Tournée 2 Solar (Pty) Ltd

TOURNÉE 2 SOLAR PV FACILITY AND ASSOCIATED INFRASTRUCTURE, NEAR STANDERTON, MPUMALANGA

Final Environmental Scoping Report

MAY 2023

PUBLIC

Tournée 2 Solar (Pty) Ltd

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Final Environmental Scoping Report

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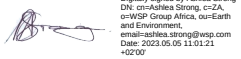
Signature				
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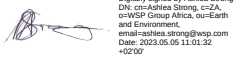
Signature				
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GLOSSARY

Abbreviation	Definition
AC	Alternating Current
AEL	Atmospheric Emissions License
AIPs	Alien Invasive Plant
AIS	Alien and Invasive Species
CA	Competent Authority
CAA	South African Civil Aviation Authority
CARA	Conservation of Agricultural Resources Act (No. 43 of 1983)
CBAs	Critical Biodiversity Areas
CHSSP	Community Health, Safety and Security Plan
CIA	cumulative impact assessment
CoC	Code of Conduct
DALRRD	Department of Agriculture, Land Reform and Rural Development
DC	Direct Current
DFFE	Department of Forestry, Fisheries and Environment
DMRE	Department of Mineral Resources and Energy
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act 73 of 1989
ECO	Environmental Control Officer
EHS	Health and Safety
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment

Abbreviation	Definition
EIAR	Environmental Impact Assessment Report
EMPr	Environmental Management Programme
EPFIs	Equator Principles Financial Institutions
EPs	Equator Principles
ERA	Electricity Regulation Act (No. 4 of 2006)
ESAs	Ecological Support Areas
ESMS	Environmental and Social Management System
FSR	Final Scoping Report
GA	General Authorisation
GIIP	Good International Industry Practice
GNR	Government Notice Regulation
GSDM	Gert Sibande District Municipality
ha	hectares
HIA	Heritage Impact Assessment
HR	Human Resources
IBAs	Important Bird and Biodiversity Areas
IEP	Integrated Energy Plan
IFC	International Funding Corporation
IRP	Integrated Resource Plan
JET	Just Energy Transition
LLM	Lekwa Local Municipality
MBCP	Mpumalanga Biodiversity Conservation Plan
MC	Monitoring Committee
MEGDP	Mpumalanga Economic Growth and Development Path
MIDP	Mpumalanga Industrial Development Plan
MSA	Municipal Systems Act (Act 32 of 2000)
MW	Megawatt

Abbreviation	Definition
NDP	National Development Plan
NDP	National Development Plan
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMAQA	National Environmental Management: Air Quality Act (Act 39 of 2004)
NEMBA	Environmental Management: Biodiversity Act(Act No. 10 of 2004)
NEMPAA	National Environmental Management Protected Areas Act (No. 57 of 2003)
NHRA	National Heritage Resource Act (Act No. 25 of 1999)
NPAES	National Parks Area Expansion Strategy
NPAES	National Protected Area Expansion Strategy 2010
NWA	National Water Act (Act No. 36 of 1998)
O&M	Operations and Maintenance
OHS	Occupational Health and Safety
OHSA	Occupational Health and Safety Act (No. 85 of 1993)
PAOI	Project Area of Influence
PS	Performance Standards
PV	Photovoltaic
REDZ	Renewable Energy Development Zone
REIPPP	Renewable Energy Independent Power Producer Procurement Programme
S&EIA	Scoping and EIA
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency Limited
SAS	Scientific Aquatic Services (Pty) Ltd
SAWS	South African Weather Service
SCC	Species of Conservation Concern
SDF	Spatial Development Framework

Abbreviation	Definition
SDGs	Sustainable Development Goals
SEP	Stakeholder Engagement Plan
SER	Stakeholder Engagement Report
SG	Surveyor General
SKA	Square Kilometre Array
STS	Scientific Terrestrial Services (Pty) Ltd
TB	Tuberculosis
Tournée 2	Tournée 2 Solar (Pty) Ltd
UNDP	United Nations' Development Programmes
VECs	Valued Environmental and Social Components
WBG	World Bank Group
WHO	World Health Organisation
WML	Waste Management Licence
WSP	WSP Group Africa (Pty) Ltd
WUA	Water Use Authorisation Application
WUL	Water Use License
ZRC	Zimpande Research Collaborative

GENERAL SITE INFORMATION

Technical details of the proposed Tournée 2 Solar PV Facility		
Location of Site	Near Standerton in the Mpumalanga Province	
Description of all affected farm portions and 21 digit SG Codes	**Farm Name**	**21-Digit SG Code**
	Remaining Portion of Portion 3 of Farm Dwars-in-die-Weg 350 IS	T0IS00000000035000003
	Portion 6 of Farm Dwars-in-die-Weg 350 IS	T0IS00000000035000006
Total Disturbance Footprint	505.15 ha	
Design Specifications		
Solar Field	▪ PV Modules, which convert the solar radiation into DC. ▪ PV panels will have a maximum height of 6 m, and could be mounted on fixed tilt, single axis tracking or dual axis tracking mounting structures of monofacial or bifacial Solar PV Modules.	
Site Substation and BESS	▪ Total footprint will be up to 5.5ha in extent (3ha for the BESS and 2.5ha for the back-to-back substation). ▪ The substation will consist of a high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc. ▪ The associated BESS storage capacity will be up to 150MW/600MWh with up to four hours of storage. ▪ It is proposed that Lithium Battery Technologies, such as Lithium Iron Phosphate, or Lithium Nickel Manganese Cobalt oxides will be considered as the preferred battery technology. The main components of the BESS include the batteries, power conversion system and transformer which will all be stored in various rows of containers	
Operation and Maintenance Building Infrastructure	▪ O&M building infrastructure will be required to support the functioning of the Solar PV Facility and for services required by operations and maintenance staff. The O&M building infrastructure will include: • Operations building (including workshop and stores) of approximately 1 500m^2; and • Refuse area for temporary waste storage and conservancy tanks to service ablution facilities.	
Construction Camp Laydown	Building infrastructure of up to a maximum height of 8m will be located within the project area. The infrastructure includes: ▪ Temporary infrastructure includes: • Typical construction camp area 100m x 50m = 5,000m^2	

	• Typical laydown area 100m x 200m = 20,000m^2 • Temporary cement batching plant • Sewage: Septic tanks and portable toilets
Access Road	▪ Access to the proposed Tournée 2 Solar PV Facility from the R39 or R38 towards the site • Width of internal road – Between 4m and 5m • Length of internal roads – Approximately 8km
Associated Infrastructure	▪ The medium voltage collector system will comprise of cables up to and including 33kV that run underground, except where a technical assessment suggest that overhead lines are required, within the facility connecting the panels to the onsite substation; and ▪ Fencing of up to 4m high around the construction camp, O&M building and Site substation and BESS areas, including any other associated infrastructure (fencing and lighting, lightning protection, telecommunication infrastructure, storm water channels, water pipelines, offices, operational control centre, operation and maintenance area / warehouse / workshop, ablution facilities, a gate house, offices, security building, a visitor's centre; and substation building).

1 INTRODUCTION

Changes made from the Draft Scoping Report (DSR) have been underlined in this Final Scoping Report (FSR) for ease of reference to the updates made in the reporting.

WSP Group Africa (Pty) Ltd (WSP) has been appointed by Tournée 2 Solar (Pty) Ltd (Tournée 2), to undertake an Environmental Impact Assessment (EIA) to meet the requirements under the National Environmental Management Act (Act 107 of 1998) (NEMA), for the proposed 150 megawatt (MW) Tournée 2 Solar Photovoltaic (PV) Facility located near Standerton in the Mpumalanga Province (Figure 1-1).

The proposed development will be subject to a Scoping and EIA (S&EIA) Process in terms of NEMA (as amended) and Appendix 2 of the EIA Regulations, 2014 promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017. The competent authority for this S&EIA Process is the national Department of Forestry, Fisheries and Environment (DFFE).

1.1 PURPOSE OF THIS REPORT

The S&EIA process is an interdisciplinary procedure to ensure that environmental and social considerations are included in decisions regarding projects. Simply defined, the process aims to identify the possible environmental and social effects of a proposed activity and how those impacts can be mitigated.

The Draft Scoping Report (DSR) (this report) aims to provide stakeholders with information on the proposed development including location, layout and technological alternatives, the scope of the environmental assessment and key impacts to be addressed in the environmental assessment, and the consultation process undertaken through the EIA process.

1.2 BACKGROUND INFORMATION

The proposed project includes the development of the Tournée 1 & 2 Solar PV Parks near Thuthukani in the Mpumalanga Province (**Figure 1-1**). The Tournée Solar PV Cluster will include two 150MW Solar Energy Facilities (SEFs). **This report is specific to the Tournée 2 Solar PV Facility**.

The proposed project will be applied for under a Special Purpose Vehicle and the Project Applicant is therefore Tournée 2 Solar (Pty) Ltd. The proposed Solar PV Facility will connect to a nearby Eskom substation (still to be confirmed) through an up to 132kV single or double circuit powerline. The powerline will subject to a separate BA process towards environmental authorisation.

The Cluster is being developed in the context of the Renewable Energy Independent Power Producer Procurement Programme (REIPPP), in conjunction with private off-take or wheeling agreements, where possible.

It is understood that Red Rocket has a corporate Environmental and Social Management System (ESMS) which aligns with the Equator Principles, the International Funding Corporation (IFC) Performance Standards (PS) and applicable World Bank/IFC Environmental, Health and Safety (EHS) and Sector specific Guidelines and applicable Good International Industry Practice (GIIP). All Red Rocket's renewable energy projects, from inception, development, construction, operation, and

any decommissioning are required to fully comply with the requirements and expectations of the ESMS.

The Tournée 2 Solar PV Facility does not fall within a Renewable Energy Development Zone (REDZ).

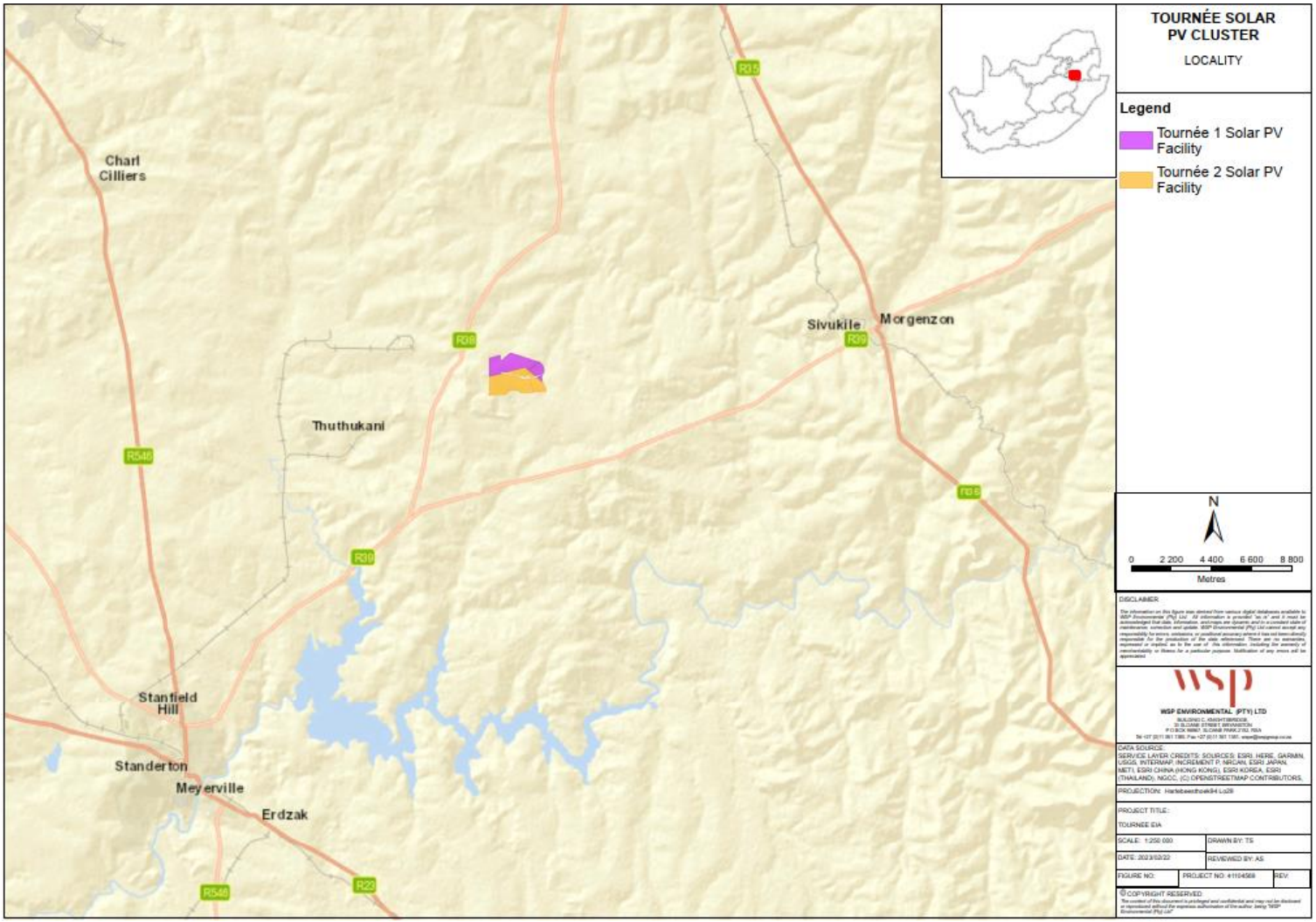

Figure 1-1 – Regional locality map of Tournée 2 Solar PV Facility

1.3 DETAILS OF KEY ROLE PLAYERS

1.3.1 PROJECT PROPONENT

Tournée 2 Solar (Pty) Ltd is the project proponent (Applicant) with regards to this application for the construction and operation of the Tournée 2 Solar PV Facility. **Table 1-1** provides the relevant details of the project proponent.

Table 1-1 – Details of Project Proponent

Proponent:	**Tournée 2 Solar (Pty) Ltd**
Contact Person:	Matteo Giulio Luigi Brambilla
Postal Address	Postnet Suite 150, Private Bag X3, Roggebaai, Cape Town
Telephone:	021 418 3940
Email:	m.logan@redrocket.energy

1.3.2 COMPETENT AUTHORITY (CA)

Section 24C(2)(a) of NEMA stipulates that the Minister of Forestry, Fisheries and the Environment ("the Minister") must be identified as the competent authority if the activity has implications for international environmental commitments or relations. GN 779 of 01 July 2016 identifies the Minister as the CA for the consideration and processing of environmental authorisations and amendments thereto for activities related to the Integrated Resource Plan (IRP) 2010 – 2030.

As the proposed Tournée 2 Solar PV Facility is related to the IRP, DFFE is the CA for the proposed project.

Table 1-2 provides the relevant details of the competent authority on the Project.

Table 1-2 – Competent Authority

Aspect	**Competent Authority**	**Contact Details**
Competent Authority: Environmental Authorisation	Department of Forestry, Fisheries, and the Environment (DFFE)	Case Officer: Makhosi Yeni Integrated Environmental Authorisations Email: myeni@dffe.gov.za

1.3.3 COMMENTING AUTHORITY

The commenting authorities for the project include:

- Department of Water and Sanitation (DWS);
- Department of Mineral Resources and Energy (DMRE);
- Department of Agriculture, Land Reform and Rural Development (DALRRD);
- Department of Public Works;
- Department of Defence;
- National Department of Transport;
- South African National Roads Agency Limited (SANRAL);

- South African Heritage Resources Agency (SAHRA);
- South African Civil Aviation Authority (CAA);
- Square Kilometre Array (SKA);
- South African Weather Service (SAWS);
- Lekwa Local Municipality (LLM);
- Gert Sibande District Municipality (GSDM);
- BirdLife South Africa;
- Endangered Wildlife Trust; and
- South African National Parks.

Refer to the Stakeholder Engagement Report (SER) in **Appendix D** for a full list of commenting authorities.

1.3.4 ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

WSP was appointed in the role of Independent EAP to undertake the S&EIA process for the proposed project. The CV of the EAP is available in **Appendix A**. The EAP declaration of interest and undertaking is included in **Appendix B**. **Table 1-3** details the relevant contact details of the EAP.

Table 1-3 – Details of the EAP

EAP:	**WSP Group Africa (Pty) Ltd**
Contact Person:	Ashlea Strong
Physical Address:	Building C, Knightsbridge, 33 Sloane Street, Bryanston, Johannesburg
Postal Address:	P.O. Box 98867, Sloane Park 2151, Johannesburg
Telephone:	011 361 1392
Fax:	011 361 1301
Email:	Ashlea.Strong@wsp.com
EAP Qualifications:	▪ Masters in Environmental Management, University of the Free State ▪ B Tech, Nature Conservation, Technikon SA ▪ National Diploma in Nature Conservation, Technikon SA
EAPASA Registration Number:	EAPASA (2019/1005)

Statement of Independence

Neither WSP nor any of the authors of this Report have any material present or contingent interest in the outcome of this Report, nor do they have any business, financial, personal or other interest that could be reasonably regarded as being capable of affecting their independence. WSP has no beneficial interest in the outcome of the Assessment

1.3.5 SPECIALISTS

Specialist input was required in support of this application for Environmental Authorisation (EA). The details of the specialists are provided in **Table 1-4** below. The specialist studies are attached in **Appendix G** and their declarations in **Appendix C**.

Table 1-4 – Details of Specialists

Assessment	Name of Specialists	Company	Sections in Report	Specialist Report attached as
Soil, Landuse and Land Capability Assessment	▪ Stephen van Staden ▪ Tshiamo Setsipane ▪ Braveman Mzila	Zimpande Research Collaborative	▪ Section 2.7 ▪ Section 6.1.1 ▪ Section 7.1.1 ▪ Section 8 ▪ Section 10	**Appendix G.1**
Air Quality Compliance Statement	▪ Kirsten Collett	WSP Group Africa (Pty) Ltd	▪ Section 2.7 ▪ Section 8.1	**Appendix G.2**
Noise Compliance Statement	▪ Kirsten Collett	WSP Group Africa (Pty) Ltd	▪ Section 2.7 ▪ Section 8.1	**Appendix G.3**
Terrestrial Biodiversity Scoping Report	▪ Charne Gouws ▪ Chris Hooton ▪ Christien Steyn ▪ Hennie de Beer ▪ Nelanie Cloete	Scientific Terrestrial Services (Pty) Ltd	▪ Section 2.7 ▪ Section 6.2.1 ▪ Section 6.2.3 ▪ Section 6.2.4 ▪ Section 7.1.2 ▪ Section 7.1.4 ▪ Section 7.1.5 ▪ Section 8 ▪ Section 10	**Appendix G.4**
Freshwater Scoping Report	▪ Stephen van Staden ▪ Paul da Cruz ▪ Kristen Nienaber ▪ Faith Mamphoka	Scientific Aquatic Services (Pty) Ltd	▪ Section 2.7 ▪ Section 6.2.2 ▪ Section 7.1.3 ▪ Section 8 ▪ Section 10	**Appendix G.5**
Avifauna Scoping Survey	▪ Low de Vries ▪ Justin Nicolau ▪ Colyn Grobler	Volant Environmental (Pty) Ltd	▪ Section 2.7 ▪ Section 6.2.5 ▪ Section 8 ▪ Section 10	**Appendix G.6**
Bats Scoping Survey	▪ Low de Vries ▪ Colyn Grobler	Volant Environmental (Pty) Ltd	▪ Section 2.7 ▪ Section 6.2.6	**Appendix G.7**

Assessment	Name of Specialists	Company	Sections in Report	Specialist Report attached as
			▪ Section 8	
Heritage Impact Assessment	▪ Jenna Lavin	CTS Heritage	▪ Section 2.7 ▪ Section 6.3.1 ▪ Section 7.1.7 ▪ Section 8	**Appendix G.8**
Archaeological Specialist Study	▪ Jenna Lavin ▪ Heidi Fivaz ▪ Sky-Lee Fairhurst (of Ubique Heritage Consultants)	CTS Heritage	▪ Section 2.7 ▪ Section 6.3.1 ▪ Section 7.1.7 ▪ Section 8	Appendix 1 of Heritage Impact Assessment (**Appendix G.8)**
Palaeontological Impact Assessment	Prof Marion Bamford	Independent (Sub-contracted by CTS Heritage)	▪ Section 2.7 ▪ Section 6.1.2 ▪ Section 6.3.2 ▪ Section 7.1.8 ▪ Section 8	Appendix 2 of Heritage Impact Assessment (**Appendix G.8)**
Transport Impact Assessment	Iris Wink	iWink Consulting (Pty) Ltd	▪ Section 2.7 ▪ Section 6.3.3 ▪ Section 8	**Appendix G.9**
Visual Impact Assessment	▪ Stephen van Staden ▪ Sanja Erwee	Scientific Aquatic Services (Pty) Ltd	▪ Section 2.7 ▪ Section 6.3.4 ▪ Section 7.1.9 ▪ Section 8 ▪ Section 10	**Appendix G.10**
Social Scoping Report	Tony Barbour	Tony Barbour Environmental Consulting	▪ Section 2.7 ▪ Section 6.3.5 ▪ Section 8 ▪ Section 10	**Appendix G.11**
Geotechnical Desktop Study	▪ Nthabiseng Mashego ▪ Heather Davis	WSP Group Africa (Pty) Ltd	▪ Section 2.7 ▪ Section 8 ▪ Section 10	**Appendix G.12**

1.4 SCOPING TERMS OF REFERENCE

The 2014 EIA Regulations (Government Notice Regulation (GNR) 982), as amended, identifies the proposed solar PV facility development as an activity being subject to an S&EIR process due to the applicability of the EIA Listing Notice 2 (GNR 984, as amended).

As defined in Appendix 2 of GNR 982, as amended, the objective of the scoping process is to, through a consultative process:

- Identify the relevant policies and legislation relevant to the activity;
- Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- Identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- Identify the key issues to be addressed in the assessment phase;
- Agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration, and probability of the impacts to inform the location of the development footprint within the preferred site; and
- Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

Public participation is a requirement of scoping; it consists of a series of inclusive interactions aimed at providing stakeholders with opportunities to express their views, so that these can be considered and incorporated into the S&EIA decision-making process. Effective public participation requires the prior disclosure of relevant and adequate project information to enable stakeholders to understand the risks, impacts, and opportunities of the Proposed Project. The objectives of the public participation process can be summarised as follows:

- Identify relevant individuals, organisations and communities who may be interested in or affected by the Proposed Project;
- Clearly outline the scope of the proposed Project, including the scale and nature of the existing and proposed activities;
- Identify viable proposed Project alternatives that will assist the relevant authorities in making an informed decision;
- Identify shortcomings and gaps in existing information;
- Identify key concerns, raised by Stakeholders that should be addressed in the subsequent specialist studies;
- Highlight the potential for environmental impacts, whether positive or negative; and
- To inform and provide the public with information and an understanding of the Proposed Project, issues and solutions.

1.5 DRAFT SCOPING REPORT STRUCTURE

As per the EIA Regulations 2014, as amended, Appendix 2 of GNR 982 identifies the legislated requirements that must be contained within a SR for the CA to consider and come to a decision on the application. **Table 1-5** below details where the required information is located within this report.

Table 1-5 - Legislated Report Requirements as detailed in GNR 982

Appendix 2 of GNR 982	Description	Relevant Report Section
(a)	Details of	
	the EAP who compiled the report; and	Section 1.3.4 and **Appendix A**
	the expertise of the EAP, including a Curriculum Vitae	**Appendix A**
(b)	The location of the activity, including-	
	The 21-digit Surveyor code for each cadastral land parcel;	Section 3.1
	Where available, the physical address and farm name	Section 3.1
	Where the required information in terms of (i) and (ii) is not available, the coordinates of the boundary of the property.	N/A
(c)	A plan which locates the proposed activities applied for at an appropriate scale, or, if it is-	
	A linear activity, a description of the corridor in which the proposed activity or activities is to be undertaken; or	N/A
	On land where the property has not been defined, the coordinates within which the activity is to be undertaken.	N/A
(d)	A description of the proposed activity, including	
	All listed and specified activities triggered;	Section 5.1
	A description of the activities to be undertaken, including associated structures and infrastructure;	Section 3
(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;	Section 5
(f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section 3.6
(h)	A full description of the process followed to reach the proposed preferred activity, site and location within the site, including-	
	Details of all the alternatives considered;	Section 4
	Details of the public participation undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section 2.6 **Appendix D**

Appendix 2 of GNR 982	Description	Relevant Report Section
	a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	**Appendix D**
	the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 6 Section 10
	the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Section 8
	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;	Section 2.5
	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;	Section 8
	the possible mitigation measures that could be applied and level of residual risk;	Section 8
	the outcome of the site selection matrix;	Section 4
	if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and	N/A
	a concluding statement indicating the preferred alternatives, including preferred location of the activity;	Section 4
(i)	A plan of study for undertaking the environmental impact assessment process to be undertaken, including-	
	a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;	Section 4
	a description of the aspects to be assessed as part of the environmental impact assessment process;	Section 10.4
	aspects to be assessed by specialists;	Section 10.5
	a description of the proposed method of assessing the environmental aspects, including a description of the proposed	Section 10.6

Appendix 2 of GNR 982	Description	Relevant Report Section
	method of assessing the environmental aspects including aspects to be assessed by specialists;	
	a description of the proposed method of assessing duration and significance;	Section 10.6
	an indication of the stages at which the competent authority will be consulted;	Section 10.8
	particulars of the public participation process that be conducted during the environmental impact assessment process; and	Section 2.6
	a description of the tasks that will be undertaken as part of the environmental impact assessment process;	Section 10
	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.	Section 8.1 Section 10.7
(j)	An undertaking under oath or affirmation by the EAP in relation to-	
	the correctness of the information provided in the report;	Appendix B
	the inclusion of comments and inputs from stakeholders and interested and affected parties; 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;	
(k)	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	**Appendix B**
(l)	Where applicable, any specific information required by the competent authority; and	N/A
(m)	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	N/A

2 S&EIA PROCESS

2.1 OBJECTIVES OF THE S&EIA PROCESS AS PER THE PROCEDURAL FRAMEWORK

The S&EIR process consists of various phases with associated timelines as defined in GNR 982. The process can generally be divided into four main phases, namely, (i) a Pre-application Phase, (ii) an Application and Scoping Phase (current phase), (iii) an Impact Assessment Phase and (iv) Authorisation and Appeal Phase.

The main objectives of the phases can be described as follows:

- Pre-Application Phase:
  - Undertake consultation meetings with the relevant authorities to confirm the required process, the general approach to be undertaken and to agree on the public participation plan;
  - Identify stakeholders, including neighbouring landowners/residents and relevant authorities;
- Application and Scoping Phase:
  - Compile and submit application forms to the CA and pay the relevant application fees;
  - Compile a DSR describing the affected environment and present an analysis of the potential environmental issues and benefits arising from the proposed project that may require further investigation in the Impact Assessment Phase;
  - Develop draft terms of reference for the specialist studies to be undertaken in the Impact Assessment Phase; and
  - Inform stakeholders of the proposed project, feasible alternatives and the S&EIR process and afford them the opportunity to register and participate in the process and identify any issues and concerns associated with the proposed project.
  - Incorporate comments received from stakeholders during the DSR comment period;
  - Should significant amendments be required, release the updated DSR for a 30-day comment period to provide stakeholders with the opportunity to review the amendments as well as provide additional input if required; and
  - Submit the Final Scoping Report (FSR), following the consultation period, to the relevant authorities, in this case the DFFE, for acceptance/rejection.
- Impact Assessment Phase:
  - Continue to inform and obtain contributions from stakeholders, including relevant authorities, stakeholders, and the public and address their relevant issues and concerns;
  - Assess in detail the potential environmental and socio-economic impacts of the project as defined in the DSR;
  - Identify environmental and social mitigation measures to avoid and/or address the identified impacts;
  - Develop and/or amend environmental and social management plans based on the mitigation measures developed in the Environmental Impact Assessment Report (EIAR);
  - Submit the EIAR and the associated the Environmental Management Programme (EMPr) to the CA to undertake the decision making process;
  - Authorisation and Appeal Phase;

- The DFEE to provide written notification of the decision to either grant or refuse EA for the proposed project; and
- Notify all registered stakeholders of the decision and right to appeal.

2.2 DFFE WEB-BASED ENVIRONMENTAL SCREENING TOOL

DFFE has developed the National Web-based Environmental Screening Tool in order to flag areas of potential environmental sensitivity related to a site as well as a development footprint and produces the screening report required in terms of regulation 16 (1)(v) of the EIA Regulations (2014, as amended). *The Notice of the requirement to submit a report generated by the national web-based environmental screening tool in terms of section 24(5)(h) of the NEMA, 1998 (Act No 107 of 1998) and regulation 16(1)(b)(v) of the EIA regulations, 2014, as amended (GN 960 of July 2019)* states that the submission of a report generated from the national web-based environmental screening tool, as contemplated in Regulation 16(1)(b)(v) of the EIA Regulations, 2014, published under Government Notice No. R982 in Government Gazette No. 38282 of 4 December 2014, as amended, is compulsory when submitting an application for environmental authorisation in terms of regulation 19 and regulation 21 of the EIA Regulations, 2014 (as amended) as of 04 October 2019.

The Screening Report generated by the National Web-based Environmental Screening Tool contains a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development footprint as well as the most environmentally sensitive features on the footprint based on the footprint sensitivity screening results for the application classification that was selected.

A screening report for the proposed Tournée 2 Solar PV Facility was generated on 06 March 2023 and is attached as **Appendix F**. The Screening Report for the project identified various sensitivities for the site. The report also generated a list of specialist assessments that should form part of the S&EIA based on the development type and the environmental sensitivity of the site. Assessment Protocols in the report provide minimum information to be included in a specialist report to facilitate decision-making.

Table 2-1 below provides a summary of the sensitivities identified for the development footprint.

Table 2-1 – Sensitivities identified in the DFFE Screening Report

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Agriculture Theme		X		
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Avian Theme				X
Civil Aviation (Solar PV) Theme			X	

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Defence Theme				X
Landscape (Solar) Theme	X			
Palaeontology Theme	X			
Plant Species Theme			X	
Radio Frequency Interference (RFI) Theme			X	
Terrestrial Biodiversity Theme	X			

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report as determined by the screening tool:

- Agricultural Impact Assessment;
- Landscape/Visual Impact Assessment;
- Archaeological and Cultural Heritage Impact Assessment ;
- Palaeontology Impact Assessment;
- Terrestrial Biodiversity Impact Assessment;
- Aquatic Biodiversity Impact Assessment;
- Civil Aviation Assessment;
- Defence Assessment;
- RFI Assessment;
- Geotechnical Assessment;
- Socio-Economic Assessment;
- Plant Species Assessment; and
- Animal Species Assessment.

2.2.1 MOTIVATION FOR SPECIALIST STUDIES

The report recognises that “it is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the footprint situation.”

The following specialist assessments have been commissioned for the project based on the environmental sensitivities identified by the Screening Report:

- Agricultural Impact Assessment;
- Landscape/Visual Impact Assessment;
- Archaeological and Cultural Heritage Impact Assessment ;
- Palaeontology Impact Assessment;
- Terrestrial Biodiversity Impact Assessment;
- Aquatic Biodiversity Impact Assessment;
- Socio-Economic Assessment;
- Plant Species Assessment; and

- Animal Species Assessment.

The Tournée 2 Solar PV Facility is required to fully comply with the requirements and expectations of the ESMS, from inception, development, construction, operation, and any decommissioning. As a result, additional specialist studies are required. The following specialist studies have been commissioned in addition to those above:

- Air Quality Compliance Statement;
- Noise Compliance Statement;
- Avifauna Assessment;
- Bats Assessment;
- Traffic and Transport Assessment;
- Geotechnical Desktop Study; and
- High-level Qualitative Risk Assessment.

The above specialist studies commissioned were presented to DFFE during the pre-application meeting that was held with on 27 February 2023. The specialist studies commissioned were accepted by the DFFE as per the meeting minutes included in the SER in **Appendix D**.

Four of the identified specialist studies will not be undertaken as part of the S&EIA process for the proposed Tournée 2 Solar PV Facility. Motivation for the exclusion of these specialist studies is provided below:

- Geotechnical Assessment:
  - A detailed Geotechnical Assessment will not be undertaken as this will be undertaken during the design phase. A desktop Geotechnical Study has been undertaken and is included in **Appendix G.12**.
- RFI Assessment:
  - An RFI Study will not be undertaken. The SAWS and relevant telecommunications stakeholders will be engaged with as part of the Public Participation Process.
- Civil Aviation:
  - According to the DFFE Screening Tool the Civil Aviation theme has been identified as a Medium Sensitivity A compliance statement will be compiled. Nevertheless, the relevant Authorities have been included on the project stakeholder database. As of the 1st of May 2021, ATNS has been appointed as the new Obstacle application Service Provider for Windfarms and later Solar Plants. Their responsibility would pertain to the assessments, maintenance, and all other related matters in respect to Windfarms and in due time Power Plant assessments. Where required, an Application for the Approval of Obstacles will also be submitted to ATNS and the required permits will be obtained prior to the development of the project. The SACAA has been included on the project stakeholder database. They will be informed of the proposed Project, and comment will be sought. An Application for the Approval of Obstacles will also be submitted to SACAA by the Applicant.
- Defence:
  - According to the DFFE Screening Tool the RFI theme has been identified as a Low Sensitivity A compliance statement is therefore not required. The Department of Defence has been

included on the project stakeholder database. They will be informed of the proposed Project, and comment will be sought.

Specialist assessments were conducted in accordance with the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes, which were promulgated in Government Notice No. 320 of 20 March 2020 and in Government Notice No. 1150 of 30 October 2020 (i.e. “the Protocols”). The assessment protocols followed as well as the site sensitivity verification undertaken by the specialists are indicated in **Section 7**.

2.3 APPLICATION FOR ENVIRONMENTAL AUTHORISATION

The application phase consisted of a pre-application consultation with DFFE and subsequently completing the appropriate application form as well as the submission and registration of the application for EA with the DFFE. The pre-application meeting was held with DFFE on 27 February 2023 (meeting minutes included in the SER in **Appendix D**). The application form will be submitted to the DFFE with the DSR. An application reference number will be included in the FSR following acknowledgment of receipt from the DFFE.

2.4 BASELINE ENVIRONMENTAL ASSESSMENT

The description of the environmental attributes of the Project area was compiled through a combination of desktop reviews and site investigations. Desktop reviews made use of available information including existing reports, aerial imagery, and mapping. The specialist teams undertook site investigations, between January and February 2023, to identify sensitive features on site that informed the sensitivity mapping (see **Section 7.1.10**) for the Tournée 2 Solar PV Facility.

2.5 IMPACT SCREENING METHODOLOGY

The potential impacts associated with the proposed development were determined at both a desktop level based on existing information, as well as field assessments. The following methodology was used:

- Identify potential sensitive environments and receptors that may be impacted on by the proposed development;
- Identify potential social receptors that may be impacted on by the proposed development;
- Identify the type of impacts that are most likely to occur (including cumulative impacts);
- Determine the nature and extent of the potential impacts during the various developmental phases, including, construction, operation and decommissioning;
- Identify potential No-Go areas; and
- Summarise the potential impacts that will be considered further in the Scoping & EIA phase through detailed specialist studies.

Appendix 2 of GNR 982, as amended, requires the identification of the significance of potential impacts during scoping. To this end, an impact screening tool has been used in the scoping phase. The screening tool is based on two criteria, namely probability; and consequence (**Table 2-2**), where the latter is based on general consideration to the intensity, extent, and duration.

The scales and descriptors used for scoring probability and consequence are detailed in **Table 2-3** and **Table 2-4** respectively.

Table 2-2 – Significance Screening Tool

	Consequence Scale				
Probability Scale		1	2	3	4
	1	Very Low	Very Low	Low	Medium
	2	Very Low	Low	Medium	Medium
	3	Low	Medium	Medium	High
	4	Medium	Medium	High	High

Table 2-3 – Probability scores and descriptors

Score	Descriptor
4	Definite: The impact will occur regardless of any prevention measures
3	Highly Probable: It is most likely that the impact will occur
2	Probable: There is a good possibility that the impact will occur
1	Improbable: The possibility of the impact occurring is very low

Table 2-4 - Consequence Score Descriptions

Score	Negative	Positive
4	Very severe: An irreversible and permanent change to the affected system(s) or party(ies) which cannot be mitigated.	Very beneficial: A permanent and very substantial benefit to the affected system(s) or party(ies), with no real alternative to achieving this benefit.
3	Severe: A long term impacts on the affected system(s) or party(ies) that could be mitigated. However, this mitigation would be difficult, expensive or time consuming or some combination of these.	Beneficial: A long term impact and substantial benefit to the affected system(s) or party(ies). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these.
2	Moderately severe: A medium to long term impacts on the affected system(s) or party (ies) that could be mitigated.	Moderately beneficial: A medium to long term impact of real benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are equally difficult, expensive and time consuming (or some combination of these), as achieving them in this way.
1	Negligible: A short to medium term impacts on the affected system(s) or party(ies). Mitigation is very easy, cheap, less time consuming or not necessary.	Negligible: A short to medium term impact and negligible benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these.

The nature of the impact must be characterised as to whether the impact is deemed to be positive (+ve) (i.e. beneficial) or negative (-ve) (i.e. harmful) to the receiving environment/receptor. For ease of reference, a colour reference system (**Table 2-5**) has been applied according to the nature and significance of the identified impacts.

Table 2-5 - Impact Significance Colour Reference System to Indicate the Nature of the Impact

Negative Impacts (-ve)	Positive Impacts (+ve)
Negligible	Negligible
Very Low	Very Low
Low	Low
Medium	Medium
High	High

2.6 STAKEHOLDER ENGAGEMENT PROCESS

Stakeholder engagement (public participation) is a requirement of the S&EIA process. It consists of a series of inclusive and culturally appropriate interactions aimed at providing stakeholders with opportunities to express their views, so that these can be considered and incorporated into the S&EIA decision-making process. Effective engagement requires the prior disclosure of relevant and adequate project information to enable stakeholders to understand the risks, impacts, and opportunities of the proposed project. The objectives of the stakeholder engagement process can be summarised as follows:

- Identify relevant individuals, organisations and communities who may be interested in or affected by the proposed project;
- Clearly outline the scope of the proposed project, including the scale and nature of the existing and proposed activities;
- Identify viable proposed project alternatives that will assist the relevant authorities in making an informed decision;
- Identify shortcomings and gaps in existing information;
- Identify key concerns, raised by Stakeholders that should be addressed in the specialist studies;
- Highlight the potential for environmental impacts, whether positive or negative; and
- To inform and provide the public with information and an understanding of the proposed project, issues, and solutions.

An SER has been included in **Appendix D** detailing the project's compliance with Chapter 6 of the NEMA EIA Regulations 2014, as amended.

2.6.1 STAKEHOLDER IDENTIFICATION

Stakeholders were identified and will continue to be identified through several mechanisms. These include:

- Utilising existing databases from other projects in the area;
- Advertising in the press;
- Placement of community notices;

- Completed comment sheets; and
- Attendance registers at meetings.

All Stakeholders identified to date have been registered on the project stakeholder database. The EAP endeavoured to ensure that individuals/organisations from referrals and networking were notified of the Proposed Project. Stakeholders were identified at the horizontal (geographical) and vertical extent (organisations level).

A list of stakeholders captured in the project database is included in the SER in **Appendix D**.

2.7 ASSUMPTIONS AND LIMITATIONS

General assumptions and limitations:

- The EAP hereby confirms that they have undertaken to obtain project information from the client that is deemed to be accurate and representative of the project;
- Site visits have been undertaken to better understand the project and ensure that the information provided by the client is correct, based on site conditions observed;
- The EAP hereby confirms their independence and understands the responsibility they hold in ensuring all comments received are accurately replicated and responded to within the EIA documentation;
- The comments received in response to the public participation process, will be representative of comments from the broader community; and
- Based on the Pre-Application meeting and subsequent minutes, the CA would not require additional specialist input, in order to make a decision regarding the application.

Soil, Landuse and Land Capability:

- It is important to note that although all data sources used provide useful and often verifiable, high-quality data, the various databases used do not always provide an entirely accurate indication of the actual site characteristics associated with the investigation area at the scale required to inform an environmental process. However, this information is useful as background information to the study and, if desktop results are considered with the outcome of the soil and land capability assessment, sufficient decision making can take place;
- The soil survey conducted as part of the land capability assessment was confined within the study area outline. However, consideration of the immediately adjacent areas was given; and
- Since soils occur in a continuum with infinite variances, it is often problematic to classify any given soils as one form, or another. for this reason, the classifications presented in this report are based on the "best fit" to the soil classification system of South Africa.

Air Quality:

- The identification of sensitive receptors is based on a desktop assessment using satellite imagery and it is assumed that all key receptors have been considered.

Noise:

- The identification of sensitive receptors is based on a desktop assessment using satellite imagery and it is assumed that all key receptors have been considered.

Terrestrial Biodiversity:

- The biodiversity desktop assessment was confined to the Tournée 2 Solar PV Park and did not include the neighbouring and adjacent properties, although the sensitivity of surrounding areas is included on the respective maps.
- It is acknowledged that the data presented within this report may change in due course as more background studies are undertaken and further information is obtained for the Tournée 2 Solar PV Park. However, the data presented within this report is considered sufficient, with suitable detail, to fulfil the needs of the scoping phase and initial decision-making processes.
- The scoping phase study was undertaken primarily as a desktop assessment and as such, the information gathered must be considered with caution, as inaccuracies and data-capturing errors are often present within the online databases. Since this information forms part of the scoping phase, this desktop assessment with supporting preliminary field assessment results should provide adequate information for informed decision-making and to inform the Plan of Study for the EIA phase.

Freshwater:

- The identification and delineation of the freshwater ecosystems are confined to the proposed Tournée 2 Solar PV Park and its associated 500 m investigation area and was undertaken using desktop-based methods, and refined during the field assessment.
- This scoping phase study was largely undertaken as a desktop assessment with some reliance on on-site observations prior to data processing, and as such, the information gathered must be considered with caution, as inaccuracies and data-capturing errors are often present within national and provincial databases. Since this information forms part of the scoping phase, this desktop assessment is considered to provide adequate information for informed decision-making and to inform the plan of study for the EIA phase.
- The field assessment was undertaken during late summer (6 – 8 February 2023). The field assessment aimed to determine the ecological status of the freshwater ecosystems associated with the proposed Tournée 2 Solar PV Park and to “ground-truth” the results of the desktop assessment which will be discussed in detail in the EIA report.

Avifauna:

- Vantage point surveys and transects are only conducted during daylight. Therefore, any bird movement for nocturnal species was recorded under ad hoc conditions. Some waterbirds and migrants are known to make regular flights and migration movements at night.
- Although very useful, the SABAP1 bird data set is more than two decades old. This dataset does however provide an adequate baseline to use when assessing species presence, distribution, and abundance. The use of SABAP2 along with SABAP1 will provide substantial data to be used during initial desktop assessments. These data were, however, mostly obtained by citizen scientists, and accuracy depends on their identification skills.

Bats:

- Bats are known to migrate, and their population sizes varies seasonally. As such, this Scoping Survey only gives a brief snapshot into bat populations in the area and no conclusions can be drawn from the presence or absence of species. Even though studies have reported on bats migration, the exact routes followed are not known (Pretorius et al., 2020).

- The same is true for breeding behaviour and the formation of maternity colonies for many species. Distribution records of bats in southern Africa are still poorly reported and limited for many species.
- In addition, migratory patterns of bats are largely unknown in South Africa. Studies have reported that bats do migrate, but the exact routes followed are not known (Pretorius et al., 2020). The same is true for breeding behaviour and the formation of maternity colonies for many species.
- SEF pre-construction monitoring reports on bats are reliant on reporting echolocation calls and identifying species from these calls, but without echolocation call libraries accurate identification is not always possible. Published libraries created from release and handheld calls of captured bats are available for southern Africa but are geographically limited. Since the echolocation calls of a particular species from different regions in South Africa are known to vary to some degree (Monadjem et al., 2020), call libraries created in different regions are not always comparable.
- Bat detectors are not always effective in recording echolocation calls for all bat species, and some species may be missed e.g., some fruit bat species that do not echolocate. Other species, such as the Egyptian slit-faced bat (*Nycteris thebaica*), emits low intensity calls that may not be recorded.
- Bat detectors are also limited in the range over which a call can be recorded, and this can be further influenced by environmental conditions such as humidity. In addition, the microphones that are coupled to the detectors are not omnidirectional and recording quality and number of recordings is influenced by the orientation of the call relative to the microphone.

Heritage:

- The significance of the sites and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.
- It should be noted that archaeological and palaeontological deposits often occur below ground level.
- Should artefacts or skeletal material be revealed at the site during construction, such activities should be halted, and it would be required that the heritage consultants are notified for an investigation and evaluation of the find(s) to take place.
- The local farmers confirmed a rainfall of 70 mm between the 31st of January and the morning of the 1st of February. The rain affected the surface of the development footprint properties and access roads. In addition, the soil was saturated, with waterlogged areas, specifically near the water sources and cultivated areas. The water and mud affected the surface's visibility and made certain areas inaccessible by vehicle and foot.
- Several areas were densely vegetated, with various grasses and vegetation affecting the visibility of the surface. Vegetation growth, wet weather, waterlogged areas, and erosion limited the transects that could be undertaken during the survey. Nevertheless, the survey tracks followed the landscape, farm roads, fences and boundaries from which we conducted pedestrian surveys at various points. In addition, the ground surface and areas with noticeable vegetation changes were inspected to the best of the specialists' abilities.

Archaeological:

- The local farmers confirmed a rainfall of 70 mm between the 31st of January and the morning of the 1st of February. The rain affected the surface of the development footprint properties and access roads. In addition, the soil was saturated, with waterlogged areas, specifically near the water sources and cultivated areas. The water and mud affected the surface's visibility and made certain areas inaccessible by vehicle and foot.
- Several areas were densely vegetated, with various grasses and vegetation affecting the visibility of the surface. Vegetation growth, wet weather, waterlogged areas, and erosion limited the transects that could be undertaken during the survey. Nevertheless, the survey tracks followed the landscape, farm roads, fences and boundaries from which we conducted pedestrian surveys at various points. In addition, the ground surface and areas with noticeable vegetation changes were inspected to the best of our abilities.

Palaeontological:

- Based on the geology of the area and the palaeontological record as we know it, it can be assumed that the formation and layout of the dolomites, sandstones, shales and sands are typical for the country and only some do contain fossil plant, insect, invertebrate and vertebrate material.
- The site visit and walk through on 06 February 2023 (summer) by palaeontologists confirmed that there are no fossils on the surface. There were no outcrops of shales that could potentially preserve fossils. There were no fossils on the surface. It is not known what lies below the surface but the soils appear to be a metre or more deep. The overlying soils and sands of the Quaternary period would not preserve fossils.

Transport:

- This study is based on the project information provided by the client as available at commencement of the Scoping Phase.
- According to the Eskom Specifications for Power Transformers (Eskom Power Series, Volume 5: Theory, Design, Maintenance and Life Management of Power Transformers), the following dimensional limitations need to be kept when transporting the transformer – total maximum height 5 000 mm, total maximum width 4 300 mm and total maximum length 10 500 mm. It is envisaged that for this project the inverter, transformer, and switchgear will be transported to site in containers on a low bed truck and trailer. The transport of a mobile crane and the transformer are the only abnormal loads envisaged. The crane will be utilised for offloading equipment, such as the transformer.
- Maximum vertical height clearances along the haulage route are 5.2 m for abnormal loads.
- If any elements are manufactured within South Africa, these will be transported from their respective manufacturing centres, which would be either in the greater Cape Town area, Johannesburg, or possibly in Pinetown/Durban.
- All haulage trips will occur on either surfaced national and provincial roads or existing gravel roads.
- Material for the construction of internal access roads will be sourced locally as far as possible.
- The final access points are to be determined during the detailed design stage. Only recommended access points at conceptual level can be given at this stage.
- An 18-months construction period is assumed with some of the construction period dedicated to site prep and civil works.

Visual:

- No specific national legal requirements for VIAs currently exist in South Africa. However, the assessment of visual impacts is required by implication when the provisions of relevant acts governing environmental management are considered and when certain characteristics of either the receiving environment or the proposed project indicate that visibility and aesthetics are likely to be significant issues and that visual input is required (Oberholzer, 2005);
- Distance and terrain play a critical role when assessing the visual impacts of an area. Due to the undulating terrain of the area and relatively low height of the proposed PV structures and associated infrastructure, it was deemed necessary to identify all potential sensitive receptors within a 5 km radius, on a desktop-level, which would then be verified during the field assessment. The 5 km radius can be considered the "visual assessment zone". It should be noted that the visibility of an object decreases exponentially the further away the observer is from the source of impact;
- Due to a lack of guidelines for specialist visual impact assessments as part of the EIA process within the Mpumalanga Province, the "Guidelines for Involving Visual and Aesthetic Specialists in the EIA Process" (Oberholzer, 2005), prepared for the Western Cape Department of Environmental Affairs & Development Planning, was used; and
- Abstract or qualitative aspects of the environment and the intangible value of elements of visual and aesthetic significance are difficult to measure or quantify and as such depend to some degree on subjective judgements. It, therefore, is necessary to differentiate between aspects that involve a degree of subjective opinion and those that are more objective and quantifiable, as outlined in the diagram below (The Landscape Institute and Institute of Environmental Management and Assessment (LI IEMA, 2002).

Social:

- Identification of social issues:
  - A site visit will be undertaken during the Assessment Phase of the SIA. The identification of social issues is based on the authors experience with undertaking in the region of 130 SIAs for solar and wind energy facilities and the associated infrastructure (substations, transmission lines, roads etc.). Based on this the author is confident that the majority of social issues have been identified.
- Technical suitability:
  - It is assumed that the development site represents a technically suitable site for the establishment of the proposed SEF and associated infrastructure.
- Strategic importance of the project:
  - The strategic importance of promoting renewable and other forms of energy is supported by the national and provincial energy policies.
- Fit with planning and policy requirements:
  - Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard, a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy

documents. As such, if the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported.

- Demographic data:
  - Some of the provincial documents do not contain data from the 2011 Census and or 2016 Household Community Survey. However, where required the relevant 2016 data has been provided.

3 PROJECT DESCRIPTION

This section provides a description of the location of the project area and the site location alternatives considered for the project. The descriptions encompass the activities to be undertaken during the construction and operational phases as well as the consideration for site accessibility, water demand, supply, storage, and site waste management. This section also considers the need and desirability of the project in accordance with Appendix 1 of GNR 326.

3.1 LOCATION OF THE PROPOSED PROJECT

The proposed Tournée 2 Solar PV Facility is located near Thuthukani, within the LLM and GSDM, in the Mpumalanga Province (**Figure 1-1**).

The details of the property associated with the proposed Tournée 2 Solar PV Facility, including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in **Table 3-1**. The co-ordinates of the cadastral land parcels are included in **Table 3-2**.

Table 3-1 – Tournée 2 Solar PV Facility Affected Farm Portions

Farm Name	21 Digit Surveyor General Code of Each Cadastral Land Parcel
Remaining Portion of Portion 3 of Farm Dwars-in-die-Weg 350 IS	T0IS00000000035000003
Portion 6 of Farm Dwars-in-die-Weg 350 IS	T0IS00000000035000006

Table 3-2 – Coordinate Points of the Cadastral Land Parcel

Point	Longitude	Latitude
		
E	29° 26' 14.245" E	29° 26' 14.245" E
F	29° 25' 25.141" E	29° 25' 25.141" E
G	29° 25' 18.344" E	29° 25' 18.344" E
J	29° 24' 7.671" E	29° 24' 7.671" E
K	29° 24' 7.265" E	29° 24' 7.265" E
L	29° 25' 35.242" E	29° 25' 35.242" E
M	29° 25' 23.692" E	29° 25' 23.692" E
N	29° 25' 23.782" E	29° 25' 23.782" E

3.2 SOLAR PV GENERATION PROCESS

South Africa experiences some of the highest levels of solar radiation in the world between 4.5 and 6.5kWh/m^2/day) and therefore, possesses considerable solar resource potential for solar power generation.

In terms of large-scale grid connected applications the most commonly used technology utilised in South Africa is PV installations and is described in some detail in the following section.

It must be noted that this project is specific to solar power generation through the use of solar PV technology only.

3.2.1 PV AND MOUNTING SYSTEM

Internationally, solar PV is the fastest-growing power generation technology. Approximately 139 GW was added to the installed capacity globally in 2020, increasing the installed capacity by 18% from the previous year. The total capacity from PVs was 760 GW globally, producing approximately 3% of the world's electricity. In South Africa the solar PV installed capacity in 2020 grew by 37% compared to the previous year's value. As much as 3.6 GW of PV is planned to be installed by 2026, with approximately 1.48 GW already installed as recorded in 2019.

Large-scale or utility-scale PV systems are designed for the supply of commercial power into the electricity grid. Large-scale PV plants differ from the smaller units and other decentralised solar power applications because they supply power at the utility level, rather than to local users.

PV cells are made from semi-conductor materials that are able to release electrons when exposed to solar radiation. This is called the photo-electric effect. Several PV cells are grouped together through conductors to make up one module. Modules can be connected together to produce power in large quantities. In PV technology, the power conversion source is via PV modules that convert light directly to electricity.

Solar panels produce direct current (DC) electricity; therefore, PV systems require conversion equipment to convert this power to alternating current (AC), that can be fed into the electricity grid. This conversion is done by inverters. **Figure 3-1** provides an illustration of the main components of a solar PV power plant.

The solar PV panels can be mounted in various ways to ensure the maximum exposure to sunlight. The two main mounting systems that form part of a PV facility are either single axis tracking or fixed axis mounting structures. In the fixed axis mounting structures, the panels are installed and set to face north and does not move to follow the sun. With tracking systems, the panels track the sun and thereby ensure maximum exposure to the sunlight. Both mounting systems are considered for this project.

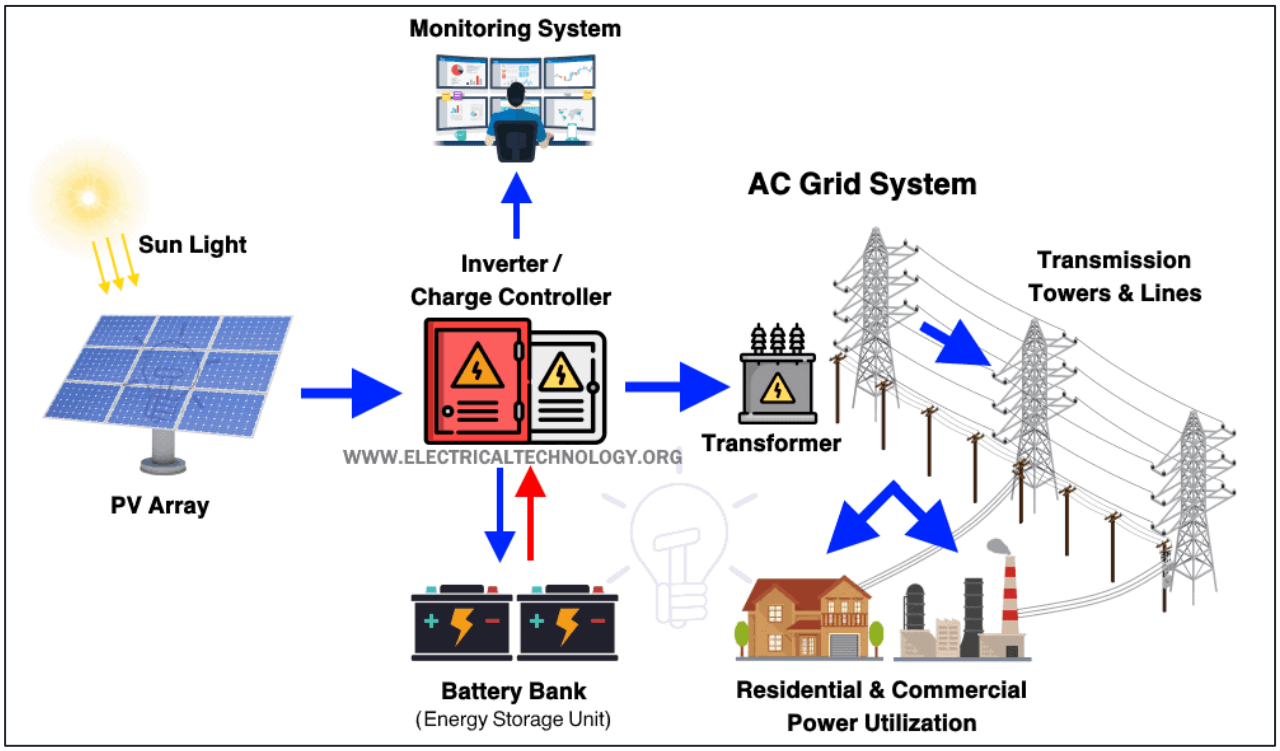

Figure 3-1 - Main components of a Solar PV Plant

Source: *www.electricaltechnology.org/2021/07/solar-power-plant.html*

3.3 BESS TECHNOLOGY

The Tournée 2 Solar PV Facility includes the development of a Battery Energy Storage System (BESS). There is a growing need for renewable energy technologies, such as solar and wind, to be able to supply a reliable source of electricity to the grid. Since solar and wind technology depend on whether the sun is shining or the wind is blowing, respectively, these technologies are only efficient when these sources are available. Battery storage systems allow for fluctuating renewable energy sources to be as stable as conventional systems and also provide a means to decouple generation of electricity from its use (i.e. provide electricity to the grid during peak demand) and therefore minimising supply and demand related issues.

Given the ongoing improvement in battery storage technology and the significant advantages of combining battery storage with wind farms, it makes sense to include a battery facility with the solar facility.

3.3.1 BATTERY TYPE

It is proposed that Lithium Battery Technologies, such as Lithium Iron Phosphate, or Lithium Nickel Manganese Cobalt oxides will be considered as the preferred battery technology. This is due to them being a mature and safe technology with regard to potential impacts on the environment in a solar facility, modular and easy to install and due to their technical characteristics, will work well as energy storage systems for solar facilities, as well as supporting grid stability. Lithium Battery Technologies arrive on site pre-assembled.

BESS consist of two main parts: battery modules and the accompanying Battery Management System (BMS), and a Power Conditioning System (PCS) used to enable the interface of the batteries to the grid. Individual battery cells are connected in a series/parallel arrangement in order to obtain the desired nominal voltage for highest efficiency and required storage capacity. The PCS is a bidirectional power conversion device (inverter), enabling AC power from the grid to be converted to DC to charge the batteries in a controlled manner, and discharge DC battery power to feed AC power onto the grid (**Figure 3-2**).

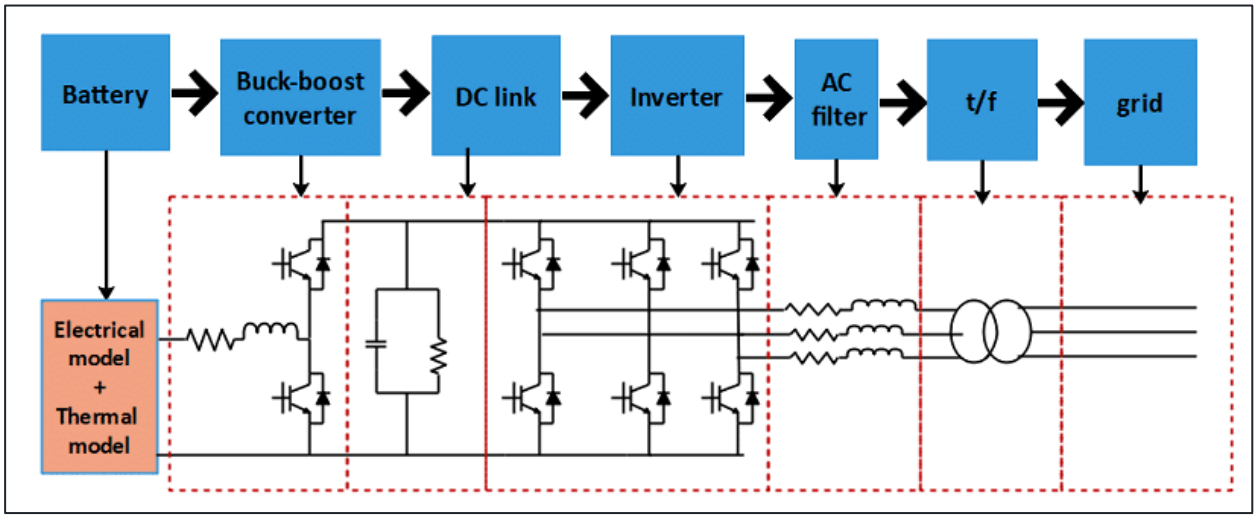

Figure 3-2 - BESS components Schematic

Source: www.researchgate.net

3.3.2 COMPLIANCE WITH LOCAL AND INTERNATIONAL STANDARDS

The cells, modules, racks and the complete facility will be compliant with all local laws and regulations and health and safety requirements governing such battery facilities. Over and above that they will comply with international standards such as UN 38.3 (Transportation Testing for Lithium Batteries), UL 1642 (Standard for Safety – Lithium-ion Batteries) and IEC 62619 (Secondary cells and batteries containing alkaline or other non-acid electrolytes Safety requirements for secondary lithium cells and batteries, for use in industrial applications). Furthermore, the battery facility will also comply with standards such as UL 1973 (Batteries for Use in Stationary Applications) and IEC 62619-2017 including thermal runaway non-propagation and safety zone region operation limits and a failure mode analysis. The design will be compliant with UL 9540 (Energy Storage Systems and Equipment): this standard defines the safety requirements for battery installation in industrial and grid connected applications.

3.4 PROJECT INFRASTRUCTURE

The proposed Tournée 2 Solar PV Facility will be developed with a contracted capacity of 150 MW, thus allowing for up to 150 MW for export from the facility. The proposed development footprint (buildable area) is approximately 297 hectares (ha) (subject to finalisation based on technical and environmental requirements), and the extent of the project area is approximately 505.15 ha. The development footprint includes the Solar PV field and all associated infrastructures as indicated below.

The proposed Tournée 2 Solar PV Facility will comprise the following key components:

- Solar Field;
- Back-to-Back Substation and BESS;
- Operations and Maintenance (O&M) Building Infrastructure;
- Construction Camp Laydown;
- Access Road; and
- Associated Infrastructure.

These items are discussed in more detail below.

3.4.1 SOLAR FIELD

- PV Modules, which convert the solar radiation into DC.
- PV panels will have a maximum height of 6 m, and could be mounted on fixed tilt, single axis tracking or dual axis tracking mounting structures of monofacial or bifacial Solar PV Modules.

3.4.2 SITE SUBSTATION AND BESS

- Total footprint will be up to 5.5ha in extent (3ha for the BESS and 2.5ha for the back-to-back substation).
- The substation will consist of a high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc.
- The associated BESS storage capacity will be up to 150MW/600MWh with up to four hours of storage.
- It is proposed that Lithium Battery Technologies, such as Lithium Iron Phosphate, or Lithium Nickel Manganese Cobalt oxides will be considered as the preferred battery technology. The main components of the BESS include the batteries, power conversion system and transformer which will all be stored in various rows of containers.

3.4.3 OPERATION AND MAINTENANCE BUILDING INFRASTRUCTURE

- O&M building infrastructure will be required to support the functioning of the Solar PV Facility and for services required by operations and maintenance staff. The O&M building infrastructure will include:
  - Operations building (including workshop and stores) of approximately 1 500m^2; and
  - Refuse area for temporary waste storage and conservancy tanks to service ablution facilities.

3.4.4 CONSTRUCTION CAMP LAYDOWN

Building infrastructure of up to a maximum height of 8m will be located within the project area. The infrastructure includes:

- Temporary infrastructure includes:
  - Typical construction camp area 100m x 50m = 5,000m^2
  - Typical laydown area 100m x 200m = 20,000m^2
  - Temporary cement batching plant
  - Sewage: Septic tanks and portable toilets

3.4.5 ACCESS ROAD

- Access to the proposed Tournée 2 Solar PV Facility from the R39 or R38 towards the site
- Width of internal road – Between 4m and 5m
- Length of internal roads – Approximately 8km

3.4.6 ASSOCIATED INFRASTRUCTURE

- The medium voltage collector system will comprise of cables up to and including 33kV that run underground, except where a technical assessment suggest that overhead lines are required, within the facility connecting the panels to the onsite substation; and
- Fencing of up to 4m high around the construction camp, O&M building and Site substation and BESS areas, including any other associated infrastructure (fencing and lighting, lightning protection, telecommunication infrastructure, storm water channels, water pipelines, offices, operational control centre, operation and maintenance area / warehouse / workshop, ablution facilities, a gate house, offices, security building, a visitor's centre; and substation building).

3.5 PROPOSED PROJECT DEVELOPMENT ACTIVITIES

3.5.1 CONSTRUCTION PHASE

The construction process will follow industry standard methods and techniques. Key activities associated with the construction phase are described in **Table 3-3**.

Table 3-3 – Construction activities

Activity	Description
Establishment of access and internal roads	Access to the proposed Tournée 2 Solar PV Facility will be via the R39 or R38. Internal gravel roads will be developed. The roads will be between 4 m and 5 m wide, with a length of approximately 8 km.
Site preparation and establishment	Site establishment will include clearing of vegetation and any bulk earthworks that may be required.
Transport of components and equipment to site	All construction material (i.e. PV support structure materials), machinery and equipment (i.e. graders, excavators, trucks, cement mixers etc.) will be transported to site utilising the national, regional and local road network. Large components (such as substation transformers) may be defined as abnormal loads in terms of the Road Traffic Act (No. 29 of 1989). In such cases a permit may be required for the transportation of these loads on public roads.
Establishment of a laydown area on site	Construction materials, machinery and equipment will be kept at relevant laydown and/or storage areas. Laydown areas (site camps) of approximately up to 5 000m^2 each have been proposed for this project. The laydown areas will also be utilised for the assembly of the PV panels. The laydown area will limit potential environmental impacts associated with the construction phase by limiting the extent of the activities to one designated area.
Erection of PV Panels	The PV panels will be arranged in arrays. The frames will be fixed onto vertical posts that will be driven into the ground utilising the relevant foundation method identified during the geotechnical studies, including potentially employing concrete foundations for the panel frames. PV panels will have a maximum height of 6m.

Activity	Description
Construction of substation and inverters	The facility output voltage will be stepped up from medium voltage to high voltage in the transformer. The medium voltage cables will be run underground within the facility to a common point before being fed to the onsite substation.
Establishment of ancillary infrastructure	Ancillary infrastructure will include a workshop, storage areas, office, and a temporary laydown area for contractor's equipment.
Rehabilitation	Once all construction is completed on site and all equipment and machinery has been removed from the site, the site will be rehabilitated.

3.5.2 OPERATIONAL PHASE

During operation the key activities will include inspection and maintenance of the solar panels, substations, BESS, and other associated infrastructure.

3.5.3 DECOMMISSIONING PHASE

The decommissioning phase will include activities similar to that of the construction phase as indicated in **Table 3-3**.

3.6 NEED AND DESIRABILITY OF THE PROJECT

South Africa is faced with significant increases in electricity demand and a shortage in electricity supply. South Africa is the seventh highest coal producer in the world, with approximately 77% of the country's electricity generated from coal. This large dependence on coal and its use has also resulted in a variety of negative impacts on the environment, including the contribution to climate change. South Africa is also the highest emitter of greenhouse gases in Africa; attributed to the country's energy-intensive economy that largely relies on coal-based electricity generation.

Renewable energy development is regarded as an important contribution to meeting international and national targets of reducing reliance on fossil fuels, such as coal, which contribute towards greenhouse gas emissions and resultant climate change. The need and desirability of proposed Tournée 2 Solar PV Facility has been considered from an international, national, and regional perspective.

3.6.1 INTERNATIONAL PERSPECTIVE

The proposed project will align with internationally recognised and adopted agreements, protocols, and conventions. This includes the Kyoto Protocol (1997) which calls for countries internationally to reduce their greenhouse gas emissions through cutting down on their reliance on fossil fuels and investing in renewable energy technologies for electricity generation. The proposed project will therefore add capacity to the energy sector and generate electricity without greenhouse gas emissions and meet international requirements in this regard.

South Africa is also signatory to the United Nations' Development Programmes' (UNDP) Sustainable Development Goals (SDGs), particularly SGD 7 relating to affordable and clean energy. The proposed project qualifies as a clean technology that will generate up to 150MW of affordable energy to contribute to South Africa's energy mix.

The project will also greatly contribute to the countries' efforts to reduce their carbon emissions and play their role as part of the Paris Climate Accord. The Paris Agreement is a legally binding

international treaty signed by 196 countries at the COP 21 in Paris, on the 12th of December 2015 to combat climate change. The goal of the Paris Accord is to limit global warming to well below 2 degrees Celsius, compared to industrial levels to avoid catastrophic natural disasters which are driven by the global temperature increase. Therefore, to achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate-neutral world by 2050.

At COP27 President Sameh Shoukry announced the *Sharm el-Sheikh Adaptation Agenda*[1], enhancing resilience for people living in the most climate-vulnerable communities by 2030. The cover decision, known as the Sharm el-Sheikh Implementation Plan, highlights that a global transformation to a low-carbon economy is expected to require investments of at least USD 4-6 trillion a year. The Sharm el-Sheikh Implementation Plan emphasises the urgent need for reduced global greenhouse gas emissions through the use of renewable energy, just energy transition partnerships and other cooperative actions. The Plan further highlights that this is a critical decade of action that requires rapid transformation towards renewable energy.

This renewable energy project aligns with the goals of the Sharm el-Sheikh Implementation Plan and the need to reduce greenhouse gas emissions and rapidly transform towards renewable energy.

3.6.2 NATIONAL PERSPECTIVE

The South African Government, through the IRP, has set a target to secure 17 800 MW of renewable energy by 2030. This is an effort to diversify the country's energy mix in response to the growing electricity demand and promote access to clean sources of energy.

The National Development Plan (NDP) is aimed at reducing and eliminating poverty in South Africa by 2030. The NDP also outlines the need to increase electricity production by 2030, with 20 000 MW of electricity capacity generated from renewable sources in order to move to less carbon-intensive electricity production. The Plan also envisages that South Africa will have an energy sector that provides reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.

The authorisation of the Tournée 2 Solar PV Facility will further align with South Africa's National Climate Response White Paper which outlines the countries efforts to manage the impacts of climate change and to contribute to the global efforts to stabilize the greenhouse gases concentrations in the atmosphere.

The proposed Tournée Solar PV Cluster, will pave the way for the Just Energy Transition (JET) in South Africa and promote the transition from a fossil fuel-based economy to a low carbon economy. The proposed Tournée Solar PV Cluster aims towards the aforementioned national energy targets of diversification of energy supply and the promotion of clean energy. Wind and solar energy developments contribute to reduced emissions and subsequently climate change whilst promoting industrial development and job creation.

[1] https://unfccc.int/news/cop27-reaches-breakthrough-agreement-on-new-loss-and-damage-fund-for-vulnerable-countries

The proposed Tournée 2 Solar PV Facility will also aid in overcoming the power shortages that are currently faced in the country. In 2022, South Africa witnessed its longest recorded hours of load shedding, with the power being off for 1 949 hours between January and September 2022 as shown in **Figure 3-3**. The South African Government has taken strides to try reducing these power cuts through the implementation of bid Windows in REIPPP, but it is still expected that the country will undergo more load shedding. Over the years the construction of Solar and Wind facilities has become cheaper, and less time-consuming. Thus, acting as a faster and more efficient method of meeting the ever-growing demand for electricity in the country. Renewable energy is a key factor in the national energy mix and will assist in ensuring that load shedding is reduced in South Africa.

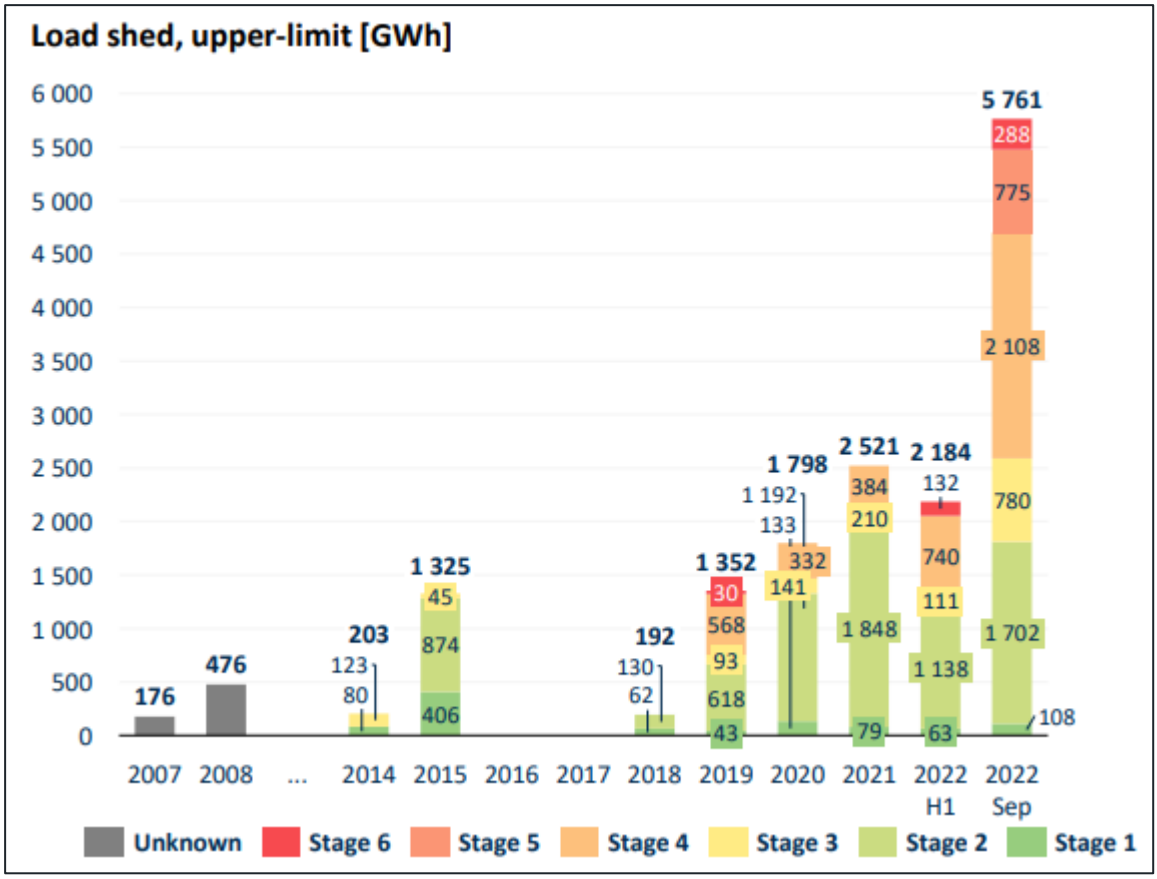

Figure 3-3 - Load shedding hours over the years in South Africa

Source: CSIR (2022)

3.6.3 REGIONAL AND LOCAL PERSPECTIVE

3.6.3.1 Just Energy Transition

Coal power stations and the coal mining industry play a vital component in the economic and social components of the local Mpumalanga economy. Shifting to a low carbon economy will thus need to offset or exceed the benefits being realized by fossil fuels in the province. Thus, a key factor to ensuring the success of the JET is not only to focus on the transition from fossil fuels to renewable energy resources but to simultaneously ensure the Just Transition of jobs and skills.

The transition towards renewable energy will improve the socio-economic conditions of the Gert Sibande District Municipality. The Gert Sibande District Municipality recorded an unemployment rate

of 26.7% in 2017, with the majority of its employed in the trade and community services sectors. The Project will aid in solving two of the leading challenges faced by the Gert Sibande District Municipality, namely the cost of electricity and lack of adequate employment opportunities. As various career opportunities are presented by the solar industry, and these are divided into five pillars that are aligned with the value chain. These four pillars are project planning/development, manufacturing and procurement, installation and grid connection, operation and maintenance, and decommissioning.

The solar industry will create job opportunities throughout the supply chain. The solar industry will contribute to the Just transition in South Africa to ensure that there are no job losses but rather job transfers and skill exchange. For these opportunities to arise, renewable energy projects need to be approved in Mpumalanga to ensure that the transition from fossil fuels to renewable energy happens gradually and takes off effectively.

4 PROJECT ALTERNATIVES

The EIA Regulations of 2014 (as amended) require that the S&EIA process must identify and describe alternatives to the proposed activity that were considered, or motivation for not considering alternatives. Different types or categories of alternatives could be considered including different locations, technology types, and project layouts. At the scoping level the evaluation of alternatives is provided at a high level in the absence of detailed environmental comparators for each alternative; due to the two-staged nature of the S& EIA process it is more suitable to identify and describe the potential alternatives on a high-level basis within scoping, and to perform a more detailed analysis of alternatives (with environmental comparators) in the EIA phase of the project. As such, the S&EIA will holistically assess the impacts and risks of each alternative comparatively, as suggested by Appendix 2 of the EIA Regulations of 2014 (as amended).

All alternatives outlined below are considered both feasible and reasonable with no apparent advantages or disadvantages at this stage of the project. All alternatives will be described and assessed in more detail during the EIA Phase.

Extensive consideration of alternatives and avoidance of impacts took place in the screening/design phase. This is discussed in detail in the section below.

4.1 TECHNOLOGY ALTERNATIVES

4.1.1 SOLAR PV TECHNOLOGY

The Tournée 2 Solar PV Facility will utilise solar PV technology to generate power. Therefore, no other technology alternatives are being considered for this project.

4.1.2 BESS TECHNOLOGY

The BESS will be made up of Lithium-Ion batteries or similar solid-state technology due to them being a mature and safe technology with regard to potential impacts on the environment in a solar facility farm, modular and easy to install and due to their technical characteristics, will work well as energy storage systems for solar facilities, as well as supporting grid stability. No other BESS technology is being considered for this project..

4.2 LOCATION ALTERNATIVES

The location of the proposed project is based on the site awarded to the applicant in response to an Eskom Request for Proposal (RFP). The following aspects were required by the RFP to be taken into consideration when selecting the location of the site:

- The selected location must be in close proximity to the existing Eskom infrastructure and interconnection points including substations;
- The site must be suitable open land for Solar PV development; and
- The screening process for the selected location must not identify exceedances of environmental sensitivities; and
- The selected site must contribute to the JET Programme.

The site is considered suitable and the investigation of an alternative site is not currently proposed.

4.3 LAYOUT ALTERNATIVES

The process undertaken for this project is an iterative design process whereby through various assessment phases and iteratively updating the site sensitivities to avoid environmental features (as outlined within **Section 7.1.10**). Therefore, no layout alternatives are being considered for this project.

4.4 NO-GO ALTERNATIVE

In the “no project” alternative, the proposed project will not be developed. In this scenario, there could be a missed opportunity to address the need for a just transition within the Province and Nationally. This project will also support the need to increase renewable energy generation in an effort to mitigate against concerns of climate change and exploitation of non-renewable resources. The no-go alternative would not assist in responding to the growing electricity demand in South Africa and would not contribute to the reliability of electricity supply at a national scale.

The “no project” alternative will be considered in the EIA phase as a baseline against which the impacts of the proposed project will be assessed.

5 GOVERNANCE FRAMEWORK

5.1 NATIONAL LEGAL AND REGULATORY FRAMEWORK

The South African regulatory framework establishes well-defined requirements and standards for environmental and social management of industrial and civil infrastructure developments. Different authorities at both national and regional levels carry out environmental protection functions. The applicable legislation and policies are shown in **Table 5-1**.

Table 5-1 – Applicable National Legislation[2]

Legislation	Description of Legislation and Applicability
The Constitution of South Africa (No. 108 of 1996)	The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated in order to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld in an on-going basis throughout the country. In terms of Section 7, a positive obligation is placed on the State to give effect to the environmental rights.
National Environmental Management Act (No. 107 of 1998)	In terms of Section 24(2) of the NEMA, the Minister may identify activities, which may not commence without prior authorisation. The Minister thus published GNR 983 (as amended) (Listing Notice 1), GNR 984 (as amended) (Listing Notice 2) and GNR 985 (as amended) (Listing Notice 3) listing activities that may not commence prior to authorisation. The regulations outlining the procedures required for authorisation are published in the EIA Regulations of 2014 (GNR 982) (as amended). Listing Notice 1 identifies activities that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 2 identifies activities that require an S&EIR process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 3 identifies activities within specific areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. WSP undertook a legal review of the listed activities according to the proposed project description to conclude that the activities listed in in this section are considered applicable to the development: A S&EIR process must be followed. An EA is required and will be applied for with the DFFE.
Listing Notice 1: GNR 983	***Activity 11 (i)*** *The development of facilities or infrastructure for the transmission and distribution of electricity—*

[2] It should be noted that all dimensions outlined in relation to Listing Notice 1, 2 and 3 are provisional and are subject to final design.

Legislation	Description of Legislation and Applicability
	(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts *excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is —* *(a) temporarily required to allow for maintenance of existing infrastructure;* *(b) 2 kilometres or shorter in length;* *(c) within an existing transmission line servitude; and* *(d) will be removed within 18 months of the commencement of development.* **Description:** The Tournée 2 Solar PV Facility will include back-to-back substation (inclusive of the IPP and Eskom sections). The substation will consist of a high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, etc.
	Activity 12 (ii) (a) (c) *The development of—* *(ii) infrastructure or structures with a physical footprint of 100 square metres or more;* *where such development occurs—* *(a) within a watercourse;* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;* excluding— (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared. **Description:**

Legislation	Description of Legislation and Applicability
	The Tournée 2 Solar PV Facility will require the development of internal roads and/or access roads around the site. The physical footprint of internal access roads and electrical cabling required to connect the various components of the Facility either traverse the delineated watercourses on site, or be located within 32m of the outer extent of the delineated watercourses on site.
	Activity 14 *The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.* **Description:** The Tournée 2 Solar PV Facility will require storage and handling of dangerous goods, including fuel (e.g. diesel), cement and chemical storage onsite, that will be greater than 80m^3 but not exceeding 500m^3.
	Activity 19 *The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;* *but excluding where such infilling, depositing, dredging, excavation, removal or moving—* *(a) will occur behind a development setback;* *(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;* *(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;* *(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or* *(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.* **Description:** Internal access roads and stormwater control infrastructure, as well as electrical cabling required to connect the various components of the Tournée PV 2 Facility will collectively require the excavation, infilling or removal of soil exceeding 10m^3 from delineated watercourses on site.
	Activity 24 (ii) *The development of a road—* *(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres* *but excluding a road—*

Legislation	Description of Legislation and Applicability
	(a) which is identified and included in activity 27 in Listing Notice 2 of 2014; *(b) where the entire road falls within an urban area; or* *(c) which is 1 kilometre or shorter.* **Description:** The Tournée 2 Solar PV Facility will require the development of internal roads and/or access roads around the site that will be wider than 8m.
	Activity 27 *The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—* *(i) the undertaking of a linear activity; or* *(ii) maintenance purposes undertaken in accordance with a maintenance management plan.* **Description:** The Tournée 2 Solar PV Facility is considered a commercial and/or industrial development, and are located on several farm portions outside an urban area, used for agricultural purposes. The total area to be developed for the Tournée PV 2 Facility (buildable area) is approximately 297ha (subject to finalization based on technical and environmental requirements) (i.e. greater than 1 hectare).
	Activity 28(ii) *Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:* *(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;* *excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.* **Description:** The Tournée 2 Solar PV Facility is considered a commercial and/or industrial development, and are located on several farm portions outside an urban area, used for agricultural purposes. The total area to be developed for the Tournée PV 2 Facility (buildable area) is approximately 297ha (subject to finalization based on technical and environmental requirements) (i.e. greater than 1 hectare).

Legislation	Description of Legislation and Applicability
	Activity 30 *Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).* **Description:** The Tournée 2 Solar PV Facility is located within, and will require vegetation clearance or disturbance of the Soweto Highveld Grassland. The Soweto Highveld Grassland is confirmed to be listed in the National List of Ecosystems that are Threated and in Need of Protection (as indicated in GNR 1002 of 9 December 2011). Due to the fact that this ecosystem is listed as threatened it is assumed that various threatened or protected species will be found within the development area. The restricted activity of "cutting, chopping off, uprooting, damaging or destroying, any specimen" has been identified in terms of Section 53(1) of the NEM:BA and is therefore applicable to the vegetation clearance that will be required to construct the development. In light of this, Activity 30 is considered applicable.
	Activity 48(i)(a)(c) *The expansion of—* *(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more;* *where such expansion occurs—* *(a) within a watercourse;* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;* *excluding—* *(aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;* *(bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;* *(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;* *(dd) where such expansion occurs within an urban area; or* *(ee) where such expansion occurs within existing roads, road reserves or railway line reserves.* **Description:** Transport of large infrastructure components related to both facilities will require the expansion of existing access and/or internal roads, culverts or similar drainage crossing infrastructure collectively exceeding 100m^2 or more beyond existing road or road reserves located within delineated

Legislation	Description of Legislation and Applicability
	watercourses on site, or within 32m of the outer extent of the delineated watercourses on site.
	Activity 56(ii) *The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—* *(ii) where no reserve exists, where the existing road is wider than 8 metres;* *excluding where widening or lengthening occur inside urban areas.* **Description:** Transport of large infrastructure components related to both facilities will require the widening of existing access and/or internal roads where no reserve exists and where such road is wider than 8 metres. Both facilities are located within a rural area. The access road will need to be widened by between 6m and 8m.
Listing Notice 2: GNR 984	***Activity 1*** *The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more* **Description:** The project comprises a Solar PV Facility allowing for a contracted capacity of up to 150MW .
	Activity 15 *The clearance of an area of 20 hectares or more of indigenous vegetation* **Description:** The clearance required for the Facility will be approximately 297ha (subject to finalisation based on technical, final design and environmental requirements) of indigenous vegetation. Although the approximate footprint will be confirmed at final design, more than 20ha of indigenous vegetation would be removed for the construction of the individual project infrastructure.
Listing Notice 3: GNR 985	***Activity 4 (f) (ii) (ee)*** *The development of a road wider than 4 metres with a reserve less than 13,5 metres.* *(f) Mpumalanga-* *(ii) areas outside urban areas* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;*

Legislation	Description of Legislation and Applicability
	Description: Tournée 2 Solar PV Facility is located outside an urban area. According to the Mpumalanga Biodiversity Sector Plan Freshwater database (2019), the wetlands indicated by the National Freshwater Ecosystem Priority Area (2011), National Biodiversity Assessment (2018) and Mpumalanga Highveld Wetlands (2019) databases are indicated as Ecological Support Areas (ESAs). A very small portion of the proposed Tournée 2 Solar PV Park is identified as Optimal CBA (approximately 0.33 ha) as identified by the Mpumalanga Biodiversity Sector Plan (2019). Transport of large infrastructure components related to the Tournée 2 Solar PV Facility will require the construction of access and/or internal roads that will be wider than 4m. The access and/or internal roads are anticipated to traverse the wetlands.
	Activity 10 (f) (i) (ee) (hh) *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.* *(f) Mpumalanga* *i. Outside urban areas:* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(hh) Areas within a watercourse or wetland, or within 100 metres of a watercourse or wetland;* **Description:** Tournée 2 Solar PV Facility is located outside an urban area. According to the Mpumalanga Biodiversity Sector Plan Freshwater database (2019), the wetlands indicated by the National Freshwater Ecosystem Priority Area (2011), National Biodiversity Assessment (2018) and Mpumalanga Highveld Wetlands (2019) databases are indicated as ESAs. A very small portion of the proposed Tournée 2 Solar PV Park is identified as Optimal CBA (approximately 0.33 ha) as identified by the Mpumalanga Biodiversity Sector Plan (2019). Tournée 2 Solar PV Facility will require storage and handling of dangerous goods, including fuel (e.g. diesel), cement and chemical storage onsite, that will be greater than 30m^3 but not exceeding 80m^3. It is anticipated that these facilities will be developed within the ESA or within 100m of a watercourse.
	Activity 12 (f) (ii)

Legislation	Description of Legislation and Applicability
	The clearance of an area of 300 square metres or more of indigenous vegetation. Except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. *(f) Mpumalanga* *ii. Within critical biodiversity areas identified in bioregional plans;* **Description:** Tournée 2 Solar PV Facility is located outside an urban area. According to the Mpumalanga Biodiversity Sector Plan Freshwater database (2019), the wetlands indicated by the National Freshwater Ecosystem Priority Area (2011), National Biodiversity Assessment (2018) and Mpumalanga Highveld Wetlands (2019) databases are indicated as ESAs. A very small portion of the proposed Tournée 2 Solar PV Park is identified as Optimal CBA (approximately 0.33 ha) as identified by the Mpumalanga Biodiversity Sector Plan (2019). It is anticipated that the construction of the Tournée 2 Solar PV Facility will require clearance of up to of 5 051 500m^2 of vegetation. It is likely that at least 300m^2 of this vegetation will be within the ESAs.
	Activity 14 (ii) (a) (c) (f) (i) (ff) *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;* *excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.* *(f) Mpumalanga* *i. Outside urban areas:* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* **Description:** Tournée 2 Solar PV Facility is located outside an urban area. According to the Mpumalanga Biodiversity Sector Plan Freshwater database (2019), the wetlands indicated by the National Freshwater Ecosystem Priority Area (2011), National Biodiversity Assessment (2018)

Legislation	Description of Legislation and Applicability
	and Mpumalanga Highveld Wetlands (2019) databases are indicated as ESAs. A very small portion of the proposed Tournée 2 Solar PV Park is identified as Optimal CBA (approximately 0.33 ha) as identified by the Mpumalanga Biodiversity Sector Plan (2019). The cabling, access and/or internal roads are anticipated to traverse the ESAs associated with the wetland areas, and will required the development of infrastructure or structures with a physical footprint of 10m^2 or more.
	Activity 18 (f) (i) (ee) *The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.* *f. Mpumalanga* *i. Outside urban areas* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* **Description:** Tournée 2 Solar PV Facility is located outside an urban area. According to the Mpumalanga Biodiversity Sector Plan Freshwater database (2019), the wetlands indicated by the National Freshwater Ecosystem Priority Area (2011), National Biodiversity Assessment (2018) and Mpumalanga Highveld Wetlands (2019) databases are indicated as ESAs. A very small portion of the proposed Tournée 2 Solar PV Park is identified as Optimal CBA (approximately 0.33 ha) as identified by the Mpumalanga Biodiversity Sector Plan (2019). Transport of large infrastructure components related to both facilities will require the widening of existing access and/or internal roads where no reserve exists and where such road requires widening by more than 4m. The existing access and/or internal roads are anticipated to traverse the wetlands.
	Activity 23 (ii) (a) (c) (f) (ee) *The expansion of—* *(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more;* *where such expansion occurs —* *(a) within a watercourse;* *(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;* *excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.* *f. Mpumalanga*

Legislation	Description of Legislation and Applicability
	(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; **Description:** Tournée 2 Solar PV Facility is located outside an urban area. According to the Mpumalanga Biodiversity Sector Plan Freshwater database (2019), the wetlands indicated by the National Freshwater Ecosystem Priority Area (2011), National Biodiversity Assessment (2018) and Mpumalanga Highveld Wetlands (2019) databases are indicated as ESAs. A very small portion of the proposed Tournée 2 Solar PV Park is identified as Optimal CBA (approximately 0.33 ha) as identified by the Mpumalanga Biodiversity Sector Plan (2019). The cabling, access and/or internal roads are anticipated to traverse the ESAs associated with the wetland areas, and will required the expansion of infrastructure or structures with a physical footprint of 10m^2 or more.
Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes (GNR 320, 20 March 2020 and GNR 1150, 30 October 2020)	The protocols provide the criteria for specialist assessment and minimum report content requirements for impacts for various environmental themes for activities requiring environmental authorisation. The protocols replace the requirements of Appendix 6 of the EIA Regulations, 2014, as amended. The assessment and reporting requirements of the protocols are associated with a level of environmental sensitivity identified by the national web based environmental screening tool (screening tool). The following environmental themes were applicable to the Tournée 2 Solar PV Facility: ▪ Agriculture Theme ▪ Animal Species Theme ▪ Aquatic Biodiversity Theme ▪ Archaeological and Cultural Heritage Theme ▪ Avian Theme ▪ Civil Aviation (Solar PV) Theme ▪ Defence Theme ▪ Landscape (Solar) Theme ▪ Palaeontology Theme ▪ Plant Species Theme ▪ Radio Frequency Interference (RFI) Theme ▪ Terrestrial Biodiversity Theme
Renewable Energy Development Zones and Strategic Transmission Corridors	On 16 February 2018, the DFFE gazetted the REDZ and Strategic Transmission Corridors and Procedures for the Assessment of Large-scale Wind and Solar Photovoltaic Energy Development Activities (GN 114) and Grid Infrastructure (GN 113). Subsequently, on 26 February 2021 a further three REDZ were gazetted (GN 142). The procedure allows for wind and solar PV activities within the eight REDZs and electricity grid development within the five power corridors to be subjected to a BA and not a full S&EIA process. In addition, the timeframes associated with the decision on the application is reduced from 107 days to 57 days.

Legislation	Description of Legislation and Applicability
	The Tournée 2 Solar PV Facility is not located within a REDZ or a Strategic Transmission Corridor.
National Environmental Management: Waste Act (59 of 2008) (NEM:WA)	This Act provides for regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation. The Act also provides for the licensing and control of waste management activities through GNR. 921 (2013): List of Waste Management Activities that Have, or are Likely to Have, a Detrimental Effect on the Environment. The proposed project does not constitute a Listed Activity requiring a Waste Management Licence (WML) as defined in GNR 921. However, the contents of this Scoping Report will include reasonable measures for the prevention of pollution and good international industry practice (GIIP).
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) was promulgated in June 2004 within the framework of NEMA to provide for the management and conservation of national biodiversity. The NEMBA's primary aims are for the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources. In addition, the NEMBA provides for the establishment and functions of a South African National Biodiversity Institute (SANBI). SANBI was established by the NEMBA with the primary purpose of reporting on the status of the country's biodiversity and conservation status of all listed threatened or protected species and ecosystems. The terrestrial biodiversity assessment (**Appendix G.4**) identifies A very small portion of the proposed Tournée 2 Solar PV Park is identified as Optimal CBA (approximately 0.33 ha). During the site assessment, the area associated with the CBA was not confirmed to be representative for the targets set for a CBA as these areas were transformed by current cultivation areas. The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) Regulations with regards to alien and invasive species have been superseded by the National Environmental Management: Biodiversity Act, 2004 (Act no. 10 of 2004) – Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014. Specific management measures for the control of alien and invasive plants will be included in the EMPr.
National Environmental Management Protected Areas Act (No. 57 of 2003)	The purpose of the National Environmental Management Protected Areas Act (No. 57 of 2003) (NEMPAA) is to, *inter alia*, provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. To this end, it provides for the declaration and management of various types of protected areas. Section 50(5) of NEMPAA states that "no development, construction or farming may be permitted in a nature reserve or world heritage site without the prior written approval of the management authority."

Legislation	Description of Legislation and Applicability
	According to the National Parks Area Expansion Strategy (NPAES), there are no areas within the study area that have been identified as priority areas for inclusion in future protected areas. The study area is therefore outside the NPAES focus area.
The National Water Act (No. 36 Of 1998)	The National Water Act, 1998 (Act No. 36 of 1998) (NWA) provides the framework to protect water resources against over exploitation and to ensure that there is water for social and economic development, human needs and to meet the needs of the aquatic environment. The Act defines water source to include watercourses, surface water, estuary or aquifer. A watercourse is defined in the Act as a river or spring, a natural channel in which water flows regularly or intermittently, a wetland, lake or dam into which or from which water flows, and any collection of water that the Minister may declare a watercourse. Section 21 of the Act outlines a number of categories that require a water user to apply for a Water Use License (WUL) and Section 22 requires water users to apply for a General Authorisation (GA) with the DWS if they are under certain thresholds or meet certain criteria. The list of water uses applicable to the proposed Project include: a) Taking water from a water resource; c) Impeding or diverting the flow of water in a watercourse; g) Disposing of waste in a manner which may detrimentally impact on a water resource; i) Altering the bed, banks, course or characteristics of a watercourse; The DWS will make the final decision on water uses that are applicable to the project through a pre-application meeting after which a Water Use Authorisation Application (WUA) as determined by the risk assessment will be undertaken in compliance with procedural regulations published by the DWS within General Notice 267 (GN267). These regulations specify required information per water use and the reporting structure of required supporting technical information.
The National Heritage Resources Act (No. 25 Of 1999)	The National Heritage Resource Act (Act No. 25 of 1999) (NHRA) serves to protect national and provincial heritage resources across South Africa. The NHRA provides for the protection of all archaeological and palaeontological sites, the conservation and care of cemeteries and graves by the South African Heritage Resources Agency (SAHRA) and lists activities that require any person who intends to undertake to notify the responsible heritage resources agency and furnish details regarding the location, nature, and extent of the proposed development. Part 2 of the NHRA details specific activities that require a Heritage Impact Assessment (HIA) that will need to be approved by SAHRA. Parts of Section 35, 36 and 38 apply to the proposed project, principally: ▪ Section 35 (4) - No person may, without a permit issued by the responsible heritage resources authority- • destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

Legislation	Description of Legislation and Applicability
	• destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite. ▪ Section 38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as- • any development or other activity which will change the character of a site— (i) exceeding 5 000 m2 in extent, 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 Tournée 2 Solar PV Facility, 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 (GN R668). A Heritage Report has been carried out by a suitably qualified specialist and is included in **Appendix G.8**. The proposed project will be loaded onto the SAHRIS portal for comment by SAHRA.
Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	In South Africa, environmental noise control has been in place for three decades, beginning in the 1980s with codes of practice issued by the South African National Standards (formerly the South African Bureau of Standards, SABS) to address noise pollution in various sectors of the country. Under the previous generation of environmental legislation, specifically the Environmental Conservation Act 73 of 1989 (ECA), provisions were made to control noise from a National level in the form of the Noise Control Regulations (GNR 154 of January 1992). In later years, the ECA was replaced by the National Environmental Management Act 107 of 1998 (NEMA) as amended. The National Environmental Management: Air Quality Act 39 of 2004 (NEMAQA) was published in line with NEMA and contains noise control provisions under Section 34: (1) The minister may prescribe essential national standards – (a) for the control of noise, either in general or by specific machinery or activities or in specified places or areas; or (b) for determining – (i) a definition of noise; and (ii) the maximum levels of noise. (2) When controlling noise, the provincial and local spheres of government are bound by any prescribed national standards. Under NEMAQA, the Noise Control Regulations were updated and are to be applied to all provinces in South Africa. The Noise Control Regulations

Legislation	Description of Legislation and Applicability
	give all the responsibilities of enforcement to the Local Provincial Authority, where location specific by-laws can be created and applied to the locations with approval of Provincial Government. Where province-specific regulations have not been promulgated, acoustic impact assessments must follow the Noise Control Regulations. Furthermore, NEMAQA prescribes that the Minister must publish maximum allowable noise levels for different districts and national noise standards. These have not yet been accomplished and as a result all monitoring and assessments are done in accordance with the South African National Standards (SANS) 10103:2008 and 10328:2008. A Noise Compliance Statement has been compiled for the project and is included in **Appendix G.3.**
National Environment Management Air Quality Act (No. 39 of 2004)	NEMAQA came into effect on 11 September 2005. Persons undertaking such activities listed under GNR 893, as amended, are required to possess an Atmospheric Emissions License (AEL). The National Dust Control Regulations (GNR 827) were promulgated in terms of Section 32 of NEMAQA, which aim at prescribing general measures for the control of dust in both residential and non-residential areas. Although no AEL will be required for the construction and operation of the Tournée 2 Solar PV Facility, the dust control regulations will be applicable during construction. An Air Quality Compliance Statement has been compiled for the project and is included in **Appendix G.2**.
Conservation of Agricultural Resources Act (No. 43 of 1983)	CARA provides for the implementation of control measures for soil conservation works as well as alien and invasive plant species in and outside of urban areas. In terms of the amendments to the regulations under the CARA, landowners are legally responsible for the control of alien species on their properties. Various Acts administered by the DFFE and the DWS, as well as other laws (including local by-laws), spell out the fines, terms of imprisonment and other penalties for contravening the law. Although no fines have yet been placed against landowners who do not remove invasive species, the authorities may clear their land of invasive alien plants and other alien species entirely at the landowners' cost and risk. The CARA Regulations with regards to alien and invasive species have been superseded by NEMBA AIS Regulations which became law on 1 October 2014.
Civil Aviation Act (No. 13 of 2009)	Civil aviation in South Africa is governed by the Civil Aviation Act (Act 13 of 2009). This Act provides for the establishment of a stand-alone authority mandated with controlling, promoting, regulating, supporting, developing, enforcing and continuously improving levels of safety and security throughout the civil aviation industry. This mandate is fulfilled by South African Civil Aviation Authority (SACAA) as an agency of the Department of Transport (DoT). SACAA achieves the objectives set out in the Act by complying with the Standards and Recommended Practices (SARPs) of the International Civil Aviation Organisation (ICAO), while considering the local

Legislation	Description of Legislation and Applicability
	context when issuing the South African Civil Aviation Regulations (SA CARs). As of the 1st of May 2021, Air Traffic and Navigation Services (ATNS) has been appointed as the new Obstacle application Service Provider for Windfarms and later Solar Plants. Their responsibility would pertain to the assessments, maintenance, and all other related matters in respect to Windfarms and in due time Power Plant assessments. The DFFE Screening Tool Report identified Civil Aviation as having medium sensitivity for the proposed Tournée 2 Solar PV Facility, and no major or other types of civil aviation aerodromes. ATNS and SACAA will be included on the project stakeholder database. They will be informed of the proposed Project, and comment will be sought from these authorities as applicable.
Occupational Health and Safety Act (No. 85 of 1993)	The National Occupational Health and Safety Act (No. 85 of 1993) (OHSA) and the relevant regulations under the Act are applicable to the proposed project. This includes the Construction Regulations promulgated in 2014 under Section 43 of the Act. Adherence to South Africa's OHSA and its relevant Regulations is essential.
National Energy Act (No. 34 of 2008)	The National Energy Act aims to ensure that diverse energy resources are available, in sustainable quantitates, and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, taking into account environmental management requirements and interactions amongst economic sectors. The main objectives of the Act are to: ▪ Ensure uninterrupted supply of energy to the Republic; ▪ Promote diversity of supply of energy and its sources; ▪ Facilitate effective management of energy demand and its conservation; ▪ Promote energy research; ▪ Promote appropriate standards and specifications for the equipment, systems and processes used for producing, supplying and consuming energy; ▪ Ensure collection of data and information relating to energy supply, transportation and demand; ▪ Provide for optimal supply, transformation, transportation, storage and demand of energy that are planned, organised and implemented in accordance with a balanced consideration of security of supply, economics, consumer protection and a sustainable development; ▪ Provide for certain safety, health and environment matters that pertain to energy; ▪ Facilitate energy access for improvement of the quality of life of the people of Republic; ▪ Commercialise energy-related technologies; ▪ Ensure effective planning for energy supply, transportation, and consumption; and ▪ Contribute to sustainable development of South Africa's economy. In terms of the act, the Minister of Energy is mandated to develop and, on an annual basis, review and publish the Integrated Energy Plan (IEP) in the Government Gazette. The IEP analyses current energy consumption trends within different sectors of the economy (i.e. agriculture, commerce, industry,

Legislation	Description of Legislation and Applicability
	residential and transport) and uses this to project future energy requirements, based on different scenarios. The IEP and the Integrated Resource Plan are intended to be updated periodically to remain relevant. The framework is intended to create a balance between energy demand and resource availability so as to provide low-cost electricity for social and economic development, while taking into account health, safety and environmental parameters.
Electricity Regulation Act (No. 4 of 2006)	The Electricity Regulation Act (No. 4 of 2006) (ERA) aims to: ▪ Achieve the efficient, effective, sustainable and orderly development and operation of electricity supply infrastructure in South Africa; ▪ Ensure that the interests and needs of present and future electricity customers and end users are safeguarded and met, having regard to the governance, efficiency. effectiveness and long-term sustainability of the electricity supply industry within the broader context of economic energy regulation in the Republic: ▪ Facilitate investment in the electricity supply industry; ▪ Facilitate universal access to electricity; ▪ Promote the use of diverse energy sources and energy efficiency; ▪ Promote competitiveness and customer and end user choice; and ▪ Facilitate a fair balance between the interests of customers and end users, licensees, investors in the electricity supply industry and the public. The Act establishes a National Energy Regulator as the custodian and enforcer of the National Electricity Regulatory Framework. The Act also provides for licenses and registration as the manner in which generation, transmission, distribution, trading and the import and export of electricity are regulated.

5.2 POLICIES AND PLANS

Table 5-2 summarised key policies and plans as an outline of the governance framework for the project.

Table 5-2 – Applicable Regional Policies and Plans

Applicable Policy	Description of Policy
National Development Plan	The National Development Plan (NDP) aims to eliminate poverty and reduce inequality by 2030. The NDP identifies a number of enabling milestones. Of relevance to the proposed development the NDP refers to the need to produce sufficient energy to support industry at competitive prices and ensure access for poor households, while reducing carbon emissions per unit of power by about one-third. In this regard the infrastructure is not just essential for faster economic growth and higher employment. It also promotes inclusive growth, providing citizens with the means to improve their own lives and boost their incomes. Infrastructure is essential to development. Chapter 3, Economy and Employment, identifies some of the structural challenges specific to South Africa, including an energy constraint that will act as a cap on growth and on options for industrialisation. The NDP notes

Applicable Policy	Description of Policy
	that from an environmental perspective South Africa faces several related challenges. The reduction of greenhouse gas emissions and shift to a green low-carbon economy, is one of these challenges. In terms of implementation the NDP identifies three phases. The first two are of specific relevance to the proposed project. The first phase (2012–2017) notes that ensuring the supply of energy and water is reliable and sufficient for a growing economy. The second phase (2018–2023) involves building on the first phase to lay the foundations for more intensive improvements in productivity. The provision of affordable and reliable energy is a key requirement for this to take place. Chapter 4, Economic infrastructure, notes that economic infrastructure provides the foundation for social and economic development. In this regard South Africa must invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives. The plan envisages that, by 2030, South Africa will have an energy sector that promotes: ▪ Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation. ▪ Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change. More specifically, South Africa should have adequate supply security in electricity and in liquid fuels, such that economic activity, transport, and welfare are not disrupted. The plan sets out steps that aim to ensure that, in 20 years, South Africa's energy system looks very different to the current situation. In this regard coal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources, will play a much larger role.
Integrated Resource Plan 2010 – 2030	The IRP is an electricity capacity plan which aims to provide an indication of the country's electricity demand, how this demand will be supplied and what it will cost. On 6 May 2011, the then Department of Energy (DoE) released the Integrated Resource Plan 2010-2030 (IRP 2010) in respect of South Africa's forecast energy demand for the 20-year period from 2010 to 2030. The promulgated IRP 2010–2030 identified the preferred generation technology required to meet expected demand growth up to 2030. It incorporated government objectives such as affordable electricity, reduced greenhouse gas (GHG) emissions, reduced water consumption, diversified electricity generation sources, localisation and regional development. The IRP recognises that solar PV, wind and CSP with storage present an opportunity to diversify the electricity mix, to produce distributed generation and to provide off-grid electricity. Renewable technologies also present huge potential for the creation of new industries, job creation and localisation across the value chain.
New Growth Path	Government released the New Economic Growth Path Framework on 23 November 2010. The aim of the framework is to enhance growth, employment creation and equity. The policy's principal target is to create five million jobs over the next 10 years and reflects government's commitment to prioritising employment creation in all economic policies. The framework identifies strategies that will enable South Africa to grow in a more equitable and inclusive manner while attaining South Africa's developmental agenda. Central to the New Growth Path is a massive

Applicable Policy	Description of Policy
	investment in infrastructure as a critical driver of jobs across the economy. In this regard the framework identifies investments in five key areas namely: energy, transport, communication, water, and housing.
National Infrastructure Plan	The South African Government adopted a National Infrastructure Plan (NIP) in 2012. The NIP aims to transform the South African economic landscape while simultaneously creating significant numbers of new jobs and strengthening the delivery of basic services. It outlines the challenges and enablers which needs to be addressed in the building and developing of infrastructure. The Presidential Infrastructure Coordinating Commission (PICC) was established by the Cabinet to integrate and coordinate the long-term infrastructure build. The plan also supports the integration of African economies. In terms of the plan Government will invest R827 billion over the next three years to build new and upgrade existing infrastructure. The aim of the investments is to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, electricity plants, hospitals, schools and dams will contribute to improved economic growth.
Integrated Energy Plan	The development of a National IEP was envisaged in the White Paper on the Energy Policy of the Republic of South Africa of 1998 and, in terms of the National Energy Act, 2008 (Act No. 34 of 2008), the Minister of Energy is mandated to develop and, on an annual basis, review and publish the IEP in the Government Gazette. 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 IEP notes that South Africa needs to grow its energy supply to support economic expansion and in so doing, alleviate supply bottlenecks and supply-demand deficits. In addition, it is essential that all citizens are provided with clean and modern forms of energy at an affordable price. As part of the Integrated Energy Planning process, eight key objectives are identified, namely: ▪ Objective 1: Ensure security of supply. ▪ Objective 2: Minimise the cost of energy. ▪ Objective 3: Promote the creation of jobs and localisation. ▪ Objective 4: Minimise negative environmental impacts from the energy sector. ▪ Objective 5: Promote the conservation of water. ▪ Objective 6: Diversify supply sources and primary sources of energy. ▪ Objective 7: Promote energy efficiency in the economy. ▪ Objective 8: Increase access to modern energy. The IEP provides an assessment of current energy consumption trends within different sectors of the economy (i.e., agriculture, commerce, industry, residential and transport) and uses this information to identify future energy requirements, based on different scenarios. The scenarios are informed by different assumptions on economic development and the structure of the economy and also take into account the impact of key policies such as environmental policies, energy efficiency policies, transport policies and industrial policies, amongst others. Based on this information the IEP then determines the optimal mix of energy sources and technologies to meet those energy needs in the most cost-effective manner for each of the scenarios. The associated

Applicable Policy	Description of Policy
	environmental impacts, socio-economic benefits and macroeconomic impacts are also analysed. The IEP is therefore focused on determining the long-term energy pathway for South Africa, taking into account a multitude of factors which are embedded in the eight objectives. As part of the analysis four key scenarios were developed, namely the Base Case, Environmental Awareness, Resource Constrained and Green Shoots scenarios: ▪ The Base Case Scenario assumes that existing policies are implemented and will continue to shape the energy sector landscape going forward. It assumes moderate economic growth in the medium to long term. ▪ The Environmental Awareness Scenario is characterised by more stringent emission limits and a more environmentally aware society, where a higher cost is placed on externalities caused by the supply of energy. ▪ The Resource Constrained Scenario in which global energy commodity prices (i.e. coal, crude oil and natural gas) are high due to limited supply. ▪ The Green Shoots Scenario describes an economy in which the targets for high economic growth and structural changes to the economy, as set out in the National Development Plan (NDP), are met. The IEP notes that South Africa should continue to pursue a diversified energy mix which reduces reliance on a single or a few primary energy sources. In terms of existing electricity generation capacity, the IEP indicates that existing capacity starts to decline notably from 2025, with significant plant retirement occurring in 2031, 2041 and 2048. By 2050 only 20% of the current electricity generation capacity remains. As a result, large investments are required in the electricity sector in order to maintain an adequate supply in support of economic growth. By 2020, various import options become available, and some new coal capacity is added along with new wind, solar and gas capacity. The mix of generation capacity technologies by 2050 is considerably more diverse than the current energy mix, across all scenarios. The main differentiating factors between the scenarios are the level of demand, constraints on emission limits and the carbon dioxide externality costs. In all scenarios the energy mix for electricity generation becomes more diverse over the period to 2050, with coal reducing its share from about 85% in 2015 to 15–20% in 2050 (depending on the scenario). Solar, wind, nuclear, gas and electricity imports increase their share. The Environmental Awareness and Green Shoots scenarios take on higher levels of renewable energy. An assessment of each scenario against the eight objectives with reference to renewable energy notes while all scenarios seek to ensure that costs are minimised within the constraints and parameters of each scenario, the Base Case Scenario presents the least cost followed by the Environmental Awareness, Resource Constrained and Green Shoots scenarios respectively when total energy system costs are considered. In terms of promoting job creation and localisation potential the Base Case Scenario presents the greatest job creation potential, followed by the Resource Constrained, Environmental Awareness and Green Shoots scenarios respectively. In all scenarios, approximately 85% of total jobs are localisable. For electricity generation, most jobs result from solar technologies followed by nuclear and wind, with natural gas and coal

Applicable Policy	Description of Policy
	making a smaller contribution. The Environmental Awareness Scenario, due to its stringent emission constraints, shows the lowest level of total emissions over the planning horizon. This is followed by the Green Shoots, Resource Constrained and Base Case scenarios. These trends are similar when emissions are considered cumulatively and individually by type.
National Protected Area Expansion Strategy, 2010	The National Protected Area Expansion Strategy 2010 (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 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, 2010). According to the NPAES, there are no areas within the study area that have been identified as priority areas for inclusion in future protected areas. The study area is therefore outside the NPAES focus area.

5.3 PROVINCIAL AND MUNICIPAL LEGAL AND REGULATORY FRAMEWORK

Table 5-3 – Provincial Plans

Applicable Plan	Description of Plan
Mpumalanga Growth and Development Path	The primary objective of the Mpumalanga Economic Growth and Development Path (MEGDP) (2011) is to foster economic growth that creates jobs, reduce poverty and inequality in the Province. The MEGDP identifies supporting the development of clean forms of energy such as wind and hydro power generation opportunities, as well as opportunities including gas production from landfill and organic waste, as one of the key interventions to facilitate growth and job creation in the manufacturing sector. A focal point of the MEGDP is massive investments in infrastructure as a key driver of job creation across the economy, with alternative energy production identified as one of the key opportunities in the Mpumalanga Economic sectors.
Mpumalanga Spatial Development Framework (MSDF), 2019	The Mpumalanga Spatial Development Framework (SDF) (2019) identifies that tourism is an important economic sector and has emerged as a robust driver of growth for emerging economies. The SDF also notes that a significant portion of Mpumalanga's land area is classified as Moderate to High-Very High agricultural potential which can be utilised for agricultural production. However, there are other factors affecting the agricultural sector including loss of agricultural land to other activities, availability of water, contamination of the water used for irrigation by other economic activities, and access to the market. The SDF further notes that mining is the largest economic sector in the province and has assisted other sectors such as manufacturing and power generation, to grow in the province. However, the mining sector has posed some key challenges, including soil and water contamination and environmental pollution, development of mines on good agricultural soil thus threatening food security, restriction of animal movement due to open cast mining thus affecting the ecosystem etc. It also

Applicable Plan	Description of Plan
	notes that Mpumalanga's manufacturing plants and coal fired power plants are the key polluters of air, with climate change also identified as a key challenge in the province. Therefore, the province must carefully design interventions that provide a gradual shift from mining oriented sectors to the sustainable economic sectors to maintain sustained growth of the provincial economy. The SDF notes that a significant amount of the country's electricity comes from coal-fired stations in Mpumalanga. It also observes that there is a steady increase in the demand for electricity in the province, mostly attributed to residential, commercial and industrial development, including mining and heavy industry. The Provincial SDF also notes that the abundance of coal has led to the development of many coal-fired power stations in the province, however these coalfields are depleting, therefore making it necessary to consider renewable power sources in Mpumalanga. The SDF also recognises that Mpumalanga's Coal Mining and Coal Fired Power Plant region (mainly the Highveld area) will be under immense pressure for environmental considerations and as a result, the region will witness a possible decline in demand of coal and large-scale employment. The SDF proposes to diversify the regional economy and facilitate the gradual transition of economic activities in the region.
Mpumalanga Industrial Development Plan	In terms of industry, the purpose of the Mpumalanga Industrial Development Plan (MIDP) (2015) is to promote the establishment of new industries and promote growth of existing industries in the province.
Mpumalanga Conservation Act (No. 10 of 1998)	This Act provides for the sustainable utilisation of wild animals, aquatic biota and plants; provides for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; provides for offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; and provides for the issuing of permits and other authorisations. Amongst other regulations, the following may apply to the current project: ▪ Various species are protected; ▪ The owner of land upon which an invasive species is found (plant or animal) must take the necessary steps to eradicate or destroy such species. The Act provides lists of protected species for the Province. According to the Mpumalanga Nature Conservation Act, a permit is required for the removal of any species on this list.

Table 5-4 – District and Local Municipality Plans

Applicable Plan	Description of Plan
Gert Sibande Municipality Integrated Development Plan	According to the Municipal Systems Act (Act 32 of 2000) (MSA), all municipalities have to undertake an IDP process. The IDP is a legislative requirement thus it has legal status and supersedes all other plans that guide development at local government level.

Applicable Plan	Description of Plan
	The GSDM IDP Review (2019/ 2020) and Final IDP (2020/2021) has identified the following development priorities: ■ Municipal Transformation and Organisational Development ■ Basic Service Delivery and Infrastructure Development ■ Local Economic Development ■ Municipal Financial Viability and Management ■ Good Governance and Public Participation ■ Spatial Development Analysis and Rationale The main goal and strategic objective of the Basic Service Delivery and Infrastructure Development priority is a reliable and sustainable service. One of the main strategic objectives for reaching the goal is the provision of basic services such as water and electricity to an approved minimum level of standards in a sustainable manner; as per the national guidelines.
Lekwa Local Municipality Integrated Development Plan	The vision of the LLM is “to be the leading, people centred municipality excelling in economic growth, development and governance”. The mission that underpins the vision is: ■ Transparent and accountable governance. ■ Accelerated customer focused affordable service delivery. ■ Creation of conducive environment for economic development and growth. ■ Sustainable infrastructural development and maintenance. ■ Enhance community participation in the affairs of the municipality. ■ To initiate ground breaking innovations in the way we conduct our business. The IDP lists a number of Strategic Goals (SGs) and Key Performance Areas (KPAs) of which the following are relevant to the project.: ■ SG: • Improved access to water, sanitation, electricity, and waste removal • Increased Economic growth ■ KPA: • KPA 1: Basic services delivery and infrastructure development • KPA 4: Local Economic Development

5.4 INTERNATIONAL STANDARDS AND GUIDELINES

5.4.1 IFC PERFORMANCE STANDARDS

The International Finance Corporation (IFC) is an international financial institution that offers investment, advisory, and asset management services to encourage private sector development in developing countries. The IFC is a member of the World Bank Group (WBG) and is headquartered in Washington, D.C., United States. It was established in 1956 as the private sector arm of the WBG to advance economic development by investing in strictly for-profit and commercial projects that purport to reduce poverty and promote development.

The IFC's stated aim is to create opportunities for people to escape poverty and achieve better living standards by mobilizing financial resources for private enterprise, promoting accessible and competitive markets, supporting businesses and other private sector entities, and creating jobs and

delivering necessary services to those who are poverty-stricken or otherwise vulnerable. Since 2009, the IFC has focused on a set of development goals that its projects are expected to target. Its goals are to increase sustainable agriculture opportunities, improve health and education, increase access to financing for microfinance and business clients, advance infrastructure, help small businesses grow revenues, and invest in climate health.

The IFC is owned and governed by its member countries but has its own executive leadership and staff that conduct its normal business operations. It is a corporation whose shareholders are member governments that provide paid-in capital and which have the right to vote on its matters. Originally more financially integrated with the WBG, the IFC was established separately and eventually became authorized to operate as a financially autonomous entity and make independent investment decisions. It offers an array of debt and equity financing services and helps companies face their risk exposures, while refraining from participating in a management capacity. The corporation also offers advice to companies on making decisions, evaluating their impact on the environment and society, and being responsible. It advises governments on building infrastructure and partnerships to further support private sector development.

The IFC's Sustainability Framework articulates the Corporation's strategic commitment to sustainable development and is an integral part of IFC's approach to risk management. The Sustainability Framework comprises IFC's Policy and Performance Standards on Environmental and Social Sustainability, and IFC's Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability. IFC's Access to Information Policy reflects IFC's commitment to transparency and good governance on its operations and outlines the Corporation's institutional disclosure obligations regarding its investment and advisory services. The Performance Standards (PSs) are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities. In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the PSs to manage environmental and social risks and impacts so that development opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation to achieve its overall development objectives. The PSs may also be applied by other financial institutions (FIs).

The Project is considered a Category B project in terms of the IFC Policy on E&S Sustainability (2012), having the potential to cause limited adverse environmental or social risks and/or impacts that are few in number, generally site specific, largely reversible, and readily addressed through mitigation measures.

The objectives and applicability of the eight PSs are outlined in **Table 5-5.**

Table 5-5 – Objectives and Applicability of the IFC Performance Standards

Reference	Requirements		Project Specific Applicability
Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts			
Overview	Performance Standard 1 underscores the importance of managing environmental and social performance throughout the life of a project. An effective Environmental and Social Management System (ESMS) is a dynamic and continuous process initiated and supported by management, and involves engagement between the client, its workers, local communities directly affected by the project (the Affected Communities) and, where appropriate, other stakeholders.		
Objectives	▪ To identify and evaluate environmental and social risks and impacts of the project. ▪ To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment. ▪ To promote improved environmental and social performance of clients through the effective use of management systems. ▪ To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately. ▪ To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.		
Aspects	1.1	Policy	The IFC Standards state under PS 1 (Guidance Note 23) that "*the breadth, depth and type of analysis included in an ESIA must be proportionate to the nature and scale of the proposed project's potential impacts as identified during the course of the assessment process*." This document is the draft deliverable from the S&EIA process undertaken for the proposed Project. The impact assessment comprehensively assesses the key environmental and social impacts and complies with the requirements of the South African EIA Regulations. In addition, an EMPr will be compiled during the EIA phase of the project.
	1.2	Identification of Risks and Impacts	
	1.3	Management Programmes	
	1.4	Organisational Capacity and Competency	
	1.5	Emergency Preparedness and Response	
	1.6	Monitoring and Review	
	1.7	Stakeholder Engagement	
	1.8	External Communication and Grievance Mechanism	
	1.9	Ongoing Reporting to Affected Communities	
Performance Standard 2: Labour and Working Conditions;			
Overview	Performance Standard 2 recognises that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers.		
Objectives	▪ To promote the fair treatment, non-discrimination, and equal opportunity of workers.		

Reference	Requirements		Project Specific Applicability
	▪ To establish, maintain, and improve the worker-management relationship. ▪ To promote compliance with national employment and labour laws. ▪ To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client's supply chain. ▪ To promote safe and healthy working conditions, and the health of workers. ▪ To avoid the use of forced labour.		
Aspects	2.1	▪ Working Conditions and Management of Worker Relationship ▪ Human Resources Policy and Management ▪ Working Conditions and terms of Engagement ▪ Workers organisation ▪ Non- Discrimination and Equal Opportunity ▪ Retrenchment ▪ Grievance Mechanism	Even though the nature and scale of the project is considered to be small, PS2 is considered applicable as a contractor will be appointed to undertake the required scope of work. Whilst PS2 will be applicable to the Project, it is not intended to be addressed in detail at the EIA stage. Recommendations are provided concerning development of a detailed Human Resources (HR) and Occupational Health and Safety (OHS) system by the developer and its partners as the Project moves towards implementation. In addition, measures to address the Interim Advice for IFC Clients on Supporting Workers in the Context of COVID-19 are referenced. The EMPr will incorporate the requirements for compliance with local and international Labour and Working legislation and good practice on the part of the contractors.
	2.2	▪ Protecting the Workforce ▪ Child Labour ▪ Forced Labour	
	2.3	Occupational health and Safety	
	2.4	Workers Engaged by Third Parties	
	2.5	Supply Chain	
Performance Standard 3: Resource Efficiency and Pollution Prevention			
Overview	Performance Standard 3 recognises that increased economic activity and urbanisation often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. There is also a growing global consensus that the current and projected atmospheric concentration of greenhouse gases (GHG) threatens the public health and welfare of current and future generations. At the same time, more efficient and effective resource use and pollution prevention and GHG emission avoidance and mitigation technologies and practices have become more accessible and achievable in virtually all parts of the world.		
Objectives	▪ To avoid or minimise adverse impacts on human health and the environment by avoiding or minimising pollution from project activities.		

Reference	Requirements		Project Specific Applicability
	▪ To promote more sustainable use of resources, including energy and water. ▪ To reduce project related GHG emissions.		
Aspects	3.1	▪ Policy Resource Efficiency ▪ Greenhouse Gases ▪ Water Consumption	PS3-related impacts, such as the management of construction waste, hazardous substances, and stormwater are assessed in **Section 8** of this report. There are no material resource efficiency issues associated with the Project. The EMPr will include general resource efficiency measures. The project is not GHG emissions intensive and a climate resilience study or a GHG emissions-related assessment is not deemed necessary for a project of this nature. However, the Tournée 2 Solar PV Facility seeks to facilitate resource efficiency and pollution prevention by contributing to the South African green economy. Dust air pollution in the construction phase will be addressed in the EMPr. The Project will not result in the release of industrial effluents. Potential pollution associated with sanitary wastewater is low and mitigation measures will be included in the EMPr. Land contamination of the site from historical land use (i.e. low intensity agricultural / grazing) is not considered to be a cause for concern. The waste generation profile of the project is not complex. Waste mitigation and management measures will be included in EMPr. Hazardous materials are not a key issue; small quantities of construction materials (oil, grease, diesel fuel etc.) are the only wastes expected to be associated with the project. The EMPr will take these anticipated hazardous materials into account and recommend relevant mitigation and management measures.
	3.2	▪ Pollution Prevention ▪ Air Emissions ▪ Stormwater ▪ Waste Management ▪ Hazardous Materials Management ▪ Pesticide use and Management	
Performance Standard 4: Community Health, Safety, and Security			
Overview	Performance Standard 4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts.		
Objectives	▪ To anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances. ▪ To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities		
Aspects	4.1	▪ Community Health and Safety ▪ Infrastructure and Equipment Design and Safety	The requirements included in PS 4 will be addressed in the EIA process and the development of the EMPr. During the construction phase there will be an increase in vehicular traffic along public roads, largely due to the need for importation of construction material. Pedestrian and

Reference	Requirements		Project Specific Applicability
		▪ Hazardous Materials Management and Safety ▪ Ecosystem Services ▪ Community Exposure to Disease ▪ Emergency Preparedness and Response	road safety risks will be qualitatively evaluated in the EIA process and the clients' standard safety and security measures, as well as potential additional measures recommended by WSP, will be detailed in the EMPr.
	4.2	Security Personnel	
Performance Standard 5: Land Acquisition and Involuntary Resettlement			
Overview	Performance Standard 5 recognises that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use.		
Objectives	▪ To avoid, and when avoidance is not possible, minimise displacement by exploring alternative project designs. ▪ To avoid forced eviction. ▪ To anticipate and avoid, or where avoidance is not possible, minimise adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected. ▪ To improve, or restore, the livelihoods and standards of living of displaced persons. ▪ To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.		
Aspects	5.1	▪ Displacement ▪ Physical Displacement ▪ Economic Displacement ▪ Private Sector Responsibilities under Government Managed Resettlement	PS5 is not applicable to the proposed Tournée 2 Solar PV Facility as no physical or economic displacement or livelihood restoration will be required. The proposed Tournée 2 Solar PV Facility is located on privately owned land that is utilised for agriculture by the landowners. The significance of all potential agricultural impacts is kept low by the very small proportion of the land that is impacted. A Soil, Landuse and Land Capability Assessment has been undertaken and is included in **Appendix G.1**.
Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources			
Overview	Performance Standard 6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development.		
Objectives	▪ To protect and conserve biodiversity.		

Reference	Requirements		Project Specific Applicability
	▪ To maintain the benefits from ecosystem services. ▪ To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.		
Aspects	6.1	Protection and Conservation of Biodiversity	The Tournée 2 Solar PV Facility. A Terrestrial Biodiversity Scoping Report as well as an Avifauna Scoping Survey, Bats Scoping Survey, and Freshwater Scoping Report have been included in the proposed scope. The methodologies for the specialist assessments include a combination of literature review, in-field surveys and sensitivity mapping. This substantively complies with the PS 6 general requirements for scoping and baseline assessment for determination of biodiversity and ecosystem services issues. The determination of habitat sensitivity was undertaken within the legal and best practice reference framework for South Africa. The prevalence of invasive alien species will be determined, and mitigation and management measures will be included in the EMPr.
Performance Standard 7: Indigenous People			
Overview	Performance Standard 7 recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. Indigenous Peoples are particularly vulnerable if their lands and resources are transformed, encroached upon, or significantly degraded.		
Objectives	▪ To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples. ▪ To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimize and/or compensate for such impacts. ▪ To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner. ▪ To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project's life-cycle. ▪ To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present. ▪ To respect and preserve the culture, knowledge, and practices of Indigenous Peoples.		
Aspects	7.1	General ▪ Avoidance of Adverse Impacts ▪ Participation and Consent	As per the international instruments under the United Nations (UN) Human Rights Conventions, no indigenous peoples are present within the study area.

Reference	Requirements		Project Specific Applicability
	7.2	Circumstances Requiring Free, Prior, and Informed Consent ▪ Impacts on Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use ▪ Critical Cultural Heritage ▪ Relocation of Indigenous Peoples from Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use	
	7.3	Mitigation and Development Benefits	
	7.4	Private Sector Responsibilities Where Government is Responsible for Managing Indigenous Peoples Issues	
Performance Standard 8: Cultural Heritage			
Overview	Performance Standard 8 recognizes the importance of cultural heritage for current and future generations.		
Objectives	▪ To protect cultural heritage from the adverse impacts of project activities and support its preservation. ▪ To promote the equitable sharing of benefits from the use of cultural heritage.		
Aspects	8.1	Protection of Cultural Heritage in Project Design and Execution	A Heritage Assessment (**Appendix G.8**) has been carried out by a suitably qualified specialist. A Chance Find Procedure will be included in the EMPr during the EIA phase of the project.

5.4.2 WORLD BANK GROUP ENVIRONMENTAL HEALTH AND SAFETY GUIDELINES

In support of the Performance Standards, the WBG has published a number of Environmental Health and Safety (EHS) Guidelines. The EHS Guidelines are technical reference documents that address IFC's expectations regarding the industrial pollution management performance of its projects. They are designed to assist managers and decision makers with relevant industry background and technical information. This information supports actions aimed at avoiding, minimising, and controlling EHS impacts during the construction, operation, and decommissioning phase of a project or facility. The EHS Guidelines serve as a technical reference source to support the implementation of the IFC Performance Standards, particularly in those aspects related to PS3:

Pollution Prevention and Abatement, as well as certain aspects of occupational and community health and safety.

Where host country regulations differ from the levels and measures presented in the EHS Guidelines, projects seeking international funding may be expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a full and detailed justification for any proposed alternatives is required.

The following IFC / WBG EHS Guidelines have been generally consulted during the preparation of the EIA in order to aid the identification of EHS aspects applicable to the project:

- Electric Power Transmission and Distribution (2007) - information relevant to power transmission between a generation facility and a substation located within an electricity grid, in addition to power distribution from a substation to consumers located in residential, commercial, and industrial areas
- General EHS Guidelines – this includes a section on a range of environmental, occupational health and safety, community health and safety, and construction activities that would apply to the project. The guideline also contains recommended guidelines adopted form the World Health Organisation (WHO) for ambient air and water quality, which will be referred to in the relevant impact assessment sections in the EIA report.

5.4.3 EQUATOR PRINCIPALS

The Equator Principles (EPs) is a risk management framework, adopted by financial institutions, for determining, assessing, and managing environmental and social risk in projects and is primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making.

The EPs apply globally to all industry sectors and to five financial products 1) Project Finance Advisory Services, 2) Project Finance, 3) Project-Related Corporate Loans, 4) Bridge Loans and 5) Project-Related Refinance and Project-Related Acquisition Finance. The relevant thresholds and criteria for application is described in detail in the Scope section of the EP. Currently 125 Equator Principles Financial Institutions (EPFIs) in 37 countries have officially adopted the EPs, covering the majority of international project finance debt within developed and emerging markets. EPFIs commit to implementing the EPs in their internal environmental and social policies, procedures and standards for financing projects and will not provide Project Finance or Project-Related Corporate Loans to projects where the client will not, or is unable to, comply with the EPs.

While the EPs are not intended to be applied retroactively, EPFIs apply them to the expansion or upgrade of an existing project where changes in scale or scope may create significant environmental and social risks and impacts, or significantly change the nature or degree of an existing impact. The EPs have greatly increased the attention and focus on social/community standards and responsibility, including robust standards for indigenous peoples, labour standards, and consultation with locally affected communities within the Project Finance market.

The EPs have also helped spur the development of other responsible environmental and social management practices in the financial sector and banking industry and have supported member banks in developing their own Environmental and Social Risk Management Systems.

The requirements and applicability of the EPs are outlined in **Table 5-6**.

It should be noted that Principles 8 and 10 relate to a borrower's code of conduct and are therefore not considered relevant to the S&EIA process and have not been included in this discussion.

Table 5-6 - Requirements and Applicability of the Equator Principles

Requirement		Project Specific Applicability
Principle 1: Review and Categorisation		
Overview	When a project is proposed for financing, the EPFI will, as part of its internal social and environmental review and due diligence, categorise such project based on the magnitude of its potential impacts and risks in accordance with the environmental and social screening criteria of the IFC. Using categorisation, the EPFI's environmental and social due diligence is commensurate with the nature, scale, and stage of the Project, and with the level of environmental and social risks and impacts. The categories are: ▪ Category A: Projects with potential significant adverse environmental and social risks and/or impacts that are diverse, irreversible or unprecedented; ▪ Category B: Projects with potential limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures; and ▪ Category C: Projects with minimal or no adverse environmental and social risks and/or impacts.	Based upon the significance and scale of the Project's environmental and social impacts, the proposed project is regarded as a Category B project i.e. a project with potential limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.
Principle 2: Environmental and Social Assessment		
Overview	For all Category A and Category B Projects, the EPFI will require the client to conduct an appropriate Assessment process to address, to the EPFI's satisfaction, the relevant environmental and social risks and scale of impacts of the proposed Project (which may include the illustrative list of issues found in Exhibit II). The Assessment Documentation should propose measures to minimise, mitigate, and where residual impacts remain, to compensate/offset/remedy for risks and impacts to Workers, Affected Communities, and the environment, in a manner relevant and appropriate to the nature and scale of the proposed Project. The Assessment Documentation will be an adequate, accurate and objective evaluation and presentation of the environmental and social risks and impacts, whether prepared by the client, consultants or external experts. For Category A, and as appropriate, Category B Projects, the Assessment Documentation includes an	This document is the first deliverable (i.e. Draft Scoping Report) from the S&EIA process undertaken for the proposed Project. The impact assessment will be undertaken during the next phase of the S&EIA process. The assessment will comprehensively assess the key environmental and social impacts and complies with the requirements of the South African EIA Regulations. In addition, an EMPr will also be compiled.

Requirement		Project Specific Applicability
	Environmental and Social Impact Assessment (ESIA). One or more specialised studies may also need to be undertaken. For other Category B and potentially C Projects, a limited or focused environmental or social assessment may be appropriate, applying applicable risk management standards relevant to the risks or impacts identified during the categorisation process.	
Principle 3: Applicable Environmental and Social Standards		
Overview	The Assessment process should, in the first instance, address compliance with relevant host country laws, regulations and permits that pertain to environmental and social issues. The EPFI's due diligence will include, for all Category A and Category B Projects globally, review and confirmation by the EPFI of how the Project and transaction meet each of the Principles. For Projects located in Non-Designated Countries, the Assessment process evaluates compliance with the then applicable IFC PS and WBG EHS Guidelines. For Projects located in Designated Countries, compliance with relevant host country laws, regulations and permits that pertain to environmental and social issues.	As South Africa has been identified as a non-designated country, the reference framework for environmental and social assessment is based on the IFC PS. In addition, this S&EIA process has been undertaken in accordance with NEMA (the host country's relevant legislation).
Principle 4: Environmental and Social Management System and Equator Principles Action Plan		
Overview	For all Category A and Category B Projects, the EPFI will require the client to develop or maintain an Environmental and Social Management System (ESMS). Further, an Environmental and Social Management Plan (ESMP) will be prepared by the client to address issues raised in the assessment process and incorporate actions required to comply with the applicable standards. Where the applicable standards are not met to the EPFI's satisfaction, the client and the EPFI will agree on an Equator Principles Action Plan (EPAP). The EPAP is intended to outline gaps and commitments to meet EPFI requirements in line with the applicable standards.	A formal project specific ESMS will be compiled in the event that the project is developed in the future. Management and monitoring plans outlines in the EMPr will serve as the basis for an ESMS for the proposed Project.
Principle 5: Stakeholder Engagement		
Overview	EPFI will require the client to demonstrate effective Stakeholder Engagement as an ongoing process in a structured and culturally appropriate manner with Affected Communities Workers and, where relevant, Other Stakeholders. For Projects with potentially significant adverse impacts on Affected	The S&EIA process includes an extensive stakeholder engagement process which complies with the South African EIA Regulations. The process includes consultations with local communities, nearby businesses,

Requirement		Project Specific Applicability
	Communities, the client will conduct an Informed Consultation and Participation process. To accomplish this, the appropriate assessment documentation, or non-technical summaries thereof, will be made available to the public by the borrower for a reasonable minimum period in the relevant local language and in a culturally appropriate manner. The borrower will take account of and document the process and results of the consultation, including any actions agreed resulting from the consultation. Disclosure of environmental or social risks and adverse impacts should occur early in the Assessment process, in any event before the Project construction commences, and on an ongoing basis.	and a range of government sector stakeholders (state owned enterprises, national, provincial and local departments). The stakeholder engagement process solicits interest from potentially interested parties through the placement of site notices and newspaper advertisements as well as written and telephonic communication. The stakeholder engagement process is detailed in **Section 2.6**.
Principle 6: Grievance Mechanism		
Overview	For all Category A and, as appropriate, Category B Projects, the EPFI will require the client, as part of the ESMS, to establish effective grievance mechanisms which are designed for use by Affected Communities and Workers, as appropriate, to receive and facilitate resolution of concerns and grievances about the Project's environmental and social performance. The borrower will inform the Affected Communities and Workers about the grievance mechanism in the course of the stakeholder engagement process and ensure that the mechanism addresses concerns promptly and transparently, in a culturally appropriate manner, and is readily accessible, at no cost, and without retribution to the party that originates the issue or concern.	The EMPr will include a Grievance Mechanism Process for Public Complaints and Issues. This procedure effectively allows for external communications with members of the public to be undertaken in a transparent and structured manner.
Principle 7: Independent Review		
Overview	For all Category A and, as appropriate, Category B Projects, an Independent Environmental and Social Consultant, not directly associated with the client, will carry out an Independent Review of the Assessment Documentation including the ESMPs, the ESMS, and the Stakeholder Engagement process documentation in order to assist the EPFI's due diligence, and assess Equator Principles compliance.	This principle will only become applicable in the event that the project is developed in the future.
Principle 9: Independent Monitoring and Reporting		
Overview	To assess Project compliance with the Equator Principles after Financial Close and over the life of the loan, the EPFI will require independent monitoring and reporting for all Category A, and as	This principle will only become applicable in the event that the project is developed in the future.

Requirement		Project Specific Applicability
	appropriate, Category B projects. Monitoring and reporting should be provided by an Independent Environmental and Social Consultant; alternatively, the EPFI will require that the client retain qualified and experienced external experts to verify its monitoring information, which will be shared with the EPFI in accordance with the frequency required.	

5.5 OTHER GUIDELINES AND BEST PRACTICE RECOMMENDATIONS

5.5.1 GENERIC EMPR RELEVANT TO AN APPLICATION FOR SUBSTATION AND OVERHEAD ELECTRICITY TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE

NEMA requires that an EMPr be submitted where an EIA has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation. The content of an EMPr must either contain the information set out in Appendix 4 of the EIA Regulations, 2014, as amended, or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice, that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including, but not limited to, the applicant and the CA.

GN 435 of 22 March 2019 identified a generic EMPr relevant to applications for substations and overhead electricity transmission and distribution infrastructure which require authorisation in terms of Section 42(2) of NEMA. Applications for overhead electricity transmission and distribution infrastructure that trigger Activity 11 of Listing Notice 1 or Activity 9 of Listing Notice 2 and any other listed or specified activities must use the generic EMPr.

The objective of the generic EMPr is "*to prescribe and pre-approve generally accepted impact management outcomes and impact management actions, which can commonly and repeatedly be used for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of overhead electricity transmission and distribution infrastructure. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature*."

The generic EMPr (for Substations) will be included in the Site-Specific EMPr to be generated in the EIA Phase.

5.6 ADDITIONAL PERMITS AND AUTHORISATIONS

Table 5-7 outlines a number of additional permits and authorisations required for the proposed development, as well as the relevant Competent Authorities responsible. Further to the list below, approvals with regards to the Water Services Act and relevant municipal By-Laws may also be applicable. This list will be further refined in the EIA Phase.

Table 5-7 – Additional Permits and Authorisations required for the proposed development

Permits / Authorisation	Legislation	Relevant Authority	Status
Notification Of Intent To Develop (NID) Section 38 (1) and Section 38 (8)	Section 38 (1) & (8) of the NHRA	SAHRA	In Process
Subdivision of Agricultural Land Act (SALA) Consent / Change of Land Use (re-zoning)	Subdivision of Agricultural Land Act (Act No. 70 of 1970) / Spatial Planning and Land Use Management Act (Act No. 16 of 2013) (SPLUMA)	DALRRD	Given that the project is proposed on land zoned for Agriculture, SALA requires that any long-term lease associated with the renewable energy facility be approved by the DALRRD. Subdivision and consolidation of land are also regulated as part of municipal planning, and will therefore be subject to municipal by-laws and provincial legislation. The SALA consent and Land use zoning are separate processes from the Application for EA, and needs to be applied for and obtained separately from the EA and S&EIR process. It is however noted that a rezoning application is already underway for the proposed project, however, can only be complete once the EA is issued. The proponent will ensure all municipal approvals and zoning requirements are met prior to commencement of construction.
Water Use Licence / General	National Water Act (Act No. 36 of 1998)	Department of Water and Sanitation	An application for water use authorisation is currently underway for this project.
Obstacle Permit	Civil Aviation Act (Act 13 of 2009)	Air Traffic and Navigation Services / Civil Aviation Authority	Conditional Approval will be required for the PV facility prior to construction.

Permits / Authorisation	Legislation	Relevant Authority	Status
Section 53 Approval	Minerals and Petroleum Resources Development Act (No. 28 of 2002)	Department of Mineral Resources and Energy	Approval will be required prior to construction.
Permits for removal or destruction of Threatened or Protected Species (TOPs)	National Environmental Management Biodiversity Act	DFFE	Permits will be obtained prior to the commencement of construction if applicable.

6 BASELINE ENVIRONMENT

The following chapter presents an overview of the biophysical and socio-economic environment in which the proposed Project is located. It is important to gain an understanding of the Project area and its surroundings, as it will provide for a better understanding of the receiving environment in which the Project is being considered.

The description of the baseline environment is essential in that it represents the conditions of the environment before the construction of the proposed Project (i.e. the current, or status quo, environment) against which environmental impacts of the proposed Project can be assessed and future changes monitored.

The area has previously been studied to some extent and is recorded in various sources. Consequently, some components of the baseline have been generated based on literature review. However, where appropriate, baseline information has been supplemented or generated by specialists appointed to undertake baseline and impact assessments for the proposed Project.

6.1 PHYSICAL ENVIRONMENT

6.1.1 SOIL, LANDUSE AND LAND CAPABILITY

The following is extracted from the Soil, Landuse and Land Capability Assessment by Zimpande Research Collaborative (ZRC) and included as ***Appendix G.1****.*

6.1.1.1 Current Land Use

According to observations made during the site assessment the Tournée 2 Solar PV Park largely comprises grazing land as well as cultivated field with maize and soybeans as the crops of choice. The Tournée 2 Solar PV Park is traversed by watercourses which comprises instream dams as well other artificial impoundments in the immediate vicinity of these watercourses. The surroundings are characterised by cultivated lands as well as the Tutuka Power Station and ash dam located south of the Tournée 2 Solar PV Park. **Figure 6-1** below depicts the associated land use within the study area.

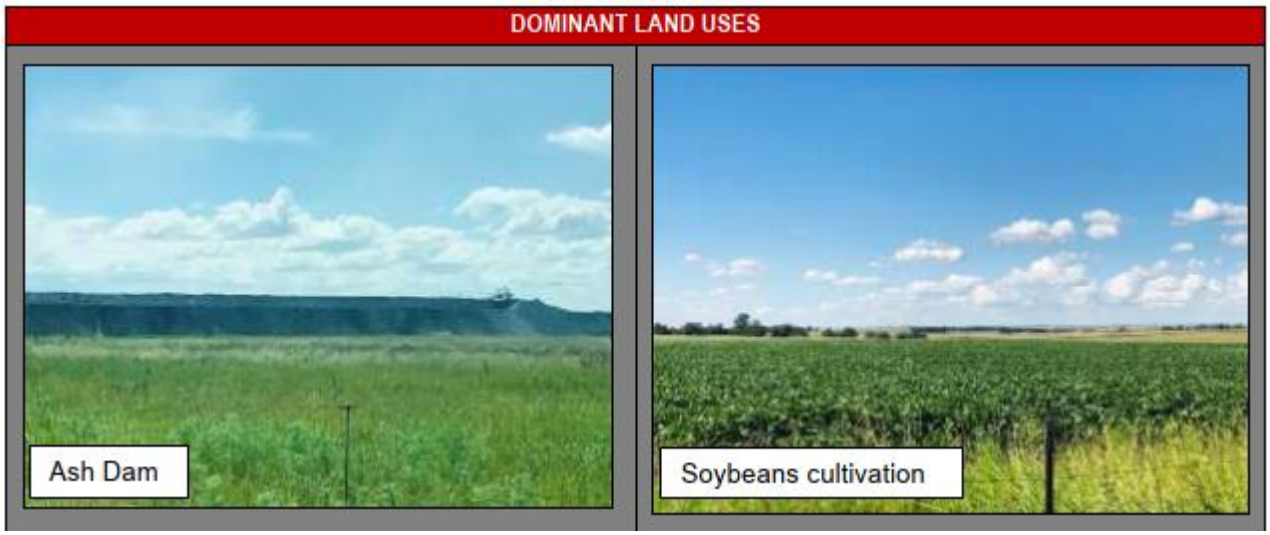

Figure 6-1 - Land uses associated with the Tournée 2 Solar PV Park

Source: ZRC, 2023

6.1.1.2 Dominant Soil Forms

The catena of the landscape in which the wetland is situated largely resembles a Vertic and Melanic topo sequence where the soils are characterised by black coloured, strongly to very strongly structured (topsoil and subsoil) of varying depths. These soils have high clay content, displaying a high water-holding capacity and mostly containing a high percentage of swelling clay minerals.

Vertic and Melanic soils associated with the study area can be classified as Arcadia, Rustenburg and Rensburg soil forms, where the Vertic/Melanic A horizon grades directly into a Hard Rock material (Milkwood/Mayo) or a Gleyed horizon which indicates signs of prolonged saturation. These soils can also be moderately deep where the Vertic/Melanic grades into a pedocutanic horizon, underlain by gleyed material. These soils are generally restricted to intensive grazing and wildlife.

The portions to the east are characterised by Darnall/Bonheim soil forms which are also of melanic (dark clayey) character underlined by pedocutanic horizons as well as lithic/hard rock material. Although these soils resemble the Milkwood/Mayo soils these soils have adequate root depth for most crops and can be cultivated and produce good yield if intensive management practices are implemented.

The remaining portion to the south is comprised of Glencoe soil forms which are characterised by Orthic A horizon, underlain by yellow brown apedal B horizon over hard plinthic material. These are considered arable soils with wetness limitation due to the occurrence of semi-impermeable plinthic material which impedes vertical movement and promotes lateral flows.

The spatial distribution of all identified soil forms within the study area is presented in soil map in **Figure 6-2** below.

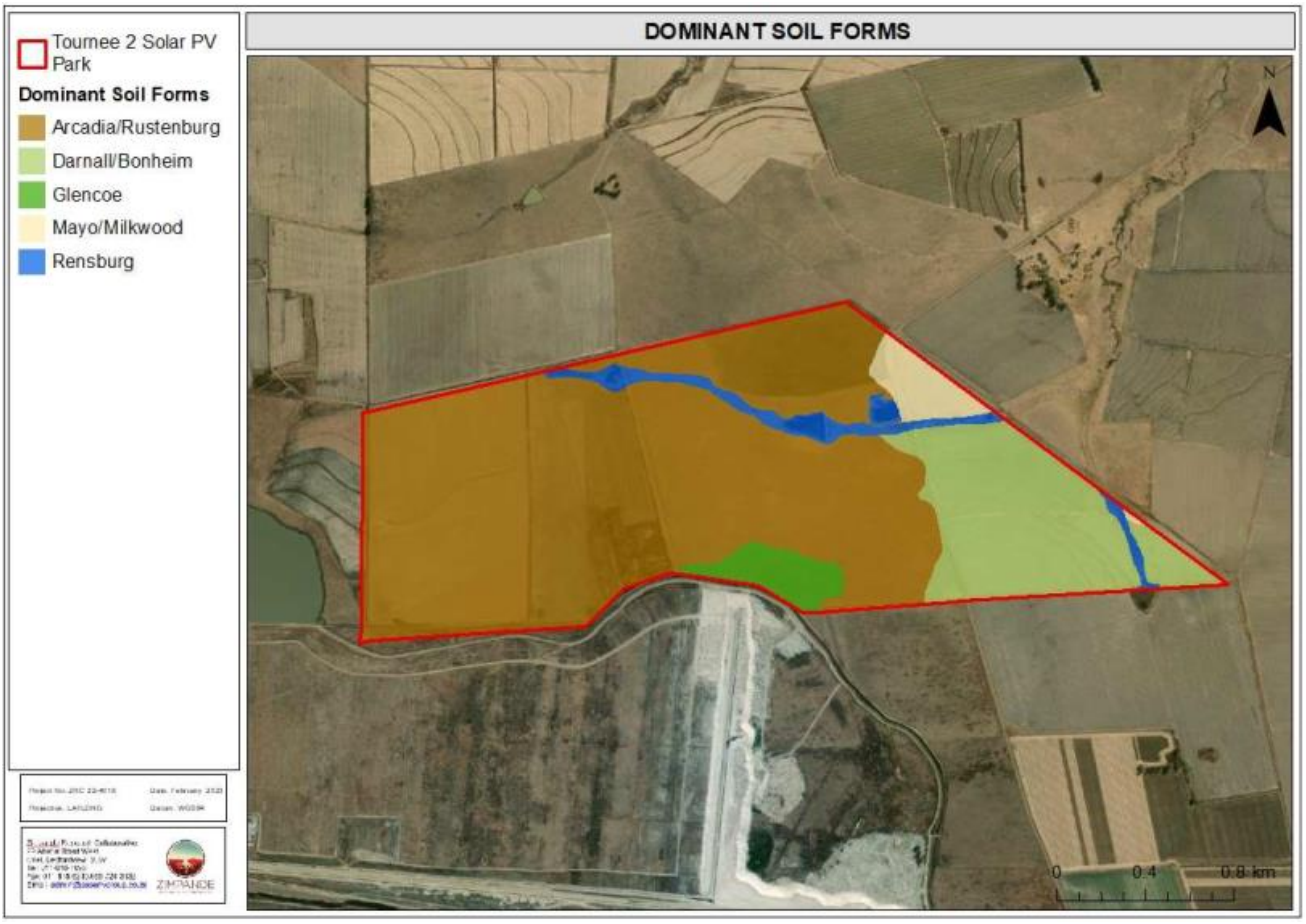

Figure 6-2 - Dominant soil forms associated with the Tournée 2 Solar PV Park

Source: ZRC, 2023

6.1.1.3 Land Capability Classification

For this assessment, land capability was inferred in consideration of observed limitations to land use due to physical soil properties and prevailing climatic conditions. Climate Capability (measured on a scale of 1 to 8) was therefore considered in the agricultural potential classification. The study area falls into Climate Capability Class 4 due a moderately restricted growing season due to low temperatures and severe frost. Good yield potential for a moderate range of adapted.

The identified soils were classified into land capability and land potential classes using the Camp et. al, and Guy and Smith Classification system (Camp et al., 1987; Guy and Smith, 1998), as presented on **Figure 6-3**; while **Figure 6-4** illustrates the Land Potential associated with the study area when incorporating other factors such as climate, slope and soil conditions together. **Table 6-1** below presents the dominant soil forms and their respective land capability, agricultural potential as well as areal extent expressed as hectares as well as percentages.

Table 6-1 – Land capability and land potential associated with the soils occurring within the study area

Soil Form	Land Capability	Land Potential	Area (ha)	Percentage (%)
Darmall/Bonheim	Arable (Class IV)	Moderate Potential (L4)	70.4	21.3
Glencoe				
Rensburg	Watercourse (Class V)	Watercourse (L4)	13.5	4.1
Arcadia	Grazing (Class VI)	Restricted Potential (L5)	246.3	74.6
Mayo/Milkwood				
Total Enclosed			**330.2**	**100**

Source: ZRC, 2023

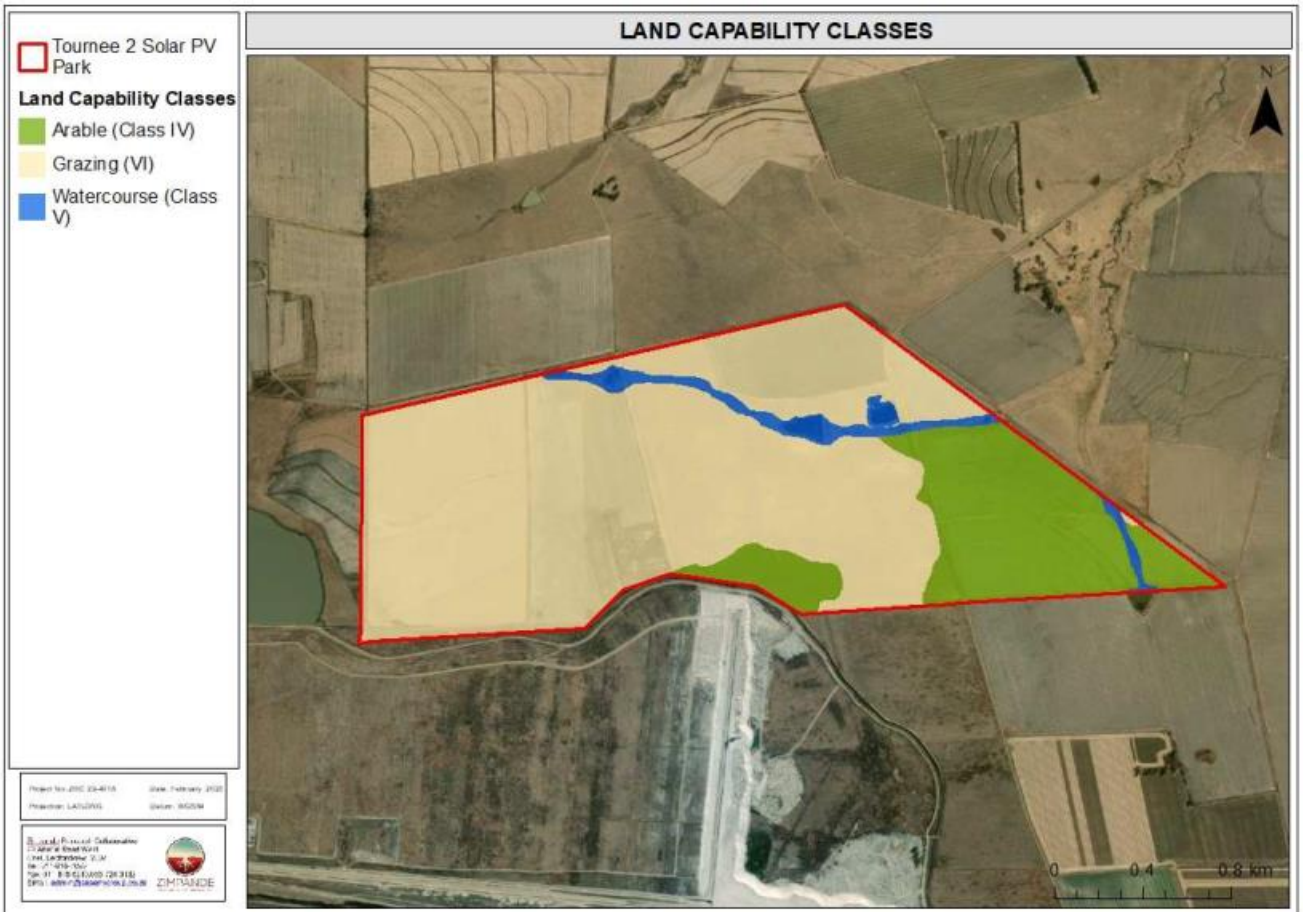

Figure 6-3 – Land Capability of the soil forms associated with the Tournée 2 Solar PV Park

Source: ZRC, 2023

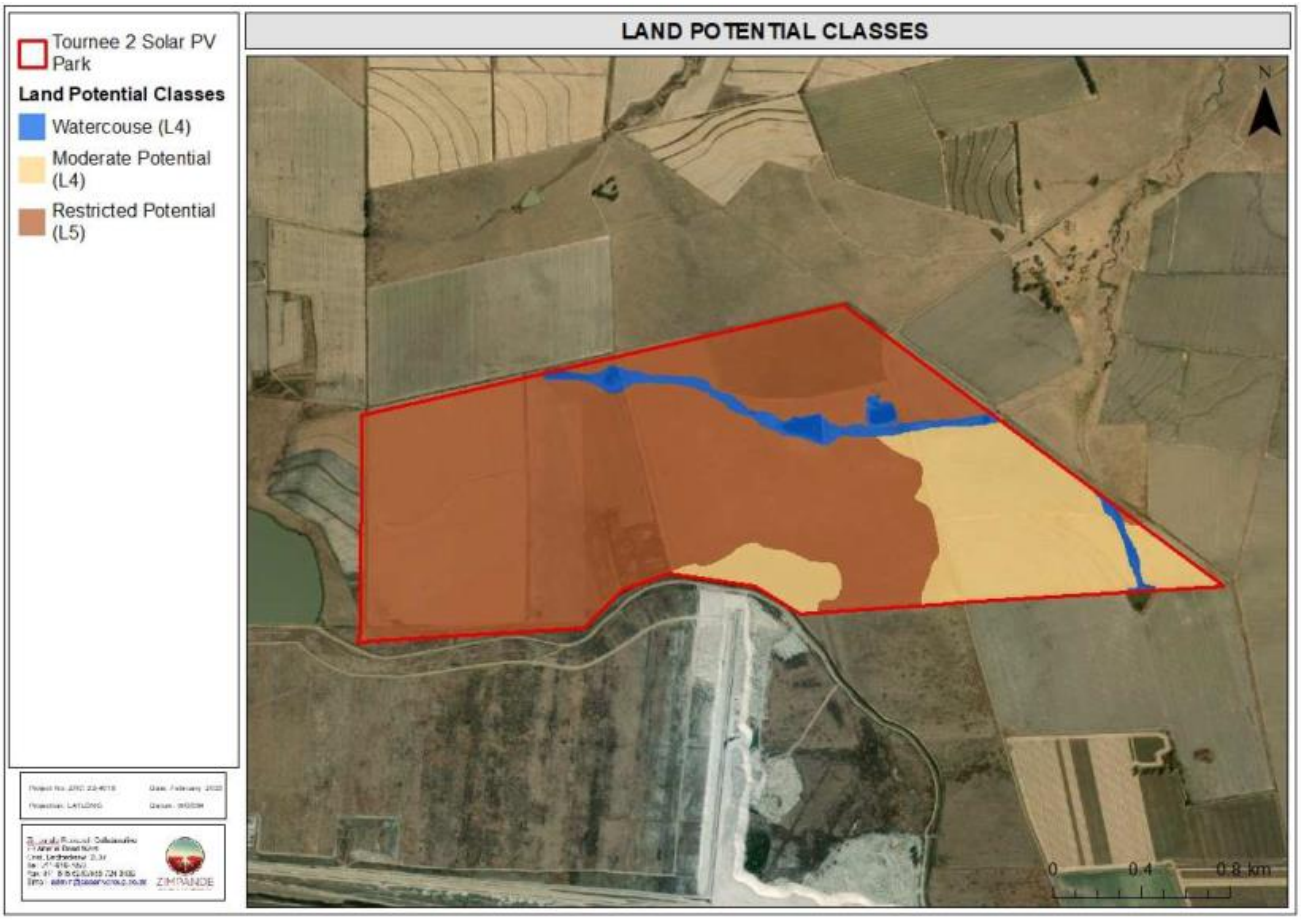

Figure 6-4 – Land potential associated with the Tournée 2 Solar PV Park

Source: ZRC, 2023

6.1.2 GEOLOGICAL CONTEXT

The following is extracted from the Palaeontological Impact Assessment by Prof Marion Bamford and included in Appendix 2 of the Heritage Impact Assessment ***(Appendix G.8)****.*

The site lies in the north-eastern part of the Karoo basin where the lower Karoo Supergroup strata are exposed (**Figure 6-5** and **Figure 6-6**). Along the rivers and streams much younger reworked sands and alluvium overly the older strata.

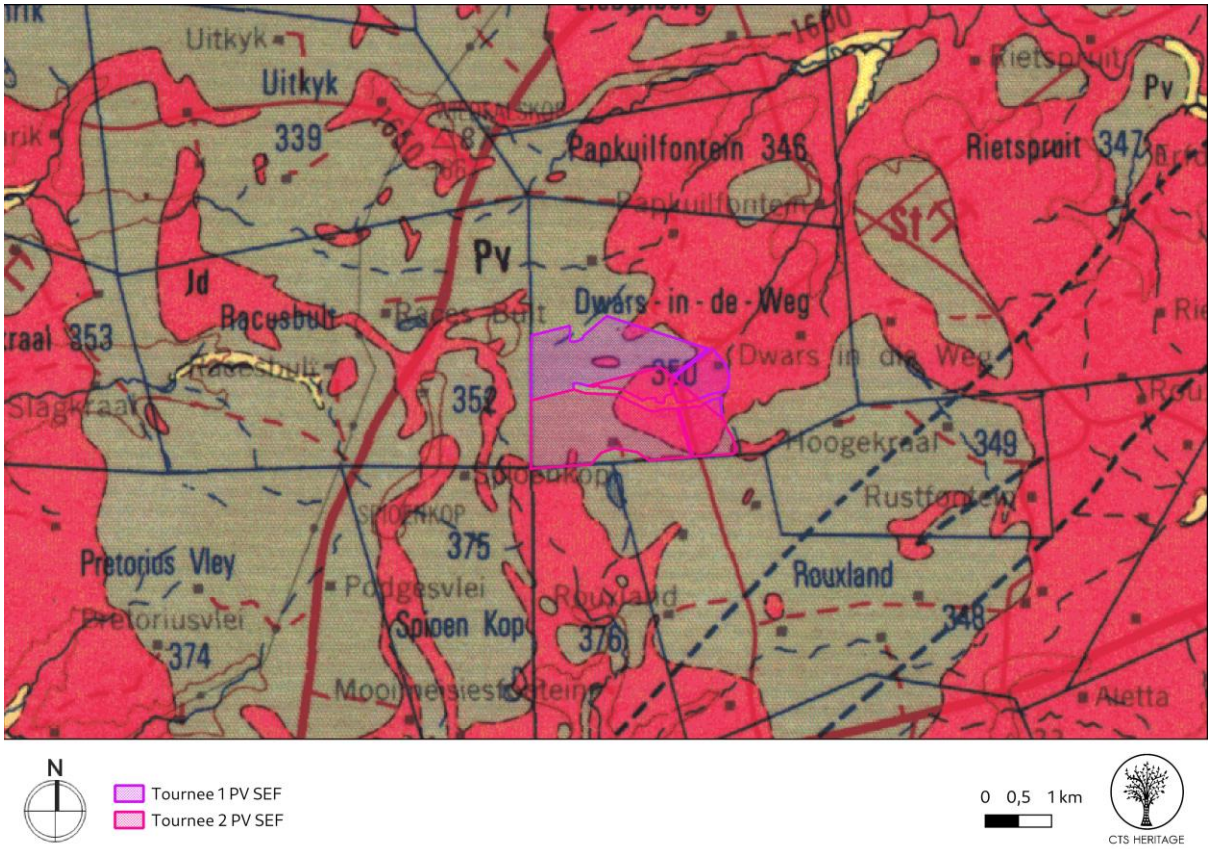

Figure 6-5 - Geological map of the area around Farm Dwars-in-de-Weg 350 for the Tournée PV SEFs

Source: Map enlarged from the Geological Survey 1: 250 000 map 2628 East Rand

Table 6-2 - Explanation of symbols for the geological map and approximate ages

Symbol	Group / Formation	Lithology	Approximate Age
Qc	Quaternary	Alluvium, sand, calcrete	Neogene, ca 2.5 Ma to present
Jd	Jurassic dykes	Dolerite dykes, intrusive	Jurassic, Ca 183 Ma
Pv	Vryheid Fm, Ecca Group, Karoo SG	Shales, mudstone, sandstone, coal seams	Early Permian Ca 290-270 Ma

Source: Johnson et al., 2006; Partridge et al., 2006

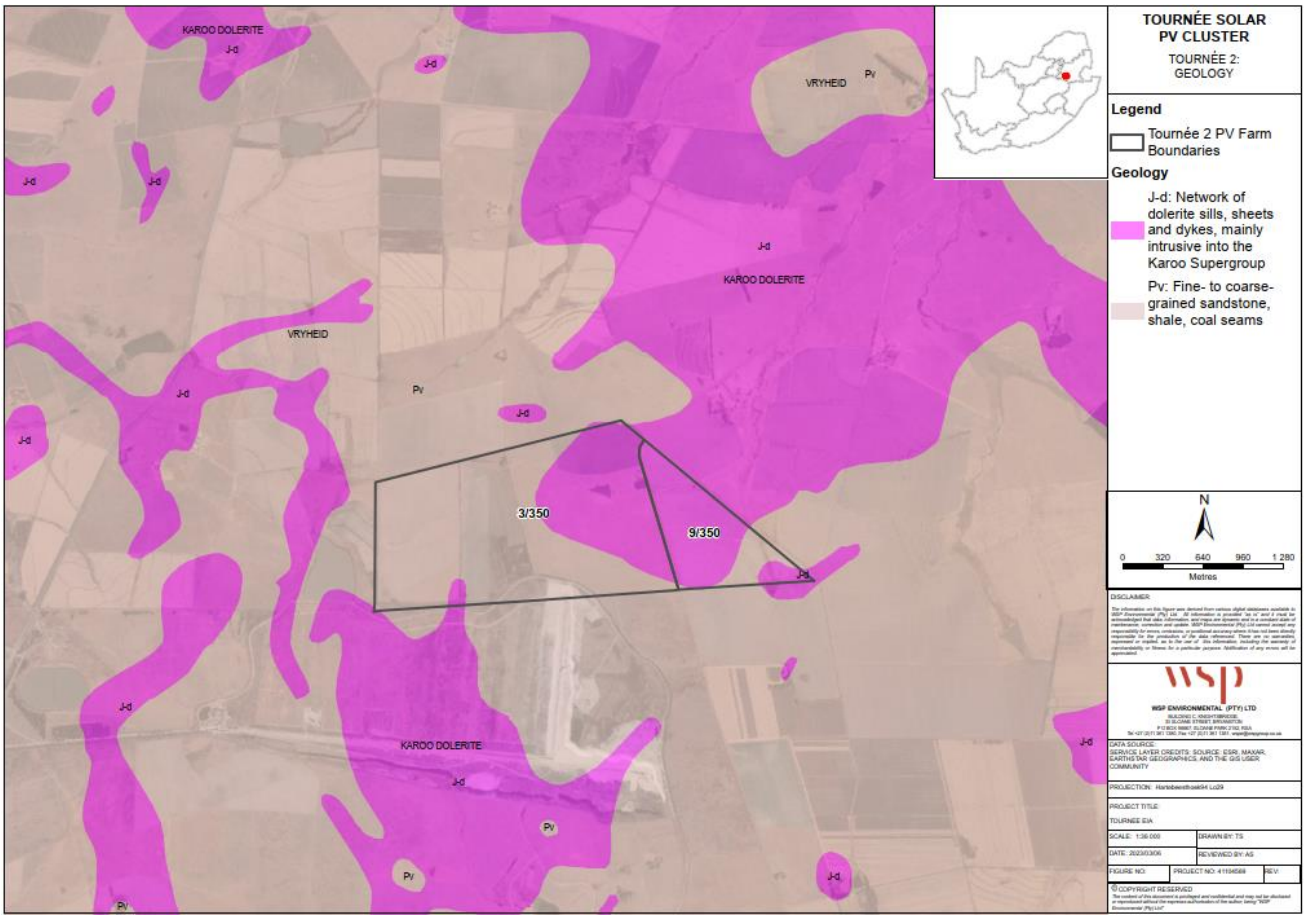

Figure 6-6 - Geological map of Tournée 2 Solar PV Facility

The Karoo Supergroup rocks cover a very large proportion of South Africa and extend from the northeast (east of Pretoria) to the southwest and across to almost the KwaZulu Natal south coast. It is bounded along the southern margin by the Cape Fold Belt and along the northern margin by the much older Transvaal Supergroup rocks. Representing some 120 million years (300 – 183Ma), the Karoo Supergroup rocks have preserved a diversity of fossil plants, insects, vertebrates and invertebrates.

During the Carboniferous Period South Africa was part of the huge continental landmass known as Gondwanaland and it was positioned over the South Pole. As a result, there were several ice sheets that formed and melted, and covered most of South Africa (Visser, 1986, 1989; Isbell et al., 2012). Gradual melting of the ice as the continental mass moved northwards and the earth warmed, formed fine-grained sediments in the large inland sea. These are the oldest rocks in the system and are exposed around the outer part of the ancient Karoo Basin, and are known as the Dwyka Group. They comprise tillites, diamictites, mudstones, siltstones and sandstones that were deposited as the basin filled. This group has been divided into two formations with Elandsvlei Formation occurring throughout the basin and the upper Mbizane Formation occurring only in the Free State and KwaZulu Natal (Johnson et al., 2006).

Overlying the Dwyka Group rocks are rocks of the Ecca Group that are Early Permian in age. There are eleven formations recognised in this group but they do not all extend throughout the Karoo Basin. In Mpumalanga, the Free State and KwaZulu Natal, from the base upwards are the

Pietermaritzburg Formation, Vryheid Formation and the Volksrust Formation. All of these sediments have varying proportions of sandstones, mudstones, shales and siltstones and represent shallow to deep water settings, deltas, rivers, streams and overbank depositional environments.

Large exposures of Jurassic dolerite dykes occur throughout the area. These intruded through the Karoo sediments around 183 million years ago at about the same time as the Drakensberg basaltic eruption.

6.2 BIOLOGICAL ENVIRONMENT

6.2.1 TERRESTRIAL BIODIVERSITY

The following is extracted from the Biodiversity Scoping Report compiled by Scientific Terrestrial Services (Pty) Ltd (STS) and included as ***Appendix G.4.***

6.2.1.1 Vegetation

The Tournée 2 Solar PV Park is situated within the Grassland Biome and within the Mesic Highveld Grassland Bioregion. The Tournée 2 Solar PV Park is largely transformed, yet some large sections thereof are identified as being within the remaining extent of the Soweto Highveld Grassland (**Figure 6-7**). This vegetation type is considered Vulnerable (VU) and Not Protected.

Ecosystem types are categorised as “not protected”, “poorly protected”, “moderately protected” and “well protected” based on the proportion of each ecosystem type that occurs within a protected area recognised in the NEMPAA and compared with the biodiversity target for that ecosystem.

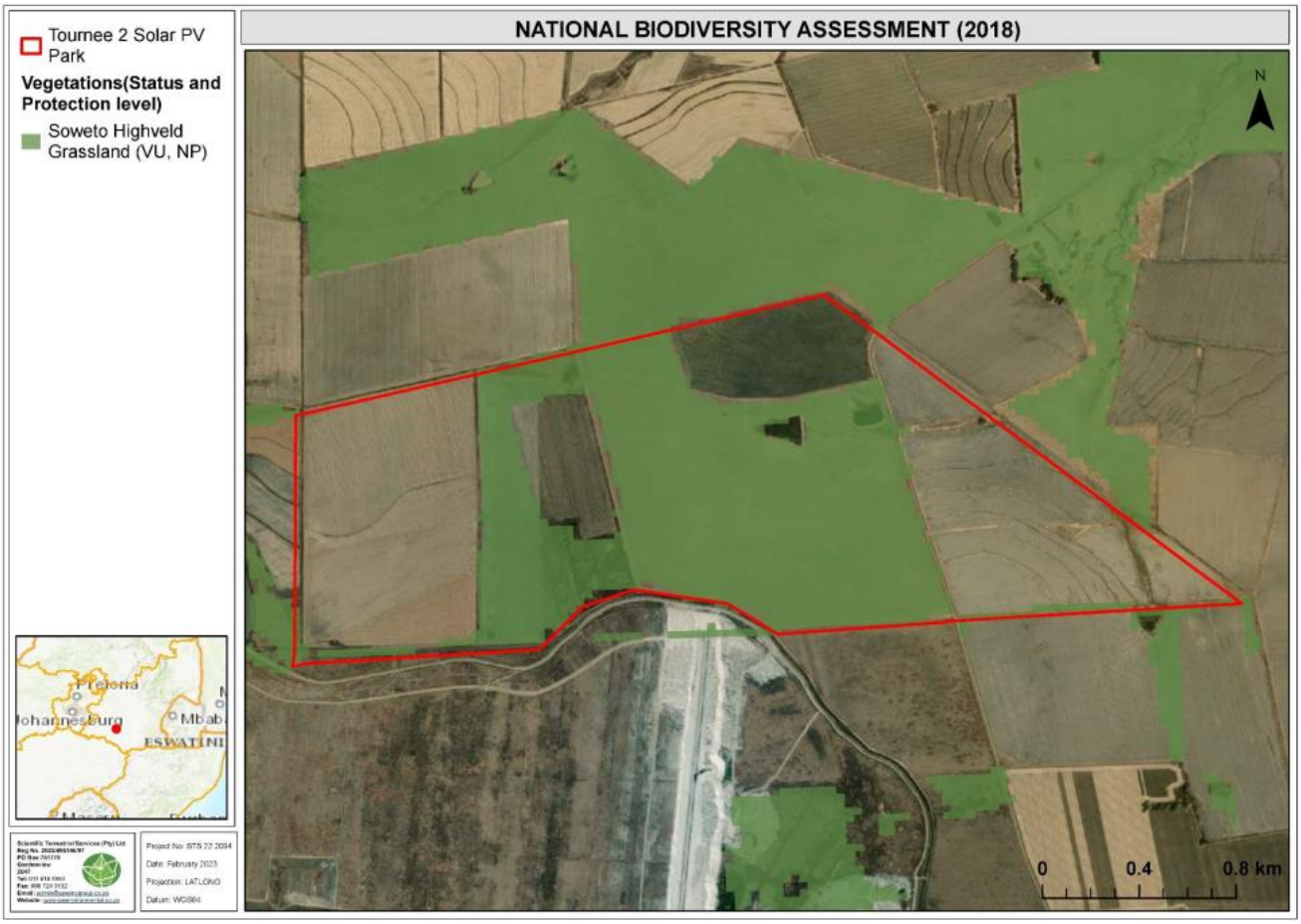

Figure 6-7 – The remaining extent of the vegetation type associated with the Tournée 2 Solar PV Park according to the National Biodiversity Assessment

Source: STS, 2023

6.2.1.2 Critical Biodiversity Areas

A moderate extent of the Tournée 2 Solar PV Park is represented by Other Natural Areas (approximately 179.4 ha). These areas are generally located within sections of the Tournée 2 Solar PV Park that are not cultivated. These are Natural areas which are not identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs), but which provide a range of ecosystem services from their ecological infrastructure.

A very small portion of the proposed Tournée 2 Solar PV Park is identified as Optimal CBA (approximately 0.33 ha), located in the lower western corner of the proposed Tournée 2 Solar PV Park. These are areas required to meet targets and with irreplaceability values of more than 80%; Critical linkages or pinch-points in the landscape that must remain natural; and often include Critically Endangered (CR) ecosystems, or hosts species of conservation concern. During the site assessment, the area associated with the CBA was not confirmed to be representative for the targets set for a CBA as these areas were transformed by current cultivation areas. The NPAES (2018) database did not identify any priority focus areas within the Tournée 2 Solar PV Park, however, is located adjacent to the Tournée 2 Solar PV Park (on the north western boundary). This however this does not intersect with the distribution of the Tournée 2 Solar PV Park itself and

therefore the proposed development will not impact any NPAES focus areas. The IBA (2015) database did not identify the any IBA within the proposed of the Tournée 2 Solar PV Park.

The CBA Optimal Areas (**Figure 6-8**) (previously called 'important and necessary' in the Mpumalanga Biodiversity Conservation Plan (MBCP) are the areas optimally located to meet both the various biodiversity targets and other criteria defined in the analysis. Although these areas are not 'irreplaceable' they are the most efficient land configuration to meet all biodiversity targets and design criteria.

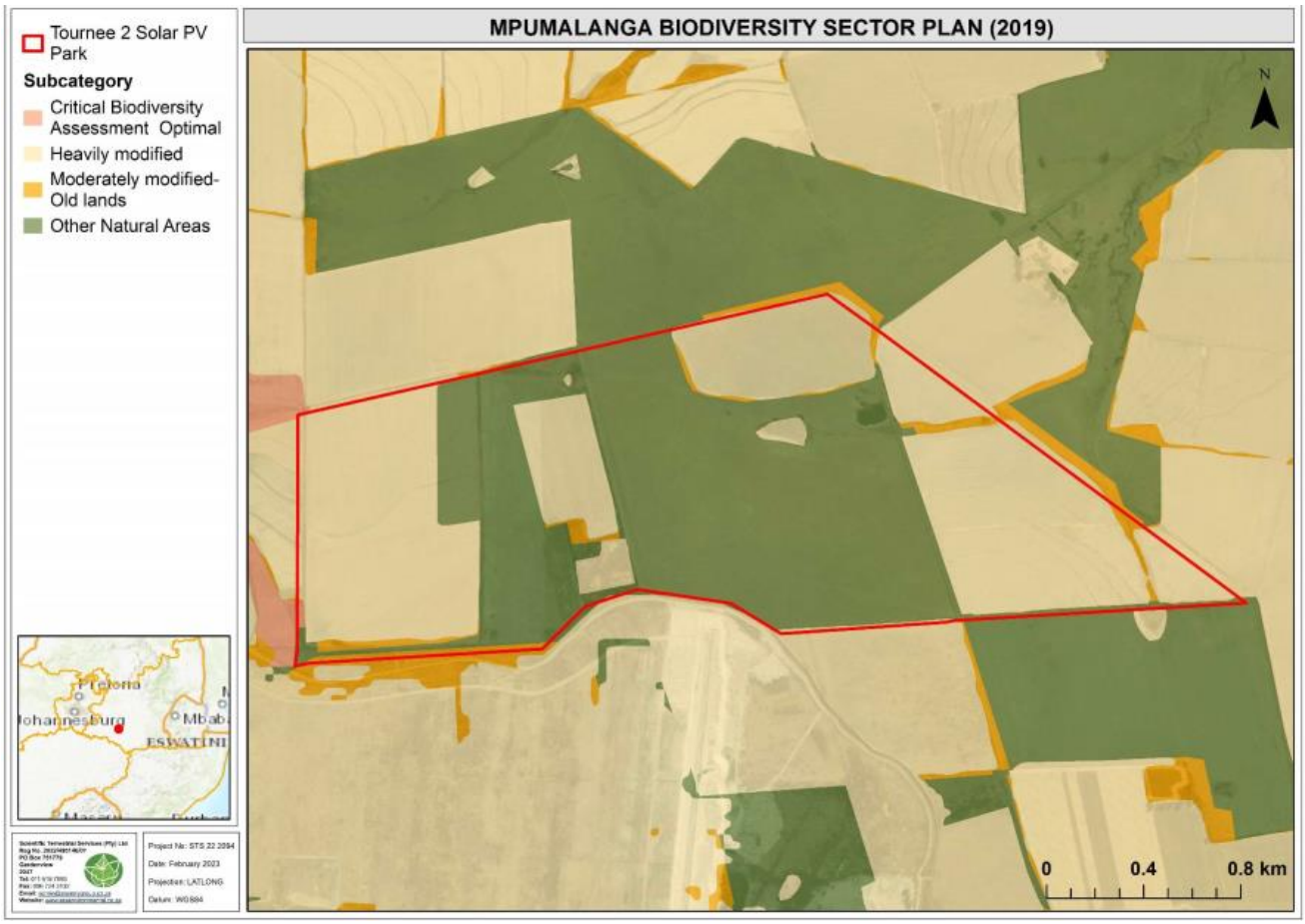

Figure 6-8 - The Tournée 2 Solar PV Park in relation to the Mpumalanga Biodiversity Sector Plan

Source: STS, 2023

6.2.2 AQUATIC BIODIVERSITY

The following is extracted from the Freshwater Scoping Report compiled by Scientific Aquatic Services (Pty) Ltd (SAS) and included as ***Appendix G.5.***

During the site visit conducted during the late summer season in February 2023, freshwater ecosystems identified were classified broadly into two (2) Channelled Valley Bottom wetlands (CVB) and a depression wetland.

The proposed Tournée 2 Solar PV Park is underlain by EA17 land type. Soils within EA land type groupings are dark brown / black or red coloured strongly to very strongly structured (topsoil and

subsoil) of varying depths. These soils have high clay content, displaying a high water-holding capacity and mostly containing a high percentage of swelling clay minerals.

Vertic and melanic soils commonly occur in EA land types. In the focus area, the vast majority of the terrain units in which wetlands are encountered – i.e., valley bottoms, footslopes and midslopes are characterised by vertic soils (occurring within two soil forms – the Arcadia and Rensburg Soil Forms). This is important in a freshwater (wetland) delineation context as the presence of vertic soils poses difficulties for delineation of wetlands as due to their high (alkaline) pH status ≥8, typical signs of wetness (such as mottling) are not typically present in the soils and the standard delineation procedure for wetlands in South Africa that relies mostly on soil wetness indicators cannot be applied. Wetland delineation in vertic settings is further complicated within the Rensburg soil form – the soil form that is typically associated with wetlands in the EA17 land type– by the potential occurrence of the gley (G) horizon at extreme depth (of up to 2m), with the soil horizon showing redoximorphic characteristics being well below the typical rooting depth of herbaceous plants. Accordingly, an adapted delineation methodology which was based on vegetation, terrain and hydrological indicators was applied.

6.2.2.1 Freshwater ecosystems within the proposed Tournée 2 Solar PV Park

The freshwater ecosystem associated with the proposed Tournée 2 Solar PV Park was identified as a single channelled Valley Bottom (CVB) wetland (**Figure 6-9**). Agricultural activities in the area have affected the integrity of the CVB wetland

Figure 6-9 - Freshwater ecosystem delineations (field-verified) associated with the proposed Tournée 2 Solar PV Park

Source: SAS, 2023

CVB wetlands

The CVB wetland within the eastern and central portions of the study area have been subject to various impacts which have impacted on the ecological integrity and eco service provisioning of the wetland. Historically, the extent of the CVB wetland was much more extensive, however, agricultural activities have encroached upon the boundary of the wetland and is now considered remnant wetland areas.

The hydraulic regime and geomorphological processes of the CVB wetland has been impacted by extensive cultivation activities, numerous impoundments, and a road crossing (Hendrikspan road). Although the wetland system is located in a catchment with extensive cultivation activities, no abstraction of water was noted during the site visit. However, these catchment wide activities have increased sediment laden runoff and have altered the water quality of the systems due to the use of herbicides and pesticides.

Numerous Alien Invasive Plants (AIPs) were also noted within the CVB wetland which included, but are not limited to, *Tagetes minuta* (Southern Cone Marigold), *Bidens pilosa* (Black Jack), *Cosmos bipinnatus* (Common Garden Cosmos), and *Cirsium vulgare* (Creeping Thistle). As the wetland system is within an agricultural area, it is expected that the system would be of high biodiversity importance as they provide a natural habitat for numerous flora, fauna, and avifaunal species.

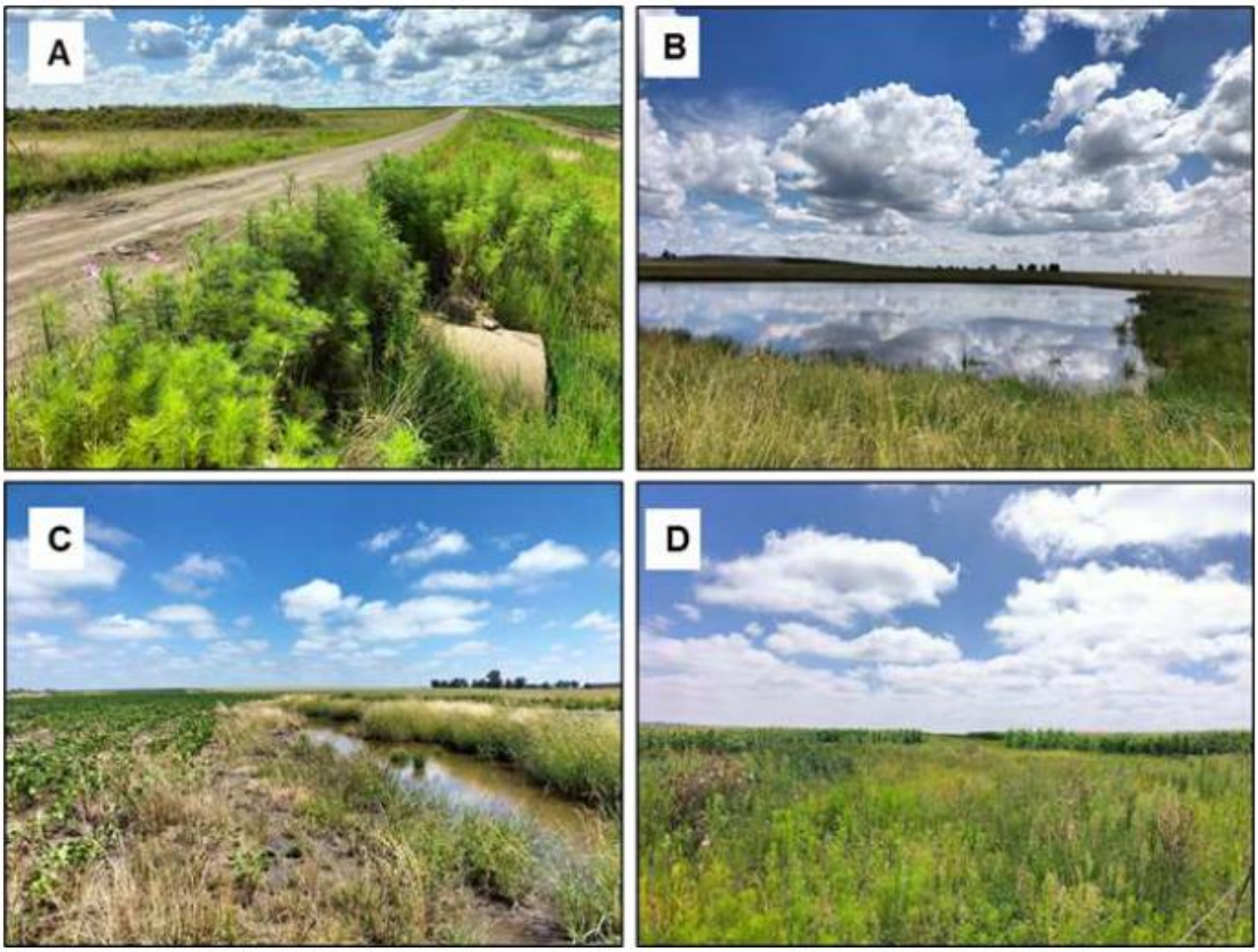

Figure 6-10 – Photographic representation of the CVB wetlands

(A) the Hendrikspan pad which traverses the wetland in the western portion. (B) example of the numerous impoundments within the active channel of the wetland. (C) encroachment of cultivation activities. (D) AIPs within the CVB wetland

Source: SAS, 2023

6.2.3 PLANT SPECIES

The following is extracted from the Biodiversity Scoping Report compiled by STS and included as ***Appendix G.4.***

During the site assessment, three habitat units were identified as shown in **Figure 6-11** and discussed below.

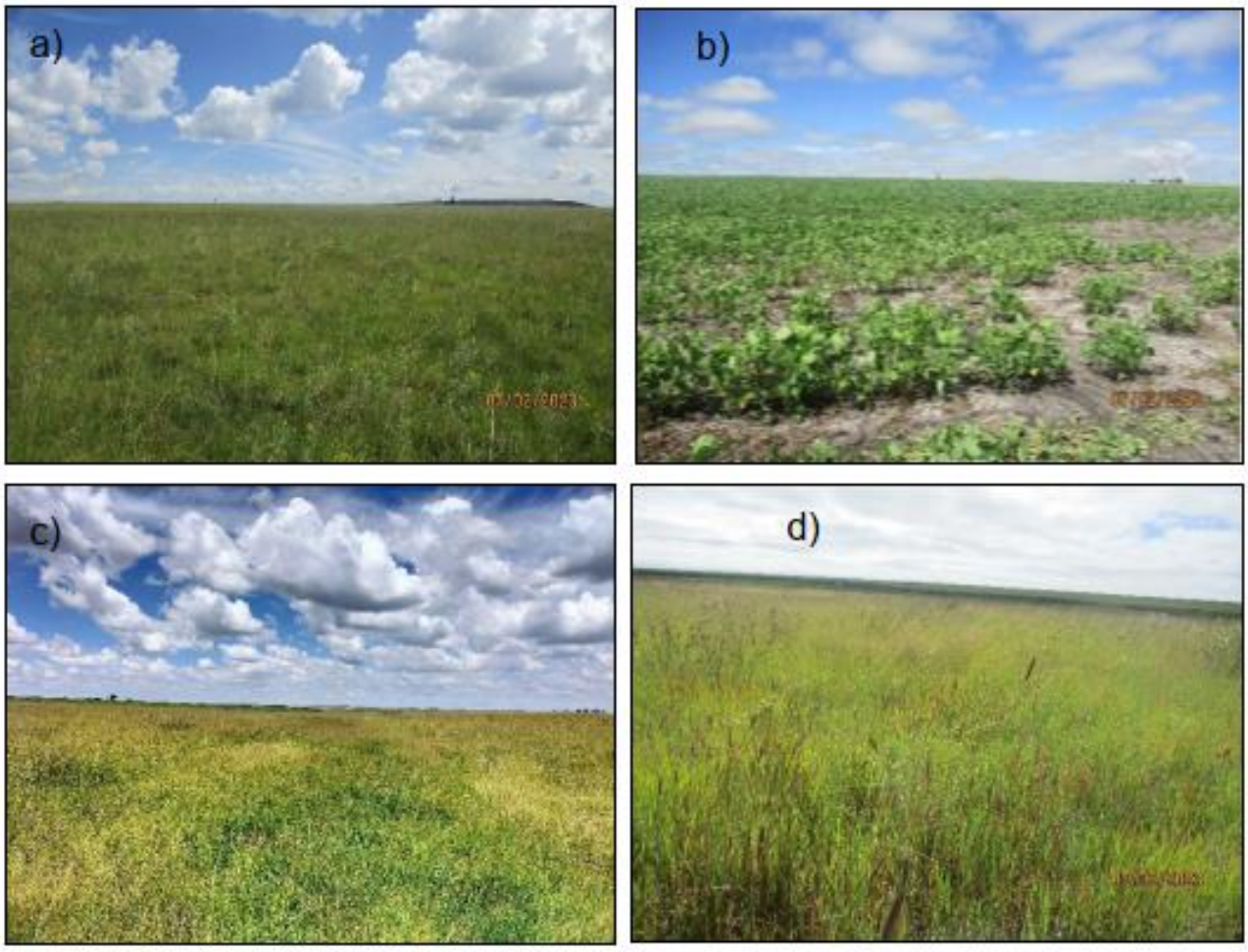

Figure 6-11 – Representative photographs of the vegetation habitat units within the proposed Tournée 2 Solar PV Park layout

Source: STS, 2023

6.2.3.1 Grassland Habitat

This grassland vegetation is widespread within the proposed extent of the Tournée 2 Solar PV Park and is interspersed by cultivated lands and Freshwater Ecosystems. The dominant land-use associated with these remaining sections of grasslands is grazing. The vegetation mostly consists of short-tall, open-closed grasslands (Edwards, 1983), and is still regarded as indigenous vegetation (as per NEMA definition). This habitat unit has a high diversity of graminoid species, however, is dominated by *Eragrostis tef* with high abundance of *Calamagrostis epigejos var. capensis, Digitaria eriantha, Helictotrichon turgidulum* and *Setaria sphacelate var. sphacelate.* The Grassland Habitat has a high diversity and abundance of several Alien Invasive Plant (AIPs) species, especially *Cirsum vulgare, Cosmos bippinatus* and *Verbena bonariensis* being widespread within the Grassland habitat. The Grassland Habitat is no longer considered to be a representative of the reference vegetation type (i.e., Soweto Highveld Grassland) in terms of species composition. Since Mucina and Rutherford (2006) described the Soweto Highveld Grasslands as being dominated almost entirely by *Themeda triandra*, accompanied by a variety of other grasses such as *Elionurus muticus, Eragrostis racemosa, Heteropogon contortus* and *Tristachya leucothrix*, this was not the

case within these Grasslands. While the habitat integrity is diminished, the Grassland Habitat is still considered to be in fair ecological condition (i.e., areas that are moderately modified, semi-natural. An ecological condition class in which ecological function is maintained even though composition and structure have been compromised).

6.2.3.2 Transformed Habitat

Four relatively large portions of the Tournée 2 Solar PV Park are cultivated with *Zea mays* (i.e., corn) and *Glycine max* (i.e., soybean). These areas have been significantly transformed and are no longer considered to be indigenous vegetation (as per NEMA definition). The boundaries of the cultivated areas are associated with a high abundance of AIPs, including *Ipomoea purpurea, Datura stramonium, Crisum vulgare* and *Cosmos bippinatus*. This habitat unit as such is not representative of the reference vegetation type and is not considered to be of ecological and conservation importance from a floral perspective. The habitat integrity is severely diminished and the Transformed habitat is in poor ecological condition (i.e., areas that are severely or irreversibly modified. An ecological condition class in which ecological function has been compromised in addition to structure and composition).

6.2.3.3 Freshwater Ecosystem:

The Freshwater Habitat meets the definition of a watercourse in terms of the definition contained within the NWA, furthermore the presence of provincially protected floral species present within the Freshwater Habitat indicates that these systems are important from a floral biodiversity point of view. The vegetation structure of the Freshwater Ecosystem was considered to be tall, closed grassland with a high abundance of grass species and sedges; most abundant of which were *Calamagrostis epigejos var. capensis, Paspalum dilatatum, Setaria sphacelate var. sphacelata, Setaria sphacelata var. torta*, and sedges such as, *Kyllinga erecta var. erecta* and *Cyperus rotundus*. The overall habitat integrity of the Freshwater Habitat was considered to be moderately intact and the habitat was considered to be within a good ecological condition (i.e., areas that are natural or near-natural. An ecological condition class in which composition, structure and function are still intact or largely intact).

6.2.4 ANIMAL SPECIES

The following is extracted from the Biodiversity Scoping Report compiled by STS and included as ***Appendix G.4.***

During the site assessment between 6th of February and the 9th of February 2023, a moderate abundance of faunal species (in comparison to expected species presence) from different classes were observed within the Tournée 2 Solar PV Park. One mammal Species of Conservation Concern (SCC) was confirmed within the Tournée 2 Solar PV Park, as well as suitable habitat for several other potential SCC known to occur in the greater area. The below sections provide a brief breakdown of the faunal classes represented in the Tournée 2 Solar PV Park.

6.2.4.1 Mammals

Signs of common mammal species activity / presence such as *Hystrix africaeaustralis* (Cape Porcupine, LC), *Atilax paludinosus* (Water mongoose, LC) and *Antidorcas marsupialis* (Springbuck, LC) were readily observed within the Tournée 2 Solar PV Park (**Figure 6-12**). A single mammal SCC was observed during the field assessment, namely *Aonyx capensis ssp. capensis* (Cape Clawless Otter, NT). The Tournée 2 Solar PV Park falls within the distribution range of several other

mammal SCC, which may make use of the Tournée 2 Solar PV Park either as a movement corridor, for permanent habitats or as part of a larger home range. The background assessments have further indicated that many of the potential SCC have been recorded in the surrounding areas.

Figure 6-12 – a) Antidorcas marsupialis (Springbuck, LC); b)Spoor of Atilax paludinosus (Water mongoose, LC)

Source: STS, 2023

6.2.4.2 Herpetofauna (Reptiles and Amphibians)

During the site assessment, no reptile SCC were observed whilst a low abundance of common reptile species were recorded. Reptiles are inherently difficult to observe during assessments of short duration, more especially in grassland habitats. The relative low reptile activity was also likely attributable to the weather patterns experienced during the site assessment, with cloud cover and rain resulting in many reptile species opting to decrease their daily activity patterns and seek shelter than be exposed to the elements. Although there is suitable habitat available and reptile species distribution ranges overlap with the site, background studies and data collected indicates that there is likely a low potential for reptile SCC to occur within the Tournée 2 Solar PV Park.

Amphibian populations are likely to be focused within the freshwater ecosystem especially areas with permanent water. *Pyxicephalus adspersus* (Giant African Bullfrog, NT) is likely to be present within the Freshwater Ecosystem and Grassland habitat unit. Their habitat includes a wide variety of environments including savannahs, grasslands and freshwater habitat. When not breeding, it can travel up to 4 km from water, foraging for insects. Their breeding habitat, in the form of shallow, stagnant temporary waters in wetlands and pans, are present in or close to the study area. Adults may be buried beneath the soil in the dry season.

Figure 6-13 – a) Burrow of *Hystrix africaeaustralis* (Cape Porcupine, LC) that may be used by reptiles for refuge

Source: STS, 2023

6.2.4.3 Invertebrates

The Tournée 2 Solar PV Park invertebrate diversity was low during the site assessment and dominated by the following orders: *Lepidoptera, Coleoptera* and *Orthoptera*. This can be due to agricultural activities in the area as insecticide is used to control pests on agricultural fields and will negatively affect invertebrates in the area. A number of invertebrate SCC have the potential to occur in the immediate surrounding areas especially the freshwater ecosystem.

From the field assessments undertaken in 2023, a single mammal SCC was recorded within the Tournée 2 Solar PV Park, whilst suitable habitat, food resources and habitat connectivity is present for several other SCC including provincially protected species.

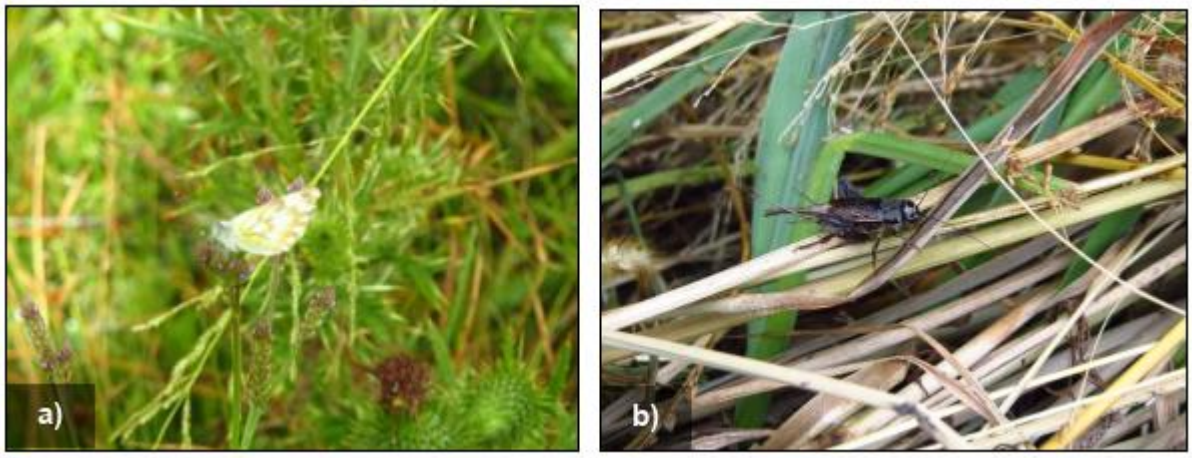

Figure 6-14 a) Belenois aurota (Brown-veined White, LC); b) Gryllus bimaculatus (Southern Field Cricket, LC)

Source: STS, 2023

6.2.5 AVIFAUNA

The following is extracted from the Avifauna Scoping Survey compiled by Volant Environmental (Pty) Ltd and included as ***Appendix G.6.***

6.2.5.1 Description of Ecoregion

The proposed Project Area of Influence (PAOI) falls across the Grassland Bioregion with Soweto Highveld Grassland vegetation present across the entire proposed development site. The extent of the Grassland Biome is relatively well defined on the basis of the specific known vegetation structure when seen in combination with the amount of rainfall in the summer and the average minimum temperatures in the winter. This biome occurs mainly on the high central plateau (Highveld), as well as the inland areas of the eastern seaboard and the established mountainous areas of KwaZulu-Natal and Eastern Cape. The biome is primarily characterised as flat to rolling, but also includes mountainous regions and escarpments. The effect of this biome being at a higher altitude result in larger temperature differences at different times of the year.

The climate in winter months specifically, can be cold and dry with the occurrence and relative high frequency of frost. The presence of high amounts of moisture allows for grassland regions to be divided into two classes. Moist grassland primarily consists of sour grasses, leached and dystrophic soils and high canopy cover, high plant production and high fire frequency. Dry grasslands are seen as sweet, palatable grasses, where the soils are less leached and are eutrophic and canopy cover, plant production and fire frequency are lower than in moist grasslands.

Grasslands are structurally simple and strongly dominated by grasses (*Poaceae*). It is noted that the moisture index effects canopy cover and decreases with lower mean annual rainfall but is influenced by the amount and type of grazing and by the presence of fire. This in turn allows for woody species to occur but are limited to specialised niches/habitats within the grassland biome. Soweto Highveld Grassland specifically is characterised by a moderately undulating landscape on the Highveld plateau. It primarily supports short to medium-high, dense, grassland that is almost entirely dominated *Themeda triandra*. In places that are not disturbed, scattered small wetlands, pans and occasional ridges or rocky outcrops are found that interrupt the continuous grassland cover. This

ecoregion characteristics will be used when assessing avifaunal habitat as well as species assemblages that could be present on the PAOI.

Figure 6-15 – Examples of vegetation found on the Project Area of Influence

Source: Volant, 2023

6.2.5.2 Potential species present in the area

Based on a list of bird species drawn from nine pentads that both cover and surround PAOI, a total of 203 species have been identified of which 30 species have been identified as Priority Species (Appendix 2 of the Avifaunal Scoping Report). Of the Priority Species nine have an Overall Priority Score of 290 or higher, placing them in the top 30 Priority species (Table 6). These include, Black Harrier, Southern Bald Ibis, Blue Crane, Secretarybird, African Marsh Harrier, Lanner Falcon, Greater and Lesser Flamingo, and African Fish Eagle.

6.2.5.3 Important Bird and Biodiversity Area

Important Bird and Biodiversity Areas (IBAs) are defined by Birdlife International, as sites of global significance for bird conservation, identified nationally through multi-stakeholder processes using globally standardized, quantitative, and scientifically agreed criteria. These areas are seen as the most important sites for conserving and should be considered during avifaunal impact assessments. The closest IBA (17 Km East) from the PAOI is known as Amersfoort–Bethal–Carolina District IBA. This specific IBA stretches throughout Mpumalanga province and covers an area of 343 320 ha

(**Figure 6-16**). This specific IBA is classified as an unprotected site which correlates to no official protection under the National Environmental Management: Protected Areas Act (2003). However, the conservation response is not completely absent from unprotected IBAs with input from civil society groups, a degree of monitoring, research and conservation action still taking place at sites of biological significance. Species found within this IBA that are of conservational concern is the globally threatened Botha's Lark, with 10% of the global population suspected to be present within this area. Other globally threatened species are Blue Crane, Southern Bald Ibis, Black Harrier, Blue Korhaan, Black-winged Pratincole, Secretarybird, Martial Eagle and Denham's Bustard. Regionally threatened species are African Grass Owl, White-bellied Korhaan and Lanner Falcon. Restricted-range and biome-restricted species are the previously mentioned Botha's Lark, and Buff-streaked Chat.

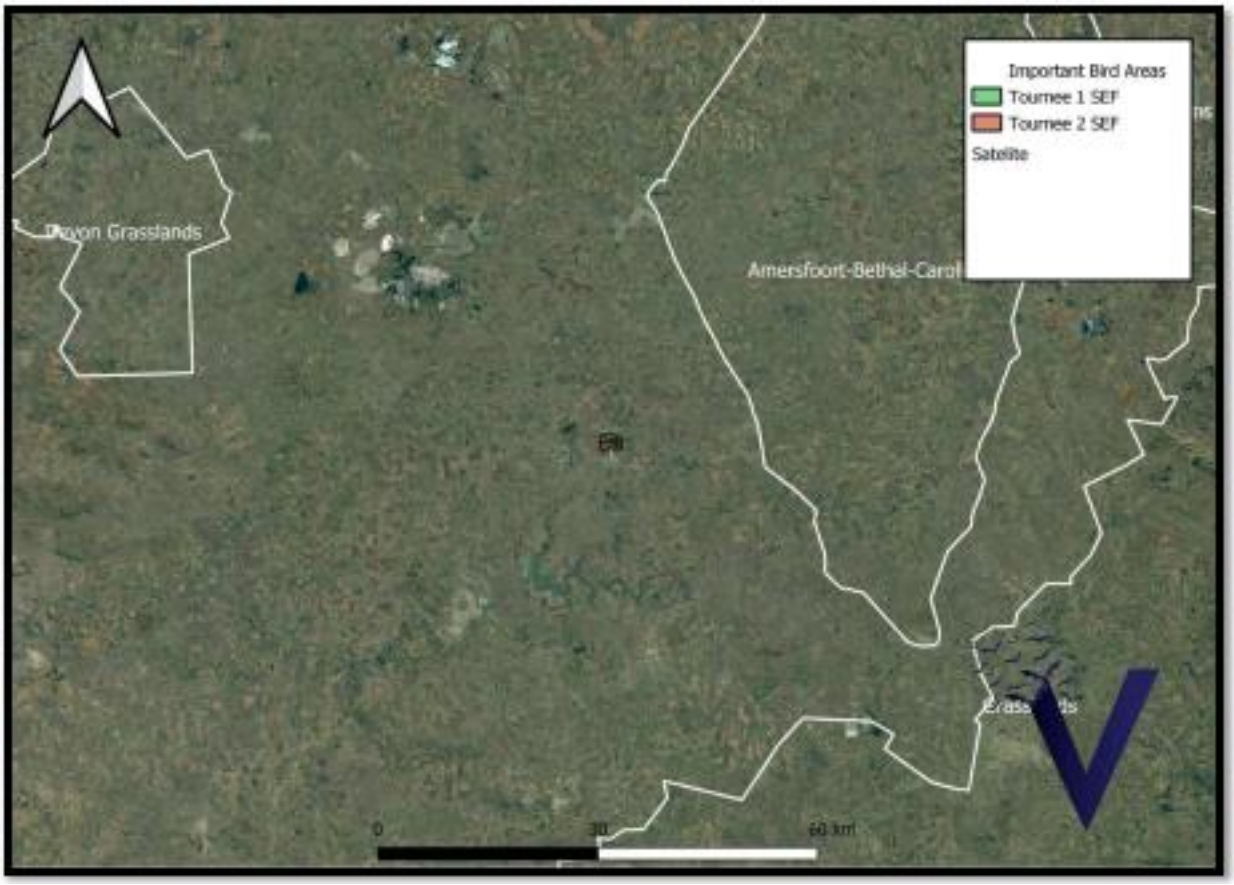

Figure 6-16 – Position of IBAs in relation to the Tournée 1 and Tournée 2 Solar PV facilities

Source: Volant, 2023

6.2.5.4 Observed species

All species that were seen or heard during both walked and driven transects were recorded. A total of 81 unique species were identified during driven and walked transects (Appendix 3 of the Avifaunal Scoping Report). Of this list, priority species observed within the PAOI included Secretarybird, Jackal Buzzard, Blue Korhaan, Marsh Owl, Yellow-billed Kite, Common Buzzard, Black-winged Kite, and Grey-winged Francolin. Black-winged Pratincole was an additional priority species recorded on site, this addition is based off of data and images received from other specialists.

6.2.5.5 Sensitive bird areas

Several potential bird sensitive areas were located (**Figure 6-17**) on the PAOI, these wetlands and their drainages were walked to survey for priority species, as well as to ascertain whether they could serve as breeding or roosting sites for these PAOI. Across all these wetlands, Marsh Owls were flushed, three individuals in total. One within the drainage line in Tournée 1 SEF, and two on Tournée 2 SEF, one on the western and eastern side of Tournée 2 SEF respectively. These drainage lines are suitable as roosting and foraging grounds for priority species such as Black, Montagu's, Pallid, and African Marsh Harrier, and are possible breeding sites for Blue Crane.

Figure 6-17 – Sensitive bird areas located on the Project Area of Influence

Source: Volant, 2023

6.2.6 BATS

The following is extracted from the Bats Scoping Survey compiled by Volant Environmental (Pty) Ltd and included as ***Appendix G.7.***

6.2.6.1 Potential species present in the area

The desktop study revealed that seven could potentially be found in the area. A *single L. capensis* was captured less than 30 km south form site, but no other species have museum records within 60 km from the PAOI (ARC 2020).

6.2.6.2 Passive monitoring

Only one species of bat, *L. capensis*, was recorded during passive monitoring, and in relatively low numbers. *Laephotis capensis* is not endemic to South Africa and not listed as Least Concern based on the IUCN red data lists. These bats roost under the bark of trees and in the roofs of houses and as such there could potentially be roosts available for this species.

Normally one expects bat activity to peak early in the evening as bats are more active during these times, however, bat activity at the Tournée 1 and Tournée 2 SEFs peaked during the middle of the evening at 23:00. This is a strong indication that there are no bat roosts or colonies present close to the PAOI, as there would have been a peak in activity much earlier. Bat activity also ends early at 2:00, indicating that there are no bats in the area returning to roosts. It must, however, be stated that an accurate estimate of bat activity cannot be obtained during three nights of monitoring and that more data is required.

6.2.6.3 Roost inspections

All potential roosts were inspected for signs of bats, including large trees and a cluster of buildings (**Figure 6-18**). Although the buildings appear to provide suitable roosting locations (**Figure 6-19**), we were unable to detect any signs of bats, nor record any calls. These buildings are all located in the north-eastern section of the PAOI and includes a homestead and several storage facilities. Considering the close proximity of these buildings to the bat detector placed on the PAOI, and the low number of calls recorded, it is highly unlikely that these buildings are utilised by bats. Several patches of exotic trees were also found on the PAOI, but we did not detect any bats or active roosts in any of these trees (**Figure 6-20**).

No caves were found within the boundaries of the PAOI, and there are no known caves present within 20 km of any sites. The landowner was asked about caves on their properties, but he was not aware of any.

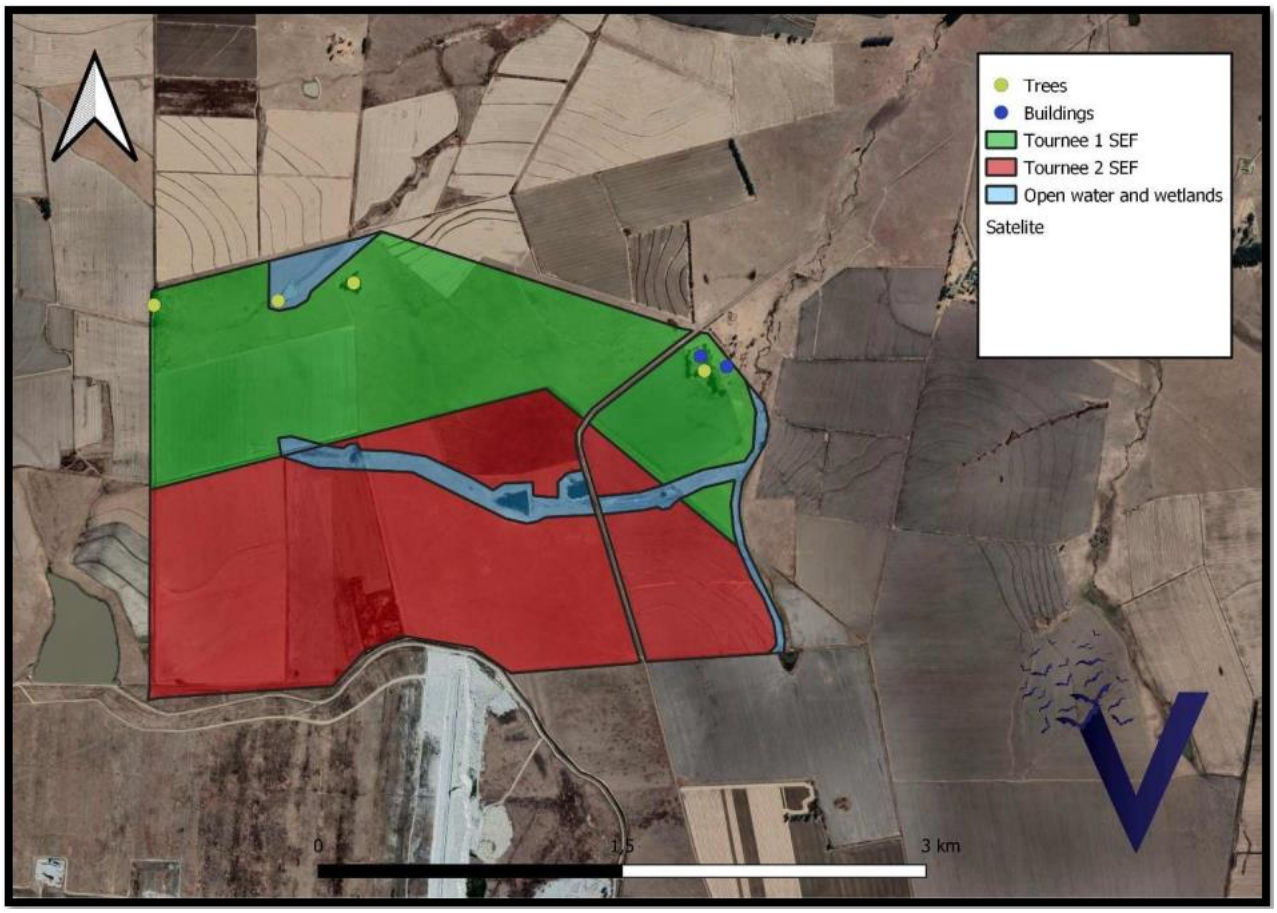

Figure 6-18 – Potential roosts found on the Project area of Influence

Source: Volant, 2023

Figure 6-19 – Buildings that could act as potential bat roosts on the Project area of Influence

Source: Volant, 2023

Figure 6-20 – Patches of exotic trees that could act as roosting locations for bats

Source: Volant, 2023

6.2.6.4 Bat sensitive zones

Several potential bat sensitive areas, including water sources and potential foraging areas, are outlined below. Based the Guidelines of Bat and Wind Energy Facilities a 200 m buffer should implemented around sites that are considered to be of Medium Sensitivity to bats such as water sources (MacEwan et al. 2022). However, these buffers are do not apply to SEFs, but it is recommended that all sources of water are avoided.

Water sources and foraging areas

Bats are heavily reliant on sources of open water and will visit at least one such source during the course of a night. Several sources of open water were found on the PAOI that are connected with sections of wetlands (**Figure 6-21** and **Figure 6-22**). The sections of wetland between the water sources are predicted to host numerous insects and would qualify as good foraging areas for bats.

However, most these wetlands and sources of open water have already been buffered with only one section of wetland outside of the buffered area in the north-west section, and as such it expected that there will be minimal impact on bats due to the construction of the proposed SEF.

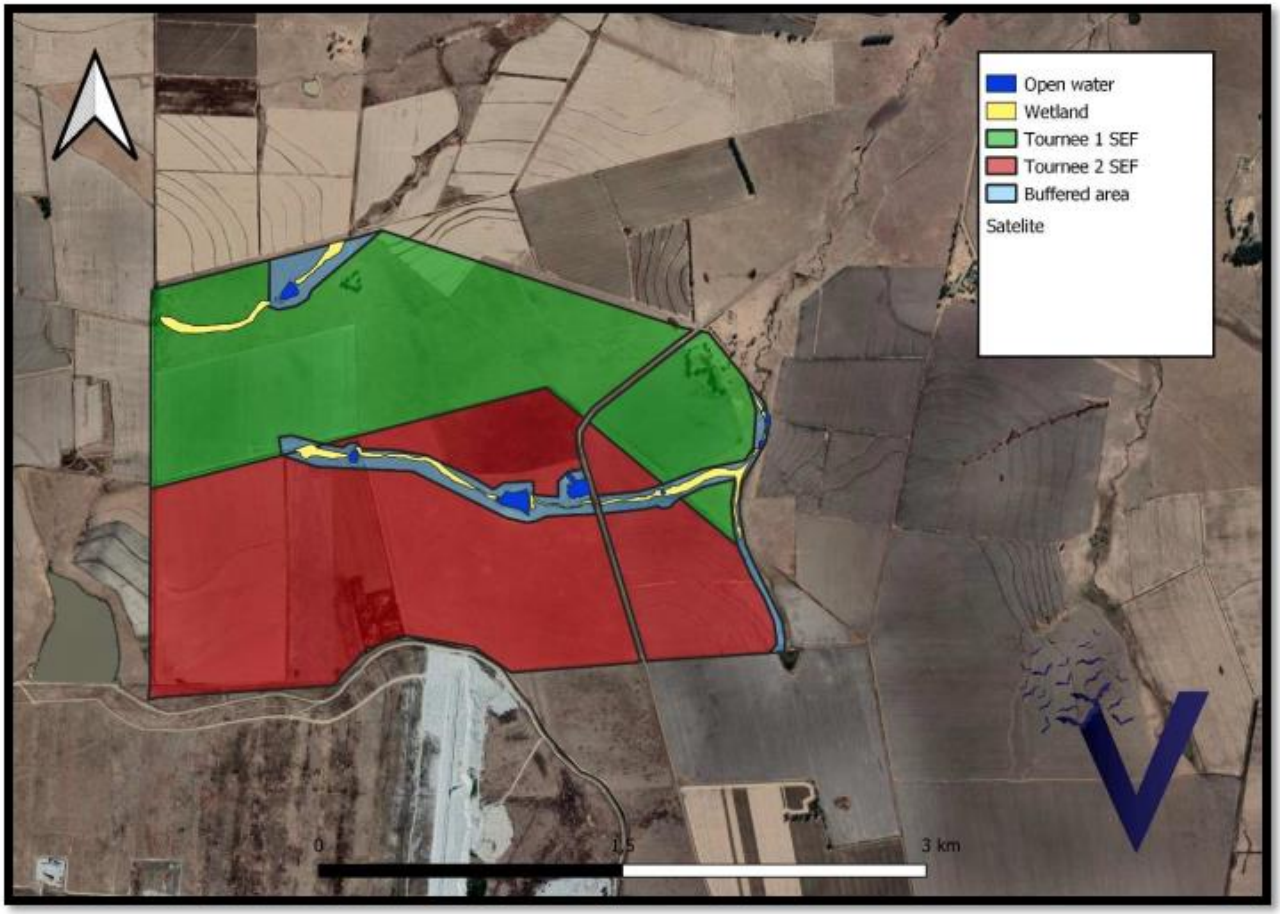

Figure 6-21 – Locations of water sources on the Project Area of Influence

Source: Volant, 2023

Figure 6-22 – Examples of open water on the Project Area of Influence with seepage from one of the dams into the wetland seen in the bottom right

Source: Volant, 2023

6.3 SOCIAL AND ECONOMIC ENVIRONMENT

6.3.1 ARCHAEOLOGICAL AND CULTURAL HERITAGE

The following is extracted from the Heritage Impact Assessment and Archaeological Specialist Study both compiled by CTS Heritage and included in Appendix 1 of the Heritage Impact Assessment ***(Appendix G.8)****.*

6.3.1.1 Cultural Landscape

Van Vollenhoven (2015) described the broader assessment area in his assessment completed for a de-stoning plant located near to this proposed development area. Van Vollenhoven (2015) describes the environment as “disturbed by recent human activities, mainly agriculture. This consists of maize fields. Other disturbance visible is mining infrastructure…, a railway track… and power lines... Signs of old fields were also present which could be seen in the pioneer plant species consisting of weeds and grass. Almost half of the surveyed area consists of natural grassland. The vegetation cover varies between short and long grass... The topography of the area forms part of the rolling hills of the surrounding landscape.”

Van Vollenhoven (2015) notes that “At the beginning of the 19th century the Phuthing, a South Sotho group, stayed in the vicinity of modern day Bethal. During the Difaquane they fled to the south (Bergh 1999: 10-11; 109). In 1829 the traveller Robert Scoon passed through an area to the north of Bethal (Bergh 1999: 13). The first white farmers only settled here during the late 1850’s. By the 1890’s this area was inhabited by many white farmers (Bergh 1999:18-20). The town of Standerton was established in 1879 although it already was a district in 1878. Bethal was established in 1880 and it became an independent district in 1898 (Bergh 1999: 20-21). During the Anglo-Transvaal War (1880-1881) the British garrison in Standerton was beleaguered by the Boer forces (Bergh 1999: 46). The Highveld areas also saw much action consisting of various skirmishes between Boer and Brit during the Anglo-Boer War (1899-1902). It includes skirmishes on the farms Oshoek (4 December 1901), Trigaardsfontein (10 December 1901), Witbank (11 January 1902) and Nelspan (26 January 1902) (Bergh 1999: 51, 54)... At Standerton there was both a concentration camp for white and for black people (Bergh 1999: 54).”

Matenga (2022) notes that the neighbouring “Tutuka Power Station was commissioned in 1985. The Power Station and other associated built elements are therefore less than 60 years old, hence below the threshold of recognition in terms of the Heritage Act as industrial heritage of significance. The six cooling towers and two chimneys are iconic structures dominating the landscape and skyline. They represent coal power generating technology of the period from the late 19th century through to the late 20th century.” The proposed SEF is relatively small in both its vertical and horizontal dimensions when compared to the Tutuka Power Station. It is dwarfed by the power plant, and as such its impact on the existing landscape is not likely to be significant. However, cognisance must be taken of this unique cultural landscape, consisting of farm werfs etc in the proposed layout.

6.3.1.2 Archaeology

None of the area proposed for development has been previously assessed in any heritage impact assessment process, however Van Schalkwyk surveyed Farm Spioenkop 376IS in 2002 (SAHRIS NID 5700). Van Schalkwyk (2002) notes that “Although sporadic finds of Stone Age tools have been reported in the larger geographical area, all of these are surface finds, with no known stratified site close by. Some Iron Age sites are also known to exit in the larger area, but none are found close to the study area. Similarly, although some Anglo-Boer War II battlefields occur in the area, and some old farmsteads can be identified on some of the farms, none of these occur in the study area.” Van Schalkwyk (2002) identified no heritage resources of significance in his assessment.

Heritage Impact Assessments have been completed nearby for projects in Secunda and these can be used to infer the archaeological sensitivity in the development area. Van Vollenhoven (2015) notes that the geographical area around the towns of Standerton and Bethal is not known to conserve Stone Age archaeology. He notes that “No such sites are indicated on maps contained in a historical atlas of this area (Bergh 1999: 4-5). However this may only be since no research has actually been done in this area. The closest known Stone Age occurrences are a Late Stone Age site at the town of Ermelo and rock art sites far to the west of Standerton (Bergh 1999: 4-5).” Van Vollenhoven (2015) noted no natural shelters during the survey; however, the good vegetation in the surrounding area and the rivers indicate that ample grazing and water may have been available, making it a prime spot for hunting in the past. Therefore one may assume that Stone Age people probably would have moved through the area. Late Iron Age sites are found in a large area around the towns of Bethal and Standerton and number at least 585 such sites.

In the heritage assessment of a powerline upgrade at the nearby Syferfontein Mine, Nel & Karodia (2013), noted that “a heritage assessment was conducted in 2000 by the National Cultural History Museum and included in the Syferfontein Mine EMP in 2010. During the survey, a few Stone Age artefacts were identified. These artefacts were not considered to have any primary context and therefore were interpreted to have low significance value. No Early Iron Age sites were identified. The Late Iron Age sites found here conform to those identified in the literature for the Southern Highveld area (former southern Transvaal, northern Orange Free State) as Type V sites. As the soil is mostly turf, Iron Age settlement usually took place on the various dolerite outcrops. The added benefit of choosing these locations was that it was located at the source of building material used in constructing the settlements. One such site shows interesting features as the living units were actually excavated to obtain enough building material for the surrounding walls. A few of the farmsteads dating to early part of this century were identified as possibly having historical-architectural significance. A number of abandoned homesteads are located in the areas that were investigated. These seem to belong to farm labourers and were all abandoned within the last few years. They are therefore not viewed to be of cultural or historical significance. However, some graves are located in the vicinity of the homesteads and it is possible that more graves will be located nearby”.

CTS Heritage recently completed a field assessment for a proposed REF located approximately 20km away for this development area. This field assessment determined that the area proposed for development has medium to high local historical significance. The broader cultural landscape consists of old farmhouses, kraals, circular stone structures, and the remnants of old water pumps, feeding and watering troughs. Even though the area is rich in history, no significant archaeological heritage resources were identified during the field assessment. No Stone Age or Iron Age heritage resources were identified during the survey. The few heritage resources that were identified consist of the ruins of older farm structures and kraals. However, the field assessment identified six burial grounds or graves.

None of the sites identified in the assessment referenced are located within or near the development area, however the text provides a good assessment of resources that may be present in this study area. It is therefore possible that the proposed development will impact negatively on archaeological resources associated with the Late Iron Age, burial grounds and graves as well as stone age archaeological resources.

6.3.1.3 Identification of Resources

Three observations were made during the field assessment (**Table 6-3**), two of which reflect significant heritage resources. All are described further below. Most areas within the proposed development footprint have been disturbed through cultivation. The dense vegetation and waterlogged areas affected the surface visibility throughout the site. A farmhouse (still in use) is located on portion 6/350. This structure does not appear to have any historical or cultural significance.

The recorded demolished farmhouse likely dates from the late-1960s/1970s (WP 001). According to the farmer, it was demolished by Eskom, probably to discourage illegal occupation. However, no significant cultural material was found by or near the structure. It is, therefore, considered not to have historical or cultural significance. This observation is therefore considered to be Not Conservation-Worthy.

A total of 8 visible stone cairn graves were observed (WP 002). Further, several loose stones were noted approximately 40 m southeast of the confirmed graves (WP 003). Therefore, there is a slight probability that additional (unmarked) graves could be located in this area. However, these stones may also belong to the prominent grave cairns – they could have been displaced due to heavy rainfalls or farming-related activities.

All graves are of high significance, and a minimum of a 50m buffer should be maintained around the extent of the graves. Graves are readily found within the South African rural landscape, and it should be expected that more graves may be in the area of the earmarked development layout. A modern beer bottle was found adjacent to one of the graves.

Table 6-3 – Observations noted during the field assessment

Point ID	Description	Density	Coordinates		Grading	Mitigation
001	Remains of a broken-down farmhouse, c.1960's/70's. No Historical period cultural material and/or features were recorded here. According to the farmer, the structure was demolished by Eskom.	NA	26°45'45.34"S	29°24'50.08"E	NCW	NA
002	Fieldstone cairns located next to the border fence (opposite cultivated lands). Eight visible graves. Some headstones visible but no inscriptions	NA	26°45'13.05"S	29°25'21.84"E	IIIA	Buffer recommended
003	Additional unmarked graves may exist at WP 003. However, the loose stones may be related to the graves at WP 002. Heavy rainfalls and/or farming activities may have displaced the identified cairns.	NA	26°45'13.80"S	29°25'23.15"E	IIIA	Buffer recommended

Source: CTS Heritage, 2023

Figure 6-23 – All heritage resources within proximity to the development area

Source: CTS Heritage, 2023

Figure 6-24 – Map of heritage resources identified within the PV development area

Source: CTS Heritage, 2023

6.3.2 PALAEONTOLOGY

The following is extracted from the Palaeontological Impact Assessment by Prof Marion Bamford and included in Appendix 2 of the Heritage Impact Assessment ***(Appendix G.8)****.*

The Vryheid Formation lies on the uneven topography of pre-Karoo or Dwyka Group rocks in the northern and northwestern margins, but lies directly on the Pietermaritzburg Formation in the central and eastern part. The lithofacies show a number of upward-coarsening cycles, some very thick, and they are essentially deltaic in origin. There are also delta-front deposits, evidence of delta switching, and fluvial deposits with associated meandering rivers, braided streams, back swamps or interfluves and abandoned channels (Cadle et al., 1993; Cairncross, 1990; 2001; Johnson et al., 2006). Coal seams originated where peat swamps developed on broad abandoned alluvial plains, and less commonly in the backswamps or interfluves. Most of the economically important coal seams occur in the fluvial successions (ibid). In the east (Mpumalanga and northern KwaZulu Natal), the Vryheid formation can be subdivided into a lower fluvial-dominated deltaic interval, a middle fluvial interval, and an upper fluvial-dominated deltaic interval again (Taverner-Smith et al., 1988).

The Vryheid Formation preserves the distinctive Gondwanan flora, the Glossopteris flora. As the climate warmed up and the huge continent drifted polewards the land was rapidly colonised by luxuriant vegetation, in some parts. Peats formed in waterlogged environments and over time were

buried, preserved and altered by heat and pressure to eventually form the coal seams typical of this formation and abundant in Mpumalanga and KwaZulu Natal coalfields. Coals themselves do not preserve the original plant structures, but plant impressions or compressions can be preserved in the lenses between the coals or in fine grained sediments. The flora is composed of the dominant Glossopteris plants (leaves, seeds, reproductive structures, roots and wood). Other plants are lycopods, sphenophytes, ferns, cordaitaleans and other early gymnosperms. Vertebrates are not found with the fossil plants because they require adifferent set of conditions for preservations. Plants require rapid burial in a reducing and anoxic environment, while bones can be preserved in oxidizing environments (Cowan, 1995).

The Jurassic dolerite does not preserve fossils because it is an intrusive volcanic rock. The very young Quaternary sands along the stream are also very unlikely to preserve fossils as they have been moved by the river floods and fossils would have been destroyed, if present in the first place.

The proposed project area is situated south of Bethal, north of Standerton and west of Morgenson, adjacent to the R38. The land has been cultivated and/or grazed for decades and so is highly disturbed from clearing of the land of rocks for cultivation and ploughing. There are no rocky outcrops within the cultivated land. With a gently rolling topography covered with either secondary grassland or exposed soils after ploughing, the visibility was generally good. Streams were not surveyed for fossils because they are seldom permitted to be developed, but more importantly, water and water-logged areas are not good for the preservation of fossils.

The palaeontologists tracked their route in the vehicle but walked into the veld to observe and take photographs. For both Tournée Solar Park 1 and Tournée Solar Park 2 (**Figure 6-25**) the same topography, open grasslands and lack of rocky outcrops were observed. NO FOSSILS of any kind were seen on the ground surface and are unlikely to be found in the overlying soils.

Figure 6-25 – Site photographs for the Tournée Solar Park 2

A– D – general view of the farmland showing no rocky outcrops and only a few trees in the far distance.

Source: Bamford, 2023

6.3.3 TRAFFIC

The following is extracted from the Transport Impact Assessment by iWink Consulting (Pty) Ltd and included as ***Appendix G.9****.*

6.3.3.1 Surrounding road network

The construction vehicles for the proposed Tournée 2 PV Solar Energy Facility will take access either via the R38 or via the R39 towards the site as described under **Section 6.3.3.3**.

According to the road classification of the surrounding road network as per the Road Infrastructure Strategic Framework for South Africa and COTO's TRH26 South African Road Classification and Access Management Manual, the R38 and R39 can be classified as Class 2 rural major arterials, which typically carries inter-regional traffic between:

- Smaller cities and medium to large towns;
- Smaller border posts;
- Class 1 and Class 2 arterials; and
- Smaller centres when travel distances are very long (i.e., longer than 200 km).

6.3.3.2 Port of Entry

It is envisaged that the components to be imported to South Africa, will arrive either via the Port of Richards Bay or the Port of Durban, as these two ports are the closest to the site.

Port of Richards Bay

The Port of Richards Bay is situated on the coast of KwaZulu-Natal and is a deep-sea water port boasting 13 berths. The terminal handles dry bulk ores, minerals and break-bulk consignments with a draft that easily accommodates Cape size and Panamax vessels. The Port is operated by Transnet National Ports Authority. The Port of Richards Bay is located approximately 490 kms from the proposed Tournée 2 PV Solar site (**Figure 6-26**).

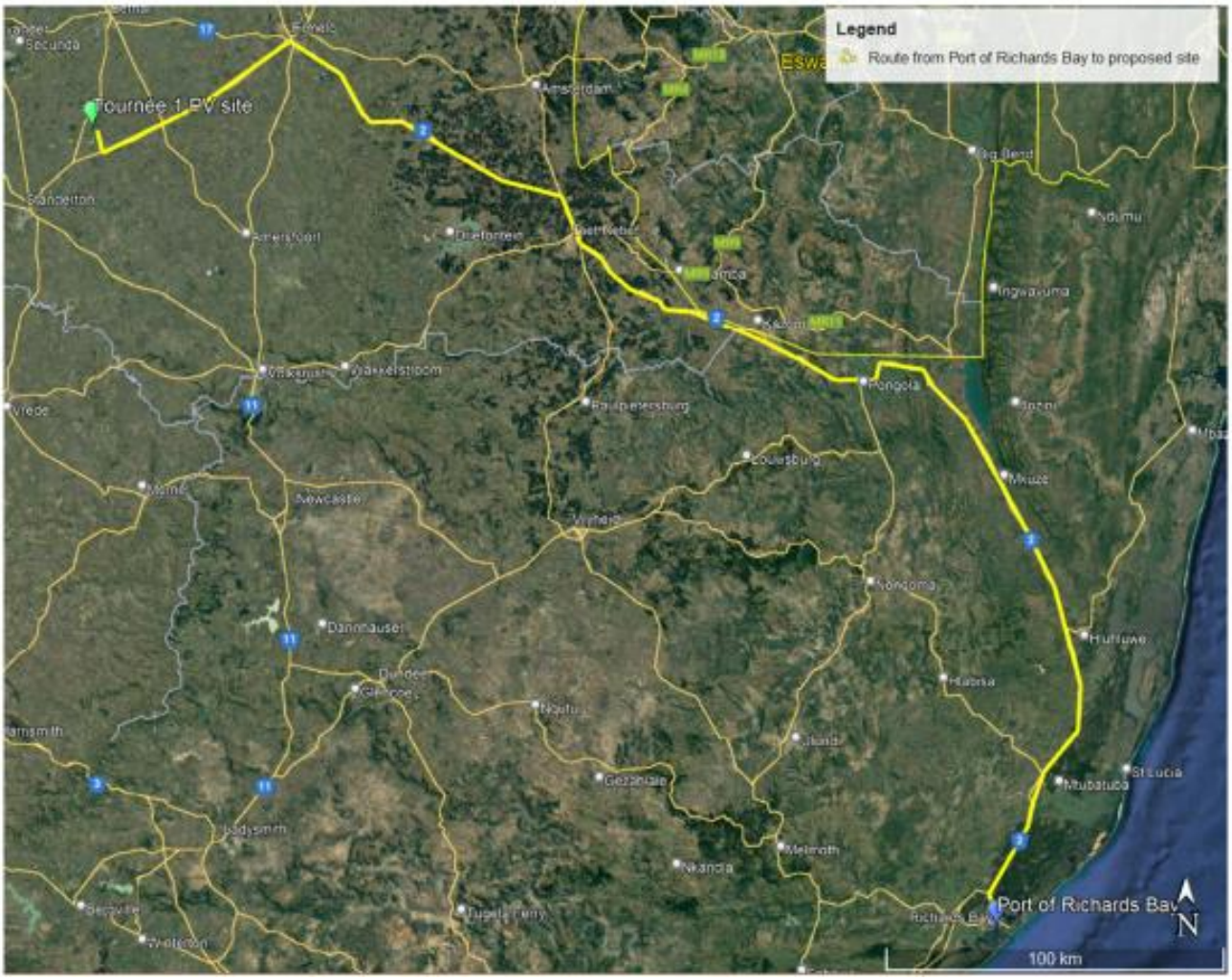

Figure 6-26 – Route from Port of Richards Bay to proposed site

Source: iWink Consulting, 2023

The Port of Durban

The Durban container terminal is one of the largest container terminals in the African continent and operates as two terminals Pier 1 and Pier 2. It is ideally located to serve as a hub for containerized cargo from the Indian Ocean Islands, Middle East, Far East and Australia. Various capacity creation

projects are currently underway, including deepening of berths and operational optimization. The terminal currently handles 65% of South Africa's container volumes. (Transnet Port Terminals, n.d).

The Port of Durban is located approximately 510 kms via the N3 from the proposed project site (**Figure 6-27**).

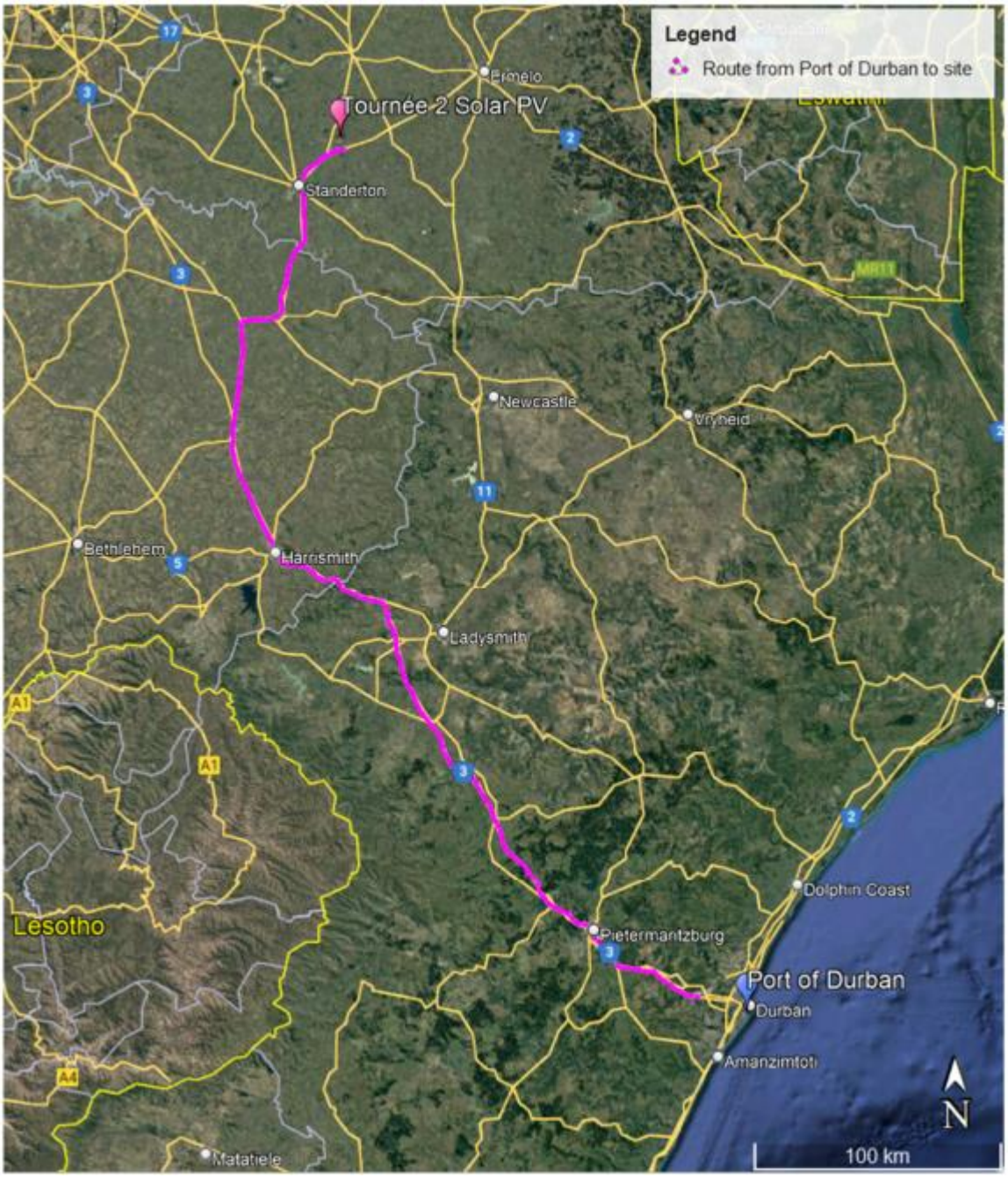

Figure 6-27 – Route from Port of Durban to proposed site

Source: iWink Consulting, 2023

6.3.3.3 Proposed Accesses

Two access points and roads are recommended towards the site – one via the R39 and one via the R38 (Figure **6-28**). Both access roads follow established routes and are partially surfaced and partially gravel surfaced. The accesses have been assessed in line with access spacing requirements, required sight lines and road safety considerations.

The route via Access Point 2 will be slightly longer from the ports of entry and possible manufacturing centres but this access point can function as a secondary access for the proposed development.

Figure 6-28 – Aerial view of proposed access points and roads to proposed site

Source: iWink Consulting, 2023

Access Point 1

The proposed access route from access point 1 is shown in **Figure 6-29**. This access point is well suited from a sight distances point of view.

Figure 6-29 – Existing surfaced access road at Access point 1 towards the proposed site

Source: iWink Consulting, 2023

Access Point 2

The access road from Access point 2 towards the site is shown in **Figure 6-30** and is unsurfaced gravel road. Sight distances are good in both directions at Access point 2. This access route will follow the gravel road and takes a right-turn towards the site. The last section of the access road towards the site will require upgrading due to being partially overgrown and not meeting the minimum road width required for large haulage vehicles.

Figure 6-30 – Distance between Access points 1 and 2

Source: iWink Consulting, 2023

General

The access roads leading from the external roads (R38 and R39) towards the site need to be maintained if damaged by haulage vehicles.

The direct access onto the sites should be located at a straight section of road (see recommended location in **Figure 6-31**, which is at existing farm gates). The radii at the access onto the site need to be large enough to allow for all construction vehicles to turn safely.

It is further recommended that the site access be security controlled during the construction phase. It is recommended to consider making use of both access points 1 (from R39) and 2 (from R38) for the duration of the construction phase to reduce the risk of traffic congestion.

Figure 6-31 – Recommended location of site access

Source: iWink Consulting, 2023

6.3.3.4 Internal Roads

The geometric design and layout for the internal roads from the recommended access points need to be established at detailed design stage. Existing structures and services, such as drainage structures, signage and pipelines will need to be evaluated if impacting on the roads. It needs to be ensured that the gravel sections remain in good condition and will need to be maintained during the additional loading of the construction phase and then reinstated after construction is completed.

The geometric design constraints encountered due to the terrain should be taken into consideration by the geometric designer. Preferably, the internal roads need to be designed with smooth, relatively flat gradients (recommended to be no more than 8%) to allow a larger transport load vehicle to ascend to the respective laydown areas.

Transportation of Materials, Plant and People to the proposed site

It is assumed that the materials, plant, and workers will be sourced from the surrounding towns as far as possible, such as from Thuthukani.

Public Transport and Non-Motorised Transport

In terms of the National Land Transport Act (NLTA) (Act No.5 of 2009), the assessment of available public transport services is included in this report. The following comments are relevant in respect to the public transport availability for the proposed developments.

It is expected that minibus taxis frequent the R38 and R39, which are located approximately 8 kms and 5 kms from the site. However, the developer of a large-scale project, such as many renewable energy projects, will provide shuttle buses or similar for workers during the construction phase.

6.3.3.5 Transportation requirements

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

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

6.3.4 VISUAL

The following is extracted from the Visual Impact Assessment compiled by Scientific Aquatic Services (Pty) Ltd and included as ***Appendix G.10.***

6.3.4.1 General views

General views of the landscape associated with the Tourneé 2 Solar PV Park and surrounds with respect to the terrain, vegetation cover (grasses and cultivated fields) and overall character are indicated in **Figure 6-32** and **Figure 6-33**.

Figure 6-32 – General view of the Tourneé 2 Solar PV Park, indicating the cultivated fields

Source: SAS, 2023

Figure 6-33 – General view of the Tourneé 2 Solar PV Park, indicating the ash dam

Source: SAS, 2023

Figure 6-34 – General view of the Tourneé 2 Solar PV Park, indicating the grassland vegetation

Source: SAS, 2023

6.3.4.2 Land Use and Visual Receptors

The Tourneé 2 Solar PV Park is situated in cultivated fields interspersed with open grassland utilised for grazing, and freshwater ecosystems. Due to the dominant land use of the area being agricultural practices, the majority of sensitive receptors located within the visual assessment zone comprised of farmsteads. Since the Tutuka Power Station and the associated ash dump form part of the skyline (i.e. dominant in the landscape) the farmers are used to industrial infrastructure in the landscape, hence the farmsteads are considered moderately sensitive receptors.

According to SAPAD (2022), SACAD (2022) and NPAES (2019) the Tourneé 2 Solar PV Park is not located within a 10 km radius of any protected or conservation areas.

Since the Tourneé 2 Solar PV Park is situated within a relatively remote area, the only roads present within a 5 km radius are farm roads, which are utilised infrequently and predominantly by the farmers and workers and the R38 (2 km west) and R39 (4.4 km south) roadways (**Figure 6-35**). Due to their momentary views and experience of the receiving environment motorists are classified as low sensitive receptors, however glint and glare from any shiny surface may momentarily distract a motorist from the road. Even though SEAs (2019) do not take into account farm roads, it is recommended that some form of buffer be placed on the road traversing the Tourneé 1 Solar PV Park, to ensure the safety of the road users. As such, a 50 m buffer, as a minimum, around the road is recommended, where no solar panels should be placed.

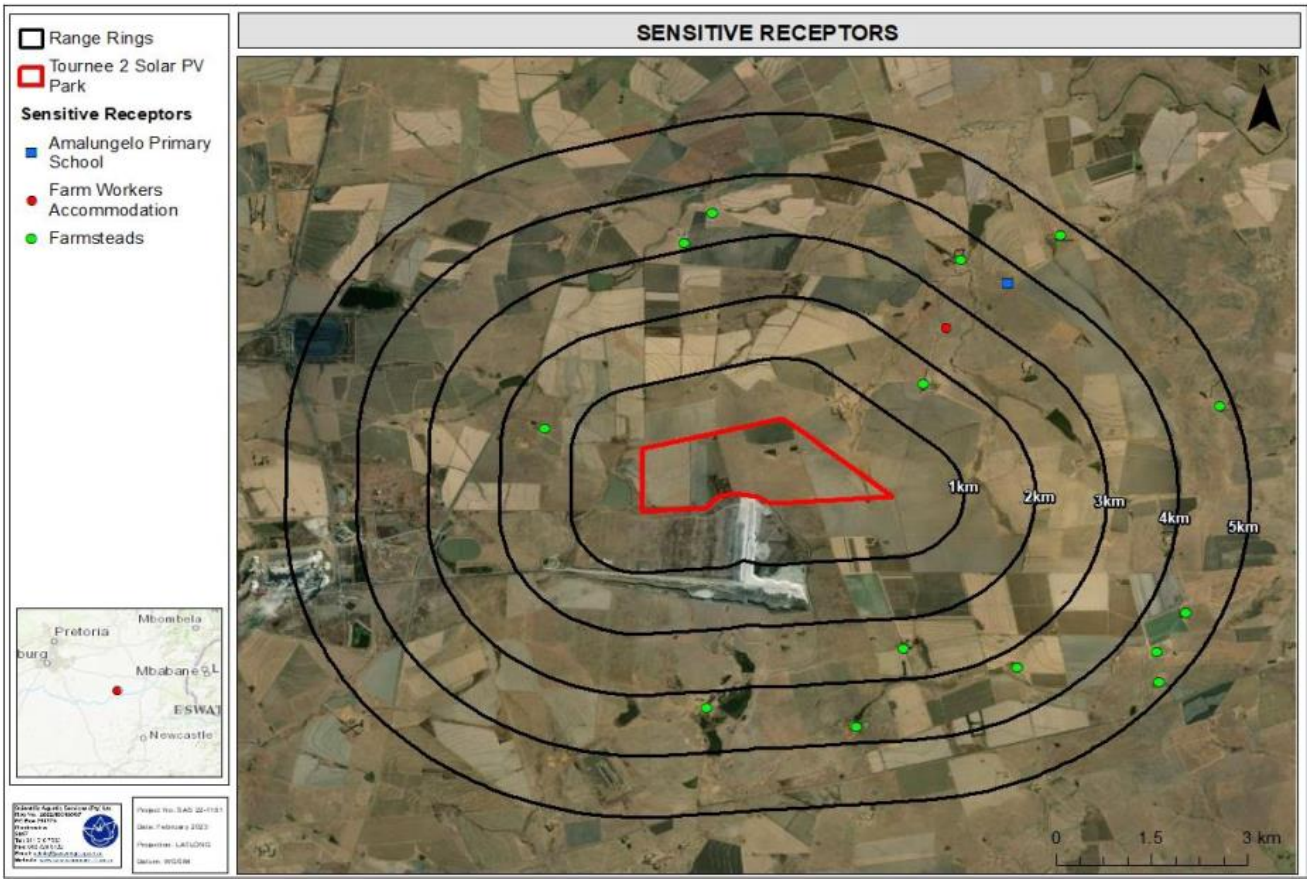

Figure 6-35 – Map indicating the location of potential sensitive receptors within 5km of the Tourneé 2 Solar PV Park

Source: SAS, 2023

6.3.4.3 Landscape Character and Quality

The Tourneé 2 Solar PV Park is located in a rural area forming the landscape character of the Highveld plateau with a colour palette of mostly green with periodic shades of brown (when fields are harvested). The Highveld plateau is relatively widespread, indicating that the landscape character is relatively common. The landscape is considered homogenous in terms of vegetation and colour palette, and the undulating terrain is fairly common in the larger Mpumalanga Province, and with the Tutuka Power Station forming part of the skyline, the scenic quality of the area is considered moderately low.

6.3.4.4 Topography

The local topography of the Tourneé 2 Solar PV Park is relatively flat to gently sloping. With the local topography of the Tourneé 2 Solar PV Park being relatively flat, it is unlikely to assist in absorbing and/ or screening the Tourneé 2 Solar PV Park. The ash dump will however assist in absorbing the Tourneé 2 Solar PV Park. The field assessment did however indicate as distance increases the visibility of Tourneé 2 Solar PV Park decreases, as such the undulating terrain does have an effect on the visibility of the Tourneé 2 Solar PV Park. Please refer to **Figure 6-36** and **Figure 6-37** for the elevation and slope models of the area.

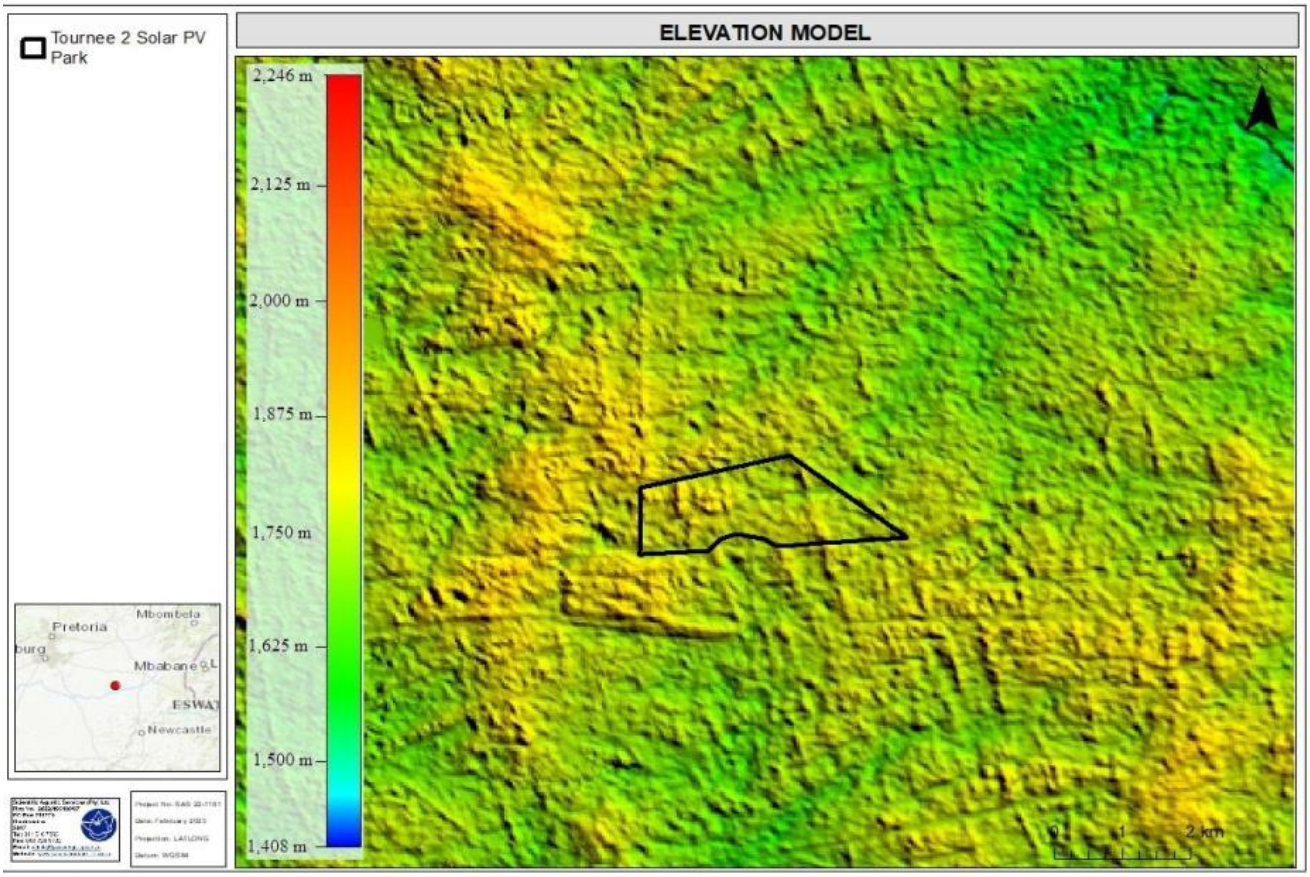

Figure 6-36 – False colour elevation rendering depicting the topographical character of the Tourneé 2 Solar PV Park

Source: SAS, 2023

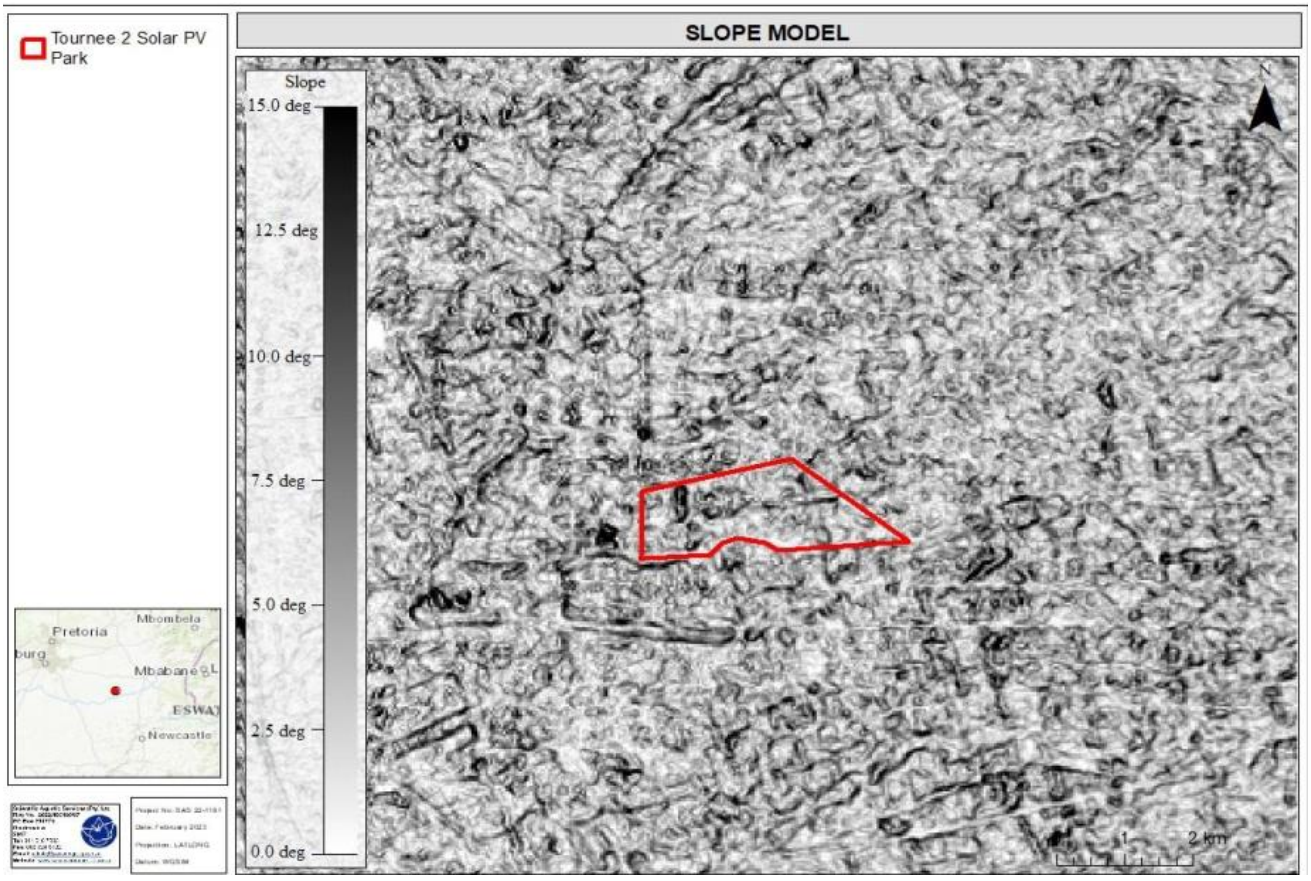

Figure 6-37 – Monochromatic map indicating the general relief associated with the Tourneé 1 Solar PV Park

Source: SAS, 2023

6.3.4.5 Sense of Place

Sense of place is the unique value that is allocated to a specific place or area through the cognitive experience of the user or viewer. It is created by the land use, character and quality of a landscape, as well as by the tangible and intangible value assigned thereto. The sense of place associated with the Tourneé 2 Solar PV Park is related to the landscape character type, defined as rural, relatively flat to gently sloping with limited anthropogenic movement. The Tourneé 2 Solar PV Park can be described as calm, tranquil and peaceful, with limited development and movement, with the exception of the shepherds moving with the livestock and farmers working in the cultivated fields.

The sense of place is however not unique to the Tourneé 2 Solar PV Park as it extends to the larger region. During the construction phase of the Tourneé 2 Solar PV Park, the sense of place will however be affected, shifting the mood to busy and disturbed with construction vehicles and potential need for some earth moving equipment, however, once the panels are operational there will be limited additional vehicular movement in and out of the area, thus returning the area to a calm and tranquil landscape.

6.3.4.6 Night-Time Lighting

The Tourneé 2 Solar PV Park is located in a rural area where the only sources of lighting are the farmsteads and Thutuka Power Station. The lighting environment of the region is therefore

considered rural (Zone E2 [Low District Brightness]). Development of the Tourneé 2 Solar PV Park may potentially be a source of light pollution during the construction and operational phases, due to security lighting on the perimeter fence and at the buildings (substation, BESS and O&M Buildings) and temporary construction camps. Overall, the impact significance of potential night-time lighting is expected to be moderately low and will be limited to a local area, as the Tourneé 2 Solar PV Park is not a development that requires a significant amount of lighting. This corresponds with Bortle's Scale – indicating that Tourneé 2 Solar PV Park falls within a Class 4 area (rural/suburban transition) where the light pollution is low and distant large objects are distinct. As such the introduction of lighting sources in an area with low light pollution results in the Tourneé 2 Solar PV Park to somewhat contribute to the effects of sky glow and artificial lighting in the region. It should however be noted that the undulating topography will reduce the range of visibility of the proposed lighting from the Tourneé 2 Solar PV Park.

6.3.5 SOCIAL

The following is extracted from the Social Scoping Report compiled by Tony Barbour Environmental Consulting and included as ***Appendix G.11.***

6.3.5.1 Administrative Context

The study area is located within the Lekwa Local Municipality (LLM) within the Mpumalanga Province. The LLM is one of the seven Local Municipalities that make up the Gert Sibande District Municipality (GSDM) (**Figure 6-38**). The town of Standerton is the administrative seat of the LLM.

Figure 6-38 – Location of Lekwa Municipality within the Gert Sibande District Municipality

Source: Tony Barbour, 2023

6.3.5.2 Demographic Overview

Population

The population of the LLM in 2016 was 123 418 (Community Household Survey 2016). Of this total, 33.4% were under the age of 18, 61.1% were between 18 and 64, and the remaining 5.6% were 65 and older. The figures or the percentage of the population falling within the economically active economic age category of 18-64 were higher than the figures for the GSDM and Mpumalanga (57.7% and 56.6% respectively). This is likely to be due to the employment opportunities associated with the mining and manufacturing activities in the LLM. The population of Ward 12 (Census 2011) was 8 405, of which 36.2% were under the age of 18, 59.6% were in the active economic category (18-64) and 4.2% were older than 64.

The dependency ratio is the ratio of non-economically active dependents (usually people younger than 15 or older than 64) to the working age population group (15-64). The higher the dependency ratio the larger the percentage of the population dependent on the economically active age group. This in turn translates to reduced revenue for local authorities to meet the growing demand for services. The traditional approach is based people younger than 15 or older than 64. The information provided provides information for the age group under 18. The total number of people falling within this age group will therefore be higher than the 0-15 age group. However, most people between the age of 15 and 17 are not economically active (i.e., they are likely to be at school).

Using information on people under the age of 18 is therefore likely to represent a more accurate reflection of the dependency ratio. Based on these figures, the dependency ratios for the LLM, the GSDM and Mpumalanga in 2016 were 63.8%, 73.5% and 77% respectively. The lower dependency ratios in the LLM reflect the employment and economic opportunities in mining and power sector. The dependency ratio for Ward 12 (2011) was 67.8%.

In terms of race groups, Black Africans made up 85.5% of the population on the LLM, followed by Whites, 13% and Indian or Asian (1.2%) (**Table 6-4**). The main first language spoken in the LLM was isizulu, 56.6%, followed by Sesotho (22.7%) and Afrikaans (12.9%).

In Ward 12 Black Africans made up 90.2% of the population, followed by Whites, 9.6% and Indian or Asian (0.1%). The main first language spoken was isizulu, 70.1%, followed by Afrikaans (9.7%) and Sesotho (7.3%).

Table 6-4 - Population group LLM

Column	LLM		GSDM		Mpumalanga	
Black African	89.2%	110,072	91.6%	1,040,425	93.6%	4,057,760
Coloured	1.8%	2,234	0.8%	9,429	0.8%	32,859
Indian or Asian	0.8%	993	0.7%	8,126	0.5%	19,786
White	8.2%	10,119	6.8%	77,429	5.2%	225,558

Source: Wazimap: 2016 Household Community Survey

Households and house types

The total number of households in the LLM in 2016 was 37 335, which ~ 10% of the total number of households in the GSDM. Of these 63.1% were formal houses, 19.1% were shacks, and 10% were flats in backyards. The figures for the GSDM were 67.2%, 13.4%, 6.7% and 8.3% respectively. While the majority of dwellings in the LLM are formal structures there are a high percentage of informal structures which reflects the migration of jobseekers to the area and the pressure this in turn places on housing. The figures for Ward 12 were 60% (formal house) and 16.9% (shack).
In terms of ownership, 58.7% of the dwellings in the LLM were owned and fully paid off, while 5.6% were in the process of being paid off. 12.2% were occupied rent free and 15.2% of the dwellings were rented from private individuals. A relatively large percentage of the properties in the LM (64.4%) were owned and or in the process of being paid off. This reflects a relatively stable and established community.
In terms of household heads, approximately 36.8% of the households in the LLM and 39.1% of the households in the GSDM were headed by women. These figures similar to the provincial figure of 39.71%. The high percentage of households headed by women in the LLM reflects the likelihood that the men have left the area in search of employment opportunities in Gauteng. This is despite the well-developed mining and energy sector in the LLM. Women headed households tend to be more vulnerable. The figure for Ward 12 was 21.4%, which is considerably lower that the LLM and GSDM.

Household income

Based on the data from the 2011 Census, 10.8% of the population of the LLM had no formal income, 3.9% earned less than R 4 800, 5.9% earned between R 5 000 and R 10 000 per annum, 17.8% between R 10 000 and R 20 000 per annum and 22.3% between R 20 000 and 40 000 per annum (2016). The figures for Ward 12 were 6.7%, 2.7%, 3.4%, 17.3% and 26.5% respectively.

The poverty gap indicator produced by the World Bank Development Research Group measures poverty using information from household per capita income/consumption. This indicator illustrates the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty, which is based on living on less than R3 200 per month for an average sized household (~ 40 000 per annum). Based on this measure, in the region of 60.7% of the households in the LLM and 65.2% in the GSDM live close to or below the poverty line. The figure for Ward 12 was 56.6%.

The low-income levels in the LLM and GSDM reflect the limited formal employment opportunities outside the urban areas. This is also reflected in the high unemployment rates. The low-income levels are a major concern given that an increasing number of individuals and households are likely to be dependent on social grants. The low-income levels also result in reduced spending in the local economy and less tax and rates revenue for the LLM. This in turn impacts on the ability of the LM to maintain and provide services.

Household income levels are likely to have been impacted by the COVID-19 pandemic. The number of households in the LLM and GSDM that live close to or below the poverty line is likely to have increased over the last 18 months. This, coupled with the high dependency ratio, is a major cause of concern for the area.

Employment

The official unemployment rate in the LM in 2016 was 15.5%, while 44.4% were employed, and 36.7% were regarded as not economically active (**Table 6-5**). However, the COVID-19 pandemic is likely to have resulted in an increase in unemployment rates in the LLM. Recent figures released by Stats South Africa also indicate that South Africa's unemployment rate is in the region of 36%, the highest formal unemployment rate in the world.

Table 6-5 - Employment LM

Column	LLM		GSDM		Mpumalanga	
Discouraged work-seeker	3.4%	2,600	5.3%	35,518	5.8%	150,844
Employed	44.4%	34,118	38.9%	259,129	37.5%	969,771
Other not economically active	36.7%	28,171	39.4%	262,387	39.4%	1,020,806
Unemployed	15.5%	11,895	16.5%	109,658	17.3%	448,126
Unspecified	0%	0	0%	0	0%	0

Source: Wazimap: 2016 Household Community Survey

Education

In terms of education levels, the percentage of the population over 20 years of age in the LLM with no schooling was 9.3% in 2016, compared to 10.8% and 11.3% for the GSDM and Mpumalanga Province respectively (**Table 6-6**). The percentage of the population over the age of 20 with matric in the LLM (2016) was 30.6%, compared to 34.3% and 36.1% for the GSDM and Mpumalanga. The education levels in the LLM are therefore lower than the GSDM and Provincial figures. The figures for Ward 12 (2011) were 22.7% (no education) and 21.4% (matric). The education levels in Ward 12 are therefore lower than the LLM, GSDM and province.

Table 6-6 - Population by highest educational level LM

Column	LLM		GSDM		Mpumalanga	
None	9.3%	7,495	10.8%	74,575	11.3%	289,024
Other	0.2%	122	0.4%	2,692	0.5%	13,008
Some primary	11.1%	8,914	10.3%	71,150	9.2%	235,202
Primary	4.7%	3,817	3.7%	25,654	3.6%	93,209
Some secondary	37%	29,835	32.7%	225,668	31.6%	807,658
Grade 12 (Matric)	30.6%	24,653	34.3%	236,452	36.1%	923,581
Undergrad	2.1%	1,725	2.6%	18,141	2.6%	65,572
Post-grad	1.9%	1,555	2.6%	17,873	2.6%	67,379
N/A	3%	2,434	2.5%	17,310	2.5%	64,704

Source: Wazimap: 2016 Household Community Survey

6.3.5.3 Municipal Services

Electricity

Based on 2016 survey, 92.1% of households in the LLM had access to electricity, compared to 90.4% for the GSDM and 93.2% for Mpumalanga. In terms of connections, 84.3% has in-house prepaid meters, while 6.2% had traditional meters (**Table 6-7**).

Table 6-7 - Population by electricity access

Column	LLM		GSDM		Mpumalanga	
In-house prepaid meter	84.3%	103,987	76.1%	863,819	81.4%	3,531,211
No access to electricity	7.9%	9,742	9.6%	108,857	6.8%	294,078
In-house conventional meter	6.2%	7,601	12.8%	145,050	9.6%	416,614
Other source (not paying for)	1.1%	1,350	0.3%	3,412	0.8%	35,088
Other	0.6%	738	1.3%	14,272	1.4%	58,972

Source: Wazimap: 2016 Household Community Survey

Access to water

Based on the 2016 survey information, 88.6% of households in the LLM were supplied by a regional or local service provider. This compares to 88.4% and 86.85% for the GSDM and Mpumalanga respectively. Of this total 46.3% had piped water inside the house and 42.3% in the yard (**Table 6-8**). The relatively high percentage that relied on piped water in their yards reflects the relatively high percentage of shacks (19.1%) in the LLM.

Table 6-8 - Population by water source

Column	LLM		GSDM		Mpumalanga	
Piped water inside house	46.3%	57,127	33.6%	381,982	27.9%	1,210,646
Piped water inside yard	42.3%	52,240	49.2%	558,314	45.7%	1,980,179
Borehole outside yard	3.7%	4,594	3%	33,521	2.1%	90,998
Public/communal tap	1.8%	2,196	3%	33,872	5.1%	220,698
Other	5.9%	7,262	11.3%	127,721	19.2%	833,444

Source: Wazimap: 2016 Household Community Survey

Sanitation

85.6% of the households in the LLM had access to flush toilets (2016), while 10% relied on pit toilets and 2.5% had not access to sanitation (**Table 6-9**). The figures with no access to sanitation are similar to the 2.6% and 2.8% for the GSDM and Mpumalanga respectively. The relatively high percentage of households that relied on pit toilets reflects the relatively high percentage of shacks

(19.1%) in the LLM. The figure for flush toilets is higher than the figures for the GSDM (65.3%) and Mpumalanga (42.1%) respectively.

Table 6-9 - Population by toilet facilities

Column	LLM		GSDM		Mpumalanga	
Flush toilet	85.9%	106,071	65.3%	741,197	42.1%	1,824,153
Pit toilet	10%	12,294	26.4%	299,583	47.5%	2,058,092
None	2.5%	3,120	2.6%	29,216	2.8%	119,896
Other	0.6%	789	3.6%	40,923	3%	128,618

Source: Wazimap: 2016 Household Community Survey

Refuse collection

66.5% of the households in the LLM had access to regular refuse removal service, while for 13.6% relied on their own dump (**Table 6-10**). The relatively high percentage that relied on their own dump reflects the relatively high percentage of shacks (19.1%) in the LLM. The figure for regular service is higher than the 52.2% for the GSDM.

Table 6-10 - Population by refuse disposal

Column	LLM		GSDM		Mpumalanga	
Service provider (regularly)	66.5%	82,069	52.2%	592,992	36.9%	1,598,974
Own dump	13.6%	16,804	26.8%	303,917	47.4%	2,054,914
None	12.5%	15,411	7.1%	80,341	6%	260,346
Communal dump	5.8%	7,162	4.2%	48,114	4.2%	183,389
Other	1.6%	1,971	9.7%	110,045	5.5%	238,341

Source: Wazimap: 2016 Household Community Survey

6.3.5.4 Overview Of Study Area

The study area is located approximately 26km to the north-east of the town of Standerton in the LLM and 35km south-west of the town of Secunda in the adjacent Govan Mbeki Municipality. Standerton is the largest urban settlement in the LLM and serves as the administrative and institutional hub of the municipality. It is a typical medium sized South African town, with a central CBD, industrial areas on the periphery, low density residential development and separation between white and black and rich and poor neighbourhoods.

Secunda has its origins in the 1973/74 international oil crisis when the then South African Government took the decision to establish a second coal liquefaction plant following the establishment of the first at Sasolburg in the 1950s. After the site for the Sasol complex had been identified, it had to be decided whether or not to combine the existing towns of Evander and Trichardt. The huge burden that extensions of this nature would have had on the financial and

administrative resources of the established communities as well as the tempo at which such development should proceed was decisive and resulted in the decision to develop Trichardt and Secunda to be one town, named Secunda. Evander, located ~ 8km to the west of the current day Secunda, remained a separate town. Trichardt borders onto the northern part of Secunda. The first town area was proclaimed in June 1976. The name Secunda is derived from the from the Latin, secundi meaning second/following, and was given to the town as it was the second extraction refinery produ^{c}ing oil from coal, after Sasolburg, which is located approximately 140km west of Secunda. The town was located adjacent to the large coalfields in the area, including the Evander and Winkelhaak coal mines located to the north west of the town. The Secunda facility consists of Sasol Two (1980) and Sasol Three (1982) is the largest coal liquefaction plant in the world, and produces synthetic fuel, diesel, and related fuels and petrochemicals from coal gasification. The Secunda facility is located to the south of the town (**Figure 6-39**).

Figure 6-39 – Secunda Sasol Facility

Source: Tony Barbour, 2023

The Thukuka Power station and Thuthukani settlement are located 4 and 10km to the west of the site respectively (**Figure 6-40**). Thuthukani started as a worker's village to house employees of the Thuthuka power station which is located 4 km to the east of the village. The IDP notes that Thuthukani is made up of two townships namely Thuthukani proper and Thuthukani Extension 1 as well as Eskom Hostels to the west of town. The IDP indicates that because Thuthukani is solely dependent on Thuthuka Power Station and the associated New Denmark Colliery the growth potential is limited. The New Denmark Colliery is located ~6km to the north west of the Thuthuka

Power station. The ash dump for the power station is located immediately to the south of the PV SEF site.

The other land uses in the study area commercial agriculture. Commercial agriculture in the study area includes livestock and grain farming. Based on the Google Earth information there appear to be a limited number of farmsteads in the study area. The number of occupied farmsteads will be confirmed during the site visit undertaken during the assessment phase. An Eskom substation is located 5 km to the south west of the site. The social environment can therefore be described is a working agricultural / industrial environment. There do not appear to be any tourist related activities located in the study area. Therefore, from a social perspective there appear to be a limited number of sensitive social receptors. This will be confirmed during the site visit undertaken during the Assessment Phase of the SIA.

Figure 6-40 – Tukuka Power Station

Source: Tony Barbour, 2023

6.4 HEALTH AND SAFETY

6.4.1 SOLID STATE LITHIUM BATTERY CHEMICAL HAZARDS

6.4.1.1 Hazard - Thermal Decomposition

Upon heating of the contents of a battery due to shorting, contaminants, external heat or exposure to water and reaction heat, the lithium salts in batteries begin to break down exothermically to release either oxygen (oxidants) that enhances combustion, possibly leading to explosion, or fumes such as hydrogen fluoride or chlorine that are toxic.

These exothermic break down reactions are self-sustaining above a certain temperature (typically 70 deg C) and can lead to thermal run away. In this process the battery gets hotter and hotter, the

decomposition reactions happen faster and faster and excessive hot fumes are generated in the battery. Eventually the pressure in the battery builds up to the point where those gases need to vented, usually via the weakest point in the system. These vented fumes can be flammable due to vaporization of the electrolyte and can ignite as a flash fire or fire ball (if large amounts) leading to the fire spreading to any surrounding combustible materials, e.g. plastic insulation on cables, the electrolyte, the electrodes and possibly even the plastic parts of the battery casing etc. If the vented flammable vapours do not ignite immediately, they can accumulate within the surrounding structures. If this flammable mixture is ignited later, e.g. due to a spark, this can lead to a violent explosion of the module, cabinet, room, container etc. In addition to being flammable the vented gases will contain toxic components. These could include:

- The products of combustion such as carbon dioxide/monoxide, hydrogen cyanide
- VOCs like benzene and ethylene,
- Depending on the exact battery chemical composition, decomposition products such as hydrogen fluoride, hydrogen chloride, phosphorous pentafluoride, phosphoryl fluoride and oxides of aluminium, cobalt, copper etc.

The temperature in the batteries and of these vented gases can be extremely high, e.g. > 600 deg C.

In the situation where oxygen is released internally as part of the decomposition (e.g., lithium perchlorate) the oxygen is available to react with the combustible electrolyte and if all this happens extremely fast in a self-sustaining manner within the confines of the device, an explosion of the device can occur with only localized impacts.

6.4.1.2 Hazard - Propagation

A BESS is composed of individual batteries which are combined into different size packs such as modules, racks. The very high temperature generated by one battery cell in thermal run away could lead to overheating of adjacent cells. This cell in turn then starts thermal decomposition and so the process propagates through the entire system. In order to prevent propagation, there are separation requirements between cells, modules etc. Separation could be with physical space or insulating materials etc.

6.4.1.3 Hazard - Electrolyte Leaks

In the case of liquid or polymer batteries, although extremely unlikely due to the structure of the batteries, should electrolyte liquid leak out of the batteries, it can be potentially flammable as well as corrosive etc. If ignited as fire, or explosion, the smoke would contain toxic components. If unignited it can still be extremely harmful especially if its decomposition products include hydrofluoric acid.

One of the main safety advantages of solid state batteries is that flammable electrolyte leaks are not possible.

6.4.1.4 Hazard – Electrical Shock/Arc

Electrical shock presents a risk to workers and emergency responders if the energy storage system cannot be “turned off”. This is referred to as “stranded energy” and presents unique hazards. Arc flash or blast is possible for systems operating above 100 V. Li-ion systems operate from 48 - 1000 V, depending on the battery design.

6.4.2 OTHER CHEMICALS OR HAZARDS

The BESS is composed not only of the batteries. There are electrical connections, switches, power converters, cooling systems etc.

6.4.2.1 Cooling Systems

Due to the need to keep the batteries within a specified temperature range most of the containerized modular system have built-in air-conditioning systems while the VRF building systems may have cooling water systems. Some have only fans for air cooling with filters to remove dust prior to cooling. Others, particularly those in hot environments requiring more cooling, may have refrigerant-based systems. These would have a refrigerant circuit usually containing non-flammable non-toxic refrigerant such as R134a (simple asphyxiant) etc as well as a low hazard circulating medium such as an ethylene glycol-based coolant. At high temperatures above 250 deg C R134 may decompose and may generate hydrogen fluoride and other toxic gases. Ethylene glycol is really only harmful if swallowed. In the environment it breaks down quickly and at low concentrations that would typically occur from occasional small spills, it has no toxicity.

6.4.2.2 Fire Suppression Systems

Although these are only effective for some fire scenarios, some of the solid-state containerized systems come fitted with “Clean agent” fire suppressant systems. These are pressurized containers of powder/gases that are released into the container to snuff a fire and do not leave a residue on the equipment.

Some containers have water sprinkler systems installed to quench thermal run-away reactions.

In general fire fighters may respond with water cannons/hydrants, foam systems etc. Such responses may generate large amount of contaminated and hazardous water runoff. A system to contain as much of this as possible should be in place.

6.4.2.3 General Electrical and Electronic Equipment

Whatever the configuration of the battery containers/ buildings there will be electrical and electronic equipment in the battery compartment, the battery building as well as outside. In some installations the main electrical equipment such as the power conversion system is in a separate compartment separated by a fire wall. In others it can be in a separate container.

Wherever there is electrical equipment there is a possibility of shorting and overheating and fire

7 SITE SENSITIVITY AND VERIFICATION

Specialist assessments were conducted in accordance with the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes, which were promulgated in Government Notice No. 320 of 20 March 2020 and in Government Notice No. 1150 of 30 October 2020 (i.e. “the Protocols”), or Appendix 6 of the EIA Regulations, depending on which legislation apply to the assessment under consideration. A summary of the DFFE screening tool, the applicable legislation as well as the specialist sensitivity verification are detailed in **Table 7-1** below.

Table 7-1 - Assessment Protocols and Site Sensitivity Verifications

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Agricultural Compliance Statement	*Protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities where the electricity output is 20 megawatts or more*	High Sensitivity	High, Medium and Low Sensitivity
Terrestrial Biodiversity Impact Assessment	*Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity*	Very High Sensitivity	Low Sensitivity
Aquatic Biodiversity Impact Assessment	*Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity*	Very High Sensitivity	Very High Sensitivity
Plant Species	*Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species*	Medium Sensitivity	Low Sensitivity
Animal Species	*Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species*	Medium Sensitivity	Medium Sensitivity
Avifauna Impact Assessment	*Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species*	Low Sensitivity	Low Sensitivity
Archaeological and Cultural Heritage Impact Assessment	*Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed*	Low Sensitivity	Medium Sensitivity

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Palaeontology Impact Assessment	*Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed*	Very High Sensitivity	Medium Sensitivity
Visual (Landscape) Impact Assessment	*Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed*	Very High Sensitivity	Low Sensitivity
Civil Aviation Assessment	*Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed*	Medium Sensitivity	Medium Sensitivity
Defence Assessment	*Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed*	Low Sensitivity	Low Sensitivity
RFI Assessment	*Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed*	Medium Sensitivity	Low Sensitivity

7.1.1 AGRICULTURAL SENSITIVITY

The output of the DFFE Screening Tool for the Agricultural Theme is illustrated in **Figure 7-1** and indicates that the site is classified as High Sensitivity.

The site verified results for the agricultural sensitivity considered the occurring soils as well as the current land uses particularly land uses contribution to the agricultural production spectrum. Upon verification the site sensitivity ranged between low and high. Areas under active cultivation were targeted as these are the areas where the impact will mostly be felt. The sensitivity classes were as follows:

- Cultivated land with Maize and Soybeans – High
- Grazing land – Intermediate
- Watercourses – Low

Figure 7-2 below depicts the agricultural sensitivity.

Figure 7-1 - Map of Agriculture Sensitivity

Source: DFFE Screening Report

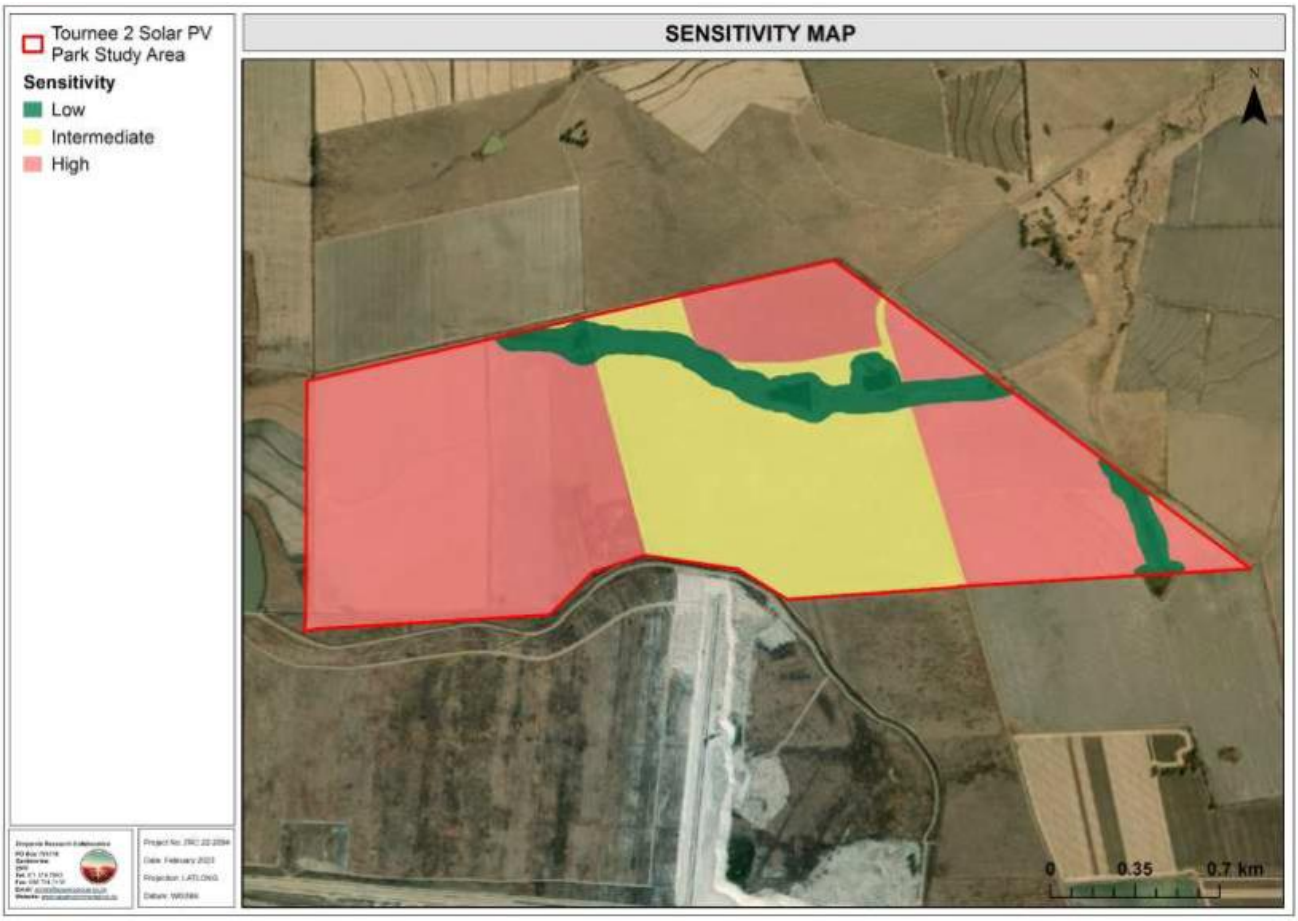

Figure 7-2 - Agricultural sensitivity associated with the Tournée 2 Solar PV Park

Source: ZRC, 2023

7.1.2 TERRESTRIAL BIODIVERSITY

The output of the DFFE Screening Tool for the Terrestrial Biodiversity Theme is illustrated in **Figure 7-3** and indicates that the site is classified as Very High Sensitivity.

Figure 7-3 - Map of Terrestrial Biodiversity Sensitivity

Source: DFFE Screening Report

The very high sensitivity was triggered by the presence of an Optimal CBA area and VU ecosystem. During the site assessment, the area associated with the CBA was not confirmed to be representative for the targets set for a CBA as these areas were transformed by current cultivation areas. The remaining Grassland habitat is no longer considered to be representative of the reference VU ecosystem (namely, Soweto Highveld Grassland). This is as a result of the underrepresentation of certain dominant species (e.g., *Themeda triandra*, which was encountered on site but in a very low abundance and restricted distribution with the Tournée 2 Solar PV Park), found in Soweto Highveld Grassland vegetation type and the dominance of grazing grasses (e.g., *Eragrostis tef and E. plana*) and abundance of AIPs, most likely the result of the historic and current land-use management practices

The very high sensitivity for the Terrestrial Biodiversity Theme is only supported for the Freshwater Ecosystem Habitat, based on the representative nature of this habitat unit to the reference VU Soweto Highveld Grassland vegetation type. The specialist (SAS) classifies all freshwater ecosystems as very high sensitivity and the remainder of study and investigation areas as low sensitivity.

7.1.3 AQUATIC BIODIVERSITY

The output of the DFFE Screening Tool for the Aquatic Biodiversity Theme is illustrated in **Figure 7-4** and indicates that the site is classified as Very High Sensitivity. These areas of very high

sensitivity relate to the presence of wetlands. The specialist (SAS) classifies all freshwater ecosystems as very high sensitivity and the remainder of study and investigation areas as low sensitivity.

Figure 7-4 - Map of Aquatic Biodiversity Sensitivity

Source: DFFE Screening Report

7.1.4 PLANT SPECIES

The DFFE Screening Tool indicates that the site has a medium sensitivity (**Figure 7-5**). The triggering species included Sensitive species 1252 (VU) and Sensitive Species 691 (VU)). The site visit was undertaking during the summer months which coincide with these species' flowering time, however, these species were not found during the site assessment and habitat for this species to occur is unlikely. The medium sensitivity for the Plant Species Theme is disputed by the specialist and the low sensitivity is confirmed.

Figure 7-5 - Map of Plant Species Sensitivity

Source: DFFE Screening Report

7.1.5 ANIMAL SPECIES

The DFFE Screening Tool indicates that the site has a medium sensitivity (**Figure 7-6**) due to potential suitable habitat for the following trigger species: *Aves: Tyto capensis* (African Grass Owl; VU) and *Eupodotis senegalensis* (White Bellied Korhaan; VU). *Insecta: Lepidochrysops procera* (Potchefstroom Blue; Rare) and Mammalia: *Crocidura maquassiensis* (Maquassie Musk Shrew; VU). The medium and low sensitivity for the Animal Species Theme for the Tournée 2 Solar PV Park within the Grassland and Freshwater habitat is supported for Mammal, Herpetofauna and invertebrate.

Figure 7-6 - Map of Animal Species Sensitivity

Source: DFFE Screening Report

7.1.6 AVIFAUNA

The output of the DFFE Screening Tool for the Avifauna Theme is illustrated in **Figure 7-7** and indicates that the site is classified as Low Sensitivity. Although a number of Priority Species were observed by Volant during the Scoping Survey, they all have a relatively low Priority Score. This in conjunction with the few sensitive areas that were found during the survey shows that Volant's findings align with the Sensitivity score given by the screening report and that the area is currently considered to be of Low Sensitivity to avifauna. Two more field sessions will be conducted to confirm the findings.

Figure 7-7 - Map of Avian Sensitivity

Source: DFFE Screening Report

7.1.7 ARCHAEOLOGICAL AND CULTURAL HERITAGE

The output of the DFFE Screening Tool for Archaeological and Cultural Heritage Theme is illustrated in **Figure 7-8** and indicates that the site is classified as Low Sensitivity.

The results of the site sensitivity are summarised below:

- The cultural value of the broader area has some significance in terms of its mining and agricultural history: Moderate
- Some significant archaeological resources were identified within the broader area: Moderate

Both WP 002 and WP 003 fall within the areas proposed for the Tournée 1 PV Facility. All the graves are highly significant, and a 50m buffer zone with a fence is recommended to ensure their conservation. The 50m buffer zone falls within the Tournée 2 PV Facility (**Figure 7-9**). The site is therefore considered as having a medium sensitivity.

Figure 7-8 - Map of Archaeological and Heritage Sensitivity

Source: DFFE Screening Report

Figure 7-9 – Heritage resources and buffer identified in close proximity to the Tournée 2 Solar PV Facility

Source: CTS Heritage, 2023

7.1.8 PALAEONTOLOGY

The output of the DFFE Screening Tool for the Palaeontology Theme is illustrated in **Figure 7-10** and indicates that the site is classified as Very High Sensitivity.

The results of the site sensitivity are summarised below:

- No highly significant palaeontological resources were identified within the development area, however the geology underlying the development area is very sensitive for impacts to significant fossils: Moderate

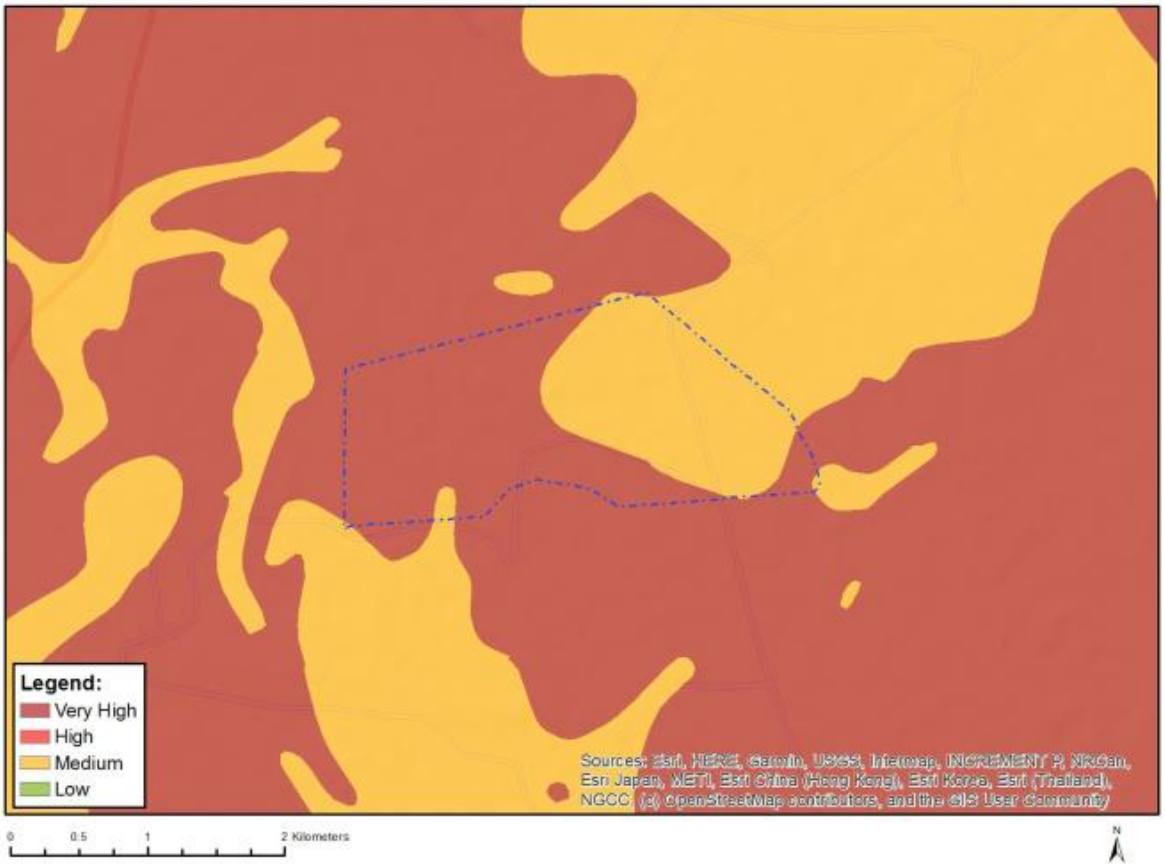

Figure 7-10 - Map of Palaeontology Sensitivity

Source: DFFE Screening Report

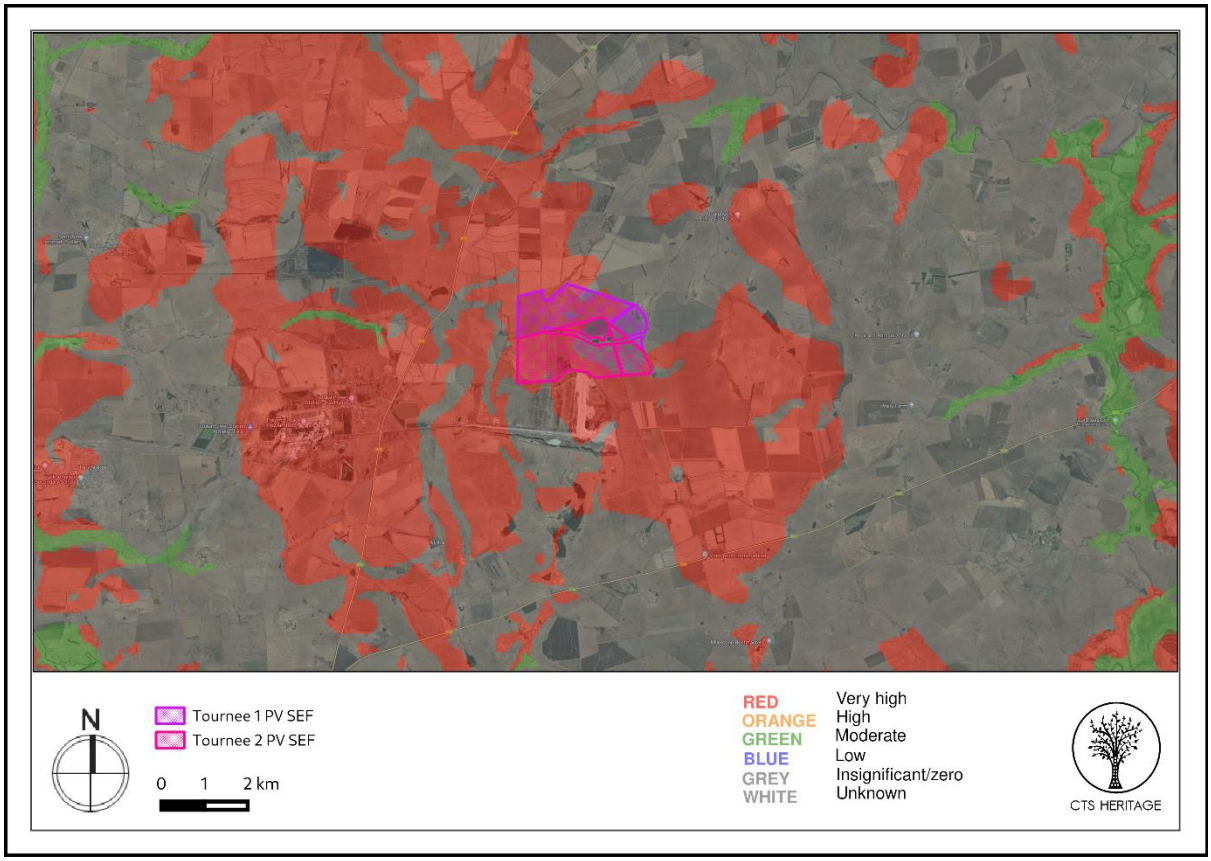

Figure 7-11 - SAHRIS palaeosensitivity map for the site for the proposed Tournée PVs

Background colours indicate the following degrees of sensitivity: red = very highly sensitive; orange/yellow = high; green = moderate; blue = low; grey = insignificant/zero

Source: Bamford, 2023

7.1.9 LANDSCAPE (VISUAL)

The output of the DFFE Screening Tool for the Landscape Theme is illustrated in **Figure 7-12** and indicates that the western and eastern portions of the site is classified as Very High Sensitivity as the area is believed to have mountain tops and high ridges. The remaining portions of the Tourneé 2 Solar PV Park is considered to have no sensitivity.

Based on the field assessment it is evident that there are no high ridges or mountain tops within the Tourneé 2 Solar PV Park as the terrain within the Tourneé 2 Solar PV Park is gently sloping, with the surrounding landscape displaying undulating terrain, with no prominent outcrops or ridges in this specific area. In terms of the above-mentioned, the very high sensitivity as per the screening tool outcome is thus not supported and classification as a low sensitivity site is considered more appropriate.

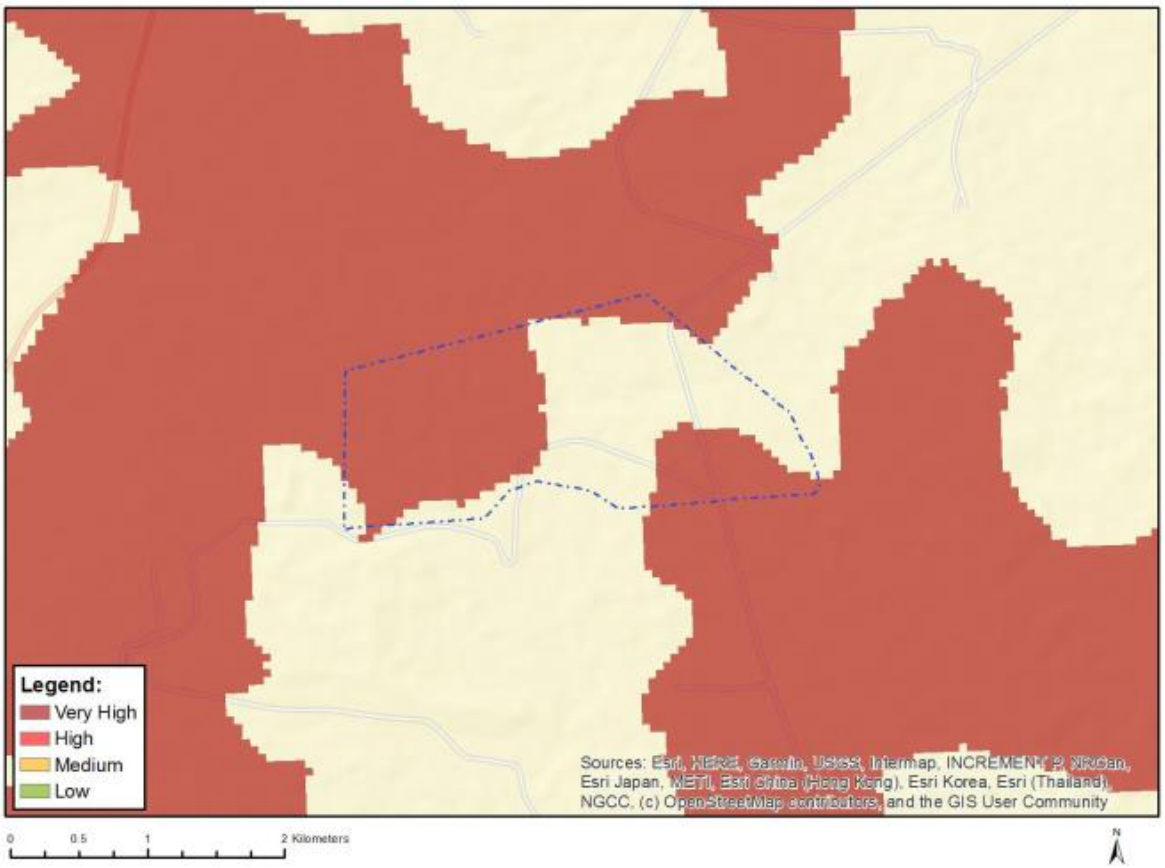

Figure 7-12 - Map of Landscape Sensitivity

Source: DFFE Screening Report

Based on the outcome of the desktop and field assessments, it is evident that the number of potential sensitive receptors situated within the visual assessment zone is not more than 20, comprising of farmsteads and gravel roads. Since the Tourneé 2 Solar PV Park is located adjacent to the ash dump of the Tutuka Power Station, and within 5 km of the Tutuka Power Station, the proposed solar facility is located in an area where anthropogenic structures, and particularly those related to energy generation, form part of the skyline, and due to the relatively low height of the proposed infrastructure it will not be significantly visually intrusive on the receiving environment. Furthermore, with the colour palette of the Tourneé 2 Solar PV Park it is likely to blend in with the silhouette of the ash dump especially to sensitive receptors located to the north, and the ash dump will completely screen view from sensitive receptors located south.

During the field assessment if was further evident that the undulating topography and cultivated fields in the surrounding area, either partially or completely obscures the view towards the Tourneé 2 Solar PV Park, therefore the visual impact for the Tourneé 2 Solar PV Park is considered moderate as the visual intrusion on the receiving environment will be limited.

Based on the desktop and field assessments the Scenic Quality of the Tourneé 2 Solar PV Park falls within Class C, which is a landscape that have features that are common to the region, i.e. the cultivated fields interspersed by the grasslands and freshwater ecosystems.

With the Tourneé 2 Solar PV Park located in a rural area where no farmsteads are present within a 1 km radius, the visual inventory classes is not applicable.

A 50m no development buffer is recommended for the gravel road traversing the Tourneé 2 Solar PV Park, to reduce the quantum of risk of glint and glare on farmers utilising the road. The figure below illustrates the visual opportunities and constraints for the Tourneé 2 Solar PV Park (**Figure 7-13**). This opportunities and constraints map provides adequate information for informed decision making to take place and to assist in the definition of the preliminary layout for the Tourneé 2 Solar PV Park for the EA process.

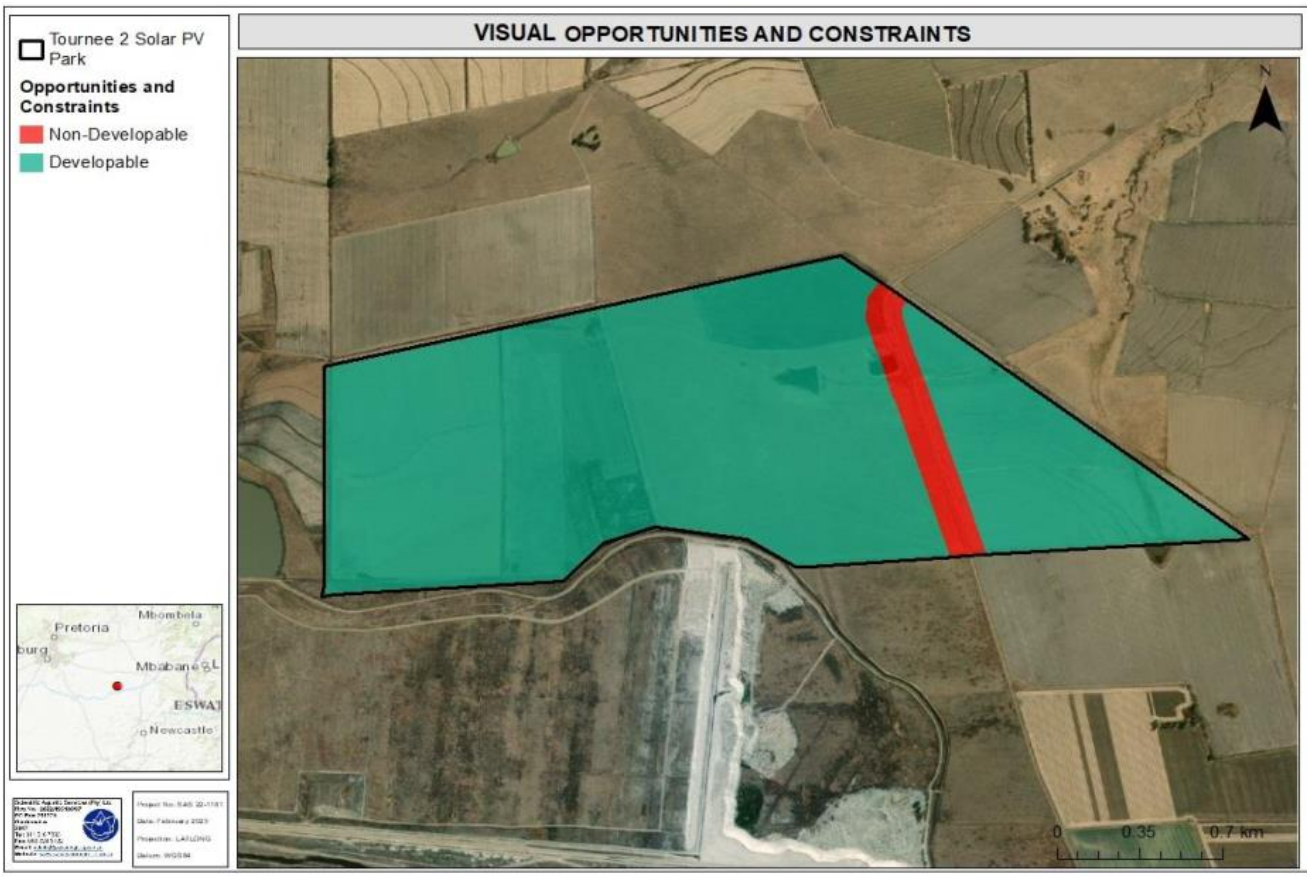

Figure 7-13 - Visual opportunities and constraints map the Tourneé 1 Solar PV Park.

Source: SAS, 2023

7.1.10 CIVIL AVIATION

The output of the DFFE Screening Tool for the Civil Aviation Theme is illustrated in **Figure 7-14** and indicates that the site is classified as Medium Sensitivity. The medium sensitivity is due to the presence of a civil aviation aerodrome within 8km of the investigation area. A compliance statement will be compiled and included in the Draft EIA Report.

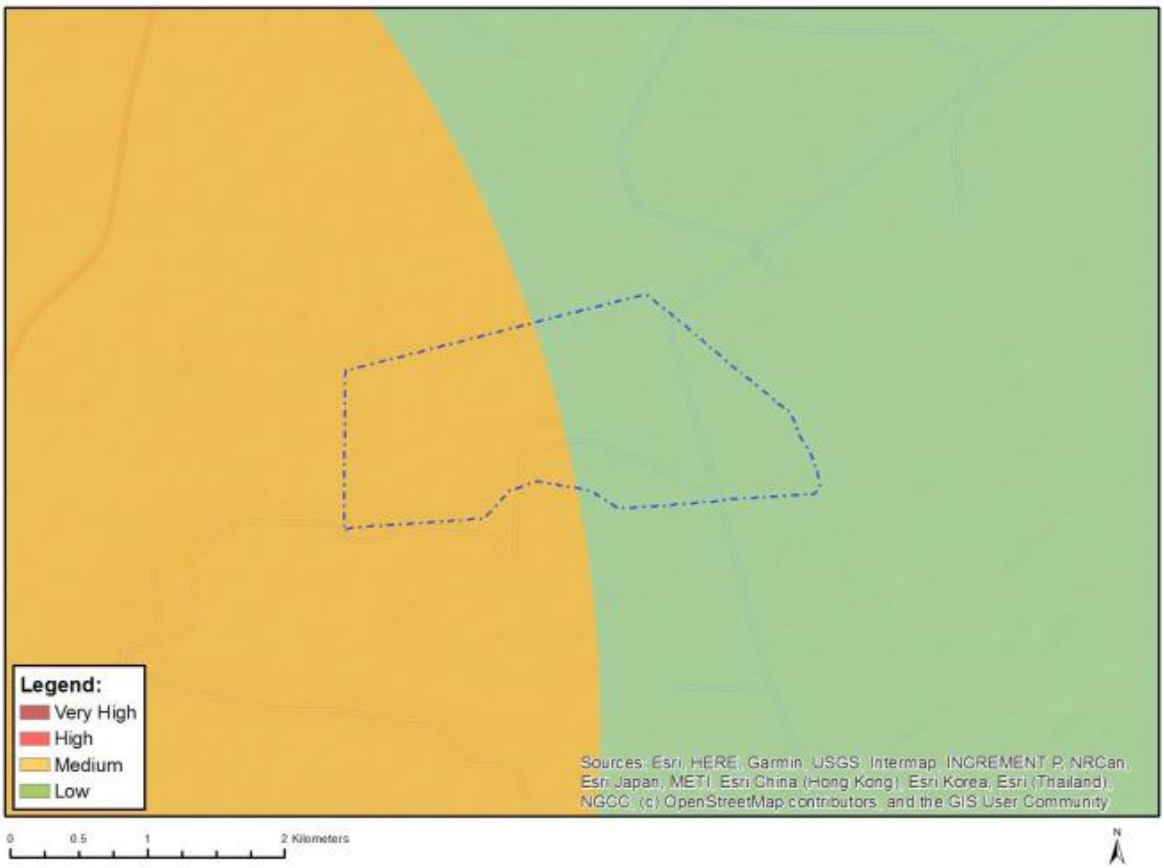

Figure 7-14 - Map of Civil Aviation Sensitivity

Source: DFFE Screening Report

7.1.11 DEFENCE

The output of the DFFE Screening Tool for the Defence Theme is illustrated in **Figure 7-15** and indicates that the site is classified as Low Sensitivity.

Figure 7-15 - Map of Defence Sensitivity

Source: DFFE Screening Report

7.1.12 RADIO FREQUENCY INTERFERENCE

The output of the DFFE Screening Tool for the RFI Theme is illustrated in **Figure 7-16** and indicates that the site is classified as Medium Sensitivity. The medium sensitivity is due to the presence of a telecommunication facility within 1km of the southeastern point of the Tournée 1 Solar PV Facility. The sensitivity is not supported as less than 1% of the site's footprint falls within the medium sensitivity area. The EAP classifies the investigation area as low sensitivity.

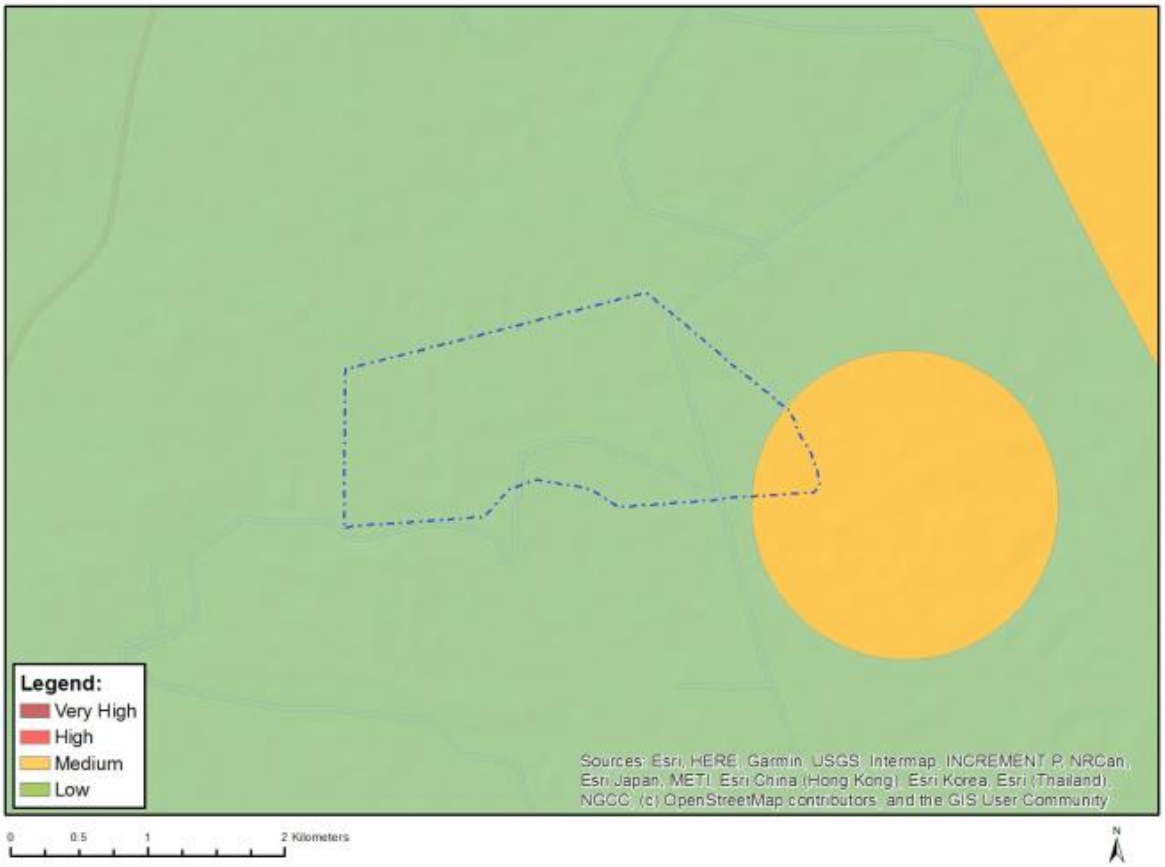

Figure 7-16 - Map of RFI Sensitivity

Source: DFFE Screening Report

7.2 SENSITIVITY MAPPING

A preliminary consolidated environmental sensitivity map (**Figure 7-17**) has been compiled based on the sensitivities and buffers outlined in the following specialist studies:

- Aquatic Biodiversity;
- Terrestrial Biodiversity;
- Heritage; and
- Visual.

A no-go map has been included in **Figure 7-18**, indicating areas where no development will take place.

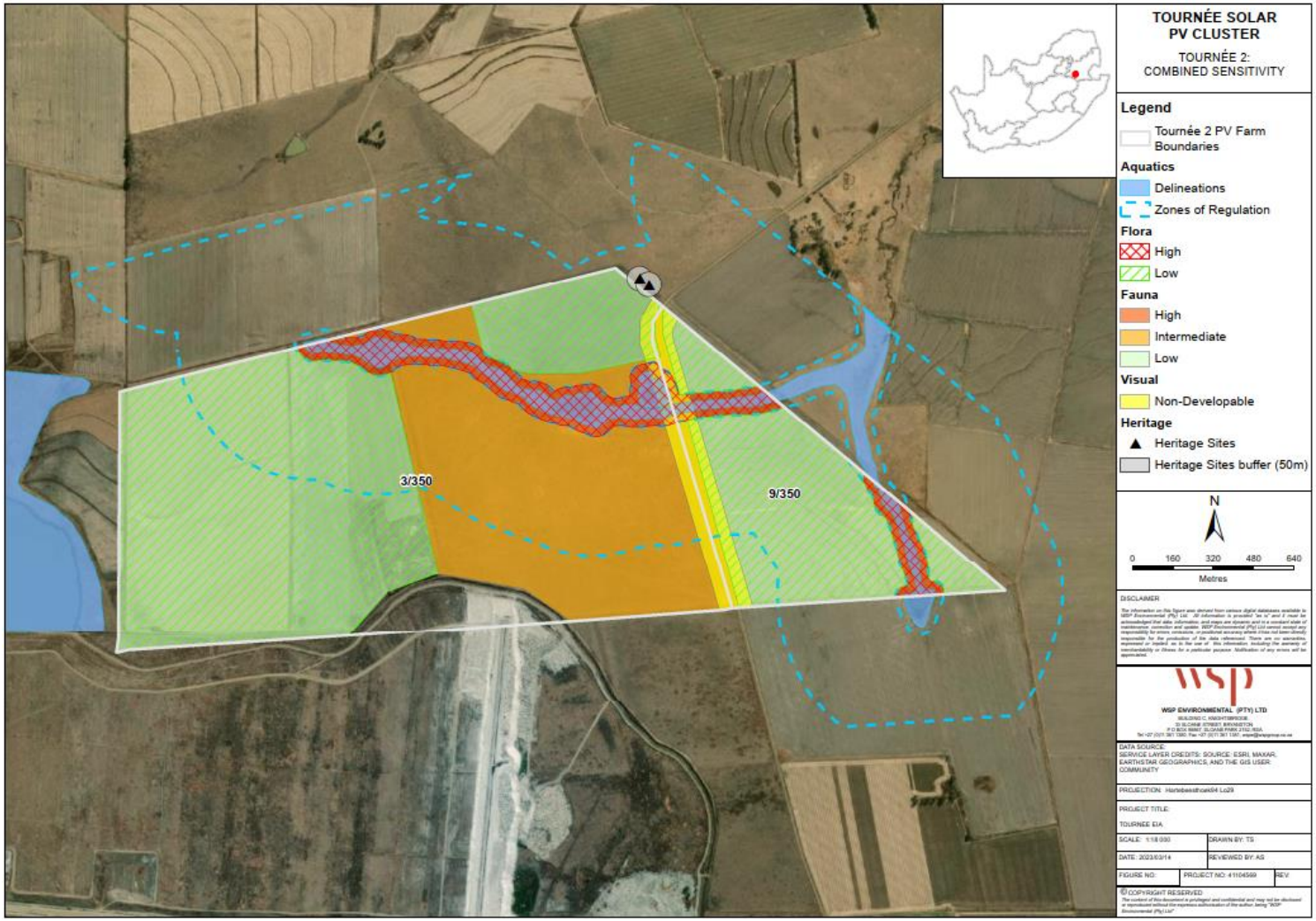

Figure 7-17 - Combined Preliminary Sensitivity Map for Tournée 2 Solar PV Facility

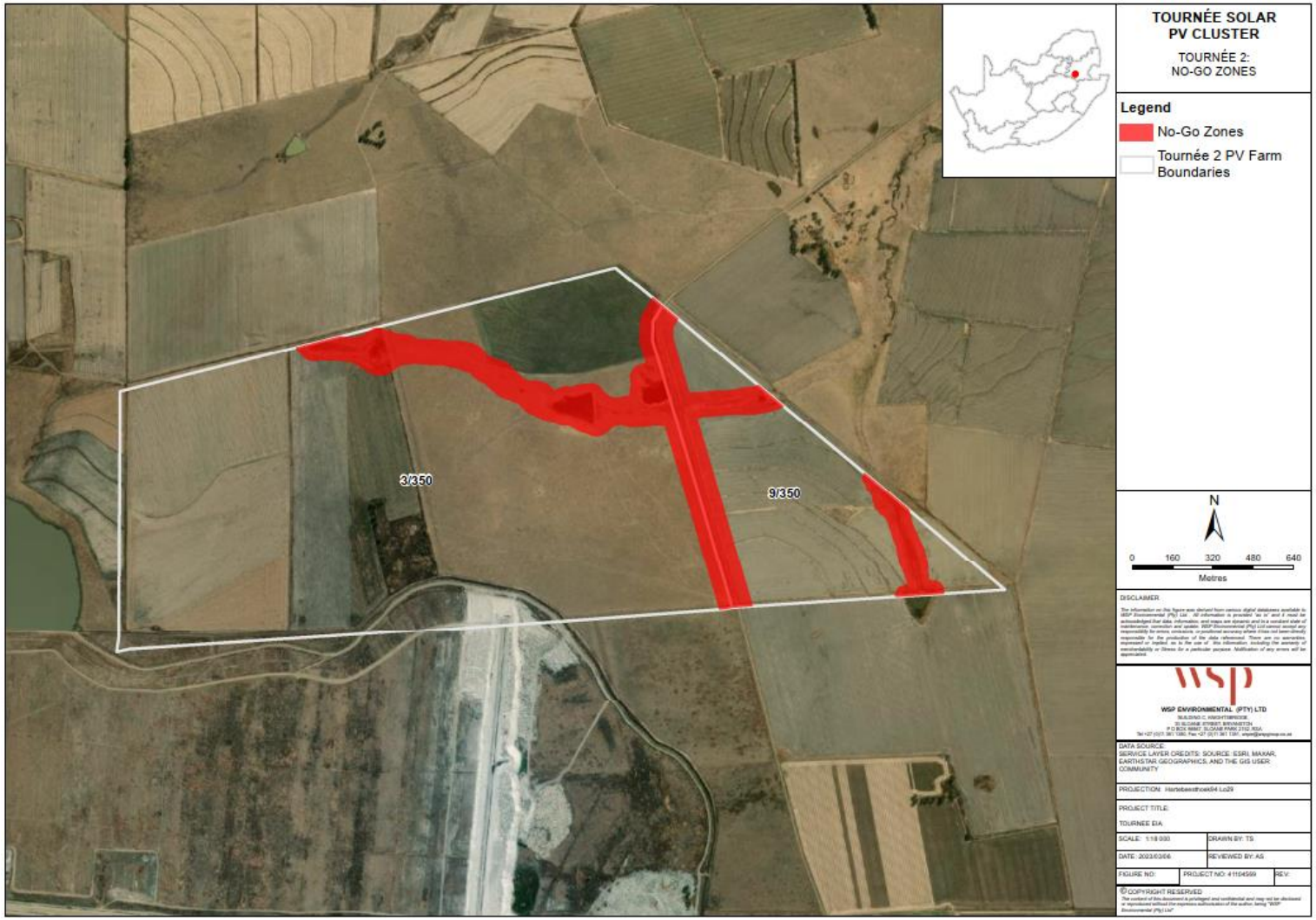

Figure 7-18 - Combined No-Go Map for Tournée 2 Solar PV Facility

8 POTENTIAL IMPACTS

8.1 IDENTIFICATION OF POTENTIAL IMPACTS

The scoping phase of a S&EIR process is aimed to identify potential impacts that are most likely to be significant and which need to be assessed as part of the S&EIR process. The determination of anticipated impacts associated with the proposed development is a key component to the S&EIR process. This Chapter identifies the anticipated environmental and social impacts associated with the proposed project.

The issues identified stem from those aspects presented in **Section 6** and the description of project components and phases as outlined in **Section 3**. Each significant issue identified is to be investigated further during the S&EIR process. Non-significant issues will be scoped out of the study with reasonable consideration given within the Scoping Report.

The potential environmental and social impacts of the Tournée 2 Solar PV Facility have been identified at a high level and are discussed in **Table 8-1**. These impacts and mitigation measures will be further assessed during the EIA Process. The Impact Significance Assessment Rating for these impacts are included in **Section 8.2**.

Table 8-1 – Potential impacts

Aspect	Impact	C	O	D	Mitigation Measures
Loss of soil and Land Capability:	Site clearing, removal of vegetation and associated disturbances to soils, leading to increased runoff, erosion, and consequent loss of land capability in cleared areas.	✓			▪ Direct disturbance of the actively cultivated soils must be avoided where possible to minimise loss of arable soils; ▪ Areas adjacent to the footprint should be ripped to alleviate compaction; ▪ Define cut-off horizons in simple terms that the stripping operator can understand and demarcate boundaries of different soil types; ▪ Close supervision and monitoring of the stripping process is required to ensure that soils are stripped correctly; ▪ Strip a suitable distance ahead of mining at all times, to avoid loss and contamination. ▪ The dumping of waste materials next to or on the stockpiles should be prohibited.
	Construction within actively cultivated and grazing soils leading to loss of land capability	✓			
Soil Erosion and Compaction	Potential frequent movement of earth moving machinery within lose and exposed soils, leading to excessive erosion and soil compaction;	✓			▪ The footprint of the proposed development and construction activities should be clearly demarcated to restrict vegetation clearing activities within the infrastructure footprint as far as practically possible; ▪ Bare soils within the access roads can be regularly dampened with water to suppress dust during the construction phase, especially when strong wind conditions are predicted according to the local weather forecast; ▪ All disturbed areas adjacent to the proposed development areas should be re-vegetated with an indigenous grass mix to re-establish a protective cover, to minimise soil erosion. ▪ Although the soils have a high clay content, temporary erosion control measures in sloping areas should be used to protect the disturbed soils during the construction phase until adequate vegetation has established.

Aspect	Impact	C	O	D	Mitigation Measures
					▪ Soil Compaction is usually greatest when soils are moist, so soils should be stripped when moisture content is as low as possible. If they have to be moved when wet, shovel and truck should be used as bowlscrapers create excessive compaction when moving wet soils; ▪ Compaction should be minimised by use of appropriate equipment. ▪ Heavy equipment movement over replaced soils should be minimised. ▪ Minimise compaction during smoothing of replaced soils by using dozers rather than graders. ▪ Following placement, compacted soils should be ripped to full rooting depth (30cm as the bare minimum seedbed) to allow penetration of plant root.
Soil Contamination	Spillage of petroleum hydrocarbons during construction of associated infrastructure;	✓			▪ Contamination prevention measures should be addressed in the Environmental Management Programme (EMP) for the proposed development, and this should be always implemented and made available and accessible to the contractors and construction crew conducting the works on site for reference. ▪ A spill prevention and emergency spill response plan, as well as dust suppression, and fire prevention plans should also be compiled to guide the construction works. ▪ Burying of any waste including rubble, domestic waste, empty containers on the site should be strictly prohibited and all construction rubble waste must be removed to an approved disposal site.
	Potential disposal of hazardous and non-hazardous waste, including waste material spills and refuse deposits into the soil	✓			
Air quality	▪ Heavy construction activities, including site preparation, transportation of equipment and general construction activities, are a source of dust and PM10 and PM2.5 emissions that can have a	✓			

Aspect	Impact	C	O	D	Mitigation Measures
	temporary impact on the local ambient air quality at the site. ▪ Due to the erratic and transient nature of construction activities, dust and particulate emissions may vary substantially on a daily basis, depending on the level of activity, the specific operations and the prevailing meteorological conditions. ▪ It must be noted, however, with limited nearby receptors the construction-related impacts will be minimal.				
Noise	▪ Sources of noise during the construction phase may include earth-moving equipment (trucks, cranes, scrapers and loaders), compressors and generators, pumps, rotary drills, concrete mixers and materials handling activities among others. ▪ It must be noted, however, with limited nearby receptors the impacts will be minimal.	✓			
Plant Species	Vegetation clearing and construction activities will lead to habitat destruction and disturbance within the direct footprint area and will lead to the loss of floral communities, consequently impacting on the terrestrial biodiversity within the Tournée 2 Solar PV Park;	✓			▪ At all times, ensure that sound environmental management is in place during the planning phase. ▪ The design plans should take cognisance of sensitive habitats described during the EIA phase, in line with the DFFE mitigation hierarchy. As far as feasibly possible, sensitive habitats must be excluded from the proposed activities. Development should be prioritised in habitats of decreased sensitivity. ▪ Access roads should be kept to existing roads so to reduce further fragmentation of existing natural habitat.
	The Tournée 2 Solar PV Park is anticipated to host provincially protected floral species listed in the MNCA. As such, the proposed activities threaten potentially occurring floral SCC habitat and populations.	✓			

Aspect	Impact	C	O	D	Mitigation Measures
	Changes in surface characteristics may lead to increased runoff and erosion resulting in a further loss of floral habitat in adjacent areas.	✓			▪ The construction and operational footprints must be kept as small as possible, clearly demarcated, and prioritised in habitats of low sensitivity, in order to minimise impact on the surrounding environment. ▪ Informal fires by construction personnel should be prohibited, and no uncontrolled fires whatsoever should be allowed. ▪ In terms of the DFFE (2013) mitigation hierarchy, avoidance should be undertaken primarily to avoid high impacts to floral SCC. Following this, and if not completely possible to avoid impacts, a search and rescue should be undertaken prior to the vegetation clearing activities; ▪ Rescue efforts should also include a walkdown of the proposed footprint areas to detect and/or mark all (potentially) occurring floral SCC. This should be overseen by a suitably qualified specialist or nominated personnel in order to ensure that species loss during construction activities is kept to a minimum; ▪ Where floral SCC are located in the proposed footprint areas, the appropriate permits must be obtained from the relevant authorities before any further work can be conducted. ▪ Should any floral SCC species be found within the proposed development footprint, they must be legally relocated to suitable, similar habitat in close proximity to where they were removed from, but outside the disturbance footprint. ▪ Infrastructure design should be environmentally sound and all vehicles in a good working condition, and all possible precautions taken to prevent potential spills and /or leaks; ▪ No dumping of general or hazardous waste should take place. If any spills occur, they should be immediately
	Degradation of the surrounding Freshwater Ecosystem within the Tournée 2 Solar PV Park will result in significant loss of floral habitat (specifically species reliant on wet environments), impacting upon species diversity and abundance.	✓			
	Introduction of foreign material (e.g., soil) during construction activities may lead to the further introduction of alien invader species, impacting on the floral characteristics of the Tournée 2 Solar PV Park.	✓			
	Failure to implement an alien floral control plan may result in widespread degradation or loss of indigenous flora within the Tournée 2 Solar PV Park and possibly in surrounding areas.	✓	✓	✓	
	Ineffective removal and control of alien invader species, and poor rehabilitation of exposed areas could lead to re-establishment of invasive species, impacting on floral community rehabilitation efforts.	✓	✓	✓	

Aspect	Impact	C	O	D	Mitigation Measures
					cleaned up, and be disposed of at a registered waste facility. ▪ Special attention should be paid to AIP control within these areas. ▪ Edge effects of all operational activities, such as erosion and alien plant species proliferation, which may affect adjacent natural vegetation, need to be strictly managed adjacent to the project footprint areas.
Animal Species	Vegetation clearing may result in the loss of faunal SCC within the directly impacted areas, whilst edge effects may lead to further declines of faunal SCC in the adjacent areas.	✓			▪ The design plans should take cognisance of sensitive habitats described during the EIA phase, in line with the DFFE mitigation hierarchy. As far as feasibly possible, sensitive habitats must be excluded from the proposed activities. Development should be prioritised in habitats of decreased sensitivity. ▪ Access roads should be kept to existing roads so to reduce further fragmentation of existing natural habitat. ▪ The construction and operational footprints must be kept as small as possible, clearly demarcated, and prioritised in habitats of low sensitivity, in order to minimise impact on the surrounding environment. ▪ Informal fires by construction personnel should be prohibited, and no uncontrolled fires whatsoever should be allowed; ▪ Special attention should be paid to AIP control within the project footprint and adjacent areas. ▪ Edge effects of all activities, such as erosion and alien plant species proliferation, which may affect adjacent natural vegetation, need to be strictly managed adjacent to the project footprint areas. ▪ Edge effect control needs to be implemented to prevent further degradation and potential loss of faunal SCC habitat outside of the proposed development footprint;
	Alien plant proliferation will lead to changes in habitat structure and food resources, leading to a decline of habitat suitability for faunal species.	✓			
	Permanent surface scarring may reduce favourable habitat for faunal species.	✓	✓	✓	
	Increased risk of hunting/trapping of local faunal species	✓			
	Potential for poor rehabilitation and monitoring of sensitive habitat, leading to declines in species diversity	✓			

Aspect	Impact	C	O	D	Mitigation Measures
					▪ Should any lights be installed they should face downwards to reduce the abundance of insects attracted to the night lights. This prey source may attract insectivores to the footprint area, notably bats and may increase bat collisions or electrocutions. Furthermore, increased lighting will impose upon the nights darkness altering invertebrate movement. Lights should be of a softer yellow, fluorescent design whilst bright LED and/or white lights should be avoided. ▪ Faunal habitat beyond the demarcated area should not be cleared or altered. ▪ No collection or hunting of any fauna species is to be allowed by personnel, especially with regards to faunal SCC (if encountered and not part of a rescue/relocation plan).
Aquatic Biodiversity	The potential pre-construction and construction of the Tournée 2 Solar PV Park may result in potential encroachment of the CVB wetland. In addition, the development activities may result in an increased ingress of hydrocarbons, toxicants, and sediment runoff into the wetland systems. This may have a cumulative impact on the health, functionality, and water quality of the wetlands.	✓		✓	▪ The footprint of the proposed Tournée 2 Solar PV Park development needs to take cognisance of the delineated CVB wetland and the associated NEMA 32m ZoR and impacts must be mitigated in line with the requirements of the mitigation hierarchy (DEA et al., 2013). It is recommended that the three (3) wetlands and the associated NEMA 32 m ZoR be demarcated as “no-go areas” for development activities. This area has been demarcated as such to avoid direct impacts on the wetlands and is an important mitigation measure. Development activities such as linear infrastructure (including cabling and roads) within the 32 m ZoR would require authorisation in terms of the EIA process. The “no go” area must be allocated as open space and should be maintained as such as part of the proposed Tournée 2 Solar PV Park development. This will greatly reduce the significance of impacts which may occur on the
	Pollutants from pre-construction and construction activities (sediment, contaminated runoff and hydrocarbons) and spills during the operational phase may contaminate wetland systems and/or groundwater reserves.	✓		✓	
	Potential changes to the pattern, flow, and timing of water in the landscape due to clearing of vegetation and	✓		✓	

Aspect	Impact	C	O	D	Mitigation Measures
	changes to the soil characteristics under the solar arrays, especially since bi-facial panels are being envisaged for the project. This impact could be greatly exacerbated by the nature of increased runoff from the predominantly vertic soils in the study area.				freshwater ecosystems. Should encroachment within the freshwater ecosystems be unavoidable, then the applicant will be required to undertake an appropriate wetland offset and must obtain a Water Use Licence (WUL) from the Department of Water and Sanitation (DWS) prior to commencement of the construction and related activities. ■ The footprint of construction and operational phase activities of the proposed Tournée 2 Solar PV Park development must be kept as small as possible to minimise impact on the surrounding environment and loss of catchment yield; ■ Appropriate sanitary facilities must be provided during the construction phase and all waste must be removed to an appropriate waste disposal facility. No indiscriminate disposal of waste should take place. If any spills occur, they should be immediately cleaned up, and be disposed of at a registered waste facility. ■ Areas which are to be cleared of vegetation, including contractor laydown areas and development footprints must remain as small as possible to reduce the risk of proliferation of alien vegetation, and in order to retain a level of protection to the wetland systems during both construction and operation (e.g., sediment trapping, slowing of stormwater runoff etc.). Contractor laydown areas and development footprints are recommended to remain outside of the delineated wetland and the associated NEMA 32m buffer, and as much as feasible no natural/indigenous hydrophytic vegetation is to be cleared. ■ It must be ensured that all recruited alien vegetation present as a result of disturbance caused by construction
	Potential exposure of soil, leading to increased runoff (transporting toxicants and sediment from road surfaces) and erosion, and thus increased sedimentation of the wetland.	✓		✓	
	Increased risk of erosion and incision of the wetlands as a result of higher water volumes entering the wetlands due to increased impermeable surface areas especially since bi-facial panels are being envisaged for the project.	✓		✓	
	Alterations to vegetation community composition as a result of increased alien vegetation proliferation arising from disturbance to soil profiles and clearing of vegetation in the construction footprint. This impact will continue especially since bi-facial panels are being envisaged for the project.	✓	✓	✓	
	Soil and water contamination from oil and hydrocarbons resulting from vehicular transport.	✓		✓	
	Loss of wetland and /freshwater ecosystem drivers.	✓		✓	
	Potential for deterioration in water quality, including increased likelihood of dust generation, turbidity, and sedimentation within the wetlands.	✓		✓	

Aspect	Impact	C	O	D	Mitigation Measures
	Noise disturbance to avifauna and aquatic biota associated with the wetland systems.	✓		✓	activities is eradicated, and that ongoing alien vegetation control is implemented. It is highly recommended that an alien vegetation management plan be compiled during the planning phase and implemented concurrently with the commencement of construction. Small scale rehabilitation and post construction monitoring of wetland health and functioning is also recommended to be conducted subsequent to Tournée 2 Solar PV Park.
Avifauna	Displacement due to disturbance, created by the construction of the solar PV plant and associated infrastructure.	✓		✓	▪ Construction activity should be restricted as far as possible to the immediate footprint of the required infrastructure. ▪ Access to the surrounding site outside of the footprint should be controlled and limited to reduce unnecessary disturbance to priority species. ▪ Existing roads should be used and construction of new roads kept to a minimum. ▪ Recommendations of the ecological specialist studies should be strictly followed.
	Displacement due to habitat destruction and transformation, created by the construction of the solar PV plant and associated infrastructure.	✓		✓	
	Electrocution on power lines, and associated infrastructure.		✓		▪ Recommendations of the ecological specialist studies should be strictly followed. ▪ A 100m solar panel free buffer zone should be implemented around dams, wetlands, and drainage lines. ▪ A single perimeter fence is recommended to reduce entrapment of priority species. ▪ Increasing the spacing between the two top wires (minimum of 30cm) and ensuring wires are barbless and correctly tensioned, will reduce snaring risk of birds (Especially the Marsh Owls present on site) ▪ Use underground cables as much as possible. ▪ Use raptor friendly pole designs, approved by an avifaunal specialist.
	Mortality and injury, caused by collisions with solar PV panels and associated infrastructure		✓		
	Entrapment within perimeter fencing.	✓	✓	✓	

Aspect	Impact	C	O	D	Mitigation Measures
					▪ All overhead lines must be marked with Eskom approved flight diverters/flappers according to the latest official Eskom Engineering Instruction.
	Chemical pollution, usually linked to dust suppressants.	✓		✓	▪ Best practice guidelines should be followed to control noise and dust.
Bats	Habitat destruction:	✓			▪ Avoid areas sensitive to bats.
Archaeology	Impacts of the proposed development to archaeological resources	✓			▪ A no development buffer of 50m is implemented around the burial sites identified within the development area. ▪ Ongoing community access to these burials, as well as their conservation into the future, must be ensured. This can be managed through the development of a Heritage Management Plan for the burials to be implemented for the duration of the project. ▪ Should any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources be found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted. ▪ If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. ▪ A professional archaeologist must be contracted as soon as possible to inspect the findings. ▪ A Phase 2 rescue excavation operation may be required subject to permits issued by SAHRA.

Aspect	Impact	C	O	D	Mitigation Measures
Palaeontology	Impact to Fossil Resources	✓			▪ Implement Fossil Chance Find Protocol
Transport	Temporary increase in traffic, noise and dust pollution associated with potential traffic.	✓		✓	▪ Stagger component delivery to site. ▪ Reduce the construction period where possible. ▪ Stagger the construction Phase. ▪ The use of mobile batch plants and quarries in close proximity to the site would decrease the impact on the surrounding road network ▪ Staff and general trips should occur outside of peak traffic periods as much as possible. ▪ Maintenance of haulage routes. ▪ Design and maintenance of internal roads. ▪ Provide two access points to the site to split construction vehicle trips and reduce the risk of congestion
	Noise and dust pollution associated potential traffic.		✓		▪ Source on-site water supply if possible. ▪ Utilise cleaning systems for the panels needing less vehicle trips. ▪ Schedule trips for the provision of water for the cleaning of panels outside peak traffic times as much as possible
Visual	Development activities such as vegetation clearing, vehicular movement, rubble dumping, and associated construction will lead to changes in the landscape character and temporarily alter the sense of place.	✓		✓	▪ Any areas for temporary material storage and other potentially intrusive activities must be screened from view as far as possible. ▪ All operational infrastructure must be actively maintained to avoid degradation and becoming untidy, especially with the proposed infrastructure located within such close proximity to the gravel road. ▪ The duration of the construction phase should be reduced as far as possible through careful planning, to reduce the exposure of bare ground.
	Potential risk of night time lighting in a rural area that has low light pollution with limited sources of lighting (farmsteads and Tutuka Power Station), hence the Tourneé 2 Solar PV Park may potentially contribute to sky glow in the area. It should however be noted that the Tourneé 2 Solar PV Park does not require a significant		✓		

Aspect	Impact	C	O	D	Mitigation Measures
	amount of lighting, therefore the contribution toward night-time lighting is not likely to be significant				▪ The development footprint and disturbed areas associated with the construction phase of the project should be kept as small as possible, with as little indigenous vegetation being cleared as possible. ▪ Construction boundaries should be clearly demarcated to minimise areas of surface disturbance. ▪ Direct loss of or damage to valuable natural visual resources such as the freshwater ecosystems in the area should be actively avoided. ▪ Excavation and earthmoving activities are to be kept to a minimum and limited to foundation areas for substations and support structures of the PV panels. ▪ As far as possible, construction activities should be restricted to daylight hours, in order to limit the need of bright floodlighting and the potential for skyglow and to avoid the use of additional night-time lighting for security purposes. ▪ Night lighting of construction sites and camps, the BESS, substation and O&M Building should be minimised as far as possible, taking into consideration that due to safety requirements a certain level of lighting may be necessary
	Excavation activities related to the development of foundations for the substations and solar panels, resulting in dust generation, potentially leading to visual exposure and visibility in the distance.	✓		✓	
	Construction and operation activities taking place on both sides of the gravel road, leading to visual contrast, a change in the landscape character and thus a high visual intrusion on the gravel road	✓	✓	✓	
	Potential of sunlight reflecting off the PV arrays creating glint and glare impacts especially for farmers traveling along the gravel road		✓		▪ No PV panels are placed within 50 m of the gravel road, to reduce the risk of glint and glare.
Social	Presence of construction workers and potential impacts on family structures and social networks	✓			▪ Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase. ▪ Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.

Aspect	Impact	C	O	D	Mitigation Measures
					▪ The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents. ▪ Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories. ▪ The proponent should consider the option of establishing a Monitoring Committee (MC) for the construction phase that representatives from local landowners, farming associations, and the local municipality. This MC should be established prior to commencement of the construction phase and form part of the SEP. ▪ The proponent and contractor should develop a Code of Conduct (CoC) for construction workers. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation. The CoC should be signed by the proponent and the contractors before the contractors move onto site. The CoC should form part of the CHSSP. ▪ The proponent and the contractor should implement an HIV/AIDS, COVID-19 and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. The programmes should form part of the CHSSP. ▪ The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contactor to effectively manage and monitor the movement of construction workers on and off the site. ▪ The contractor must ensure that all construction workers from outside the area are transported back to their place

Aspect	Impact	C	O	D	Mitigation Measures
					of residence within 2 days for their contract coming to an end. ▪ No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site
	Influx of job seekers	✓			▪ Preparation and implementation of a SEP prior to and during the construction phase. ▪ Preparation and implementation of a CHSSP prior to and during the construction phase. ▪ The proponent, in consultation with the LM, should investigate the option of establishing a MC to monitor and identify potential problems that may arise due to the influx of job seekers to the area. The MC should also include the other proponents of solar energy projects in the area. ▪ The proponent should implement a “locals first” policy, specifically with regard to unskilled and low skilled opportunities. ▪ The proponent should implement a policy that no employment will be available at the gate.
	Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	✓			▪ •Preparation and implementation of a SEP prior to and during the construction phase. ▪ Preparation and implementation of a CHSSP prior to and during the construction phase. ▪ The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences. ▪ All farm gates must be closed after passing through.

Aspect	Impact	C	O	D	Mitigation Measures
					▪ Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site. ▪ The proponent should establish a MC and CoC for workers (see above). ▪ The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities (see below). ▪ The proponent should implement a Grievance Mechanism that provides local farmers with an effective and efficient mechanism to address issues related to report issues related to damage to farm infrastructure, stock theft and poaching etc. ▪ The EMP must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested. ▪ Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms. ▪ Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the CoC. All dismissals must be in accordance with South African labour legislation.

Aspect	Impact	C	O	D	Mitigation Measures
					▪ It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.
	Increased risk of grass fires	✓			▪ Preparation and implementation of a SEP prior to and during the construction phase. ▪ Preparation and implementation of a CHSSP prior to and during the construction phase. ▪ The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase will be compensated for. The agreement should be signed before the construction phase commences. ▪ Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas. ▪ Smoking on site should be confined to designated areas. ▪ Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy winter months. ▪ Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle. ▪ Contractor should provide fire-fighting training to selected construction staff. As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also

Aspect	Impact	C	O	D	Mitigation Measures
					compensate the fire-fighting costs borne by farmers and local authorities. ▪ No construction staff, with the exception of security staff, to be accommodated on site overnight.
	Impact of heavy vehicles and construction activities	✓			▪ Preparation and implementation of a SEP prior to and during the construction phase. ▪ Preparation and implementation of a CHSSP prior to and during the construction phase. ▪ Timing of construction activities should be planned to avoid / minimise impact on key farming activities, including planting and harvesting operations. ▪ The proponent should establish a MC to monitor the construction phase and the implementation of the recommended mitigation measures. The MC should be established before the construction phase commences, and should include key stakeholders, including representatives from local farmers and the contractor(s). The MF should also address issues associated with damage to roads and other construction related impacts. ▪ Ongoing communication with land owners and road users during construction period. This should be outlined in the SEP. ▪ The proponent should implement a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads. ▪ Implementation of a road maintenance programme throughout the construction phase to ensure that the affected roads maintained in a good condition and repaired once the construction phase is completed.

Aspect	Impact	C	O	D	Mitigation Measures
					▪ Repair of all affected road portions at the end of construction period where required. ▪ Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport building materials are fitted with tarpaulins or covers. ▪ All vehicles must be roadworthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.
	Loss of farmland	✓			▪ The loss of high-quality agricultural land should be avoided and or minimised by careful planning of the final layout of the proposed SEF facilities. The recommendations of the agricultural / soil assessment should be implemented. ▪ Affected landowners should be consulted about the timing of construction related activities in advance. ▪ The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be minimised. ▪ An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase. ▪ All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase. ▪ The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. The specifications for the rehabilitation programme should be drawn up by the Environmental Consultants appointed to manage the EIA.

Aspect	Impact	C	O	D	Mitigation Measures
					▪ The implementation of the Rehabilitation Programme should be monitored by the ECO
	Visual impact and impact on sense of place		✓		▪ The recommendations contained in the VIA should also be implemented
	Impact on property values		✓		
	Impact on tourism		✓		
	Social impacts associated with retrenchment including loss of jobs, and source of income			✓	▪ The proponent should ensure that retrenchment packages are provided for all staff retrenched when the plant is decommissioned. ▪ All structures and infrastructure associated with the proposed facility should be dismantled and transported off-site on decommissioning. ▪ Revenue generated from the sale of scrap metal during decommissioning should be allocated to funding closure and rehabilitation of disturbed areas.
Geotechnical	Soil erosion: ▪ Increased stormwater velocity ▪ Increase in soil and wind erosion due to clearing of vegetation ▪ Creation of drainage paths along access tracks. ▪ Sedimentation of non- perennial features and excessive dust	✓			▪ Rehabilitation of affected areas (such as revegetation). ▪ Construction of temporary berms and drainage channels to divert surface water. ▪ Minimize earthworks and fills. ▪ Use existing road network and access tracks. ▪ Correct engineering design and construction of gravel roads and water crossings. ▪ Control stormwater flow.
	Disturbance of fauna and flora - the displacement of natural earth material and overlying vegetation leading to erosion.	✓		✓	▪ Limited excavations

Aspect	Impact	C	O	D	Mitigation Measures
	Oil spillages from heavy plant - Potential groundwater and drainage feature contamination.	✓			▪ Vehicle and construction machinery repairs to be undertaken in designated areas with proper soil protection.
	Slope instability around structures	✓		✓	▪ Avoid steep slopes areas. ▪ Design cut slopes according to detailed geotechnical analysis.
	Seismic activity - Damage of proposed development.	✓			▪ Design according to expected peak ground acceleration.
	Soil erosion: ▪ Increase in soil and wind erosion due to clearance of structures. ▪ Displacement of soil and damage to vegetation by vehicles			✓	▪ Use existing road network and access tracks. ▪ Use of temporary berms and drainage channels to divert surface water. ▪ Minimize earthworks and demolish footprints. ▪ Rehabilitation of affected areas (such as revegetation). ▪ Reinstate channelized drainage features. ▪ Strip, stockpile and re-spread topsoil.
	Potential oil spillages due to clearance of structures.			✓	▪ Vehicle and construction machinery repairs to be undertaken in designated areas with proper soil protection. ▪ Frequent checks and conditional monitoring
Risk	Impact on Human Health chronic exposure to toxic chemical or biological agents	✓	✓	✓	▪ The construction phase must be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993 specifically the Construction Regulations. ▪ A SHEQ policy and procedure must be compiled and implemented.

Aspect	Impact	C	O	D	Mitigation Measures
					▪ A detailed construction risk assessment must be undertaken prior to construction work. ▪ The necessary Personal Protective Equipment (PPE) must be provided and worn at the required working areas. ▪ Ensure that relevant SHE appointees are in place. ▪ Contractor's safety files must be in place and kept up to date. ▪ All necessary health controls/ practices must be in place, e.g. ventilation of welding and painting areas. ▪ SHE monitoring and reporting programs must be in place and implemented. ▪ An emergency response plan must be compiled prior to construction, which must include aspects such as appointment of emergency controller, provision of first aid, first responder contact numbers.
	Impact on human and equipment safety - exposure to explosion over pressures	✓	✓	✓	▪ Develop and implement an emergency response plan that deals with all emergency responses applicable to the BESS, including during transportation. ▪ For simplicity one transport route would be preferable. The route needs to be assessed in terms of responding local services, rest places for drivers, refuelling if required, break down services available etc. ▪ Emergency response planning and training referred to above may be important for key locations such as the mountain passes / tunnels.
	human and equipment safety – exposure to fire radiation	✓	✓	✓	▪ Fuels stored on site must be situated in dedicated, demarcated and bunded areas. ▪ Suitable fire-fighting equipment must be available on site near source of fuel, e.g. diesel tank, generators, mess, living quarters, workshops etc

Aspect	Impact	C	O	D	Mitigation Measures
					▪ The company responsible for the facility at this stage is to have: ▪ An emergency plan must be in place prior to commencement of construction. ▪ Fuel spill containment procedures and equipment must be provided for and in place. ▪ Hot-work permit and management system must be in place ▪ Grass cutting and fire breaks must be maintained around the BESS installations to prevent veld fires. No combustible materials to be stored in or near the batteries or electrical infrastructure. Ensure separation of site diesel tank, transformers from BESS and vice versa. ▪ The Facility to comply with prescribed design standards such as the BESS design codes from the USA and standards of practice that (e.g. UL9540, NFPA 855 and DNV GL RP 43). ▪ A detailed Failure Modes and Effects Analysis (FMEA) / (Hazard and Operability Analysis (HAZOP) / Bowtie methodology must be developed during design at the component level and system levels. ▪ Conduct safety integrity level rating of equipment (failure probably) with suitable redundancy if required.
	Impact on human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS	✓	✓	✓	▪ Appointed transport company to ensure transport in accordance with Regulation 8 of the National Road Traffic Act 93 of 1996, Dangerous Goods. The transportation of prescribed goods in manner that is not consistent with the prescriptions, e.g. consignor and consignee responsibilities is not permitted. Prescription are found in SANS 10228/29 and international codes for battery transport etc.

Aspect	Impact	C	O	D	Mitigation Measures
					▪ SSL BESS must be transported in sealed packages that are kept upright, protected from movement damage etc. ▪ These must be packaged to ensure no short-circuiting during transport. ▪ Consideration must be taken to prevent excessive vibration as battery internal may be damaged leading to thermal run-away during commissioning. ▪ Pre-assembled containers will most likely be supplied. These will be fitted with the necessary protective measures by the supplier considering marine and road transport as well as lifting, setting down etc. ▪ Route selection to consider possible incidents along the way and suitable response, e.g. satellite tracking, mobile communication, 24/7 helpline response. ▪ Standard dangerous goods requirements for Hazmat labels must be adhered to, Transport Emergency Card (Trem cards) must be carried/held, and the driver/s must be trained on the hazards of the load.

8.2 SUMMARY OF IMPACT SIGNIFICANCE SCREENING

This section provides an overview of the likely significance of construction phase (**Table 8-2**), operational phase (**Table 8-3**) and decommissioning phase (**Table 8-4**) presenting the results of the impact screening tool based on two criteria, namely probability and consequence (outlined in **Section 2.5**). This is used as a guide to determine whether additional assessment may be required in the EIA phase. Impacts will be refined and assessed during the EIA phase.

Table 8-2 – Significance of potential construction phase impacts

Aspect	Impact	Nature	Probability	Consequence	Significance (Before Mitigation)
Soil, Landuse and Land Capability	Soil and land capability	Negative	4	3	High
	Soil Contamination	Negative	3	2	Medium
	Soil Compaction	Negative	3	2	Medium
	Soil Erosion	Negative	2	2	Low
Plant Species	Floral Habitat and Diversity	Negative	4	3	High
	Floral SCC	Negative	3	2	Medium
Animal Species	Faunal Habitat and Diversity	Negative	4	3	High
	Faunal SCC	Negative	3	3	Medium
Aquatic Biodiversity – CVB Wetland	Loss of wetland habitat and ecological structure	Negative	2	3	Medium
	Changes to sociocultural and service provision	Negative	2	2	Low
	Impacts on hydrology and sediment balance	Negative	2	3	Medium
	Impacts on water quality	Negative	2	3	Medium
Avifauna	Displacement of priority species due to disturbance	Negative	4	2	Medium
	Displacement of priority species due to habitat transformation	Negative	4	3	High
Bats	Habitat destruction	Negative	1	3	Low
Archaeology	Impacts of the proposed development to archaeological resources	Negative	1	4	Medium
Palaeontology	Impact to Fossil Resources	Negative	1	3	Low

Aspect	Impact	Nature	Probability	Consequence	Significance (Before Mitigation)
Transport	Temporary increase in traffic, noise and dust pollution associated with potential traffic.	Negative	2	3	Medium
Visual	Visual impact to surrounding area	Negative	4	2	Medium
Social	Creation of employment and business opportunities	Positive	2	3	Medium
	Presence of construction workers and potential impacts on family structures and social networks	Negative	2	2	Low
	Influx of job seekers	Negative	2	2	Low
	Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Negative	3	2	Medium
	Increased risk of grass fires	Negative	3	2	Medium
	Impact of heavy vehicles and construction activities	Negative	3	2	Medium
	Loss of farmland	Negative	3	2	Medium
Geotechnical	Soil erosion	Negative	2	2	Low
	Disturbance of fauna and flora	Negative	3	2	Medium
	Oil spillages from heavy plant	Negative	2	2	Low
	Slope stability	Negative	1	1	Very Low
	Seismic activity	Negative	1	2	Very Low
Risk	Impact on Human Health chronic exposure to toxic chemical or biological agents	Negative	3	2	Medium
	Impact on human and equipment safety - exposure to explosion over pressures	Negative	3	2	Medium
	human and equipment safety – exposure to fire radiation	Negative	3	2	Medium

Aspect	Impact	Nature	Probability	Consequence	Significance (Before Mitigation)
	Impact on human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS	Negative	3	2	Medium

Table 8-3 – Significance of potential operational phase impacts

Aspect	Impact	Nature	Probability	Consequence	Significance (Before Mitigation)
Avifauna	Mortality of priority species due to collisions	Negative	3	1	Low
	Entrapment of large-bodied birds in the perimeter fence lines of Tournée SEF Cluster	Negative	3	2	Medium
	Mortality of priority species due to electrocution	Negative	3	2	Medium
	Mortality of priority species due to collisions with reticulation networks	Negative	3	2	Medium
Transport	Noise and dust pollution associated potential traffic.	Negative	1	3	Low
Visual	Visual impact to surrounding area	Negative	4	2	Medium
Social	Generate renewable energy	Positive	3	4	High
	Creation of employment and business opportunities	Positive	1	4	Medium
	Benefit associated with community trust	Positive	2	3	Medium
	Benefits for landowners	Positive	1	4	Medium
	Visual impact and impact on sense of place	Negative	1	3	Low
	Impact on property values	Negative	1	3	Low
	Impact on tourism	Negative	1	3	Low

Aspect	Impact	Nature	Probability	Consequence	Significance (Before Mitigation)
Risk	Impact on Human Health chronic exposure to toxic chemical or biological agents	Negative	3	2	Medium
	Impact on human and equipment safety - exposure to explosion over pressures	Negative	3	2	Medium
	human and equipment safety – exposure to fire radiation	Negative	3	2	Medium
	Impact on human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS	Negative	3	2	Medium

Table 8-4 – Significance of potential decommissioning phase impacts

Aspect	Impact	Nature	Probability	Consequence	Significance (Before Mitigation)
Transport	Temporary increase in traffic, noise and dust pollution associated with potential traffic.	Negative	2	3	Medium
Visual	Visual impact to surrounding area	Negative	4	2	Medium
Social	Social impacts associated with decommissioning	Negative	2	2	Low
Geotechnical	Soil erosion	Negative	2	2	Low
	Disturbance of fauna and flora	Negative	3	2	Medium
	Potential oil spillage	Negative	2	2	Low
	Slope stability	Negative	1	1	Very Low
Risk	Impact on Human Health chronic exposure to toxic chemical or biological agents	Negative	3	2	Medium

Aspect	Impact	Nature	Probability	Consequence	Significance (Before Mitigation)
	Impact on human and equipment safety - exposure to explosion over pressures	Negative	3	2	Medium
	human and equipment safety – exposure to fire radiation	Negative	3	2	Medium
	Impact on human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS	Negative	3	2	Medium

9 CUMULATIVE IMPACT ASSESSMENT

Although the objective of the NEMA S&EIA process is to undertake an impact and risk assessment process, inclusive of cumulative impacts, which is essential to assessing and managing the environmental and social impacts of projects, it may be insufficient for identifying and managing the incremental impacts on areas or resources used or directly affected by a given development from other existing, planned, or reasonably defined developments at the time the risks and impacts are identified.

IFC PS 1 recognizes that, in some instances, cumulative effects need to be considered in the identification and management of environmental and social impacts and risks. For private sector management of cumulative impacts, IFC considers good practice to be two pronged:

- Effective application of and adherence to the mitigation hierarchy in environmental and social management of the specific contributions by the project to the expected cumulative impacts; and
- Best efforts to engage in, enhance, and/or contribute to a multi-stakeholder, collaborative approach to implementing management actions that are beyond the capacity of an individual project proponent.

Even though Performance Standard 1 does not expressly require, or put the sole onus on, private sector clients to undertake a cumulative impact assessment (CIA), in paragraph 11 it states that the impact and risk identification process "*will take into account the findings and conclusions of related and applicable plans, studies, or assessments prepared by relevant government authorities or other parties that are directly related to the project and its area of influence" including "master economic development plans, country or regional plans, feasibility studies, alternatives analyses, and cumulative, regional, sectoral, or strategic environmental assessments where relevant*."

Cumulative impacts are those that result from the successive, incremental, and/or combined effects of an action, project, or activity when added to other existing, planned, and/or reasonably anticipated future ones. For practical reasons, the identification and management of cumulative impacts are limited to those effects generally recognized as important on the basis of scientific concerns and/or concerns of affected communities (IFC GPH).

Evaluation of potential cumulative impacts is an integral element of an impact assessment. In reference to the scope for an impact assessment, IFC's Performance Standards specify that "*Risks and impacts will be analysed in the context of the project's area of influence. This area of influence encompasses…areas potentially impacted by cumulative impacts from further planned development of the project, any existing project or condition, and other project-related developments that are realistically defined at the time the Social and Environmental Assessment is undertaken; and (iv) areas potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location.*" (IFC 2006).

A cumulative impact assessment is the process of (a) analysing the potential impacts and risks of proposed developments in the context of the potential effects of other human activities and natural environmental and social external drivers on the chosen Valued Environmental and Social Components (VECs) over time, and (b) proposing concrete measures to avoid, reduce, or mitigate such cumulative impacts and risk to the extent possible (IFC GPH).

Cumulative impacts with existing and planned facilities may occur during construction and operation of the proposed Tournée 2 Solar PV Facility. While one project may not have a significant negative impact on sensitive resources or receptors, the collective impact of the projects may increase the severity of the potential impacts.

Renewable energy developments within the surrounding area which have submitted applications for environmental authorisation have been included in this cumulative impact assessment. It is important to note that the existence of an approved EA does not directly equate to actual development of the project. Only one projects within 30 km of the Tournée 1 Solar PV Facility site was identified:

- 65.9 MW Tutuka PV Energy Facility and Its associated Infrastructure on portion 4, 10, 11 and 12 of the Farm Pretorius Vley 374 is near Standerton within Lekwa, Mpumalanga Province. Applicant: Eskom Holdings SOC Limited. Status: Approved. DFFE Ref: 14/12/16/3/3/2/754

Other planned or existing projects that can interact with the Project will be identified during stakeholder engagement and finalisation of the S&EIA process.

The existing surrounding project is included in **Figure 9-1**.

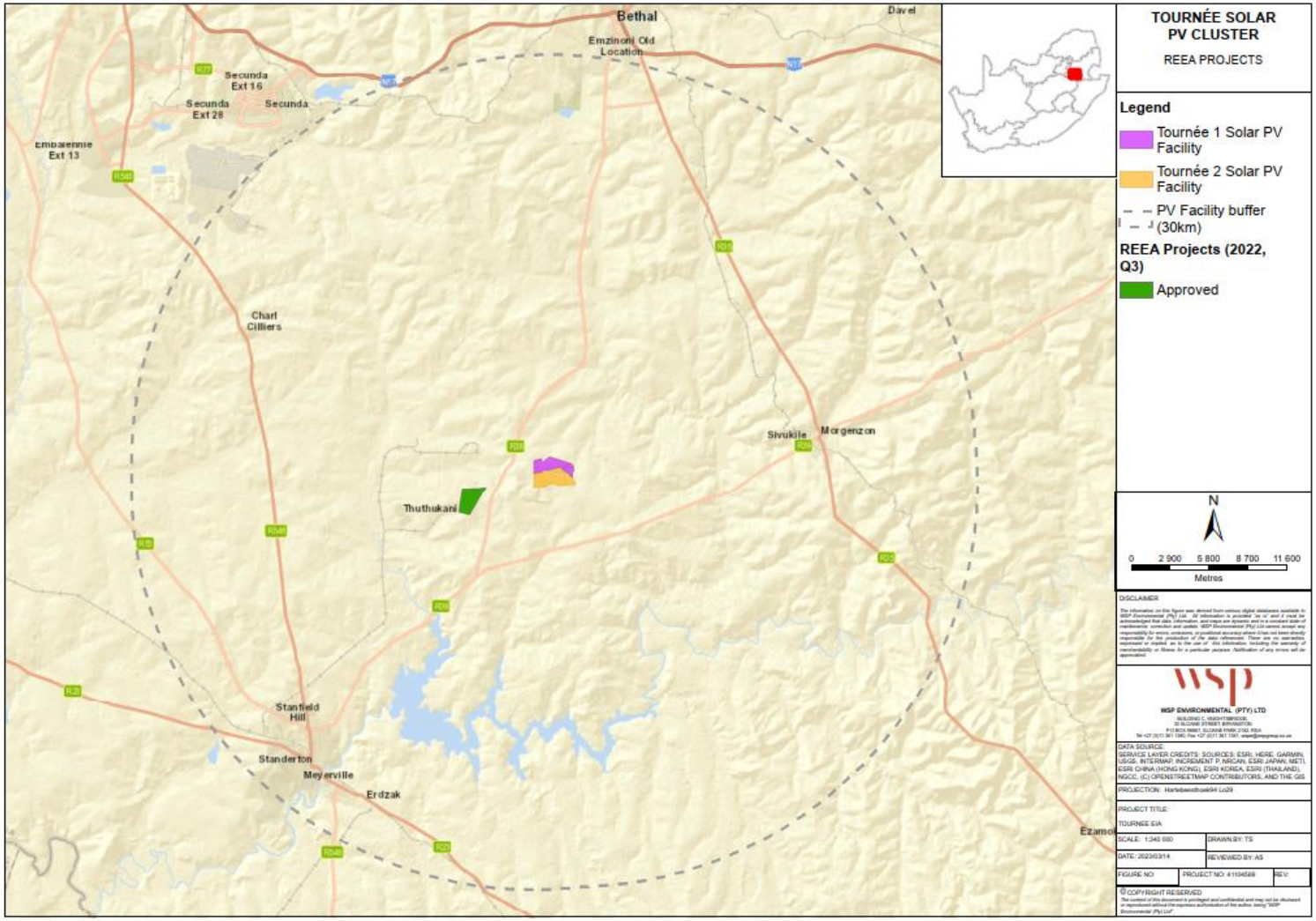

Figure 9-1 - Renewable Energy Projects with 30km of the Tournée Solar PV Facilities

10 PLAN OF STUDY FOR EIA

10.1 PLAN OF STUDY FOR EIA TERMS OF REFERENCE

Table 10-1 outlines the structure of the plan of study as required in terms of Appendix 2 of GNR 982.

Table 10-1 – Plan of Study Requirements

Plan of Study Chapter	Information Requirements as per GNR 982
Description of EIA Tasks	▪ A description of the tasks that will be undertaken as part of the environmental impact assessment process.
Description of Alternatives	▪ A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity.
Aspects to be Assessed in the EIA Process	▪ A description of the aspects to be assessed as part of the environmental impact assessment report process.
Specialist Studies	▪ Aspects to be assessed by specialists.
Impact Assessment Methodology	▪ A description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists. ▪ A description of the proposed method of assessing duration and significance.
Environmental Impact Report	▪ Contents of EIAR as specified in GNR 982 (as amended) Annexure 2
Stakeholder and Authority Engagement	▪ An indication of the stages at which the competent authority will be consulted. ▪ Particulars of the public participation process that will be conducted during the environmental impact assessment process.

10.2 OVERVIEW OF THE EIA PHASE TASKS

The EIA phase will consist of the following tasks; each of these tasks is detailed separately in the following sub-sections:

- Specialist studies;
- Continuation of authority and stakeholder engagement;
- Assessment of the significance of potential impacts;
- Preparation of the EIA Report; and
- Preparation of the EMPr (including the relevant Generic EMPrs).

10.3 DESCRIPTION OF ALTERNATIVES

The EIA process identifies two types of project alternatives:

- Concept Level Alternatives, which relate to the site, technology and process alternatives
- Detailed Level Alternatives which relate to mitigation measures

The feasibility of the higher-level Concept Alternatives have been considered and assessed within **Section 4** of this report. The Detailed Level Alternatives which relate to mitigation measures, will be addressed within the EIA Report.

10.4 ASPECTS TO BE ASSESSED IN THE EIA PROCESS

Table 10-2 outlines the key aspects that were identified in the scoping phase; these aspects will be subject to further assessment in the EIA Phase.

Table 10-2 – Summary of aspects to be addressed in the EIA Phase

Environmental Aspect	Impact
Soil, Landuse and Land Capability Assessment	▪ Soil and land capability ▪ Soil Contamination ▪ Soil Compaction
Plant Species	▪ Floral Habitat and Diversity ▪ Floral SCC
Animal Species	▪ Faunal Habitat and Diversity ▪ Faunal SCC
Aquatic Biodiversity	▪ Loss of wetland habitat and ecological structure ▪ Changes to sociocultural and service provision ▪ Impacts on hydrology and sediment balance ▪ Impacts on water quality
Avifauna	▪ Displacement of priority species due to disturbance ▪ Displacement of priority species due to habitat transformation ▪ Mortality of priority species due to collisions with reticulation networks
Visual	▪ Visual impact to surrounding area
Heritage and Palaeontology	▪ Impacts of the proposed development to archaeological resources (i.e. graves) ▪ Impact to Fossil Resources
Social	▪ Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers ▪ Increased risk of grass fires ▪ Impact of heavy vehicles and construction activities ▪ Loss of farmland ▪ Visual impact and impact on sense of place ▪ Impact on property values

Environmental Aspect	Impact
	▪ Impact on tourism
Detailed Geotechnical Desktop Assessment	▪ Disturbance of fauna and flora
Risk	▪ Impact on Human Health chronic exposure to toxic chemical or biological agents ▪ Impact on human and equipment safety - exposure to explosion over pressures ▪ human and equipment safety – exposure to fire radiation ▪ Impact on human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS

10.5 SPECIALIST STUDIES TO BE UNDERTAKEN

The following specialist assessments have been commissioned for the EIA Phase:

- Soil, Landuse and Land Capability Assessment;
- Terrestrial Ecological Assessment (including Plant and Animal Species Assessments);
- Aquatic Biodiversity Assessment;
- Avifauna 12 month pre-construction monitoring;
- Visual Impact Assessment;
- Archaeology and Cultural Heritage Assessment;
- Palaeontological Assessment;
- Social Impact Assessment;
- Detailed Geotechnical Desktop Assessment;
- Traffic and Transport Assessment; and
- High-level Qualitative Risk Assessment.

It should be noted that the specialist studies will be undertaken according to the procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Sections 24(5)(a) and (h) and Section 44 of the NEMA (GNR 320, dated 20 March 2020), where applicable.

10.6 IMPACT ASSESSMENT METHODOLOGY

10.6.1 ASSESSMENT OF IMPACTS AND MITIGATION

The assessment of impacts and mitigation evaluates the likely extent and significance of the potential impacts on identified receptors and resources against defined assessment criteria, to develop and describe measures that will be taken to avoid, minimise or compensate for any adverse environmental impacts, to enhance positive impacts, and to report the significance of residual impacts that occur following mitigation.

The key objectives of the risk assessment methodology are to identify any additional potential environmental issues and associated impacts likely to arise from the proposed project, and to propose a significance ranking. Issues / aspects will be reviewed and ranked against a series of significance criteria to identify and record interactions between activities and aspects, and resources

and receptors to provide a detailed discussion of impacts. The assessment considers direct[3], indirect[4], secondary[5] as well as cumulative[6] impacts.

A standard risk assessment methodology is used for the ranking of the identified environmental impacts pre-and post-mitigation (i.e. residual impact). The significance of environmental aspects is determined and ranked by considering the criteria[7] presented in **Table 10-3.**

Table 10-3 – Impact Assessment Criterion and Scoring System

Criteria	Score 1	Score 2	Score 3	Score 4	Score 5
Impact Magnitude (M) The degree of alteration of the affected environmental receptor	Very low: No impact on processes	Low: Slight impact on processes	Medium: Processes continue but in a modified way	High: Processes temporarily cease	Very High: Permanent cessation of processes
Impact Extent (E) The geographical extent of the impact on a given environmental receptor	Site: Site only	Local: Inside activity area	Regional: Outside activity area	National: National scope or level	International: Across borders or boundaries
Impact Reversibility (R) The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change	Reversible: Recovery without rehabilitation		Recoverable: Recovery with rehabilitation		Irreversible: Not possible despite action
Impact Duration (D) The length of permanence of the impact on the environmental receptor	Immediate: On impact	Short term: 0-5 years	Medium term: 5-15 years	Long term: Project life	Permanent: Indefinite
Probability of Occurrence (P) The likelihood of an impact occurring in the absence of pertinent environmental management measures or mitigation	Improbable	Low Probability	Probable	Highly Probability	Definite

[3] Impacts that arise directly from activities that form an integral part of the Project.
[4] Impacts that arise indirectly from activities not explicitly forming part of the Project.
[5] Secondary or induced impacts caused by a change in the Project environment.
[6] Impacts are those impacts arising from the combination of multiple impacts from existing projects, the Project and/or future projects.
[7] The definitions given are for guidance only, and not all the definitions will apply to all the environmental receptors and resources being assessed. Impact significance was assessed with and without mitigation measures in place.

Significance (S) is determined by combining the above criteria in the following formula:	$[S = (E + D + R + M) \times P]$ $Significance = (Extent + Duration + Reversibility + Magnitude) \times Probability$

Impact Significance Rating					
Total Score	**4 to 15**	**16 to 30**	**31 to 60**	**61 to 80**	**81 to 100**
Environmental Significance Rating (Negative (-))	**Very low**	**Low**	**Moderate**	**High**	**Very High**
Environmental Significance Rating (Positive (+))	**Very low**	**Low**	**Moderate**	**High**	**Very High**

10.6.2 IMPACT MITIGATION

The impact significance without mitigation measures will be assessed with the design controls in place. Impacts without mitigation measures in place are not representative of the proposed development's actual extent of impact and are included to facilitate understanding of how and why mitigation measures were identified. The residual impact is what remains following the application of mitigation and management measures and is thus the final level of impact associated with the development. Residual impacts also serve as the focus of management and monitoring activities during Project implementation to verify that actual impacts are the same as those predicted in this report.

The mitigation measures chosen are based on the mitigation sequence/hierarchy which allows for consideration of five (5) different levels, which include avoid/prevent, minimise, rehabilitate/restore, offset and no-go in that order. The idea is that when project impacts are considered, the first option should be to avoid or prevent the impacts from occurring in the first place if possible, however, this is not always feasible. If this is not attainable, the impacts can be allowed, however they must be minimised as far as possible by considering reducing the footprint of the development for example so that little damage is encountered. If impacts are unavoidable, the next goal is to rehabilitate or restore the areas impacted back to their original form after project completion. Offsets are then considered if all the other measures described above fail to remedy high/significant residual negative impacts. If no offsets can be achieved on a potential impact, which results in full destruction of any ecosystem for example, the no-go option is considered so that another activity or location is considered in place of the original plan.

The mitigation sequence/hierarchy is shown in **Table 10-3** below.

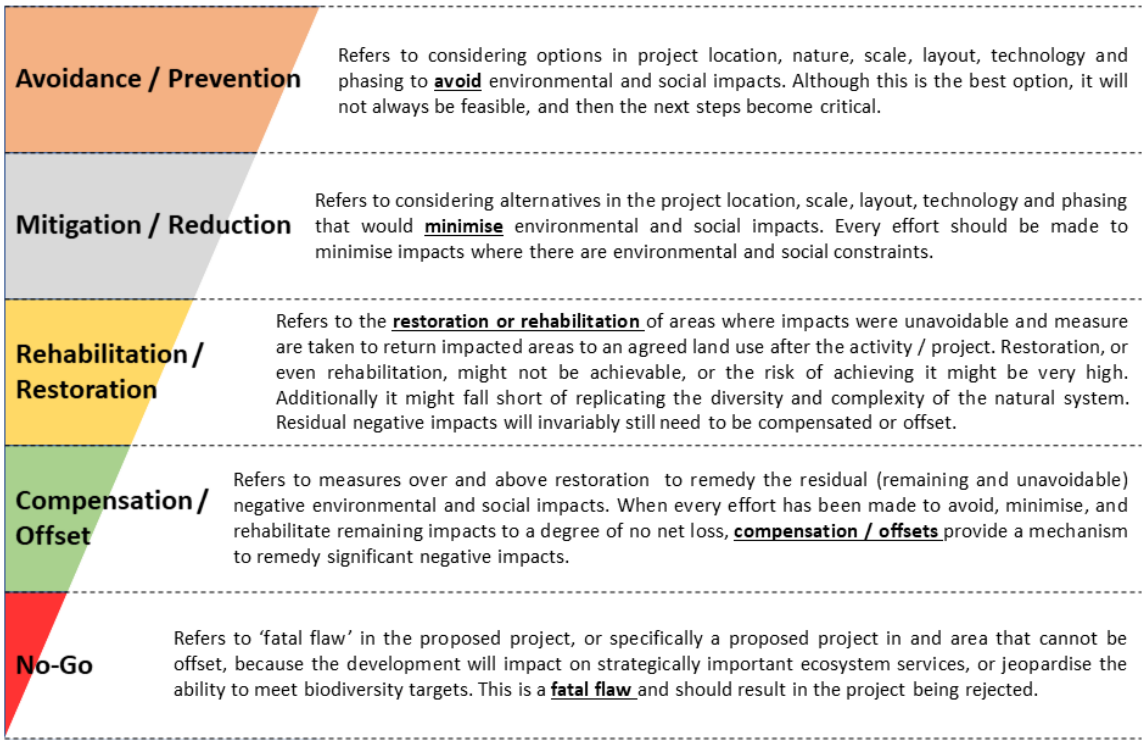

Figure 10-1 - Mitigation Sequence/Hierarchy

The idea is that when project impacts are considered, the first option should be to avoid or prevent the impacts from occurring in the first place if possible, however, this is not always feasible. If this is not attainable, the impacts can be allowed, however they must be minimised as far as possible by considering reducing the footprint of the development for example so that little damage is encountered. If impacts are unavoidable, the next goal is to rehabilitate or restore the areas impacted back to their original form after project completion. Offsets are then considered if all the other measures described above fail to remedy high/significant residual negative impacts. If no offsets can be achieved on a potential impact, which results in full destruction of any ecosystem for example, the no-go option is considered so that another activity or location is considered in place of the original plan.

10.7 ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Once the FSR has been approved the proposed project will proceed into detailed EIA phase, which involves the detailed specialist investigations.

WSP will produce a Draft EIA Report after the completion of the required specialist studies. The Draft EIAR will provide an assessment of all the identified key issues and associated impacts from the Scoping phase. All requirements as contemplated in the EIA Regulations, 2014 (GNR 982, as amended) will be included in the Draft EIAR.

The Draft EIAR will contain, inter alia, the following:

- Details of the EAP who prepared the report and the expertise of the EAP to carry out the S&EIR process, including a curriculum vitae;

- The location of the activity, including the 21 digit Surveyor General code of each cadastral land parcel, where available, the physical address and farm name; and the coordinates of the boundary of the property or properties;
- A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale;
- A description of the scope of the proposed activity, including all listed and specified activities triggered and being applied for; and a description of the associated structures and infrastructure related to the proposed project;
- A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;
- 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;
- A motivation for the preferred development footprint within the approved site;
- A full description of the process followed to reach the proposed development footprint within the approved site;
- Details of the public participation process undertaken;
- A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;
- The environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
- The impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts;
- The methodology used in determining and ranking of potential environmental impacts and risks;
- Positive and negative impacts;
- An assessment of each identified potentially significant impact and risk;
- The possible mitigation measures that could be applied;
- An environmental impact statement;
- A description of any assumptions, uncertainties and gaps in knowledge;
- A reasoned opinion as to whether the proposed activity should or should not be authorised;
- An undertaking under oath or affirmation by the EAP; and
- An EMPr.

10.8 STAKEHOLDER AND AUTHORITY ENGAGEMENT

Public participation during the EIA phase revolves around the review of the environmental impact assessment findings, which will be presented in the Draft EIA Report. All stakeholders will be notified of the progress to date and availability of the Draft EIA Report, via mail, email and/or SMS. A legislated period of 30 consecutive days will be allowed for public comment. Reports will be made available in the following way:

- Distribution for comment at central public places, which were used during the Scoping phase;
- The document will be made available to download from the WSP and Datafree websites; and
- Copies of CDs will be made available on request.

The EIA phase will provide the following information to I&APs:

- Initial Site Plan;

- Alternatives;
- A description of activities and operations to be undertaken;
- Baseline information;
- Specialist studies;
- Impact assessment; and
- Management measures.

The information outlined above will be presented in one or more of the following:

- Notifications;
- Scoping Report;
- EIA Report; and
- EMPr.

All comments received during the EIA phase will be recorded in the Comments and Responses table within the SER, which will be included in the draft and final EIA Reports. The final EIA Report will incorporate public comment received on the Draft EIA Report and will be made available for public review with hard copies distributed mainly to the authorities and key stakeholders.

All stakeholders will receive a letter notifying them of the authority's decision.

11 CONCLUSION AND WAY FORWARD

This FSR contains:

- A description of the existing and proposed activities;
- A description of the alternatives considered to date;
- An outline of the proposed process to be followed;
- Information on the EAP and stakeholders who have chosen to participate in the project;
- An outline of the environment in which the project falls;
- Information on the potential environmental impacts to be studied in more detail during the EIAR phase of the project; and
- Information on the proposed specialist studies to be undertaken.

A number of environmental impacts have been identified as requiring some more in-depth investigation and the identification of detailed mitigation measures. Therefore, a detailed EIA is required to be undertaken in order to provide an assessment of these potential impacts and recommend appropriate mitigation measures. All specialist studies and identified mitigations will be assessed, verified and groundtruthed during the EIA phase.

The recommendation of this report is that detailed specialist studies as outlined in **Section 10.5** are undertaken.

All issues and comments submitted to WSP during the scoping phase have been incorporated in Section 3 of the SER (**Appendix D** of the FSR). The FSR will be submitted to the DFFE, as the competent authority.

If you have any further enquiries, please feel free to contact:

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Appendix A

EAP CV

Appendix B

EAP DECLARATION

Appendix C

SPECIALIST DECLARATIONS

Appendix D

STAKEHOLDER ENGAGEMENT REPORT

Appendix E

MAPS

Appendix F

DFFE SCREENING TOOL REPORT

Appendix G

SPECIALIST STUDIES

Appendix G.1

SOIL, LANDUSE AND LAND CAPABILITY ASSESSMENT

Appendix G.2

AIR QUALITY COMPLIANCE STATEMENT

Appendix G.3

NOISE COMPLIANCE STATEMENT

Appendix G.4

TERRESTRIAL BIODIVERSITY SCOPING REPORT

Appendix G.5

FRESHWATER SCOPING REPORT

Appendix G.6

AVIFAUNA SCOPING SURVEY

Appendix G.7

BATS SCOPING SURVEY

Appendix G.8

HERITAGE, ARCHAEOLOGICAL AND PALAEONTOLOGICAL IMPACT ASSESSMENT

Appendix G.9

TRANSPORT IMPACT ASSESSMENT

Appendix G.10

VISUAL IMPACT ASSESSMENT

Appendix G.11

SOCIAL SCOPING REPORT

Appendix G.12

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