification and evaluation of the potential issues associated with the Project.
- » **Chapter 9** presents the conclusions of the Scoping Report.
- » **Chapter 10** describes the Plan of Study (PoS) for the EIA Phase.
- » **Chapter 11** provides references used to compile the Scoping Report.

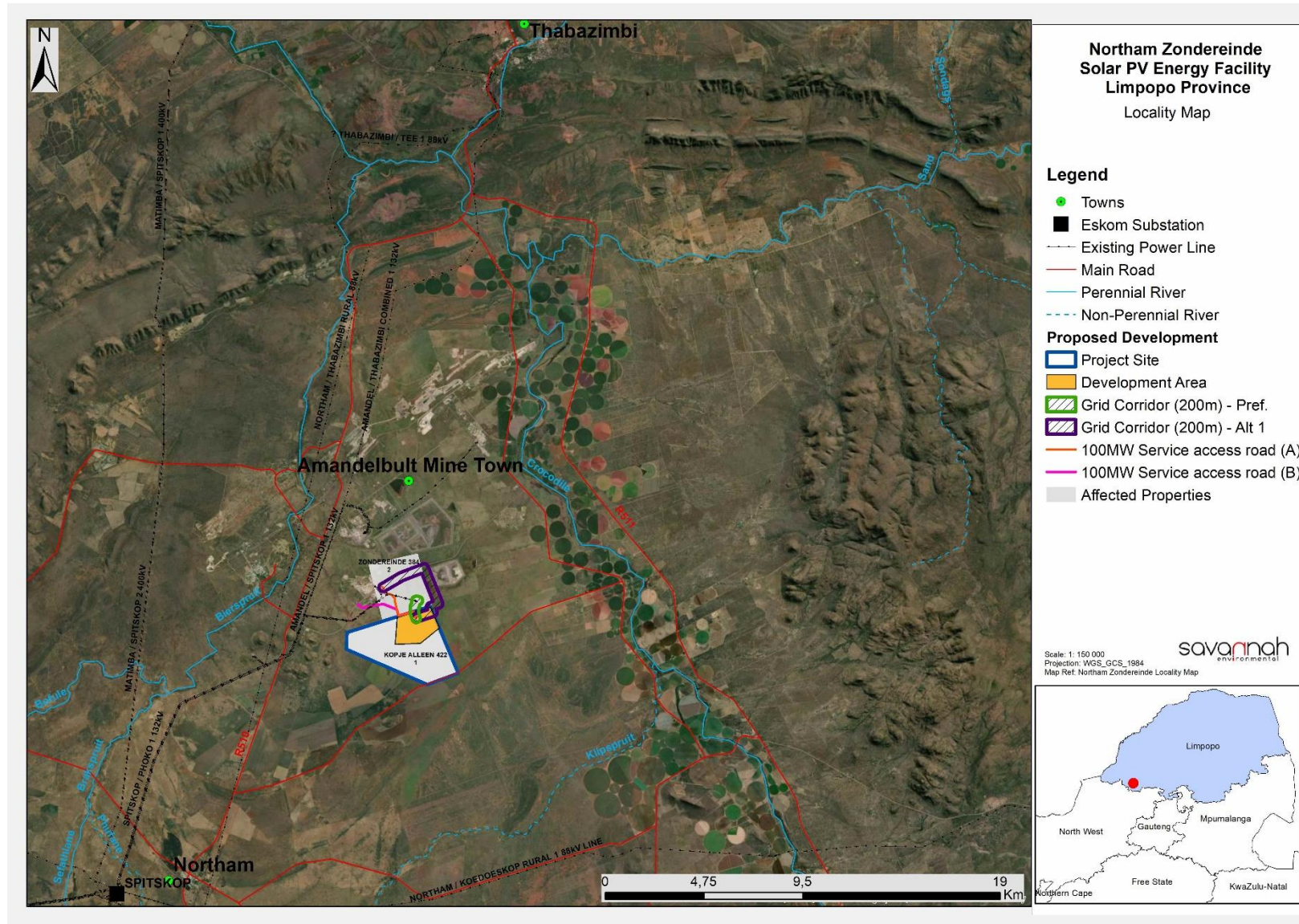
### **1.1. Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of a Scoping Report**

This Scoping Report has been prepared in accordance with the requirements of the Environmental Impact Assessment Regulations published on 04 December 2014 in Government Notice (GN) 982 in



Government Gazette (GG) 38282 (as amended on various occasions) ("EIA Regulations"), promulgated in terms of Chapter 5 of the National Environmental Management Act (Act No 107 of 1998) (NEMA). This chapter of the Scoping Report includes the following information required in terms of the EIA Regulations, Appendix 2: Content of Scoping Report:

Requirement	Relevant Section
2(1)(a)(i) the details of the EAP who prepared the report and (ii) the expertise of the EAP to carry out scoping procedures; including a curriculum vitae	The details and expertise of the EAP have been included in <b>Section 1.5</b> . The Curriculum Vitae of the Savannah Environmental Team have been included as <b>Appendix A</b> .
2(1)(b) the location of the activity, including (i) the 21-digit Surveyor General (SG) code of each cadastral land parcel; (ii) where available, the physical address and farm name and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties	Details of the location of the Project, the affected properties, including the property names and numbers, as well as the SG codes are included in <b>Table 1.1</b> .
2(1)(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is: (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken	A locality map illustrating the location of the Project has been included in <b>Figure 1.1</b> . The centre point coordinates of the Development area are included in <b>Table 1.1</b> .



**Figure 1.1:** Locality map of the Zondereinde PV Facility development area and grid connection corridor (also refer to **Appendix I**)

## 1.2. Project Overview

The Project Site, with an extent of approximately 1171 ha, was identified by Letsati and is considered to be technically suitable for the development of the Project. It is situated on the following properties, which are all included in the mining right held by Northam:

### Solar PV Energy Facility:

Remainder of Portion 1 of the Farm Kopje Alleen 422 KQ

### Grid Connection Corridor 200m (Alternative 1):

- » Remainder of Portion 1 of the Farm Kopje Alleen 422 KQ
- » Remainder of Portion 1 of the Farm Witvley 423 KQ
- » Portion 0 of the Farm Vrugbaar 381 KQ
- » Portion 2 of the Farm Zondereinde 384 KQ

### Grid Connection Corridor 200m (Preferred):

- » Remainder of Portion 1 of the Farm Kopje Alleen 422 KQ
- » Portion 2 of the Farm Zondereinde 384 KQ,

### Access Roads:

- » Remainder of Portion 2 of the Farm Zondereinde 384 KQ
- » Remainder of Portion 0 of the Farm Zondereinde 384 KQ

(collectively the "Affected Properties").

A development area of ~265ha was demarcated within the Affected Properties for consideration in the EIA process (being the Project Site).

The Zondereinde PV Facility will have a contracted capacity of up to 100MW. The Project will include specific infrastructure, namely:

- » Solar PV array, with branch strings, comprising PV panels and mounting structures.
- » Inverters and transformers.
- » Underground cabling between project components.
- » A battery energy storage systems (BESS).
- » A 33kV on-site facility substation to facilitate the connection between the Solar PV Energy Facility and the mine electrical distribution system.
- » An O&M building, which will include a site security office, warehouse, storage area.
- » 2 x 33kV overhead power line and transmission towers from the PV Site for the distribution of the generated power, which will be connected to the existing Smelter substation and Shaft substation (Existing 33kV Mine Substations).
- » Temporary laydown area and a construction yard.
- » Access road (gravel), internal gravel roads, firebreaks (4m width) and fencing around the PV Site.
- » A borehole, water storage facilities, water pump station and possibly a water treatment facility; sewage facilities (septic tank); and water and sewage pipelines.
- » Security and access control.

The PV Site allows an adequate footprint for the installation of the Solar PV Energy Facility with a contracted capacity of up to 100MW. The full extent of the Project Site is to be evaluated in the Scoping Phase of the EIA process. Site-specific studies and assessments will delineate areas of potential sensitivity within the Project Site. Once constraining factors have been confirmed, the layout of the Project within the Project Site can be planned to avoid sensitive environmental areas and features.

The grid connection infrastructure for the Facility will include underground cabling between project components to the 33kV on-site substation, which will connect to the Existing 33kV Mine Substations via two 33kV overhead power line. Two alternative corridors are being investigated for the power lines as follows:

- » Preferred Alternative 1 is up to 1km in length and will tie into the Existing 33 kV Mine Substations (located directly north of the PV Area).
  - » Preferred Alternative 2 is up to 5.6km in length and will tie into the Existing 33 kV Mine Substations. The gridline is located northeast of the PV Area.
- The grid connection infrastructure for both options is located within an assessment corridor of 200m wide.

**Table 1.1:** Detailed description of the Project Site

<b>Province</b>	<b>Limpopo Province</b>
<b>District Municipality</b>	Waterberg District Municipality
<b>Local Municipality</b>	Thabazimbi Local Municipality
<b>Ward Number (s)</b>	Ward 11
<b>Nearest town(s)</b>	Northam (Project Site is ~18km northwest of Northam)
<b>Farm name(s) and number(s) of properties affected by the Project</b>	<p><u>Solar PV Energy Facility:</u></p> <ul style="list-style-type: none"> <li>» Remainder of Portion 1 of the Farm Kopje Alleen 422 KQ</li> </ul> <p><u>Grid Connection Corridor 200m (Alternative 1):</u></p> <ul style="list-style-type: none"> <li>» Remainder of Portion 1 of the Farm Kopje Alleen 422 KQ</li> <li>» Remainder of Portion 1 of the Farm Witvley 423 KQ</li> <li>» Portion 0 of the Farm Vrugbaar 381 KQ</li> <li>» Portion 2 of the Farm Zondereinde 384 KQ</li> </ul> <p><u>Grid Connection Corridor 200m (Preferred):</u></p> <ul style="list-style-type: none"> <li>» Remainder of Portion 1 of the Farm Kopje Alleen 422 KQ</li> <li>» Remainder of Portion 2 of the Farm Zondereinde 384 KQ</li> </ul> <p><u>Access Roads:</u></p> <ul style="list-style-type: none"> <li>» Remainder of Portion 2 of the Farm Zondereinde 384 KQ</li> <li>» Remainder of Portion 0 of the Farm Zondereinde 384 KQ</li> </ul>
<b>SG 21 Digit Code (s)</b>	<ul style="list-style-type: none"> <li>» Portion 1 of the Farm Kopje Alleen 422KQ: T0KQ0000000042200001</li> <li>» Portion 1 of the Farm Witvley 423: T0KQ00000000042300001</li> <li>» Portion 0 of the Farm Vrugbaar 381: T0KQ00000000038100000</li> <li>» Portion 2 of the Farm Zondereinde 384: T0KQ00000000038400002</li> <li>» Portion 0 of the Farm Zondereinde 384: T0KQ00000000038400000</li> </ul>
<b>Site Coordinates (centre of PV project site)</b>	24°50'29.84"S 27°23'4.02"E



The overarching objective for the Zondereinde PV Facility is to maximise electricity production through exposure to the available solar resource, while minimising infrastructure, operational and maintenance costs and potential social and environmental impacts. To meet these objectives, local level environmental and planning issues will be assessed through the EIA process, with the aid of site-specific specialist studies, to delineate areas of sensitivity within the identified development area. This will serve to inform and optimise the design of the Solar PV Facility and power line.

### 1.3. Requirement for an Environmental Impact Assessment Process

Section 24 of NEMA pertains to Environmental Authorisations (EA) and requires that the potential consequences for, or impacts of, listed or specified activities on the environment be considered, investigated, assessed, and reported on to the Competent Authority (CA). The 2014 EIA Regulations prescribe the process to be followed when applying for EA, while the Listing Notices 1, 2 and 3 contain those activities which may not commence without EA from the CA. (These Listing Notices are published under NEMA in GNs 983, 984 and 985 on 4 December 2014 in GG 38282), as amended.

As the Project involves activities included in all these Listing Notices 1, including Listing Notice 2, an EA is required subject to the completion of a full Scoping and EIA (S&EIA), as prescribed in Regulations 21 to 24 of the 2014 EIA Regulations. The need for EA subject to the completion of a full S&EIA is triggered by the inclusion of, amongst others, Activity 1 of Listing Notice 2, namely:

*"The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20MW or more."*

According to the Explanatory Document for GN. 779 published in GG 40110 dated 01 July 2016, if the proponent will not, or does not, intend to participate in any of the Integrated Resource Plan (IRP) programmes (IRP), the CA will be the Member of the Executive Council (MEC) responsible for environmental affairs in the respective province, unless another sub-section of section 24C of NEMA specifies the Minister to be the CA. Since the purpose of the Project is to generate power for use by the Zondereinde Mine, and the Project will not be bid into the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) or a similar government programme, the Limpopo Department of Economic Development, Environment and Tourism (LDEDET) has been determined as the CA.

### 1.4. Overview of this Environmental Impact Assessment (EIA) Process

An EIA is an effective planning and decision-making tool for the project developer, as it allows for the identification and management of potential environmental impacts. It provides the opportunity for the project developer to be forewarned of potential environmental issues and allows for the resolution of the issues reported on in the scoping and EIA reports, as well as dialogue with interested and affected parties (I&APs).

The EIA process comprises of two (2) phases (i.e., Scoping and Impact Assessment) and involves the identification and assessment of potential environmental impacts through the undertaking of independent specialist studies, as well as public participation. The processes followed in these two phases are as follows:

- » The **Scoping Phase** includes the identification of potential issues associated with the Project, through a desktop study (considering existing information), limited fieldwork, and consultation with I&APs and key

stakeholders. This phase considers the development area in order to identify and delineate any environmental fatal flaws, no-go and / or sensitive areas. Following a public review period of the scoping report, this phase culminates in the submission of a final scoping report and PoS for the EIA to the CA for consideration and acceptance.

- » The **EIA Phase** involves a detailed assessment of the potentially significant positive and negative impacts (direct, indirect, and cumulative) identified in the Scoping Phase. This Phase considers a proposed development footprint within the development area and includes detailed specialist investigations and public consultation. Following a public review period of the EIA report, this phase culminates in the submission of a final EIA report and an environmental management programme (EMPr), including recommendations of practical and achievable mitigation and management measures, to the CA for final review and decision-making.

### 1.5. Details of Environmental Assessment Practitioner and Expertise to conduct the S&EIA Process

In accordance with Regulation 12 of the 2014 EIA Regulations, the project developer has appointed Savannah Environmental (Pty) Ltd as the independent environmental consultant responsible for managing the application for EA and supporting S&EIA process; inclusive of comprehensive, independent specialist studies. The application for EA and S&EIA process will be managed in accordance with the requirements of NEMA, the 2014 EIA Regulations and all other relevant applicable legislation.

Neither Savannah Environmental nor any of its specialists are subsidiaries or are affiliated to the project developer. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the Project.

Savannah Environmental is a specialist environmental consulting company providing a holistic environmental management service, including environmental assessment, and planning to ensure compliance and evaluate the risk of development, and the development and implementation of environmental management tools. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team. The Savannah Environmental team for this project includes:

- » **Carina de Ornelas** is a Junior Environmental Consultant that has recently started her environmental career at Savannah Environmental. She holds a Bachelor of Arts in Environmental Management and intends to further her studies in the near future. She previously worked in retail as a supervisor for over 4 years and now has over 2 months of experience as a Junior Environmental Consultant whereby she has helped in drafting of scoping reports, basic assessment reports and EIAs, she also does mapping on GIS for reports.
- » **Ansoné Esterhuizen**, is the registered EAP with the Environmental Assessment Practitioners Association of South Africa. She holds a Bachelor of Arts in Environmental Management and is currently completing her BSc Honours in Environmental Management. She has over 4 years of experience in conducting Environmental Impacts Assessments, public participation, and Environmental Management Programmes for a wide range of projects, including renewable energy projects. She is responsible for overall compilation of this Scoping Report, including engaging specialists, reviewing specialists reports and incorporating specialist studies into the Environmental Impact Assessment report and its associated Environmental Management.

- » **Jo-Anne Thomas** is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA - 2019/726) and is registered as a Professional Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP). She provides technical input for projects in the environmental management field, specialising in Strategic Environmental Advice, Environmental Impact Assessment studies, environmental auditing and monitoring, environmental permitting, public participation, Environmental Management Plans and Programmes, environmental policy, strategy and guideline formulation, and integrated environmental management. Her key focus is on integration of the specialist environmental studies and findings into larger engineering-based projects, strategic assessment, and providing practical and achievable environmental management solutions and mitigation measures. Responsibilities for environmental studies include project management (including client and authority liaison and management of specialist teams); review and manipulation of data; identification and assessment of potential negative environmental impacts and benefits; review of specialist studies; and the identification of mitigation measures.
- » **Molatela Ledwaba** is a public participation and social consultant at Savannah Environmental. She has a BA in Environmental Management and is currently working on her BA(Hons) in Environmental Management. Molatela has thirteen (13) years of experience in office administration, project coordination, and public participation in a variety of industries, including geohydrological and environmental services projects, but not limited to infrastructure development and mining. She has worked for both small and large organizations, gaining experience in research, data collection, planning and execution of social surveys, data management and community facilitation. Molatela has experience working on projects in South Africa and Kenya. She has been taking part in public participation, stakeholder engagement and socio-economic baseline. She has successfully completed several public participation processes for ESIA, basic assessment, and water use licence (WULA) projects.

**Appendix A** includes the curricula vitae for the Savannah Environmental team.

## 1.6. Details of the Independent Specialist Team

In order to adequately identify and assess potential impacts associated with the project, several specialists have been appointed as part of the project team and have provided specialist input into this Scoping Report (refer to **Table 1.2**). CVs detailing the independent specialists' expertise and relevant experience are provided in **Appendix H**

**Table 1.2:** Independent Specialists that contributed to the Scoping Report

Specialist	Area of Expertise
Jan Jacobs and Andrew Husted of The Biodiversity Company	Terrestrial Ecology (including flora, fauna and avifauna), Freshwater and soils
Tony Barbour of Tony Barbour Consulting	Social
Lourens du Plessis of LoGIS	Visual
Jenna Lavin from CTS Heritage	Heritage including cultural landscape, archaeology and palaeontology
Iris Sigrid Wink of JG Afrika (Pty) Ltd	Traffic Impact Assessment

## CHAPTER 2: PROJECT DESCRIPTION

This Chapter provides an overview of the Project and details the project scope which includes the planning/design, construction, operation, and decommissioning activities required for the Project. The project description presented in this Chapter may change to some extent based on the outcomes and recommendations of detailed engineering and other technical studies; the findings and recommendations of the S&EIA and supporting specialist studies; and any licencing, permitting, and legislative requirements.

### 2.1. Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Scoping Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
2(b) the location of the activity including (i) the 21-digit Surveyor General (SG) code of each cadastral land parcel, (ii) where available the physical address and farm name and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	The location of the Project is detailed in Chapter 1, <b>Table 1.1</b> , as well as in <b>section 2.2.1</b> .
2(d)(ii) a description of the scope of the proposed activity, including a description of the activities to be undertaken including associated structures and infrastructure	A description of the activities to be undertaken with the development of the Project is included in <b>Table 2.1</b> and <b>Table 2.2</b> .  A description of the associated infrastructure is included in <b>Section 2.4</b> . Activities to be undertaken during the various Project development phases is included in <b>Section 2.6</b> .

### 2.2. Nature and Extent of the Zondereinde PV Facility

Letsatsi is proposing to develop a Solar PV Energy Facility and associated infrastructure to generate electricity for use by a private off-taker. The Facility will have a contracted capacity of up to 100MW and will use single or double axis tracking PV technology to harness the solar resource on the development area and will be known as the Northam Zondereinde PV Facility. The solar panels, once installed, will stand up to 5m above ground level. The purpose of the Facility is to generate electricity for use by Northam's Zondereinde Mine. The construction the Solar PV Energy Facility aims to increase the Zondereinde Mine's security of electricity supply and reduce its carbon emissions. The Zondereinde PV Facility is central to achieving these goals, while simultaneously generating employment opportunities through the construction and operation of the Facility.

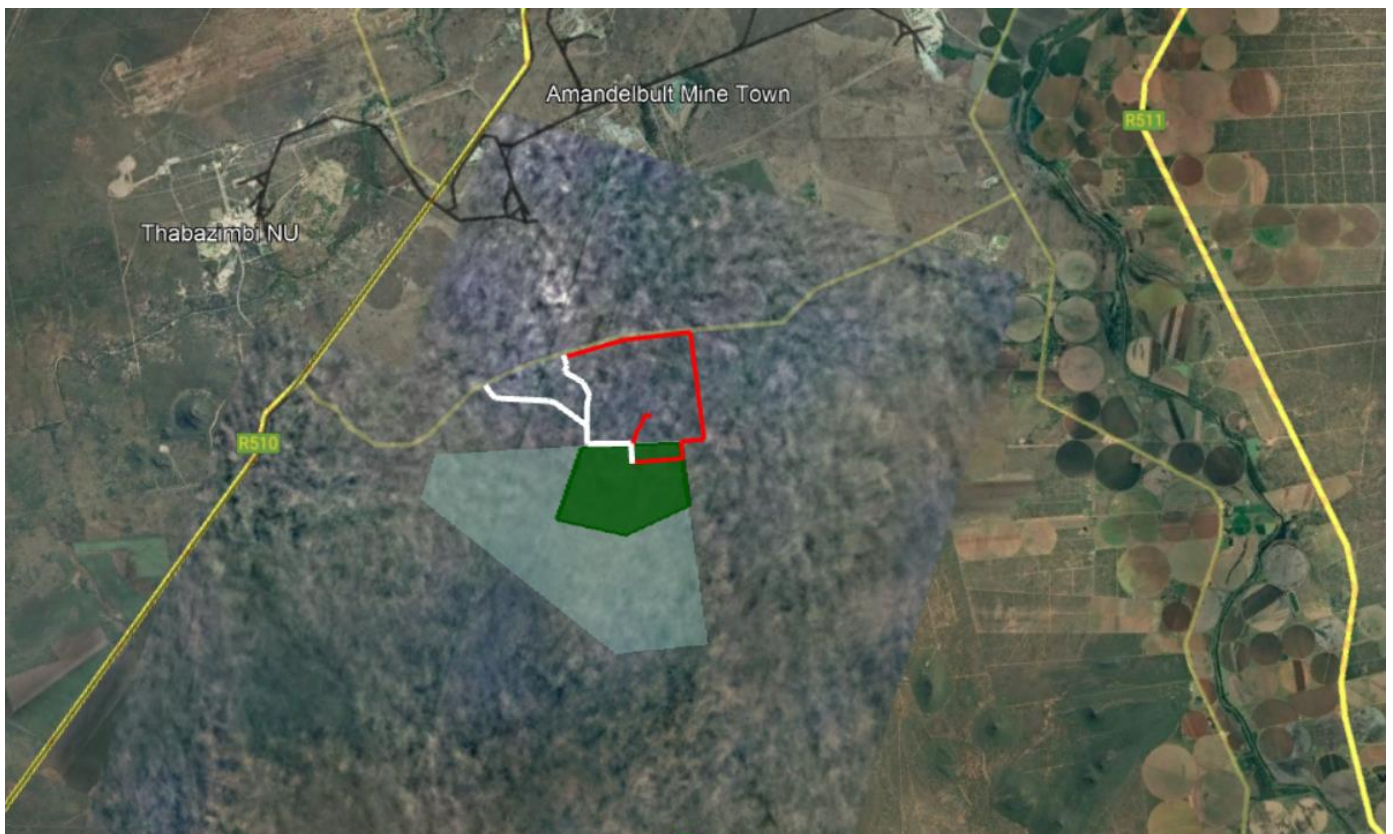


### 2.3. Overview of the Project Site and planned Infrastructure

The PV Site is located south of the Zondereinde Mine, on the Remainder of Portion 1 of the Farm Koppie Alleen 422 KQ, located approximately 30km south of Thabazimbi and 15km north-west of Northam, between the R510 in the west and the R511 in the east, in the Thabazimbi Local Municipality and Waterberg District in the Limpopo Province.

A development area of up to ~265ha has been identified within the project site (~1171ha) by Letsatsi for the development of the Zondereinde PV Facility Project. Within the development area, a smaller development footprint (~200ha) will be defined for assessment, taking into consideration the environmental sensitivities identified in the Scoping Phase of the EIA process.

The two alternative grid connection corridors have been identified in the Project Site for consideration in the EIA process (refer to **Figure 2.1**).



**Figure 2.1:** Location of the R510 in the west and the R511 in the east in relation to the Project.

#### **Components of the Zondereinde PV Facility**

Infrastructure associated with the Project will include:

- » Solar PV array, with branch strings, comprising PV panels and mounting structures.
- » Inverters and transformers.
- » Underground cabling between project components.
- » A battery energy storage systems (BESS).

- » A 33kV on-site facility substation to facilitate the connection between the Solar PV Energy Facility and the mine electrical distribution system.
- » Operations and maintenance (O&M) buildings (including offices, control room/s, warehouse, site security office and a storage facility).
- » 2 x 33kV overhead power line and transmission towers for the distribution of the generated power, which will be connected to the existing Smelter substation and Shaft substation (Existing 33kV Mine Substations).
- » Temporary laydown area and a construction yard.
- » Access road (gravel), internal gravel roads, firebreaks (4m width) and fencing around the PV Site.
- » A borehole, water storage facilities, water pump station and possibly a water treatment facility; sewage facilities (septic tank); and water and sewage pipelines.
- » Access control.

A summary of the details and dimensions of the planned infrastructure associated with the Project is provided in **Table 2.1**

**Table 0.1:** Details or infrastructures proposed as part of the Project. Specific details to be confirmed in the EIA phase.

Infrastructure	Footprint and dimensions
Number of Modules	Up to 178 600 modules (560Wp modules for the generation of up to 100MW)
Contracted Capacity	Up to 100MW
Area occupied by the solar array	Up to 200 ha
Panel Height	Up to 5m
Technology	The Project will make use of fixed-tilt or single-axis tracking PV technology and bifacial panels (single axis or double axis tracking PV technology to harness the solar resource on the project site)
Inverters	<ul style="list-style-type: none"> <li>» Up to 400 (qty)</li> <li>» Height: 5m</li> </ul>
BESS	<ul style="list-style-type: none"> <li>» Proposed technology: Lithium - Ion or Lithium-iron-phosphate or Redox Vanadium battery technology</li> <li>» Footprint: up to 4ha</li> <li>» Height: Up to 3m</li> <li>» Proposed capacity of battery storage: 500MWh / 5 hours per day of usable energy during demand peaks at Beginning of Life</li> </ul>
Other infrastructures	<ul style="list-style-type: none"> <li>» Offices, control room/s, inverters, transformers (MV/HV station). Dimensions to be confirmed during detailed design phase, although all will be single storey.</li> <li>» Overhead power line to the Existing 33kV Mine Substations, access and internal roads and fencing also required</li> <li>» Storage for diesel and transformer oil, if appropriate, storage size below thresholds</li> <li>» Establishment of a borehole for water supply and septic tank for sanitation</li> <li>» Underground cabling between project components.</li> <li>» Operations and maintenance buildings, warehouse, fencing around the PV Site, water storage facilities, water pump station and possibly a water treatment facility; sewage facilities (septic tank); and water and sewage pipelines.</li> <li>» Security and access control.</li> </ul>

Infrastructure	Footprint and dimensions
Area occupied by temporary laydown area	1 ha
Area occupied by the onsite facility substation	Up to 2 ha
Capacity of onsite facility substation	Up to 33kV
Access and internal roads associated with the facility	Existing municipal/mine roads will be used to access PV facilities; additional access from existing roads to site 3km with width of up to 8m (gravel or paved). Internal roads are to have hard surface/gravel roads with width of up to 6m to be used for internal roads within PV facility.
Grid connection	<p>A grid connection corridor, which is up to 200m wide allow for avoidance of environmental sensitivities, and suitable placement of the overhead power line within the corridor has been identified and will be assessed as part of the S&amp;EIA process.</p> <p>The parameters of the proposed overhead power line are provided below:</p> <ul style="list-style-type: none"> <li>» Capacity and circuit of the power lines (x2): 33kV (single circuit)</li> <li>» Power line servitude width: 15m</li> <li>» Height of the power line towers (pylons):16-24m</li> </ul> <p>During construction, a permanent access road along the length of the power line corridor, between 4 – 8m wide, will be established to allow for large crane movement. This track will then be utilised for maintenance during operation.</p>
Temporary infrastructure	<p>Temporary offices (site containers, chemical toilets) and temporary laydown area (accumulatively +- 5 ha)</p> <p>The construction yard will be used to perform small tasks during the construction phase, including equipment preparation and cleaning activities; and will include one or few container-type, offices for contractors and technical staff.</p> <p>The laydown area will be used for storage of material and equipment during the construction phase. This area will be rehabilitated on completion of construction activities.</p>

**Table 2.2** provides details regarding the requirements and the activities to be undertaken during the Project development phases (i.e., construction phase, operation phase and decommissioning phase). **Section 2.3** provides details of the technology considered for the Project.

**Project Development Phases Associated with the Zondereinde PV Facility**

**Table 2.2:** Details of the Project development phases (i.e., construction, operation, and decommissioning).

<b>Construction Phase</b>	
<b>Requirements</b>	<ul style="list-style-type: none"> <li>» Project receives required governmental approvals, including EA from LDEDET and a generating authorisation issued by the National Energy Regulator of South Africa (NERSA)</li> <li>» Expected to be up to 18 months.</li> <li>» The construction phase involves installation of the solar PV panels and the structural and electrical infrastructure to make the Facility operational. In addition, preparation of the soil and improvement of the access roads would continue for most of the construction phase.</li> <li>» Create direct and indirect local employment opportunities, with the majority of the workforce being sourced locally. Local unskilled and, where possible, semi-skilled labour will be used. The number of employment opportunities to be created during the construction phase will be determined as the Project modelling progresses during the EIA Phase.</li> <li>» No on-site labour camp are planned to be established during the construction phase. Workers will be sourced from the neighbouring towns.</li> <li>» Overnight on-site worker presence would be limited to security staff.</li> <li>» Chemical toilets will be used for sewage management during the construction phase.</li> <li>» Electricity required for construction activities will be sourced from the Zondereinde Mine.</li> <li>» Water required for the construction phase will be sourced from a newly established borehole, via small diameter pipes; or from the Municipality and will be transported and stored in tanks as appropriate.</li> </ul>
<b>Activities to be undertaken</b>	
Conduct surveys prior to construction	<ul style="list-style-type: none"> <li>» Including, but not limited to: geotechnical and biodiversity site surveys, , including the on-site substation site, to determine and confirm the locations of all associated infrastructure and panel micro-siting footprint.</li> </ul>
Undertake site preparation	<ul style="list-style-type: none"> <li>» Including the clearance of vegetation at the footprint of PV panel supports, onsite substation, power line tower positions, establishment of the laydown area and internal access roads and excavations for foundations.</li> <li>» Stripping of topsoil to be stockpiled, for use during rehabilitation.</li> <li>» Vegetation clearance to be undertaken in a systematic manner, to reduce the risk of exposed ground being subjected to erosion.</li> <li>» Include search and rescue of floral species of conservation concern (SCC) (where required) and the identification and excavation of any sites of cultural/heritage value (where required).</li> </ul>
Establishment of access roads to the site and internal roads	<ul style="list-style-type: none"> <li>» Internal gravel access roads between the arrays (6m wide) and around the boundary of the PV Site (6m wide) will be established at the commencement of construction.</li> <li>» An existing access road, which may be upgraded with hard surface, will be used to access the Facility (up to 8 m wide).</li> <li>» During construction, a permanent access road along the length of the power line corridor between 4 – 8m wide will be established, to allow for large crane movement.</li> </ul>
Establishment of laydown area	<ul style="list-style-type: none"> <li>» A laydown area for the storage of PV panels, project components and civil engineering construction equipment.</li> <li>» The laydown will also accommodate building materials and equipment associated with the construction of buildings.</li> </ul>

	<ul style="list-style-type: none"> <li>» No borrow pits will be required. Infilling or depositing materials will be sourced from licenced borrow pits within the surrounding areas.</li> </ul>
Construct foundation	<ul style="list-style-type: none"> <li>» Excavations to be undertaken mechanically.</li> </ul>
Transport of components and equipment to and within the site	<ul style="list-style-type: none"> <li>» The components for the Solar PV Energy Facility and onsite substation will be transported to site by road. Transportation will take place via appropriate national and provincial roads, and the dedicated Zondereinde Mine access/haul road to the site.</li> <li>» Some of the components (i.e., substation transformer) may be defined as abnormal loads in terms of the National Road Traffic Act (Act No. 29 of 1989) (NTRA) by virtue of the dimensional limitations.</li> <li>» Typical civil engineering construction equipment will need to be brought to the site (e.g., excavators, trucks, graders, compaction equipment, cement trucks, etc.), as well as components required for the mounting of the PV support structures, construction of the substation and site preparation.</li> </ul>
Erect PV Panels and Construct Substation, Invertors and BESS	<ul style="list-style-type: none"> <li>» The construction phase involves installation of the solar PV panels and the structural, mechanical and electrical infrastructure to make the Facility operational. In addition, preparation of the soil and improvement of the access roads would continue for most of the construction phase.</li> <li>» For array installation, typically vertical support posts are driven into the ground. Depending on the results of the geotechnical study, a different foundation method, such as screw pile, helical pile, micro-pile or drilled post/pile could be used. Ramming of the piles or pre-drilling with concrete filling will be considered if the ground is found to be hard. The posts will hold the support structures (tables), on which PV arrays would be mounted. Brackets attach the PV modules to the tables.</li> <li>» Trenches are dug for the underground Alternate Current (AC) and Direct Current (DC) cabling; and the foundations of the inverter enclosures and transformers are prepared. While cables are being laid and combiner boxes are being installed, the PV tables are erected.</li> <li>» Wire harnesses connect the PV modules to the electrical collection systems.</li> <li>» Underground cables and overhead circuits connect the Power Conversion Stations to the onsite AC electrical infrastructure and ultimately the Project's onsite substation. This process also involves the installation of the BESS facility.</li> </ul> <p>The following simplified sequence is conducted for the construction of the substation:</p> <ul style="list-style-type: none"> <li>» Step 1: Conduct geotechnical investigations to determine founding conditions;</li> <li>» Step 2: Conduct site survey;</li> <li>» Step 3: Vegetation clearance and construction of access road;</li> <li>» Step 4: Site grading and levelling;</li> <li>» Step 5: Construction of foundations;</li> <li>» Step 6: Import of collector substation components;</li> <li>» Step 7: Construction of collector substation;</li> <li>» Step 8: Rehabilitation of disturbed area and protection of erosion sensitive areas; and</li> <li>» Step 9: Testing (including quality control) and commissioning (in consultation with the switching specialist).</li> </ul>
Connection of PV panels to the onsite substation	<ul style="list-style-type: none"> <li>» PV arrays to be connected to the onsite substation via underground electrical cables.</li> <li>» Excavation of trenches is required for the installation of the cables. Trenches will be approximately 1.5 m deep.</li> <li>» Underground cables are planned to follow the internal access roads, as far as possible.</li> </ul>

	»
Construction of two (2) 33kV overhead power lines to evacuate the generated power to the Existing 33kV Mine Substations	<p>Two (2) 33kV single circuit overhead power lines will be constructed to connect the onsite substation to the two (2) Existing 33kV Mine Substations. Overhead power lines are constructed in the following simplified sequence:</p> <ul style="list-style-type: none"> <li>» Step 1: Surveying of the development corridor and holding discussions with Northam, the affected landowner;</li> <li>» Step 2: Final design and micro-siting of the infrastructure based on geo-technical and topographical conditions and potential environmental sensitivities; and obtain / register the required environmental permits (such as biodiversity permits, heritage permits and water use licence (WUL) or general authorisation (GA));</li> <li>» Step 3: Vegetation clearance and construction of access roads/tracks (where required);</li> <li>» Step 4: Construction of tower foundations;</li> <li>» Step 5: Assembly and erection of infrastructure within and along the corridor;</li> <li>» Step 6: Stringing of conductors;</li> <li>» Step 7: Rehabilitation of disturbed areas; and</li> <li>» Step 8: Continued maintenance.</li> </ul>
Establishment of ancillary infrastructure	<ul style="list-style-type: none"> <li>» An O&amp;M building, which will include offices, control room/s, a site security office, warehouse, storage area and workshop will be required.</li> <li>» Establishment of ancillary infrastructure will require the clearing of vegetation, levelling, and the excavation of foundations prior to construction.</li> </ul>
Undertake site rehabilitation	<ul style="list-style-type: none"> <li>» Commence with rehabilitation efforts once construction is completed in an area, and all construction equipment is removed.</li> <li>» On commissioning, access points to the Project Site not required during the operation phase will be closed and prepared for rehabilitation.</li> </ul>
<b><u>Operation Phase</u></b>	
<b>Requirements</b>	<ul style="list-style-type: none"> <li>» Duration will be a minimum of 20 years or as required by the off-taker.</li> <li>» Requirements for security and maintenance of the Project.</li> <li>» Employment opportunities relating to plant operation. The number of employment opportunities to be created during the operation phase will be determined as the Project modelling progresses during the EIA Phase.</li> <li>» Overnight on-site worker presence would be limited to security staff.</li> <li>» During the operation phase, water will mostly be required for the cleaning of panels where it will be sourced from a newly established borehole, via small diameter pipes; or from the Municipality.</li> <li>» Sewage due to the presence of maintenance personnel on-site will be produced during the operation phase. Septic tanks will be used during the construction and operation phases whereby these septic tanks will be serviced by an appropriately licensed third party contractor and transported to municipal sewage treatment works.</li> </ul>
<b>Activities to be undertaken</b>	
Operation and Maintenance	<ul style="list-style-type: none"> <li>» Full time security, maintenance, and control room staff.</li> <li>» All PV panels will be operational, except under circumstances of mechanical breakdown, inclement weather conditions, or maintenance activities.</li> <li>» PV panels to be subject to periodic maintenance and inspection.</li> </ul>

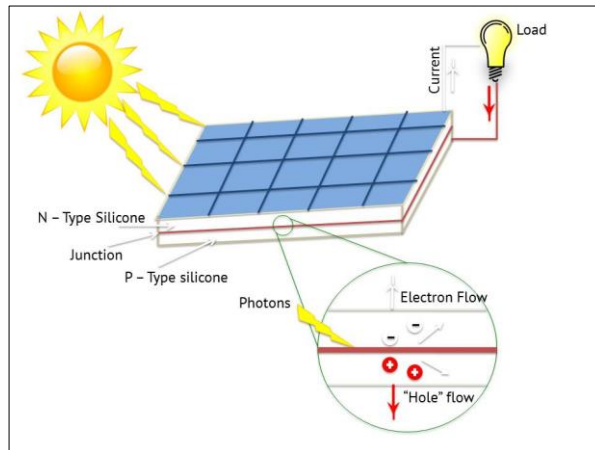
	<ul style="list-style-type: none"> <li>» It is anticipated that the PV panels will generally be washed not more than twice a year during operation using clean water, with no cleaning products; or using non-hazardous biodegradable cleaning products. The exact number of cleaning cycles will be confirmed once more knowledge on the soiling on site is acquired.</li> <li>» Areas which were disturbed during the construction phase to be utilised, should a laydown area be required during operation.</li> </ul>
<b><u>Decommissioning Phase</u></b>	
<b>Requirements</b>	<ul style="list-style-type: none"> <li>» Decommissioning of the Project at the end of its economic life.</li> <li>» Potential for repowering of the Facility, depending on its condition at the time.</li> <li>» Expected lifespan of a minimum of 20 years (with maintenance) or as required by the off-taker before decommissioning is required.</li> <li>» A decommissioning EMPr will be drafted and complied with at the decommissioning stage of the project lifecycle.</li> <li>» Decommissioning activities to comply with the legislation relevant at the time.</li> </ul>
<b>Activities to be undertaken</b>	
Site preparation	<ul style="list-style-type: none"> <li>» Confirming the integrity of access to the Project Site to accommodate the required decommissioning equipment.</li> <li>» Preparation of the Project Site (e.g., laydown areas and construction platform).</li> <li>» Mobilisation of construction equipment.</li> </ul>
Disassemble and remove PV panels	<ul style="list-style-type: none"> <li>» Components to be reused, recycled, or disposed of in accordance with regulatory requirements.</li> <li>» Much of the above ground wire, steel, and PV panels of which the system is comprised are recyclable materials and would be recycled to the extent feasible.</li> <li>» Concrete will be removed to a depth as defined by an agricultural specialist and the area rehabilitated. Cables will be excavated and removed, as may be required</li> </ul>

It is expected that the Project Site will revert to its original land-use, or an agreed land use that conforms with the principle of sustainable development, once the Project has reached the end of its economic life and all infrastructure has been decommissioned.



## 2.4. Technology considered for the Solar Energy Facility and the Generation of Electricity

The Project will have a contracted capacity of up to 100MW and will make use of PV technology. Solar energy facilities use energy from the sun to generate electricity through a process known as the **Photovoltaic Effect**. This effect refers to photons of light colliding with electrons, therefore placing the electrons into a higher state of energy to create electricity refer to **Figure 2.3**.



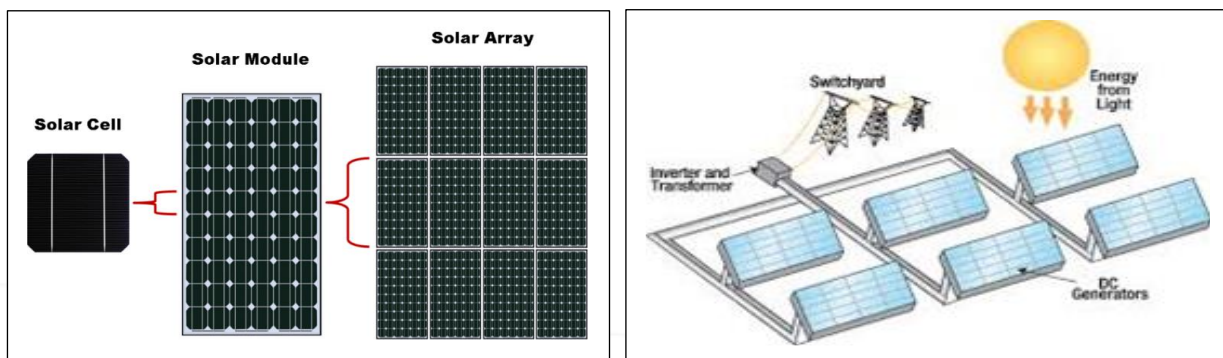
**Figure 0.3:** Diagram illustrating the Photovoltaic Effect (Source: Centre for Sustainable Energy).

The solar field of the PV facility will comprise the following components:

### PV Cells, Modules and Arrays:

A PV cell is made of silicone that acts as a semiconductor used to produce the photovoltaic effect. PV cells are arranged in multiples / arrays and placed behind a protective glass sheet to form a PV module (solar panel). Each PV cell is positively charged on one side and negatively charged on the opposite side, with electrical conductors attached to either side to form a circuit. This circuit captures the released electrons in the form of an electric current (i.e., Direct Current (DC)). A solar PV module is made up of individual solar PV cells connected together, whereas a solar PV array is a system made up of a group of individual solar PV modules electrically wired together to form a much larger PV installation.

PV modules are designed to operate continuously for more than 20 years, mostly unattended and with low maintenance.



**Figure 2.4:** Overview of a PV cell, module, and array(Source: pveducation.com).

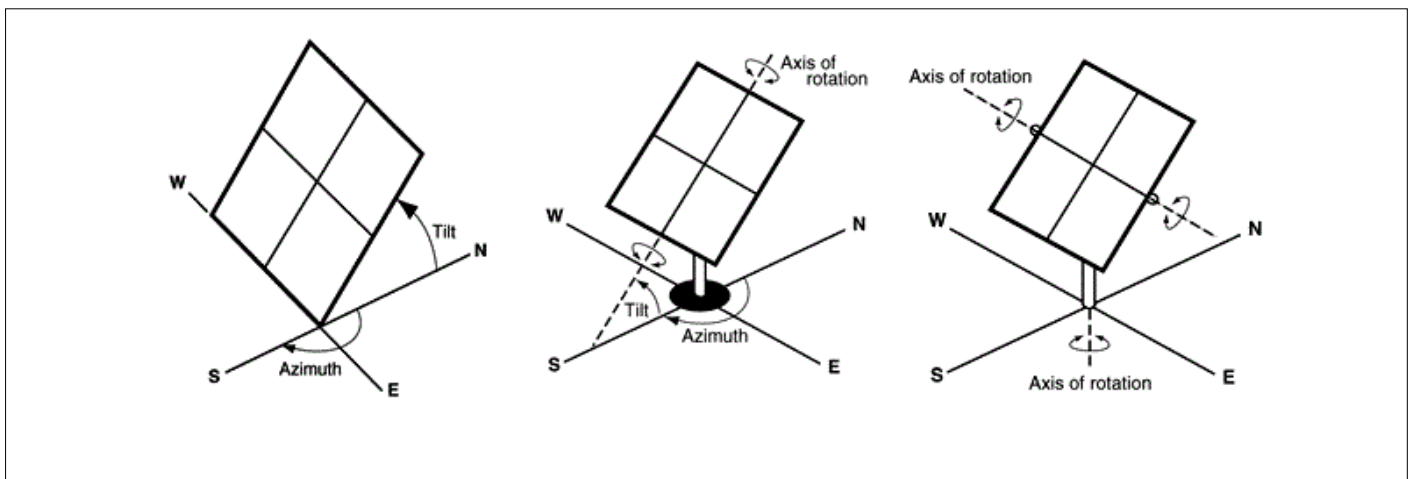


## Inverters

Inverters are used to convert the electricity produced by the PV cells from DC into Alternating Current (AC,) to enable the distribution of the electricity generated to the private off-taker's electricity point of interconnection. Numerous inverters will be arranged in several arrays to collect and convert power produced by the Zondereinde PV Facility.

## Support Structures

The PV panels will be fixed to support structures to maximise exposure to the sun. They can either utilise fixed / static support structures or alternatively single or double axis tracking support structures. PV panels that utilise fixed / static support structures are set at an angle (fixed-tilt PV system), to optimise the amount of solar irradiation. With fixed / static support structures, the angle of the PV panel is dependent on the latitude of the Project and may be adjusted to optimise for summer and winter solar radiation characteristics. PV panels that utilise tracking support structures track the movement of the sun throughout the day, to receive the maximum amount of solar irradiation.

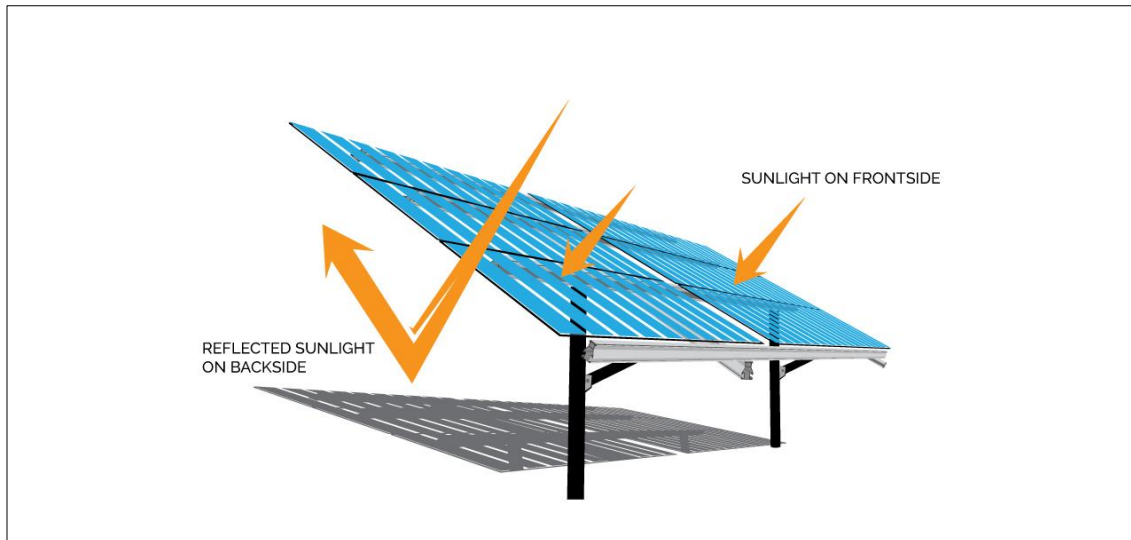


**Figure 2.5:** Overview of different PV tracking systems (from left to right: fixed-tilt, single-axis tracking, and double-axis tracking (Source: pveducation.com)).

## Bifacial Solar Panel Technology

Letsatsi is considering the use of bifacial tracking technology. Bifacial (“two-faced”) modules produce solar power from both sides of the panel. Traditional solar panels capture sunlight on one light-absorbing side. The light energy that cannot be captured is simply reflected away. Bifacial solar panels have solar cells on both sides, which enables the panels to absorb light from the back and the front (refer to **Figure 2.6**). Practically speaking, this means that a bifacial solar panel can absorb light reflected off the ground or another material. In general, more power can be generated from bifacial modules for the same area, without having to increase the development footprint.

The optimum tilt for a bifacial module must be designed to capture a big fraction of the reflected irradiation. Use of trackers is recommended so the modules can track the sun's movement across the sky, enabling them to stay directed to receive the maximum possible sunlight to generate power.



**Figure 2.6:** Diagram showing how bifacial Solar PV panels work (Source: <https://sinovoltaics.com/learning-center/solar-cells/bifacial-solar-modules/>).

### Battery Energy Storage System

The need for a BESS stems from the fact that electricity is only produced by the Zondereinde PV Facility while the solar resource is available; and the peak demand may not necessarily occur during the daytime or as the resource is available. Therefore, the storage of electricity and supply thereof during peak-demand will mean that the Facility is more efficient, reliable and electricity supply more constant.

The BESS will:

- » store and integrate a greater amount of renewable energy from the Solar PV Energy Facility into the Mine distribution system.
- » assist with the objective to generate electricity by means of renewable energy to feed into the Mine distribution system.

The BESS proposed footprint is up to 4ha and its proposed capacity is 500MWh / 5h per day of usable energy at Beginning of Life.

The BESS is included as part of the ESIA process, albeit that it will only be installed after the Solar PV Energy Facility has come into operation. The total electricity requirements for the off-taker are currently under review and an energy master plan is being developed, which will only be finalised post implementation of the Solar PV Facility to address all the electricity needs of the off-taker. The BESS has been included in this ESIA to ensure that should the energy master plan require this component is authorized.

The type of battery storage will only be determined at a later stage and will be based solely on the technological advancements made in the battery technology field. The storage solution will remain a containerised solution.

**Table 2.3:** Photographs of the construction phase of a solar facility similar to the Zondereinde PV Facility (Source: <https://medium.com/@solar.dao/how-to-build-pv-solar-plant-6c9f6a01020f>; <https://www.shutterstock.com/video/clip-1028794-workers-mounting-panels-on-solar-power-plant-construction>; <https://www.esi-africa.com/renewable-energy/kenya-construction-solar-farm-gets-green-light/>).





## CHAPTER 3: CONSIDERATION OF ALTERNATIVES

This Chapter provides an overview of the site selection process and various alternatives considered for the Project as part of the S&EIA Process.

### 2. 3.1 Legal Requirements as per the EIA Regulations, 2014 (as amended) for the undertaking of a Scoping Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
2(1)(f) a motivation for the preferred site, activity, and technology alternative	The identification and motivation for the preferred Project Site, the development area within the Project Site, the proposed activity and the proposed technology is included in <b>sections 3.3.1, 3.3.3 and 3.3.4.</b>
2(1)(g)(i) details of the alternative considered	The details of all alternatives considered as part of the Project are included in <b>sections 3.3.1 – 3.3.5.</b>
2(1)(g)(ix) the outcome of the site selection matrix	The site selection process followed by the project developer to identify the preferred Project Site and development area is described in <b>section 3.3.1.</b>
2(1)(g)(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such	Where no alternatives have been considered, motivation has been included. This is included in <b>section 3.3.</b>

### 3. 3.2 Alternatives Considered during the S&EIA Process

In accordance with the requirements of Appendix 2 of the 2014 EIA Regulations (GNR 326), reasonable and feasible alternatives, including but not limited to site and technology alternatives and the “do-nothing” alternative, should be considered.

The Department of Forestry, Fisheries and the Environment (DFFE) Guideline for determining alternatives states that the key criteria for consideration when identifying alternatives are that they should be “practicable”, “feasible”, “relevant”, “reasonable” and “viable”. Essentially there are two types of alternatives:

- » Fundamentally (totally) different alternatives to the Project.
- » Incrementally different (modifications) alternatives to the Project.

In this instance, 'the Project' refers to the Zondereinde PV Facility, with capacity of up to 100MW, and associated infrastructure proposed to be developed to generate electricity for use by a private off-taker (i.e., Zondereinde Mine) and the power line. The construction of the Facility is aimed at increasing the Zondereinde Mine's security of electricity supply and reducing its carbon emissions. The Zondereinde PV Facility is central to achieving these goals, while simultaneously generating employment opportunities through the construction and operation of the Facility.

Several other solar renewable energy facilities are planned within the broader study area, supporting the suitability of the area for solar PV projects.

### **3.2.1 Consideration of Fundamentally Different Alternatives**

Fundamentally different alternatives are usually assessed at a strategic level and, as a result, project specific EIAs are therefore limited in scope and ability to address this. At a strategic level, electricity generating alternatives have been addressed as part of the Department of Mineral Resources and Energy's (DMRE) current IRP for Electricity 2010 – 2030<sup>1</sup> and will continue to be addressed as part of future revisions.

In this regard, the need for renewable energy power generation from solar PV facilities has been identified as part of the technology mix for power generation in the country for the next 20 years. Of relevance to the Project is the IRP 2019, which outlines South Africa's stepping stones to reduce coal's contribution to the energy mix to below 60%, in favour of renewables, like wind, and PV technologies, which would account for 25% of the country's energy mix by 2030. Furthermore the DMRE plans to repurpose existing coal-fired plants with renewable energy plants and/or battery storage solutions, and train people in new skills, to ensure that jobs can be transferred. The IRP includes provision for distributed generation capacity for own use. The threshold for distributed generation was raised to 100MW in August 2021. Project developers are exempted from applying for a license but are required to register with the NERSA and comply with the relevant grid code(s).

The fundamental energy generation alternatives were assessed and considered within the development of the IRP and the need for the development of renewable energy projects has been defined. Therefore, fundamentally different alternatives to the Project are not considered within this S&EIA process.

### **3.2.2 Consideration of Incrementally Different Alternatives**

Incrementally different alternatives relate specifically to the Project under investigation. "Alternatives", in relation to a proposed activity, means different ways of meeting the general purposes and requirements of the activity, which may include alternatives for:

- » The property on which, or location where the activity is proposed to be undertaken.
- » The type of activity to be undertaken.
- » The design or layout of the activity.
- » The technology to be used in the activity.
- » The operational aspects of the activity.

In addition, the option of not implementing the activity (i.e., the "do-nothing" alternative) must also be considered.

The sections below describe the incrementally different alternatives being considered as part of the Project. Where no alternative is being considered, a motivation has been provided as required by the EIA Regulations, 2014, as amended.

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<sup>1</sup> The Integrated Resource Plan (IRP) is legislated policy which regulates power generation planning.



### 3.3 Project Alternatives under Consideration for the Zondereinde PV Facility

#### 3.3.1. Property or Location Alternatives

The Project Site is located approximately 30km south of Thabazimbi and 18km north-east of Northam, between the R510 in the west and the R511 in the east in the Waterberg DistrictWDM in the Limpopo Province.

Prior to selection of study area, additional areas in the vicinity were screened but rejected due to geotechnical, topographical, environmental and other factors.

The placement of a solar PV facility is dependent on several factors, namely, land suitability; climatic conditions (solar irradiation levels); topography; the location and extent of the development area; availability of grid connection infrastructure; and the need and desirability of the project.

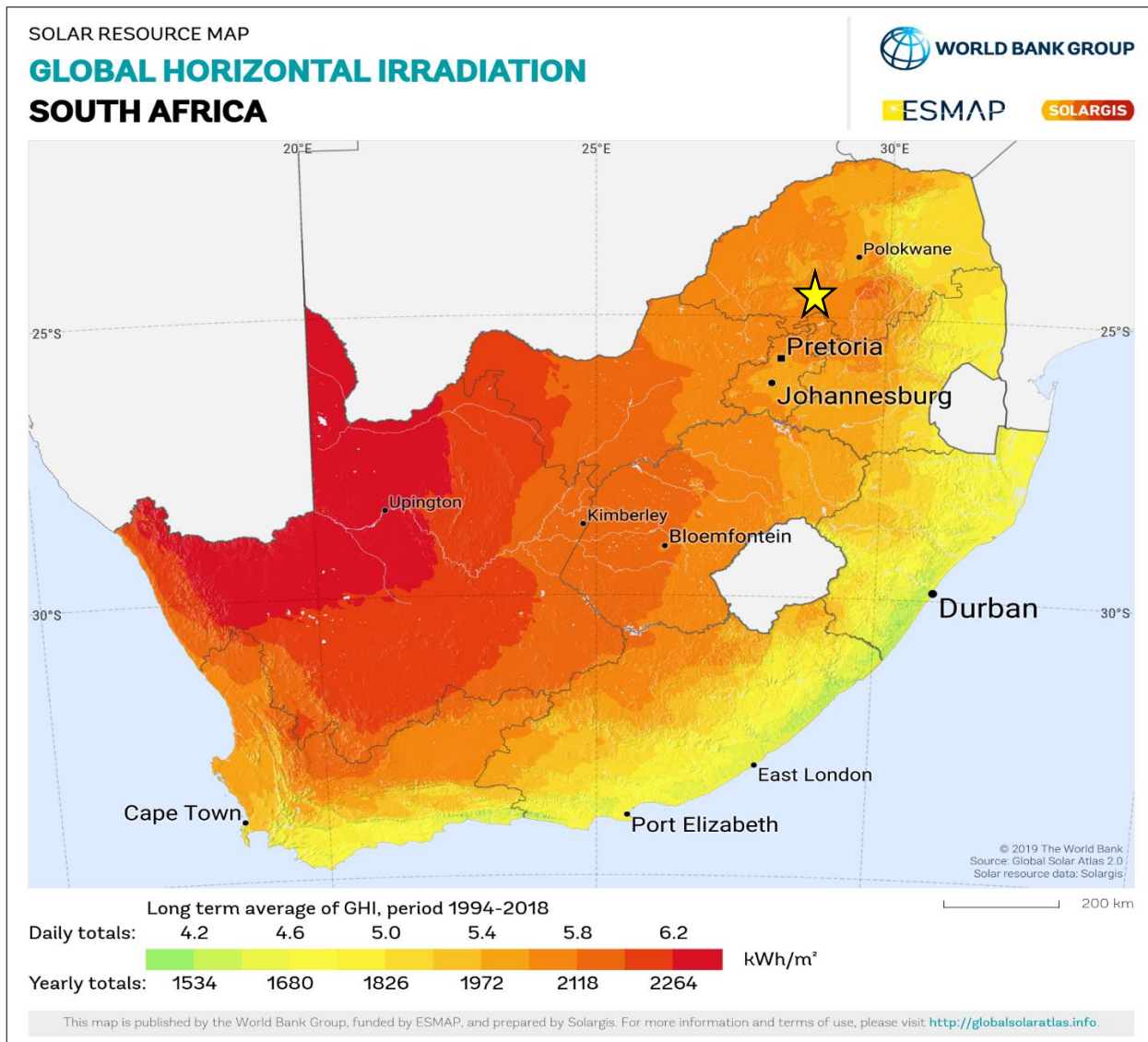
The development area is considered highly favourable to establish a solar PV facility based on the evaluation of technical characteristics, including:

- » Solar resource characteristics (including Global Horizontal Irradiation (GHI)).
- » Land availability.
- » Land use and geographical and topographical considerations.
- » Access to the Zondereinde Mine grid tie in point.
- » Site accessibility.
- » Environmental and social aspects.

Northam considers the development area as being highly favourable and suitable for the establishment of the Northam Zondereinde PV Facility. The PV Facility will be located close to the Zondereinde Mine processing plant.

The characteristics listed below were considered were identified by the developer as the main aspects that play a role in the opportunities and limitations for the development of a solar PV facility. The characteristics considered, and the results thereof, are discussed in the sections below.

- » **Solar resource:** Solar resource is the first main driver of site selection and property viability when considering the development of solar PV energy facilities. Their economic viability of a solar PV energy facility is directly dependent on the annual direct solar irradiation values of the area within which it will operate. The Global Horizon Irradiation (GHI) for the study area is in the region of approximately 2045 – 2118kWh/m<sup>2</sup>/annum (refer to **Figure 3.1**). Based on the solar resource available, no alternative locations are considered.



**Figure 3.1:** Solar Irradiation Map For South Africa: The Position Of The Proposed Northam Zondereinde Solar PV Energy Facility is shown by the yellow star on the map. (Source: adapted from Global Solar Atlas 2.0, 2019).

- » **Topographical Considerations:** The topographical heterogeneity of the development area is described as low, with relatively flat topography. No significant topographical features have been observed within the development area. The Site lies at an elevation of approximately 700m above mean sea level (amsl), with the highest point located in the southern extent of the Site. The Site is situated in a virtually flat terrain, with slopes of less than 2%. Only minor undulations and localised topographical variances, in the form of small, non-perennial streams, occur within the area. Sites that facilitate easy construction conditions (i.e., relatively flat topography, lack of major rock outcrops etc.) are favoured during the site selection process for a solar PV energy facility, and the development area fits this criterion.
- » **Latitude of the site:** At higher latitudes, the angle of irradiation is smaller, causing energy to be spread over a large area of the surface, resulting in cooler temperatures. At lower latitudes (i.e., between 20° and 30°), the sun is higher in the sky, causing energy to be spread over a small area of the surface, resulting in warmer temperatures.

- » **Local climate considerations:** Cloudy weather has a negative effect on solar power production, as clouds reduce the amount of sunlight that reaches solar panels. Clouds tend to form where air rises, and descending air inhibit cloud formation. Since air descends between latitudes of 15° and 30° north and south of the equator, clouds are rare in areas located at these latitudes. The Project Site is located at a latitude of 24°50'29.84"S, which means cloud occurrence is rare in the area and it is therefore unlikely that there would be cloudy weather in the area that would reduce the amount of sunlight that reaches the solar panels.
  
- » **Land Availability:** In order to develop Zondereinde Solar Energy PV Facility, with a contracted capacity of up to 100MW, sufficient space is required. The Project Site is owned by Northam and can therefore be used for a development of this nature. The Project Site has an extent of ~ 1171ha, which was considered by the developer as sufficient for the development of the Project. An exact development footprint within the Project Site for the placement of infrastructure will be identified and assessed as part of the EIA Phase, considering environmental constraints and sensitivities.
  
- » **Land Use and Suitability:** The current land use of the development area is an important consideration in site selection in terms of limiting disruption to existing land use practices. The area to the north of the PV Site can be classified as being heavily influenced by mining activities. The general region within which the Project Site is located can be classified as being definitively rural. The land use character of this region is preferred for a development of this nature, as it will not conflict with the current land use. The Project is compatible with the surrounding land uses and does not present a conflicting land use.
  
- » **Site Access:** The Northam Zondereinde Solar Energy PV Facility is to be located approximately 30km south of Thabazimbi and 18km north-east of Northam. The road network in the vicinity of the site includes the R51002N, an unnamed road to the north; the D1639\_025 to the east; and the D56\_010 to the south. Access to the Project Site is possible using an existing site access point. By making use of an existing access point, access spacing restrictions are not envisaged. The access is located off a fairly straight road thus sight line issues are not envisaged during the life of the Project (refer to **Figure 3.2**).





**Figure 3.2:** Location of the development area (in green) in relation to the gravel main access roads which provides direct access to it

**Access to the National Electricity Grid:** A key factor in the siting of any power generation project is a viable grid connection. The grid connection infrastructure for the Solar PV Energy Facility will include underground cabling between project components to the 33kV on-site substation, including a BESS (preferably constructed adjacent to the on-site substation). BESS sizing and technology specifications are finalised upon detailed design of the plant. 2 x 33kV overhead power lines will be utilised to evacuate the generated power to the Existing 33kV Substations (i.e., the existing Smelter and Shaft Substations).

Taking into consideration the solar resource, grid access, land suitability, landowner support, access to road infrastructure and the current land use of the Project Site and development area, the Project Site was identified by the developer as being the most technically feasible and viable project site within the broader area for further investigation in support of an application for EA. As a result, no property alternatives are proposed as part of this Scoping and EIA process.

The preferred Project Site has been subject to further investigation by specialist consultants as part of the Scoping Phase of the S&EIA process. This included field investigations; and desktop consideration of environmental constraints. The purpose of this phase of the process was to identify sensitive and no-go areas; and determine appropriate buffers to be considered within the development of the Project layout. The facility layout or development footprint will be determined based on the outcomes of the scoping study and will undergo further investigation during the EIA Phase.

### **3.3.2. Design and Layout Alternatives**

The overall aim of the facility layout is to maximise electricity production through exposure to the solar resource, while minimising infrastructure, operation, and maintenance costs, and social and environmental impacts. The findings of the specialist scoping assessments will assist the project developer in selecting the optimum position for the PV arrays and associated infrastructure including, but not limited to, access roads, and laydown areas.

The Affected Properties (i.e. 1171ha in which development area (~265 ha) and facility footprint is located), is sufficient in extent for the installation of a solar PV facility, while allowing for the avoidance of environmental site sensitivities. Findings from specialist field surveys were considered through this Scoping process to provide site specific information regarding the development area considered for the 200ha Solar PV Facility.

An overall environmental scoping sensitivity map has been provided to illustrate the sensitive environmental features located within the development area which need to be considered and, in some instances, completely avoided by the Project infrastructure or development footprint (refer to **Chapter 8**). Once more detailed information is available from an environmental and planning perspective for the broader site, a detailed micro-siting exercise will be undertaken to effectively 'design' the facility layout within the development footprint. Through the process of determining constraining factors and environmentally sensitive areas, the layout of the Facility will be planned and adjusted, if necessary, to ensure the avoidance of no-go areas and mitigation of sensitive environmental features. A detailed facility layout will be developed and made available for assessment and ground-truthing by the independent specialists in the EIA Phase. Where further conflicts are predicted, a mitigation strategy will be developed to meet the objectives of the mitigation hierarchy (avoid, minimise, mitigate).

### **3.3.3. Activity Alternatives**

In an aim to decarbonize, mines are choosing to move away from coal generated power sources, such as those provided by Eskom. The alternatives to electricity supply from coal in South Africa are renewable energy and nuclear energy.

Possible alternatives in terms of renewable energy for the Zondereinde Mine include solar, biomass, hydro and wind energy. However, based on the preliminary investigations undertaken by the Project Applicant only a solar PV development, is being considered by the project developer, seeing as South Africa has some of the highest levels of solar radiation in the world (with an average daily solar radiation that varies between 4.5 kilowatt hours per square metre per day (kWh/m<sup>2</sup>/day) and 6.5 kWh/m<sup>2</sup>/day. This, in comparison to about 3.6 kWh/m<sup>2</sup>/day for parts of the United States and about 2.5 kWh/m<sup>2</sup>/day for Europe and the United Kingdom, reveals that South Africa has considerable solar resource potential which should be exploited (Energy, 2022).

In addition to a more stabilized supply, renewable energy facilities also have numerous environmental, social and economic benefits, which align with the off-taker's sustainability efforts.

Considering the available natural energy resource within the area (i.e., solar irradiation) and unsuitability of the site for wind generation, solar PV power generation is considered the preferred option within the development area. In addition, grid connection infrastructure to connect the Solar Energy PV Facility to the

Existing 33kV Mine Substations is present on the Project Site, which will enable an easy and short connection. Considering the above, no activity alternatives are considered within this S&EIA process.

#### **3.3.4. Technology Alternatives**

Few technology options are available for solar energy PV facilities, and the use of those that are considered are usually differentiated by weather and temperature conditions that prevail in the area, so that optimality is obtained by the final site selection. Solar energy is considered the most suitable renewable energy technology for this area, based on the site location, ambient conditions and energy resource availability.

When considering PV as a technology choice, several types of panels are available, including *inter alia*:

- » Bifacial PV panels.
- » Monofacial PV panels.
- » Fixed mounted PV systems (static / fixed-tilt panels).
- » Single-axis tracking or double-axis tracking systems (with solar panels that rotate around a defined axis to follow the sun's movement).

The primary difference between PV technologies available relate to the extent and height of the facility; however, the potential for environmental impacts remains similar in magnitude. Fixed mounted PV systems can occupy a smaller extent and have a lower height when compared to tracking PV systems, which require both a larger extent of land, and are taller in height. However, both options are considered acceptable for implementation from an environmental perspective.

#### **3.3.5. The 'Do-Nothing' Alternative**

The 'Do-Nothing' alternative is the option of not constructing the Project. Should this alternative be selected, there would be no environmental impacts or benefits as a result of construction and operation activities associated with the Solar PV Facility. This alternative will be assessed within the EIA Phase of the process.

#### **3.3.6. Conclusion**

The Applicant considers the preferred Project Site as being highly favourable and suitable for the establishment of a solar PV facility. The Northam Zondereinde Solar PV Energy Facility will be located close to the Zondereinde Mine's processing plant. Furthermore, with the Project Site being near the Existing Mine 33kV Substations, this ensures that the power line will be relatively short, saving on costs and further reducing cumulative environmental impacts associated with power line infrastructure.

The characteristics considered were identified by the developer as the main aspects that play a role in the opportunities and limitations for the development of a solar PV facility.

## CHAPTER 4: POLICY AND LEGISLATIVE CONTEXT

This chapter provides an overview of the policy and legislative context within which the development of a Solar PV Facility, such as Zondereinde PV Facility, is proposed. It identifies environmental legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process which may be applicable to or have bearing on the Project.

### 4.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Scoping Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of Scoping Report:

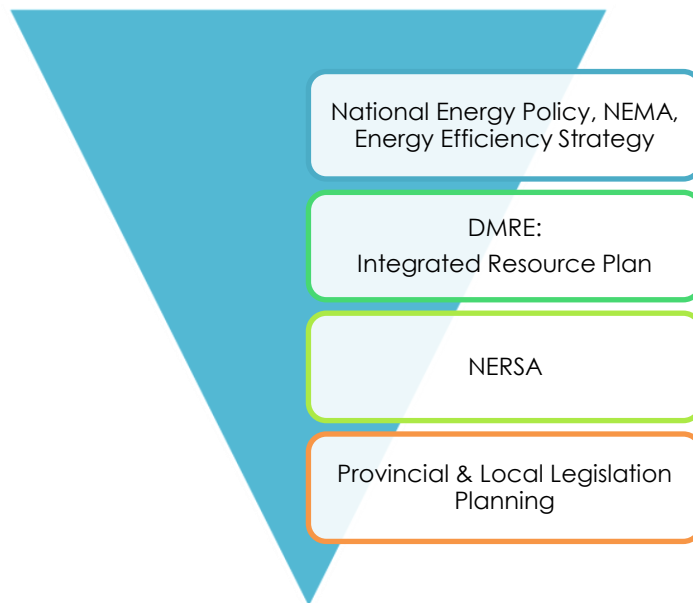
Requirement	Relevant Section
(e) a description of the policy and legislative context within which the development is proposed, including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.	Chapter 5 provides an overview of the policy and legislative context which is considered to be associated with the development of the solar energy facility. The regulatory and planning context has been considered at national, provincial and local levels. A description of the policy and legislative context within which Zondereinde PV Facility is proposed is included in <b>sections 4.3, 4.4, 4.5 and 4.6.</b>

### 4.2 Strategic Electricity Planning in South Africa

The need to expand electricity generation capacity in South Africa is based on national policy and informed by on-going strategic planning undertaken by the DMRE. The hierarchy of policy and planning documentation that support the development of renewable energy projects such as a solar energy facility is illustrated in **Figure 4.1**. These policies are discussed in more detail in the following sections, along with the provincial and local policies or plans that have relevance to the development of Zondereinde PV Facility.

The South African energy industry is evolving rapidly, with regular changes to legislation and industry role-players. The regulatory hierarchy for an energy generation project of this nature consists of three tiers of authority, who exercise control through both statutory and non-statutory instruments – that is National, Provincial and Local levels. As solar energy developments are a multi-sectoral issue (encompassing economic, spatial, biophysical, and cultural dimensions), various statutory bodies are likely to be involved in the approval process of a solar energy project and the related statutory environmental assessment process.





**Figure 4.1:** Hierarchy of electricity and planning documents

At **National Level**, the main regulatory agencies are:

- » **Department of Mineral Resources and Energy (DMRE):** DMRE is responsible for policy relating to all energy forms and for compiling and approving the IRP for electricity. Furthermore, the DMRE is also responsible for granting approvals for the use of land which is contrary to the objects of the Mineral and Petroleum Resource Development Act (Act No. 28 of 2002) (MPRDA), in terms of Section 53 of the MPRDA. Therefore, in terms of the Act, approval from the Minister is required to ensure that proposed activities do not sterilise mineral resources that may occur within the Project Site and Development Area.
- » **National Energy Regulator of South Africa (NERSA):** NERSA is responsible for regulating all aspects of the electricity sector and will ultimately issue licenses for independent power produce (IPP) projects to generate electricity.
- » **The South African Heritage Resources Agency (SAHRA):** SAHRA is a statutory organisation, established under the National Heritage Resources Act (No. 25 of 1999) (NHRA), as the national administrative body responsible for the protection of South Africa's cultural heritage.
- » **South African National Roads Agency Limited (SANRAL):** SANRAL is responsible for the regulation and maintenance of all national road routes.
- » **Department of Water and Sanitation (DWS):** The DWS is responsible for effective and efficient water resources management to ensure sustainable economic and social development. It is also responsible for evaluating and issuing licenses pertaining to water use (i.e. , Water Use Licenses (WUL) and registering General Authorisations).
- » **The Department of Agriculture, Rural Development and Land Reform (DARDLR):** This Department is the custodian of South Africa's agricultural resources and is primarily responsible for the formulation and implementation of policies governing the agriculture sector.

At **Provincial Level**, the main regulatory agencies are:

- » **Limpopo Department of Economic Development, Environment and Tourism (LDEDET):** LEDET is the competent authority (CA) for the EIA process for the Project and is responsible for issuing of biodiversity and conservation-related permits.

- » **Limpopo Department of Public Works, Roads and Infrastructure:** This Department is responsible for roads and the granting of exemption permits for the conveyance of abnormal loads on public roads.
- » **Limpopo Provincial Heritage Resources Authority (LIHRA):** The LIHRA is responsible for the identification, conservation and management of heritage resources and commenting on heritage related issues in Limpopo Province.

At the **Local Level**, the local and district municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. In the Limpopo Province, both the local and district municipalities play a role. The local municipality includes the **Thabazimbi Local Municipality**, which forms part of the **Waterberg District Municipality**. In terms of the Municipal Systems Act (No. 32 of 2000), it is compulsory for all municipalities to go through an Integrated Development Planning (IDP) process to prepare a five-year strategic development plan for the area under their control.

### 4.3 International Policy and Planning Context

A brief review of the most relevant international policies relevant to the establishment of the Zondereinde PV Facility are provided below in **Table 4.1**. The Zondereinde PV Facility is considered aligned with the aims of these policies, even if contributions to achieving the goals therein are only minor.

**Table 4.1:** International policies relevant to Zondereinde PV Facility

Relevant policy	Relevance to Zondereinde PV Facility
United Nations Framework Convention on Climate Change (UNFCCC) and Conference of the Party (COP)	The Conference of the Parties (COP), established by Article 7 of the UNFCCC, is the supreme body and highest decision-making organ of the Convention. It reviews the implementation of the Convention and any related legal instruments and takes decisions to promote the effective implementation of the Convention.
	The Conference of the Parties (COP) 21 was held in Paris from 30 November to 12 December 2015. From this conference, the Paris Agreement to tackle global warming was reached between 195 countries.
	South Africa signed the Paris Agreement in April 2016 and ratified it on 1 November 2016. The Agreement was assented to by the National Council of Provinces on 27 October 2016, and the National Assembly on 1 November 2016.
	South Africa signed the Agreement in April 2016 and ratified the agreement on 01 November 2016. The Agreement was assented to by the National Council of Provinces on 27 October 2016, and the National Assembly on 1 November 2016.
	South Africa's National Climate Change Response Policy (NCCRP) establishes South Africa's approach to addressing climate change, including adaptation and mitigation responses. The NCCRP formalises Government's vision for a transition to a low carbon economy, through the adoption of the 'Peak, Plateau and Decline' (PPD) GHG emissions trajectory whereby South Africa's emissions should peak between 2020 and 2025, plateau for approximately a decade, and then decline in absolute terms thereafter, and based on this the country has pledged to reduce

Relevant policy	Relevance to Zondereinde PV Facility
	<p>emissions by 34% and 42% below Business As Usual (BAU) emissions in 2020 and 2025, respectively.</p> <p>The policy provides support for Zondereinde PV Facility which will contribute to managing climate change impacts, supporting the emergency response capacity, as well as assist in reducing GHG emissions in a sustainable manner.</p>
<p>The Equator Principles IV (October 2020)</p>	<p>The Equator Principles IV constitute a financial industry benchmark used for determining, assessing, and managing a project's environmental and social risks. The EPs are primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making. The EPs are applicable to large infrastructure projects (such as Zondereinde PV Facility) and apply globally to all industry sectors.</p> <p>Such an assessment should propose measures to minimise, mitigate, and offset adverse impacts in a manner relevant and appropriate to the nature and scale of Zondereinde PV Facility. In terms of the EPs, South Africa is a non-designated country; and, as such, the assessment process for projects located in South Africa evaluates compliance with the applicable International Finance Corporation's (IFC) Performance Standards on Environmental and Social Sustainability, and Environmental Health and Safety (EHS) Guidelines.</p> <p>The Zondereinde PV Facility is currently being assessed in accordance with the requirements of the 2014 EIA Regulations, as amended (GN R326), published in terms of Section 24(5) of the National Environmental Management Act (No. 107 of 1998) (NEMA), which is South Africa's national legislation providing for the authorisation of certain controlled activities. Through this assessment, all potential social and environmental risks are identified and assessed, and appropriate mitigation measures proposed.</p>
<p>International Finance Corporation (IFC) Performance Standards and Environmental and Social Sustainability (January 2012)</p>	<p>The International Finance Corporation's (IFC) Performance Standards (PSs) on Environmental and Social Sustainability were developed by the IFC and were last updated on 1 January 2012.</p> <p>Performance Standard 1 requires that a process of environmental and social assessment be conducted, and an Environmental and Social Management System (ESMS) appropriate to the nature and scale of the project, and commensurate with the level of its environmental and social risks and impacts, be established and maintained. The above-mentioned standard is the overarching standard to which all the other standards relate. Performance Standards 2 through to 8 establish specific requirements to avoid, reduce, mitigate, or compensate for impacts on people and the environment; and to improve conditions where appropriate. While all relevant social and environmental risks and potential impacts should be considered as part of the assessment, the standards 2 and 8 describe potential social and environmental impacts that require particular attention specifically within emerging markets. Where social or environmental impacts are anticipated, the developer is required to manage them through its ESMS consistent with Performance Standard 1.</p>

Relevant policy	Relevance to Zondereinde PV Facility
	Given the nature of the Zondereinde PV Facility, it is anticipated (at this stage of the process) that Performance Standards 1, 2, 3, 4, 6, and 8 may be applicable to the Project.

#### 4.4 National Policy and Planning Context

Further to the South African government's commitment in August 2011 to support the development of renewable energy capacity, the DMRE initiated the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) to procure renewable energy from the private sector in a series of rounds. To date, the Department has procured 6 422MW of renewable energy capacity from 112 IPPs, with 4 724MW operational and made available to the grid<sup>2</sup>. National policies should be considered for the construction and operation of the Northam Zondereinde PV Facility, to ensure that the development is in line with the planning of the country.

A brief review of the most relevant national policies is provided below in **Table 4.2**. The development of Zondereinde PV Facility is considered to align with the aims of these policies and objectives of national legislation, even where contributions to achieving the goals therein are only minor.

**Table 4.2:** Relevant national legislation and policies for Zondereinde PV Facility

Relevant legislation or policy	Relevance to Zondereinde PV Facility
Constitution of the Republic of South Africa, 1996	<p>Section 24 of the Constitution pertains specifically to the environment. It states that everyone has the right to an environment that is not harmful to their health or well-being, and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources, while promoting justifiable economic and social development.</p> <p>The Constitution outlines the need to promote social and economic development. Section 24 of the Constitution therefore requires that development be conducted in such a manner that it does not infringe on an individual's environmental rights, health, or well-being. This is especially significant for previously disadvantaged individuals who are most at risk to environmental impacts. The undertaking of an EIA process for the Project, in terms of the requirements of the EIA Regulations, 2014 (as amended), aims to minimise any impacts on the natural and social environment.</p>
National Environmental Management Act (No. 107 of 1998) (NEMA)	<p>This piece of legislation is South Africa's key piece of environmental legislation and sets the framework for environmental management in South Africa. NEMA is founded on the principle that everyone has the right to an environment that is not harmful to their health or well-being, as contained within the Bill of Rights.</p> <p>The national environmental management principles state that the social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.</p>

<sup>2</sup><http://www.nersa.org.za/wp-content/uploads/2021/05/Monitoring-of-Renewable-Energy-Performance-of-Power-Plants-%E2%80%93-Performance-of-Power-Plants-in-2020>



Relevant legislation or policy	Relevance to Zondereinde PV Facility
	<p>The need for responsible and informed decision-making by government on the acceptability of environmental impacts is therefore enshrined within NEMA.</p>
<p>National Energy Act (No. 34 of 2008) (NEA)</p>	<p>The purpose of the National Energy Act (No. 34 of 2008) is to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, while taking into account environmental management requirements and interactions amongst economic sectors, as well as matters relating to renewable energy. The National Energy Act also provides for energy planning; increased generation and consumption of renewable energies; contingency energy supply; holding of strategic energy feedstocks and carriers; and adequate investment in, appropriate upkeep and access to energy infrastructure.</p> <p>It provides measures for the furnishing of certain data and information regarding energy demand, supply, and generation; and for establishing an institution to be responsible for promotion of efficient generation and consumption of energy and energy research.</p> <p>The NEA provides the legal framework which supports the development of power generation facilities. It also provides for licences and registration as the way generation, transmission, distribution, trading and the import and export of electricity are regulated. The development of Zondereinde PV Facility will have to ensure compliance with this NEA as a license for the generation of electricity will be required.</p>
<p>White Paper on the Energy Policy of the Republic of South Africa (1998)</p>	<p>The White Paper on Energy Policy places emphasis on the expansion of energy supply options to enhance South Africa's energy security. This can be achieved through increased use of renewable energy and encouraging new entries into the generation market.</p> <p>The policy states that the advantages of renewable energy include minimal environmental impacts during operation in comparison with traditional supply technologies, generally lower running costs, and high labour intensities. Disadvantages include higher capital costs in some cases, lower energy densities, and lower levels of availability, depending on specific conditions, especially with sun and wind-based systems. Nonetheless, renewable resources generally operate from an unlimited resource base and, as such, can increasingly contribute towards a long-term sustainable energy future.</p>
<p>White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)</p>	<p>The White Paper on Renewable Energy Policy Supplements Government's predominant policy on energy as set out in the White Paper on the Energy Policy of the Republic of South Africa (DME, 1998). The policy recognises the potential of renewable energy and aims to create the necessary conditions for the development and commercial implementation of renewable energy technologies.</p> <p>The White Paper on renewable energy sets out Government's vision, policy principles, strategic goals, and objectives for promoting and implementing renewable energy in South Africa. The country relies heavily on coal to meet its energy needs due to its abundant, accessible and affordable coal resources. However, massive renewable energy resources that can be sustainable alternatives to fossil fuels, have so far remained largely untapped.</p>

Relevant legislation or policy	Relevance to Zondereinde PV Facility
	<p>The development of additional renewable energy projects will promote the use of the abundant South African renewable energy resources and contribute to long-term energy security and diversification of the energy mix.</p>
<p>The Electricity Regulation Act (No. of 2006) (ERA)</p>	<p>The Electricity Regulation Act of 2006 replaced the Electricity Act (No. 41 of 1987), as amended, except for Section 5B, which provides funds for the energy regulator for the purpose of regulating the electricity industry. The ERA establishes a national regulatory framework for the electricity supply industry and established NERSA as the custodian and enforcer of the National Electricity Regulatory Framework. The ERA also provides for licences and registration as the manner in which the generation, transmission, distribution, trading, and import and export of electricity are regulated.</p>
<p>Integrated Energy Plan (IEP), 2016</p>	<p>The purpose and objectives of the Integrated Energy Plan (IEP) are derived from the National Energy Act (No. 34 of 2008). The IEP takes into consideration the crucial role that energy plays in South Africa's entire economy and is informed by the output of analyses founded on a solid fact base. It is a multi-faceted, long-term energy framework which has multiple aims, some of which include:</p> <ul style="list-style-type: none"> <li>» To guide the development of energy policies and, where relevant, set the framework for regulations in the energy sector.</li> <li>» To guide the selection of appropriate technologies to meet energy demand (i.e., the types and sizes of new power plants and refineries to be built and the prices that should be charged for fuels).</li> <li>» To guide investment in and the development of energy infrastructure in South Africa.</li> <li>» To propose alternative energy strategies, which are informed by testing the potential impacts of various factors, such as proposed policies, introduction of new technologies, and effects of exogenous macro-economic factors.</li> </ul> <p>A draft version of the IEP was released for comment on 25 November 2016. The purpose of the IEP is to provide a roadmap of the future energy landscape for South Africa, which guides future energy infrastructure investments and policy development. The development of the IEP is an ongoing continuous process. It is reviewed periodically to consider changes in the macroeconomic environment, developments in new technologies and changes in national priorities and imperatives, amongst others.</p> <p>The 8 key objectives of the integrated energy planning process are as follows:</p> <ul style="list-style-type: none"> <li>» Objective 1: Ensure security of supply.</li> <li>» Objective 2: Minimise the cost of energy.</li> <li>» Objective 3: Promote the creation of jobs and localisation.</li> <li>» Objective 4: Minimise negative environmental impacts from the energy sector.</li> <li>» Objective 5: Promote the conservation of water.</li> <li>» Objective 6: Diversify supply sources and primary sources of energy.</li> <li>» Objective 7: Promote energy efficiency in the economy.</li> <li>» Objective 8: Increase access to modern energy.</li> </ul>
<p>Integrated Resource Plan for Electricity (IRP) 2010-2030</p>	<p>The Integrated Resource Plan (IRP) for Electricity 2010 – 2030 is a subset of the IEP and constitutes South Africa's national electricity plan. The primary objective of the IRP is to determine the long-term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing and cost. The IRP also serves as input</p>

Relevant legislation or policy	Relevance to Zondereinde PV Facility
	<p>to other planning functions, including amongst others, economic development and funding, and environmental and social policy formulation.</p> <p>On 27 August 2018, the then Minister of Energy published a draft IRP which was issued for public comment. The lengthy public participation and consultation process has culminated in the issue of the overdue IRP 2019, which updates the energy forecast from the current period to the year 2030. Since the promulgated IRP 2010, the following capacity developments have taken place:</p> <ul style="list-style-type: none"> <li>» A total of 6 422MW has been procured thus far under the REIPPP Programme, with 4 724MW being currently operational and made available to the grid<sup>3</sup>. In addition, IPPs have commissioned 1 005MW from two (2) Open Cycle Gas Turbines (OCGT) peaking plants.</li> <li>» Under the Eskom Build Programme, 1 332MW has been procured from the Ingula Pumped Storage Project, 1 588MW and 800MW from the Medupi and Kusile power stations and 100MW from the Sere Wind Farm.</li> </ul> <p>Provision has been made for the following new capacity by 2030:</p> <ul style="list-style-type: none"> <li>» 1 500MW of coal;</li> <li>» 2 500MW of hydro;</li> <li>» 6 000MW of solar PV;</li> <li>» 14 400MW of wind;</li> <li>» 1 860MW of nuclear;</li> <li>» 2 088MW of storage;</li> <li>» 3 000MW of gas/diesel; and</li> <li>» 4 000MW from other distributed generation, co-generation, biomass and landfill technologies.</li> </ul> <p>Based on the IRP 2019, 1 474MW has been installed for solar PV facilities, whereas 6 422MW has already been procured. In addition, 1 000MW has been allocated for solar PV facilities from 2022 to 2030. This will bring the total installed capacity of solar PV facilities by 2030 to 8 288MW. Therefore, the development of Zondereinde PV Facility is supported by the IRP 2019.</p>
<p>New Growth Path (NGP) Framework, 23 November 2010</p>	<p>The purpose of the New Growth Path (NGP) Framework is to provide effective strategies towards accelerated job-creation through the development of an equitable economy and sustained growth. Its target is to create 5 million jobs by 2020; with economic growth and employment creation as the key indicators identified in the NGP. The framework seeks to identify key structural changes in the economy that can improve performance in terms of labour absorption and the composition and rate of growth.</p> <p>To achieve this, government will seek to, amongst other things, identify key areas for large-scale employment creation, as a result of changes in conditions in South Africa and globally, and to develop a policy package to facilitate employment creation in these areas.</p>
<p>National Development Plan 2030 (2012) (NDP)</p>	<p>The National Development Plan (NDP) 2030 is a plan prepared by the National Planning Commission, in consultation with the South African public, which is aimed at eliminating poverty and reducing inequality by 2030.</p>

<sup>3</sup><http://www.nersa.org.za/wp-content/uploads/2021/05/Monitoring-of-Renewable-Energy-Performance-of-Power-Plants-%E2%80%93-Performance-of-Power-Plants-in-2020>

Relevant legislation or policy	Relevance to Zondereinde PV Facility
	<p>In terms of the Energy Sector’s role in empowering South Africa, the NDP envisages that, by 2030, South Africa will have an energy sector that promotes:</p> <ul style="list-style-type: none"> <li>» Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.</li> <li>» Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households.</li> <li>» Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change.</li> </ul> <p>In formulating its vision for the energy sector, the NDP took the IRP 2010 as its point of departure. Therefore, although electricity generation from coal is still seen as part of the energy mix within the NDP, the plan sets out steps that aim to ensure that, by 2030, South Africa's energy system will look very different to the current situation: coal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources – especially wind, solar, and imported hydroelectricity – will play a much larger role.</p> <p>The NDP aims to provide a supportive environment for growth and development, while promoting a more labour-absorbing economy. The development of Zondereinde PV Facility supports the NDP through the development of energy-generating infrastructure which will not lead to the generation of GHGs and will result in economic development and growth of the area surrounding the development area.</p>
<p>Strategic Integrated Projects (SIPs)</p>	<p>The Presidential Infrastructure Coordinating Commission (PICC) is integrating and phasing investment plans across 18 Strategic Integrated Projects (SIPs,) which have 5 core functions, including to unlock opportunity, transform the economic landscape, create new jobs, strengthen the delivery of basic services and support the integration of African economies.</p> <p>SIP 8 of the energy SIPs supports the development of renewable energy projects as follows:                      Green energy in support of the South African economy: Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP 2010) and supports bio-fuel production facilities.</p> <p>The development of Zondereinde PV Facility is aligned with SIP 8, as it constitutes a green energy initiative that would contribute clean energy in accordance with the IRP 2010 – 2030.</p>
<p>National Climate Change Response Policy, 2011 (NCCRP)</p>	<p>The Conference of the Parties (COP) 21 was held in Paris from 30 November to 12 December 2015. From this conference, an agreement to tackle global warming was reached between 195 countries. This Agreement is open for signature and subject to ratification, acceptance or approval by States and regional economic integration organisations that are Parties to the Convention from 22 April 2016 to 21 April 2017. Thereafter, this Agreement shall be open for accession from the day following the date on which it is closed for signature. The agreement can only be sanctioned once it has been ratified by 55 countries, representing at least 55% of emissions.</p>

Relevant legislation or policy	Relevance to Zondereinde PV Facility
	<p>South Africa signed the Agreement in April 2016 and ratified the agreement on 01 November 2016. The Agreement was assented to by the National Council of Provinces on 27 October 2016, and the National Assembly on 1 November 2016. The Agreement was promulgated on 04 November 2016, thirty days after the date on which at least 55 Parties to the Convention, which account for at least 55% of the total global greenhouse gas emissions have deposited their instruments of ratification, acceptance, approval or accession with the Depositary.</p> <p>South Africa's NCCRP establishes South Africa's approach to addressing climate change, including adaptation and mitigation responses. It formalises Government's vision for a transition to a low carbon economy, through the adoption of the 'Peak, Plateau and Decline' (PPD) GHG emissions trajectory, whereby South Africa's emissions should peak between 2020 and 2025; plateau for approximately a decade; and then decline in absolute terms thereafter. Based on this the country has pledged to reduce emissions by 34% and 42% below Business As Usual (BAU) emissions in 2020 and 2025, respectively.</p> <p>The policy provides support for Zondereinde PV Facility, which will contribute to managing climate change impacts; supporting the emergency response capacity; and assist in reducing GHG emissions in a sustainable manner.</p>
Climate Change Bill, 2018	<p>On 08 June 2018, the Minister of Environmental Affairs published the Climate Change Bill ("the Bill") for public comment. The Bill provides a framework for climate change regulation in South Africa aimed at governing South Africa's sustainable transition to a climate resilient, low carbon economy and society. The Bill provides a procedural outline that will be developed through the creation of frameworks and plans.</p> <p>The Zondereinde PV Facility is a renewable energy generation facility and would not result in the generation or release of emissions during its operation.</p>

#### 4.5 Provincial Planning and Context

A brief review of the most relevant provincial policies is provided below in **Table 4.3**. The Project is considered to align with the aims of these policies, even if contributions to achieving the goals therein are only minor.

**Table 4.3:** Relevant provincial legislation and policies for Zondereinde PV Facility

Relevant policy	Relevance to Zondereinde PV Facility
Limpopo Employment, Growth and Development Plan (LEGDP) 2009 - 2014	<p>The Limpopo Employment, Growth and Development Plan provides a framework for the provincial government, municipalities, private sector and all organs of civil society to make hard choices in the pursuit of strategic priorities as encapsulated in the Medium-Term Strategic Framework (MTSF). The LEGDP provides a brief insight into the state of Limpopo's growth and development.</p> <p>The LEGDP states that <i>"the most pressing problem facing Limpopo Province today is the absence of sustained economic growth and job creation, which are essential to reduce poverty and improve living conditions"</i>.</p> <p>The industrial development emphasis to be pursued by the Province is therefore to move onto an industrialization trajectory that is responsive to:</p>

Relevant policy	Relevance to Zondereinde PV Facility
	<ul style="list-style-type: none"> <li>» Intensification of Limpopo's industrialisation process and movement towards a knowledge economy.</li> <li>» Provision by domestic manufacturers of the capital goods that the growing economy needs and will continue to demand.</li> <li>» Promotion of more labour-absorbing industrial sectors, with an emphasis on tradable labour-absorbing goods and services and economic linkages that catalyse employment creation.</li> <li>» Promotion of a broader based industrialisation path that is characterized by greater levels of participation of historically disadvantaged people, and marginalized regions in the mainstream of the industrial economy.</li> </ul> <p>Ensuring more inclusive economic growth, decent work and sustainable livelihoods has been identified as a priority. The main objective of the priority is to respond appropriately, promptly and effectively so that growth in decent employment and improvements in income security are reinforced; and investment sustained to build up provincial economic capability and improve industrial competitiveness. This must be conducted in an environment of a stable macro-economy, which provides conditions for higher rates of investment and creation of decent jobs.</p> <p>Growth of the green economy in the Limpopo Province and the creation of green jobs is listed as one of the actions that the government intends to take to accelerate growth and development of; and address some of the key challenges expected to affect the Province over the next decade.</p> <p>The development of Zondereinde PV Facility will contribute towards the creation of green jobs, and growth of the Province's green economy, leading to a reduction in poverty and an increase in the standard of living.</p>
<p>Limpopo Development Plan (LDP) 2015 -2019</p>	<p>The Limpopo Development Plan (LDP) 2015 – 2019 builds on the foundations of the LEGDP 2009 – 2014 and the Limpopo Provincial Growth and Development Strategy (PGDS) 2004 – 2008.</p> <p>The purpose of the LDP 2015 – 2019 is to:</p> <ul style="list-style-type: none"> <li>» Outline the contribution from Limpopo Province to the National Development Plan (NDP objectives and the national MTSF (Medium-Term Strategic Framework) for this period.</li> <li>» Provide a framework for the strategic plans of each provincial government department, as well as the Integrated Development Plans (IDPs) and sector plans of district and local municipalities.</li> <li>» Create a structure for the constructive participation of private sector business and organised labour towards the achievement of provincial growth and development objectives</li> <li>» Encourage citizens to become active in promoting higher standards of living within their communities.</li> </ul> <p>The development strategy, as outlined in the LDP, is designed on the floor plan of fourteen (14) development outcomes contained in the MTSF for 2015 – 2019. Of relevance to Zondereinde PV Facility are outcome 4: decent employment through inclusive growth;</p>



Relevant policy	Relevance to Zondereinde PV Facility
	outcome 6: competitive economic infrastructure; and outcome 10: environmental protection.

#### 4.6 Local Policy and Planning Context

The local tiers of government relevant to the Zondereinde PV Facility are the Thabazimbi Local Municipality and the Waterberg District Municipality. Instruments and/or policies at both the district and local level contain objectives which align with the development of the Zondereinde PV Facility. These include, economic growth, job creation, community upliftment and poverty alleviation.

**Table 4.4:** Relevant district and local legislation and policies for Zondereinde PV Facility

Relevant policy	Relevance to Zondereinde PV Facility
Waterberg District Municipality Integrated Development Plan (IDP) (2022/2023)	<p>The vision of the Waterberg District Municipality is as follows:</p> <p><i>"To be the best energy hub and ecotourism destination in Southern Africa."</i></p> <p>The Mission of the Municipality is:</p> <p><i>"To invest in a constituency of talented human capital who are motivated and innovative to build a sustainable economy in the field of energy, minerals and eco-tourism for the benefit of all our communities."</i></p> <p>Being the best energy hub and having talented human capital looking to build a sustainable economy, especially in the energy field, are some of the priorities for the Waterberg District Municipality. The strategic objective aligned to this priority area is to have the Zondereinde Mine achieve energy security by changing over to solar powered energy and providing employment opportunities during the project development, which will simultaneously aid these employees in learning more about the energy industry <i>inter alia</i>.</p> <p>According to the IDP, the funding for electricity provision is one of the challenges experienced within the Waterberg District Municipality. The development of the Zondereinde PV Facility will lead to an increased energy security for the Zondereinde Mine and assist Eskom in providing for other consumers with electricity.</p>
Thabazimbi Local Municipality Integrated Development Plan (IDP) (2022/2023)	<p>The vision of the Thabazimbi Local Municipality is:</p> <p><i>"A Municipality with a diversified economy in the provision of excellent sustainable services."</i></p> <p>The Municipality's mission is as follows:</p> <p><i>"To be a leading municipality in the provision of excellent sustainable services in collaboration with stakeholders."</i></p> <p>Several strategic objectives have been included in the IDP. Of relevance to the Zondereinde PV Facility is the municipality's objective to create a conducive environment for sustainable local economic development. The development of the Facility will lead to increased sustainable economic development in the Thabazimbi Local Municipality.</p>

## CHAPTER 5: NEED AND DESIRABILITY

Appendix 2 of the 2014 EIA Regulations (GNR 326) requires that a Scoping Report include a motivation for the need and desirability of the proposed development, including the need and desirability of the activity in the context of the preferred location. The need and desirability of the development needs to consider whether it is the right time and the right place for locating the type of land-use/activity being proposed. The need and desirability of a proposed development is, therefore, associated with the wise use of land, and should be able to respond to the question such as, but not limited to, what the most sustainable use of the land may be.

This Chapter provides an overview of the need and desirability, and perceived benefits of the Project specifically.

### 5.1. Legal Requirements as per the EIA Regulations 2014 (as amended), for the undertaking of a Scoping Report

This chapter includes the following information required in terms of Appendix 2: Content of a Scoping report:

Requirement	Relevant Section
3(1)(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	The need and desirability for the development of the Zondereinde PV Facility is included and discussed as a whole within this chapter. This has been considered from an international, national, regional and site-specific perspective.

### 5.2. Need and Desirability from an Energy Perspective

Electricity is essential for most human activities and for South Africa's social and economic development. The development of large-scale electricity generation projects contributes towards security of supply and assists in minimising the costs of energy. For the benefits associated with electricity to be realised, it needs to be readily available, easily accessible, and affordable. It should also be generated in a sustainable manner, while minimising adverse social and environmental impacts. In addition to energy provision, large-scale electricity generation projects, such as solar PV facilities, can contribute positively to the creation of skilled, unskilled, and semi-skilled employment opportunities and mitigate climate change.

The uptake of renewable energy sources in the mining sector has been a slow-moving transition – which can largely be attributed to the cost involved in establishing a solar or wind power plant, the added costs associated with storing that energy, regulatory challenges, and a limited track record in the industry.

Pressure from government and investors to improve environmental footprints by reducing carbon emissions is now one of the top agenda items in business development, and incorporating renewable energy is an easy way to achieve this. In August 2021, with the aim to bolster energy security, President Cyril Ramaphosa announced that the licence threshold for IPPs would be lifted from 1 MW to 100 MW, opening the door for companies to build their own generation facilities without the need to obtain a generation license from the NERSA. In response, Letsatsi identified the opportunity to develop a solar PV facility of up to 100MW to supply



the Zondereinde Mine. Reliable and cost-effective energy, sourced and generated through private or internal arrangements, eliminates the possibility of unexpected power outages and unreliable grid power from government-owned entities such as Eskom, which is highly reliant of coal. The alternative energy supply helps reduce the burden on such entities and reduces the need for energy management alternatives, such as load shedding.

### 5.3 Need and Desirability from an International Perspective

The need and desirability of Zondereinde PV Facility, from an international perspective, can be described through the Project's alignment with internationally recognised and adopted agreements, protocols and conventions. South Africa is a signatory to various international treaties and initiatives, including the United Nation's Development Programme's (UNDP's) Sustainable Development Goals (SDGs). The SDGs address global socio-economic challenges, such as poverty, hunger, health, education, climate change, gender equality, water, sanitation, energy, urbanisation, environment and social justice. The SDGs consist of 17 global goals set by the United Nations; and are characterised by 169 targets, and 304 indicators.

Goal 7 of the SDGs relates to "Affordable and Clean Energy" and includes ensuring access to affordable, reliable, sustainable and modern energy for all. The following targets and indicators have been set for Goal 7:

Targets	Indicators
7.1 By 2030, ensure universal access to affordable, reliable and modern energy services.	7.1.1 Proportion of population with access to electricity. 7.1.2 Proportion of population with primary reliance on clean fuels and technology.
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.	7.2.1 Renewable energy share in the total final energy consumption.
7.3 By 2030, double the global rate of improvement in energy efficiency.	7.3.1 Energy intensity measured in terms of primary energy and GDP.
7.A By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.	7.A.1 Mobilised amount of United States dollars per year starting in 2020 accountable towards the \$100 billion commitment.
7.B By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, particularly least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support.	7.B.1 Investments in energy efficiency as a percentage of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services.

The development of Zondereinde PV Facility would contribute positively towards Goal 7 of the SDGs through the following:

- » By generating up to 100MW (contracted capacity) of affordable and clean energy. PV technology is considered as one of the cleanest electricity generation technologies, as it does not result in the release of emissions during its operation.

- » By contributing towards South Africa's total generation capacity, specifically through the utilisation of renewable energy resources.

The Kyoto Protocol (1997) and subsequently Paris Agreement are also relevant to the need for the development of Zondereinde PV Facility from an international perspective. The protocol calls for the reduction of South Africa's greenhouse gas (GHGs) emissions through actively cutting down on using fossil fuels, or by utilising more renewable resources. The development of Zondereinde PV Facility will add generation capacity from renewable energy sources within the country and strengthen the commitment and action plan to achieve the requirements, as set out in these international instruments, through the generation of energy without the emission of GHGs.

#### **5.4 Need and Desirability from a National Perspective**

Following the energy crisis in 2008, South African Government started to introduce renewable energy developments on a large scale and further enhanced the promotion of energy efficiency in all sectors to meet the demand of energy, while reducing CO<sub>2</sub> emissions and creating jobs<sup>4</sup>. Consequently, significant investment in renewable energy and energy efficiency is required. Increasing the diversity of South Africa's electricity mix is important, not only for enhancing the crucially important security of supply of the country, but also to support job creation and mitigate climate change.

The NDP envisages that, by 2030, South Africa will have an energy sector that provides reliable and efficient energy service at competitive rates; that is socially equitable through expanded access to energy at affordable tariffs; and that is environmentally sustainable through reduced emissions and pollution. Historically, coal has provided the primary fuel resource for baseload electricity generation in South Africa. Consequently, Eskom, the main electricity generating company in the country, generates approximately 85% of the country's electricity from coal resources (Stats SA, 2016), resulting in a large carbon footprint. Taking into consideration the need to ensure adequate supply of electricity and meet international obligations in terms of addressing climate change, Government has identified the need to diversify the energy mix within the country.

South Africa needs to build about 40 000MW of new generation capacity to meet demand requirements. According to the NDP, 17 800MW should be provided by renewable energy projects and 4 000MW from other distributed generation for own use by 2030.

The Zondereinde PV Facility is proposed in response to the requirement for diversification of the country's energy mix to include renewable energy, such as solar PV, as detailed in the IRP 2019. Its primary objective is energy security. Energy reliability and cost, especially in relation to electricity, are ranked among Northam's high impact business risks, prompted Northam to investigate various renewable energy sources and energy efficiency opportunities that address both these business risks, as well as providing the foundation of our GHG reduction targets. As a result, the need and desirability of the Facility from a national perspective can largely be linked to the Project's alignment with national government policies, plans, and programmes which have relevance to energy planning and production (as discussed in detail in **Chapter 4**).

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<sup>4</sup> [https://energypedia.info/wiki/South\\_Africa\\_Energy\\_Situation](https://energypedia.info/wiki/South_Africa_Energy_Situation)

#### **5.4.1 Benefits of Renewable Energy and the Need and Desirability in the South African Environment**

The generation of electricity from renewable energy resources offers a range of potential socio-economic and environmental benefits for South Africa. These benefits include:

**Socio-economic upliftment of local communities:** The Zondereinde PV Facility has the potential to create much needed employment for unskilled locals during the construction phase. Training opportunities will also be afforded to qualified local people, who can be upskilled to undertake certain roles during the construction and operation phases. In terms of the needs of the local community, the Local and District Municipality IDPs identified the need to facilitate economic development by creating an environment that is conducive for business development, economic growth, sustainable employment opportunities and growth in personal income levels of communities; unlock opportunities to increase participation amongst all sectors of society in the mainstream economy to create decent job opportunities; promote local economic development; and enhance rural development and agriculture. Secondary social benefits can be expected in terms of additional spend in nearby towns due to the increased demand for goods and services. These socio-economic benefits would include an increase in the standard of living for residents within the area and overall financial and economic upliftment.

**Exploitation of renewable energy resource:** At present, valuable renewable resources, including biomass by-products, solar irradiation and wind power remain largely unexploited. The use of these energy flows will strengthen energy security through the development of a diverse energy portfolio in South Africa, including distributed generation for own use such as proposed by Letsatsi.

**Economics:** As a result of the excellent resource and competitive procurement processes, both wind and solar PV power are now proven in South Africa as cheaper forms of energy generation than coal power. They offer excellent value for money to the economy and citizens of South Africa while benefitting society as a whole through the development of clean energy.

**Pollution reduction:** The release of by-products through the burning of fossil fuels for electricity generation has a particularly hazardous impact on human health and contributes to ecosystem degradation. The use of solar irradiation or wind for power generation is a non-consumptive use of a natural resource, which produces zero emissions during its operation.

**Climate friendly development:** The uptake of renewable energy offers the opportunity to address energy needs in an environmentally responsible manner and thereby allows South Africa to contribute towards mitigating climate change through the reduction of GHG emissions. South Africa is estimated to currently be responsible for approximately 1% of global GHG emissions (and circa half of those for which Africa is responsible) and is ranked 12<sup>th</sup> worldwide in terms of per capita carbon dioxide emissions as of 2021. The development of the Zondereinde PV Facility, and the associated electricity by it, will result in considerable savings on tons of CO<sub>2</sub> emissions.

**Support for international agreements:** The effective deployment of renewable energy provides a tangible means for South Africa to demonstrate its commitment to its international obligations under the Kyoto Protocol and the Paris Agreement, and for cementing its status as a leading player within the international community.

**Employment creation:** The development, procurement, installation, maintenance and management of renewable energy facilities have significant potential for job creation and skills development in South Africa. The construction phase will create temporary employment opportunities and the operation phase will create limited full-time employment opportunities.

**Acceptability to society:** Renewable energy offers several tangible benefits to society, including reduced pollution concerns; improved human and ecosystem health; and climate friendly development.

**Support to a new industry sector:** The development of renewable energy offers the opportunity to establish a new industry within the South African economy, creating jobs and skilling local communities, which have potential for further renewable energy projects.

**Protecting the natural foundations of life for future generations:** Actions to reduce our disproportionate carbon footprint can play an important part in ensuring our role in preventing dangerous anthropogenic climate change, thereby securing the natural foundations of life for generations to come. This is the basis of sustainable development.

## 5.5 Need and Desirability of the project from a Regional Perspective

Limpopo's Public Infrastructure Investment Programme identified in the LEGDP 2009 – 2014 indicates that the government has a pressing need to accelerate sustainable socio-economic development by, amongst other things, rolling out on a mass scale physical, social and economic infrastructure.

The core aspects of the socio-economic infrastructure are:

- » Bulk infrastructure (sewer, water and sanitation, electricity, and communication)
- » Social infrastructure, such as housing, school and hospitals
- » Economic infrastructure, such as freight and logistics

With regards to social infrastructure, housing, electrification, and water utilities take priority due to immense mining and energy investments that have grown in the Limpopo Province. This results in pressing demand for infrastructure development, especially in areas where these developments are taking place. It is also crucial to note that shortages of water and electricity in some rural pockets of the Province have reached alarming levels.

The Limpopo Development Plan 2015 -2019 provides a framework for the strategic plans of each provincial government department. It makes a case for the investment in a strong network of economic infrastructure, designed to support economic and social objectives. This, it is stated, is a precondition for providing basic services, such as electricity, among others. To achieve this, basic services must be robust and extensive enough to meet industrial, commercial, and household needs.

The Limpopo Provincial Government views economic infrastructure as a base for economic and social upliftment. To achieve this, the Provincial Government sought to attract investment in coal and energy. Furthermore, to expand business activities in the Province, the coal and energy SMME growth initiative is promoted. The energy sector therefore has the power to contribute to and maintain the growth of the provincial economy.

The development of the Zondereinde PV Facility would contribute positively towards increased electricity provision, which could be used in the development of socio-economic infrastructure within the Province, as well as to increase employment opportunities.

## **5.6 Need and Desirability of the project from a District and Local Perspective**

In terms of energy supply and demand management, the energy needs of poor households are still immense (Waterberg District Municipality Integrated Development Plan (IDP), 2022/2023). The original goal of universal electricity by 2014 was not feasible and hence a need to review the target and planning (NDP, 2011).

A major challenge to the Municipality is the funding of projects, more specifically for maintenance of existing infrastructure. The electrification of low-cost housing mostly occurs in the Eskom supply area, which often does not have enough capacity on the main feeder lines to supply these villages.

Regarding the employment status, employment within the Waterberg District Municipality Employment increased annually at an average rate of 3.22% from 2008 to 2018. (Waterberg District Municipality IDP, 2022/2023). In 2018, there were a total number of 42 200 people unemployed in Waterberg, which is a decrease of -5 200 from 47 400 in 2008.

According to the IDP 2022/2023, Thabazimbi Local Municipality has an unemployment rate of 13% and an employment rate of 50.5%. The Municipality's Local Economic Development (LED) Strategy depicts that, the TLM's economic growth potential is in agriculture, tourism and mining.

The main contributors to Thabazimbi Local Municipality's economy are mining and tourism. The Thabazimbi Local Municipality's development opportunities can be summarised as follows:

- » Agricultural activities take up large portions of land in the municipality, with more than half of the employed population being employed in this sector. The agricultural sector of the local municipality also contributes approximately 35% to the same sector in the district, confirming its importance to the local economy. It is however essential that job opportunities are spread to also include people from the settlements in the eastern parts of the municipality, as they are not benefitting such as the population in the urban area surrounding Thabazimbi town.
- » The manufacturing sector of the economy is not currently performing well. However, given the strong agricultural base, opportunities for expansion of the manufacturing industry exists through agro-processing and other activities.
- » The municipality benefits from a potentially economically active population that comprises approximately 70% of the total population, which provides the municipality with a large human resource base.
- » This allows opportunities for development projects to involve and benefit local people. The age distribution of the municipality's population also indicates a fairly young potential economically active population, necessitating development to focus on the youth.
- » In terms of economic indicators, the municipality also enjoys comparative advantages in the agriculture, mining, manufacturing and transport industries, compared to the District Municipality.
- » The municipality should therefore capitalize on these advantages to further strengthen its position in the district.

The development of the Zondereinde PV Facility could be expected to contribute positively towards improving electricity availability locally and providing new employment and investment opportunities, which would benefit both the Thabazimbi Local Municipality and greater Waterberg District.

## **5.7 Receptiveness of the project site to the development of Zondereinde PV Facility**

The overarching objective of the Zondereinde PV Facility is to maximise electricity production utilising the solar resource. The placement of a solar PV facility is strongly dependent on several factors, including climatic conditions (solar irradiation levels), topography, the location of the site, and in particular the location in a node for renewable projects, availability of grid connection, the extent of the site and the need and desirability for the project as detailed in this Chapter.

As discussed in Chapter 3, the Zondereinde PV Facility Project Site was identified by the developer as being the most technically feasible and viable project site within the broader area for further investigation in support of an application for authorisation taking into consideration the proximity of the Project Site to the Zondereinde Mine (the off-taker); and site-specific characteristics (such as the solar resource, land availability, topographical considerations, and environmental features). The Affected properties (i.e. 1171ha in which the development area (~265 ha) and facility footprint is located) is sufficient in extent for the installation of a solar PV facility, while allowing for the avoidance of environmental site sensitivities. This consideration is in line with the mitigation strategy and enables the achievement of the objectives of the mitigation hierarchy (i.e., avoid, minimise, mitigate). This application of the mitigation strategy will result in the identification of the optimised placement of the Solar PV Energy Facility within the Project Site. This approach will ensure that the final location of the Facility and associated infrastructure is desirable from an environmental and social perspective.



## CHAPTER 6 APPROACH TO UNDERTAKING THE EIA PROCESS

In terms of the EIA Regulations of December 2014 published in terms of the NEMA (Act No. 107 of 1998), as amended, the construction and operation of the Zondereinde PV Facility is a listed activity requiring Environmental Authorisation (EA). The application for EA is required to be supported by a Scoping & Environmental Impact Assessment (S&EIA) process based on the contracted capacity of the Facility being 100MW, which triggers Activity 1 of Listing Notice 2 (GNR 325).

An EIA process refers to the process undertaken in accordance with the requirements of the EIA Regulations (the 2014 EIA Regulations (GNR 326), as amended), which involves the identification and assessment of direct, indirect, and cumulative environmental impacts associated with a proposed project or activity. The EIA process comprises two main phases: i.e., **Scoping** and **EIA Phase**, and is illustrated in **Figure 6.1**. Public Participation forms an important component of the process and is undertaken throughout both phases.



**Figure 6.1:** The Phases of an Environmental Impact Assessment (EIA) Process

### 6.1 Legal Requirements as per the EIA Regulations for the undertaking of a Scoping Report

This chapter includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
2(1)(d)(i) a description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for and (ii) a description of the activities to be undertaken, including associated structures and infrastructure.	All listed activities triggered and applied for are included in <b>Section 6.2</b> .
2(1)(g)(ii) details of the public participation process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs.	The public participation process that will be followed throughout the EIA process for the Zondereinde PV Facility is included in <b>Section 6.5.2</b> and copies of the supporting documents and inputs are included in <b>Appendix C</b> .

Requirement	Relevant Section
2(1)(g)(iii) a summary of the issues raised by interested and affected parties (I&APs), and an indication of the manner in which the issues were incorporated, or the reasons for not including them.	The main issues raised through the undertaking of the public participation process including consultation with I&APs are included in the Comments and Responses Report in <b>Appendix C8</b> .
2(1)(g)(vi) the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives.	The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives are included in <b>Section 6.6.3</b> .

## 6.2 Relevant legislative permitting requirements

The legislative permitting requirements applicable to Zondereinde PV Facility, as identified at this stage in the process and considered within this EIA process, are described in more detail under the respective sub-headings. Additional permitting requirements applicable to the Project are detailed within **Section 6.8**.

### 6.2.1 National Environmental Management Act (No. 107 of 1998) (NEMA)

NEMA (No. 107 of 1998) is South Africa's key piece of national environmental legislation that provides for the authorisation of certain controlled activities known as "listed activities". In terms of Section 24(1) of NEMA, the potential impact on the environment associated with listed activities must be considered, investigated, assessed, and reported on to the Competent Authority (CA) (the decision-maker) charged by NEMA with granting of the relevant Environmental Authorisation (EA). As the Zondereinde PV Facility triggers Activity 1 of Listing Notice 2, a full S&EIA process is applicable for the Project. According to the Explanatory Document for Government Notice No. 779 published in Government Gazette No. 40110 dated 01 July 2016, LDEDET has been determined as the CA.

The need to comply with the requirements of the EIA Regulations, published under NEMA, ensures that developers are provided the opportunity to consider the potential environmental impacts of their activities early in the project development process; and also allows for an assessment to be made as to whether environmental impacts can be avoided, minimised or mitigated to acceptable levels. Comprehensive, independent environmental studies are required to be undertaken, in accordance with the EIA Regulations, to provide the CA with sufficient information in order for an informed decision to be taken regarding the application for EA.

The EIA process being conducted for the Zondereinde PV Facility is being undertaken in accordance with Section 24(5) of the NEMA, which defines the procedure to be followed in applying for EA, and requires that the potential consequences for, or impacts of, listed or specified activities on the environment be considered, investigated, assessed, and reported on to the CA. Listed Activities are activities identified in terms of Section 24 of the NEMA which are likely to have a detrimental effect on the environment, and which may not commence without an EA from the CA, subject to the completion of an environmental assessment process (either a basic assessment or full S&EIA).

**Table 6.1** details the listed activities in terms of the EIA Regulations, 2014 (as amended) that apply to Zondereinde PV Facility, and for which an application for EA has been submitted to the LDEDET. The table also includes a description of the specific project activities that relate to the applicable listed activities.

**Table 6.1:** Listed activities identified in terms of the Listing Notices (GNR 327, 325 and 324).



Notice Number	Activity Number	Description of listed activity
Listing Notice 1 (GNR 327) 08 December 2014 (as amended)	14	<p>The development and related operation of facilities and infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80m<sup>3</sup> cubic metres or more but not exceeding 500m<sup>3</sup>.</p> <p><b>The development of the Project will require the construction and operation of facilities and infrastructure for the storage and handling of dangerous goods (combustible and flammable liquids, such as oils, lubricants, solvents) associated with the onsite substation where such storage will occur inside containers with a combined capacity exceeding 80m<sup>3</sup> but not exceeding 500m<sup>3</sup>.</b></p>
Listing Notice 1 (GNR 327) 08 December 2014 (as amended)	19 (i)	<p>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from</p> <p>(i) a watercourse</p> <p><b>The project carries the possibility of depositing material of more than 10 cubic metres into a nearby watercourse</b></p>
Listing Notice 1 (GNR 327) 08 December 2014 (as amended)	28 (ii)	<p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.</p> <p><b>The total area to be developed for Zondereinde PV Facility is greater than 1ha and occurs outside an urban area in an area that has been used for agriculture.</b></p>
Listing Notice 2 (GNR 325) 08 December 2014 (as amended)	1	<p>The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more,</p> <p><b>The Project comprises a renewable energy generation facility, which will utilise solar power technology and have a generating capacity of up to 100MW.</b></p>
Listing Notice 2 (GNR 325) 08 December 2014 (as amended)	15	<p>The clearance of an area of 20ha or more of indigenous vegetation<sup>5</sup>.</p> <p><b>The Facility will be located on agricultural land, comprising indigenous vegetation. The Project would therefore result in the clearance of indigenous vegetation within an area in excess of 20ha for the development infrastructure.</b></p>
Listing Notice 3	3 (e) (i) (gg)	<p>The development of masts or towers of any material or type used for</p>

<sup>5</sup> "Indigenous vegetation" as defined by the 2014 EIA Regulations (GNR 326) refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

Notice Number	Activity Number	Description of listed activity
(GNR 324) 08 December 2014 (as amended)		telecommunication broadcasting or radio transmission purposes where the mast or tower— (a) is to be placed on a site not previously used for this purpose  <b>e. Limpopo</b> i. Outside urban areas: (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve  <b><i>A telecommunications mast is planned to be built within 5km of a protected wetland in terms of NEMPAA</i></b>
Listing Notice 3 (GNR 324) 08 December 2014 (as amended)	4 (e)(i)(ee)(gg)	The development of a road wider than 4 metres with a reserve less than 13,5m.  <b><u>e. Limpopo</u></b> i. Outside urban areas: (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve  (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans  <b><i>The development area is within approximately 3 km from Sharme Private Nature Reserve.</i></b>
Listing Notice 3 (GNR 324) 08 December 2014 (as amended)	10 (e)(gg)	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.  <b><u>e. Limpopo</u></b> i. Outside urban areas: (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve  <b><i>The development area is within approximately 3 km from Sharme Private Nature Reserve.</i></b>
Listing Notice 3 (GNR 324) 08 December 2014 (as amended)	14(ii) (e)(i)(hh)	The development of – (ii) infrastructure or structures with a physical footprint of 10 square metres or more, where such development occurs— (a) within a watercourse; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse.  <b><u>e. Limpopo</u></b> i. Outside urban areas: (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve

Notice Number	Activity Number	Description of listed activity
		<b>The development area is within approximately 3 km from Sharme Private Nature Reserve.</b>
Listing Notice 3 (GNR 324) 08 December 2014 (as amended)	18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.  <b>e. Limpopo</b> i. Outside urban areas: (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve  <b>The development area is within approximately 3 km from Sharme Private Nature Reserve.</b>

### 6.2.2 National Water Act (No. 36 of 1998) (NWA)

In accordance with the provisions of the National Water Act (No. 36 of 1998) (NWA, all water uses listed in section 21 must be licensed or registered with the CA (i.e., the Regional DWS or the relevant Catchment Management Agency (CMA)). Water use is defined broadly and includes taking and storing water; activities which reduce stream flow; waste discharges and disposals; controlled activities (activities which impact detrimentally on a water resource); altering a watercourse; removing water found underground for certain purposes; and recreation.

**Table 6.2** contains water uses associated with the Project and identified in terms of the NWA which require licensing in the form of a WUL or registration of a General Authorisation (GA). The table also includes a description of those Project activities which relate to the applicable water uses.

**Table 6.2:** List of Water Uses published under Section 21 of NWA, as amended.

Notice No.	Activity No.	Description of Water Use
NWA (No. 36 of 1998)	Section 21 (a)	taking water from a water resource  <b>Abstraction of water from a borehole</b>
NWA (No. 36 of 1998)	Section 21 (b)	Storing water  <b>Storage of water will take place within the development area</b>
NWA (No. 36 of 1998)	Section 21 (c)	Impeding or diverting the flow of water in a watercourse  <b>Watercourses may be present on the Project Site. Activities pertaining to the establishment of the infrastructure might encroach on the watercourse, which may lead to an impediment and diversion of the flow of water in the watercourse.</b>
NWA (No. 36 of 1998)	Section 21 (g)	Disposing of waste in a manner which may detrimentally impact on a water resource  <b>Septic tanks will be utilised for waste disposal</b>
NWA (No. 36 of 1998)	Section 21 (i)	Altering the bed, banks, course or characteristics of a watercourse.

Notice No.	Activity No.	Description of Water Use
NWA (No. 36 of 1998)	Section 21 (a)	taking water from a water resource  <b>Abstraction of water from a borehole</b>
NWA (No. 36 of 1998)	Section 21 (b)	Storing water  <b>Storage of water will take place within the development area</b>
		<b>Watercourses may be present on the Project Site. Activities pertaining to the establishment of the infrastructure might encroach on the watercourse, which may lead to an impediment and diversion of the flow of water in the watercourse.</b>

If any water uses as defined in Section 21 of the NWA are applicable, then a water use authorisation would be required. This will need to be in accordance with the requirements of the Regulations Regarding the Procedural Requirements for Water Use License Applications and Appeals (published in GN267 of GG 40713 on 24 March 2017); or a GA registered in accordance with the requirements of the Revision of General Authorisation (published in GN R1091 of GG 19182 on 6 September 2013) or the Revision of General Authorisation for the taking and storage of water (published in GN 538 of GG 40243 on 2 September 2016).

### 6.2.3 National Heritage Resources Act (No. 25 of 1999) (NHRA)

The National Heritage Resources Act (No. 25 of 1999) (NHRA) provides an integrated system which allows for the management of national heritage resources, and for the conservation of heritage resources for future generations. Section 38 of NHRA provides a list of activities which potentially require the undertaking of a heritage impact assessment (HIA).

#### Section 38: Heritage Resources Management

- 1). Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as –
- a. the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
  - b. the construction of a bridge or similar structure exceeding 50m in length;
  - c. any development or other activity which will change the character of a site –
    - i). exceeding 5 000m<sup>2</sup> in extent; or
    - ii). involving three or more existing erven or subdivisions thereof; or
    - iii). involving three or more erven or divisions thereof which have been consolidated within the past five years; or
    - iv). the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

*Must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

In terms of Section 38(8), approval from the heritage authority is not required if an evaluation of the impact of such development on heritage resources is required in terms of any other legislation (such as NEMA), provided that the consenting authority ensures that the evaluation of impacts fulfils the requirements of the

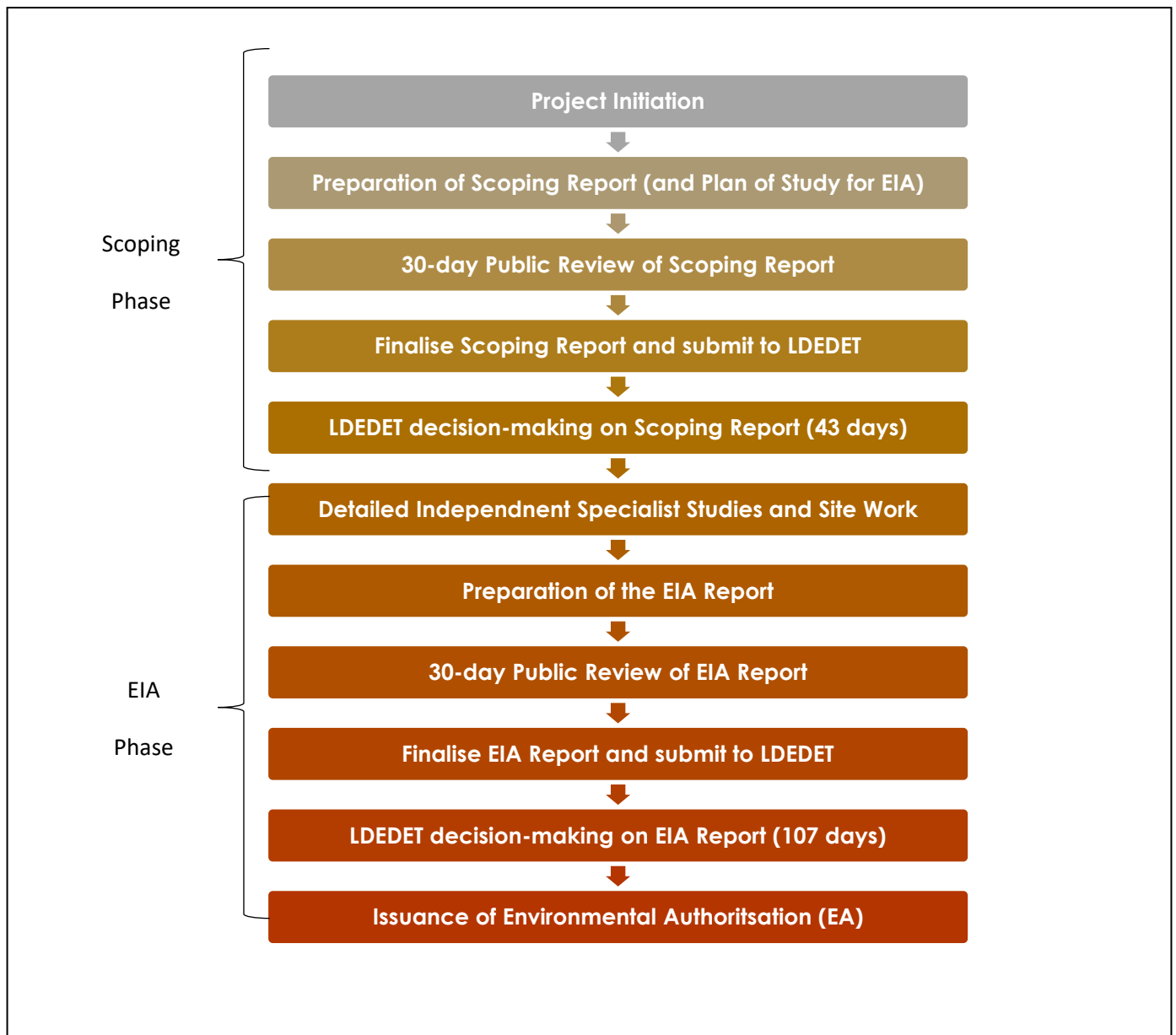
relevant heritage resources authority in terms of Section 38(3) and any comments and recommendations of the relevant resources authority with regard to such development have been taken into account prior to the granting of the consent. However, should heritage resources of significance be affected by the proposed development, a permit is required to be obtained prior to disturbing or destroying such resources as per the requirements of Section 48 of the NHRA, and the SAHRA Permit Regulations (GNR 668).

### 6.3 Overview of the S&EIA process being undertaken for Zondereinde PV Facility

In terms of NEMA, Regulations 21 to 24 of the 2014 EIA Regulations (GNR 326), and Listing Notices (Listing Notice 1 (GNR 327) and Listing Notice 2, the development of the Zondereinde PV Facility requires EA from LDEDET subject to the completion of a full S&EIA. The need for a full S&EIA process to be conducted in support of the application for EA is based on listed activities triggered which are contained within Listing Notice 2.

The S&EIA process is to be undertaken in two phases as follows (refer to **Figure 6.2**):

- » The **Scoping Phase** includes the identification and description of potential issues associated with the Project, through a desktop study and consultation with I&APs and key stakeholders during a public participation process. The entire Project Site is considered within this process. Through this study, areas of sensitivity within the Project Site are identified and delineated to identify any environmental fatal flaws, and environmentally sensitive, or no-go areas which need to be considered. In accordance with Regulation 21(1) of the 2014 EIA Regulations (GNR 326), this Scoping Report prepared for the Project will be subject to a 30-day review and comment period, during which any I&AP or Authority are invited to review and provide comment on the findings. Following the completion of this review period, a final Scoping Report, which incorporates all comments received during the 30-day public review and comment period, will be prepared and submitted to LDEDET for its consideration. Following its receipt of the Final Scoping Report, LDEDET has 43 days within which to either accept the Scoping Report, and advise the applicant to proceed or continue with the tasks contemplated in the PoS; or refuse the application for EA if the proposed activity is in conflict with a prohibition contained in legislation, or the Scoping Report does not substantially comply with Appendix 2 of the 2014 the EIA Regulations (GNR 326).
- » The **EIA Phase** involves a detailed assessment of potentially significant positive and negative direct, indirect, and cumulative impacts identified during the Scoping Phase. This Phase includes detailed specialist investigations and a public participation process, and results in the compilation of an EIA Report (EIAR) and EMPr. In accordance with Regulation 23(1)(a) of the 2014 EIA Regulations, (GNR 326) the EIA Report and EMPr prepared for the Project will also be subject to a 30-day public review and comment period, during which members of the public, I&APs, and Authorities will be invited to review and provide comment on the EIA Report and EMPr. Following the conclusion of this review period a Final EIA Report and EMPr, which incorporates all comments received during the 30-day review and comments period, will be prepared and submitted to LDEDET for its consideration. Following its receipt of the Final EIA and EMPr, LDEDET has 107 days within which to either grant or refuse the EA.



**Figure 6.2:** Regulated timeframe of an Environmental Impact Assessment (EIA) Process

#### 6.4 Objectives of the Scoping Phase

This Scoping Report documents the evaluation of potential environmental impacts associated with the development of the Zondereinde PV Facility and forms part of the EIA process being conducted in support of an application for EA for the Project. The Scoping Phase has been conducted in accordance with the requirements of the 2014 EIA Regulations (GNR 326), and therefore aims to:

- » Identify and evaluate potential environmental (biophysical and social) impacts and benefits of all phases of the Project (including design, construction, operation, and decommissioning) within the Project Site, through a review of existing baseline data, including specialist studies which were undertaken within the Project Site.
- » Identify potentially sensitive environmental features and areas within the Project Site, to inform the preliminary design process of the Facility.
- » Define the scope of studies to be undertaken during the EIA process.



- » Provide the Authorities with sufficient information to make a decision regarding the scope of issues to be addressed in the EIA Phase; and the scope and extent of specialist studies that will be required to be undertaken.

The following objectives of the Scoping Phase (in accordance with Appendix 2 of the 2014 EIA Regulations (GNR 326)) have been met, through the undertaking of a consultative process.

- » The identification of relevant policies and legislation regarding the activities to be undertaken have been identified and considered within this Scoping Report.
- » Activities to be undertaken for the development of the Zondereinde PV Facility have been identified and motivated in terms of the need and desirability for the activities to take place.
- » Potential impacts associated with the undertaking of the identified activities and technology have been identified and described.
- » Identification of areas of high sensitivity to be avoided by the preferred development footprint.
- » Preferred areas for the Project in the form of a development footprint, which are areas associated with low to medium environmental sensitivity, have been identified within the Project Site, through a desktop level impact assessment process and on-going consultative process.
- » Key issues associated with the Project to be addressed during the EIA Phase for further detailed study and ground-truthing have been identified and listed within this Scoping Report.
- » The level of assessment, expertise and the extent of further consultation to be undertaken in the EIA Phase of the process, with the aim of determining the extent of impacts associated with the activities through the life cycle of the Project (i.e., construction, operation and decommissioning), have been identified and included within this Scoping Report.

## 6.5 Overview of the Scoping Phase

Key tasks undertaken within the Scoping Phase include:

- » Consultation with relevant decision-making and regulating authorities (at National, Provincial and Local levels).
- » Submission of the completed application for EA to the CA (LDEDET) in terms of Regulations 5 and 16 of the 2014 EIA Regulations (GNR 326).
- » Undertaking a public participation process in accordance with Chapter 6 of GNR326, and the Department of Environmental Affairs (2017), Public Participation Guidelines in terms of NEMA EIA Regulations, Department of Environmental Affairs, Pretoria, South Africa (hereinafter referred to as "the Guidelines"), to identify issues and concerns associated with the Project.
- » Undertaking of independent specialist studies in accordance with Appendix 6 of the EIA Regulations, 2014 (GNR326), as amended, and the requirements of the Specialist Protocols published in Regulation GNR 320, issued 20 March 2020 and GNR 1150 30 October 2020 in GG 43110 and 43855 respectively, where relevant, as well as other relevant guidelines.
- » Preparation of a Scoping Report and Plan of Study (PoS) for EIA in accordance with the requirements of Appendix 2 of the 2014 EIA Regulations (GNR 326).
- » Preparation of a Comments and Response (C&R) Report, detailing all comments raised by I&APs and responses provided as part of the Scoping Phase.
- » Submission of a Final Scoping Report, including a PoS for the EIA, to LDEDET for review and approval.

### **6.5.1 Authority Consultation and Application for Environmental Authorisation in terms of the 2014 EIA Regulations (as amended)**

In terms of GNR 779 of 1 July 2016, LDEDET has been determined as the CA for all projects which relate to the IRP and any updates thereto. Consultation with these authorities is being undertaken throughout the Scoping Phase. To date, this consultation has included the following:

- » Submission of the application for EA to the LDEDET with hard copies via courier.
- » Submission of the Scoping Report for review and comment by:
  - \* The CA.
  - \* State departments that administer laws relating to a matter affecting the environment relevant to an application for EA.
  - \* Organs of State which have jurisdiction in respect of the activity to which the application relates.

A record of all authority correspondence undertaken during the Scoping Phase is included in **Appendix B**.

### **6.5.2 Public Participation Process**

Public participation is an essential and regulatory requirement for an EA process and is guided by Regulations 41 to 44 of the EIA Regulations 2014 (GN R326) (as amended). The purpose of public participation is clearly outlined in Regulation 40 of the EIA Regulations 2014 (GN R326) (as amended) and is being followed for this Project.

The sharing of information forms the basis of the public participation process and offers the opportunity for I&APs to become actively involved in the EIA process from the outset. The public participation process is designed to provide sufficient and accessible information to I&APs in an objective manner. The public participation process affords I&APs opportunities to provide input into and receive information regarding the EIA process in the following ways:

- » During the **Scoping Phase**:
  - \* Provide an opportunity to submit comments regarding the Project.
  - \* Assist in identifying reasonable and feasible alternatives, where required.
  - \* Identify issues of concern and suggestions for enhancement.
  - \* Contribute relevant local information and knowledge to the environmental assessment.
  - \* Allow registered I&APs to verify that their comments have been recorded, considered and addressed, where applicable, in the environmental investigations.
  - \* Foster trust and co-operation.
  - \* Generate a sense of joint responsibility and ownership of the environment.
  - \* Comment on the findings of the Scoping Phase results.
  - \* Identify issues of concern and suggestions for enhanced benefits.
- » During the **EIA Phase**:
  - \* Contribute relevant local information and knowledge to the environmental assessment.
  - \* Verify that issues have been considered in the environmental investigations, as far as possible, as identified within the Scoping Phase.
  - \* Comment on the findings of the environmental assessments.
  - \* Attend a Focus Group Meeting to be conducted for the Project.

» During the **decision-making phase**:

- \* To advise I&APs of the outcome of the CA's decision, and how and by when the decision can be appealed.

The public participation process therefore aims to ensure that:

- \* Information containing all relevant facts in respect of the application is made available to potential stakeholders and I&APs for their review.
- \* The information presented during the public participation process is presented in such a manner, i.e., local language and technical issues, that it avoids the possible alienation of the public and prevents them from participating.
- \* Public participation is facilitated in such a manner that I&APs are provided with a reasonable opportunity to comment on the Project.
- \* A variety of mechanisms are provided to I&APs to correspond and submit their comments i.e., fax, post, email, telephone, text message (SMS and WhatsApp).
- \* An adequate review period is provided for I&APs to comment on the findings of the Scoping Report and EIA Reports.

In terms of the requirement of Chapter 6 of the EIA Regulations of December 2014, as amended, the following key public participation tasks are required to be undertaken:

- » Fix a notice board at a place conspicuous to the public at the boundary or on the fence of—
  - (i) The site where the activity to which the application relates is or is to be undertaken.
  - (ii) Any alternative site mentioned in the application.
- » Give written notice to:
  - (i) The owner or person in control of that land if the applicant is not the owner or person in control of the land. (This is not applicable as Northam is the owner of the Project Site).
  - (ii) The occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken.
  - (iii) Owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken.
  - (iv) The municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area.
  - (v) The municipality which has jurisdiction in the area.
  - (vi) Any organ of state having jurisdiction in respect of any aspect of the activity.
  - (vii) Any other party as required by the CA.
- » Place an advertisement in one local newspaper.
- » Open and maintain a register of I&APs and Organs of State.
- » Release of a Scoping Report for a 30-day review and comment period.
- » Prepare a Comments and Responses (C&R) report which documents the comments received on the EIA process and during the 30-day review and comment period of the Scoping Report and the responses provided by the project team.

**i. Stakeholder identification and Register of Interested and Affected Parties**

42. A proponent or applicant must ensure the opening and maintenance of a register of I&APs and submit such a register to the competent authority, which register must contain the names, contact details and addresses of –
- (a) All persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;
  - (b) All persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and
  - (c) All organs of state which have jurisdiction in respect of the activity to which the application relates.

I&APs have been identified through a process of networking and referral; obtaining information from Savannah Environmental's existing stakeholder database; liaising with potentially affected parties in the greater surrounding area; and a registration process involving the completion of a reply form. Key stakeholders and affected and surrounding landowners have been identified and registered on the Project database. Other stakeholders are required to formally register their interest in the Project through either directly contacting the Savannah Environmental Public Participation team via phone, text message (SMS and WhatsApp), email or fax, or registering their interest via the online stakeholder engagement platform. An initial list of key stakeholders identified and registered is listed in **Table 6.3**.

**Table 6.3:** Initial list of Stakeholders identified for the inclusion in the project database during the public participation process for Zondereinde PV Facility

<b>Organs of State</b>
<b>National Government Departments</b>
Department Forestry, Fisheries and the Environment (DFFE): Biodiversity Directorate
Department of Mineral Resources and Energy (DMRE)
Department of Agriculture, Land Reform, and Rural Development (DALRRD)
Department of Water and Sanitation (DWS)
Department of Communications and Digital Technologies
<b>Government Bodies and State-Owned Companies</b>
Eskom Holdings SOC Limited
National Energy Regulator of South Africa (NERSA)
Air Traffic Navigation Services (ATNS)
South African Civil Aviation Authority (CAA)
South African Heritage Resources Agency (SAHRA)
South African National Roads Agency Limited (SANRAL)
Telkom SA SOC Limited
Transnet SA SOC Limited
<b>Provincial Government Departments</b>
Limpopo Department Economic Development, Environment and Tourism (LDEDET)
Limpopo Department of Transport and Community Safety
The Limpopo Provincial Heritage Resources Authority (LIHRA)
Limpopo Department of Agriculture and Rural Development (LDARD)
<b>Local Government Departments</b>
Waterberg District Municipality
Thabazimbi Local Municipality
<b>Commenting Stakeholders</b>

BirdLife South Africa

Endangered Wildlife Trust (EWT)

Wildlife and Environment Society of South Africa (WESSA)

**Landowners**

Affected landowners, tenants and occupiers

Neighbouring landowners, tenants and occupiers

As per Regulation 42 of the EIA Regulations 2014 (as amended), all relevant stakeholder and I&AP information has been recorded within a register of I&APs (refer to **Appendix C1** for a listing of the recorded parties). In addition to the EIA Regulations, point 4.1 of the Public Participation Guidelines has also been followed. The register of I&APs contains the names<sup>6</sup> of:

- » All persons who requested to be registered on the database using the online stakeholder engagement platform or in writing and disclosed their interest in the Project.
- » All Organs of State which hold jurisdiction in respect of the activity to which the application relates.
- » All persons who submitted written comments or attended virtual meetings (or in-person consultation where sanitary conditions can be maintained) and viewed the narrated presentations on the Savannah Environmental online platform during the public participation process.

I&APs have been encouraged to register their interest in the EIA process from the onset of the Project; and the identification and registration of I&APs will be on-going for the duration of the EIA process. The database of I&APs will be updated throughout the EIA process and will act as a record of all I&APs involved in the public participation process.

**ii. Advertisements and Notifications**

- 40.(2)(a) Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of –
- (i) The site where the activity to which the application or proposed application relates is or is to be undertaken; and
  - (ii) Any alternative site.
- 40.(2)(b) Giving written notice, in any of the manners provided for in section 47D of the Act, to –
- (i) The occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
  - (ii) Owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
  - (iii) The municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;
  - (iv) The municipality which has jurisdiction in the area;
  - (v) Any organ of state having jurisdiction in respect of any aspect of the activity; and
  - (vi) Any other party as required by the competent authority.
- 40.(2)(c) Placing an advertisement in –
- (i) One local newspaper; or
  - (ii) Any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

<sup>6</sup> Contact details and addresses have not been included in the I&AP database as this information is protected by the Protection of Personal Information Act (No 4 of 2013).

- 40.(2)(d) Placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii); and
- 40.(2)(e) Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to –
- (i) Illiteracy;
  - (ii) Disability; or
  - (iii) Any other disadvantage.

The EIA process was announced with an invitation to the Organs of State, potentially affected and neighbouring landowners and general public to register as I&APs and to actively participate in the process. This was achieved via the following:

- » Compilation of a background information document (BID) (refer to **Appendix C3**), providing technical and environmental details on the Project and how to become involved in the S&EIA process. The BID and the process notification letter announcing the S&EIA process; notifying Organs of State, potentially affected and neighbouring landowners and registered stakeholders/I&APs; and inviting I&APs to register on the Project's database were distributed via email on **07 October 2022**. The evidence of the distribution is contained in **Appendix C** of the Scoping Report. The BID is also available electronically on the Savannah Environmental website (<http://www.savannahsa.com/public-documents/energy-generation/>).
- » Placement of site notices announcing the S&EIA process at visible points along the boundary of the affected properties, in accordance with the requirements of the EIA Regulations on **09 September 2022**. Photographs and the GPS co-ordinates of the site notices are contained in **Appendix C2** of the Scoping Report.
- » Placement of an advertisement announcing the S&EIA process and the availability of the Scoping Report for review by I&APs for a 30-day review and comment period in the Rustenburg Herald Newspaper (English advert) on 27 September 2022. A copy of the newspaper advert, as sent to the newspaper and the newspaper advert tear sheet is included in **Appendix C2** of the Scoping Report.
- » The Scoping Report has been made available for review by I&APs for a 30-day review and comment period from **Friday, 07 October 2022 - Monday, 07 November 2022**. The full Scoping Report is available on the Savannah Environmental website. The evidence of distribution of the Scoping Report will be included in the Final Scoping Report, which will be submitted to the LDEDET for acceptance.

### iii. Public Involvement and Consultation

To accommodate the varying needs of stakeholders and I&APs within the surrounding area and capture their views, comments, issues and concerns regarding the Project, various opportunities have been and will continue to be provided to I&APs to note their comments and issues. I&APs are being consulted through the following means:

**Table 6.4:** Public involvement for Zondereinde PV Facility

Activity	Date
Distribution of the BID, process notification letters and stakeholder reply form announcing the EIA process and inviting I&APs to register on the Project database.	07 October 2022



The BID and electronic reply form were also made available on the online stakeholder engagement platform.	
Placement of site notices at the Project Site, including placement of further notices in the town of Northam and Setaria.	9 September 2022
Announcement of the availability of the Scoping Report for a 30-day review and comment period, including details on how to access the Scoping Report via the online stakeholder engagement platform, in one provincial newspaper: » Rustenburg Herald Newspaper (English advert)	07 October 2022
Distribution of notification letters announcing the availability of the Scoping Report for a 30-day review and comment period. These letters were distributed to Organs of State, Government Departments, Ward Councillors, landowners within the surrounding area (including neighbouring landowners) and key stakeholder groups.	07 October 2022
30-day review and comment period of the Scoping Report.	Friday, 07 October 2022 - Monday, 07 November 2022
Virtual meetings using virtual platforms, as determined through discussions with the relevant stakeholder group: » Landowners » Authorities and key stakeholders (including Organs of State, local municipality and official representatives of community-based organisations). » Where an I&AP does not have access to a computer and/or internet to participate in a virtual meeting telephonic discussions (including WhatsApp video call) will be set-up and minuted for inclusion. The preferred language of the I&AP has been considered when setting up these discussions. » Direct in-person consultation will only take place in limited numbers and where sanitary conditions can always be maintained.	To be held during the 30-day review and comment period
Ongoing consultation (i.e., telephone liaison; e-mail communication) with all I&APs.	Throughout the EIA process

#### iv. **Registered I&APs entitled to Comment on the Scoping Report**

- 43.(1) A registered I&AP is entitled to comment, in writing, on all reports or plans submitted to such party during the public participation process contemplated in these Regulations and to bring to the attention of the proponent or applicant any issues which that party believes may be of significance to the consideration of the application, provided that the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.
- (2) In order to give effect to section 24O of the Act, any State department that administers a law relating to a matter affecting the environment must be requested, subject to regulation 7(2), to comment within 30 days.
- 44.(1) The applicant must ensure that the comments of interested and affected parties are recorded in reports and plans and that such written comments, including responses to such comments and records of meetings, are attached to the reports and plans that are submitted to the competent authority in terms of these Regulations.
- (2) Where a person desires but is unable to access written comments as contemplated in subregulation (1) due to –
- A lack of skills to read or write;
  - Disability; or
  - Any other disadvantage;

Reasonable alternative methods of recording comments must be provided for.

I&APs registered on the database have been notified by means of a notification letter of the release of the Scoping Report for a 30-day review and comment period, invited to provide comment on the Scoping Report, and informed of the way, and timeframe within which, such comment must be made. The Scoping Report has been made available in soft copies to I&APs on the Savannah Environmental website (<http://www.savannahsa.com/public-documents/energy-generation/>). Hard copies can be made available on request. Where I&APs are not able to provide written comments (including SMS and WhatsApp), other means of consultation, such as telephonic discussions, will be used to provide the I&APs with a platform to verbally raise their concerns and comments on the Project.

All comments raised as part of the discussions and written comments submitted during the 30-day review and comment period will be recorded and included in **Appendix C6** and **Appendix C7** of the Scoping Report.

#### v. **Identification and Recording of Comments**

Comments raised by I&APs over the duration of the S&EIA process will be synthesised into a C&R Report, which will be included in **Appendix C8** of the Final Scoping Report. The C&R Report will include detailed responses from members of the EIA project team and/or the project proponent to the issues and comments raised during the public participation process.

Meeting notes of all the telephonic discussions and virtual meetings conducted during the 30-day review and comment period of the Scoping Report will be included in **Appendix C7**.

#### **6.6 Outcomes of the DFFE Web-Based Screening Tool**

In terms of GN R961 (promulgated on 5 July 2019 in GG 42561) and Regulation 16(1)(b)(v) of the 2014 EIA Regulations (as amended), the submission of a Screening Report generated from the national web based environmental screening tool is compulsory for the submission of applications in terms of Regulations 19 and 21 of the EIA Regulations.

The requirement for the submission of a Screening Report (included as **Appendix K** of the Scoping Report) for the Zondereinde PV Facility is applicable, as it triggers Regulation 19 of the EIA Regulations, 2014, as amended. **Table 6.5** provides a summary of the specialist assessments identified in terms of the screening tool and responses to each assessment from the project team considering the development area under consideration.

**Table 6.5:** Sensitivity ratings from the DFFE's web-based online Screening Tool associated with the development area of the Zondereinde PV Facility.

Theme/Specialist Assessment	Sensitivity Rating as per the Screening Tool (relating to the need for the study)	Project Team Response
Agriculture Theme/Agricultural Impact Assessment	Medium	<p>Various soil forms are expected throughout the development area, of which some are commonly associated with medium land capabilities. Even though the soil depth, texture and permeability of these soils ensure medium land capability, the climatic capability of the area often reduces the land potential considerably.</p> <p>The Scoping Phase Soils Assessment is included as <b>Appendix E</b> in this Scoping Report. Impacts on soils and the agricultural potential will be assessed further in the EIA Phase.</p>
Landscape (Solar) Theme/Visual Impact Assessment	Very High	<p>The Visual Scoping Evaluation is included in this Scoping Report as <b>Appendix G</b>. Sensitive receptors in the area include Nature Reserve (Sharme Private) within the immediate surrounds of the development area and users of the roads near the site. Visual impacts will be assessed further in the EIA Phase.</p>
Archaeological and Cultural Heritage Theme/Heritage Impact Assessment	Low	<p>A Heritage Screening (which covers archaeological and cultural aspects of the development area) is included in this Scoping Report as <b>Appendix F</b>.</p> <p>The area surrounding the development area is of a low sensitivity. Heritage impacts will be further assessed during the EIA Phase.</p>
Palaeontology Theme/Heritage Impact Assessment	Medium	<p>A Heritage Screening (which covers palaeontological aspects of the development area) is included in this Scoping Report as <b>Appendix F</b>.</p> <p>The development area is located on sediments of moderate and zero palaeontological sensitivity. Paleontological impacts will be further assessed during the EIA Phase.</p>
Terrestrial Biodiversity Theme/ Terrestrial Ecology Impact Assessment	Low	<p>A Terrestrial Ecology Scoping Study (including flora and fauna) has been undertaken for the Project and is included as <b>Appendix D</b> of the Scoping Report.</p> <p>Based on the desktop assessment, it can be said that the development area has moderate to high sensitivity. Impacts on terrestrial ecology will be further assessed during the EIA Phase.</p>
Aquatic Biodiversity Theme/Freshwater Impact Assessment	Very High	<p>A Freshwater Scoping Study has been undertaken for the Project and is included as <b>Appendix E</b> of the Scoping Report.</p> <p>The overall extent of natural wetland areas expected for the development area is very high sensitivity. Impacts on freshwater resources will be further assessed during the EIA Phase.</p>
Avian Impact Assessment/Avifauna Impact Assessment	Very High	<p>Avifauna species expected to occur in the area are included in the Terrestrial Ecology Scoping Study, which is included as <b>Appendix D</b> of the Scoping Report. The development area occurs within 50km of avian colonies, making it a high sensitivity site. A standalone Avifauna Impact Assessment will be prepared during the EIA Phase, the findings of which will be included in the EIA Report.</p>
Civil Aviation (Solar PV) Theme	Medium	<p>No major aerodromes or small airfields are known to occur in the larger area. The Civil Aviation Authority (CAA) and Air Traffic Navigation Services (ATNS)</p>

Theme/Specialist Assessment	Sensitivity Rating as per the Screening Tool (relating to the need for the study)	Project Team Response
		will be consulted throughout the S&EIA process, to obtain input and determine any specific requirements.
Defence Theme	Low	There is no military base located close to the development area.
RFI Theme	Medium	The South African Radio Astronomy Observatory (SARAO) will however be consulted during the 30-day review and comment period of the Scoping Report to provide written comment on the proposed development.
Plant Species Theme/ Terrestrial Ecology Impact Assessment	Low	A Terrestrial Ecology Scoping Study (including flora and fauna) has been undertaken for the Project and is included as <b>Appendix D</b> of the Scoping Report.
Animal Species Theme/ Terrestrial Ecology Impact Assessment	Medium	Based on the desktop assessment, it can be said that the development area is moderately sensitive, with a moderate-high likelihood of SCC occurring. This assumption is based on the Ecological Support Area (ESA 1). Impacts on terrestrial ecology will be further assessed during the EIA Phase.
Social Impact Assessment	The screening report does not indicate a rating for this theme.	A Social Scoping Assessment has been undertaken and is included in the Scoping Report as <b>Appendix H</b> . Impacts on the social environment will be further assessed during the EIA Phase.

### 6.6.3 Evaluation of Issues Identified through the Scoping Process

Direct, indirect, and cumulative environmental impacts associated with the Project identified during the Scoping Phase have been evaluated through consideration of existing information available for the development area.

To evaluate issues and assign an order of priority, the following methodology was used to identify the characteristics of each potential issue/impact:

- » The **nature**, which includes a description of what causes the impact, what will be affected and how it will be affected.
- » The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional or national.
- » Identify **sensitive receptors** that may be impacted on by the Project and the types of impacts that are most likely to occur.
- » The **significance** of potential impacts, in terms of the requirements of the 2014 EIA Regulations (including nature, significance, consequence, extent, duration and probability of the impacts, the degree to which these impacts:
  - (a) Can be reversed;
  - (b) May cause irreplaceable loss of resources; and
  - (c) Can be avoided, managed or mitigated.
- » Identify the potential impacts that will be considered further in the EIA Phase through detailed investigations.

The evaluation of the Project resulted in a description of the nature, significance, consequence, extent, duration and probability of the identified issues, as well as recommendations regarding further studies required within the EIA Phase.

#### **6.6.4 Finalisation of the Scoping Report**

The final stage of the Scoping Phase entails the recording and capturing of comments received from stakeholders and I&APs on the Scoping Report, in order to finalise the Scoping Report for submission to LDEDET for decision-making. All written comments received will be addressed within the C&R Report (**Appendix C8**).

#### **6.7 Assumptions and Limitations of the EIA Process**

The following assumptions and limitations are applicable to the EIA process for the Zondereinde PV Facility:

- » All information provided by the developer and I&APs to the environmental team was correct and valid at the time it was provided.
- » It is assumed that the Project Site for the Zondereinde PV Facility identified by the developer represents a technically suitable site for the establishment of the Project, which is based on the design undertaken by technical consultants for the Project.
- » The development footprint (the area that will be affected during the operation phase) will include the footprint for the Solar PV Energy Facility and associated infrastructure (i.e., internal access roads, and the BESS).
- » The Scoping Phase evaluation of impacts has been largely based on desktop studies and the findings of studies which have been completed previously for this specific site. This information has been used to inform this Scoping Report and will be verified by specialists in the EIA Phase, to assess the Project development footprint for the Zondereinde PV Facility.

#### **6.8 Legislation and Guidelines that have informed the preparation of this Scoping Report**

The following legislation and guidelines have informed the scope and content of this Scoping Report:

- » National Environmental Management Act (Act No. 107 of 1998).
- » EIA Regulations of December 2014, published under Chapter 5 of NEMA (as amended).
- » Department of Environmental Affairs (2017), Public Participation Guidelines in terms of NEMA EIA Regulations.
- » Department of Environmental Affairs (2017), Integrated Environmental Management Guideline: Guideline on Need and Desirability.
- » Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation; and
- » International guidelines – the Equator Principles, the IFC Performance Standards, the Sustainable Development Goals, World Bank Environmental and Social Framework, and the and World Bank Group Environmental, Health, and Safety Guidelines (EHS Guidelines).

Several other Acts, standards or guidelines have also informed the project process and the scope of issues addressed and assessed in this Scoping Report. A review of legislative requirements applicable to the Project is provided in **Table 6.6**.



**Table 6.6:** Relevant legislative permitting requirements applicable to Zondereinde PV Facility

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<b>National Legislation</b>			
Constitution of the Republic of South Africa (No. 108 of 1996)	In terms of Section 24, the State has an obligation to give effect to the environmental right, which states that:  <i>"Everyone has the right –</i> » <i>To an environment that is not harmful to their health or well-being, and</i> » <i>To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:</i> * <i>Prevent pollution and ecological degradation,</i> * <i>Promote conservation, and</i> * <i>Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."</i>	Applicable to all authorities	There are no permitting requirements associated with this Act. The application of the environmental right however implies that environmental impacts associated with proposed developments are considered separately and cumulatively. It is also important to note that the environmental right includes the notion that justifiable economic and social development should be promoted, through the use of natural resources and ecologically sustainable development.
National Environmental Management Act (No 107 of 1998) (NEMA)	The 2014 EIA Regulations have been promulgated in terms of Chapter 5 of NEMA (GN982). Listed activities which may not commence without EA are identified within the Listing Notices (GN983, GN984 and GN 985) have also been published under NEMA.  In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the CA charged by NEMA with granting of the relevant EA.  Considering the capacity of the Zondereinde PV Facility (i.e. contracted capacity of 100MW) and the triggering of Activity 1 of Listing Notice 2 (GNR 325) a full S&EIA process is required in support of the application for EA.	LDEDET – Competent Authority	The listed activities triggered by the Project have been identified and are being assessed as part of the EIA process currently underway for the Project. The EIA process will culminate in the submission of a Final EIAR to LDEDET for review and decision-making.
National Environmental Management Act (No 107 of 1998) (NEMA)	In terms of the "Duty of Care and Remediation of Environmental Damage" provision in Section 28(1) of NEMA, every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable	DFFE LDEDET	While no permitting or licensing requirements arise directly by virtue of the Project, this section finds application through the consideration of potential cumulative, direct, and

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.</p> <p>In terms of NEMA, it is the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.</p>		<p>indirect impacts. It will continue to apply throughout the life cycle of the Project.</p>
<p>DFFE Web-Based Screening Tool</p>	<p>In terms of Regulation 16(1)(b)(v), read with regulation 21 of the 2014 EIA Regulations, it is compulsory for an EA application to include a sensitivity report generated by the national web based environmental screening tool (GN R960 of GG 42561, dated 5 July 2019) (DFFE Screening Tool).</p> <p>Where themes are identified for an EA application, specialist reports are prescribed in the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of NEMA (Assessment Procedures) for certain of the themes. Two Assessment Procedures have been gazetted, in March 2020 (March 2020 Assessment Procedures) and October 2020 (October 2020 Assessment Procedures) (published in GN R320 of GG 43110 on 20 March 2020 and GN R1150 of GG 43855 on 30 October 2020).</p>		
<p>Environment Conservation Act (No. 73 of 1989) (ECA)</p>	<p>The Noise Control Regulations in terms of Section 25 of the ECA contain regulations applicable for the control of noise in the Provinces of Limpopo, North West, Mpumalanga, Northern Cape, Eastern Cape, and KwaZulu-Natal Provinces.</p> <p>The Noise Control Regulations cover the powers of a local authority, general prohibitions, prohibitions of disturbing noise, prohibitions of noise nuisance, use</p>	<p>DFFE LDEDET</p> <p>Waterberg District Municipality</p>	<p>Noise impacts are expected to be associated with the construction phase of the Project. Considering the location of the Project Site in relation to residential areas and provided that appropriate mitigation measures are implemented, construction noise is unlikely to present a significant intrusion to the local community. There is therefore no requirement for</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>of measuring instruments, exemptions, attachments, and penalties.</p> <p>In terms of the Noise Control Regulations, no person shall make, produce or cause a disturbing noise, or allow it to be made, produced or caused by any person, machine, device or apparatus or any combination thereof (Regulation 04).</p>		<p>a noise permit in terms of the legislation.</p>
<p>National Water Act (No. 36 of 1998) (NWA)</p>	<p>A water use listed under Section 21 of the NWA must be licensed with the Regional DWS, unless it is listed in Schedule 1 of the NWA (i.e. is an existing lawful use), is permissible under a GA, or if a responsible authority waives the need for a licence.</p> <p>Water use is defined broadly, and includes consumptive and non-consumptive water uses, taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering a watercourse, removing water found underground for certain purposes, and recreation.</p> <p>Consumptive water uses may include taking water from a water resource (Section 21(a)) and storing water (Section 21(b)).</p> <p>Non-consumptive water uses may include impeding or diverting of flow in a watercourse (Section 21(c)), disposing of waste in a manner which may detrimentally impact on a water resource (Section 21(g)) and altering of bed, banks or characteristics of a watercourse (Section 21(i)).</p> <p>Various GAs have been published under the NWA, including for Sections 21, (i),(g), and (a) water uses. In respect of Sections 21(c) and (i) water uses, activities can be conducted within 100m of a watercourse and 500m of a wetland without a WUL if the impacts to the watercourse / wetland are low.</p>	<p>DWS</p>	<p>According to the Freshwater Scoping Study included as <b>Appendix E</b> to the Scoping Report, the overall extent of natural wetland areas expected for the Project Site is limited; however, previous assessments of the Project Site have delineated water resources for the project area. Digby Wells (2018) delineated a network of drainage features across the Project Site, with the ARC-Institute (2018) indicating a potential wetland flowing through the centre of the Project Site in a northerly direction. Desktop information also suggests the presence of drainage features.</p> <p>As a result, a water use authorisation for the Project may be required from the DWS.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	Water uses that will be conducted under a GA need to be registered with the DHSWS.		
Minerals and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA)	<p>A mining permit is required in accordance with Section 27(6) of the MPRDA where a mineral in question is to be mined, including the mining of materials from a borrow pit. Any person who wishes to apply for a mining permit in accordance with Section 27(6) must simultaneously apply for an EA in terms of NEMA.</p> <p>Section 53 of the MPRDA states that any person who intends to use the surface of any land in any way which may be contrary to any object of the MPRDA, or which is likely to impede any such object must apply to the Minister for approval in the prescribed manner.</p>	Department of Mineral Resources and Energy (DMRE)	<p>No borrow pits are expected to be required for the Project's construction; and as a result, a mining permit or EA in this regard is not required to be obtained for this.</p> <p>In terms of Section 53 of the MPRDA, approval is required from the Minister of Mineral Resources and Energy to ensure that the Project does not sterilise a mineral resource that might occur on the development area.</p>
National Environmental Management: Air Quality Act (No. 39 of 2004) (NEM:AQA)	<p>The National Dust Control Regulations (published under Section 32 of NEM:AQA in GNR 827 of GG 36974 on 1 November 2013) prescribe the general measures for the control of dust in all areas; and provide a standard for acceptable dustfall rates for residential and non-residential areas.</p> <p>In accordance with these Regulations, any person who conducts any activity in such a way as to give rise to dust in quantities and concentrations that may exceed the dustfall standard set out in Regulation 03 must, upon receipt of a notice from the air quality officer, implement a dustfall monitoring programme.</p> <p>Any person who has exceeded the dustfall standard set out in Regulation 03 must, within three months after submission of the dustfall monitoring report, develop and submit a dust management plan to the air quality officer for approval.</p>	LDEDET / Waterberg District Municipality	If the Project results in the generation of excessive levels of dust, the possibility could exist that a dustfall monitoring programme would be required for the Project. If so, dustfall monitoring results from the dustfall monitoring programme would need to be included in a dust monitoring report, and a dust management plan would need to be developed.
National Heritage Resources Act (No. 25 of 1999) (NHRA)	Section 7 of the NHRA stipulates assessment criteria and categories of heritage resources according to their significance.	South African Heritage Resources Agency (SAHRA)	A Heritage Impact Assessment will be undertaken for the Project, as per the requirements of Section 38 of the NHRA. The

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>Section 35 of the NHRA provides for the protection of all archaeological and palaeontological sites, and meteorites.</p> <p>Section 36 of the NHRA provides for the conservation and care of cemeteries and graves by SAHRA where this is not the responsibility of any other authority.</p> <p>Section 38 of the NHRA lists activities which require developers or any person who intends to undertake a listed activity to notify the responsible heritage resources authority and furnish it with details regarding the location, nature, and extent of the proposed development.</p> <p>Section 44 of the NHRA requires the compilation of a Conservation Management Plan as well as a permit from SAHRA for the presentation of archaeological sites as part of tourism attraction.</p>	<p>Limpopo Heritage Resources Authority (LIHRA) – provincial heritage authority</p>	<p>Heritage Impact Assessment will be made available in the EIA Phase.</p>
<p>National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)</p>	<p>Section 53 of NEM:BA provides for the MEC / Minister to identify any process or activity in a listed ecosystem as a threatening process. No notices have been published yet under this section.</p> <p>Picking parts of, or cutting, chopping off, uprooting, damaging or destroying, any specimen of a listed threatened or protected species is a restricted activity under NEM:BA. A permit is required for a restricted activity involving a listed threatened or protected (TOPS) species without a permit. Chapter 7 of the NEM:BA regulates the process for application of a permit under NEM:BA.</p> <p>Three government notices have been published in terms of Section 56(1) of NEM:BA as follows:</p> <ul style="list-style-type: none"> <li>» Commencement of TOPS Regulations, 2007 (GNR 150).</li> <li>» Lists of critically endangered, vulnerable and protected species (GNR 151 in GG 29567 of 23 February 2007).</li> </ul>	<p>DFFE LDEDET</p>	<p>Under NEM:BA, a permit would be required for any activity that is of a nature that may negatively impact on the survival of a listed protected species.</p> <p>A Terrestrial Ecology Impact Assessment will be undertaken as part of the EIA Phase to identify the presence of any listed protected species present on site which will require a permit.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>» TOPS Regulations (GNR 152 in GG 29657 of 23 February 2007).</p> <p>NMEBA provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), and vulnerable (VU) or protected.</p> <p>The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process, including the purpose and rationale for listing ecosystems; the criteria used to identify listed ecosystems; the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems. Its objectives include preventing further degradation and loss of structure, function and composition of threatened ecosystems and preserving witness sites of exceptionally high conservation value. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. (NEM:BA: National list of ecosystems that are threatened and in need of protection, (Government Gazette 34809, GN1002, 9 December 2012).</p>		
<p>National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM:BA)</p>	<p>Chapter 5 of NEM:BA pertains to alien and invasive species, and states that a person may not carry out a restricted activity involving a specimen of an alien species without a permit issued in terms of Chapter 7 of NEM:BA, and that a permit may only be issued after a prescribed assessment of risks and potential impacts on biodiversity is carried out.</p> <p>Applicable, and exempted alien and invasive species are contained within the Alien and Invasive Species List 2020 (GN 1003 of GG 43726 of 18 September 2020) and are regulated by the Alien and Invasive Species Regulations (GN 1020 of GG 43735 of 25 September 2020).</p>	<p>DFFE</p> <p>LDEDET</p>	<p>A Terrestrial Ecology Impact Assessment will be undertaken as part of the EIA Phase to identify the presence of any alien and invasive species present on site.</p>



Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<p>Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA)</p>	<p>Section 05 of CARA provides for the prohibition of the spreading of weeds.</p> <p>Regulation 15 of GN R1048 (published under CARA in GG 9238 on 25 May 1984) provides for the classification of categories of weeds and invader plants; and restrictions in terms of where these species may occur.</p> <p>Regulation 15E of GN R1048 provides requirement and methods of control for different categories of alien and invasive plant species.</p> <p>In terms of CARA, landowners are legally responsible for the control of weeds and AIPs. CARA makes provision for three categories of alien and invasive plants:</p> <ul style="list-style-type: none"> <li>» Category 1a: must immediately be removed and destroyed;</li> <li>» Category 1b: need to be immediately removed and contained;</li> <li>» Category 2: requires a permit to retain the species on site and it must be ensured that they do not spread. All category 2 plants in riparian zones need to be removed; and</li> <li>» Category 3: require a permit to retain these species. All category 3 plants in the riparian zone need to be removed.</li> </ul> <p>CARA also regulates the conservation of soil and states that degradation of the agricultural potential is illegal. It furthermore requires the protection of land against soil erosion and the prevention of water logging and associated salinization.</p> <p>Permissions / permits are required under CARA for the 'cultivation' of 'virgin soil'; cultivation and/or draining vlei(s), marshes or water sponges; and cultivation of an area within a watercourse's flood area.</p>	<p>Department of Agriculture, Land Reform and Rural Development (DALRD)</p>	<p>CARA will find application throughout the Project's lifecycle. In this regard, soil erosion prevention and soil conservation strategies need to be developed and implemented. In addition, a weed control and management plan must be implemented.</p> <p>In terms of Regulation 15E (GN R1048) where Category 1, 2 or 3 plants occur, a land user is required to control such plants by means of one or more of the following methods:</p> <ul style="list-style-type: none"> <li>» Uprooting, felling, cutting or burning.</li> <li>» Treatment with a weed killer that is registered for use in connection with such plants in accordance with the directions for the use of such a weed killer.</li> <li>» Biological control carried out in accordance with the stipulations of the Agricultural Pests Act (No. 36 of 1983), the ECA and any other applicable legislation.</li> <li>» Any other method of treatment recognised by the executive officer that has as its object the control of plants concerned, subject to the provisions of sub-regulation 4.</li> <li>» A combination of one or more of the methods prescribed, save that biological control reserves and areas where biological control agents are effective shall not be disturbed by other control methods to the extent that the agents are</li> </ul>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
<p>National Forests Act (No. 84 of 1998) (NFA)</p>	<p>According to the NFA, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. Notice of the List of Protected Tree Species under the NFA was published in GNR 734.</p> <p>The prohibitions provide that <i>“no person may cut, damage, disturb or destroy any protected tree; or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister”</i>.</p>	<p>DFFE</p>	<p>destroyed or become ineffective.</p> <p>A licence is required for the removal of protected trees. It is therefore necessary to conduct a survey that will determine the number and relevant details pertaining to protected tree species present in the development footprint for the submission of relevant permits to authorities prior to the disturbance of these individuals.</p> <p>A Terrestrial Ecology Impact Assessment will be undertaken as part of the EIA Phase to identify the presence of any protected trees present on site which will require a permit in terms of the NFA.</p>
<p>National Veld and Forest Fire Act (No. 101 of 1998) (NVFFA)</p>	<p>Chapter 4 of the NVFFA places a duty on owners to prepare and maintain firebreaks; the procedure in this regard; and the role of adjoining owners and the fire protection association.</p> <p>The applicant must ensure that firebreaks are wide and long enough to have a reasonable chance of preventing a veldfire from spreading to or from neighbouring land; it does not cause soil erosion; and it is reasonably free of inflammable material capable of carrying a veldfire across it.</p> <p>Chapter 5 of the Act places a duty on all owners to acquire equipment and have available personnel to fight fires. Every owner on whose land a veldfire may start or burn or from whose land it may spread must have such equipment, protective clothing and trained personnel for extinguishing fires; and ensure that in his or her absence responsible persons are present on or near his or her land who, in the event of fire, will extinguish the fire or assist in doing so and take all reasonable steps</p>	<p>DFFE</p>	<p>While no permitting or licensing requirements arise from the NVFFA, it will be applicable during the construction and operation of the Project, in terms of the preparation and maintenance of firebreaks, and the need to provide appropriate equipment and trained personnel for firefighting purposes.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	to alert the owners of adjoining land and the relevant fire protection association, if any.		
Hazardous Substances Act (No. 15 of 1973) (HAS)	<p>The HAS regulates the control of substances that may cause injury, or ill health, or death of human beings due to their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. It provides for the rating of such substances or products in relation to the degree of danger; and the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products.</p> <ul style="list-style-type: none"> <li>» Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared as Group I or Group II substance</li> <li>» Group IV: any electronic product, and</li> <li>» Group V: any radioactive material.</li> </ul> <p>The use, conveyance, or storage of certain hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.</p>	Department of Health (DoH)	It is necessary to identify and list all Group I, II, III, and IV hazardous substances that may be on the development area and in what operational context they are used, stored or handled. If applicable, a license would be required to be obtained from the DoH.
National Environmental Management: Waste Act (No. 59 of 2008) (NEM:WA)	<p>NEMWA's purpose is to: assist in regulating waste management; ensure the protection of human health; and prevent pollution and environmental degradation through sound waste management principles and guidelines. It furthermore provides for:</p> <ul style="list-style-type: none"> <li>» national norms and standards for regulating waste management by all spheres of government;</li> <li>» licensing and control of waste management activities;</li> <li>» remediation of contaminated land;</li> <li>» a national waste information system; and</li> </ul>	<p>DFFE – Hazardous Waste</p> <p>LDEDET – General Waste</p>	No waste listed activities are triggered by the Zondereinde PV Facility; therefore, no Waste Management License is required to be obtained. General and hazardous waste handling, storage and disposal will be required during construction and operation. The National Norms and Standards for the Storage of Waste (GNR 926) published under Section 7(1)(c) of NEM:WA will need to be considered in this regard.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>» provision for compliance and enforcement.</p> <p>The NEMWA currently defines waste broadly, as set out below. This definition will be amended when the National Environmental Management Laws Amendment Act 2 of 2022 commences:</p> <p><i>"(a) any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to this Act; or</i></p> <p><i>(b) any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister by notice in the Gazette but any waste or portion of waste, referred to in paragraphs (a) and (b), ceases to be a waste—</i></p> <p><i>(i) once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered;</i></p> <p><i>(ii) where approval is not required, once a waste is, or has been re-used, recycled or recovered;</i></p> <p><i>(iii) where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or</i></p> <p><i>(iv) where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste."</i></p> <p>The NEMWA imposes a general duty upon waste holders to take reasonable measures to avoid waste generation and, where this is impossible, to: minimise the toxicity and quantities of waste generated; reuse, reduce, recycle and recover waste; and ensure that it is</p>		

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>treated and disposed of in an environmentally sound way. Failure to do so is a criminal offence, with a maximum fine of R10 million or imprisonment of up to 10 years, or both.</p> <p>The DEA promulgated Regulations under NEMWA in GN 921 of GG 37083 on 29 November 2013, which provides that a waste management licence (WML) is required for undertaking certain waste management activities that have, or are likely to have, a detrimental effect on the environment ("Waste Listed Activities"). The Waste Listed Activities are separated into three categories, namely Category A, Category B and Category C. Category A and B Waste Listed Activities require a WML, for which either a basic assessment or an EIA process needs to be undertaken that complies with the EIA Regulations. Category C activities do not require a WML but must comply with <i>inter alia</i> the Norms and Standards for Storage of Waste, 2013 (published in GN 926 of GG 37088 on 29 November 2013). Such facilities need to be registered with the DEA 90 days before construction commences.</p> <p>The Minister may amend the list by –</p> <ul style="list-style-type: none"> <li>» Adding other WMA to the list.</li> <li>» Removing WMA from the list.</li> <li>» Making other changes to the particulars on the list.</li> </ul> <p>Classification of certain waste streams is required in terms of the Waste Classification and Management Regulations, published in GN634 of GG 36784 on 23 August 2013, to ensure that the correct waste management standards and disposal methods are implemented.</p> <p>The National Norms and Standards for the Assessment of Waste for Landfill Disposal and the National Norms and Standards for the Disposal of Waste to</p>		

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<p>Landfill (published under GN R635 and GN R636 respectively in GG 36784 of 23 August 2013) provide the norms and standards for disposal of waste to landfill.</p> <p>The National Waste Information Regulations (published in GN 625 of GG 35583 on 13 August 2012) regulate the collection of data and information to fulfil the objectives of the national waste information system, as set out in section 61 of the NEMWA, and includes reporting obligations. A registered person must keep a record of the information submitted to the SAWIS or the CA.</p> <p>Any person who stores waste must at least take steps, unless otherwise provided by NEM:WA, to ensure that:</p> <ul style="list-style-type: none"> <li>» The containers in which any waste is stored, are intact and not corroded or in any other way rendered unfit for the safe storage of waste.</li> <li>» Adequate measures are taken to prevent accidental spillage or leaking.</li> <li>» The waste cannot be blown away.</li> <li>» Nuisances such as odour, visual impacts and breeding of vectors do not arise, and</li> <li>» Pollution of the environment and harm to health are prevented.</li> </ul>		
<p>Mine Health and Safety Act (Act No. 29 of 1996) ("MHSA")</p>	<p>The MHSA aims to provide for protection of the health and safety of all employees and other personnel at RSA mines. Its main objectives are:</p> <ul style="list-style-type: none"> <li>» Protection of the health and safety of all persons at mines;</li> <li>» Requiring employers and employees to identify hazards and eliminate them, control and minimise the risks relating to health and safety at mines;</li> <li>» Giving effect to South Africa's public international law obligations that concern health and safety at all mines;</li> <li>» Providing for –</li> </ul>		<p>Northam already complies with the MHSA and it will be applicable to the Project Site. An application for exemption will however be submitted in respect of the PV Site, as the Project will be operated by independent third parties.</p>



Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<ul style="list-style-type: none"> <li>▪ employee participation in matters of health and safety through health and safety representatives and the health and safety committees at mines;</li> <li>▪ effective monitoring of health and safety conditions at mines;</li> <li>▪ enforcement of health and safety measures at mines;</li> <li>▪ investigations and inquiries to improve health and safety at mines; and</li> </ul> <p>» To promote:</p> <ul style="list-style-type: none"> <li>▪ a culture of health and safety in the mining industry;</li> <li>▪ training in health and safety in the mining industry; and</li> <li>▪ cooperation and consultation on health and safety between the State, employers, employees and their representatives.</li> </ul>		
Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) (OHSA)	The MHSAs provide that OHSA is not applicable to any matter in respect of which any provision of the MHSAs is applicable. Certain regulations under OHSA, discussed below regulate matters not provided for in MHSAs and would thus be relevant to mines.		If an exemption is obtained from the MHSAs, OHSA will be applicable and the project developer will take cognisance of the requirements of the OHSA for the Project.
Restitution of Land Rights Act 22 of 1994 ("RLRA")	<p>The RLRA governs land restitution claims.</p> <p>Initially, the RLRA only allowed land claims to be lodged until December 1998 (Initial Period). This period was amended with the promulgation of the Restitution of Land Rights Amendment Act of 2014 and the process for the lodgement of claims was extended to 2019 (Extended Period). However, a few months thereafter, the Constitutional Court delivered a judgment, <i>Access Movement of South Africa and Others v Chairperson of the National Council of Provinces and Others</i> 2016(5) SA 635 (CC) (LAMOSA). In terms of the LAMOSA judgment, the DRDLR is interdicted from processing those claims lodged after December 1998 until those lodged prior to this date have been finalised.</p> <p>Under section 11(7) of the RLRA no person may sell, exchange, donate, lease, subdivide, rezone or develop a</p>		Northam is not aware of any land claims lodged during the Initial Period or Extended Period over the Project Site.

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	land in respect of which a land claim has been published in a GG without having given the Regional Land Claims Commissioner ("LCC") one month's written notice of the intention to do so.		
Environmental Impact Assessment Guideline for Renewable Projects (GN 989 of 16 October 2015)	<p>The purpose of this document is primarily to provide guidance on the environmental management legal framework applicable to renewable energy operations and all the role players in the sector (DEA, 2015). The guideline is principally intended for use by the following stakeholder groups (DEA, 2015):</p> <ul style="list-style-type: none"> <li>» Public Sector Authorities (as regulator and/or CA);</li> <li>» Joint public sector authorities and project funders, e.g., Eskom, IDC, etc;</li> <li>» Private Sector Entities (as project funder/developer/consultant); and</li> <li>» Other I&amp;APs (as determined by the project location and/or scope).</li> </ul> <p>The guideline seeks to identify activities requiring authorisation prior to commencement of that activity; and provide an interface between national EIA regulations and other legislative requirements of various authorities (DEA, 2015).</p>		
Land Use Legislation	<p>The Spatial Planning and Land Use Management Act 16 of 2013; Subdivision of Agricultural Land Act 70 of 1970; TLM's Spatial Planning and Land Use Management Bylaws, 2016; Advertising on Roads and Ribbon Development Act 21 of 1940; and provincial road legislation will be applicable to the EM PV Solar Project.</p> <p>This legislation requires approval from local municipalities for use of land for certain specified purposes. Approval is required from Department of Agriculture, Land Reform and Rural Development (DALRRD) for the subdivision of agricultural land.</p>		EP intends to subdivide the Remainder of Portion 1 of the Farm Kopje Alleen, with the PV Site being becoming a new, property. DALRRD approval will be obtained for the subdivision and MLM's consent for the use of the PV Site for renewable energy purposes.
<b><u>Other Legislation and Policy</u></b>	Other policies, legislation and associated regulations (where applicable) considered as part of the application process include:		The project developer takes note of the requirements of the mentioned documents

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
	<ul style="list-style-type: none"> <li>» Water Services Act 108 of 1997.</li> <li>» DFEE Consultation Guidelines.</li> <li>» Traditional and Khoi-San Leadership Act, No. 3 of 2019.</li> <li>» Municipal Systems Act, No 32 of 2000.</li> <li>» Regulations of Gatherings Act, No. 205 of 1993.</li> <li>» Protection of Personal Information Act, No. 4 of 2013.</li> </ul>		and will comply with them where relevant.
National Road Traffic Act (No. 93 of 1996) (NRTA)	<p>The technical recommendations for highways (TRH 11): "<i>Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads</i>" outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads; and the detailed procedures to be followed in applying for exemption permits are described and discussed.</p> <p>Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts.</p> <p>The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the NRTA's requirements and the relevant Regulations.</p>	<p>South African National Roads Agency (SANRAL) – national roads</p> <p>Limpopo Department of Public Works</p>	An abnormal load / vehicle permit may be required to transport the various components to the Project Site for construction. These include route clearances and permits required for vehicles carrying abnormally heavy or abnormally dimensioned loads and transport vehicles exceeding the dimensional limitations (length) of 22m. Depending on the trailer configuration and height when loaded, some of the onsite substation and BESS components may not meet specified dimensional limitations (height and width) which will require a permit.
<b>Provincial Policies / Legislation</b>			
Limpopo Environmental Management Act (Act No 7 of 2003) (LEMA)	LEMA relates to, <i>inter alia</i> , protected areas, wild and alien animals, professional hunting, aquatic biota and aquatic systems, invertebrates, indigenous plants, preservation of caves and cave formations, limited development areas, mountain catchment areas, environmental pollution, and permits, permissions, exemptions, and exclusions.	LDEDET	<p>A collection / destruction permit must be obtained from LDEDET for the removal of any protected plant or animal species found on site.</p> <p>Should these species be confirmed within the development footprint during</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
			any phase of the Project, permits will be required.  A Terrestrial Ecology Impact Assessment will be undertaken as part of the EIA Phase to identify the presence of any listed species present on the Project Site which will require a permit.

**6.8.1 Best Practice Guidelines Birds & Solar Energy (2017)**

The Best Practice Guidelines Birds & Solar Energy (2017) proposed by the Birds and Renewable Energy Specialist Group (BARESG) (convened by BirdLife South Africa and the Endangered Wildlife Trust) contain guidelines for assessing and monitoring the impact of solar generation facilities on birds in Southern Africa. The guidelines recognise the impact that solar energy may have on birds, through for example, the alteration of habitat, the displacement of populations from preferred habitat, and collision and burn mortality associated with elements of solar hardware and ancillary infrastructure; and as the nature and implications of these effects are poorly understood.

The Guidelines are aimed at EAPs, avifaunal specialists, developers and regulators and propose a tiered assessment process, including:

- (i) Preliminary avifaunal assessment – an initial assessment of the likely avifauna in the area and possible impacts, preferably informed by a brief site visit and collation of available data; also including the design of a site-specific survey and monitoring project, should this be deemed necessary.
- (ii) Data collection – further accumulation and consolidation of the relevant avian data, possibly including the execution of baseline data collection work (as specified by the preliminary assessment), intended to inform the avian impact study.
- (iii) Impact assessment – a full assessment of the likely impacts and available mitigation options, based on the results of systematic and quantified monitoring, if this was deemed a requisite at preliminary assessment.
- (iv) Monitoring – repetition of baseline data collection, plus the collection of mortality data. This helps to develop a complete before and after picture of impacts; and to determine if proposed mitigation measures are implemented and are effective or require further refinement. Monitoring may only be necessary for projects with the potential for significant negative impacts on birds (i.e., large area affected and / or vulnerable species present).

In terms of the Guidelines, the quantity and quality of baseline data required to inform the assessment process at each site should be set in terms of the size of the site and the predicted impacts of the solar technology in question; the anticipated sensitivity of the local avifauna (for example, the diversity and relative abundance of priority species present, proximity to important flyways, wetlands or other focal sites); and the amount of existing data available for the area.

Data collection could vary from a single, short field visit (Regime 1, for e.g. at a small or medium sized site with low avifaunal sensitivity), to a series of multi-day survey periods (including the collection of various forms of data describing avian abundance; and distribution, movement and spread over 12 months (Regime 3, for e.g. at a large developments located in a sensitive habitat, or which otherwise may have significant impacts on avifauna)). **Table 6.7** is taken from the Best Practise Guidelines and provides a summary of the recommended assessment regimes in relation to proposed solar energy technology, project size, and likely risk).

**Table 6.7:** Recommended avian assessment regimes in relation to proposed solar energy technology, project size, and known impact risks.

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

Regime 1: One site visit (peak season); minimum 1 – 5 days.

Regime 2: Pre- and post-construction; minimum 2 – 3 x 3 – 5 days over 6 months (including peak season); carcass searches.

Regime 3: Pre- and post-construction; minimum 4 – 5 x 4 – 8 days over 12 months, carcass searches.

\* Different technologies may carry different intrinsic levels of risk, which should be considered in impact significance ratings

\*\* For multi-phased projects, the aggregate footprint of all the phases should be used. At 3ha per MW, Small = < 10MW, Medium = 10 – 50MW, Large = > 50MW.

\*\*\* The avifaunal sensitivity is based on the number of priority species present, or potentially present; the regional, national or global importance of the affected area for these species (both individually and collectively); and the perceived susceptibility of these species (both individually and collectively) to the anticipated impacts of development. For example, an area would be considered of high avifaunal sensitivity if one or more of the following is found (or suspected to occur) within the broader impact zone:

- 1) Avifaunal habitat (e.g. a wetlands, nesting or roost sites) of regional or national significance.
- 2) A population of a priority species that is of regional or national significance.
- 3) A bird movement corridor that is of regional or national significance.
- 4) A protected area and / or Important Bird and Biodiversity Area.

An area would be considered of medium avifaunal sensitivity if it does not qualify as high avifaunal sensitivity, but one or more of the following is found (or suspected to occur) within the broader impact zone

- 1) Avifaunal habitat (e.g. a wetland, nesting or roost sites) of local significance.
- 2) A locally significant population of a priority species.
- 3) A locally significant bird movement corridor.

An area would be considered of low avifaunal sensitivity if it does not meet any of the above criteria.

\*\*\*\* 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.

Bird distribution patterns fluctuate widely in response to environmental conditions (e.g., local rainfall patterns, nomadism, migration patterns, seasonality), meaning that a composition noted at a particular moment in time will differ during another time period at the same locality. For this reason, the PV transects are counted 4 times in spring and then again 4 times in autumn.

### **6.8.2 The IFC Environmental Health and Safety (EHS) Guidelines**

The IFC EHS Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice (GIIP). The following IFC EHS Guidelines have relevance to the Project:

- » IFC EHS General Guidelines
- » IFC Project Developer's Guide to Utility-Scale Solar Photovoltaic Power Plants

The EHS General Guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines, however no Industry Sector EHS Guidelines have been developed for PV solar power to date. The application of the General EHS Guidelines should be tailored to the hazards and risks associated with a project and take into consideration site-specific variables which may be applicable, such as host country context, assimilative capacity of the environment, and other project factors. In instances where host country regulations differ from the standards presented in the EHS Guidelines, whichever is the more stringent of the two in this regard should be applied.

The General EHS Guidelines include consideration of the following:

- » Environmental:
  - \* Air Emissions and Ambient Air Quality
  - \* Energy Conservation
  - \* Wastewater and Ambient Water Quality
  - \* Water Conservation
  - \* Hazardous Materials Management
  - \* Waste Management
  - \* Noise
  - \* Contaminated Land
- » Occupational Health and Safety:
  - \* General Facility Design and Operation
  - \* Communication and Training
  - \* Physical Hazards
  - \* Chemical Hazards
  - \* Biological Hazards
  - \* Radiological Hazards
  - \* Personal Protective Equipment (PPE)
  - \* Special Hazard Environments
  - \* Monitoring
- » Community Health and Safety:
  - \* Water Quality and Availability
  - \* Structural Safety of Project Infrastructure
  - \* Life and Fire Safety
  - \* Traffic Safety
  - \* Transport of Hazardous Materials
  - \* Disease Prevention
  - \* Emergency Preparedness and Response
- » Construction and Decommissioning:
  - \* Environment

- \* Occupational Health & Safety
- \* Community Health & Safety

### **6.8.3 IFC's Project Developer's Guide to Utility-Scale Solar Photovoltaic Power Plants (2015)**

While no Industry Sector EHS Guidelines have been developed for PV solar power, the IFC has published a Project Developer's Guide to Utility-Scale Solar Photovoltaic Power Plants (IFC, 2015). Chapter 8 of the Project Developer's Guide pertains to permits, licensing and environmental considerations; and states that to deliver a project which will be acceptable to international lending institutions, environmental and social assessments should be carried out in accordance with the requirements of the key international standards and principles, namely the Equator Principles and IFC's Performance Standards (IFC PS).

Some of the key environmental considerations for solar PV power plants contained within the Project Developer's Guide include:

- » Construction phase impacts (i.e. OHS, temporary air emissions from dust and vehicle emissions, noise related to excavation, construction and vehicle transit, solid waste generation and wastewater generation from temporary building sites and worker accommodation).
- » Water usage (i.e. the cumulative water use requirements).
- » Land matters (i.e. land acquisition procedures and the avoidance or proper mitigation of involuntary land acquisition / resettlement).
- » Landscape and visual impacts (i.e. the visibility of the solar panels within the wider landscape and associated impacts on landscape designations, character types and surrounding communities).
- » Ecology and natural resources (i.e. habitat loss / fragmentation, impacts on designated areas and disturbance or displacement of protected or vulnerable species).
- » Cultural heritage (i.e. impacts on the setting of designated sites or direct impacts on below-ground archaeological deposits due to ground disturbance during construction).
- » Transport and access (i.e. impacts of transportation of materials and personnel).
- » Drainage / flooding (i.e. flood risk associated with the site).
- » Consultation and disclosure (i.e. consulting with key authorities, statutory bodies, affected communities and other relevant stakeholders as early as possible).
- » Environmental and Social Management Plan (ESMP) (i.e. compile an ESMP to ensure that mitigation measures for relevant impacts are identified and incorporated into project construction procedures and contracts).



## CHAPTER 7: DESCRIPTION OF THE RECEIVING ENVIRONMENT

This chapter provides a description of the local environment. This information is provided in order to assist the reader in understanding the possible effects of the Project on the environment within which it is proposed to be developed. Aspects of the biophysical, social and economic environment that could be directly or indirectly affected by, or could affect, the Zondereinde PV Facility have been described. This information has been sourced from both existing information available for the area and collected field data by specialist consultants; and aims to provide the context within which this S&EIA process is being conducted.

### 7.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Scoping Report

This chapter includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
2(1)(g)(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	<p>The environmental attributes associated with the development of the Zondereinde PV Facility are included as a whole within this chapter. The environmental attributes that are assessed within this chapter include the following:</p> <ul style="list-style-type: none"> <li>» The regional setting of the broader study area indicates the geographical aspects associated with the Zondereinde PV Facility. This is included in <b>Section 7.2</b>.</li> <li>» The climatic conditions for the Dwaalboom Thornveld have been included in <b>Section 7.3</b>.</li> <li>» The biophysical characteristics of the development area and the surrounding areas are included in <b>Section 7.4</b>. The characteristics considered are topography and terrain, geology, soils and agricultural potential and the ecological profile which includes the vegetation patterns, listed plant species, critical biodiversity areas (CBAs) and broad-scale processes, freshwater resources, terrestrial fauna and avifauna.</li> <li>» The heritage and cultural aspects (including archaeology, cultural landscape and palaeontology) have been included in <b>Section 7.5</b>.</li> <li>» The visual quality, land-use and settlement patterns of the affected environment has been included in <b>Section 7.6</b>.</li> <li>» The social and socio-economic characteristics associated with the broader study area and the development area have been included in <b>Section 7.7</b>.</li> </ul>

A more detailed description of each aspect of the affected environment is included within the specialist Scoping Reports contained within **Appendices D - H**.

### 7.2. Regional Setting

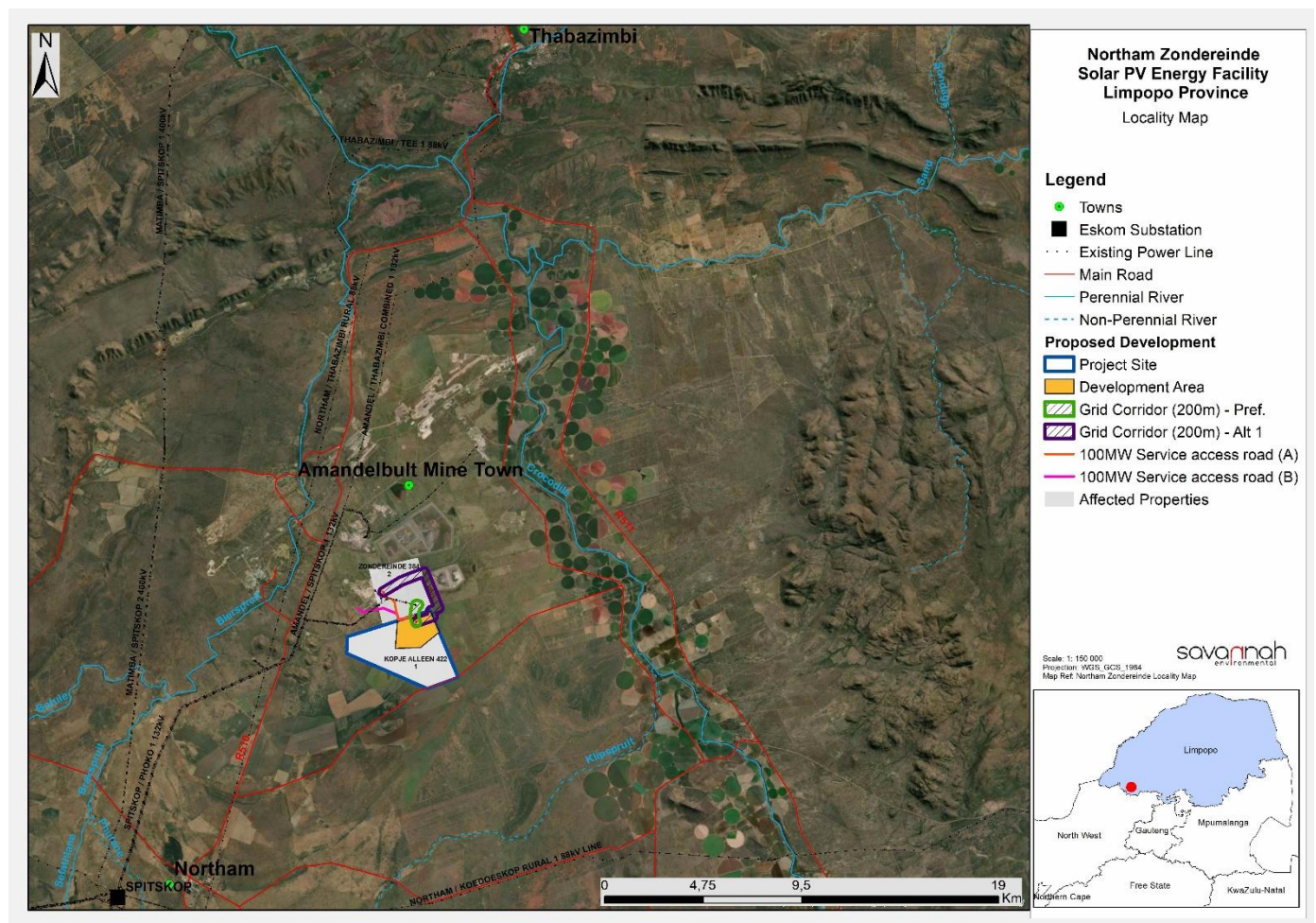
#### 7.2.1. Location of the Development area

The Development area is located south of the Zondereinde Mine, on the Remainder of Portion 1 of the Farm Koppie Alleen 422KQ, located approximately 30km south of Thabazimbi and 15km north-east of Northam,

between the R510 in the west and the R511 in the east in the Thabazimbi Local Municipality and Waterberg District in the Limpopo Province. (Refer to **Table 7.1**).

**Table 7.1:** Overview of the Identified Site

Farm Name:	Area (ha)	Central Coordinates	
		Latitude	Longitude
Kopje Alleen 422KQ	1 185ha	24°50'29.84"S	27°23'4.02"E



**Figure 7.1:** Location of the R510 in the west and the R511 in the east in relation to the Project.

**7.2.2. Limpopo Province**

Limpopo, South Africa's northern-most province, borders onto Mozambique, Zimbabwe and Botswana. It also borders the Mpumalanga, Gauteng and North West Provinces. Named after the Limpopo River, which flows along its northern border, it is a region of contrasts, from true Bushveld country to majestic mountains, primeval indigenous forests, unspoiled wilderness and patchworks of farmland. In the eastern region lies the northern half of the magnificent Kruger National Park. Limpopo ranks fifth in South Africa in both surface area and population, covering an area of 125 754km<sup>2</sup> and being home to a population of 5 779 090. The capital is Polokwane (previously Pietersburg). Other major cities and towns include Bela-Bela (Warmbad), Lephalale (Ellisras), Makhado (Louis Trichardt), Musina (Messina), Thabazimbi and Tzaneen.

Mining is the primary driver of economic activity. Limpopo is rich in mineral deposits, including platinum-group metals, iron ore, chromium, high and middle-grade coking coal, diamonds, antimony, phosphate and copper, gold, emeralds, scheelite, magnetite, vermiculite, silicon and mica. The Province is a typical developing area, exporting primary products and importing manufactured goods and services.

The climatic conditions in the Province allow for double harvesting seasons, which results in it being the largest producer of various crops in the agricultural market. Sunflowers, cotton, maize and peanuts are cultivated in the Bela-Bela–Modimolle area. Bananas, litchis, pineapples, mangoes and pawpaws and a variety of nuts are grown in the Tzaneen and Makhado areas. Extensive tea and coffee plantations create many employment opportunities in the Tzaneen area. The Bushveld is cattle country, where controlled hunting is often combined with ranching.

Limpopo is divided into five district municipalities, namely, Capricorn, Mopani, Sekhukhune, Vhembe and Waterberg and which are further subdivided into 22 local municipalities (refer to Figure 7.2), with the Project Site falling within the Waterberg District Municipality.

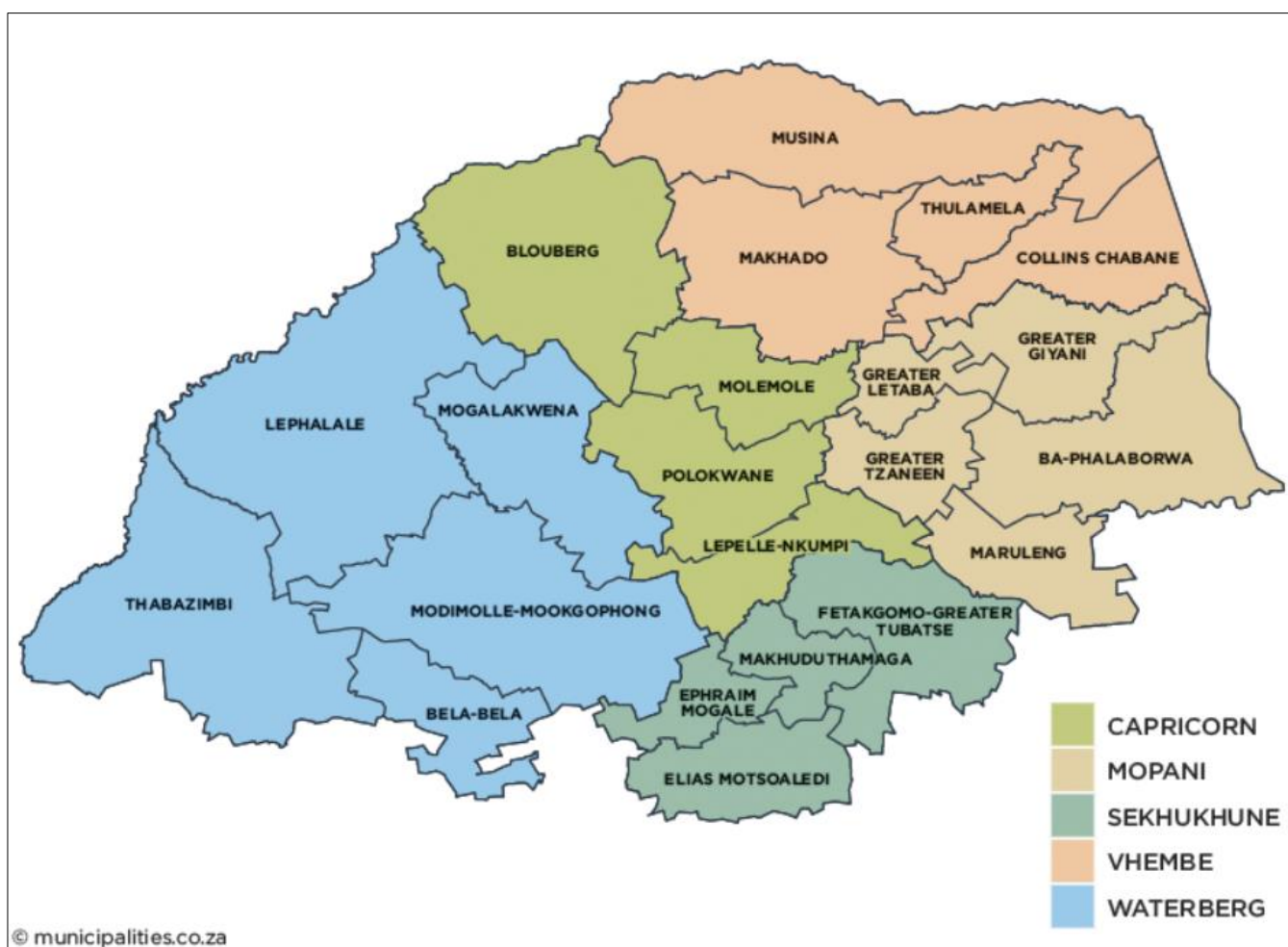


Figure 7.2: District municipalities of the Limpopo Province (Source: [www.municipalities.co.za](http://www.municipalities.co.za)).

### 7.2.3. Waterberg District Municipality

The Waterberg District Municipality is a Category C municipality, which indicates that it has a municipal executive and legislative authority in an area that includes more than one municipality. The Waterberg District Municipality is one of five (5) Districts which make up the Limpopo Province. The others include: Capricorn, Mopani, Sekhukhune, and Vhembe Districts. Waterberg District is in the western part of the Limpopo Province. It is strategically located in sharing its borders with Capricorn District Municipality in the north and Sekhukhune District Municipality in the east. It comprises of five local municipalities, namely Thabazimbi, Lephalale, Mogalakwena, Modimolle-Mookgophong and Bela-Bela (refer to **Figure 7.3**), with the Project Site falling within the Thabazimbi Local Municipality. The Waterberg District Municipality is the biggest district in the Province, making up just more than a third of its geographical area. The region, as we know it today, is more than three million years old. With its great variety of wildlife, birds and scenic splendour, it is one of South Africa's prime ecotourism destinations.



**Figure 7.3:** The five municipalities located in the Waterberg District Municipality (Source: IHS Markit Regional eXplorer version 1750).

#### 7.2.4. Thabazimbi Local Municipality

The Thabazimbi Local Municipality is one of five (5) Local Municipalities which form part of the Waterberg District of Limpopo. It is a Category B municipality located within the Waterberg District in the south-western part of the Limpopo Province. It has Botswana as its international neighbour and is a two-hour drive from Pretoria. It is one of five municipalities in the district. Thabazimbi is known as 'mountain of iron', which is a Setswana name referring to the highly lucrative iron ore reef first discovered in the Municipality in 1919. The

Municipality has Marakele National Park, which is a subsidiary of the National Parks Board, and in the same standard as the Kruger National Park and Mapungube. It has been mined since the 1930s, when iron and steel production started. Apart from iron ore, the Thabazimbi Municipality is surrounded by platinum-producing areas. Other minerals produced in the area include andalusite. Agriculture has also proven to be a strong economic sector in the municipality. Agricultural commodities produced are wheat, beans and maize. The municipality's goals are aligned with those of the Provincial Growth and Development Strategy in Limpopo. This will ensure that the growth trajectory also addresses the objective of poverty eradication through job creation and business opportunity stimulation.

According to the Spatial Development Framework (SDF) prepared for the Waterberg District Municipality (refer to **Figure 7.4**), the Project Site is located on land with platinum mining potential (shown in **Figure 7.4**). The Project Site is located on land class IV in line with arable land.



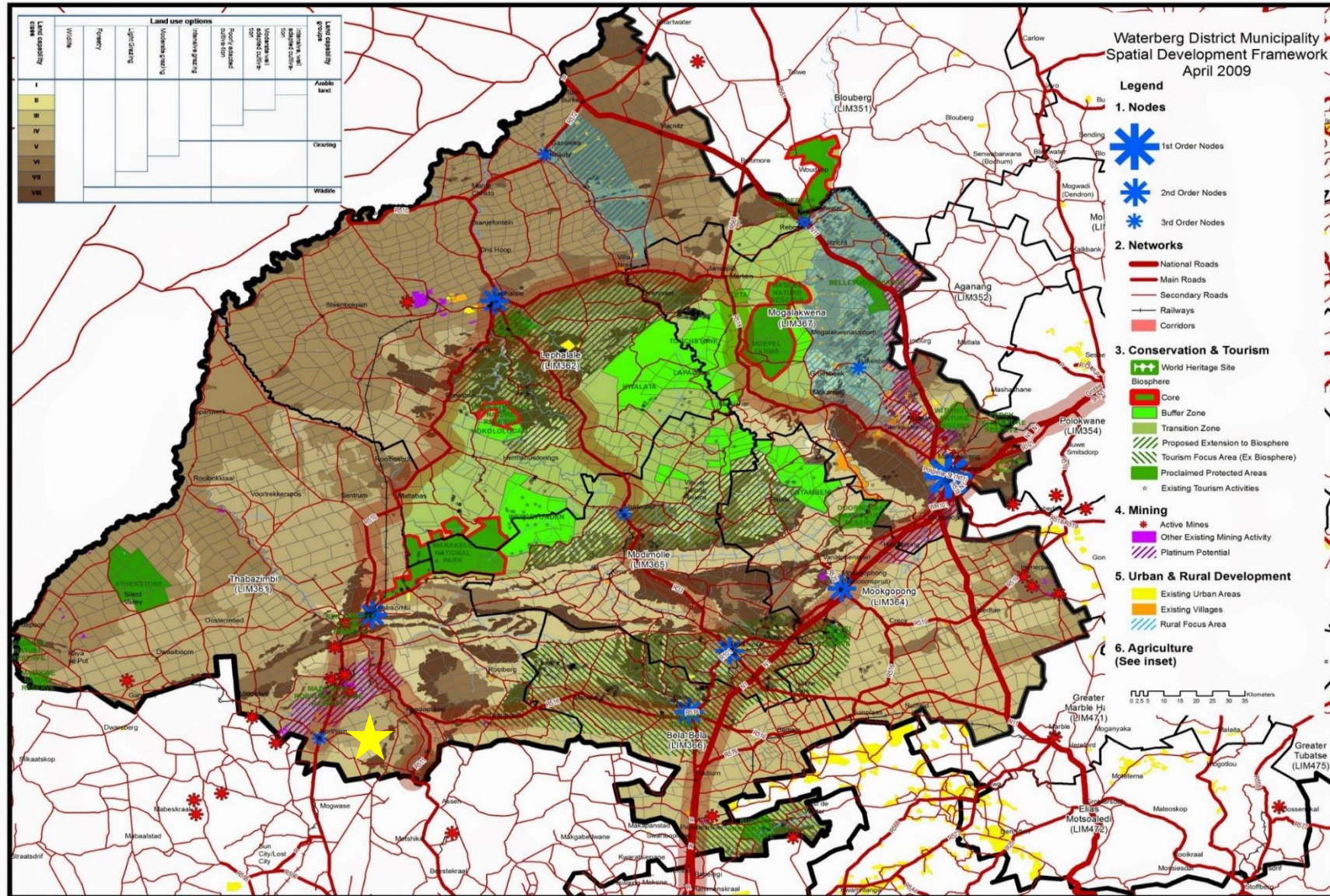
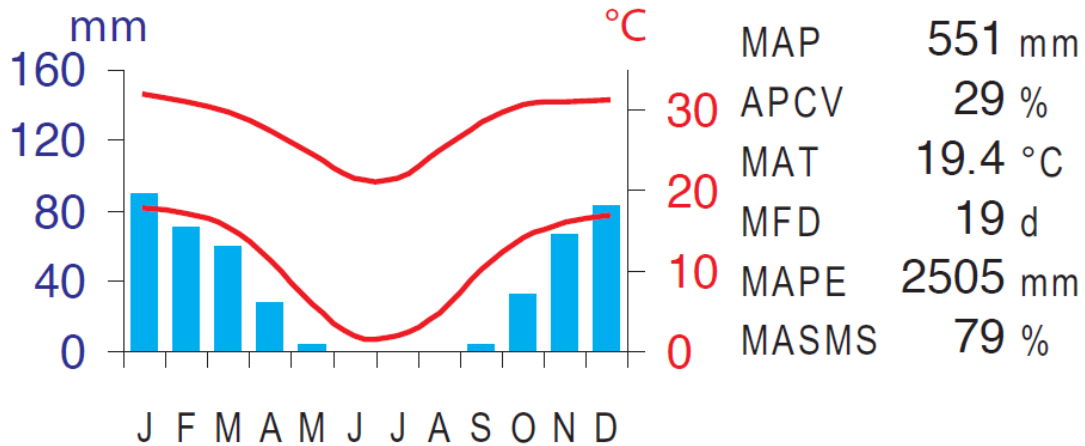


Figure 7.4: Spatial Development Framework for the Thabazimbi Local Municipality (Project Site location depicted by yellow star)

### 7.3. Climatic Conditions

The SVcb 1 vegetation type is characterised by a summer rainfall with a Mean Annual Precipitation (MAP) that ranges between 500 mm and 600 mm (see **Figure 7.5**). 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).



**Figure 7.5:** Climate for the Dwaalboom Thornveld (Mucina & Rutherford, 2006)

### 7.4. Biophysical Characteristics of the Study Area and Development Area

The following section provides an overview and description of the biophysical characteristics of the study area and has been informed by specialist studies (**Appendix D-H**) undertaken for this Scoping Report.

#### 7.4.1. Topographical profile

The topography or terrain morphology of the region is broadly described as Plains and Pans or Slightly Undulating Plains and is therefore relatively flat. A decrease in elevation (approximately 60m below the development area elevation) is shown north-west and north-east of the Site, holding the Bierspruit and Crocodile River respectively. Small koppies (or small isolated hills) are situated south-east (i.e. the Vaalkop and Spitskop); south (i.e. De Hoop); and west of the development area. These koppies / hills are only approximately 50m above the development area's elevation. The site itself is situated on fairly flat terrain.

See **Figure 7.6** for the shaded relief / topography map of the study area.



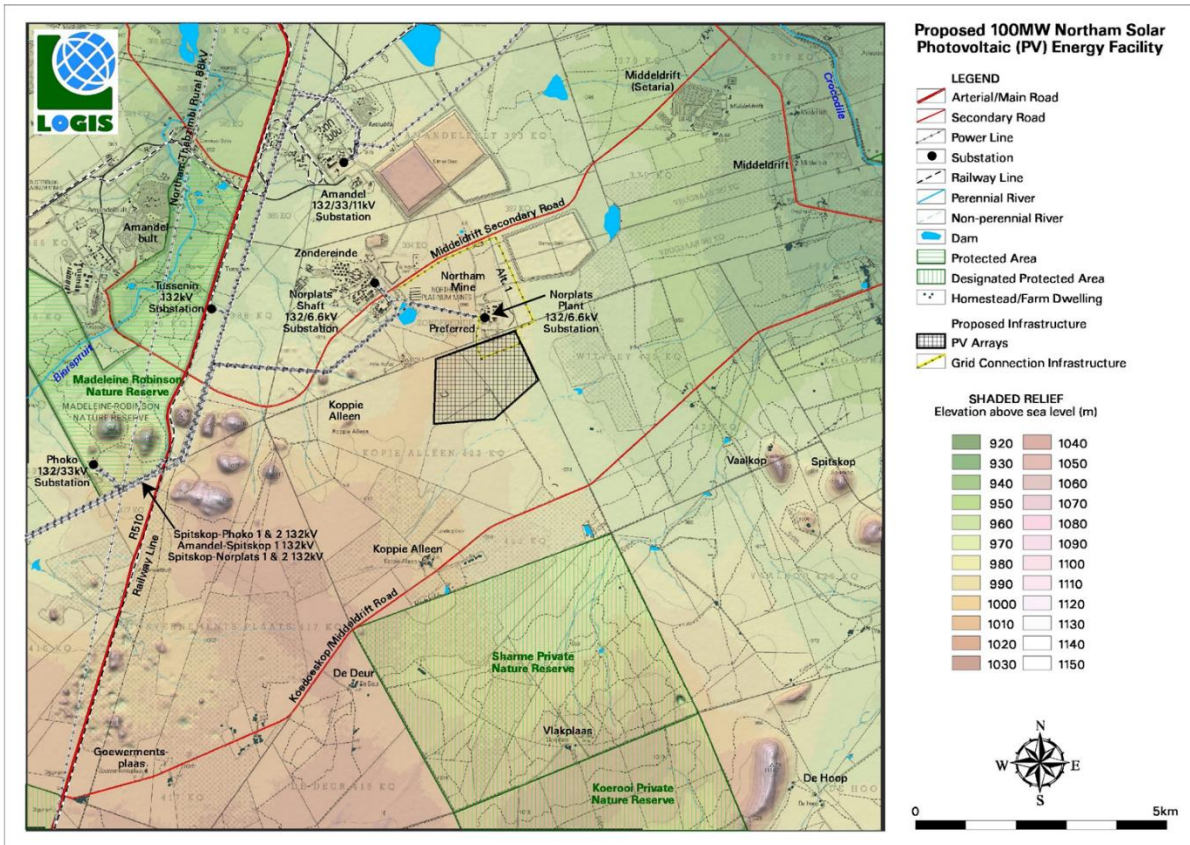


Figure 7.6: Shaded relief map of the Development area within which the Zondereinde PV Facility is proposed

**7.4.2. Geology, Soils, and Agricultural Potential**

**Geology and Soil**

According to the land type database (Land Type Survey Staff, 1972 - 2006) the Development area falls within the Ea 70 land types. The Ea land type consists of one or more of the following soils: Vertic, Melanic, and red structured diagnostic horizons, of which these soils are all undifferentiated. The Ea 70 land type terrain units and expected soils are illustrated in Figure 7.7 and Table 7.2 respectively.

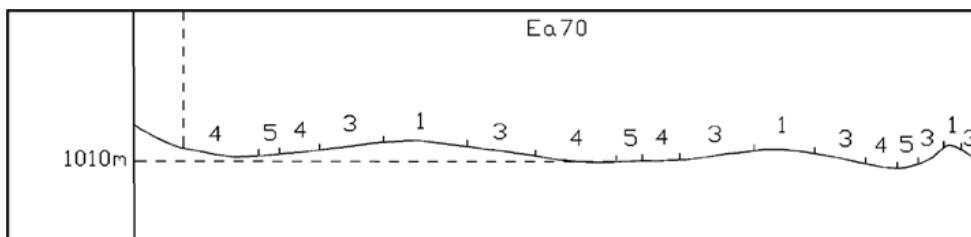


Figure 7.7: Illustration of land type Ea 70 terrain units (Land Type Survey Staff, 1972 – 2006)

**Table 7.2:** Soils expected at the respective terrain units within the Ea 70 land type (Land Type Survey Staff, 1972 – 2006)

1 (20%)		3 (40%)		4 (31%)		5 (9%)	
Arcadia	60%	Arcadia	74%	Arcadia	76%	Rensburg	34%
Bare Rock	15%	Shortlands	9%	Swartland	11%	Arcadia	33%
Hutton	8%	Bare Rock	6%	Shortlands	6%	Dundee	22%
Shortlands	7%	Hutton	5%	Hutton	5%	Bonheim	6%
Glenrosa	7%	Glenrosa	4%	Bonheim	2%	Swartland	5%
Milkwood	5%	Milkwood	2%				

### Agricultural Potential

Land capability is divided into eight classes, and these may be divided into three capability groups. **Table 7.3** shows how the land classes and groups are arranged in order of decreasing capability and ranges of use. The risk of use and sensitivity increases from class I to class VIII (Smith, 2006).

**Table 7.3:** Land capability class and intensity of use (Smith, 2006)

Land capability class	Increased Intensity of Use									
	W	F	LG	MG	IG	LC	MC	IC	VIC	
I	W	F	LG	MG	IG	LC	MC	IC	VIC	Arable Land
II	W	F	LG	MG	IG	LC	MC	IC		Arable Land
III	W	F	LG	MG	IG	LC	MC			
IV	W	F	LG	MG	IG	LC				
V	W	F	LG	MG						Grazing Land
VI	W	F	LG	MG						
VII	W	F	LG							
VIII	W									Wildlife

W- Wildlife	F- Forestry	LG-Light Grazing
MG-Moderate Grazing	IG- Intensive Grazing	LC – Light Cultivation
MC- Moderate Cultivation	IC- Intensive Cultivation	VIC – Very Intensive Cultivation

The land potential classes are determined by combining the land capability results and the climate capability of a region, as shown in **Table 7.4**. The final land potential results are then described in **Table 7.5**. These land potential classes are regarded as the final delineations subject to sensitivity, given the comprehensive addition of climatic conditions as those relevant to the then Department of Agriculture, Forestry and Fisheries (DAFF) (2017) land capabilities. The main contributors to the climatic conditions as per Smith (2006) are Mean Annual Precipitation (MAP), Mean Annual Potential Evaporation (MAPE), mean September temperatures, mean June temperatures and mean annual temperatures. These parameters will be derived from Mucina and Rutherford (2006) for each vegetation type located within the relevant project area. This will give the specialist the opportunity to consider micro-climate, aspect, topography etc.

**Table 7.4:** The combination table for land potential classification

Land capability class	Climate capability class							
	C1	C2	C3	C4	C5	C6	C7	C8
I	L1	L1	L2	L2	L3	L3	L4	L4
II	L1	L2	L2	L3	L3	L4	L4	L5
III	L2	L2	L3	L3	L4	L4	L5	L6
IV	L2	L3	L3	L4	L4	L5	L5	L6
V	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei	Vlei
VI	L4	L4	L5	L5	L5	L6	L6	L7
VII	L5	L5	L6	L6	L7	L7	L7	L8
VIII	L6	L6	L7	L7	L8	L8	L8	L8

**Table 7.5:** The land potential classes

L1	<b>Very high potential: No limitations. Appropriate contour protection must be implemented and inspected.</b>
L2	High potential: Very infrequent and/or minor limitations due to soil, slope, temperatures or rainfall. Appropriate contour protection must be implemented and inspected.
L3	Good potential: Infrequent and/or moderate limitations due to soil, slope, temperatures or rainfall. Appropriate contour protection must be implemented and inspected.
L4	Moderate potential: Moderately regular and/or severe to moderate limitations due to soil, slope, temperatures or rainfall. Appropriate permission is required before ploughing virgin land.
L5	Restricted potential: Regular and/or severe to moderate limitations due to soil, slope, temperatures or rainfall.
L6	Very restricted potential: Regular and/or severe limitations due to soil, slope, temperatures or rainfall. Non-arable
L7	Low potential: Severe limitations due to soil, slope, temperatures or rainfall. Non-arable
L8	Very low potential: Very severe limitations due to soil, slope, temperatures or rainfall. Non-arable

### 7.4.3. Land Use

Land use often determines land cover; and is an important contributing factor to the overall condition of the land. This is since different land uses have varying effects on the integrity of the land. Areas that are characterised by high levels of transformation and habitat degradation are generally considered to be more suited for development purposes, as it is unlikely that biodiversity attributes of conservation importance will be present or affected by development in such areas. Conversely, areas that are characterised by extensive untransformed and pristine habitat are generally regarded as unsuitable options for development purposes. The general region within which the Development area is located can be classified as being definitively rural, with very little anthropogenic development and/or transformed environments.

A generalised land-use will be derived for the larger project area considering agricultural productivity.

- » Mining;
- » Bare areas;
- » Agriculture crops;
- » Natural veld;
- » Grazing lands;
- » Forest;
- » Plantation;
- » Urban;

- » Built-up;
- » Waterbodies; and
- » Wetlands.

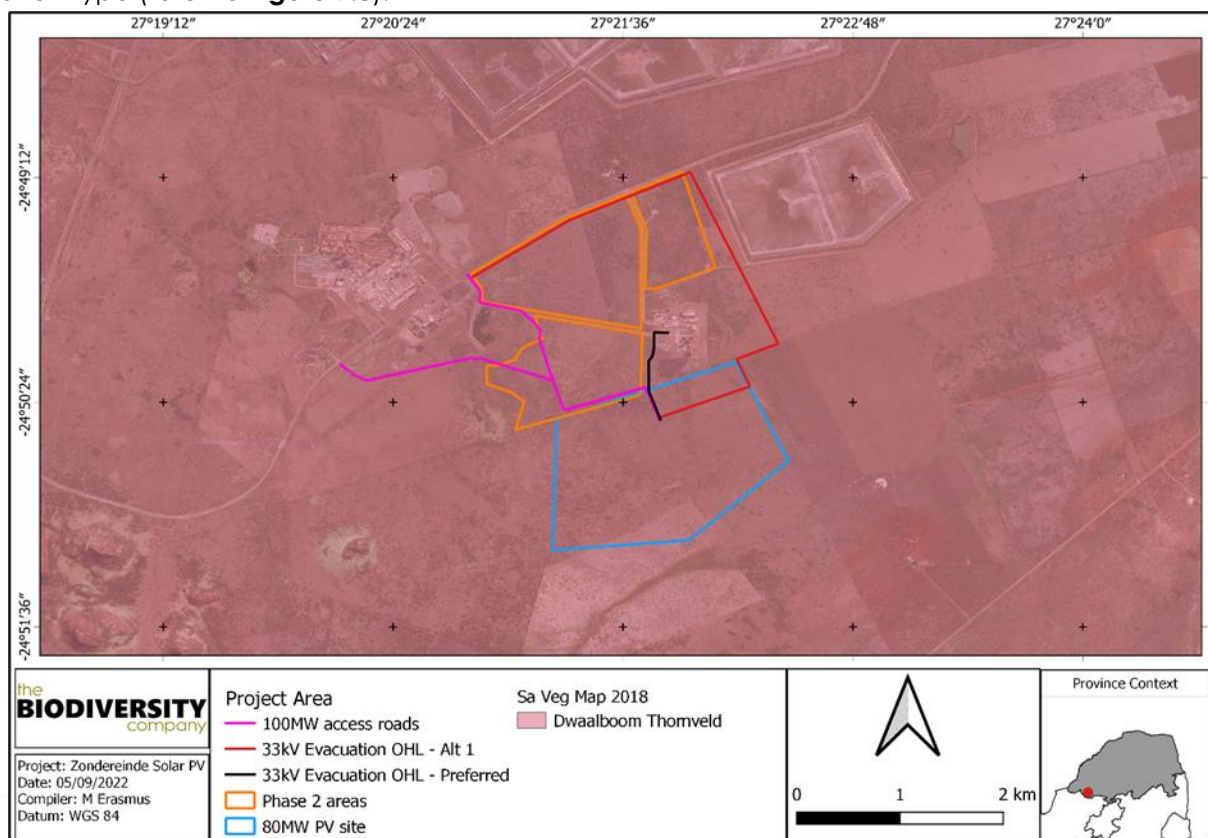
#### 7.4.4. Ecological Profile of the Study Area and the Development Area

##### i. Broad-Scale Vegetation Patterns

The Development area is situated in the savanna biome. The savanna vegetation of South Africa represents the southernmost extension of the most widespread biome in Africa (Mucina & Rutherford, 2006). Major macroclimatic traits that characterise the Savanna biome include a seasonal precipitation and a sub-tropical thermal regime, with no or usually low incidence of frost (Mucina & Rutherford, 2006).

The savanna biome is the largest biome in South Africa, extending throughout its east and north-eastern areas. Savannas are characterised by a dominant grass layer, over-topped by a discontinuous, but distinct woody plant layer (Mucina & Rutherford, 2006). At a structural level, Africa's savannas can be broadly categorised as either fine-leaved (microphyllous) savannas or broad-leaved savannas. Fine-leaved savannas typically occur on nutrient rich soils and are dominated by microphyllous woody plants of the Mimosaceae family (common genera include Vachellia and Albizia) and a generally dense herbaceous layer (Scholes & Walker, 1993).

On a fine-scale vegetation type, the Development area overlaps with the Dwaalboom Thornveld vegetation type (refer to **Figure 7.8**).



**Figure 7.8:** Map illustrating the vegetation type associated with the development area

#### Dwaalboom Thornveld



Dwaalboom Thornveld is restricted to, and is distributed in, the Limpopo and North-West Provinces within flats north of the Dwarsberge and associated ridges, mainly west of the Crocodile River in the Dwaalboom area but including a patch around Sentrum. South of the ridges it extends eastwards from the Nietverdiend area, north of the Pilanesberg to the Northam area, at an altitude range of between 900 and 1.200 m.a.s.l. Its main vegetation and landscape features include plains with a layer of scattered, low to medium high, deciduous microphyllous trees and shrubs with a few broad-leaved tree species. There is almost a continuous herbaceous layer dominated by grass species.

### Important Taxa associated with the Dwaalboom Thornveld

Based on Mucina and Rutherford's (2006) vegetation classification, important plant taxa are those species that have a high abundance; a frequent occurrence (not being particularly abundant); or are prominent in the landscape within a particular vegetation type. They note the following species are important taxa in the Dwaalboom Thornveld vegetation type:

- » **Trees:** *Vachellia erioloba*, *Vachellia erubescens*, *Vachellia nilotica*, *Vachellia tortilis* subsp *heteracantha*, *Senegalia fleckii*, *Senegalia burkei*, *Searsia lancea* (Mucina & Rutherford, 2006).
- » **Shrubs:** *Diospyros lycioides* subsp. *lycioides*, *Grewia flava*, *Mystroxydon aethiopicum* subsp. *burkenum*, *Agathisanthemum bojeri* (Mucina & Rutherford, 2006).
- » **Graminoids:** *Aristida bipartite*, *Bothriochloa insculpta*, *Digitaria eriantha* subsp *eriantha*, *Ischaemum afrum*, *Panicum maximum* and *Cymbopogon pospischilii* (Mucina & Rutherford, 2006).

### Conservation Status of the Dwaalboom Thornveld

According to Mucina and Rutherford (2006) Dwaalboom Thornveld is classified as Least Threatened. Although the target for conservation is 19%, only 6% of this vegetation type is currently under statutory conservation in reserves, such as the Madikwe Game Reserve (approximately 150km west of the development area). Cultivation and to a lesser extend urbanisation have resulted in the transformation of approximately 14% of Dwaalboom Thornveld and exotic invasive plants are present. Incidences of erosion are low to very low (Mucina & Rutherford, 2006).

### ii. Expected Flora Species

The Plants of Southern Africa (POSA) database indicates that 452 species of indigenous plants are expected to occur within the development area. (The full list of species will be provided in the final report). Two SCCs based on their conservation status could be expected to occur within the development area and are provided in **Table 7.6** below.

**Table 7.6:** Threatened flora species that may occur within the development area

Family	Taxon	Author	IUCN	Ecology
Apocynaceae	<i>Stenostelma umbelluliferum</i>	(Schltr.) Bester & Nicholas	NT	Indigenous; Endemic
Scrophulariaceae	<i>Jamesbrittenia bergae</i>	Lemmer	VU	Indigenous; Endemic

**iii. Critical Biodiversity Areas and Ecological Support Areas**

The conservation of Critical Biodiversity Areas (CBAs) is crucial, in that if these areas are not maintained in a natural or near-natural state, biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity compatible land uses and resource uses.

The Limpopo Conservation Plan (2018) aims to inform land-use planning and development on a provincial scale and to aid in natural resource management. One of the outputs is a map of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). These are classified into different categories, namely Protected Areas, CBA1, CBA2, ESA1, ESA2, Other Natural Areas (ONAs) and areas with No Natural Habitat Remaining (NNR), based on biodiversity characteristics; spatial configuration; and requirements for meeting targets for both biodiversity patterns and ecological processes.

Figure 7.9 shows the development area superimposed on the Terrestrial CBA maps. The Project Area overlaps mainly with an ONA and marginally with an NNR. The project area also borders another NNR.

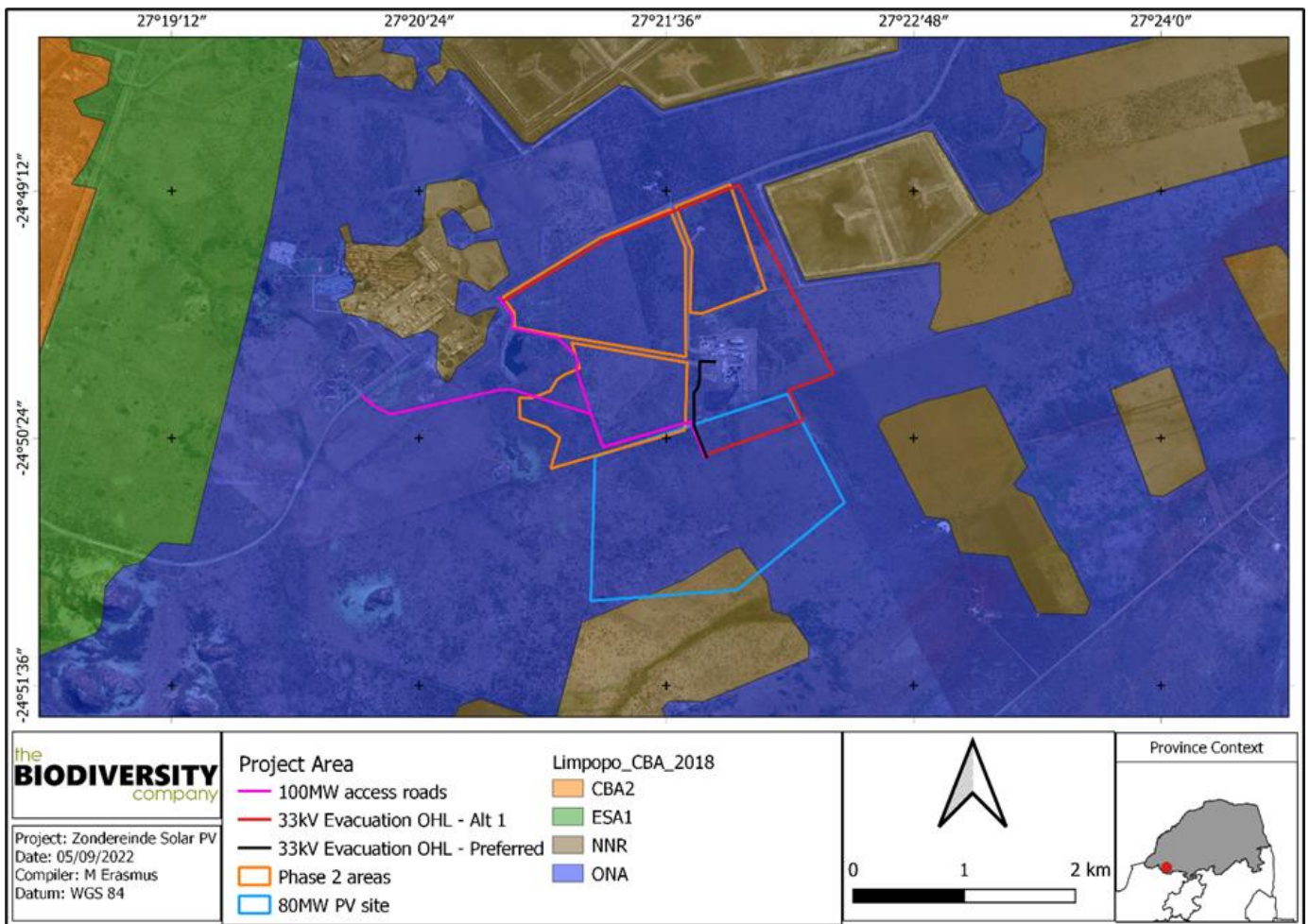


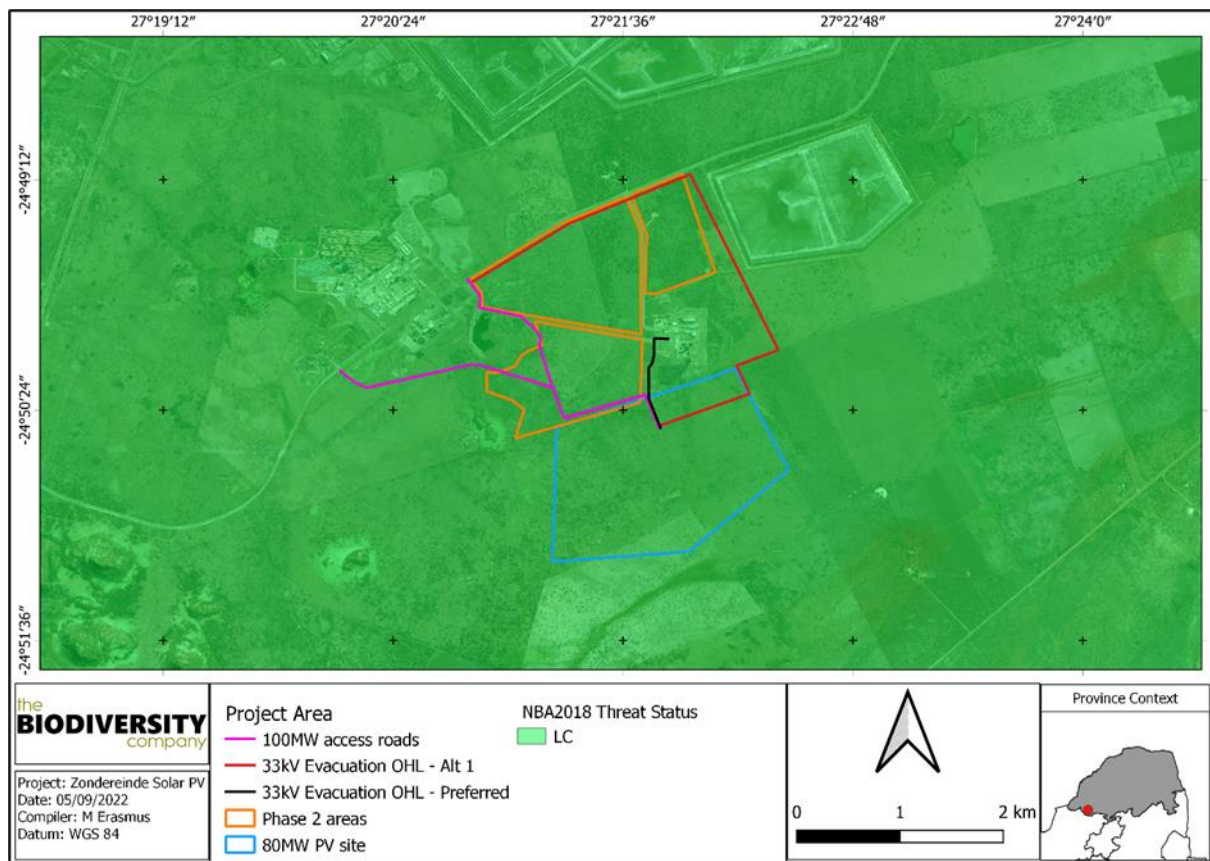
Figure 7.9: Map illustrating the locations of CBAs in the development area

**iv. Ecosystem Threat Status and Protection Level**

The Ecosystem Threat Status is an indicator of an ecosystem's wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR),

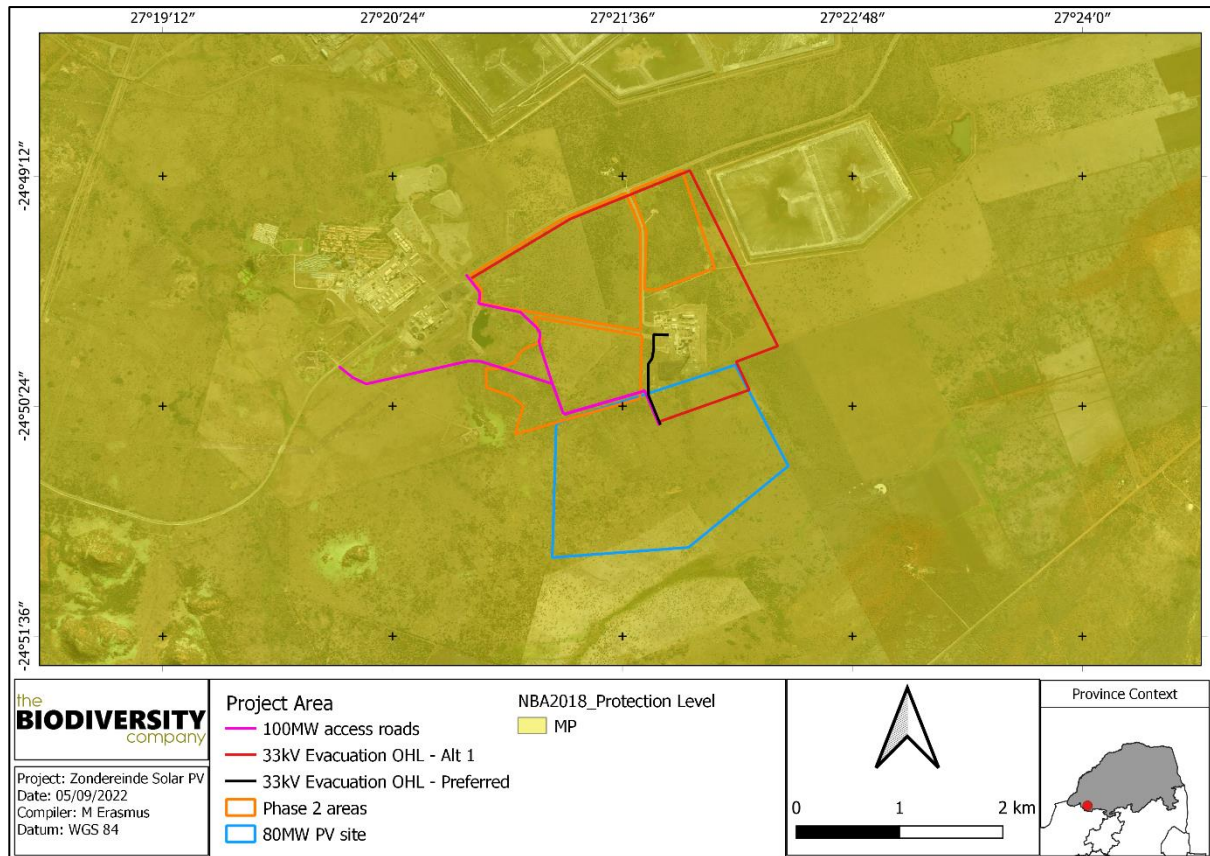
Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition. According to the spatial dataset, the Project overlaps with a LC ecosystem (refer to **Figure 7.10**).

The Ecosystem Protection Level is an indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP), or Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems. The Project overlaps with a MP ecosystem (refer to **Figure 7.11**)



**Figure 7.10:** Map illustrating the ecosystem threat status associated with the development area



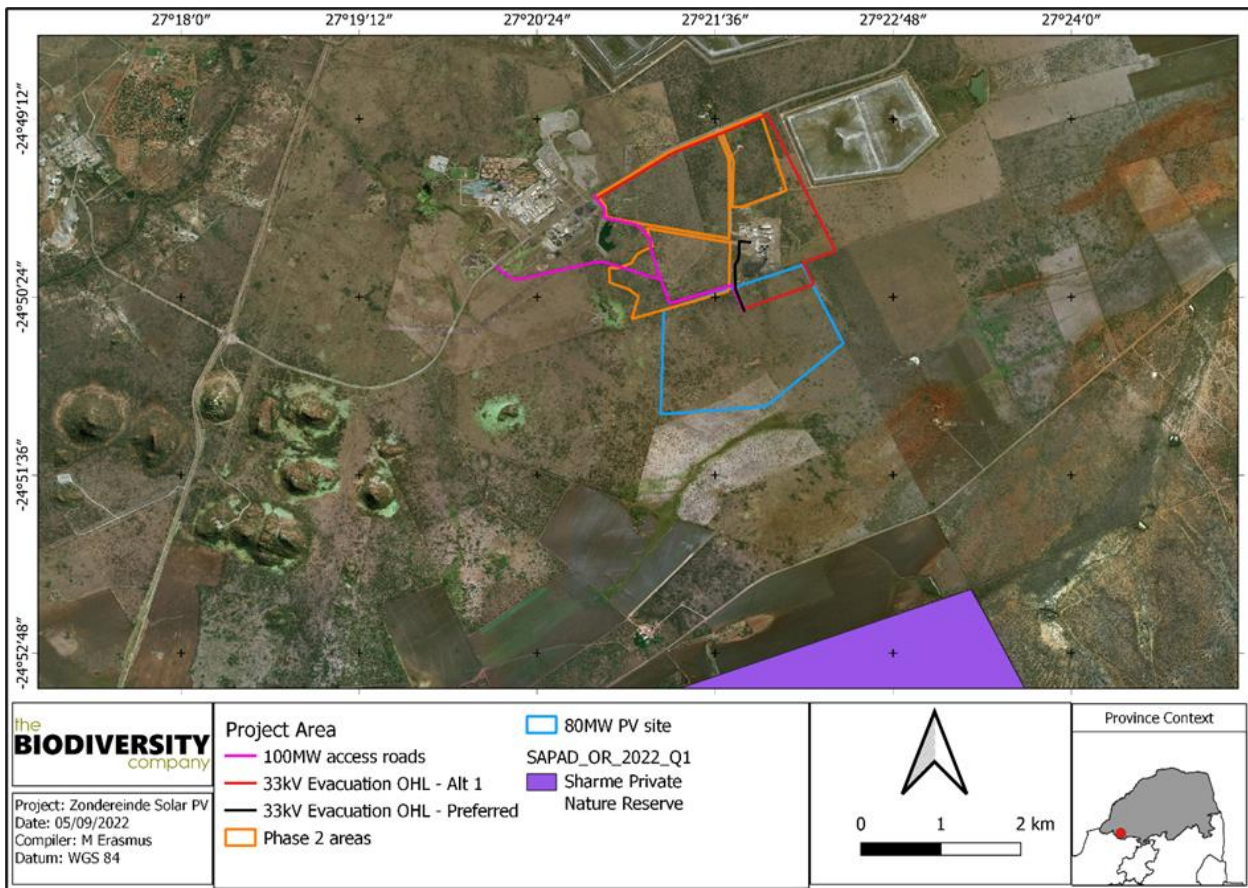


**Figure 7.11:** Map illustrating the ecosystem protection level associated with the development area

**v. Protected Areas and National Protected Areas Expansion Strategy Focus Areas**

**Protected Areas**

According to the protected area spatial datasets from SAPAD (2022) and SACAD (2022), the development area does not overlap with any protected areas or conservation areas. However, it is located approximately 3km north-west from Sharpe Private Nature Reserve (**Figure 7.12**). Thus, the development area is located within the 5km Protected Area Buffer Zone of a protected area and the 10km radius from a protected area referred to in Listing Notice 3.



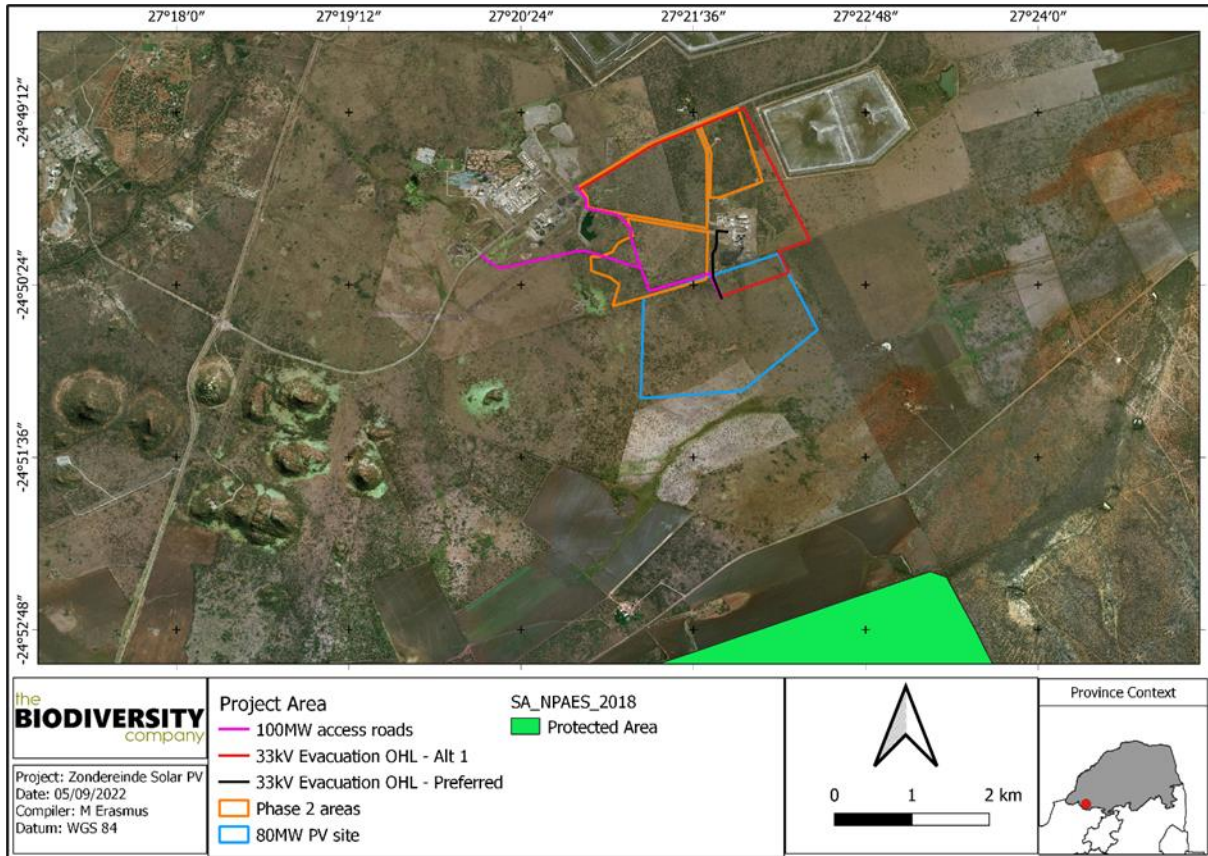
**Figure 7.12:** The development area in relation to protected areas

### National Protected Areas Expansion Strategy Focus Areas

National Protected Area Expansion Strategy 2016 (NPAES) areas were identified through a systematic biodiversity planning process. They present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with a strong emphasis on climate change resilience and requirements for protecting freshwater ecosystems. These areas should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. They are also not a replacement for fine scale planning, which may identify a range of different priority sites based on local requirements, constraints and opportunities (NPAES, 2016).

The development area does not overlap with any NPAES areas but does occur within the 5km buffer zone of an NPAES protected area (**Figure 7.13**).

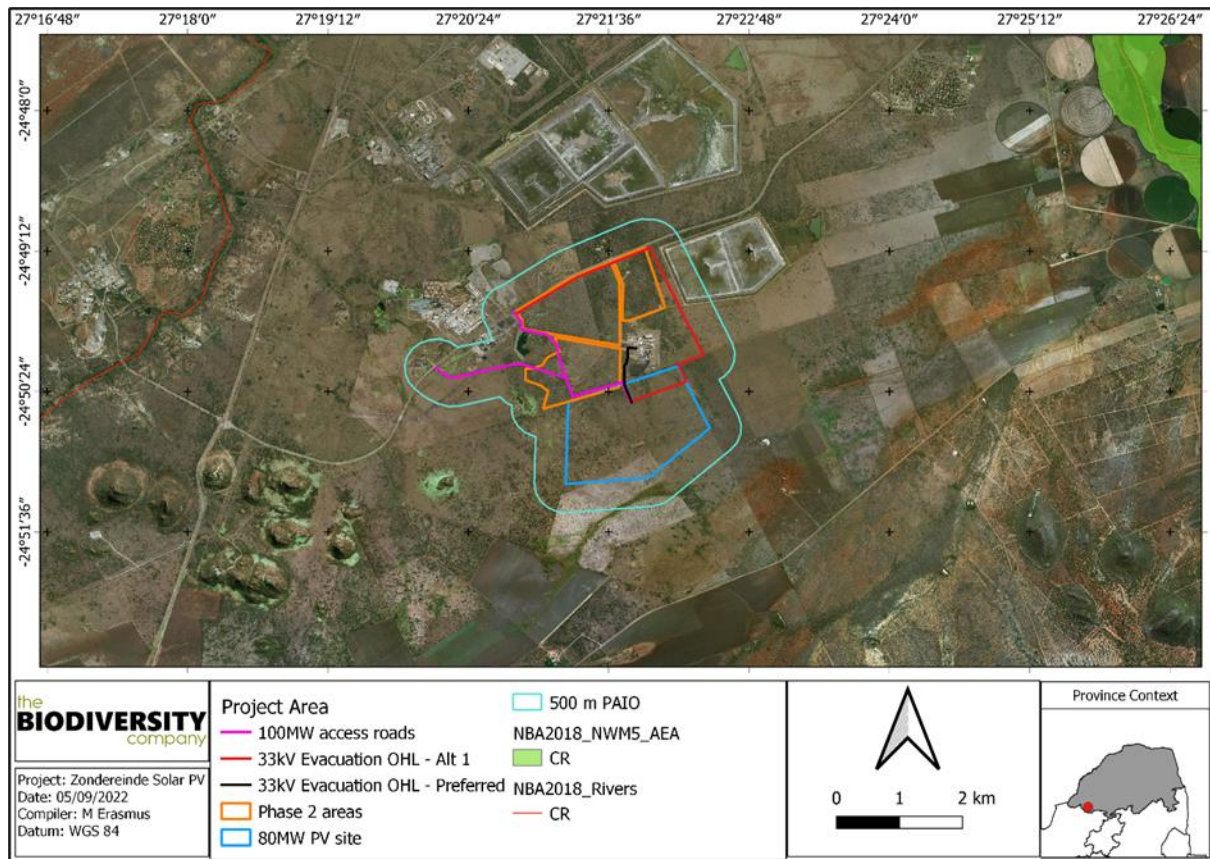




**Figure 7.13:** The development area in relation to the National Protected Area Expansion Strategy

**vi. Hydrological Setting**

The South African Inventory of Inland Aquatic Ecosystems (SIIAE) was released with the National Biodiversity Assessment (NBA) 2018. Ecosystem threat status (ETS) of river and wetland ecosystem types are based on the extent to which each river ecosystem type had been altered from its natural condition. Ecosystem types are categorised as CR, EN, VU or LT, with CR, EN and VU ecosystem types collectively referred to as 'threatened' (Van Deventer et al., 2019; Skowno et al., 2019). The development area does not overlap with any NBA wetlands or rivers (refer to **Figure 7.14**).

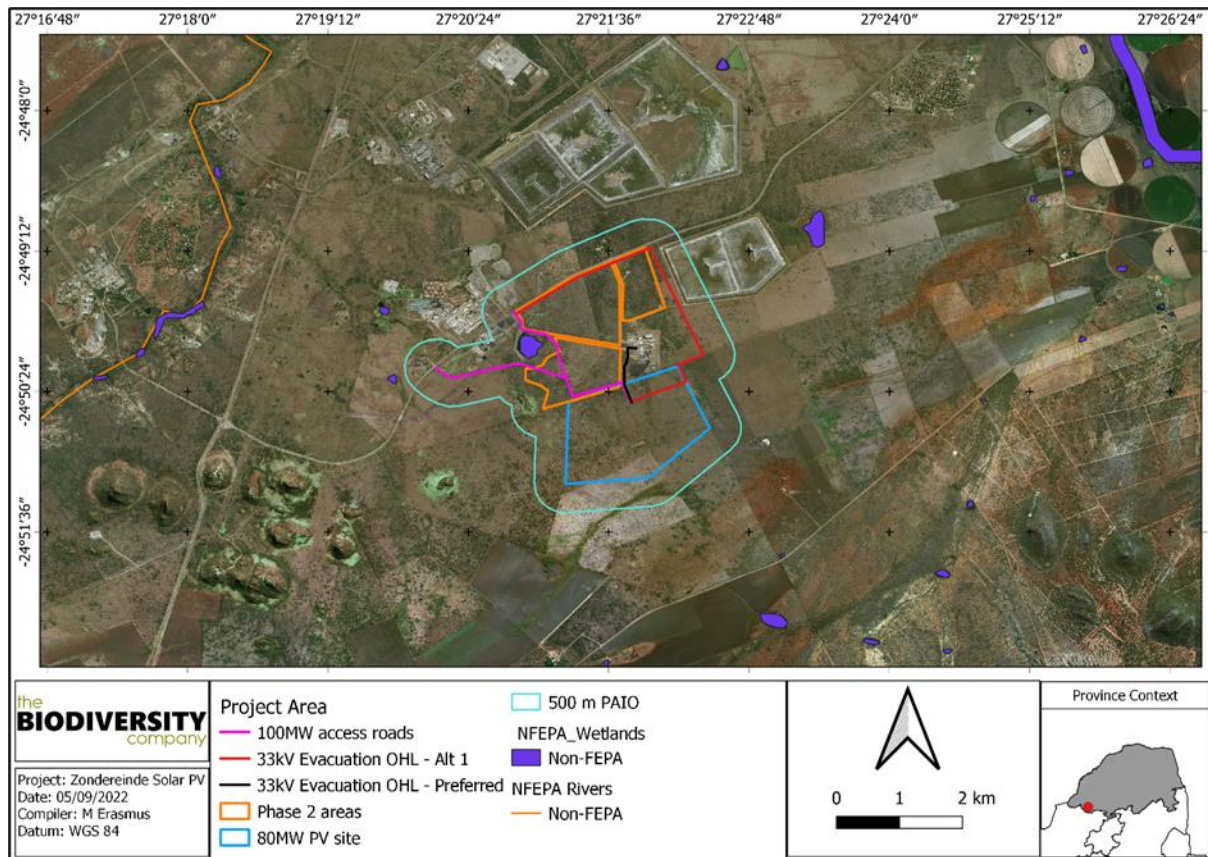


**Figure 7.14:** Map illustrating ecosystem threat status of rivers and wetland ecosystems in the development area

To better conserve aquatic ecosystems, South Africa has categorised its river systems according to set ecological criteria (i.e., ecosystem representation, water yield, connectivity, unique features, and threatened taxa) to identify Freshwater Ecosystem Priority Areas (FEPAs). The FEPAs are intended to be conservation support tools and envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act's (NEM:BA) biodiversity goals.

**Figure 7.15** shows that the development area's 500m regulated area overlaps with one unclassified NFEPA wetland.





**Figure 7.15:** The location of NFEPA wetlands in relation to the development area

To better conserve aquatic ecosystems, South Africa has categorised its river systems according to set ecological criteria (i.e., ecosystem representation, water yield, connectivity, unique features, and threatened taxa) to identify Freshwater Ecosystem Priority Areas (FEPAs) (Driver et al., 2011). The FEPAs are intended to be conservation support tools and envisioned to guide the effective implementation of measures to achieve NEM:BA's biodiversity goals (Nel et al., 2011).

## **vii. Terrestrial Fauna Communities**

### **Mammals**

The IUCN Red List Spatial Data lists 85 mammal species that could be expected to occur within the area (The full list will be provided in the final assessment). This list excludes large mammal species that are normally restricted to protected areas. Eleven of these expected species are regarded as threatened (**Table 7.7**). Of these 11 SCCs, one has a low likelihood of occurrence based on the lack of suitable habitat in the development area.

**Table 7.7:** Threatened mammal species expected to occur within the development area

Species	Common Name	Conservation Status		Likelihood of occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Aonyx capensis</i>	Cape Clawless Otter	NT	NT	Low
<i>Atelerix frontalis</i>	South African Hedgehog	NT	LC	Moderate
<i>Clootis percivali</i>	Short-eared Trident Bat	EN	LC	Low
<i>Crocidura mariquensis</i>	Swamp Musk Shrew	NT	LC	Low
<i>Eidolon helvum</i>	African Straw-colored Fruit Bat	LC	NT	Low
<i>Felis nigripes</i>	Black-footed Cat	VU	VU	Moderate
<i>Panthera pardus</i>	Leopard	VU	VU	High
<i>Parahyaena brunnea</i>	Brown Hyaena	NT	NT	Moderate
<i>Pelea capreolus</i>	Grey Rhebok	NT	LC	Low
<i>Redunca fulvorufula</i>	Mountain Reedbuck	EN	LC	Low
<i>Smutsia temminckii</i>	Temminck's Ground Pangolin	VU	VU	Low

## Amphibians

Based on the IUCN Red List Spatial Data and FrogMap, 30 amphibian species are expected to occur within the area (The full list will be provided in the final assessment). No amphibian SCCs are expected to occur within the area.

## Reptiles

Based on the IUCN Red List Spatial Data and the ReptileMAP database, 69 reptile species are expected to occur within the area (The full list will be provided in the final assessment). One species is regarded as threatened (refer to **Table 7.8**).

**Table 7.8:** Threatened reptile species expected to occur within the development area

Species	Common Name	Conservation Status		Likelihood of Occurrence
		Regional (SANBI, 2016)	IUCN (2017)	
<i>Kinixys lobatsiana</i>	Lobatse Hinged Tortoise	VU	VU	Moderate

## viii. Avifauna

### Important Bird and Biodiversity Areas

Important Bird & Biodiversity Areas (IBAs) are the sites of international significance for the conservation of the world's birds and other conservation significant species, as identified by BirdLife International. These sites are also all Key Biodiversity Areas - sites that contribute significantly to the global persistence of biodiversity (Birdlife South Africa, 2017).

According to Birdlife South Africa (2017), the selection of IBAs is achieved through the application of quantitative ornithological criteria, grounded in up-to-date knowledge of the sizes and trends of bird populations. The criteria ensure that the sites selected as IBAs have true significance for the international



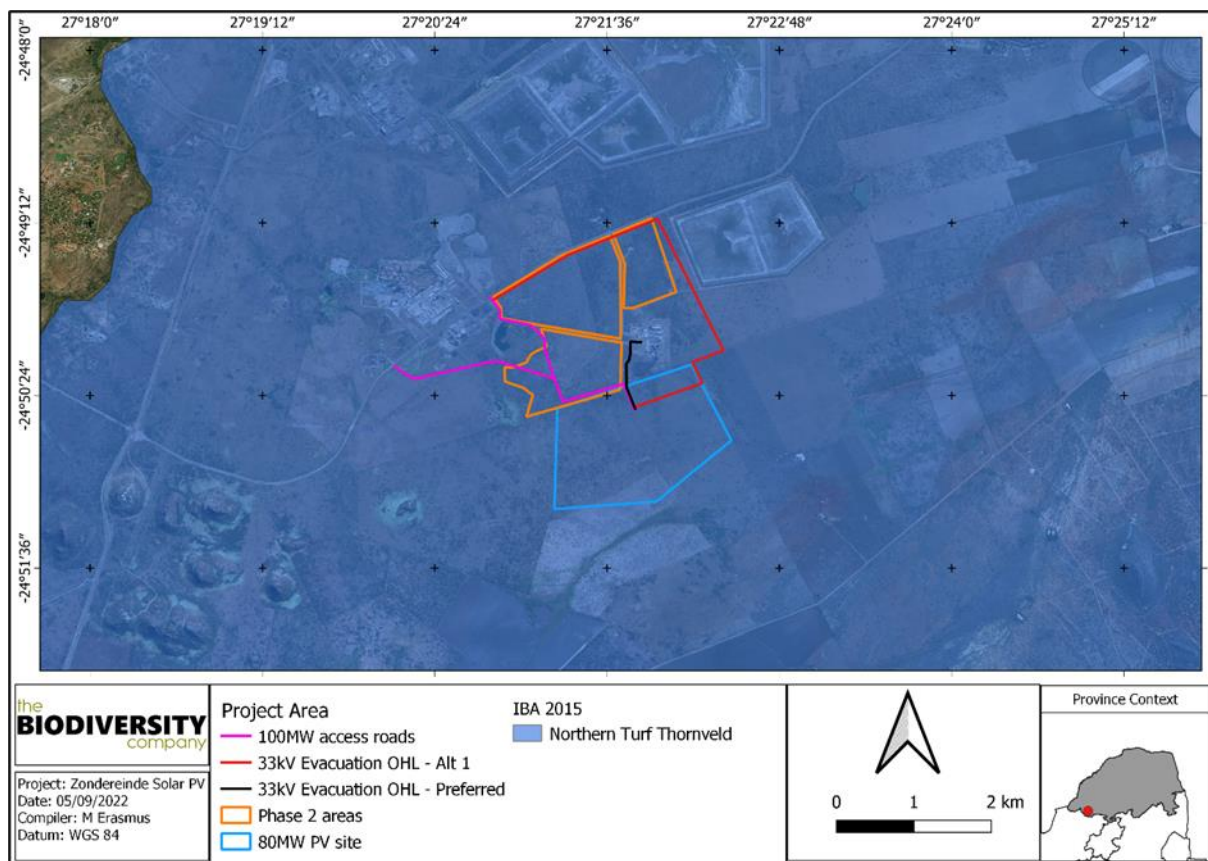
conservation of bird populations and provide a common currency that all IBAs adhere to, thus creating consistency among, and enabling comparability between, sites at national, continental and global levels.

**Figure 7.16** shows the development area overlaps with the Northern Turf Thornveld IBA.

The Northern Turf Thornveld IBA consists of a group of privately owned farms that forms a triangle delineated roughly by the Crocodile River in the east and the Bierspruit River in the west; the confluence of these two Rivers is approximately 3 km south-west of Thabazimbi. This IBA is important as it is home to the Yellow-throated Sandgrouse (*Pterocles gutturalis*) and is regarded as the core of the resident South African population (Birdlife South Africa, 2015).

Other important birds in the IBA include the Secretarybird *Sagittarius serpentarius*, Kori Bustard *Ardeotis kori*, Lanner Falcon (*Falco biarmicus*) and Black-winged Pratincole (*Glareola nordmanni*).

Common biome-restricted species found within this IBA include Kurrichane Thrush *Turdus libonyanus*, White-throated Robin-Chat (*Cossypha humeralis*), Burchell's Starling (*Lamprotornis australis*), White-bellied Sunbird (*Cinnyris talatala*) and the fairly common Kalahari Scrub Robin (*Erythropygia paena*) (Birdlife South Africa, 2015).



**Figure 7.16:** The development area in relation to the Northern Turf Thornveld IBA

### Avifauna Species Expected to Occur within the area

The SABAP2 Data lists 298 avifauna species that could be expected to occur within the area. (The full list will be provided in the final assessment). Seventeen of these expected species are regarded as threatened

(Table 7.9). Seven of the species have a low likelihood of occurrence due to lack of suitable habitat and food sources in the development area.

**Table 7.9:** Threatened avifauna species expected to occur within the development area

Species	Common Name	Conservation Status		Likelihood of Occurrence
		Regional (SANBI, 2016)	IUCN (2021)	
<i>Calidris ferruginea</i>	Curlew Sandpiper	LC	NT	Low
<i>Ciconia ciconia</i>	White Stork	NT	LC	Moderate
<i>Coracias garrulus</i>	European Roller	NT	LC	Moderate
<i>Falco biarmicus</i>	Lanner Falcon	VU	LC	High
<i>Glareola nordmanni</i>	Black-winged Pratincole	NT	NT	Low
<i>Gyps coprotheres</i>	Cape Vulture	EN	EN	High
<i>Leptoptilos crumenifer</i>	Marabou Stork	NT	LC	High
c	Yellow-billed Stork	EN	LC	Low

## 7.5. Integrated Heritage, including Archaeology, Palaeontology and Cultural Landscape

### 7.5.1. Cultural Landscape and the Built Environment

A broad history of the area is included in Murimbika (2010) and is referred to here. According to Murimbika (2010), the broader region has also yielded some significant Iron Age Sites, such as the Mzonjani facies Broederstroom site (AD 430 to AD 780). According to Murimbika (2010), the broader region was subject to various instances of migration and settlement from 450 AD. Evidence indicates that Sotho-Tswana groups migrated in and out of the Magaliesberg region and s are responsible for the many early stone-walled settlements in this region. One of the most documented migrations is the Mfecane (forced migration or scattering) which was a period of widespread chaos and warfare among indigenous ethnic communities in southern Africa during the period between 1815 and about 1840. During this time, the Ndebele under Mzilikazi reached the Magaliesberg region and are responsible for introducing the Doornspruit-type walled settlements that are known from this region (the Doornspruit River drains into the development area). According to Murimbika (2010) this type of stone-walled settlement represents "typical Nguni-Sotho-Tswana acculturation". Murimbika (2010) further explains that one of the most acculturated groups in the region is known as the "Po", whose Chief Mogale lends his name to the Magaliesberg Mountains and the Mogale City Municipality. By the mid-1800's, Voortrekkers had begun to settle in the foothills of the Magaliesberg mountains and, in so doing, clashed with Mzilikazi's Ndebele in 1837. These early colonial battles forced the Ndebele north of the Limpopo River and effectively ended the independence of African Chiefdoms in the area. The Voortrekkers went on to establish the Republic of the Transvaal. As articulated by Murimbika (2010), it is in this context that the Magaliesberg area, in which the Project is proposed, is an important cultural landscape.

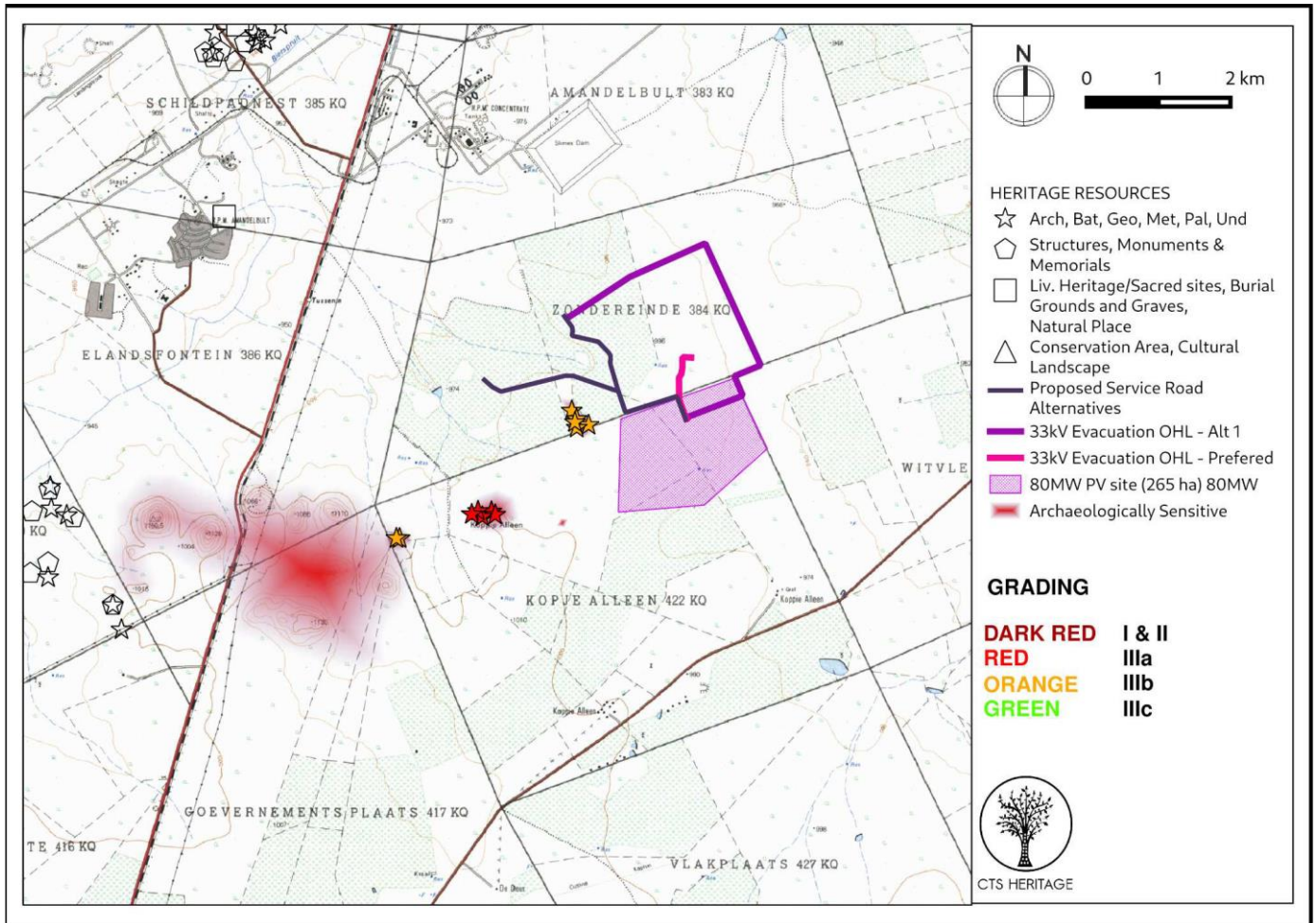
### 7.5.2. Archaeology

Previous Heritage Impact Assessments conducted approximately 3km to the west of the development area (Von Vollenhoven, 2013 and van der Walt 2019) have identified a number of significant archaeological sites in the vicinity of the Project Area, dated to the Late Iron Age. Van Vollenhoven (2013) noted three clusters

of Late Iron Age sites consisting of a number of individual features of stone walling of a variety of heights and diameters. Similarly, Van der Walt (2019) identified clusters of stone packed kraals up to 20m in diameter and deflated middens. According to Van der Walt (2019), a number of Late Iron Age middens and stone-walled enclosures were identified as having high local significance (Grade IIIA). Van der Walt (2019) also identified individual artefacts outside of these kraal locations such as upper grindstones and undecorated ceramics. As mitigation against impacts to the identified Iron Age sites, Van der Walt (2019) recommended the implementation of buffer zones of 30m around the identified sites; however, this author is of the view that this may not be sufficient for conservation of the broader cultural landscape.

In 2021, an archaeological assessment of the area, wherein the development area can be found and proposed for development, was completed by CTS Heritage. This assessment sought to clarify the extent of certain areas within the area in more detail and to provide guidance as to the areas that should be avoided by development activities. The distribution of artefactual material was noted on the ground; and this was found in large numbers surrounding sites 4 and 5 in and among extensive stone walling enclosures and ruined remains. We were aware of the likely locations of the stone walls using satellite imagery and once the fieldwork was concluded we mapped out the areas with the benefit of historical and current satellite imagery. We are certain that even more detail would be possible should surveys be conducted during winter and with the use of drone footage - however, our main objective was to identify a substantial buffer area around these sites where no stone walling or significant artefact distributions would be found beyond the boundaries.

A more detailed photographic record was taken of the koppie complex lying just to the west of the development area along with the outcrops containing sites 4 and 5 previously recorded by Van Vollenhoven (2013). This has significantly improved the appreciation of the sense of place and nature of the area containing an extensive Late Iron Age settlement that we believe should be conserved and carefully managed for the remaining period of mining in the area.

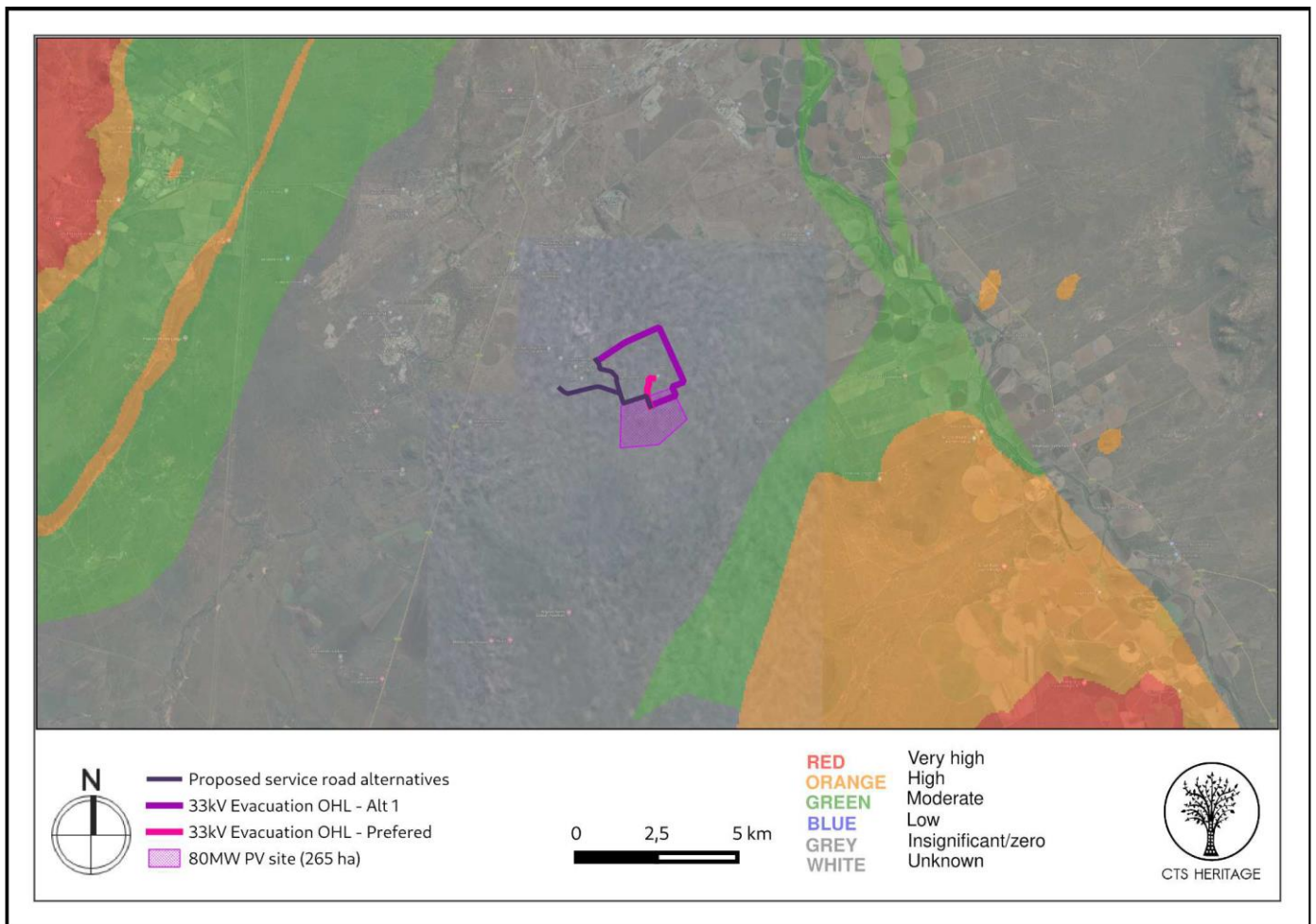


**Figure 7.17:** Heritage resources previously identified within and near the development area

### 7.5.3. Palaeontology

According to the SAHRIS Palaeosensitivity Map (**Figure 7.18**), the development area is underlain by sediments that have zero palaeontological sensitivity. As such, no palaeontological resources will be impacted by the Project and no further specialist palaeontological assessment is recommended.





**Figure 7.18:** Palaeosensitivity map indicating low fossil sensitivity underlying the development area

## 7.6 Visual Quality

The landscape of the development area and broader area is characterised by three landscape character areas, namely, undulating plains landscape character area, Soutpansberg landscape character area, and Limpopo valley ridgelines landscape character area.

The undulating plains landscape character area comprises undulating plains to the north of the Soutpansberg and south of the Limpopo River. It is largely covered with semi-natural bushveld. The landscape character area is generally used for low intensity grazing. There also appears to be a significant eco-tourism secondary bias to the land use.

The Soutpansberg landscape character area comprises Soutpansberg mountain range to the south and east of the development area. The mountain slopes are vegetated but much of the valley floors are developed. The Limpopo valley ridgelines landscape character area comprises narrow ridgelines and koppies that run through the plain to the north and south of the development area. The ridgelines are generally covered with natural bushveld.

### 7.6.1 Identified Visual Receptors

The natural vegetation or land cover types of the region are described as alternating Grassland, with Open Woodland and large tracts of agricultural fields (altered vegetation), comprised of mostly dryland agriculture towards the north-east, east, south and south-west of the site. Some irrigated agricultural land is found towards the east of the development area (Figure 7.19).

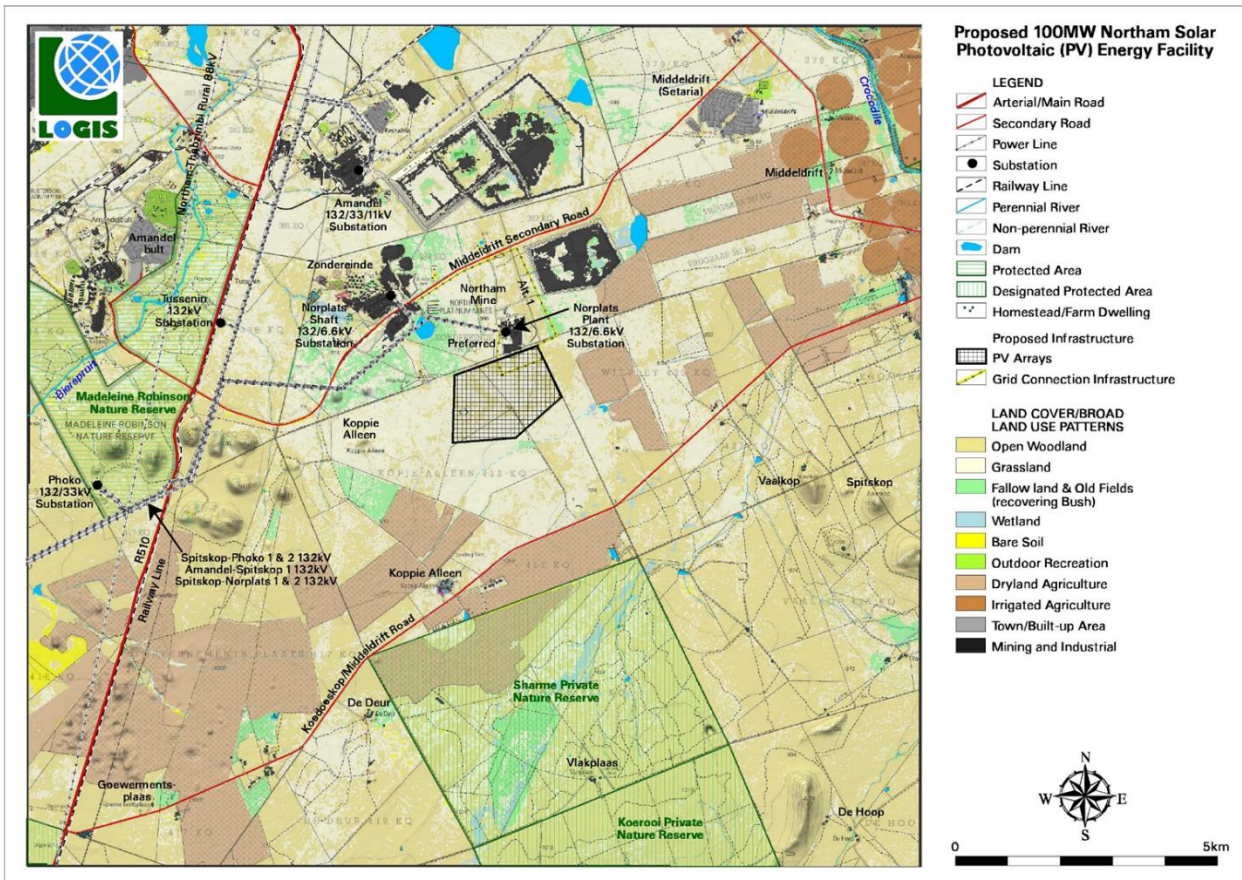


Figure 7.19 Land cover and broad land-use patterns.

Most of the remaining natural vegetation within the development area is indicated as Dwaalboom Thornveld. Limited sections of Western Highveld Sandy Grassland, surrounded by Western Sandy Bushveld further beyond the site boundaries, with Waterberg Mountain Bushveld at higher elevations. All these zones lie within the Central Bushveld Bioregion.

Fallow land and old fields (recovering bush) surround the development area in patches (i.e. north, east, south and west).

Wetlands have been identified south of the development area, predominantly within Sharme Private Nature Reserve. More isolated wetlands are shown to dot the eastern side of the Site.

Land use activities within the broader region are predominantly described as undeveloped (vacant open space, farmland or conservation areas), with well-developed mining and industrial activity (i.e. Zondereinde Mine) dominating the north and north western regions of the study area.

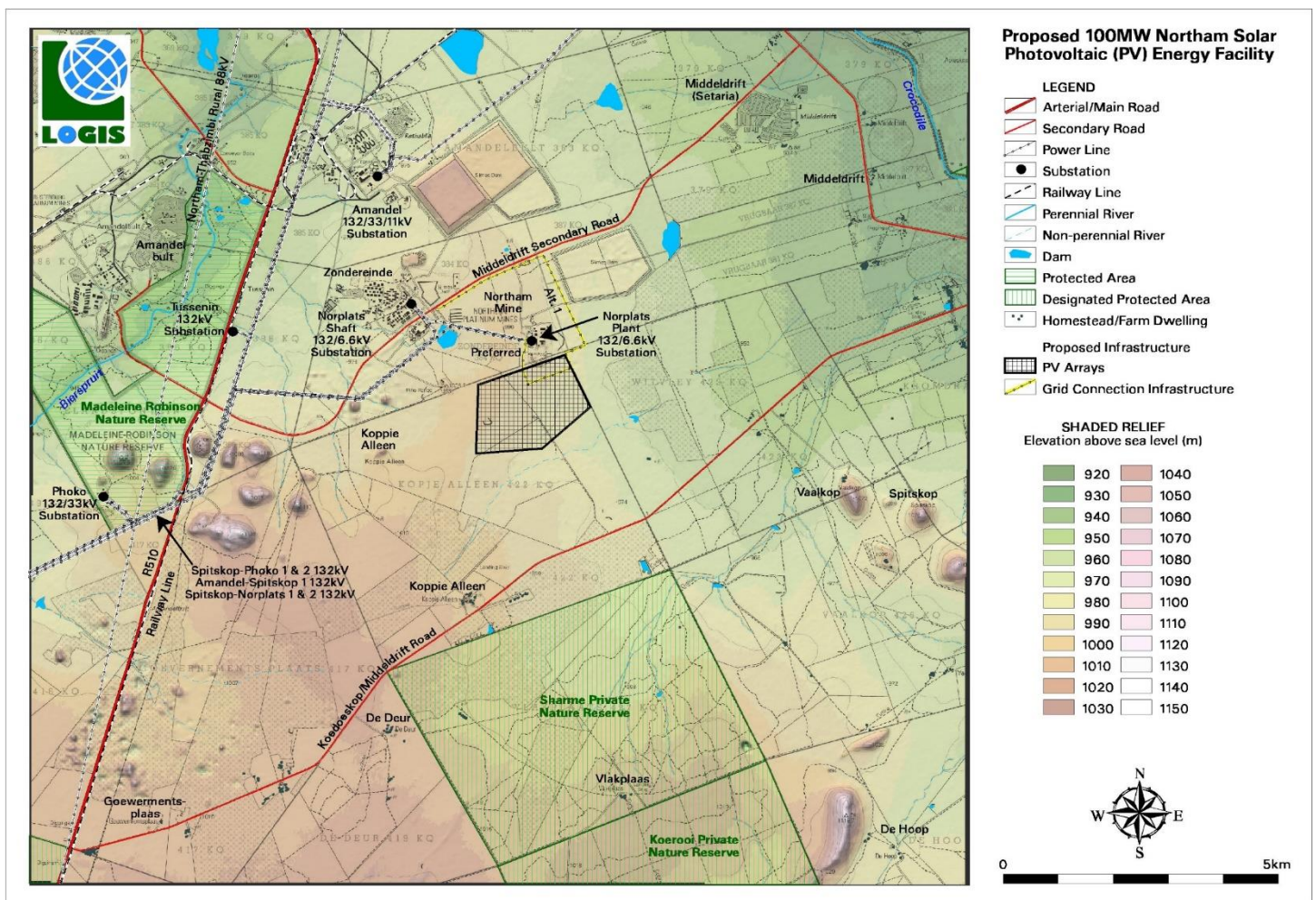
The Amandelbult Mine Town and Setaria (within a closer radius) are located north-west and north-east of the development area respectively, while Rethabile Village lies north of the development area. The town of Middeldrif / Ixesi lies north-east of the development area. The population density of the Amandelbult region



is indicated as approximately 158.6 people per km<sup>2</sup>, while the population density of Middeldrift is indicated as approximately 1,601.92 people per km<sup>2</sup>, according to most recently published 2011 statistics.

The topography or terrain morphology of the region is broadly described as plains and pans or slightly undulating plains and is therefore relatively flat. A decrease in elevation (approximately 60m below the development area's elevation) is shown north-west and north-east of the Site, holding the Bierspruit and Crocodile Rivers respectively. Small koppies (or small isolated hills) are situated south-east (i.e. the Vaalkop and Spitskop); south (i.e. De Hoop); and west of the development area (i.e. Koppie Alleen). These koppies / hills are only approximately 50m above the development area's elevation. The Site itself is situated on fairly flat terrain.

The region receives approximately 552mm per year. **Figure 7.20** for the shaded relief / topography map of the study area.

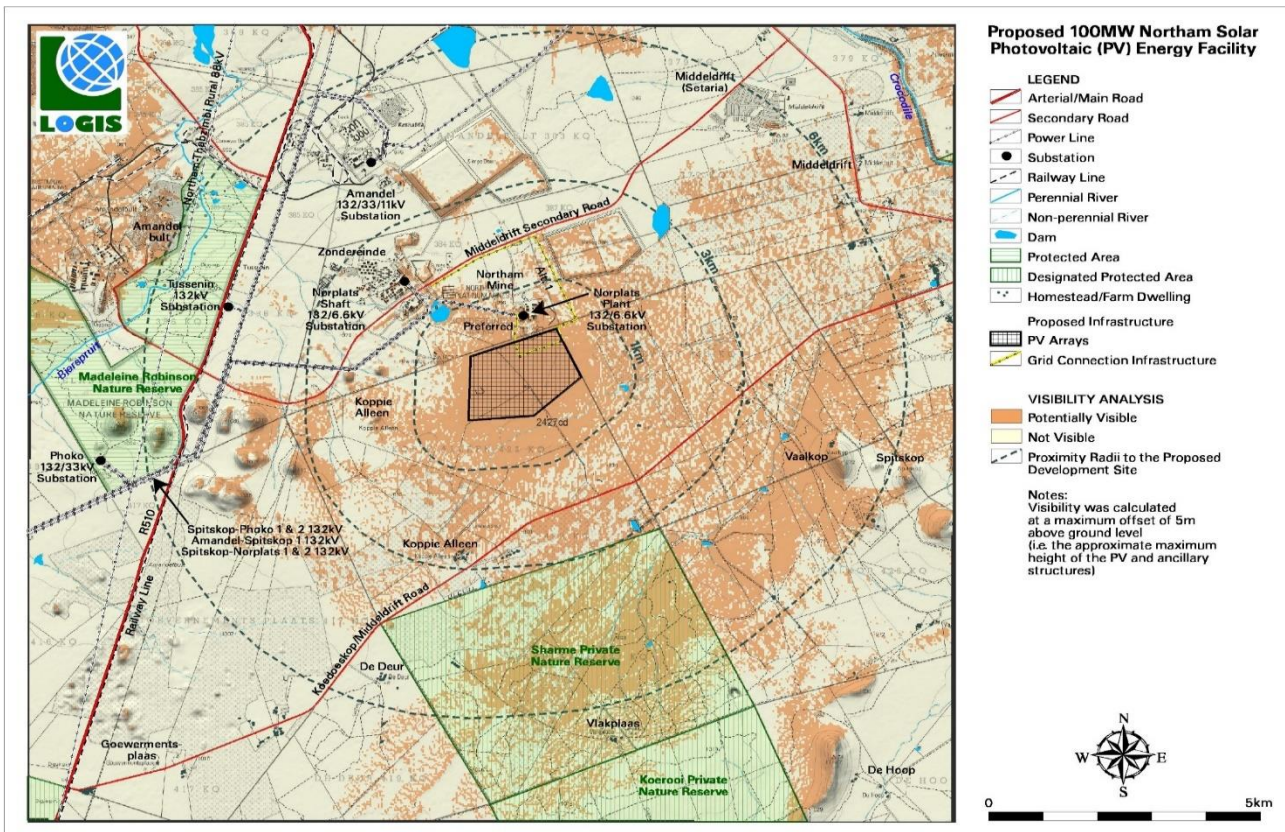


**Figure 7.20** Shaded relief map of the study area.

The result of the viewshed analysis for the Project is shown on the map below (**Figure 7.21**). The viewshed analysis was undertaken from a representative number of vantage points within the development footprint at an offset of 5m above ground level (i.e. the approximate maximum height of the PV structures). This was done to determine the general visual exposure (visibility) of the area under investigation, simulating the



maximum height of the proposed structures (PV panels, inverters and grid connection infrastructure) associated with the Facility.



**Figure 7.21** Map indicating the potential (preliminary) visual exposure of Zondereinde PV Facility

The viewshed analysis will be further refined once a preliminary and/or final layout is completed and will be regenerated for the actual position of the infrastructure on the development area and actual proposed infrastructure during the EIA phase of the Project. **Figure 7.21** also indicates proximity radii from the development footprint, to show the viewing distance (scale of observation) of the Facility in relation to its surrounds.

## **7.7 Socio-Economic Profile**

### **7.7.1 Profile of the Broader Area**

#### **Population, Economic, education and household Profile**

The Thabazimbi Local Municipality is a Category B municipality located within the Waterberg District in the south-western part of the Limpopo Province. It has Botswana as its international neighbour and is a two-hour drive from Pretoria. It is one of five municipalities in the district.

#### **Population characteristics**

According to the Statistics SA, Thabazimbi had a population intercensal growth rate of 0.028% for the period 2011-2016. Thabazimbi population for the year 2016 (Community Survey) was 96 232. The Waterberg District Municipality (WDM) population constitutes 12.6% of the total provincial population with an average household size of 3.5. The Thabazimbi Local Municipality (TLM) constitutes approximately 12.5% of the total population of the District, with an average household size that is lower than the above-mentioned at 2.8. Between 2001 and 2011, the population growth rate was 0.8% at the Provincial level followed by 1.2% at the District level and the Local Municipality has the highest rate of 2.6%

Most of the population in Limpopo, District and Local (59.8%, 64.3% and 63%, respectively) is within the working age group (15 to 64 years). There is a notably higher percentage at the District and Local Municipality levels, probably linked with in-migration in search of employment opportunities.

Dependency ratios in Limpopo, District and Local are estimated to be 67.35, 55.5% and 30.8% respectively; the significant difference in dependency is likely to reflect high number of migrants in the TLM.

#### **Economic, education and household characteristics**

Over 17% of the working age population (15 to 64 years) in Limpopo has no formal education and only 22.4% has obtained a grade 12/matric education (Census, 2011).

The District closely follows the Province, with 12.5% of the working age population having no formal education and 23.3% having obtained a grade 12/matric education.

Both the Province and District have 9% of the working age population with tertiary level education.

Although TLM cannot be considered to have high levels of education, its population has higher education levels as compared to the Province and District, this is most likely due to the number of qualified employees working at the various mining operations.

Nearly 9% of the working age population has no formal education, 56.4% has obtained a grade 12/matric education and 8% have higher educational training. According to the Waterberg District IDP Report (2012/13), there are 333 schools in the District and 67 of them are based within the Local

The District IDP Report (2013) notes that mining plays an important role in the Limpopo Province's economy, it is currently the most dominant contributor to the Province's Gross Geographical Product (GGP) at 29.4%.

The sectors with the smallest contribution to the GGP are manufacturing, agriculture, forestry and fishing and the construction industry at 2.5% each.

District's main Gross Domestic Product (GDP) contribution comes from mining (47,4%) and agriculture (21%); another significant contributor is tourism (WDM IDP, 2011/12). Mining activities in District include minerals, such as platinum, iron ore, coal and diamonds.

District is home to a world-renowned biosphere and, as a result, tourism plays a major role in the economy. The WDM's agricultural activities comprise 30% of the Province's agricultural activities, contributing over 4% to the District's GGP. These activities include crop, cattle and game farming.

Similar to the Province and District, TLM's economy is driven by three pillars; mining, agriculture and tourism (Thabazimbi Local Municipality Agriculture Strategy Report, 2012).

Although mining constitutes the lowest land use in the TLM, statistics indicate that it contributes significantly to the GDP and employment rates. Local Municipality contributes 36% to the District's GDP. According to Local IDP Report (2015), mining has been instrumental through its recruitment thereby contributing significantly to the current population profile.

Agriculture and eco-tourism also contribute fairly significantly to the economy; agricultural activities constitute 40% of the District's agricultural activities. According to District IDP Report (2013) maize, sorghum, sunflowers, wheat, soya beans, groundnuts, paprika, potatoes, tomatoes, onions, cabbage and citrus fruits are commonly grown in Local Municipality. Cattle farming, including cattle ranches and poultry and pig production are also common in Local Municipality. Game farming activities within Local Municipality include auctioning of animals, hunting and processing food items.

### **7.7.2 Profile of the Immediate Affected Area**

- » The project is proposed within the Limpopo Province, which covers the area that lies Northern most in South Africa, just South of Zimbabwe.
- » The project is proposed within the Thabazimbi LM of the Waterberg DM.
- » The Thabazimbi LM is approximately 11214.4km<sup>2</sup> in extent, whilst Waterberg is 45315.6km<sup>2</sup> in extent.

## CHAPTER 8: SCOPING OF POTENTIAL ISSUES

This chapter serves to describe environmental issues and potential impacts (direct, indirect, and cumulative impacts) that have been identified to be associated with the development of the Zondereinde PV Facility; and to make recommendations for further studies required to be undertaken in the EIA Phase. The scoping process has involved the review of existing information (including previous detailed studies undertaken), limited field work, input from the project proponent and specialist consultants.

Environmental issues associated with construction and decommissioning activities of the Project may include, amongst others, impacts on vegetation and protected plant species, direct faunal impacts, soil erosion and associated degradation of ecosystems, alien plant invasion, impacts on water quality, impacts on the social environment and current land use, and visual impact.

Benefits during both the construction and operation phases include reduction of GHGs, in furtherance of South Africa's international obligations; the creation of employment and business opportunities; the opportunity for skills development and on-site training; improvement in energy security and support towards the renewable sector; benefits for local landowners; and benefits associated with socio-economic contributions to community development.

The Project Site considered for the Zondereinde PV Facility Project has an aerial extent of approximately 1 185ha, which has been investigated during this Scoping Phase to determine the environmental suitability. This will provide an indication of the areas of sensitivity that the developer would need to take into consideration in planning the location of the development footprint within the Project Site.

**Section 8.3** provides a summary of the findings of the desktop scoping study undertaken for the construction, operation and decommissioning phases of the Zondereinde PV Facility. Those impacts associated with construction can also be expected to be associated with the decommissioning phase (however, to a lesser extent as the development footprint would have previously undergone transformation and disturbance during construction). More detail regarding potential impacts is included in the specialist scoping reports included in Appendix **D - H**.

A summary of the potential cumulative impacts that may be associated with the Project is provided in **Section 8.4**. These impacts are associated with the scale of the Project when considered together with other similar developments within the region; and will be confirmed and assessed within the EIA Phase of the Project.

### **8.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Scoping Report**

This chapter serves to identify the potential environmental impacts associated with the development of the Zondereinde PV Facility Project from a desktop level. It includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
2(1)(g)(v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and	The impacts and risks identified to be associated with the construction and operation phase of the Zondereinde PV Facility Project have been included in <b>Section 8.3</b> . Impact

Requirement	Relevant Section
probability of such identified impacts, including the degree to which these impacts (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated.	tables have been included for each field of study, which considers the nature, significance, consequence, extent, duration and probability of the impacts; and the reversibility of the impacts, the loss of resources and avoidance, management or mitigation.
2(1)(g)(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected, focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	The positive and negative impacts associated with the Zondereinde PV Facility Project have been included in <b>Section 8.3.</b>
2(1)(g)(viii) the possible mitigation measures that could be applied and level of residual risk	Possible mitigation (specifically relating to the avoidance of sensitive areas) has been included in <b>Section 8.3.</b>



## 8.2 Evaluation of Potential Impacts associated with the Construction, Operation and Decommissioning Phases

### 8.1.1 Impacts on Terrestrial Ecology (including flora, fauna and avifauna)

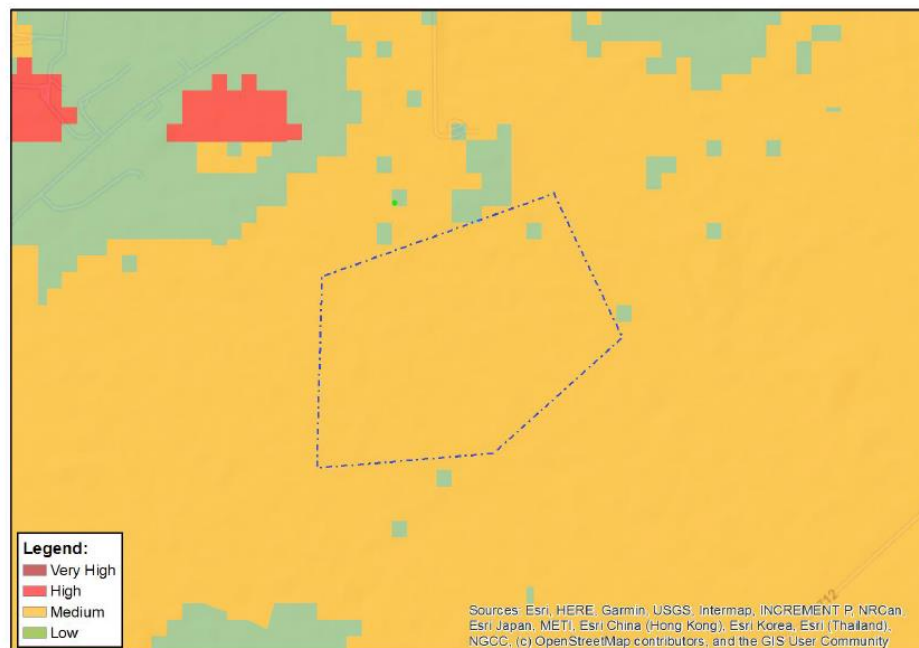
Anthropogenic activities drive habitat destruction, causing displacement of fauna and flora and possibly direct mortality. Land clearing destroys local wildlife habitat and can lead to the loss of local breeding grounds, nesting sites and wildlife movement corridors, such as rivers, streams and drainage lines, or other locally important features. The removal of natural vegetation may reduce the habitat available for fauna species and may reduce animal populations and species compositions within the area.

The terrestrial habitat expected in the development area consists of Dwaalboom Thornveld (Least Threatened), which based on the desktop scoping assessment is expected to host two flora SCCs, namely *Stenostelma umbelluliferum* and *Jamesbrittenia bergae*. Portions of the development area are classified as ONA and NNR. The 500m buffer zone around the development area also overlaps with unclassified NFEPA wetlands. A total of 8 fauna (including avifauna) SCCs were given a high likelihood of occurrence, while a further seven were given a moderate likelihood of occurrence. Based on the desktop assessment information it can be said that most of the development area will have a moderate sensitivity rating.

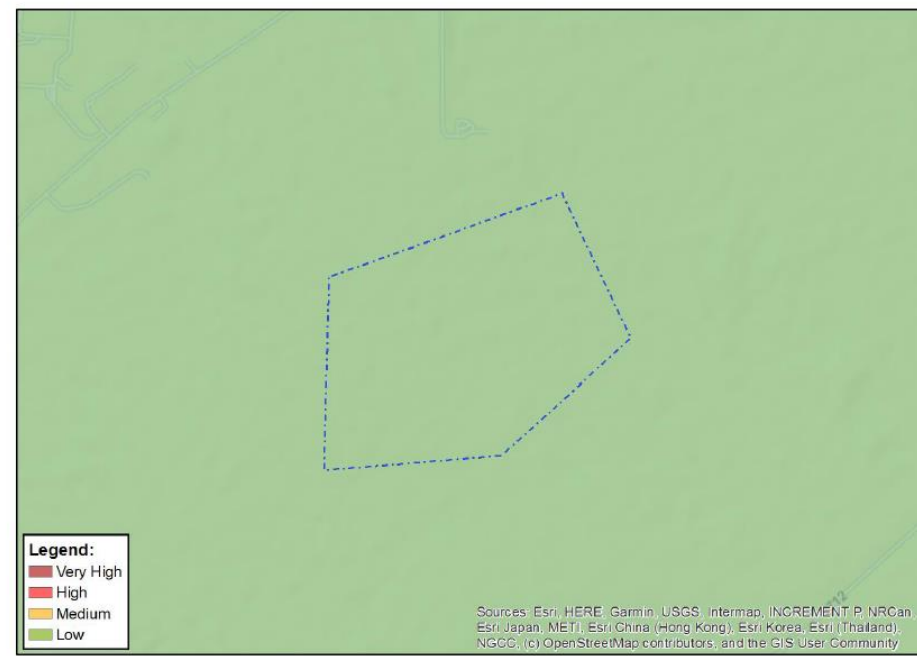
#### **Sensitivity Analysis of the Site**

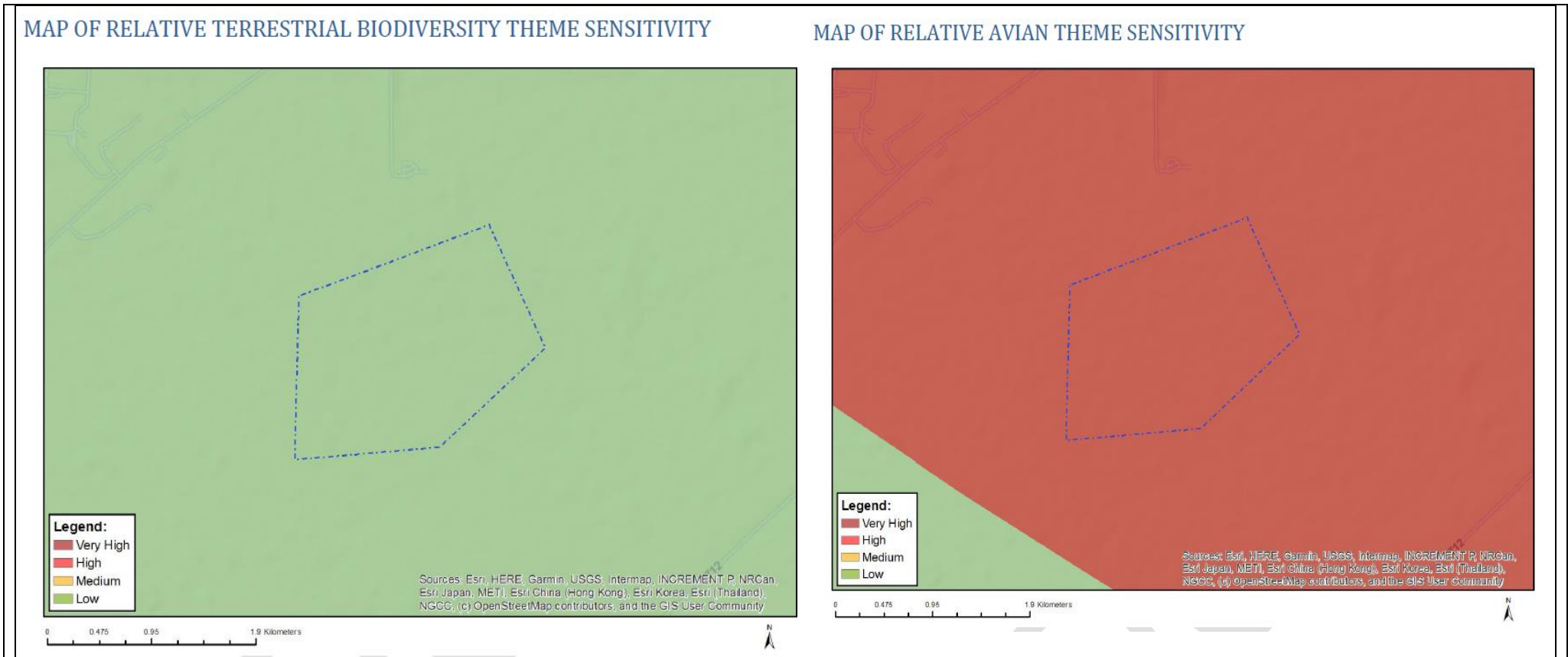
Based on the desktop assessment, it can be said that the development area is moderately sensitive, with a moderate-high likelihood of SCC occurring. The National Web based Environmental Screening Tool has characterised the terrestrial theme sensitivity of the development area as "Low" (refer to **Figure 8.1**). The Screening Tool has characterised the plant theme sensitivity of the development area as "Low", and the animal theme sensitivity as "Medium" (refer to **Figure 8.1**). These sensitivity ratings are preliminary at this stage of the Project and will be confirmed during the EIA Phase.

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY





**Figure 8.1.** The terrestrial biodiversity, avifauna, animal, and plant theme sensitivity classifications for the Zondereinde PV Facility

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Destruction, fragmentation and degradation of habitats and ecosystems	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Disturbance / degradation / loss to vegetation and habitats</li> <li>» Ecological corridors are disrupted</li> <li>» Habitat fragmentation</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Erosion risk increases</li> <li>» Fire risk increases</li> <li>» Increase in invasive alien species</li> </ul>	Local	None identified at this stage

<p>Spread and/or establishment of alien and/or invasive species</p>	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of vegetation and habitat due to increase in alien species</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Creation of infrastructure suitable for breeding activities of alien and/or invasive species</li> <li>» Spreading of potentially dangerous diseases due to invasive and pest species</li> </ul>	<p>Local</p>	<p>None identified at this stage</p>
<p>Direct mortality of fauna</p>	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of SCC</li> <li>» Loss of fauna diversity</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of diversity and species composition in the area</li> <li>» Possible impact on the food chain</li> </ul>	<p>Regional</p>	<p>None identified at this stage</p>
<p>Reduced dispersal/migration of fauna</p>	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of genetic diversity</li> <li>» Isolation of species and groups leading to inbreeding</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Reduced seed dispersal</li> <li>» Loss of ecosystem services</li> </ul>	<p>Regional/National</p>	<p>None identified at this stage</p>
<p>Environmental pollution due to water runoff, spills from vehicles and erosion</p>	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Pollution in waterbodies and the surrounding environment</li> <li>» Faunal mortality (direct and indirectly)</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Groundwater pollution</li> <li>» Loss of ecosystem services</li> </ul>	<p>Regional</p>	<p>None identified at this stage</p>
<p>Disruption/alteration of ecological lifecycles (breeding, migration, feeding) due to noise, dust, heat radiation and light pollution.</p>	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Disruption/alteration of ecological lifecycles due to noise</li> <li>» Reduced pollination and growth of vegetation due to dust</li> <li>» Faunal mortality due to light pollution (nocturnal species becoming more visible to predators)</li> <li>» Heat radiation could lead to the displacement of species</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of ecosystem services</li> </ul>	<p>Local</p>	<p>None identified at this stage</p>
<p>Collisions and electrocutions</p>	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of SCCs or endemic species</li> </ul>	<p>Regional/National</p>	<p>None identified at this stage</p>

	<p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of migratory routes</li> <li>» Loss of genetic diversity</li> </ul>		
Staff and others interacting directly with fauna (potentially dangerous) or poaching of animals	<p><u>Direct impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of SCC or Threatened or Protected Species</li> </ul> <p><u>Indirect impacts:</u></p> <ul style="list-style-type: none"> <li>» Loss of ecosystem service</li> <li>» Loss of genetic diversity</li> </ul>	Local	None identified at this stage
<p><b>Description of expected significance of impact</b></p> <p>The development of the area could result in the loss or degradation of the habitat and vegetation, most of which is still in a natural condition and is expected to support several fauna species. The construction of the Project could also lead to the displacement/mortalities of the fauna (including avifauna) and more specifically SCC fauna species. The operation of the Project could result in the disruption of ecological lifecycles. This could be as a result of various things, but mainly due to dust, noise, light pollution and heat radiation. The disturbance of the soil/vegetation layer will allow for the establishment of flora alien invasive species. In turn, the new infrastructure will provide refuge for invasive/feral fauna species. Erosion is another possible impact that could result from the disturbance of the topsoil and vegetation cover. A number of machines, vehicles and equipment will be required, aided by chemicals and concrete mixes for the Project. Leaks, spillages or breakages from any of these could result in contamination of the receiving water resources. Contaminated water resources are likely to influence the associated biota. Based on the number of avifauna SCCs with a high likelihood of occurrence, the risk of collisions and electrocutions needs to be considered.</p>			
<p><b>Gaps in knowledge &amp; recommendations for further study</b></p> <ul style="list-style-type: none"> <li>» This study is completed at a desktop level only.</li> <li>» Identification and descriptions of habitats.</li> <li>» Identification of the Site Ecological Importance.</li> <li>» Location and identification of plant SCC and the location of nests/dens in the case of fauna and avifauna species.</li> <li>» Determine a suitable buffer width for the identified features.</li> </ul> <p><b>Recommendations with regards to general field surveys</b></p> <ul style="list-style-type: none"> <li>» Field surveys to prioritise the development footprint, but also consider the 500m project area of influence (PAOI).</li> <li>» Fieldwork to be undertaken during the wet season period.</li> <li>» Avifauna assessment field work to be conducted over two seasons, to ensure migratory species are considered.</li> </ul>			

**8.1.2. Impacts on Freshwater Features**

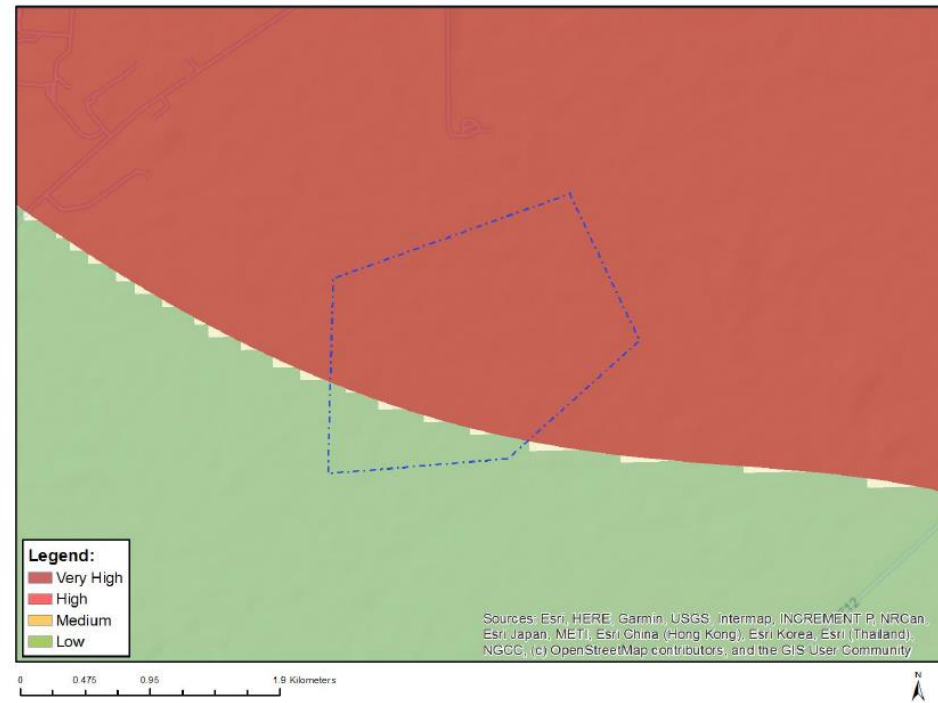
A key consideration for the scoping level impact assessment is the presence of the water resources delineated in proximity beyond the development area. The available data also suggests the presence of drainage features and wetlands within proximity to the development area. A Zone of Regulation (ZoR) of 500m is applicable for any wetland system that is present beyond the development area boundary.

### Sensitivity Analysis of the Site

Desktop information also suggests the presence of drainage features, and these have been assigned a moderate to moderately high sensitivity.

The aquatic biodiversity theme sensitivity, as depicted in **Figure 8.2** below, indicates “Very High” sensitivity. This is attributed to the associated freshwater ecosystem priority area (FEPA) quinary catchment and the presence of wetlands in the area.

#### MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



**Figure 8.2:** The aquatic biodiversity theme sensitivity classification for the Zondereinde PV Facility



Issue	Nature of Impact	Extent of Impact	No-Go Areas
Disturbance / degradation / loss to wetland soils or vegetation due to the construction of the Project and associated infrastructure, such as crossings	<u>Direct impacts:</u> » Disturbance / degradation / loss to wetland soils or vegetation <u>Indirect impacts:</u> » Loss of ecosystem services	Local	None identified at this stage
Increased erosion and sedimentation & contamination of resources	<u>Direct impacts:</u> » Erosion and structural changes to the systems <u>Indirect impacts:</u> » Sedimentation & contamination of downstream reaches	Local	None identified at this stage
Increased erosion and sedimentation & contamination of resources	<u>Direct impacts:</u> » Erosion and structural changes to the systems <u>Indirect impacts:</u> » Sedimentation & contamination of downstream reaches	Local	None identified at this stage
<p><b>Description of expected significance of impact</b></p> <p>The development of the development area could result in the encroachment into water resources and result in the loss or degradation of these system. Water resources are also likely to be traversed by linear infrastructure, but these systems can be avoided by spanning infrastructure. These disturbances could also result in the infestation and establishment of alien vegetation, which would affect the functioning of the systems. Earthworks will expose and mobilise earth materials, which could result in sedimentation of the receiving systems. A number of machines, vehicles and equipment will be required, aided by chemicals and concrete mixes for the Project. Leaks, spillages or breakages from any of these could result in contamination of the receiving water resources. Contaminated water resources are likely to influence the associated biota. It is anticipated to increase stormwater runoff due to the hardened surfaces and the crossings will result in an increase in run-off volume and velocities, resulted in altered flow regimes. The changes could result in physical changes to the receiving systems caused by erosion, run-off and sedimentation; and the functional changes could result in changes to the vegetative structure of the systems. The reporting of surface run-off to the systems could also result in the contamination of the systems, transporting (in addition to sediment) diesel, hydrocarbons and soil from the operational areas.</p>			
<p><b>Gaps in knowledge &amp; recommendations for further study</b></p> <ul style="list-style-type: none"> <li>» This study is completed at a desktop level only.</li> <li>» Identification, delineation and characterisation of water resources.</li> <li>» Undertake a functional assessment of systems, where applicable.</li> <li>» Determine a suitable buffer width for the resources.</li> </ul> <p><b>Recommendations with regards to general field surveys</b></p> <ul style="list-style-type: none"> <li>» Field surveys to prioritise the development footprint, but also consider the 500m regulated area.</li> <li>» Beneficial to undertake fieldwork during the wet season period.</li> </ul>			

**8.1.3. Impacts on Soils and Agricultural Potential**

Considering the occurrence of various soil forms that are commonly associated with high land capabilities, it is unlikely that areas with high land capability sensitivity do occur within the development area. Further to this, due to the climatic capability, the ultimate land potential is more likely to be low.

**Sensitivity Analysis of the Site**

The agriculture theme sensitivity, as depicted in **Figure 8.3** below, indicates predominantly a “Medium” sensitivity, with isolated areas of “Medium” sensitivity. It was concluded by the ARC-Institute (2018) that the agricultural potential for portions of the development area, excluding the delineated wetland area, ranges from low to very low potential.

**MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY**



**Figure 8.3:** The agriculture theme sensitivity classification for Zondereinde PV Facility

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Compaction / soil stripping / transformation of land use, which leads to loss of land capability.	<u>Direct impacts:</u> » Loss of soil / land capability  <u>Indirect impacts:</u> » Loss of land capability	Local	None identified at this stage
<p><b>Description of expected significance of impact</b></p> <p>The development of the area could result in the encroachment into areas characterised by high land potential properties, which can ultimately result in the loss of land capability. These disturbances could also result in the infestation and establishment of alien vegetation, which in turn can have a detrimental impact on soil resources. Earthworks will expose and mobilise earth materials, which could result in compaction and/or erosion. A number of machines, vehicles and equipment will be required, aided by chemicals and concrete mixes for the Project. Leaks, spillages or breakages from any of these could result in contamination of soil resources, which could affect the salinity or pH of the soil, and render the fertility of the soil unable to provide nutrition to plants. During the operational phase, the impacts associated with the substation and collector substation will be easily managed by best "housekeeping" practices.</p>			
<p><b>Gaps in knowledge &amp; recommendations for further study</b></p> <ul style="list-style-type: none"> <li>» This study is completed at a desktop level only.</li> <li>» Identification and delineation of soil forms.</li> <li>» Determine of soil sensitivity.</li> </ul> <p><b>Recommendations with regards to general field surveys</b></p> <ul style="list-style-type: none"> <li>» Field surveys to prioritise the development footprint.</li> </ul>			

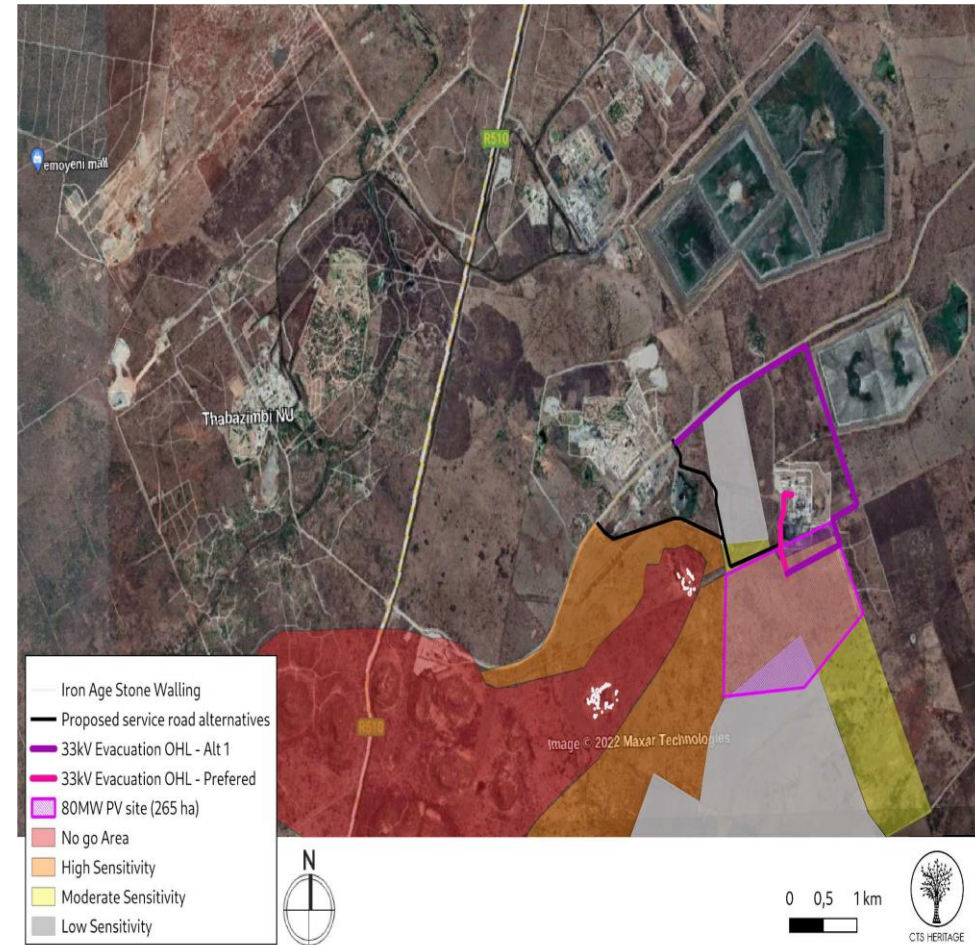
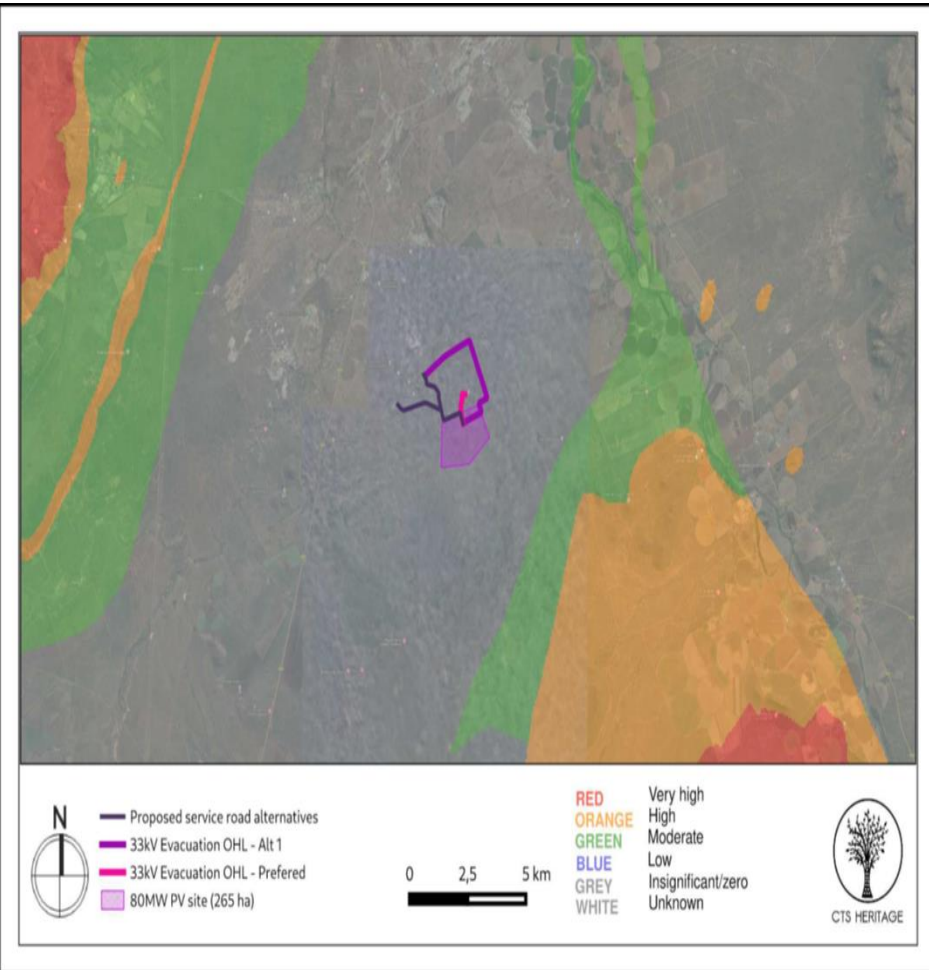
#### 8.1.4. Impacts on Heritage (Archaeology, Palaeontology and Cultural Landscape)

<p><b>Heritage, Archaeological Resources and Cultural Landscape</b></p> <p>Previous Heritage Impact Assessments conducted in the surrounding area of the development area (Von Vollenhoven, 2013 and van der Walt 2019) have identified a number of significant archaeological sites in the vicinity of the development area, dated to the Late Iron Age. Van Vollenhoven (2013) noted three clusters of Late Iron Age sites consisting of a number of individual features of stone walling of a variety of heights and diameters. Similarly, Van der Walt (2019) identified clusters of stone packed kraals up to 20m in diameter and deflated middens. According to Van der Walt (2019), a number of Late Iron Age middens and stone-walled enclosures were identified as having high local significance (Grade IIIA). Van der Walt (2019) also identified individual artefacts outside of these kraal locations, such as upper grindstones and undecorated ceramics. As mitigation against impacts to the identified Iron Age sites, Van der Walt (2019) recommended the implementation of buffer zones of 30m around the identified sites; however this author is of the view that this may not be sufficient for conservation of the broader cultural landscape.</p> <p>In 2021, an archaeological assessment of the area proposed for development was completed by CTS Heritage. This assessment sought to clarify the extent of the high and no-go sensitive areas in more detail and to provide guidance as to the areas that should be avoided by development activities. The distribution of artefactual material was noted on the ground and this was found in large numbers surrounding the high and no-go sensitive areas in and among extensive stone walling enclosures and ruined remains. We were aware of the likely locations of the stone walls using satellite imagery and once the fieldwork was concluded we mapped out the areas, with the benefit of historical</p>
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and current satellite imagery. We are certain that even more detail would be possible should surveys be conducted during winter and with the use of drone footage - however, our main objective was to identify a substantial buffer area around these sites where no stone walling or significant artefact distributions would be found beyond the boundaries.

**Palaeontological sensitivity Analysis of the Site**

According to the SAHRIS Palaeosensitivity Map (Figure 8.4), the development area is underlain by sediments that have zero palaeontological sensitivity. As such, no palaeontological resources will be impacted by the Project and no further specialist palaeontological assessment is recommended.



**Figure 8.4. Palaeosensitivity Map.** Indicating fossil sensitivity underlying the development area. **Figure 8.5** Map of heritage resources identified during previous field assessment

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Impact on archaeological heritage resources during the construction phase	» Significant archaeological heritage resources may be impacted by the construction phase of the Project.	Local	None identified at this stage
<b>Description of expected significance of impact</b>			
The development area falls within areas that have been previously identified as having low and zero archaeological sensitivity. In the zero sensitivity area, the ground has been completely ploughed in the past by crop agriculture. No archaeological sites have been found in this area either.			
<b>Gaps in knowledge &amp; recommendations for further study</b>			
» This study is completed at a desktop level only.			
<b>Recommendations with regards to general field surveys</b>			
» Field surveys to prioritise the development footprint.			

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Impact on palaeontological heritage resources during the construction phase	» Significant palaeontological heritage resources may be impacted by the construction phase of the Project.	Local	None identified at this stage
<b>Description of expected significance of impact</b>			
According to the SAHRIS Palaeosensitivity Map ( <b>Figure 8.4</b> ), the development area is underlain by sediments that have zero palaeontological sensitivity. As such, no palaeontological resources will be impacted by the Project and no further specialist palaeontological assessment is recommended.			
<b>Gaps in knowledge &amp; recommendations for further study</b>			
» This study is completed at a desktop level only.			
<b>Recommendations with regards to general field surveys</b>			
» Field surveys to prioritise the development footprint.			
» The Chance Fossil Finds Procedure must be implemented for the duration of the construction phase.			

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Impact on cultural landscape during the construction phase	» Significant impacts to the cultural landscape may result from the construction phase of the proposed development	Likely to impact the broader area	None identified at this stage
<b>Description of expected significance of impact</b>			
The significance is expected to be low			
<b>Gaps in knowledge &amp; recommendations for further study</b>			

- » This study is completed at a desktop level only.

**Recommendations with regards to general field surveys**

- » Field surveys to prioritise the development footprint.

**8.1.5. Visual Impacts**

Visual impact of the facility on observers close to the Project. Potential sensitive visual receptors include the visibility of the Project to, and potential visual impact on, observers travelling along the secondary road (i.e. Koedoeskop / Middeldrift Road) within the study area. The visibility of the Project to, and potential visual impact on residents of dwellings within the study area, with specific reference to the farm residences or smallholdings in closer proximity to the Project. The potential visual impact of the Project on the visual character or sense of place of the region. The potential visual impact of the Project on tourist routes or tourist destinations/facilities. The potential visual impact of the construction of ancillary infrastructure (i.e. internal access roads, buildings, etc.) on observers in close proximity to the facility. The visual absorption capacity of the natural vegetation (if applicable). Potential cumulative visual impacts (or consolidation of visual impacts), with specific reference to the placement of the Project within an area with existing mines and mine processing infrastructure. The potential visual impact of operational, safety and security lighting of the Solar PV Energy Facility at night on observers residing close to the Facility. Potential visual impact of solar glint and glare as a visual distraction and possible air travel hazard. Potential visual impacts associated with the construction phase. The potential to mitigate visual impacts and inform the design process.



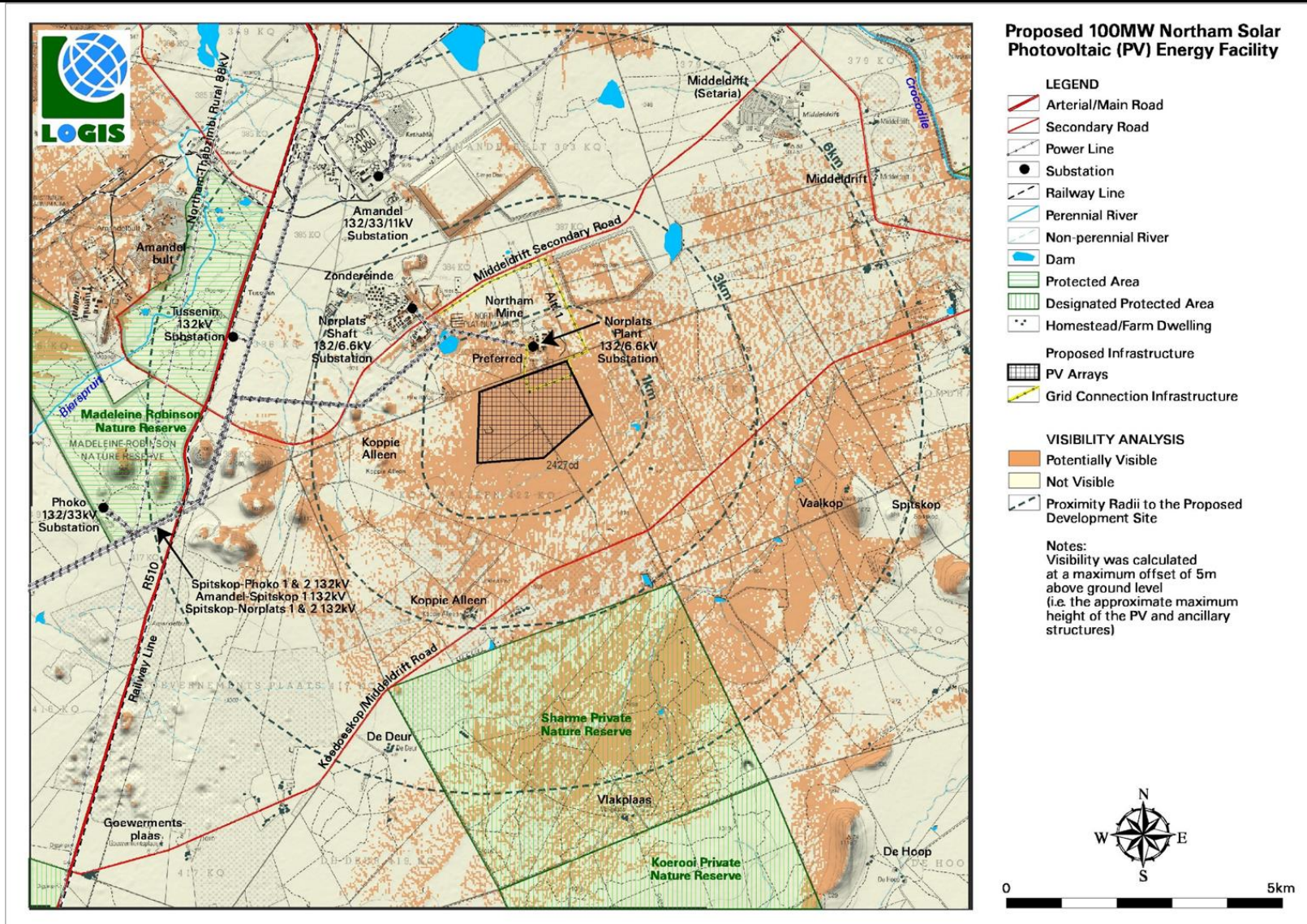


Figure 8.6: Map indicating the sensitivities identified from a visual perspective

Issue	Nature of Impact	Extent of Impact	No-Go Areas
The viewing of the Project infrastructure and activities	The potential negative experience of viewing the infrastructure and activities within a predominantly undeveloped setting	Local (Primarily observers situated within a 3km radius of the Facility).	None identified at this stage
<p><b>Description of expected significance of impact</b></p> <p>The nature of extent is local, the duration is long-term, the magnitude is moderate to high, the probability is categorised as probable, the significance is considered moderate, the status (positive, neutral or negative) is negative, the reversibility is classified as recoverable, no irreplaceable loss of resources and the impacts can be mitigated.</p>			
<p><b>Gaps in knowledge &amp; recommendations for further study</b></p> <p>A finalised layout of the PV plant and ancillary infrastructure are required for further analysis. This includes the provision of the dimensions of the proposed structures and ancillary equipment.</p> <p>Additional spatial analyses are required in order to create a visual impact index that will include the following criteria:</p> <ul style="list-style-type: none"> <li>» Visual exposure</li> <li>» Visual distance/observer proximity to the structures/activities</li> <li>» Viewer incidence/viewer perception (sensitive visual receptors)</li> <li>» Visual absorption capacity of the environment surrounding the infrastructure and activities</li> </ul> <p>Additional activities:</p> <ul style="list-style-type: none"> <li>» Identify potential cumulative visual impacts</li> <li>» Undertake a site visit</li> <li>» Recommend mitigation measures and/or infrastructure placement alternatives</li> </ul>			

### 8.1.6. Social Impacts

#### Construction Phase Impacts

<p><b>Impact</b></p> <p>Creation of direct and indirect employment opportunities and skills development</p>
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Issue	Nature of Impact	Extent of Impact	No-Go Areas
Construction of the Project will result in the creation of various direct and indirect employment opportunities, which will assist in addressing unemployment levels within the area	Positive – the creation of employment opportunities will assist to an extent in alleviating unemployment levels within the area	The impact will occur at a local, regional and national level.	None identified at this stage

and aid in skills development of communities in the area.			
<p><b>Description of expected significance of impact</b></p> <p>At its peak, the construction is likely to result in the creation of approximately 200 – 250 employment opportunities. Of those employment opportunities available, approximately 60% will comprise opportunities for low skilled workers, 25% for semi-skilled workers, and 15% for skilled workers. Skills developed through experience in the construction of the Facility will be retained by the community members involved. The impact is likely to be positive, local to national in extent, short-term, and of medium significance.</p>			
<p><b>Gaps in knowledge and recommendations for further study</b></p> <ul style="list-style-type: none"> <li>» Collection on exact direct and indirect employment opportunities and skills development opportunities.</li> <li>» Collection of information on local hospitality and services sector</li> </ul> <p><b>Recommendations with regards to general field surveys</b></p> <ul style="list-style-type: none"> <li>» Site visits and interviews with representatives from local municipality, and the hospitality and services sector.</li> <li>» Site visit and interviews with local chamber of commerce</li> </ul>			

<p><b>Impact</b></p> <p>Economic multiplier effects</p>			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Economic multiplier effects from the use of local good and services during the construction phase.	Positive – There are likely to be opportunities for local businesses to provide goods and services during the construction phase of development.	The impact will occur at a local and regional.	None identified at this stage
<p><b>Description of expected significance of impact</b></p> <p>Economic multiplier effects from the use of local goods and services opportunities include but are not limited to, the provision of construction materials and equipment, and workforce essentials (such as services, safety equipment, ablution, accommodation, transportation and other goods). The increase in demand for goods and services may stimulate local business and local economic development (however locally sourced materials and services may be limited due to availability). There is likely to be a direct increase in industry and indirect increase in secondary businesses. The impact is likely to be positive, local to regional in extent, short-term, and of medium significance.</p>			
<p><b>Gaps in knowledge &amp; recommendations for further study</b></p> <ul style="list-style-type: none"> <li>» Collection on exact direct and indirect employment opportunities and skills development opportunities.</li> <li>» Collection of information on local hospitality and services sector</li> </ul> <p><b>Recommendations with regards to general field surveys</b></p> <ul style="list-style-type: none"> <li>» Site visits and interviews with representatives from local municipality, and the hospitality and services sector.</li> <li>» Site visit and interviews with local chamber of commerce</li> </ul>			

<b>Impact</b>			
Influx of jobseekers and change in population			
<b>Issue</b>	<b>Nature of Impact</b>	<b>Extent of Impact</b>	<b>No-Go Areas</b>
Issue Increased pressure on infrastructure and basic services, and social conflicts during construction as a result of in-migration of people.	Negative – The in-migration of job seekers to the area could result in increased pressure being placed on infrastructure and basic services, and a rise in social conflicts.	The impact will occur at a local level.	None identified at this stage
<b>Description of expected significance of impact</b>			
An influx of people looking for employment or other economic opportunities could result in increased pressure being placed on economic and social infrastructure, and a change in the local population. Population change refers to the size, structure, density and demographic profile of the local community.			
An influx of jobseekers into an area could lead to a temporary increase in the level of crime, cause social disruption and put pressure on basic services. It could also potentially create conflict between locals and outsiders due to potential differences in racial, cultural and ethnic composition. A further negative impact that could result due to an influx of jobseekers into an area is an increase in unemployment levels due to an oversupply of available workforce, particularly with respect to semi- and unskilled workers.			
<b>Gaps in knowledge &amp; recommendations for further study</b>			
» Collection of information on existing community challenges and needs			
<b>Recommendations with regards to general field surveys</b>			
» Site visit and interviews with representatives from local municipality and community representative			

<b>Impact</b>			
Safety and security impacts			
<b>Issue</b>	<b>Nature of Impact</b>	<b>Extent of Impact</b>	<b>No-Go Areas</b>
Temporary increase in safety and security concerns associated with the influx of people during the construction phase.	Negative – The in-migration of job seekers to the area could be perceived to result in increased criminal activity.	The impact will occur at a local level.	None identified. No construction workers should be allowed to reside on-site during construction.
<b>Description of expected significance of impact</b>			
The commencement of construction activities can be associated with an increase in crime within an area. The perceived loss of security during the construction phase of a project due to an influx of workers and / or outsiders to the area (as in-migration of newcomers, construction workers or jobseekers are usually associated with an increase in crime), may have indirect effects, such as increased safety and security concerns for neighbouring properties, damage to property, increased risk of veld fire, stock theft, poaching, crime and so forth.			



The labour force will not permanently reside within the construction site.
<p><b>Gaps in knowledge &amp; recommendations for further study</b></p> <ul style="list-style-type: none"> <li>» Information on existing crime levels within the area.</li> <li>» Mechanisms for employment of local labour and minimisation of in-migration.</li> </ul> <p><b>Recommendations with regards to general field surveys</b></p> <p>Site visit and interviews with mine representatives and representatives from geoscience council.</p>

<p><b>Impact</b> Impacts on daily living and movement patterns</p>			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Temporary increase in traffic disruptions and movement patterns during construction	Negative – An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users.	The impact will occur at a local level.	None identified.
<p><b>Description of expected significance of impact</b></p> <p>Increased traffic due to construction vehicles and heavy vehicles could cause disruptions to road users and increase safety hazards. The use of local roads and transport systems may cause road deterioration and congestion. The impact is likely to be negative, local in extent, short-term and of low significance, given the proximity of the Project to existing mining operations within the area.</p>			
<p><b>Gaps in knowledge &amp; recommendations for further study</b></p> <ul style="list-style-type: none"> <li>» Number of vehicle trips anticipated during construction.</li> </ul> <p><b>Recommendations with regards to general field surveys</b></p> <ul style="list-style-type: none"> <li>» Site visit and interviews with mine representatives and representatives from geoscience council.</li> </ul>			

<p><b>Impact</b> Nuisance impacts (noise and dust).</p>			
Issue	Nature of Impact	Extent of Impact	No-Go Areas
Nuisance impacts in terms of temporary increase in noise and dust, and wear and tear on access roads to the site.	Negative – The impact will negatively impact sensitive receptors and could cause disruptions for neighbouring properties.	The impact will occur at a local level.	None identified.
<p><b>Description of expected significance of impact</b></p> <p>Nuisance impacts associated with construction related activities include noise, dust, and possible disruption to adjacent properties. Site clearing activities increase the risk of dust and noise being generated, which can in turn negatively impact on adjacent properties. The movement of heavy construction vehicles and construction activities and equipment also have the potential to create noise, as well as impacts on travellers travelling along the via the Swartklip Road which branches off the R510 provincial road on the south-eastern side of the SBPM development area (nearby renewable energy project). The primary sources</p>			

of noise during construction would be from construction equipment, vehicle and truck traffic. Noise levels can be audible over a large distance, although are generally short in duration. Dust would be generated from construction activities and trucks / vehicles driving on gravel access roads. This impact will negatively impact sensitive receptors. The impact of noise and dust on sensitive receptors can be reduced through the application of appropriate mitigation measures.

**Gaps in knowledge & recommendations for further study**

- » Impact of noise and dust on surrounding landowners.

**Recommendations with regards to general field surveys**

- » Site visit and interviews with mine representatives and representatives from geoscience council.

**Impact**

Visual and sense of place impacts

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Intrusion impacts from construction activities will have an impact on the area's "sense of place".	Low Negative – The Project could alter the area's sense of place, which could impact on sensitive receptors.	The impact will occur at a local level.	None identified.

**Description of expected significance of impact**

Intrusion impacts such as aesthetic pollution (i.e. building materials, construction vehicles, etc.), noise and light pollution will impact the "sense of place" for the local community. Construction related activities have the potential to negatively impact a local area's "sense of place". Such an impact is likely to be present during the construction phase.

**Gaps in knowledge & recommendations for further study**

- » Collection of information on location of existing farming and hospitality operations and activities.

**Recommendations with regards to general field surveys**

- » Site visit and interviews with mine representatives and representatives from geoscience council.

**Operation Phase Impacts**

**Impact**

Direct and indirect employment opportunities and skills development

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Creation of direct and indirect employment and skills development opportunities and skills development as a result of the operation of the Project.	Positive – The creation of employment opportunities and skills development will assist to an extent in alleviating unemployment levels within the area.	The impact will occur at a local, regional and national level.	None identified at this stage

**Description of expected significance of impact**

During operation various direct full time employment opportunities will be created. Of those employment opportunities created approximately, 70% will comprise opportunities for low-skilled workers; 25% will comprise opportunities for semi-skilled workers; and approximately 5% will comprise opportunities for skilled



workers. Employment opportunities include safety and security staff, operation and monitoring; and maintenance crew. Maintenance activities will be carried out throughout the lifespan of the Project; and will include washing of solar panels, vegetation control, and general maintenance around the Facility. The impact is likely to be positive, local to national in extent, long-term, and of medium significance.

**Gaps in knowledge & recommendations for further study**

- » Information on the exact direct and indirect employment opportunities and skills development opportunities likely to be created during construction

**Recommendations with regards to general field surveys**

- » Site visits and interviews with representatives from local municipality, and the hospitality and services sector.
- » Site visit and interviews with local chamber of commerce

**Impact**

Visual and sense of place impacts

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Sense of place impacts from a social perspective associated with the operation phase of the Facility and associated infrastructure.	Negative – The Project could alter the area's sense of place, which could negatively impact on sensitive receptors.	The impact will occur at a local level.	None identified at this stage

**Description of expected significance of impact**

An area's sense of place is created through the interaction of various characteristics of the environment, including atmosphere, visual resources, aesthetics, climate, lifestyle, culture, and heritage. It is however subjective and largely dependent on the demographics of the population residing within the area and their perceptions regarding trade-offs. For example, while some individuals may prefer not to see any form of infrastructure development, others may be interested in large-scale infrastructure, or engineering projects and consider the impact to be less significant. Such a scenario may be true given that one of the main economic sectors within the area is mining, which has altered the landscape from natural to industrial.

**Gaps in knowledge & recommendations for further study**

- » Potential sensitive visual receptors need to be identified as part of the social impact assessment.

**Recommendations with regards to general field surveys**

- » Site visit and interviews with local farmers and representatives from local municipality and farming and hospitality associations etc.

### 8.3 Evaluation of Potential Cumulative Impacts Associated with the Project

Impacts of a cumulative nature place the direct and indirect impacts of the Project into a regional and national context, particularly in view of similar or resultant developments and activities in the region. Potential cumulative impacts associated with Zondereinde PV FacilityProject are described below and will be assessed in detail as part of the subsequent EIA Phase to be conducted for the Project.

Cumulative impacts, in relation to an activity, refer to the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area. For cumulative effects analysis to help the decision-maker and inform interested parties, it must be limited to effects that can be evaluated meaningfully (DEAT, 2004). It is important to explore the potential for cumulative impacts, as this will lead to a better understanding of these impacts and the potential for mitigation that may be required. The scale at which the cumulative impacts are assessed is important. For example, the significance of the cumulative impact on the regional or national economy will be influenced by solar PV energy developments throughout South Africa, while the significance of the cumulative impact on the visual amenity may only be influenced by solar PV energy developments that are in closer proximity to each other.

The cumulative impacts associated with the Zondereinde PV FacilityProject have been viewed from two perspectives within this Scoping Report:

- » Cumulative impacts associated with the scale of the Project (one 100MW PV Facility and power lines on the development area); and
- » Cumulative impacts associated with other relevant planned, approved, or existing solar PV energy developments near and surrounding areas of the development area (multiple solar PV energy facilities in the proximity of the Site).

Cumulative effects are commonly understood as the impacts which combine from different projects, and which result in significant change, which is larger than the sum of all the impacts (DEAT, 2004). The complicating factor is that the projects that need to be considered are from past, present, and reasonably foreseeable future development. Cumulative effects can be characterised according to the pathway they follow. One pathway could be the persistent additions from one process. Another pathway could be the compounding effect from one or more processes. Cumulative effects can therefore occur when impacts are:

- » Additive (incremental);
- » Interactive.
- » Sequential; or
- » Synergistic.

Canter and Sadler (1997) describe the following process for addressing cumulative effects in an EIA:

- » Delineating potential sources of cumulative change (i.e., GIS to map the relevant solar PV energy facilities close to one another);
- » Identifying the pathways of possible change (direct impacts);
- » Indirect, non-linear, or synergistic processes; and

- » Classification of resultant cumulative changes.

The development area is located within at least 15km from three other authorised solar PV energy facilities (refer to **Figure 8.7**):

Project Name	Project Status
Proposed Platinum Solar Park Project	In progress
Spitskop Solar Park Project	Approved
Liverpool 10MW Solar Energy Plant	Approved
Northam PV Facility 10MW	Approved
SBPM PV Facility	In Progress
SCSC PV Facility	In Progress

The cumulative impacts that have the potential to be compounded through the development of the Project in proximity to other similar developments include impacts such as those listed below. The role of the cumulative assessment is to test if such impacts are relevant to the Zondereinde PV Facility Project:

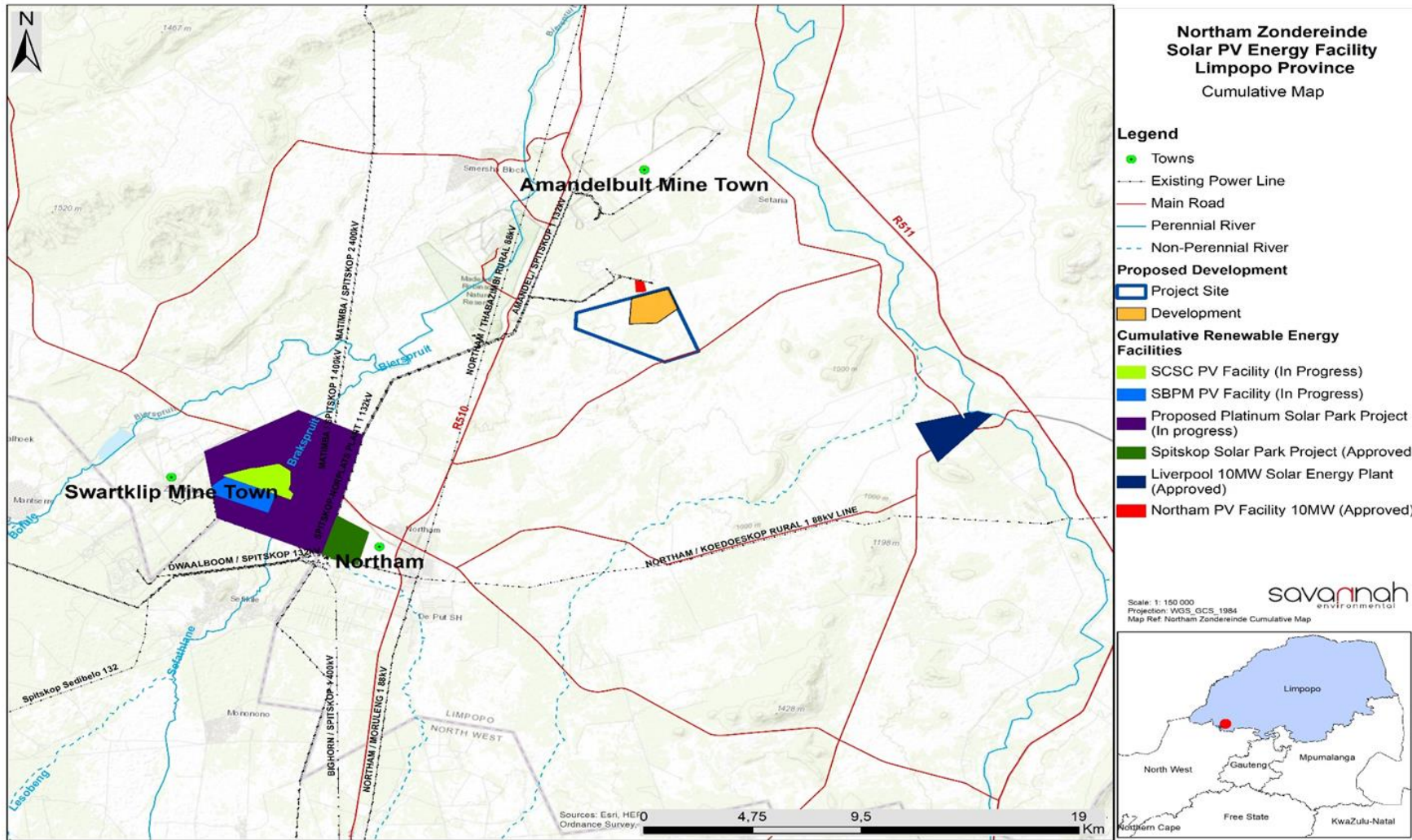
- » Unacceptable loss of threatened or protected vegetation types, habitat or species, through clearing, resulting in an impact on the conservation status of such flora, fauna or ecological functioning.
- » Unacceptable risk to freshwater features, through disturbance associated with construction activities and increased runoff and erosion during the operation phase.
- » Unacceptable risk to avifauna through habitat loss, displacement and collision with PV panels.
- » Unacceptable loss of high agricultural potential areas, presenting a risk to food security and increased soil erosion.
- » Unacceptable loss of heritage resources (including palaeontological and archaeological resources).
- » Unacceptable impact to the cultural landscape.
- » Complete or whole-scale change in the sense of place and character of an area and unacceptable visual intrusion.
- » Unacceptable impact to socio-economic factors and components.

**Summary of the nature, significance, consequence, extent, duration and probability of the impacts**

- » The abovementioned impacts are probable, although it is anticipated that the extent, duration, and magnitude of these impacts can be minimised to levels where this impact can be regarded as having low significance through the implementation of appropriate mitigation measures.
- » The operational lifespan of the Project and other solar PV energy facilities within the surrounding areas is expected to be long-term (i.e., a minimum of 20 years) and subsequently, the impact is also expected to be long-term.
- » The impact associated with the Project is expected to be local, affecting mainly the immediate environment and surrounding areas, as well as other solar PV energy facilities within the vicinity.

**Gaps in knowledge & recommendations for further study:**

- » Each specialist study will consider and assess the cumulative impacts of proposed, approved and authorised renewable projects in the area.
- » Cumulative impacts will be fully assessed and considered in the EIA Phase.



**Figure 8.7:** Cumulative map illustrating other approved and/or constructed Solar PV Energy Facilities located around Zondereinde PV Facility (refer to **Appendix J** for A3 Map).

## CHAPTER 9: CONCLUSIONS

This Scoping Report is aimed at detailing the nature and extent of the proposed development, identifying and describing potential issues associated with developing Zondereinde PV Facility the Project on the Project Site; potential environmental fatal flaws and/or areas of sensitivity; and defining the extent of studies required to be undertaken as part of the detailed EIA Phase. This was achieved through an evaluation of the Project, involving the project proponent, and specialist consultants. This Scoping Report has been compiled in terms of the 2014 EIA Regulations (GNR 326) published in terms of Section 24(5) of NEMA.

A summary of the conclusions of the evaluation of the potential impacts identified to be associated with the Project is provided in **Section 9.3**. Recommendations regarding investigations required to be undertaken within the detailed EIA Phase are provided within the PoS for EIA (**Chapter 10**).

### 9.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the undertaking of a Scoping Report

This chapter of the scoping report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
2(1)(g)(xi) a concluding statement indicating the preferred alternatives, including the preferred location of the activity.	An overall conclusion and fatal flaw analysis regarding Zondereinde PV Facility Project is included within this chapter as a whole.

### 9.2 Overview of Zondereinde PV Facility

This Scoping Report documents the procedure for determining the extent of, and approach to, the EIA Phase. The Scoping Phase included the following key tasks:

- » Involvement of relevant authorities and I&APs through the Public Involvement Process.
- » Consideration of feasible alternatives to be assessed during the EIA Phase.
- » Identification of potential impacts (positive and negative) associated with feasible Project alternatives to be assessed during the EIA Phase.
- » Defining Terms of Reference for any specialist studies required to inform the EIA Phase (PoS for the EIA).

The Zondereinde PV Facility is located south of the Zondereinde Mine, on Portion 1 of the Farm Koppie Alleen 422KQ, with the power line located on the aforesaid property and Portion 2 of the Farm Zondereinde 384 KQ, located approximately 30km south of Thabazimbi and 15km north-east of Northam, between the R510 in the west and the R511 in the east in the Thabazimbi Local Municipality and Waterberg District in the Limpopo Province.

The Zondereinde PV Facility Project Site is proposed to accommodate the following infrastructure, which will enable the Solar PV Energy Facility to supply a contracted capacity of up to 100MW:

- » Solar PV array, comprising PV panels and mounting structures.
- » Inverters and transformers.



- » Cabling between project components.
- » A battery energy storage system (BESS).
- » A 33kV on-site facility substation to facilitate the connection between the Solar PV Energy Facility and the mine electrical distribution system and BESS.
- » Offices, control room/s and a storage facility.
- » 2 x 33kV overhead power lines for the distribution of the generated power, which will be connected to the existing smelter substation and shaft substation.
- » Temporary laydown areas.
- » Access road (gravel), internal gravel roads, firebreaks (4m width) and fencing around the development area.
- » Water and sanitation infrastructure.

The Scoping Study included the identification of potential impacts associated with the Project through specialist inputs and consultation with affected parties and key stakeholders. These will be assessed in detail through the EIA Phase assessment, which will include independent specialist assessments.

This Scoping Study has identified sensitive areas within the Project Site to assist in focussing the location of the development footprint for Zondereinde PV Facility the Project to minimise the potential for environmental impact. The extent of the Project Site is ~1 185ha and has been considered in this Scoping Report and allows an adequate footprint for the installation of a Solar PV Energy Facility, with a contracted capacity of up to 100MW, while allowing for the avoidance of environmental site sensitivities. The size of a smaller development footprint within the Project Site will be defined for assessment (~200ha).

Most potential impacts identified to be associated with the construction of Zondereinde PV Facility the Project are anticipated to be localised and restricted to the development footprint itself, while operation phase impacts/benefits range from local to regional. No environmental fatal flaws were identified to be associated with the Project Site. Areas of sensitivity from a terrestrial ecology, avifauna, freshwater, soils and visual perspective to be avoided by the development footprint have been identified. Areas of sensitivity from a heritage perspective will be confirmed once a site survey has been completed and will be included in the EIA Report.

The potentially significant issues related to the construction and operation of Zondereinde PV Facility the Project include:

- » Destruction, fragmentation and degradation of habitats and ecosystems.
- » Spread and/or establishment of alien and/or invasive species.
- » Disturbance / degradation / loss to wetland soils or vegetation due to the construction of the facility and associated infrastructure, such as crossings.
- » Increased erosion and sedimentation and contamination of soil and water resources.
- » Compaction/soil stripping/transformation of land use, which leads to loss of land capability.
- » Impact to significant archaeological resources such as Stone Age artefact scatters, remnants of Iron Age settlements, burial grounds and graves, historical artefacts, historical structures and rock art engravings through destruction during the development phase and disturbance during the operational phase is possible.
- » Visual impacts on the landscape and sense of place.
- » Social impacts, both positive and negative (job creation and business opportunities, impacts associated with construction workers in the area, and economic benefits).



### 9.3 Sensitivity Analysis Zondereinde PV Facility of development area

This section considers the sensitive features located within the development area, as identified by the independent specialists within each respective field, and also indicates the locations of the sensitive features within the development area.

The potentially sensitive areas which have been identified through the environmental scoping study are listed below and illustrated in **Figure 9.1**. The detail is based on the desktop review of available baseline information for the development area; and sensitivity data from specialist studies undertaken during the Scoping Phase, which included field surveys. During the site and desktop surveys, the affected area was investigated in sufficient detail to provide definitive insight into the potential for constraining factors on the Site. The sensitivity map must be used as a tool by the developer to avoid any areas flagged to be of higher risk or sensitivity and inform the location/layout of the Project's development footprint. The development footprint is the area which will be assessed further in detail in the EIA Phase, in order to provide an assessment of environmental acceptability and suitability of the Project layout Zondereinde PV Facility.

#### 9.3.1 Ecological Sensitive Features (including flora, fauna and avifauna)

Based on the desktop assessment, it can be said that the development area is moderately sensitive, with a moderate-high likelihood of SCC occurring. This assumption is based on the ONA, proximity (less than 5 km) to a NPAES protected area (Sharme Private Nature Reserve), Northern Turfveld IBA and one unclassified NFEPA wetland around the development area. **Figure 9.1** shows the expected post-mitigation risk significance for the Project on the development area to be medium, but in consideration of other Projects in the area, it is considered high. The expectant anthropogenic activities are likely to drive habitat destruction, causing displacement of fauna and flora and possibly event direct mortality. Land clearing destroys local wildlife habitat and can lead to the loss of local breeding grounds, nesting sites and wildlife movement corridors, such as rivers, streams and drainage lines, or other locally important features. The removal of natural vegetation may reduce the habitat available for fauna species and may reduce animal populations and species compositions within the area. Based on the number of avifauna SCCs with a high likelihood of occurrence, the risk of collisions and electrocutions needs to be considered.

#### 9.3.2 Freshwater Sensitive Features

As per the DFFE screening report, the aquatic biodiversity theme sensitivity indicates "Very High" sensitivity. This is attributed to the associated FEPA quinary catchment, as well as the presence of wetlands. A key consideration for the impact assessment is the presence of the identified water resources in relation to the development area. The available data also suggests the presence of features in proximity to the development area, with wetland systems expected for the 500m regulation area. Construction could result in the encroachment into water resources and loss or degradation of these system, most of which are functional and provide ecological services. These disturbances could also result in the infestation and establishment of alien vegetation, which would affect the functioning of the systems. Leaks and/or spillages could result in contamination of the receiving water resources. Contaminated water resources are likely to influence the associated biota. An increase in stormwater runoff could result in physical changes to the receiving systems caused by erosion, run-off and also sedimentation, and the functional changes could result in changes to the vegetative structure of the systems.

### **9.3.3 Soils and Agricultural Potential Sensitive Features**

Various soil forms are expected throughout the development area, of which some are commonly associated with higher land capabilities. Even though the soil depth, texture and permeability of these soils ensure higher land capability, the climatic capability of the area often reduces the land potential considerably. Areas characterised by "High" land potential are expected for selected areas. The Project can result in the loss of land capability. The disturbances could further also result in the infestation and establishment of alien vegetation, which in turn can have a detrimental impact on soil resources. The development of the development area could also result in compaction and/or erosion. Further to this, these activities could also cause leaks and/or spillages resulting in contamination of soil resources, which could affect the salinity or pH of the soil, which can render the fertility of the soil unable to provide nutrition to plants.

### **9.3.4 Heritage Sensitive Features (including archaeology, palaeontology, and cultural landscape)**

The development area fall within areas that have been previously identified as having low and zero archaeological sensitivity. In the zero sensitivity area, the ground has been completely ploughed in the past by crop agriculture. No archaeological sites have been found in this area either. Furthermore, development of the Project here does not leapfrog the industrial development across an area of undisturbed bushveld and contains it within the vicinity of the existing infrastructure, which is preferable to areas located further away. The 33kV power line routes follow existing power line routes and the alternative route falls outside of the very sensitive archaeology areas. The development area is desirable from a sprawl perspective, and there are no archaeological objections to the proposed location of the Project. The preferred alternative for the 33kV power line route is preferred from a heritage perspective.

### **9.3.5 Visual Sensitive Features**

As some components of the Project may be visible does not necessarily imply a high visual impact. Sensitive visual receptors within (but not restricted to) a 3km buffer zone from the facility need to be identified and the severity of the visual impact assessed within the EIA phase of the project.

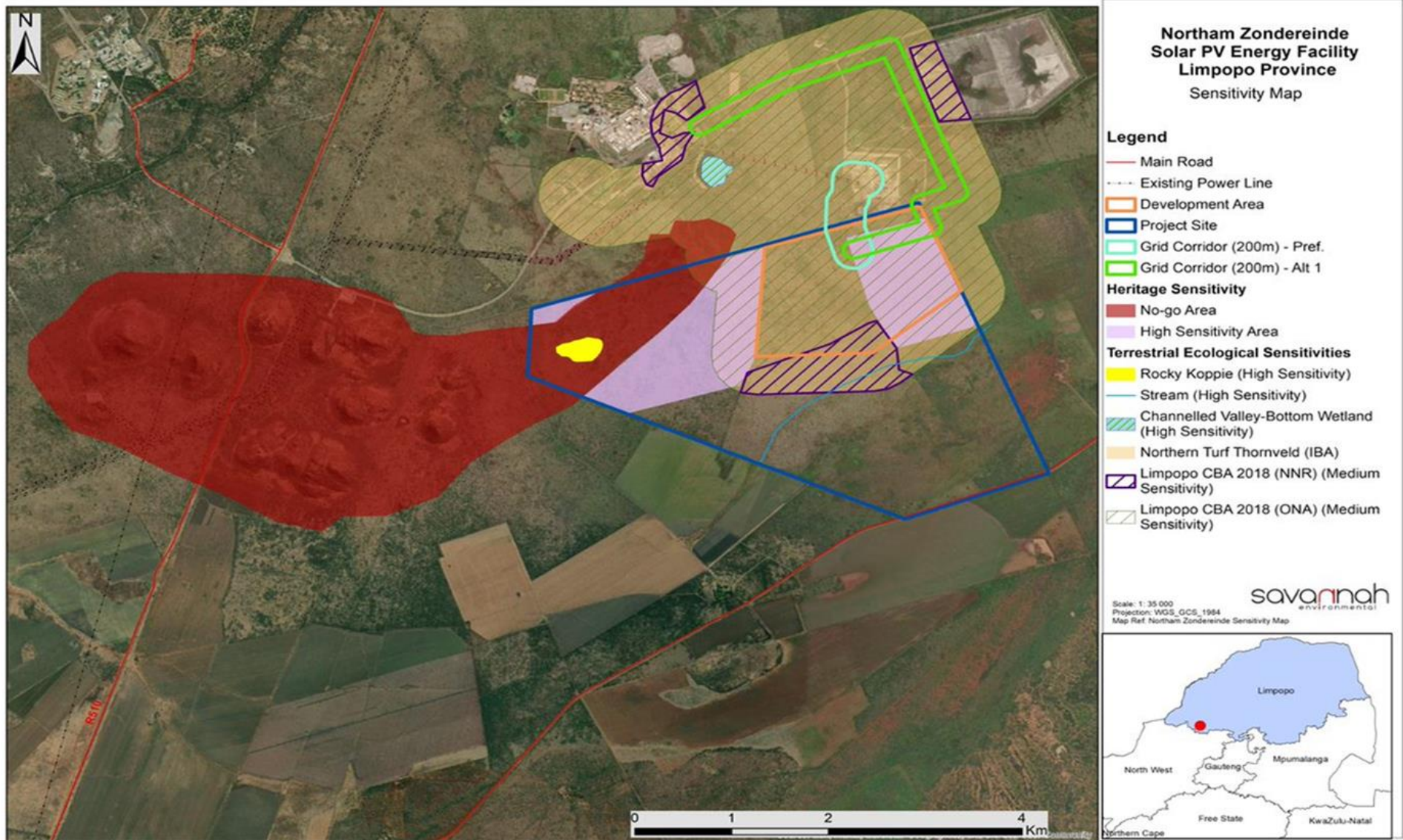
It is recommended that additional spatial analyses be undertaken, to create a visual impact index that will further aid in determining potential areas of visual impact. This exercise should be undertaken for the core PV plant, ancillary infrastructure and the power line, as these structures (e.g. the BESS structures) are envisaged to have varying levels of visual impact at a more localised scale. The site-specific issues (as mentioned earlier in the report) and potential sensitive visual receptors should be measured against this visual impact index and be addressed individually in terms of nature, extent, duration, probability, severity, and significance of visual impact.

## **9.4 Overall Conclusion and Fatal Flaw Analysis**

The findings of the desktop Scoping Study indicate that no environmental fatal flaws are associated with the Zondereinde PV Facility Project Site. While some impacts of potential significance do exist, it is anticipated that the implementation of appropriate mitigation measures would assist in reducing the significance of such impacts to acceptable levels. It is however recommended, that the Project's development footprint be

considered outside of the identified areas of a high sensitivity as far as possible in order, to ensure that it does not have a detrimental impact on the environment.

With an understanding of which areas within the Project Site are considered sensitive to the development of the Project, the Applicant can prepare a detailed infrastructure layout for consideration within the EIA Phase. During the EIA phase, more detailed environmental studies will be conducted in line with the PoS for EIA contained in **Chapter 10** of this Scoping Report. These studies will consider the detailed layout produced by the Applicant and make recommendations for the implementation of avoidance strategies (if required), and mitigation and management measures to ensure that the final assessed layout retains an environmental impact within acceptable limits. The sensitivity map will be further refined in the EIA Phase based on these specialist studies, to provide an assessment of environmental acceptability of the final design of the Project.



**Figure 9.2:** Environmental Sensitivity Map from the results of the scoping evaluation for Zondereinde PV Facility the Projec



## CHAPTER 10: PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

One of the key objectives of the Scoping Phase is to determine the level of assessment to be undertaken within the EIA Phase of the process. This will include the methodology to be applied, the expertise required and the extent of further consultation to be undertaken. This is to determine the impacts and risks a particular activity will impose on a preferred site through the life of the activity (including the nature, significance, consequence, extent, duration and probability of the impacts) to inform the location of the development footprint within the preferred site and to define management and mitigation measures to minimise potential negative impacts and enhance potential positive impacts..

This Chapter contains the PoS for the EIA for Zondereinde PV Facilitythe Project, which describes how the EIA Phase will proceed, and includes details of the independent specialist studies required to be undertaken to assess the significance of those impacts identified within the Scoping Study to be of potential significance.

### 10.1 Legal Requirements as per the EIA Regulations, 2014 (as amended), for the Undertaking of a Scoping Report

This chapter of the Scoping Report includes the following information required in terms of Appendix 2: Content of the Scoping Report:

Requirement	Relevant Section
<p>2(1)(h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including -</p> <ul style="list-style-type: none"> <li>(i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity.</li> <li>(ii) a description of the aspects to be assessed as part of the environmental impact assessment process.</li> <li>(iii) aspects to be assessed by specialists.</li> <li>(iv) a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists.</li> <li>(v) a description of the proposed method of assessing duration and significance.</li> <li>(vi) an indication of the stages at which the competent authority will be consulted.</li> <li>(vii) particulars of the public participation process that will be conducted during the environmental impact assessment process.</li> <li>(viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process.</li> <li>(ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.</li> </ul>	<p>The PoS for the undertaking of the EIA Phase for Zondereinde PV Facility the Project is included within this chapter as a whole.</p>

## 10.2 Objectives of the EIA Phase

The EIA Phase to be undertaken for Zondereinde PV Facility the Project will aim to achieve the following:

- » Provide an overall description and detailed assessment of the social and biophysical environment affected by the development of Zondereinde PV Facility the Project.
- » Assess potentially significant impacts (direct, indirect, and cumulative, where required) associated with the Project.
- » Identify and recommend appropriate avoidance strategies and mitigation measures for potentially significant environmental impacts.
- » Undertake a fully inclusive public involvement process to ensure that I&APs are afforded the opportunity to participate, and that their comments are recorded.

The EIA will assess potential environmental impacts and benefits (direct, indirect, and cumulative impacts) associated with each phase of the Project, including design, construction, operation and decommissioning; and will aim to provide the CA with sufficient information to make an informed decision regarding the Project. The site layout being proposed for Zondereinde PV Facility the Project will be assessed through detailed independent specialist studies. As required in terms of the 2014 EIA Regulations (GNR 326), as amended, the assessment will include consideration of the 'do nothing' alternative.

## 10.3 Consideration of Alternatives

The following Project alternatives will be investigated in the EIA Phase:

Nature of Alternatives Considered	Description of the Alternatives relating to Zondereinde PV Facility
Property/Location Alternatives	One preferred development area has been identified for the development of Zondereinde PV Facility the Project due to site specific characteristics, such as the solar resource, topography, latitude of the site, the local climate, land availability, landowner support, land use and suitability, site access, and proximity to a viable grid connection and environmental features. The Project Site is ~1 171ha in extent which is considered to be sufficient for the development of a Solar PV Energy Facility with a contracted capacity of up to 100MW. Within the development area (~ 265ha), a smaller development footprint (~200ha) will be defined for assessment, taking into consideration the environmental sensitivities identified in the Scoping Phase of the EIA process.
Design and Layout Alternatives	An overall environmental scoping sensitivity map has been provided to illustrate the sensitive environmental features located within the Project Site which need to be considered and, in some instances, completely avoided by the development footprint (refer to Chapter 9). A detailed micro-siting exercise will be undertaken by the developer to effectively 'design' the solar facility layout within the Project Site, which will be known as the development footprint. Through the process of determining constraining factors and environmentally sensitive areas, the layout of the PV Facility footprint and infrastructure will be planned and adjusted, if necessary, to ensure the avoidance of no-go areas and mitigation of sensitive environmental features. A detailed facility layout will be developed and will be made available for assessment and ground-truthing by the independent specialists in the EIA Phase. Where further conflicts are predicted, a mitigation strategy will be developed to meet the objectives of the mitigation hierarchy (avoid, minimise, mitigate).



Nature of Alternatives Considered	Description of the Alternatives relating to Zondereinde PV Facility
Activity Alternatives	Letsatsi is an IPP renewable energy project developer and as such is only considering renewable energy activities in accordance with the need for such development as identified within the IRP. The only activity considered for implementation on the identified site is therefore power generation.
'Do-nothing' Alternative	This is the option to not construct Zondereinde PV Facilitythe Project. No impacts (positive or negative) are expected to occur on the social and environmental sensitive features or aspects located within the Project Site or the surrounds. The opportunities associated with the development of the Project for the affected area and other surrounding towns in the area will not be made available.

## 10.4 Description of project to be assessed during the EIA Phase

### 10.4.1 Project description

The aspects or nature and extent of the project to be assessed as part of the EIA are detailed in **Table 10.1** below. A more detailed description of the activities associated with the construction and operation of the project is included in Chapter 2 of this Scoping Report.

**Table 10.1:** Activities and associated infrastructure to be assessed in the EIA

Infrastructure	Footprint and dimensions
Number of Modules	Up to 178 600 modules (560Wp modules for the generation of up to 100MW)
Contracted Capacity	Up to 100MW
Area occupied by the solar array	Up to 200 ha
Panel Height	Up to 5m
Technology	The Project will make use of fixed-tilt or single-axis tracking PV technology and bifacial panels (single axis or double axis tracking PV technology to harness the solar resource on the project site)
Inverters	<ul style="list-style-type: none"> <li>» Up to 400 (qty)</li> <li>» Height: 5m</li> </ul>
BESS	<ul style="list-style-type: none"> <li>» Proposed technology: Lithium - Ion or Lithium-iron-phosphate or Redox Vanadium battery technology</li> <li>» Footprint: up to 4ha</li> <li>» Height: Up to 3m</li> <li>» Proposed capacity of battery storage: 500MWh / 5 hours per day of usable energy during demand peaks at Beginning of Life</li> </ul>
Other infrastructures	<ul style="list-style-type: none"> <li>» Offices, control room/s, inverters, transformers (MV/HV station). Dimensions to be confirmed during detailed design phase, although all will be single storey.</li> <li>» Overhead power line to the Existing 33kV Mine Substations, access and internal roads and fencing also required</li> <li>» Storage for diesel and transformer oil, if appropriate, storage size below thresholds</li> <li>» Establishment of a borehole for water supply and septic tank for sanitation</li> <li>» Underground cabling between project components.</li> <li>» Operations and maintenance buildings, warehouse, fencing around the PV Site, water storage facilities, water pump station and possibly a water treatment facility; sewage facilities (septic tank); and water and sewage pipelines.</li> </ul>

Infrastructure	Footprint and dimensions
	» Security and access control.
Area occupied by temporary laydown area	1 ha
Area occupied by the onsite facility substation	Up to 2 ha
Capacity of onsite facility substation	Up to 33kV
Access and internal roads associated with the facility	Existing municipal/mine roads will be used to access PV facilities; additional access from existing roads to site 3km with width of up to 8m (gravel or paved). Internal roads are to have hard surface/gravel roads with width of up to 6m to be used for internal roads within PV facility.
Grid connection	<p>A grid connection corridor, which is up to 200m wide allow for avoidance of environmental sensitivities, and suitable placement of the overhead power line within the corridor has been identified and will be assessed as part of the S&amp;EIA process.</p> <p>The parameters of the proposed overhead power line are provided below:</p> <ul style="list-style-type: none"> <li>» Capacity and circuit of the power lines (x2): 33kV (single circuit)</li> <li>» Power line servitude width: 15m</li> <li>» Height of the power line towers (pylons):16-24m</li> </ul> <p>During construction, a permanent access road along the length of the power line corridor, between 4 – 8m wide, will be established to allow for large crane movement. This track will then be utilised for maintenance during operation.</p>
Temporary infrastructure	<p>Temporary offices (site containers, chemical toilets) and temporary laydown area (accumulatively +/- 5 ha)</p> <p>The construction yard will be used to perform small tasks during the construction phase, including equipment preparation and cleaning activities; and will include one or few container-type, offices for contractors and technical staff.</p> <p>The laydown area will be used for storage of material and equipment during the construction phase. This area will be rehabilitated on completion of construction activities.</p>

#### 10.4.2. Scope of the EIA Phase and EIA report

The EIA Report will be compiled in terms of the requirements of the EIA Regulations and include the information as required in Appendix 3 of GNR 326. The results of the specialist studies and other available information will be integrated, synthesised, and presented in the EIA Report by the Savannah Environmental project team. The EIA Report will assess the overall environmental and socio-economic impacts associated with the development, consider mitigation measures as may be required, and make recommendations regarding the best development alternative. It will also identify mitigation measures and provide management recommendations to minimise negative impacts and enhance benefits. The EIA Report will include:

- » The details and expertise of the **EAP** who prepared the report.
- » The **location** of the development footprint of the activity and a locality map illustrating the location of the proposed activity.
- » A **description** of the scope of the proposed activity, including all listed activities triggered and a description of associated structures and infrastructure.
- » The **policy and legislative** context within which the development is located and an explanation of how the development complies and responds to the legislation and policy context.
- » The **need and desirability** of the proposed development of the activity in the context of the preferred location.
- » A motivation for the **preferred development footprint** within the approved site as contemplated in the accepted Scoping Report.
- » A description of the **process** followed to reach the proposed development footprint within the approved site, including:
  - \* details of the development footprint considered;
  - \* details of the public participation process undertaken in terms of Regulation 41 of the 2014 EIA Regulations, including copies of supporting documents;
  - \* a summary of issues raised by interested and affected parties and the manner in which the issues were incorporated;
  - \* the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
  - \* the impacts and risks identified including the nature, significance, consequence extent, duration and probability of the impacts, including the degree to which these impacts can be reversed, may cause irreplaceable loss of resources and can be avoided, managed or mitigated;
  - \* the methodology used for determining and ranking the nature, significance, consequence, extent, duration and probability of potential environmental impacts and risks;
  - \* positive and negative impacts that the activity and alternatives will have on the environment and the community;
  - \* possible mitigation measures to be applied and the level of residual risk;
  - \* a motivation for not considering alternative development locations;
  - \* a concluding statement indicating the location of the preferred alternative development location; and
  - \* a full description of the process followed to identify, assess and rank impacts of the activity and associated infrastructure on the preferred location including all environmental issues and risks that have been identified and an assessment of the significance of each issue and risk and the extent to which the issue/risk can be avoided or mitigated.
- » An **assessment** of the identified potentially significant impacts and risks.
- » A summary of the **findings and recommendations** of any specialist report and an indication as to how these findings and recommendations have been included.
- » An **environmental impact assessment** containing a summary of key findings, an environmental sensitivity map and a summary of the positive and negative impacts and risks of the proposed activity.
- » An **Environmental Management Programme** (EMPr), as per Appendix 4 of GNR326, containing the recommendations from specialists, the impact management **objectives**, and the impact management **outcomes**.
- » The final **alternatives** which respond to the impact management measures, avoidance and mitigation measures identified.
- » Any aspects which were **conditional** to the findings of the assessment.

- » Description of the assumptions, uncertainties and gaps in knowledge relating to the assessment and mitigation measures proposed.
- » An **opinion** as to whether the proposed activity should or should not be authorised and the conditions thereof.
- » An undertaking under **affirmation** by the EAP in relation to the correctness of the information, the inclusion of comments and inputs from stakeholders and interested and affected parties, the inclusion of inputs and recommendations from the specialists and any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties.

The EIA Report will be released to the public and relevant stakeholders, Organs of State and Authorities for a 30-day review and comment period. Comments received from I&APs will be captured within C&R Report, which will be included within the Final EIA Report, for submission to the CA for decision-making.

### 10.5 Specialist Assessments to be undertaken during the EIA Phase

A summary of the aspects which require further investigation within the EIA Phase through specialist studies, as well as the proposed activities to be undertaken in order to assess and ground truth the significance of the potential impacts is provided within **Table 10.2**. More detail on the methodology to be followed is included in the specialist reports contained in Appendix D to H. The specialists proposed to undertake detailed studies in the EIA Phase are also reflected within this table. These specialist studies will consider the development footprint proposed for the Project; and feasible and reasonable alternatives identified for the Project.

**Table 10.2:** Aspects requiring further investigation by specialists during the EIA Phase and terms of reference to assess the significance of the potential impacts relevant to Zondereinde PV Facility the Project

Aspect	Activities to be undertaken in order to identify and assess significance of impacts	Specialist
<b>Terrestrial Ecology (including flora and fauna)</b>	<p>The following site-specific assessments are recommended for the EIA Phase:</p> <ul style="list-style-type: none"> <li>» Undertake a flora survey, preferably during the wet season, as follows: <ul style="list-style-type: none"> <li>○ The fieldwork and sample sites will be placed within targeted areas (i.e., target sites) perceived as ecologically sensitive based on the preliminary interpretation of satellite imagery (Google Corporation) and GIS analysis (which will included the latest applicable biodiversity datasets) available prior to the fieldwork. The focus of the fieldwork will therefore be to maximise coverage and navigate to each target site in the field, to perform a rapid vegetation and ecological assessment at each sample site. Emphasis will be placed on sensitive habitats, especially those overlapping with the development area.</li> <li>○ Homogenous vegetation units will be subjectively identified using satellite imagery and existing land cover maps. The floristic diversity and search for flora SCC will be conducted through timed meanders, within representative habitat units delineated during the fieldwork. Emphasis will be placed mostly on sensitive habitats overlapping with the development area.</li> <li>○ Suitable habitat for SCC will be identified according to Raimondo et al. (2009) and targeted as part of the timed meanders.</li> <li>○ At each sample site notes will be made regarding current impacts (e.g., livestock grazing, erosion etc.); subjective recording of dominant vegetation species; and any sensitive features (e.g., wetlands, outcrops etc.). In addition, opportunistic observations will be made while navigating through the development area.</li> </ul> </li> <li>» Undertake a fauna survey, comprising the following techniques: <ul style="list-style-type: none"> <li>○ Visual and auditory searches - This typically comprises of meandering and using binoculars to view species from a distance without them being disturbed; and listening to species calls.</li> <li>○ Active hand-searches - Used for species that shelter in or under particular micro-habitats (typically rocks, exfoliating rock outcrops, fallen trees, leaf litter, bark etc.).</li> <li>○ Utilization of local knowledge.</li> </ul> </li> <li>» Identify the Site Ecological Importance.</li> <li>» Determine a suitable buffer to the identified features.</li> </ul> <p><u>Assessment of Impacts for the EIA</u></p>	Jan Jacobs and Andrew Husted of The Biodiversity Company

Aspect	Activities to be undertaken in order to identify and assess significance of impacts	Specialist
	<p>The methodology described in <b>Section 10.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of criteria including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect, what will be affected, and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme</u></p> <p>For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the project EMPr.</p>	
<b>Avifauna</b>	<p>The EIA Phase will include the following activities:</p> <ul style="list-style-type: none"> <li>» Avifauna assessment field work to be conducted over two seasons to ensure migratory species are considered. Fieldwork to include point counts for the avifauna.</li> <li>» Identify and describe habitats.</li> </ul> <p><b>Note:</b> The DFFE screening tool report indicates the development area as having very high avian sensitivity and the Project footprint is likely to be bigger than 100ha (~200ha), warranting the requirement for a Regime 2 survey. It is the specialist's opinion that the avian sensitivity generated by the screening tool is incorrect and, as such, the correct Regime survey to follow was determined based on the animal theme sensitivity. Although the screening tool report indicates a medium sensitivity for the animal theme based on two birds occurring within the area, a Regime 2 is required due to the size of the footprint. The BirdLife Guidelines state that if there is data for an area then the specialist can motivate for a lesser regime. Data is available for the study area and therefore, a single season avifauna survey is proposed to be conducted during the EIA Phase, as the previous reports undertaken for the site were considered to supplement the requirements of a Regime 2.</p> <p><u>Assessment of Impacts for the EIA</u></p> <p>The methodology described in <b>Section 10.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of criteria, including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p>	Jan Jacobs and Andrew Husted of The Biodiversity Company



Aspect	Activities to be undertaken in order to identify and assess significance of impacts	Specialist
	<p>The nature of the impact will be defined and described. It will refer to the causes of the effect; what will be affected; and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme</u> For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the Project EMPr.</p>	
<p><b>Freshwater resources (including all waterbodies and wetlands)</b></p>	<p><u>The EIA Phase will include the following activities:</u> Any freshwater resources located within the development area will be further assessed during the EIA Phase, in accordance with the protocols and procedures of the March 2020 Assessment Procedures. The following activities will be undertaken:</p> <ul style="list-style-type: none"> <li>» Undertake a field survey during the wet season period that prioritises the development area, but also considers the 500m regulated area.</li> <li>» Identify, delineate, and characterise water resources.</li> <li>» Undertake a functional assessment of systems, where applicable.</li> <li>» Determine the present ecological status of the water resources.</li> <li>» Determine the importance and sensitivity of the water resources.</li> <li>» Determine a suitable buffer width for the resources.</li> </ul> <p><u>Assessment of Impacts for the EIA:</u> The methodology described in <b>Section 10.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of criteria including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect; what will be affected; and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme:</u> For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the project EMPr.</p>	<p>Jan Jacobs and Andrew Husted of The Biodiversity Company</p>

Aspect	Activities to be undertaken in order to identify and assess significance of impacts	Specialist
<b>Soils and Agricultural Potential</b>	<p><u>The EIA Phase will include the following activities:</u></p> <p>The soils impact assessment will include the consideration of aspects related to agricultural aspects, in accordance with the protocols and procedures of the March 2020 Assessment Procedures. The assessment will also include:</p> <ul style="list-style-type: none"> <li>» Undertake a field survey that will prioritise the development footprint.</li> <li>» Identification and delineation of soils forms.</li> <li>» Determination of soil sensitivity.</li> </ul> <p><u>Assessment of Impacts for the EIA:</u></p> <p>The methodology described in <b>Section 10.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of criteria including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect; what will be affected; and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme:</u></p> <p>For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the Project EMPr.</p>	Jan Jacobs and Andrew Husted of The Biodiversity Company
<b>Heritage (including cultural landscape, archaeology and palaeontology)</b>	<p><u>The EIA Phase will include the following activities:</u></p> <p>As part of the EIA, it is necessary to undertake a Heritage and Archaeological Study to fulfil the SAHRA requirements in accordance with the National Heritage Resources Act (No. 25 of 1999). A Heritage and Archaeological Impact Assessment (including cultural landscape and palaeontology) will therefore be conducted, the primary objective of which is to determine the heritage and archaeological significance of features on the site and the significance of the cultural landscape. The following activities will be undertaken during the EIA Phase:</p> <ul style="list-style-type: none"> <li>» Undertake field assessments in order to fill the identified gaps in knowledge. The archaeological field surveys will provide sufficient ground-coverage of the areas to be developed, to be able to determine the nature of the resources likely to be impacted. The palaeontological and cultural landscape field surveys will target sensitive geological and cultural landscape features.</li> </ul>	Jenna Lavin of CTS Heritage

Aspect	Activities to be undertaken in order to identify and assess significance of impacts	Specialist
	<p><u>Assessment of Impacts for the EIA:</u> The methodology described in <b>Section 10.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of potential impacts on heritage resources is to be assessed by means of criteria including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect, what will be affected, and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme:</u> For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the Project EMPr.</p>	
<b>Visual</b>	<p><u>The EIA Phase will include the following activities:</u></p> <ul style="list-style-type: none"> <li>» A visual impact assessment will be undertaken during the EIA Phase. Confirmation of the following is required in order to investigate and finalise the issues and impacts highlighted by the Visual Scoping Study: <ul style="list-style-type: none"> <li>o Confirmation of the facility layout.</li> <li>o Undertake a site visit to assess the proposed development.</li> </ul> </li> <li>» The following methodology will be used in preparation of the visual impact assessment for the EIA Phase: <ul style="list-style-type: none"> <li>o The creation of a detailed digital terrain model of the potentially affected environment.</li> <li>o The sourcing of relevant spatial data. This included cadastral features, vegetation types, land use activities, topographical features, site placement, etc.</li> <li>o The identification of sensitive environments/receptors, upon which the Project could have a potential impact.</li> <li>o The creation of viewshed analyses from the development area to determine the visual exposure and the topography's potential to absorb the potential visual impact. The viewshed analyses considers the dimensions of the proposed structures and activities.</li> </ul> </li> </ul> <p><u>Assessment of Impacts for the EIA:</u> The methodology described in <b>Section 10.6</b> assists in the evaluation of the overall effect of a proposed activity on the environment and potential receptors. It includes an assessment of the significant direct, indirect, and cumulative impacts.</p>	Lourens du Plessis of LoGIS

Aspect	Activities to be undertaken in order to identify and assess significance of impacts	Specialist
	<p>The significance of environmental impacts is to be assessed by means of criteria including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect; what will be affected; and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme:</u> For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the Project EMPr.</p>	
<b>Socio-Economic</b>	<p><u>The EIA Phase will include the following activities:</u> A full EIA level Socio-Economic Impact Assessment will be conducted as part of the EIA Phase. The following activities will be undertaken as part of the process:</p> <ul style="list-style-type: none"> <li>» Review comments pertaining to social impacts received from members of the key stakeholders, and any organ of state during the public review of the Scoping Report. Where applicable, comments received from DFFE on the Final Scoping Report, which may pertain to socio-economic impact assessment, will also be reviewed.</li> <li>» Collect primary data. Interview key stakeholders to obtain primary information related to the development area, socio-economic environment, and to gain their inputs on the Project and its perceived impact (positive and /or negative).</li> <li>» Update the baseline information with information received during the data collection and any additional information received from the client, or updates to the project description.</li> <li>» Assess impacts identified for the Project in terms of their nature, extent, duration, magnitude, probability, status, and significance; and the degree to which the impact can be reversed, may cause irreplaceable loss of resources, and can be mitigated.</li> <li>» Identify mitigation measures with which to reduce negative impacts and enhance positive impacts for inclusion in the EMPr.</li> <li>» Provide a reasoned opinion regarding the acceptability of the Project, and whether the it should be authorised.</li> <li>» Prepare a Socio-Economic Impact Assessment Report for inclusion in the EIA Report to be prepared for the Project.</li> </ul> <p><u>Assessment of Impacts for the EIA:</u></p>	Nondumiso Bulunga of Savannah Environmental (Pty) Ltd

Aspect	Activities to be undertaken in order to identify and assess significance of impacts	Specialist
	<p>The methodology described in <b>Section 10.6</b> assists in the evaluation of the overall effect of a proposed activity on the socio-economic environment. It includes an assessment of the significant direct, indirect, and cumulative impacts. The significance of environmental impacts is to be assessed by means of criteria including extent (scale), duration, magnitude (severity), probability (certainty) and direction (negative, neutral or positive).</p> <p>The nature of the impact will be defined and described. It will refer to the causes of the effect, what will be affected, and how it will be affected. For each anticipated impact, recommendations will be made for desirable mitigation measures.</p> <p><u>Environmental Management Programme:</u> For each overarching anticipated impact, management recommendations for the design, construction, and operational phase (where appropriate) will be drafted for inclusion in the project EMPr.</p>	
<b>Cumulative Assessment</b>	<p>Assess the cumulative impacts associated with the construction and operation of more than one development (i.e., renewable energy developments) within the immediate surrounding areas of the development area on the ecological, heritage, soil and agricultural potential, avifaunal, social, and visual impacts of the area.</p> <p><u>The objective is to identify and focus on potentially significant cumulative impacts so these may be taken into consideration in the decision-making process. The following will be considered:</u></p> <ul style="list-style-type: none"> <li>o Unacceptable loss of threatened or protected vegetation types, habitat or species through clearing, resulting in an impact on the conservation status of such flora, fauna or ecological functioning.</li> <li>o Unacceptable risk to freshwater features through disturbance associated with construction activities and increased runoff and erosion during the operation phase.</li> <li>o Unacceptable risk to avifauna through habitat loss, displacement and collision with PV panels.</li> <li>o Unacceptable loss of high agricultural potential areas, presenting a risk to food security and increased soil erosion.</li> <li>o Unacceptable loss of heritage resources (including palaeontological and archaeological resources).</li> <li>o Unacceptable impact to the cultural landscape.</li> <li>o Complete or whole-scale change in the sense of place and character of an area and unacceptable visual intrusion.</li> <li>o Unacceptable impact to socio-economic factors and components.</li> </ul>	Specialists and Savannah Environmental

## 10.6 Methodology for the Assessment of Potential Impacts

Direct, indirect, and cumulative impacts of the above issues identified through this Scoping Study will be assessed in terms of the following criteria during the EIA Phase:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional:
  - \* local extending only as far as the development site area – assigned a score of 1;
  - \* limited to the site and its immediate surroundings (up to 10 km) – assigned a score of 2;
  - \* will have an impact on the region – assigned a score of 3;
  - \* will have an impact on a national scale – assigned a score of 4; or
  - \* will have an impact across international borders – assigned a score of 5.
- » The **duration**, wherein it will be indicated whether:
  - \* the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - \* the lifetime of the impact will be of a short duration (2–5 years) - assigned a score of 2;
  - \* medium-term (5–15 years) – assigned a score of 3;
  - \* long term (> 15 years) - assigned a score of 4; or
  - \* permanent - assigned a score of 5.
- » The **magnitude**, quantified on a scale from 0–10, where a score is assigned:
  - \* 0 is small and will have no effect on the environment;
  - \* 2 is minor and will not result in an impact on processes;
  - \* 4 is low and will cause a slight impact on processes;
  - \* 6 is moderate and will result in processes continuing but in a modified way;
  - \* 8 is high (processes are altered to the extent that they temporarily cease); and
  - \* 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale, and a score assigned:
  - \* Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
  - \* Assigned a score of 2 is improbable (some possibility, but low likelihood);
  - \* Assigned a score of 3 is probable (distinct possibility);
  - \* Assigned a score of 4 is highly probable (most likely); and
  - \* Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- » the **significance**, which shall be determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- » the **status**, which will be described as either positive, negative or neutral.
- » the degree to which the impact can be reversed.
- » the degree to which the impact may cause irreplaceable loss of resources.
- » the *degree* to which the impact can be *mitigated*.

The **significance** is determined by combining the criteria in the following formula:

**S= (E+D+M) P**; where

S = Significance weighting

E = Extent



D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

Other aspects to be taken into consideration in the specialist studies and EIA report are:

- » Impacts should be described in terms of before and after the proposed mitigation and management measures have been implemented.
- » All impacts should be evaluated for the full lifecycle of the Project, including construction, operation, and decommissioning.
- » The impact assessment should take into consideration the cumulative effects associated with this and other similar developments which are either developed or in the process of being developed in the region. The purpose of the cumulative assessment is to test if such impacts are relevant to the Project in the development area (i.e., whether the addition of the Project in the area will increase the impact). In this regard, specialist studies will consider whether the construction of the Project will result in:
  - Unacceptable risk
  - Unacceptable loss
  - Complete or whole-scale changes to the environment or sense of place
  - Unacceptable increase in impact

A conclusion regarding whether the Project will result in any unacceptable loss or impact considering all the projects proposed in the area is included in the respective specialist reports.

As Letsatsi has the responsibility to avoid and/or minimise impacts as well as plan for their management (in terms of the EIA Regulations), the mitigation of significant impacts will be discussed. Assessment of mitigated impacts will demonstrate the effectiveness of the proposed mitigation measures.

## 10.7 Authority Consultation

Consultation with the regulating authorities (i.e., DFFE and LDEDET) will be undertaken in the Scoping Phase and will continue throughout the EIA process. On-going consultation will include the following:

- » Submission of a Final Scoping Report following a 30-day review period which will include all comments and issues raised during the review period as well as appropriate responses to the comments.
- » Submission of an EIA Report and EMPr for a 30-day review and comment period.
- » Submission of a Final EIA Report and EMPr following a 30-day review period, which will include all comments and issues raised during the review period as well as appropriate responses to the comments received.

- » Consultation and an authority site visit (if required) in order to discuss the findings and conclusions of the EIA Report.

## 10.8 Public Participation Process

A public participation process will be undertaken by Savannah Environmental and consultation with key stakeholders and I&APs will be on-going throughout the EIA Phase. Through this consultation process, stakeholders and I&APs will be encouraged to verify that their issues were recorded in the Scoping Phase, identify additional issues of concern or highlight positive aspects of the Project, and comment on the findings of the EIA Phase. In order to accommodate the varying needs of stakeholders and I&APs within the study area, as well as capture their inputs, various opportunities will be provided for stakeholders and I&APs to be involved in the EIA Phase of the process, as follows:

- » Focus group meetings (pre-arranged and I&APs invited to attend).
- » One-on-one consultation meetings (for example with directly affected and surrounding landowners).
- » Telephonic consultation sessions (consultation with various parties from the EIA project team, including the public participation consultant, lead EIA consultant, as well as specialist consultants).
- » Written, faxed or e-mail correspondence.

The public participation process will include the following activities:

- » Placement of advertisements in one local newspaper (Rustenburg Herald Newspaper, in English).
- » Maintenance and finalisation of the I&AP database.
- » Release of the EIA Report for a 30-day review and comment period.
- » Ongoing consultation with all registered I&APs regarding the progress of the EIA process and the outcomes or findings of the EIA Report through stakeholder consultation via notification letters, telephone calls, focus group meetings and information sharing meetings, depending on the specific needs of the stakeholders in the area.
- » Facilitate comments on the EIA Report.
- » Compile a C&R Report and evidence of the public participation process undertaken to be included in the final EIA Report for decision-making.

## 10.9 Key Milestones of the Programme for the EIA

The envisaged key milestones of the programme for the EIA Phase are outlined in the following table (and include indicative dates):

Key Milestone Activities	Proposed timeframe
Make the Scoping Report available to the public, stakeholders, and authorities for 30 days	Friday, 07 October 2022 - Monday, 07 November 2022
Finalisation of Scoping Report, and submission of the Final Scoping Report to DFFE	November 2022
Authority acceptance of the Final Scoping Report and PoS to undertake the EIA	43 days from submission of the Final Scoping Report
Undertake specialist studies for the EIA Phase and the public participation process	October 2022 – December 2022
Make Draft EIA Report and EMPr available to the public, stakeholders, and authorities	January / February 2023

<b>Key Milestone Activities</b>	<b>Proposed timeframe</b>
Finalisation of EIA Report, and submission of the Final EIA Report to DFFE	March 2023
Authority review period and decision-making (107 calendar days)	~July 2023

## CHAPTER 11: REFERENCES

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124316	Heritage Scoping	Johnny Van Schalkwyk	30/04/2010	SURVEY OF HERITAGE RESOURCES IN THE LOCATION OF THE PROPOSED MERENSKY MINING PROJECT, AMANDELBULT SECTION, RUSTENBURG PLATINUM MINE, LIMPOPO PROVINCE.
186228	Heritage Impact Assessment Specialist Reports	Marko Hutten	13/10/2014	Heritage Impact Assessment for the Proposed Agricultural Development on Portion 2 of the Farm Kwikstaart 431 KQ, near Koedoeskop in the Limpopo Province.
186920	AIA Phase 1	Jaco van der Walt	05/12/2014	Archaeological Impact Assessment For the proposed Zwartkop Industrial Development, Amandelbult, Limpopo Province.
278332	HIA Phase 1	Marko Hutten	02/06/2015	Heritage Impact Assessment for the Proposed Solar Park and Power Line Development on the Farm Liverpool near Koedoeskop, Limpopo Province.
5556	AIA Phase 1	Johnny Van Schalkwyk	19/01/2007	Survey of Heritage Resources in the Location of the Proposed Merensky Mining Project, Amandelbult Section, Rustenburg Platinum, Limpopo Province.
5703	AIA Phase 1	Johnny Van Schalkwyk	01/09/1994	A Survey of Archaeological and Cultural Historical Resources in the Amandelbult Mining Lease Area.
5704	AIA Phase 1	Johnny Van Schalkwyk	01/08/2001	A Survey of Cultural Resources in Two Development Areas, Amandelbult, Northern Province.
5706	AIA Phase 1	Johnny Van Schalkwyk, Frank Teichert, Anton Pelser	01/06/2003	A Survey of Archaeological Sites for the Amandelbult Platinum Mine Seismic Exploration Program.
5719	AIA Phase 1	Johnny Van Schalkwyk	28/08/2007	Heritage Impact Assessment: Portion 6 Aapieskraa
5729	AIA Phase 1	JM Maguire, Calvin van Wijk	12/06/2008	Phase 1 Archaeological Impact Assessment for Portion 128 of the Farm Koedoesdoorns KQ 414, Northam, Limpopo Province.

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