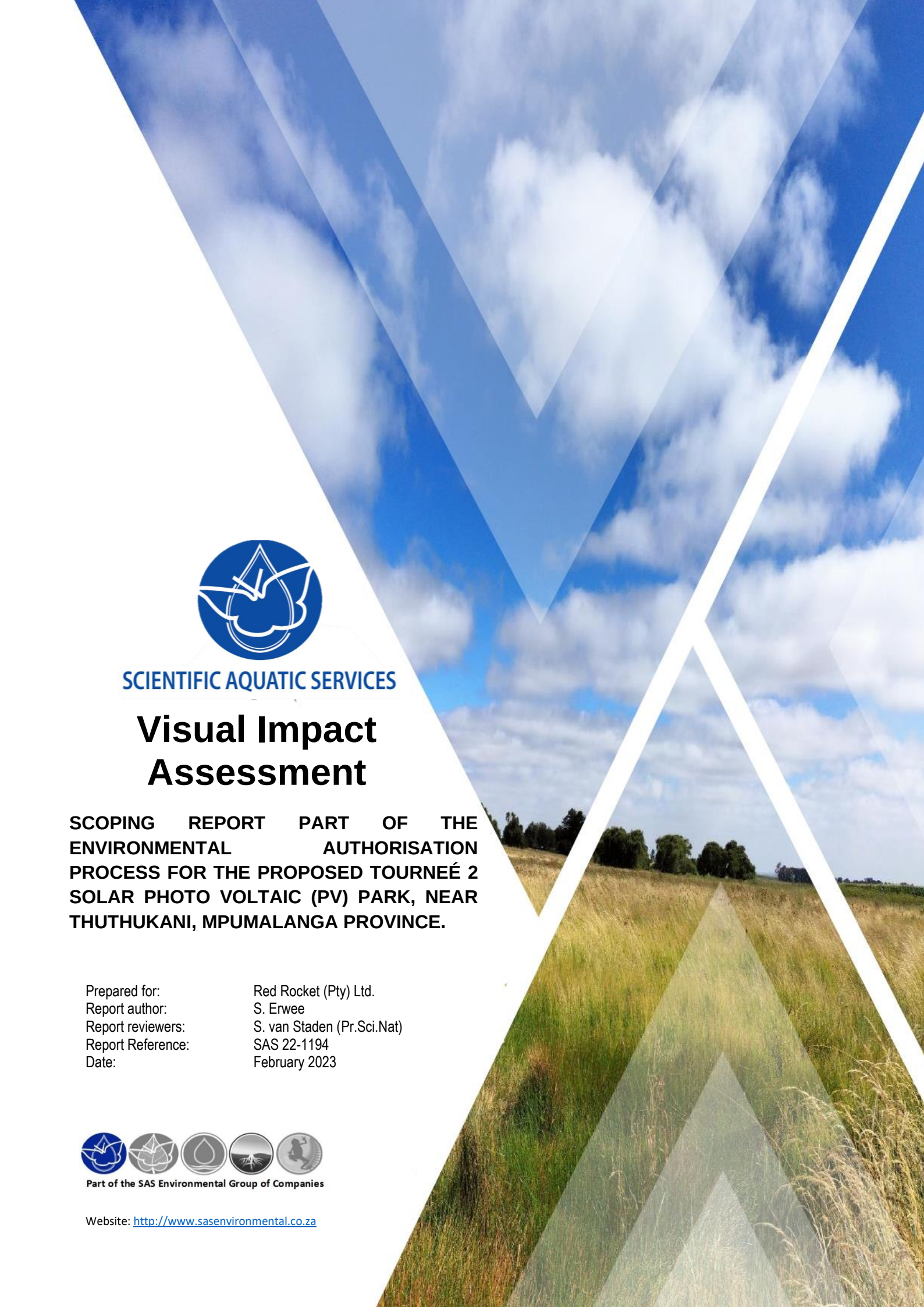

SCIENTIFIC AQUATIC SERVICES

Visual Impact Assessment

SCOPING REPORT PART OF THE ENVIRONMENTAL AUTHORISATION PROCESS FOR THE PROPOSED TOURNEÉ 2 SOLAR PHOTO VOLTAIC (PV) PARK, NEAR THUTHUKANI, MPUMALANGA PROVINCE.

Prepared for:	Red Rocket (Pty) Ltd.
Report author:	S. Erwee
Report reviewers:	S. van Staden (Pr.Sci.Nat)
Report Reference:	SAS 22-1194
Date:	February 2023

Part of the SAS Environmental Group of Companies

Website: http://www.sasenvironmental.co.za

EXECUTIVE SUMMARY

Scientific Aquatic Services (Pty) Ltd (SAS) was appointed to conduct a visual scoping assessment as part of the environmental authorisation process for the proposed Tourneé 2 Solar PV Park near Thuthukani, Mpumalanga Province. The proposed Tourneé 2 Solar PV forms part of the larger Tourneé Solar PV Cluster which will include two (2) 150 MW Solar Energy Facilities (SEFs).

The proposed Tourneé 2 Solar PV Park is located within the Lekwa Local Municipality, which is under the administration of the Gert Sibande District Municipality. The proposed Tourneé 2 Solar PV Park is located approximately 32 km south-west of Standerton and is situated adjacent to the Eskom Tutuka Power Station ash fallout facility. Tourneé 2 Solar PV Park is located on the remainder of portion 3 of the Farm Dwars-In-De-Weg 350 IS and on portion 6 of the Farm Dwars-In-De-Weg 350 IS.

The proposed Tourneé 2 Solar PV Park is situated in a rural area with a relatively low number of sensitive receptor; comprising mostly of farmsteads. Based on the field assessment, the undulating topography and dense vegetation associated with the farmsteads partially obscures the view towards the Tourneé 2 Solar PV Park, therefore the visual impact for the Tourneé 2 Solar PV Park is considered moderately low as the visual intrusion on the receiving environment will be low to moderate depending on the location of the vantage point.

According to the Strategic Environmental Assessment (SEA) Project (2019) the Tourneé 2 Solar PV Park does not fall within any Renewable Energy Development Zones (REDZ) nor within any corridor for ElectricaL Grid Infrastructure (EGI). According to South African Renewable Energy EIA Application Database (REEA) there is one approved application for a renewable energy facility (solar) within a 30 km radius of the Tourneé 2 Solar PV Park. This indicates that the larger region may be earmarked for renewable energy facilities in the foreseeable future, which may alter the landscape character on a broader scale.

With the Tourneé 2 Solar PV Park and surroundings being dominated by grasses interspersed with freshwater ecosystems and cultivated fields, the vegetative component will not be able to substantially assist in screening the Tourneé 2 Solar PV Park. The farmsteads do however have existing dense tree lines which may partially or completely obscure the view towards Tourneé 2 Solar PV Park. The local topography of the Tourneé 2 Solar PV Park is relatively flat to gently sloping with the surrounding landscape displaying undulating terrain. With the local topography of the Tourneé 2 Solar Park being relatively flat, it is unlikely to assist in absorbing and/ or screening the Tourneé 2 Solar PV Park. The field assessment did however indicate the undulating terrain of the surrounding area affecting the degree of visibility from various vantage points. The Tutuka ash dump will assist in screening and/ or absorbing the Tourneé 2 Solar PV Park, especially to receptors located to the south and north.

The sense of place associated with 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 the cultivated fields being tilled or harvested. 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.

The Tourneé 2 Solar PV Park being located in a rural area, results in limited sources of night-time lighting, as such the lighting environment is considered rural with 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 (back-to-back substations, BESS and O&M Buildings). 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 a rural area results in the Tourneé 2 Solar PV Park likely to somewhat contribute to the effects of sky glow and artificial lighting in the region.

Even though the gravel road intersecting the Tourneé 2 Solar PV Park may not be considered an important passage, motorists are easily distracted by objects on the side of the road, especially if such structures may possibly cause glint and glare, it was recommended that a stretch of land directly adjacent to the road not be considered for development of the solar PV panels. As such as 50 m buffer for the gravel road was recommended, to reduce the level of visual intrusion on the gravel road, and reduce the possibility of glint and glare. Should the recommended buffer zone be adhered to, the overall proposed visual intrusion on the landscape may be reduced. Additionally, if Tourneé 1 Solar PV Park is also approved, it will be indistinguishable from each other. The proposed Tourneé 2 Solar PV Park is therefore likely to have an overall moderate visual impact on the receiving environment.

From a visual impact perspective, there are no fatal flaws associated with the Tourneé 2 Solar PV Park should the recommended buffer zone for the gravel road be considered. The visual impacts associated with the Tourneé 2 Solar PV Park will be assessed in detail in the EIA Phase of the project and management and mitigatory measures will be presented in line with the mitigation hierarchy.

DOCUMENT GUIDE

The following table indicates the requirements for Specialist Studies as per Appendix 6 of Government Notice 326 as published in Government Notice 40772 of 2017, amendments to the Environmental Impact Assessment (EIA) Regulations, 2014 as it relates to the National Environmental Management Act, 1998 (Act No. 107 of 1998).

NEMA Regulations (2017) - Appendix 6		Relevant section in report
1a	Details of	
	(i) the specialist who prepared the report; and	Appendix H
	(ii) the expertise of that specialist to compile a specialist report including	Appendix H
b	a declaration that the specialist is independent in a form as may be specified by the competent authority;	Appendix H
c	an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.3
cA	an indication of the quality and age of base data used for the specialist report	Section 3.2
cB	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Will be provided during the Environmental Impact Assessment Phase of the Project
d	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 3.2
e	A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3 and Appendix A to F
f	details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan	Section 4
g	an identification of any areas to be avoided, including buffers	Not applicable – findings from ecological assessment may be used to conserve natural visual resources
h	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Not applicable – findings from ecological assessment may be used to conserve natural visual resources
i	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.5
j	a description of the findings and potential implications of such findings on the impact of the proposed activity including identified alternatives on the environment or activities;	Section 4 and 5
k	any mitigation measures for inclusion in the EMPr	Will be provided during the Environmental Impact Assessment Phase of the Project
l	any conditions for inclusion in the environmental authorisation	Will be provided during the Environmental Impact Assessment Phase of the Project
m	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Will be provided during the Environmental Impact Assessment Phase of the Project
n	a reasoned opinion	
	(i)as to whether the proposed activity, activities or portions thereof should be authorised;	Section 8
	(1A) regarding the acceptability of the proposed activity or activities; and	Section 8
	(ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Will be provided during the Environmental Impact Assessment Phase of the Project
o	a description of any consultation process that was undertaken during the course of preparing the specialist report;	Consultation with interested and affected parties (I&APs) will be undertaken as part of the project

p	summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Comments and responses that are raised by I&APs will be included in the EIA report compiled by the EAP
q	any other information requested by the competent authority	No information requested at this time

Site sensitivity verification requirements where a specialist assessment is required but no specific assessment protocol has been prescribed, the general protocol is used. Published in Government Notice No. 320 Government Gazette 43110 On 20 March 2020.

See Appendix A for the general requirements.

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GLOSSARY OF TERMS

Best Practicable Environmental Option	This is the alternative/option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.
Characterisation	The process of identifying areas of similar landscape character, classifying and mapping them and describing their character.
Characteristics	An element, or combinations of elements, which make a contribution to landscape character.
Development	Any proposal that results in a change to the landscape and/ or visual environment.
Elements	Individual parts, which make up the landscape, for example trees and buildings.
Feature	Particularly prominent or eye-catching elements in the landscape such as tree clumps, church towers or wooded skylines.
Geographic Information System (GIS)	A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database.
Glint and glare	The two terms 'glint' and 'glare' refer to the unwanted reflection of the sun's rays by the face of a reflective surface. Glint is a momentary flash of light. Glare is a continuous source of excessive brightness.
Impact (Visual)	A description of the effect of an aspect of the development on a specified component of the visual, aesthetic or scenic environment within a defined time and space.
Key characteristics	Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place.
Land cover	The surface cover of the land, usually expressed in terms of vegetation cover or the lack of it. Related to but not the same as Land use.
Land use	What land is used for based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry.
Landform	The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.
Landscape	An area, as perceived by people, the character of which is the result of the action and interaction, of natural and/ or human factors.
Landscape Character Type	These are distinct types of landscapes that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur, they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.
Landscape integrity	The relative intactness of the existing landscape or townscape, whether natural, rural or urban, and with an absence of intrusions or discordant structures.
Landscape quality	A measure of the physical state of the landscape. It may include the extent to which typical landscape character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Landscape value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a variety of reasons.
Receptors	Individuals, groups or communities who are subject to the visual influence of a particular project. Also referred to as viewers, or viewer groups.
Sense of place	The unique quality or character of a place, whether natural, rural or urban, allocated to a place or area through cognitive experience by the user. It relates to uniqueness, distinctiveness or strong identity and is sometimes referred to as *genius loci* meaning 'spirit of the place'.
Sky glow	Brightening of the night sky caused by outdoor lighting and natural atmospheric and celestial factors.

Skylining	Siting of a structure on or near a ridgeline so that it is silhouetted against the sky.
Specular Reflection	Specular reflection is a type of surface reflectance often described as a mirror-like reflection of light from the surface. In specular reflection, the incident light is reflected into a single outgoing direction.
View catchment area	A geographic area, usually defined by the topography, within which a particular project or other feature would generally be visible.
Viewshed	The outer boundary defining a view catchment area, usually along crests and ridgelines.
Visibility	The area from which project components would potentially be visible. Visibility is a function of line of sight and forms the basis of the VIA as only visible structures will influence the visual character of the area. Visibility is determined by conducting a viewshed analysis which calculates the geographical locations from where the proposed project elements might be visible.
Visual Absorption Capacity	The ability of an area to visually absorb development as a result of screening topography, vegetation or structures in the landscape.
Visual Character	The overall impression of a landscape is created by the order of the patterns composing it; the visual elements of these patterns are the form, line, colour and texture of the landscape's components. Their interrelationships are described in terms of dominance, scale, diversity and continuity. This characteristic is also associated with land use.
Visual Exposure	The relative visibility of a project or feature in the landscape. Visual exposure is based on distance from the project to selected viewpoints. Visual exposure or visual impact tends to diminish exponentially with distance.
Visual Intrusion	The nature of intrusion of an object on the visual quality of the environment resulting in its compatibility (absorbed into the landscape elements) or discord (contrasts with the landscape elements) with the landscape and surrounding land uses.
Zone of visual influence	An area subject to the direct visual influence of a particular project.

*Definitions were derived from Oberholzer (2005) and the Institute of Environmental Management and Assessment (2013)

LIST OF ACRONYMS

ARC	Agricultural Research Council
BAR	Basic Assessment Report
BESS	Battery Energy Storage System
BLM	(United States) Bureau of Land Management
BPEO	Best Practicable Environmental Option
DEAT	Department of Environmental Affairs and Tourism
DEM	Digital Elevation Model
DFFE	Department of Forestry, Fisheries and the Environment
DM	District Municipality
DTM	Digital Terrain Model
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
GIS	Geographic Information System
GN	General Notice
GPS	Global Positioning Systems
HIA	Heritage Impact Assessment
IAPs	Interested and Affected Parties
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
KOP	Key Observation Points
LI IEMA	Institute of Environmental Management and Assessment
LM	Local Municipality
m.a.m.s.l.	Meters above mean sea level
MAPE	Mean Annual Potential Evaporation
MAT	Mean Annual Temperature
MASMS	Mean Annual Soil Moisture Stress
MFD	Mean Frost Days
MW	MegaWatt
NEMA	National Environmental Management Act (No. 107 of 1998)
NGL	Natural Ground Level
NPAES	National Protected Areas Expansion Strategy
O&M	Operations and Maintenance
OHPL	Overhead Powerline
PV	Photovoltaic
PVSEF	Photovoltaic Solar Energy Facility
REEA	Renewable Energy EIA Application
REDZ	Renewable Energy Development Zones
SANBI	South African National Biodiversity Institute
SAS	Scientific Aquatic Services
SACAD	South African Conservation Areas Database
SAPAD	South African Protected Areas Database
SEA	Strategic Environmental Assessment
UNESCO	United Nations Educational Scientific and Cultural Organization

VAC	Visual Absorption Capacity
VIA	Visual Impact Assessment
VRM	Visual Resource Management

1. INTRODUCTION

1.1 Background

Scientific Aquatic Services (Pty) Ltd (SAS) was appointed to conduct a visual scoping assessment as part of the environmental authorisation process for the proposed Tourneé 2 Solar PV Park near Thuthukani, Mpumalanga Province. The proposed Tourneé 2 Solar PV forms part of the larger Tourneé Solar PV Cluster which will include two (2) 150 MW Solar Energy Facilities (SEFs).

The proposed Tourneé 2 Solar PV Park is located within the Lekwa Local Municipality, which is under the administration of the Gert Sibande District Municipality. The proposed Tourneé 2 Solar PV Park is located approximately 32 km south-west of Standerton and is situated adjacent to the Eskom Tutuka Power Station ash fallout facility. Tourneé 2 Solar PV Park is located on the remainder of portion 3 of the Farm Dwars-In-De-Weg 350 IS and on portion 6 of the Farm Dwars-In-De-Weg 350 IS. The location and extent of the proposed Tourneé 2 Solar PV Park is depicted in Figures 1 and 2.

A VIA entails a process of data collection, spatial analysis, visualisation and interpretation to describe the quality of the landscape prior to development taking place and then identifying possible visual impacts after development. Assessing visual impacts is difficult as it is very subjective due to a person's perception being affected by more than only the immediate environmental factors (Oberholzer, 2005).

This scoping report, after consideration and description of the visual integrity of the Tourneé 2 Solar PV Park and surroundings, must guide the proponent, authorities and Environmental Assessment Practitioner (EAP), as to the suitability of the proposed Tourneé 2 Solar PV Park Facility, from a visual and aesthetic point of view in consideration of the characteristics of the project and host region. This scoping report should furthermore serve to inform the planning, design and decision-making process as to the layout and nature of the proposed activities. Once a final layout is received the Impact Assessment will be undertaken during the next phase of the Project and the report will be updated accordingly.

Figure 1: Digital satellite image depicting the Tourneé 2 Solar PV Park in relation to the surrounding area.

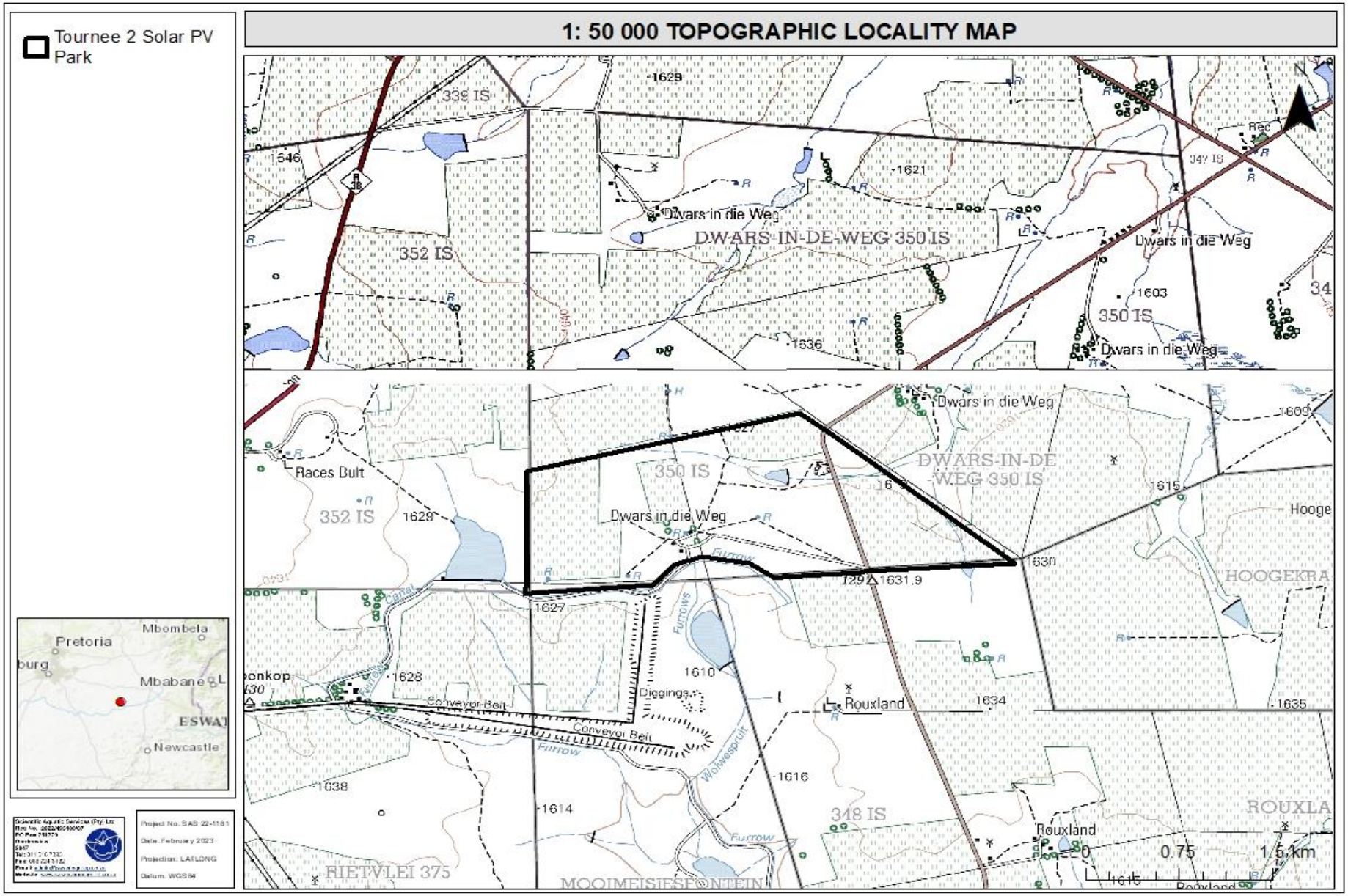


Figure 2: Digital satellite image depicting the Tourneé 2 Solar PV Park in relation to the surrounding area.

1.2 Project Description [1]

The proposed Tourneé 2 Solar PV Park will have a generating capacity of no more than 150 Megawatts (MW) and battery energy storage systems (BESS) of 600 megawatt-hours (MWh). Tier-1 bi-facial, single axis trackers are considered for the panels. The proposed Tourneé 2 Solar PV Park will also include an on-site Independent Power Producer (IPP), which includes a back-to-back substation (including IPP and Eskom side). 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 purpose of the facility is to generate clean electricity from a renewable energy source (i.e., solar radiation) to contribute to the National Energy Grid. Table 1 below indicates a summary of the project details. It should be noted that the details provided below is subject to change during the EIA phase.

Table 1: Project details for the proposed Tourneé 2 Solar PV Park.

Farm Potions Combined Extent	505.15 hectares (ha)
Buildable Area (subject to finalisation)	~297 ha
Contracted Capacity of PVSEF	Up to 150 MW/600MWh.
Associated Infrastructure	Internal Roads 4-5 m wide and up to 8km long.
	Independent Power Producer (IPP) site, (includes a back-to-back substation).
	Battery Energy Storage System (BESS) (Including 132 kV feeder bays, transformers, control building and telecommunication infrastructure).
	Paved areas (m²) - 2 200.
	O&M building (m²) - 1 500.
	Construction phase: Construction camp area (m²) - 5,000 Laydown area (m²) - 20,000 Septic tanks, and portable toilets.
	PV Modules (229 Ha).
Technical Specifications	Tier 1 bi-facial, single axis trackers.

[1] The project description is as provided by the proponent during the scoping phase and may change in the EIA Phase.

Figure 3: Example of Bi-facial solar panels to be utilised for this project.

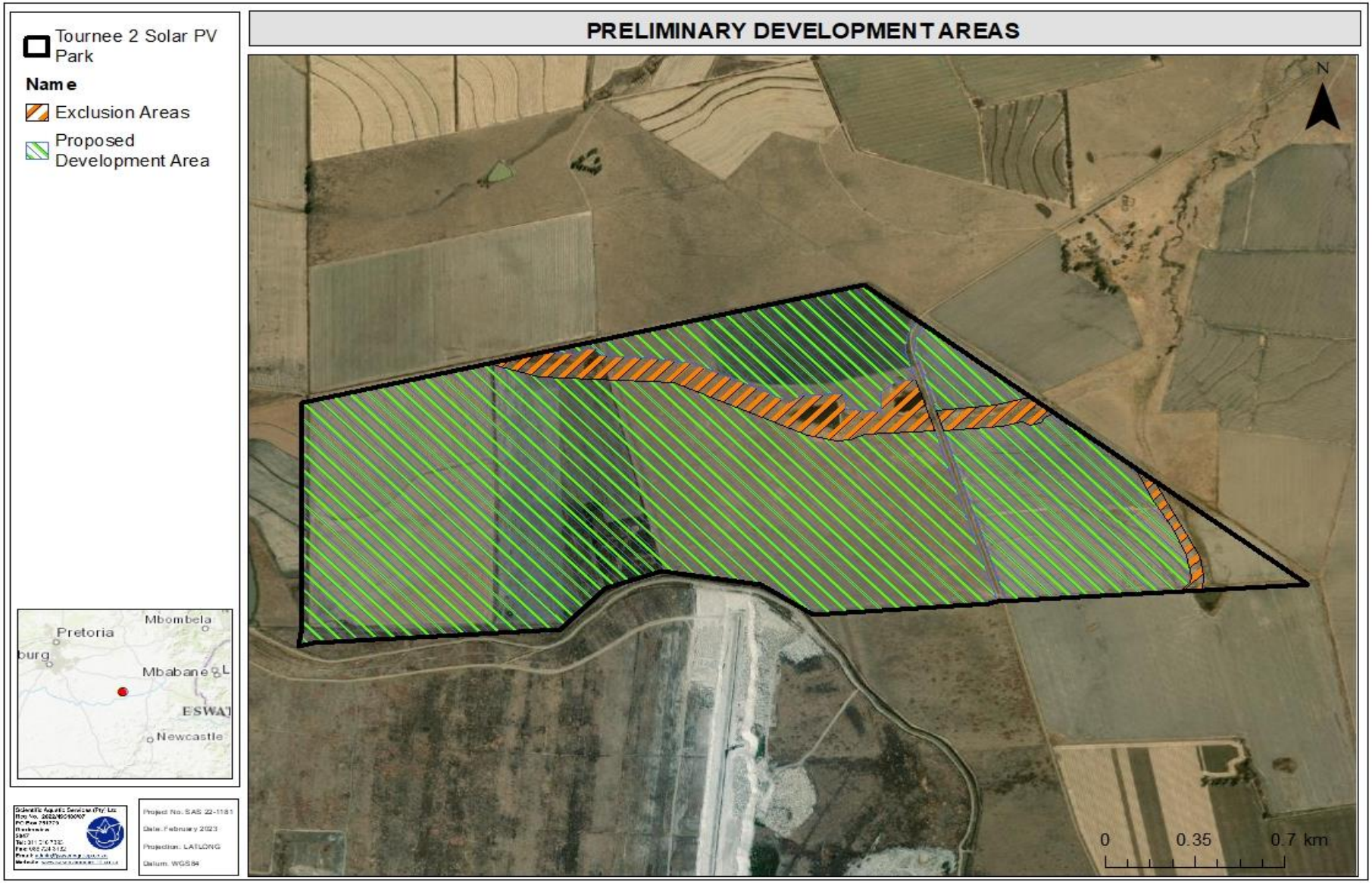


Figure 4: A digital satellite image depicting the layout of the proposed Tourneé 2 Solar PV Park in relation to the surrounding area.

1.3 Project Scope

The purpose of this scoping report is:

- To compile a desktop study of the state of the environment of the Tourneé 2 Solar PV Park including climate, topography, land uses and land cover with the data obtained from the websites of the South African National Biodiversity Institute (SANBI), the Agricultural Research Council (ARC) and the South African Protected (and Conservation) Areas Databases (SAPAD & SACAD, 2022). All databases used were published within the last 5 years and contain up to date and relevant information.
- All sensitive receptors were identified and mapped within 5km of the Tourneé 2 Solar PV Park, with the use of digital satellite imagery as well as the 1: 50 000 topographical map of the Tourneé 2 Solar PV Park;
- Following the site visit, preliminary results of the findings to date, were summarized; and
- Perceived impacts that the proposed project might have on the receiving environment.

1.4 Principles and Concepts of VIAs

Visual resources have value in terms of the regional economy and inhabitants of the region. Furthermore, these resources are often difficult to place a value on as they normally also have cultural or symbolic values. Therefore, VIAs are to be performed in a logical, holistic, transparent and consistent manner. Oberholzer (2005) identifies the following concepts to form an integral part of the VIA process:

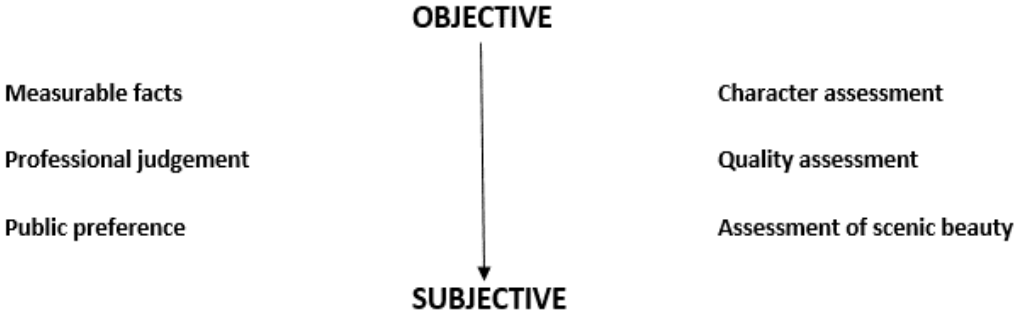
- Visual resources include the visual, aesthetic, cultural and spiritual aspects of the environment, which contribute toward and define an area's sense of place;
- Natural and cultural landscapes are inter-connected and must be considered as such;
- All scenic resources, protected areas and sites of special interest within a region need to be identified and considered as part of the VIA;
- All landscape processes such as geology, topography, vegetation and settlement patterns that characterise the landscape must be considered;
- Both quantitative criteria, such as 'visibility' and qualitative criteria, such as aesthetic value or sense of place has to be included as part of the assessment;
- VIAs must inform the Environmental Impact Assessment (EIA) process in terms of visual inputs; and
- Public involvement must form part of the process.

The guideline furthermore recommends that the VIA process identifies the Best Practicable Environmental Option (BPEO) based on the following criteria:

- Long term protection of important scenic resources and heritage sites;
- Minimisation of visual intrusion on scenic resources;
- Retention of wilderness or special areas intact as far as possible; and
- Responsiveness to the area's uniqueness, or sense of place.

1.5 Assumptions and Limitations

- 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).



2. LEGAL, POLICY AND PLANNING CONTEXT FOR VIAs

Oberholzer (2005) indicates that current South African environmental legislation governing the BA and EIA process, which may include consideration of visual impacts if this is identified as a key issue of concern, is the National Environmental Management Act (NEMA) (Act No. 107 of 1998). This includes the 2014 NEMA EIA regulations as amended (published in General Notice (GN) No. R 982 as well as R 983 Listing Notice 1, R 984 Listing Notice 2 and R 985 Listing Notice 3).

In addition, the following acts and guidelines are applicable (Oberholzer, 2005):

The National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
This act was developed in 2003 for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes

- Restricted activities involving national and protected parks:

According to the South African Protected Areas Database (SAPAD, 2022) Dataset, there are no protected areas located within a 10 km radius of the Tourneé 2 Solar PV Park, therefore the Protected Areas Act is currently not relevant to the proposed project. The National Protected Areas Expansion Strategy (NPAES, 2018) database did not identify any priority focus areas within the Tournee 1 Solar PV Park, however, adjacent to the Tourneé 2 Solar PV Park boundary (on the lower western boundary) a very small **Priority Focus Area** was identified, this does not intersect with the distribution of the Tourneé 2 Solar PV Park itself and therefore the proposed development will not impact any NPAES focus areas.

The National Heritage Resources Act (Act No. 25 of 1999)

The purpose of the Act is to protect and promote good management of South Africa’s heritage resources, and to encourage and enable communities to nurture and conserve their legacy so it is available to future generations.

A heritage impact assessment has been commissioned as part of the EA for this project.

The Advertising on Roads and Ribbons Act (Act No. 21 of 1940)

Visual pollution is controlled, to a limited extent, by the Advertising on Roads and Ribbons Act (Act 21 of 1940), which deals mainly with signage on public roads.

Municipal Systems Act (Act No. 32 of 2000)

In terms of the Municipal Systems Act (Act No. 32 of 2000), it is compulsory for all municipalities to initiate an Integrated Development Planning (IDP) process in order to prepare a five-year strategic development plan for the area under their control. The IDP process, specifically the spatial component is based in certain areas and provinces on a bioregional planning approach to achieve continuity in the landscape and to maintain important natural areas and ecological processes. The Tourneé 2 Solar PV Park is situated within the Lekwa Local Municipality (LM), which is an administrative area of the Gert Sibande District Municipality (DM). The latest IDPs are not available for the municipalities.

Strategic Environmental Assessment (SEA) and Renewable Energy Development Zones (REDZ)

A Strategic Environmental Assessment (SEA, 2015 and 2019) was undertaken by the former Department of Environmental Affairs (DEA), which is now known as the Department of Forestry, Fisheries and the Environment (DFFE), in order to identify geographical areas most suitable for the rollout of wind and solar PV energy projects and the supporting electricity grid network. The Phase 1 Wind and Solar Strategic Environmental Assessment (SEA) (2015), aimed to facilitate the efficient rollout of wind and solar PV energy. These areas are referred to as Renewable Energy Development Zones (REDZs), in which development will be incentivised and streamlined. The Phase 2 assessment (2019) focused on utilising existing information to anticipate the impacts of wind and solar PV facilities and suggesting mitigation measures and identifying thresholds for cumulative impacts.

Sensitivity was determined using criteria that influence the value of visual/scenic resources, and ultimately their significance. The criteria are considered spatially, with the addition of buffers, based on the relative sensitivity of the feature or receptor. The study categorises four levels of sensitivity, very high, high, medium and low sensitivity (DFFE, 2019). The criteria considered for the sensitivity levels determination includes visually sensitive landforms and water features, proclaimed or protected areas such as national parks or nature reserves, visually sensitive receptors such as settlements and routes, as well as heritage resources (DFFE, 2019). Table 2 below contains features and criteria considered during the visual

assessment for the SEA, as well as the sensitivity rating with buffers, providing the basis for the sensitivity mapping (DFFE, 2019).

Table 2: Spatial data used in the landscape scoping assessment (DFFE, 2019).

Sensitivity Feature Class	Data Source & Date of Publications	Sensitivity Mapping Application		
		Sensitivity	Wind Buffer Distance increments from the feature class	Solar Buffer Distance
Topographic features, including mountain ridges	Inferred from Digital Elevation Model (DEM), 2015, National Geospatial Information (NGI).	VH	0 - 500m	0 – 250m
Steep slopes	Modelled from DEM, 2015, NGI.	Very High Sensitivity areas with slopes of more than 1:4	Feature	Feature
		High Sensitivity areas with slopes between 1:4 and 1:10	Feature	Feature
Major rivers, water bodies perennial rivers and wetlands with scenic value as identified by landscape specialists	National Freshwater Ecosystem Priority Areas (NFEPA) 2011	VH	0 – 500m	0 – 500m
		H	0 – 250m	0 – 250m
		M	250 – 500m	250 – 500m
Coastal zone	Surveys and Mapping 1:50 000 topographical maps of South Africa	VH	0 1km	0 – 1km
		H	1 – 2km	1 2km
		M	2 – 4km	2 – 3km
Protected Areas : National Parks	South African Protected Areas Database (SAPAD) – Q2, 2017, SANParks	VH	0 – 5km	0 – 2km
		H	5 10km	2 – 4km
		M	10 – 15km	4 – 6km
Protected Areas: Nature Reserves	SAPAD – Q2, 2017	VH	0 – 3km	0 – 1km
	South African Conservation Areas Database (SACAD) – Q1, 2017	H	3 – 5km	1 – 2km
		M	5 – 10km	2 – 3km
Private reserves and game farms	Provincial Private Reserves/Conservation Areas and Game Farms	VH	0 – 1.5km	0 – 500m
		H	1.5 – 3km	500 – 1km
		M	3 – 5km	1 – 2km
Cultural landscapes	Not mapped	VH	Feature	Feature
		H	0 500m	500m – 1km
		M	500m – 1km	1 – 2km
Heritage Sites Grades I, II and III	SAHRA, 2015	VH	Feature	Feature
		H	0 500m	0 500m
		M	500m – 1km	500m – 1km
Towns and villages	AfriGIS SG Towns, 2017	VH	0 – 2km	0 – 500m
		H	2 – 4km	500 – 1km
		M	4 – 6km	1 – 2km
National roads	NGI, 2016	VH	0 – 1km	0 – 500m
		H	1 – 2.5km	500 – 1km
		M	2.5 – 5km	1 – 2km
Scenic routes	Western Cape Department of Transport, 2013	VH	0 – 1km	0 – 500m
		H	1 – 2.5km	500 – 1km
		M	2.5 – 5km	1 – 2km
Provincial and arterial routes		VH	0 – 500m	-
		H	500 – 1km	
		M	1km – 3km	
Passenger rail lines		VH	0 – 500m	0 – 250m
		H	500 – 1km	250 – 500m

Sensitivity Feature Class	Data Source & Date of Publications	Sensitivity Mapping Application		
		Sensitivity	Wind Buffer Distance increments from the feature class	Solar Buffer Distance
		M	1km – 3km	500 1km
Small airfields	REDZs 1 SEA dataset, EGI SEA dataset, 2015	VH	0 3km	0 3km
Square Kilometre Array (SKA) corridors	Square Kilometre Array SEA	VH	0 36km	0 16km

VH = Very High; H = High; M = Medium; REDZ = Renewable Energy Development Zone
***Feature refers to the actual sensitivity feature class e.g. the actual delineated and declared heritage site, thus no buffer.**

The Tourneé 2 Solar PV Park is not located within any REDZ nor within any Electricity Grid Infrastructure (EGI) as per GN 113.

Furthermore, according to the South African Renewable Energy EIA Application Database (REEA, 2021) there is only one application for renewable energy facilities (wind and solar) within a 30 km radius of the Tourneé 2 Solar PV Park, namely: 65.9 MW Tutuka Photovoltaic (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

- Visual and aesthetic resources are also protected by local authorities, where policies and by-laws relating to urban edge lines, scenic drives, special areas, signage, communication masts, etc. have been formulated; and
- Other decision-making authorities such as the Department of Water and Sanitation (DWS) and relevant authorities of the local and district municipality, in terms of their particular legislative frameworks, may also require VIAs to support informed decision-making.

3. METHOD OF ASSESSMENT

3.1 Desktop Assessment

The method of assessment for this report is based on a spatial analysis of the Tourneé 2 Solar PV Park and the surrounding areas, using Geographic Information Systems (GIS) such as Planet GIS, ArcGIS, Global Mapper as well as digital satellite imagery, photographs, various databases and most relevant available data on the Tourneé 2 Solar PV Park and surroundings. The desktop assessment served to guide the field assessment through

identifying preliminary areas of importance in terms of potential sensitive receptors possibly exposed to potential visual impacts.

The desktop study included an assessment of the current state of the environment of the area including the climate of the area, topography, land uses and land cover with data obtained from the websites of the South African National Biodiversity Institute (SANBI) and the Agricultural Research Council (ARC). All databases used were published within the last 5 years and contain up to date and relevant information.

During the desktop assessment, which took place prior to and in preparation of the field assessment, the 1:50 000 topographical map, as well as high-definition aerial photographs from Google Earth Pro were used to identify the dominant landforms and landscape patterns. These resources together with digital elevation data were utilised to establish a parameter within which potential sensitive receptors were to be identified via Google Earth Pro. These parameters can henceforth be referred to as the visual assessment zone. Based on the mountainous terrain of the area, the visual assessment zone encompasses a 5 km radius of the Tourneé 2 Solar PV Park, on a desktop level. The potentially sensitive receptors identified within the visual assessment zone during the desktop assessment was verified during the field assessment.

Detailed assessment methods used to determine the landscape characteristics of the receiving environment and potential visual impacts of the project are outlined in the relevant sections below as well as in Appendices A – F.

3.2 Field Assessment

A field assessment was undertaken during the summer season on the 7th and 8th of February 2023. The season in which the field assessment was undertaken does not have any considerable effect on the significance of the impacts identified, the mitigation measures, or the conclusions of the assessment since the vegetation cover does not vary significantly over the seasons, as the area is characterised by Soweto Highveld Grassland.

The field assessment included a drive-around and on-foot survey of the Tourneé 2 Solar PV Park and drive around in the visual assessment zone (5 km radius), in order to determine the visual context within which the proposed project is to be developed. The visibility of an object decreases exponentially the further away the observer is from the source of impact. Points from where the proposed solar facilities were determined to be visible were recorded (making

use of Global Positioning Systems (GPS) to confirm these aesthetically sensitive viewpoints and potential sensitive visual receptors in relation to the proposed project.

4. PRELIMINARY VISUAL RESULTS

4.1 Public Involvement

A public involvement process will be initiated as part of the EA Assessment application process, whereby stakeholders are invited to provide input concerning the proposed development. Should any comments be received during this process, the comments will be addressed and the report will be amended.

4.2 Development Category and Level of Impact Assessment

Through the application of the VIA methods of assessment as presented in Appendix A, it was determined that the proposed project can be defined as a Category 5 development, which includes renewable energy structures. According to the National Web-Based Screening Tool (2023), the overall Archaeological and Cultural Heritage Combined Sensitivity of the Tourneé 2 Solar PV Park is considered low, thus with the environment being classified as low cultural significance, a high visual impact is still possible.

The Screening Tool further indicates that the majority of the Tourneé 2 Solar PV Park has a very high sensitivity in terms of the landscape (solar) theme sensitivity as the area is believed to have mountain tops and high ridges. The eastern portion 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. See Appendix I for the outcome of the Screening Tool and verification thereof.

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. The proposed Tourneé 2 Solar PV Park is therefore likely to have an overall moderate visual impact on the receiving environment, therefore a Level 3 Assessment was undertaken versus a level 4 Assessment that would be required for a project of high or very high sensitivity.

4.3 Description of the Receiving Environment

To holistically describe the receiving environment, this section of the report aims to determine the intrinsic value of the receiving landscape including aspects of the natural, cultural and scenic landscape, taking both tangible and intangible factors into consideration. 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 the figures below.

Figure 5: General view of the Tourneé 2 Solar PV Park, indicating the cultivated fields (top), the ash dump (middle) and grassland vegetation with gently sloping terrain (bottom).

Table 3: Summary of the visual assessment of the Tourneé 2 Solar PV Park and surrounds.

Climate (Appendix D)	As a result of climate variations throughout the year, the appearance and perception of the landscape within and surrounding the Tourneé 2 Solar PV Park changes with the seasons. Early morning and evening mist often associated with these areas, can limit the visibility of the proposed infrastructure at different times during the day, particularly at further distances. Since the Mpumalanga Province falls within the region that is characterised by summer rainfall, the visibility of the proposed infrastructure is likely to be lower during the summer months especially during periods of high rainfall.	**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.
Land Use and Visual Receptors (Appendix E, Figure 7)	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	**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 Figures 7 and 8 for the elevation and slope models of the area.

	predominantly by the farmers and workers and the R38 (2 km west) and R39 (4.4 km south) roadways. 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 2 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.	**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.
Vegetation Cover (Appendix D)	The Tourneé 2 Solar PV Park falls within the Grassland biome and Mesic Highveld Grassland bioregion according to the spatial data from 2018 Final Vegetation Map of South Africa, Lesotho and Swaziland. The field assessment indicated that the Tourneé 1 Solar Park is characterised by three habitat units: grassland (still regarded as indigenous vegetation), freshwater ecosystems and transformed habitat (cultivated fields) (Appendix D). For further detail on the vegetation characteristics of Tourneé 2 Solar PV Park, refer to the biodiversity report (STS, 2023). With the area dominated by grasses of moderate to low heights, the vegetative component of the Tourneé 2 Solar PV Park and immediate surrounds will not be able to assist in screening the Tourneé 2 Solar PV Park. The farmsteads do however have existing dense tree lines which may partially obscure the view towards Tourneé 2 Solar PV Park.	**Night-Time Lighting (Appendix F)**	The Tourneé 2 Solar PV Park is located in a rural area where the only sources of lighting are the farmsteads and Tutuka 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 (back-to-back 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.

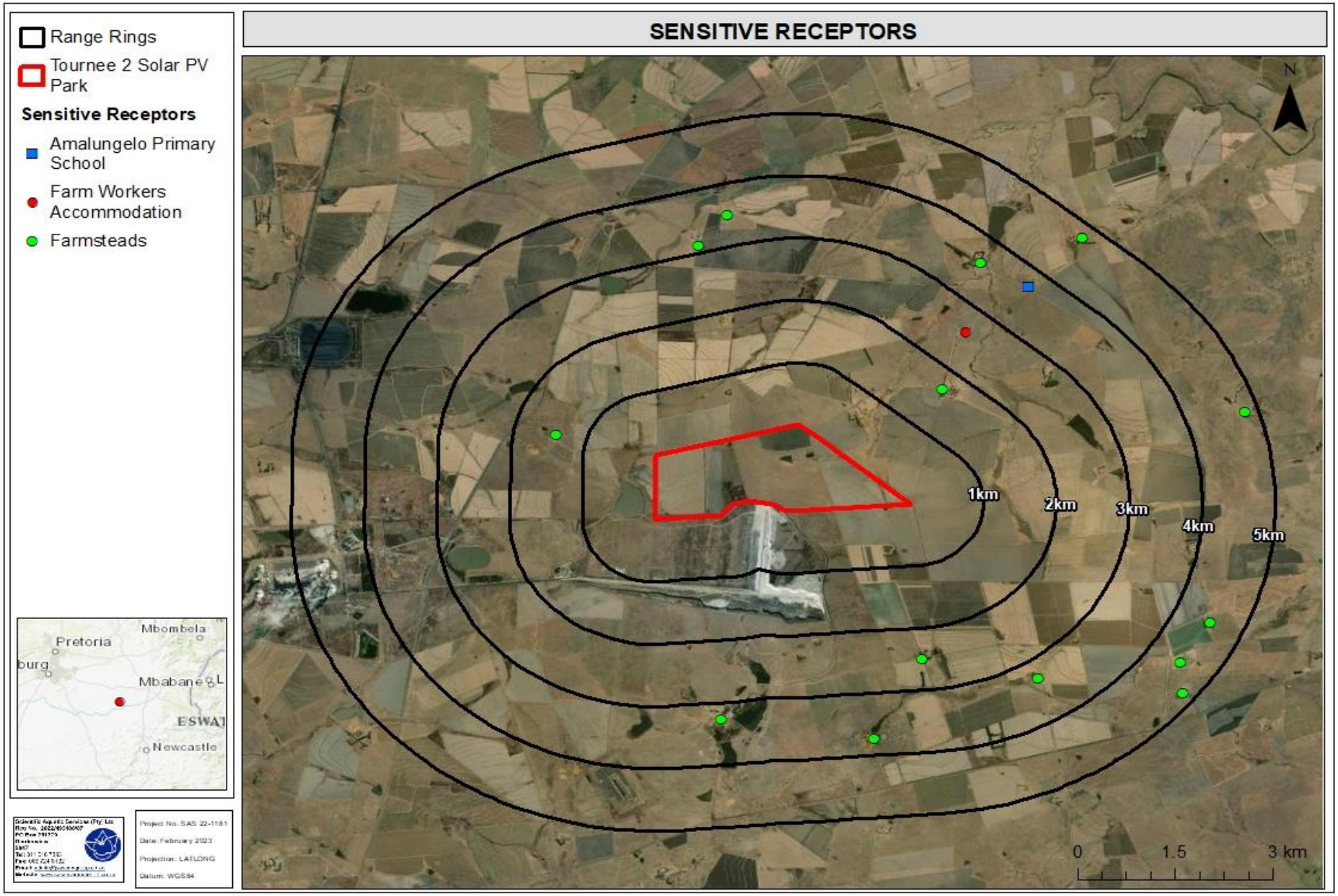


Figure 6: Map indicating the location of potential sensitive receptors within 5km of the Tourneé 2 Solar PV Park.

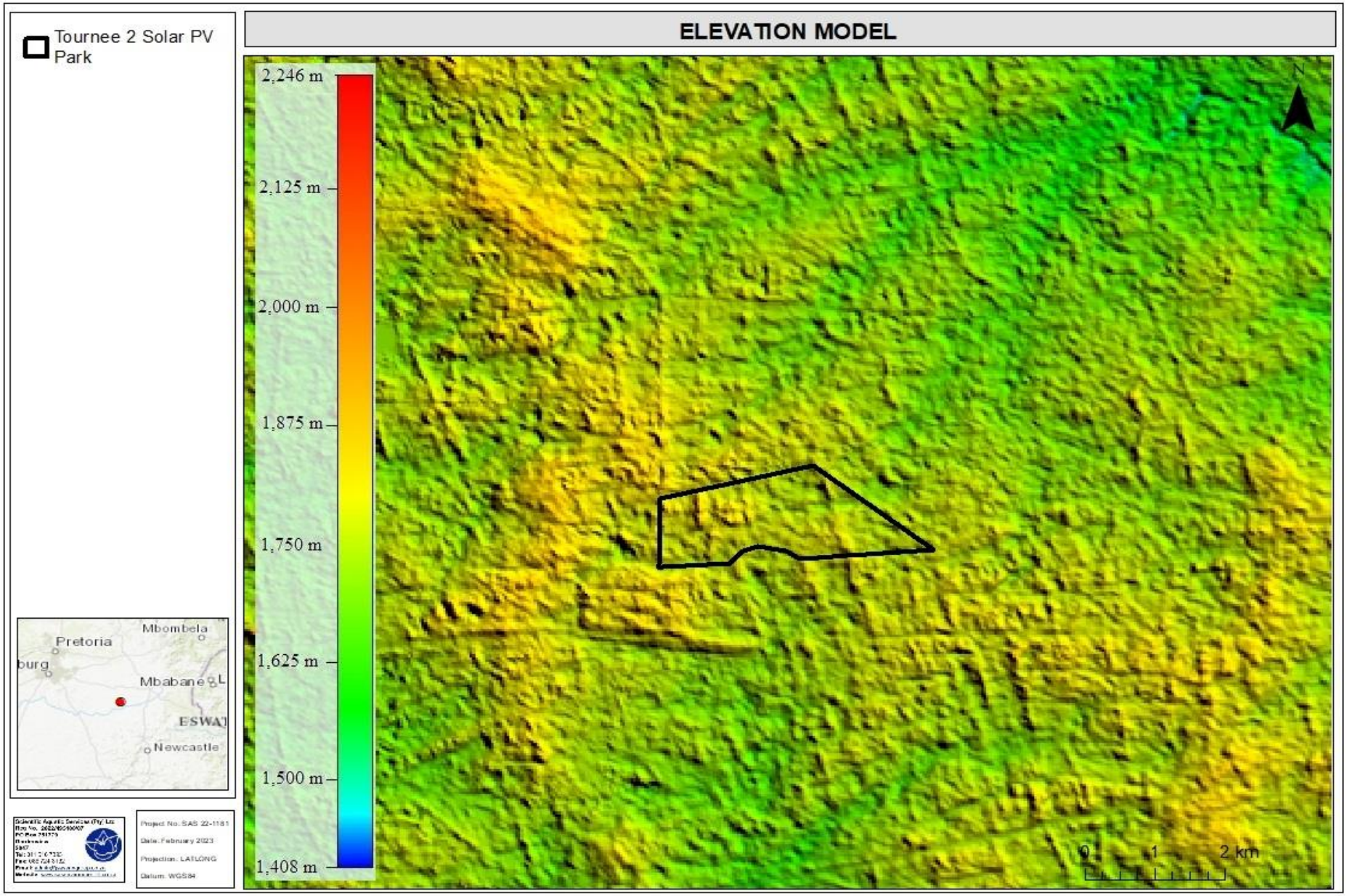


Figure 7: False colour elevation rendering depicting the topographical character of the Tourneé 2 Solar PV Park .

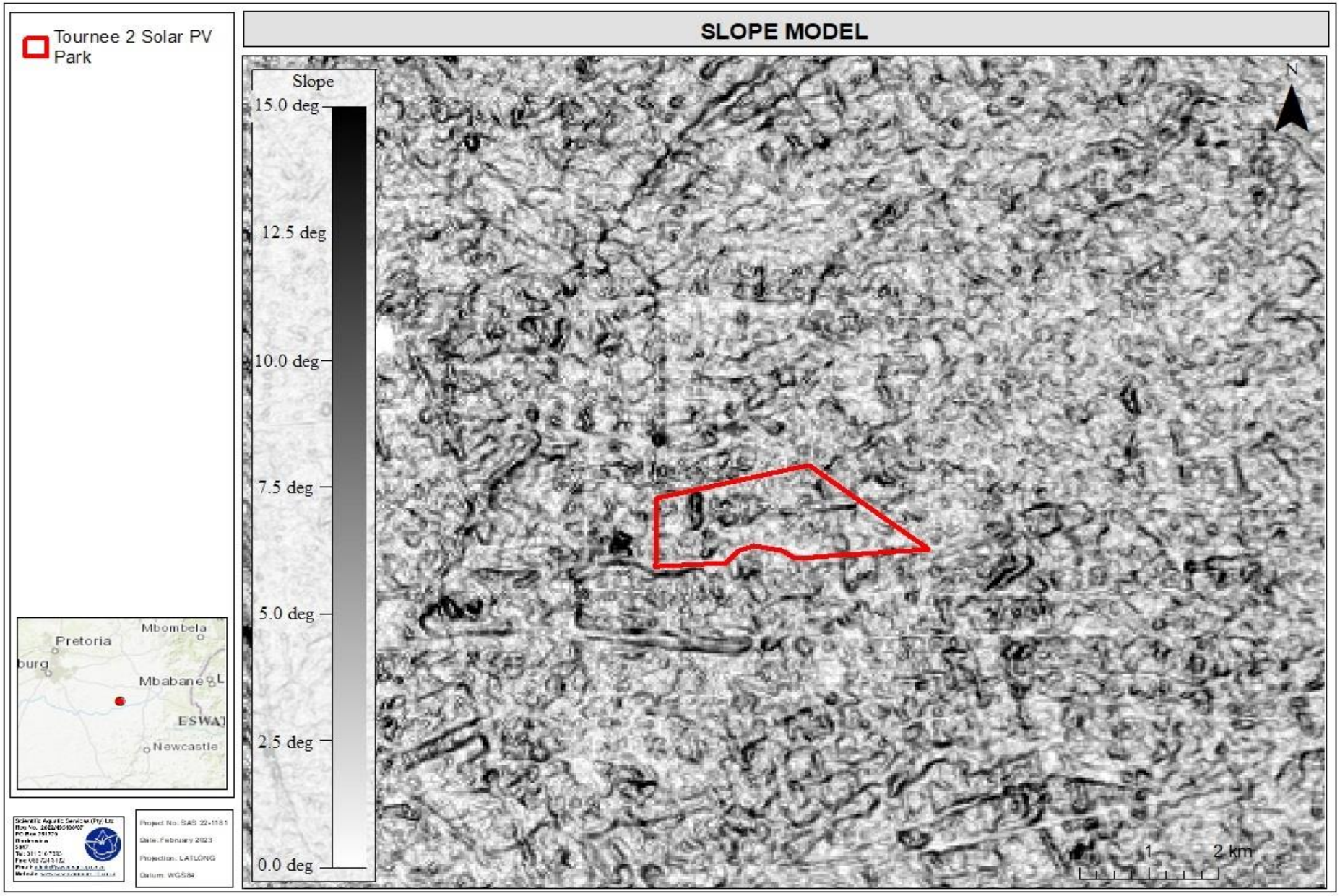


Figure 8: Monochromatic map indicating the general relief associated with the Tourneé 2 Solar PV Park.

5. OPPORTUNITIES AND CONSTRAINTS

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. As such the landscape displays a medium low scenic quality and therefore is considered to display a moderate sensitivity.

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 as described in Appendix B 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. From a visual perspective the location of Tourneé 2 Solar PV Park is deemed acceptable as it is expected to have a moderate visual impact on the receiving environment. It should be noted, the opportunities and constraints from a visual perspective did not take the freshwater ecosystems into account, as this will be covered in the Freshwater Report (SAS, 2023). Hence the opportunities and constraints should be integrated with the sensitivities of the freshwater assessment (SAS, 2023).

The figure below illustrates the visual opportunities and constraints for the Tourneé 2 Solar PV Park (Figure 9). 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.

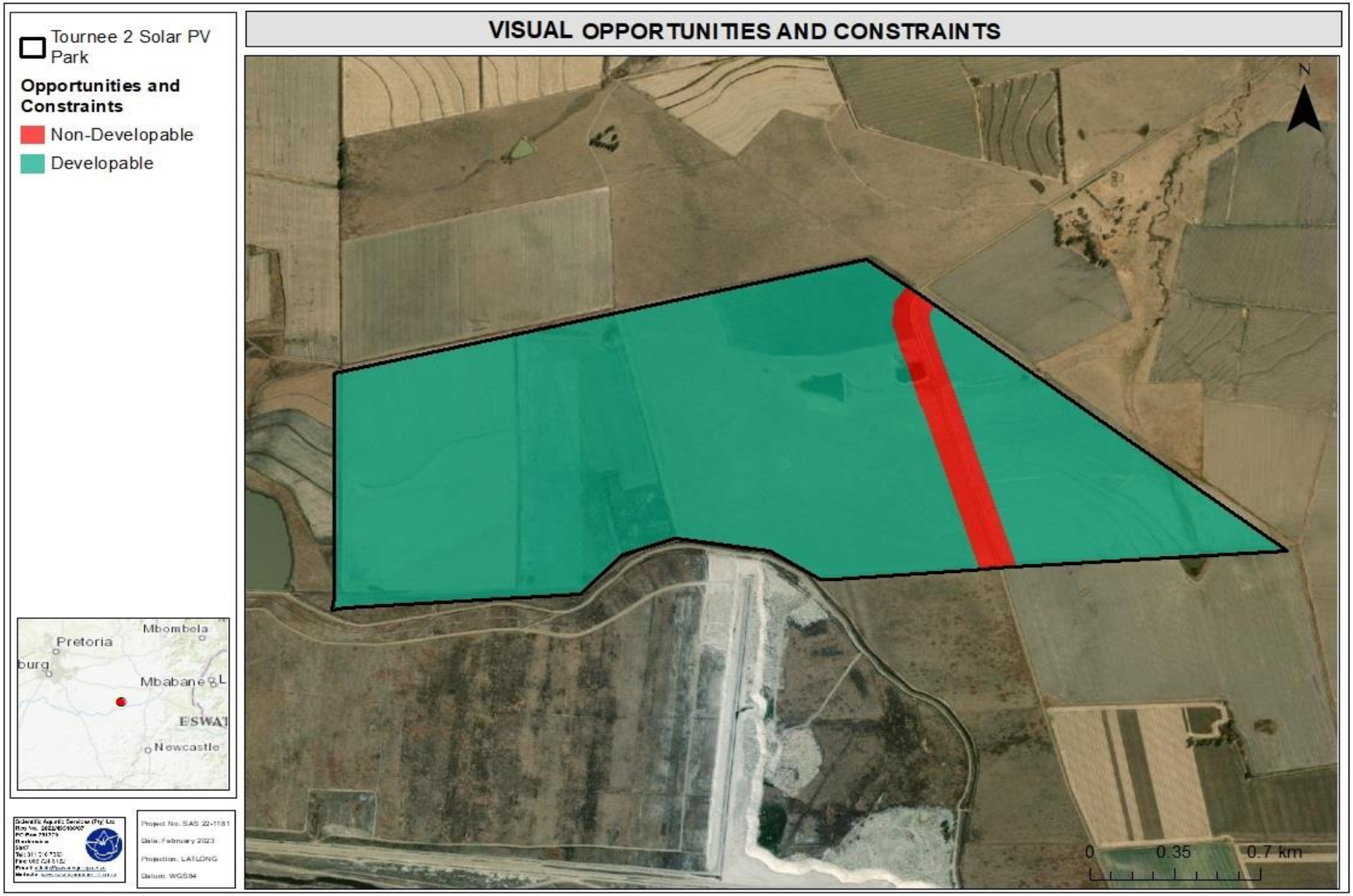


Figure 9: Visual opportunities and constraints map the Tourneé 2 Solar PV Park.

6. HIGH LEVEL SCREENING OF IMPACTS AND MITIGATION

The below section provides preliminary risks and potential impacts for the proposed project. It is important to keep in mind that the impact statements are not comprehensive, and a detailed impact assessment will follow as part of the EIA phase.

Table 4: Preliminary High level screening of impacts for the Tourneé 2 Solar PV Park.

Impacts:

- 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;
- 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;
- 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 amount of lighting, therefore the contribution toward night-time lighting is not likely to be significant; and
- Cumulative impacts: Presence of the solar PV facilities within an area where renewable energy structures are approved in the area. Cumulative visual impacts resulting from landscape modifications as a result of the proposed project in conjunction with the proposed Tourneé 1 Solar PV Park situated directly adjacent to Tourneé 2 Solar PV Park, and the approved application within a 30 km radius, as well as any future renewable energy facilities (wind and solar facilities) must be considered. Renewable energy facilities have the potential to cause significant visual impacts and the location of several such developments in close proximity to each other could significantly alter the sense of place and visual character in the broader region. Hence the cumulative impact of this project will be discussed in the Visual Impact Assessment Report during the next phase.

Probability	Consequence	Significance
4	2	**Medium**

- 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;
- 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;
- No PV panels are placed within 50 m of the gravel road, to reduce the risk of glint and glare;
- 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; and

- 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

7. PLAN OF STUDY FOR THE NEXT PHASE

Specific outcomes in terms of the next phase (Impact Assessment) of the project are presented in the points below:

- To ensure the report considers the Equator Principles and International Finance Corporation (IFC) Performance Standards;
- To identify the main viewsheds through undertaking a viewshed analysis, based on the proposed height of infrastructure components and the Digital Elevation Model (DEM);
- To establish receptor sites and identify Key Observation Points (KOPs) from which the proposed project will have a potential visual impact, if necessary;
- To prepare a photographic study and conceptual visual simulation of the proposed project as the basis for the viewshed identification and analysis, if necessary;
- To assess the potential visual impact of the proposed project from selected receptors sites in terms of standard procedures and guidelines (Appendix C); and
- To describe mitigation measures in order to minimise any potential visual impacts.

8. CONCLUSION

The proposed Tourneé 2 Solar PV Park is situated in a rural area with a relatively low number of sensitive receptor; comprising mostly of farmsteads. Based on the field assessment, the undulating topography and dense vegetation associated with the farmsteads partially obscures the view towards the Tourneé 2 Solar PV Park, therefore the visual impact for the Tourneé 2 Solar PV Park is considered moderately low as the visual intrusion on the receiving environment will be low to moderate depending on the location of the vantage point.

According to the Strategic Environmental Assessment (SEA) Project (2019) the Tourneé 2 Solar PV Park does not fall within any Renewable Energy Development Zones (REDZ) nor within any corridor for ElectricaL Grid Infrastructure (EGI). According to South African Renewable Energy EIA Application Database (REEA) there is one approved application for a renewable energy facility (solar) within a 30 km radius of the Tourneé 2 Solar PV Park. This indicates that the larger region may be earmarked for renewable energy facilities in the foreseeable future, which may alter the landscape character on a broader scale.

With the Tourneé 2 Solar PV Park and surroundings being dominated by grasses interspersed with freshwater ecosystems and cultivated fields, the vegetative component will not be able to substantially assist in screening the Tourneé 2 Solar PV Park. The farmsteads do however have existing dense tree lines which may partially or completely obscure the view towards Tourneé 2 Solar PV Park. The local topography of the Tourneé 2 Solar PV Park is relatively flat to gently sloping with the surrounding landscape displaying undulating terrain. With the local topography of the Tourneé 2 Solar Park being relatively flat, it is unlikely to assist in absorbing and/ or screening the Tourneé 2 Solar PV Park. The field assessment did however indicate the undulating terrain of the surrounding area affecting the degree of visibility from various vantage points. The Tutuka ash dump will assist in screening and/ or absorbing the Tourneé 2 Solar PV Park, especially to receptors located to the south and north.

The sense of place associated with 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 the cultivated fields being tilled or harvested. 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.

The Tourneé 2 Solar PV Park being located in a rural area, results in limited sources of night-time lighting, as such the lighting environment is considered rural with 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). 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 a rural area results in the Tourneé 2 Solar PV Park likely to somewhat contribute to the effects of sky glow and artificial lighting in the region.

Even though the gravel road intersecting the Tourneé 2 Solar PV Park may not be considered an important passage, motorists are easily distracted by objects on the side of the road,

especially if such structures may possibly cause glint and glare, it was recommended that a stretch of land directly adjacent to the road not be considered for development of the solar PV panels. As such as 50 m buffer for the gravel road was recommended, to reduce the level of visual intrusion on the gravel road, and reduce the possibility of glint and glare. Should the recommended buffer zone be adhered to, the overall proposed visual intrusion on the landscape may be reduced. Additionally, if Tourneé 1 Solar PV Park is also approved, it will be indistinguishable from each other. The proposed Tourneé 2 Solar PV Park is therefore likely to have an overall moderate visual impact on the receiving environment.

From a visual impact perspective, there are no fatal flaws associated with the Tourneé 2 Solar PV Park should the recommended buffer zone for the gravel road be considered. The visual impacts associated with the Tourneé 2 Solar PV Park will be assessed in detail in the EIA Phase of the project and management and mitigatory measures will be presented in line with the mitigation hierarchy.

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APPENDIX A – METHOD OF ASSESSMENT

Level of Assessment

The following method of assessment for determining the level of detail of the assessment was utilised in this report (Oberholzer, 2005):

Table A1: Categories of development and impact severity.

Type of environment	Category 1 development	Category 2 development	Category 3 development	Category 4 development	Category 5 development
Protected/wild areas of international, national or regional significance	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected	Very high visual impact expected
Areas or routes of high scenic, cultural, historical significance	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected	Very high visual impact expected
Areas or routes of medium scenic, cultural, historical significance	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	High visual impact expected
Areas or routes of low scenic, cultural, historical significance/disturbed	Little or no visual impact expected, possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected
Disturbed or degraded sites/run down areas/ wasteland	Little or no visual impact expected, possible benefits	Little or no visual impact expected, possible benefits	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected

The following key provides an explanation to the categories of development:

Category 1 development:
e.g., nature reserves, nature-related recreation, camping, picnicking, trails and minimal visitor facilities.

Category 2 development:
e.g., low-key recreation / resort / residential type development, small-scale agriculture / nurseries, narrow roads and small-scale infrastructure.

Category 3 development:
e.g., low-density resort / residential type development, golf or polo estates, low to medium-scale infrastructure.

Category 4 development:
e.g., medium density residential development, sports facilities, small-scale commercial facilities / office parks, one-stop petrol stations, light industry, medium-scale infrastructure.

Category 5 development:
e.g., high density township / residential development, retail and office complexes, industrial facilities, refineries, treatment plants, power stations, wind energy farms, power lines, freeways, toll roads, large scale infrastructure generally. Large-scale development of agricultural land and commercial tree plantations. Quarrying and mining activities with related processing plants.

The following box explains the nature of the impacts:

Very high visual impact expected:
Potentially significant effect on wilderness quality or scenic resources;
Fundamental change in the visual character of the area;
Establishes a major precedent for development in the area.

High visual impact expected:
Potential intrusion on protected landscapes or scenic resources;
Noticeable change in visual character of the area;
Establishes a new precedent for development in the area.

Moderate visual impact expected:
Potentially some effect on protected landscapes or scenic resources;
Some change in the visual character of the area;
Introduces new development or adds to existing development in the area.

Minimal visual impact expected:
Potentially low level of intrusion on landscapes or scenic resources;
Limited change in the visual character of the area;
Low-key development, similar in nature to existing development.

Little or no visual impact expected:
Potentially little influence on scenic resources or visual character of the area;
Generally compatible with existing development in the area;
Possible scope for enhancement of the area.

From the above, the severity of the impact determines the level of the assessment:

Table A2: Impact assessment level of input determination.

Approach	Little or no visual impact expected	Minimal visual impact expected	Moderate visual impact expected	High visual impact expected	Very high visual impact expected
Level of visual input recommended	Level 1	Level 2	Level 3	Level 4	

The following box explains the inputs required at each level of assessment (Oberholzer, 2005).

Level 1 input:
Identification of issues, and site visit;
Brief comment on visual influence of the project and an indication of the expected impacts / benefits.

Level 2 input:
Identification of issues raised in scoping phase, and site visit;
Description of the receiving environment and the proposed project;
Establishment of Receptor Site area and receptors;
Brief indication of potential visual impacts, and possible mitigation measures.

Level 3 assessment:
Identification of issues raised in scoping phase, and site visit;
Description of the receiving environment and the proposed project;
Establishment of Receptor Site area, view corridors, viewpoints and receptors;
Indication of potential visual impacts using established criteria;
Inclusion of potential lighting impacts at night;
Description of alternatives, mitigation measures and monitoring programmes.
Review by independent, experienced visual specialist (if required).

Level 4 assessment:
As per Level 3 assessment, plus complete 3D modelling and simulations, with and without mitigation.
Review by independent, experienced visual specialist (if required).

SITE SENSITIVITY VERIFICATION REQUIREMENTS WHERE A SPECIALIST ASSESSMENT IS REQUIRED BUT NO SPECIFIC ASSESSMENT PROTOCOL HAS BEEN PRESCRIBED

Published in Government Notice No. 320 GOVERNMENT GAZETTE 43110 on 20 MARCH 2020.

1. Site Sensitivity Verification And Minimum Report Content Requirements

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

The screening tool can be accessed at: https://screening.environment.gov.za/screeningtool

1.1. The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.

1.2. The site sensitivity verification must be undertaken through the use of:

(a) a desktop analysis, using satellite imagery;

(b) a preliminary on-site inspection; and

(c) any other available and relevant information.

1.3. The outcome of the site sensitivity verification must be recorded in the form of a report that--

(a) confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;

(b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and

(c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

2. Specialist Assessment And Minimum Report Content Requirements

Where a specialist assessment is required and no specific environmental theme protocol has been prescribed, the required level of assessment must be based on the findings of the site sensitivity verification and must comply with Appendix 6 of the EIA Regulations.

The gazette is available online at www.gpwonline.co.za

APPENDIX B – OPPORTUNITIES AND CONSTRAINTS METHODS

Visual Inventory Classes

The method of generating a preliminary opportunities and constraints map, from a visual impact perspective, is based on the Visual Resource Management (VRM) Inventory Classes and Objectives as developed by the United States Department of the Interior, Bureau of Land Management (BLM), whereby both visual resource classes and the location and sensitivity towards the project of potential receptors were utilised to generate a preliminary visual site sensitivity map (BLM 1986). Four Visual Inventory Classes and associated objectives are described by BLM (1986), as outlined in Table B1 below, whereby Visual Inventory Classes can be defined as the relative quality, quantity, and value of the visual resource in its current state, and the objectives serve to provide guidelines towards managing the integrity of the visual resource.

Table B1: Visual Inventory Classes and Objectives.

Visual Inventory Class	Objective
Class I (high value): Assigned to areas where a management decision has been made to maintain or conserve a natural landscape.	• The objective for this class is to conserve the existing character of the landscape. • The level of change to the characteristic landscape should be very low and must not attract attention.
Class II (high value) is assigned based on a combination of scenic quality, sensitivity level and distance zones.	• The objective for this class is to retain the existing character of the landscape. • The level of change to the characteristic landscape should be low. • Management activities may be seen but should not attract the attention of the casual observer. • Any changes must repeat the basic elements of form, line, colour, and texture found in the predominant natural features of the characteristic landscape.
Class III (moderate value) is assigned based on a combination of scenic quality, sensitivity level and distance zones.	• The objective for this class is to partially retain the existing character of the landscape. • The level of change to the characteristic landscape may be moderate. • Management activities may attract attention but should not dominate the view of the casual observer. • Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
Class IV (low value) is assigned based on a combination of scenic quality, sensitivity level and distance zones.	• The objective for this class is to provide for management activities that require major modifications of the existing character of the landscape. • The level of change to the characteristic landscape may be high. • These management activities may dominate the view and be the major focus of view attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Visual Inventory Classes II to IV therefore represents the relative value of the visual resources in terms of (BLM 1986):

- **Scenic quality**: All lands have scenic value but landscapes with the most variety and most harmonious composition are considered to have the greatest scenic value. Scenic Quality includes consideration of natural features such as landforms, vegetation, water, colour, adjacent scenery, and scarcity) and built features (roads, buildings, railroads, agricultural patterns, and utility lines). The following classes have been defined (BLM, 1986):
  - *Scenic Quality Class A* – Landscapes that combine the most outstanding characteristics of the region.

- *Scenic Quality Class B* – Landscapes that exhibit a combination of outstanding and common features.
- *Scenic Quality Class C* – Landscapes that have features that are common to the region.

➢ **Sensitivity level**: Sensitivity levels are measures of the public concerns for scenic quality. Viewer Sensitivity is a factor used to represent the value of the visual landscape to the viewing public, including the extent to which the landscape is viewed. The sensitivity level of the receptors could not be accurately determined at the time of assessment, however the overall sensitivity is estimated to be moderate; and

➢ **Distance zones**: Landscapes are divided into distance zones based on the visibility from significant viewing platforms. According to BLM (1986) landscapes are generally subdivided into three distance zones based on relative visibility from travel routes or observation points, namely foreground / middleground (f/m) less than 5 – 8km, background (b): 8 25 km and 'seldom seen' (s/s) beyond 25km.

The BLM recommends the use of the following table in defining Visual Inventory Classes, of which the outcome is summarised in Tables 3 & 4.

Table B2: Visual Resource Management (VRM) Classification Matrix.

Visual Sensitivity Levels		**High**			**Medium**			**Low**
Special Areas		**I**	**I**	**I**	**I**	**I**	**I**	**I**
Scenic Quality	**A**	**II**	**II**	**II**	**II**	**II**	**II**	**II**
	B	**II**	**III**	**III**	**III**	**IV**	**IV**	**IV**
				IV				
	C	**III**	**IV**	**IV**	**IV**	**IV**	**IV**	**IV**
Distance zones		**f/m**	**b**	**s/s**	**f/m**	**b**	**s/s**	**s/s**

APPENDIX C – IMPACT ASSESSMENT METHODOLOGY

Impact Assessment as provided by Red Rocket South Africa (Pty) Ltd (South Africa)

The assessment of impacts was based on Red Rocket's professional judgement, field observations and desk-top analysis and, where conducted, specialist studies. The significance of potential risks that may result from the proposed project was determined to assist decision-makers (e.g., government authorities) but in some instances, the proponent).

SCOPING PHASE

High-Level Screening of Impacts and Mitigation

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, where the latter is based on general consideration to the intensity, extent, and duration.

Table C1: Probability Scores and Descriptions

SCORE	DESCRIPTIONS
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 C2: 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.

Table C3: Significance Screening Tool

		Consequence Scale			
		1	2	3	4
PROBABILITY SCALE	1	Very Low	Very Low	Low	Medium
	2	Very Low	Low	Medium	Medium
	3	Low	Medium	Medium	High
	4	Medium	Medium	High	High

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 has been applied according to the nature and significance of the identified impacts.

Table C4: 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

EIA PHASE 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[2], indirect[3], secondary[4] as well as cumulative[5] 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[6] presented below.

Table C5: Impact Assessment Criteria 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

[2] Impacts that arise directly from activities that form an integral part of the Project.

[3] Impacts that arise indirectly from activities not explicitly forming part of the Project.

[4] Secondary or induced impacts caused by a change in the Project environment.

[5] Impacts are those impacts arising from the combination of multiple impacts from existing projects, the Project and/or future projects.

[6] 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.

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
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
Significance (S) is determined by combining the above criteria in the following formula:	$[S = (E + D + R + M) \times P]$ $Significance = (Extent + Duration + Reversibility + Magnitude) \times Probability$				

Table C6: 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**

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 Figure C1 below.

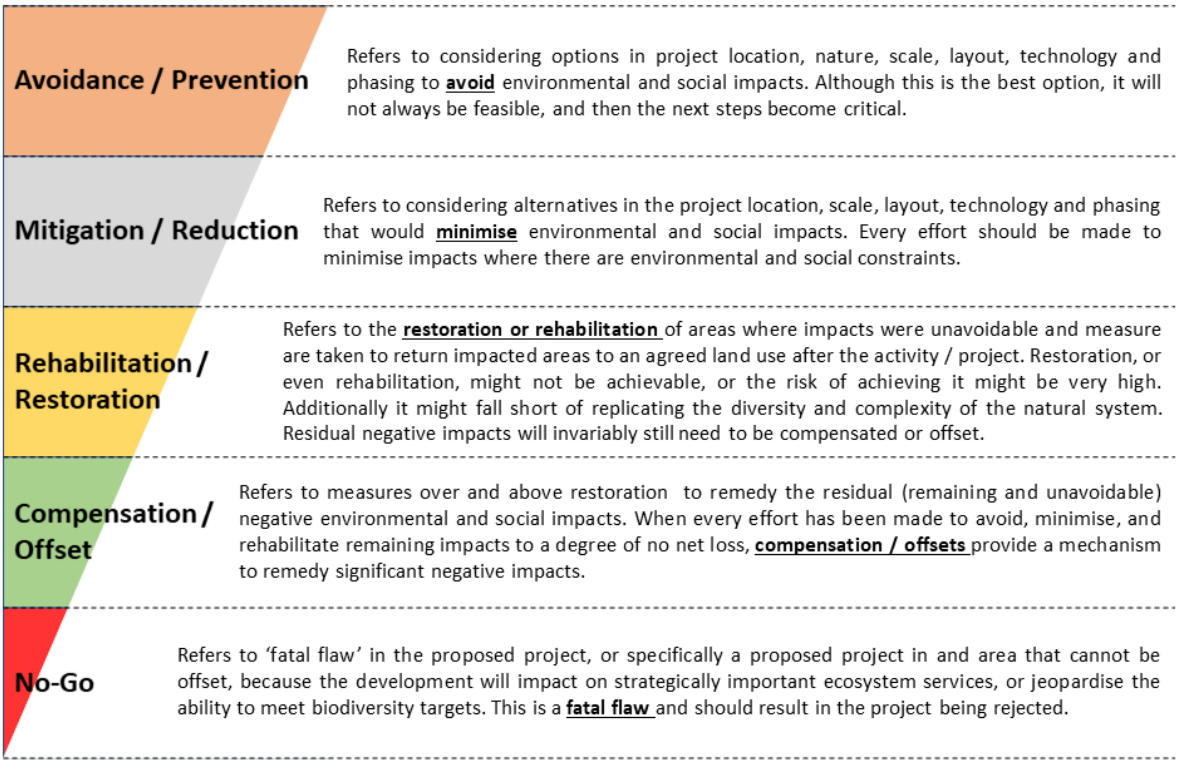

Figure C1:Mitigation Sequence/Hierarchy

APPENDIX D – VEGETATION TYPE

Table D1: Characteristics of the vegetation type associated with the Tourneé 2 Solar PV Park

<table>
<tr><th colspan="6">DESCRIPTION OF THE SOWETO HIGHVELD GRASSLAND WITHIN THE TOURNEÉ 2 SOLAR PV PARK (MUCINA & RUTHERFORD, 2006)</th></tr>
<tr><td>Distribution</td><td colspan="5">Mpumalanga, Gauteng (and to a very small extent also in neighbouring Free State and North-West) Provinces: In a broad band roughly delimited by the N17 road between Ermelo and Johannesburg in the north, Perdekop in the southeast and the Vaal River (border with the Free State) in the south. It extends further westwards along the southern edge of the Johannesburg Dome (including part of Soweto) as far as the vicinity of Randfontein. In southern Gauteng it includes the surrounds of Vanderbijlpark and Vereeniging as well as Sasolburg in the northern Free State.</td></tr>
<tr><td rowspan="3">Climate</td><td colspan="5">Summer-rainfall region (MAP 662 mm). Cool-temperate climate with thermic continentality (high extremes between maximum summer and minimum winter temperatures, frequent occurrence of frost, large thermic diurnal differences, especially in autumn and spring).</td></tr>
<tr><td>MAP (mm)</td><td>MAT (°C)</td><td>MFD (days)</td><td>MAPE (mm)</td><td>MASMS (%)</td></tr>
<tr><td>662</td><td>14.8</td><td>41</td><td>2060</td><td>75</td></tr>
<tr><td>Altitude (m)</td><td colspan="5">1 420–1 760 m</td></tr>
<tr><td>Conservation</td><td colspan="5">Endangered (EN). Target 24%. Only a handful of patches statutorily conserved (Waldrift, Krugersdorp, Leeuwkuil, Suikerbosrand, Rolfe's Pan Nature Reserves) or privately conserved (Johanna Jacobs, Tweefontein, Gert Jacobs, Nikolaas and Avalon Nature Reserves, Heidelberg Natural Heritage Site). Almost half of the area already transformed by cultivation, urban sprawl, mining and building of road infrastructure. Some areas have been flooded by dams (Grootdraai, Leeukuil, Trichardtsfontein, Vaal, Willem Brummer). Erosion is generally very low (93%).</td></tr>
<tr><td>Geology & Soils</td><td colspan="5">Shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites which feature prominently in the area. In the south, the Volksrust Formation (Karoo Supergroup) is found and in the west, the rocks of the older Transvaal, Ventersdorp and Witwatersrand Supergroups are most significant. Soils are deep, reddish on flat plains and are typically Ea, Ba and Bb land types.</td></tr>
<tr><td>Vegetation & landscape features</td><td colspan="5">Gently to moderately undulating landscape on the Highveld plateau supporting short to medium-high, dense, tufted grassland dominated almost entirely by Themeda triandra and accompanied by a variety of other grasses such as Elionurus muticus, Eragrostis racemosa, Heteropogon contortus and Tristachya leucothrix. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover.</td></tr>
</table>

Soweto Highveld Grassland (GM8)

Figure D1: Gm 8 Soweto Highveld Grassland: Typical mesic highveld grassland with *Themeda triandra* and several *Eragrostis* species still found in some parts of the southern Gauteng in natural condition (page 397 Mucina & Rutherford 2006).

Table D1: Floristic species of the Soweto Highveld Grassland (Mucina & Rutherford, 2006).

Plant Community	Species
Dominant and typical floristic species	
Woody Layer	
Low Shrubs	*Anthospermum hispidulum, A. rigidum subsp. pumilum, Berkheya annectens, Felicia muricata, Ziziphus zeyheriana.*
Forb layer	
Herbaceous climber	*Rhynchosia totta.*
Herbs	*Hermannia depressa (d), Acalypha angustata, Berkheya setifera, Dicoma anomala, Euryops gilfillanii, Geigeria aspera var. aspera, Graderia subintegra, Haplocarpha scaposa, Helichrysum miconiifolium, H. nudifolium var. nudifolium, H. rugulosum, Hibiscus pusillus, Justicia anagalloides, Lippia scaberrima, Rhynchosia effusa, Schistostephium crataegifolium, Selago densiflora, Senecio coronatus, Hilliardiella elaeagnoides, Wahlenbergia undulata.*
Geophytic Herbs	*Haemanthus humilis* subsp. *hirsutus, H. montanus.*
Graminoid layer	
Graminoids	*Andropogon appendiculatus (d), Brachiaria serrata (d), Cymbopogon pospischilii (d), Cynodon dactylon (d), Elionurus muticus (d), Eragrostis capensis (d), E. chloromelas (d), E. curvula (d), E. plana (d), E. planiculmis (d), E. racemosa (d), Heteropogon contortus (d), Hyparrhenia hirta (d), Setaria nigrirostris (d), S. sphacelata (d), Themeda triandra (d), Tristachya leucothrix (d), Andropogon schirensis, Aristida adscensionis, A. bipartita, A. congesta, A. junciformis subsp. galpinii, Cymbopogon caesius, Digitaria diagonalis, Diheteropogon amplectens, Eragrostis micrantha, E. superba, Harpochloa falx, Microchloa caffra, Paspalum dilatatum.*

APPENDIX E – VISUAL RECEPTORS

The number of observers and their perception of the proposed project will have an impact on the VIA and also on the perceived sensitivity of the landscape. The perception of viewers is difficult to determine as there are many variables to consider, such as cultural background, state of mind, the reason for the sighting and how often the project is viewed within a set period. It is therefore necessary to identify areas of high viewer incidence and to classify certain areas according to the observer's visual sensitivity towards the project. It is also necessary to generalise the viewer sensitivity to the proposed project to some degree (Oberholzer, 2005).

The IEMA (2002) identifies a number of potential sensitive receptors that may be affected by a proposed development, namely:

- Users of recreational landscapes/ public footpaths and bridleways, including tourists and visitors;
- Residents;
- Users of public sports grounds and amenity open space;
- Users of public roads and railways;
- Workers; and
- Views of or from within valued landscapes.

The sensitivity of visual receptors and views will depend on:

- The location and context of the viewpoint;
- The expectation and occupation or activity of the receptor; and
- The importance of the view.

The most sensitive receptors may include:

- Users of outdoor recreational facilities, including public rights of way, whose attention or interest may be focused on the landscape;
- Communities where the development results in changes in the landscape setting or valued views enjoyed by the community; and
- Occupiers of residential properties with views affected by the development.

Other receptors include:

- People engaged in outdoor sport or recreation (other than appreciation of the landscape, as in landscape of acknowledged importance or value);
- People travelling through or past the affected landscape in cars on trains or other transport routes;
- People at their place of work.

APPENDIX F – NIGHT TIME LIGHTING

In order to understand the potential visual impacts from night lighting, it is important to understand the existing lighting levels. The Institute of Lighting Engineers (ILP) (2011) identifies five environmental zones for exterior lighting control and with which to describe the existing lighting conditions within the landscape (Table F1). These environmental zones are supported by design guidance for the reduction of light pollution, which can then inform proposed mitigation measures and techniques. Where an area to be lit lies on the boundary of two zones the obtrusive light limitation values used should be those applicable to the most rigorous zone.

Table F1: Environmental zones for night-time lighting.

Environmental Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically Dark	National Parks, Areas of Outstanding Natural Beauty etc.
E2	Rural	Low District Brightness	Village or relatively dark outer suburban locations
E3	Suburban	Medium District Brightness	Small town centres or suburban locations
E4	Urban	High District Brightness	Town/city centres with high levels of night-time activity

Stationary lights facing upward are significant contributors to light pollution and causes sky glow and glare, while light facing in a horizontal direction can be visible for long distances, lead to light trespass (light falling outside the desired area of illumination) and be disturbing to viewers and vehicles. Sky glow refers to the night-time brightening of skies, caused by the scattering and redirecting of light in the atmosphere, by water droplets and dust in the air, back towards the ground. Such stray light mostly comes from poorly designed and improperly aimed light, and from light reflected from over-lit areas (ASSA, 2012). Lighting from vehicles within rural areas will generally be more intrusive than in urban settings and, therefore, will have a potentially greater impact due the general lack of existing ambient light within areas further away from the surface infrastructure area.

Sky glow refers to the night-time brightening of skies, caused by the scattering and redirecting of light in the atmosphere, by water droplets and dust in the air, back towards the ground. Such stray light mostly comes from poorly designed and improperly aimed light, and from light reflected from over-lit areas (ASSA, 2012). In addition, the impacts of vehicle mounted lighting sources in the area will generally be confined to the local and sub-regional setting (up to 10km) due to the effects of distance, intervening undulating topography and vegetation which restrict the potential impact on views from more distant regional points.

The ILP (2011) recommends that, in order to maintain the night-time setting, lighting within the identified zone should have minimal illumination into the sky as well as to adjacent viewpoints.

Bortle Dark Sky Scale

The Bortle Dark Sky Scale was developed by John Bortle "based on nearly 50 years of observing experience," to describe the amount of light pollution in a night sky. It was first published in a 2001 Sky & Telescope article. The reality behind the use of the scale is the enormous amount of artificial light pushed into the sky by human habitation, as documented on this map below. To facilitate learning and using the scale, Bortle's indicators of sky brightness have been adapted as a table (below), including the color codes used in available light pollution map.

For the amateur astronomer, the most robust and convenient relative measure of sky brightness is the naked eye or telescopic limiting magnitude. This is also a criterion that can be directly reported without recourse to the Bortle classification categories.

To calculate the sky darkness using these charts, simply canvas the entire area of the chart and mark as many stars as you can recognize that are near your averted vision threshold. Do not mark stars that you can identify with direct vision or that are easy with averted vision; try to select stars near your threshold. Identify in this way at least 10 faint stars. Later, tally the number of stars that fall within each magnitude bin shown in the key at bottom left, which identifies the half magnitude steps corresponding to the Bortle categories. The prevailing sky brightness is the average magnitude of the two faintest bins marked:

SB = (t1*m1 + t2*m2) / (t1+t2)

#t is a tally
*m is the fainter bracket magnitude that defines the magnitude interval bin.

For example, 7 stars of magnitude 5.0–5.49 and 9 stars of magnitude 5.5–5.99, so:

SB = (7*5.5+9*6.0)/(7+9) = (38.5+54)/16 = 5.78 = Bortle 5 (suburban)

The limit magnitude may differ from another observer's, but this difference in visual acuity will transfer to all other visual tasks. The Bortle scale inevitably combines differences in sky brightness and differences in individual detection capabilities.

Number Code	*Map Color Code*	*Label*	*Sky Mag.*	*Naked Eye Limit Mag.*	*320mm Limit Mag.*	*Triangulum Galaxy visible?*	*Andromeda Galaxy visible?*	*Central Galaxy visible?*	*Zodiacal light visible?*	*Light Pollution*	*Clouds*	*Ground Objects*
1		excellent dark sky	22.00–21.99	≥ 7.5	> 17	obvious	.	casts shadows	striking	airglow apparent	.	visible only as silhouettes
2		average dark sky	21.99–21.89	7.0–7.49	16.5	easy with direct vision	.	appears highly structured	bright, faint yellow color	airglow faint	dark everywhere	large near objects vague
3		rural sky	21.89–21.69	6.5–6.99	16.0	easy with averted vision	.	complex structure	obvious	LP on horizon	dark overhead	large distant objects vague
4		rural/suburban transition	21.69–20.49	6.0–6.49	15.5	difficult with averted vision	obvious	only large structures	halfway to zenith	low LP	lit in distance	distant large objects distinct
5		suburban	20.49–19.50	5.5–5.99	14.5–15.0	.	easy with direct vision	washed out	faint	encircling LP	brighter than sky	
6		bright suburban	19.50–18.94	5.0–5.49	14.0–14.5	.	easy with averted vision	visible only near zenith	.	LP to 35°	fairly bright	small close objects distinct
7		suburban/urban transition	18.94–18.38	4.5–4.99	14.0	.	difficult with averted vision	invisible	.	LP to zenith	brilliantly lit	.
8		city sky	< 18.38	4.0–4.49	13	.	.	.	.	bright to 35°	.	headlines legible
9		inner city sky	.	≤ 4.0		.	.	.	.	bright at zenith	.	.

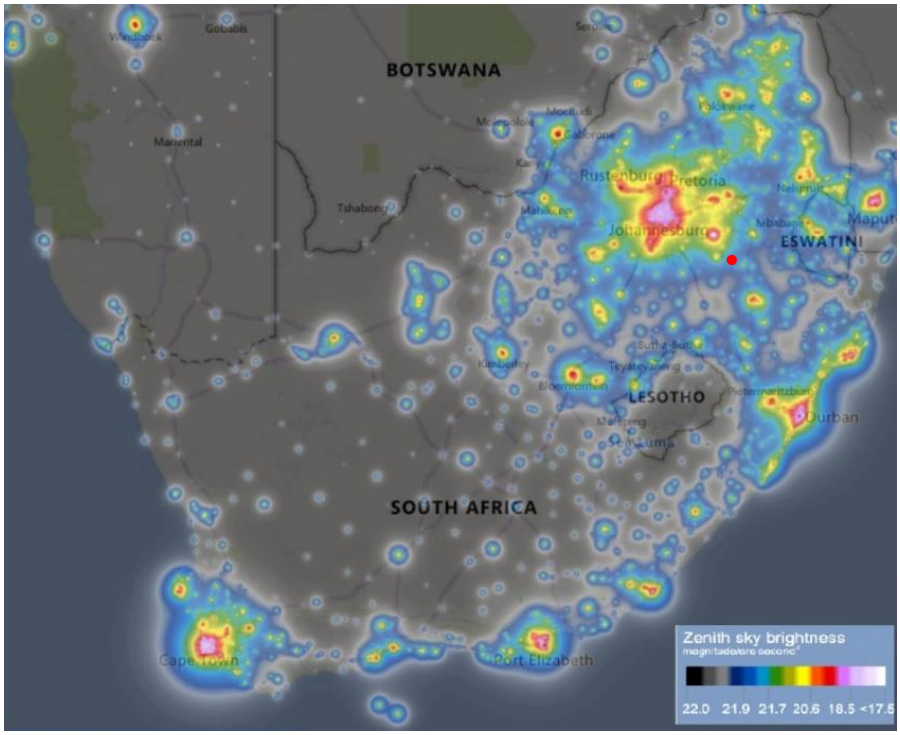

Figure F1: Light pollution map of South Africa (The World Atlas of the Artificial Night Sky Brightness). The red dot indicates where the Tourneé 2 Solar PV Park is situated.

APPENDIX G – INDEMNITY AND TERMS OF USE OF THIS REPORT

The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and SAS (Pty) Ltd and its staff reserve the right, at their sole discretion, to modify aspects of the report including the recommendations if and when new information may become available from ongoing research or further work in this field or pertaining to this investigation.

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This report must not be altered or added to or used for any other purpose other than that for which it was produced without the prior written consent of the author(s). This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

APPENDIX H – SPECIALIST INFORMATION

Details of the specialist who prepared the report

Stephen van Staden	MSc Environmental Management (University of Johannesburg)
Sanja Erwee	BSc Zoology (University of Pretoria)

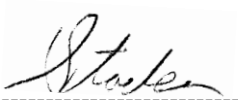
The expertise of that specialist to compile a specialist report including a curriculum vitae

Company of Specialist:	Scientific Aquatic Services		
Name / Contact person:	Stephen van Staden		
Postal address:	29 Arterial Road West, Oriel, Bedfordview		
Postal code:	2007	Cell:	082 442 7637
Telephone:	011 616 7893	Fax:	011 615 6240/ 086 724 3132
E-mail:	stephen@sasenvgroup.co.za		
Qualifications	MSc (Environmental Management) (University of Johannesburg) BSc (Hons) Zoology (Aquatic Ecology) (University of Johannesburg) BSc (Zoology, Geography and Environmental Management) (University of Johannesburg)		
Registration / Associations	Registered Professional Scientist at South African Council for Natural Scientific Professions (SACNASP) Accredited River Health practitioner by the South African River Health Program (RHP) Member of the South African Soil Surveyors Association (SASSO) Member of the Gauteng Wetland Forum		

Specialist Declaration

I, Stephen van Staden, declare that -

- I act as an **independent specialist (reviewer)** in this assessment;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant legislation and any guidelines that have relevance to the proposed activity;
- I will comply with the applicable legislation;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct.



Signature of the Specialist

I, Sanja Erwee, declare that -

- I act as an **independent specialist** in this assessment;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the relevant legislation and any guidelines that have relevance to the proposed activity;
- I will comply with the applicable legislation;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct.

Signature of the Specialist

SAS ENVIRONMENTAL GROUP OF COMPANIES –

SPECIALIST CONSULTANT INFORMATION

CURRICULUM VITAE OF STEPHEN VAN STADEN

PERSONAL DETAILS

Position in Company	Group CEO, Water Resource discipline lead, Managing member, Ecologist, Aquatic Ecologist
Joined SAS Environmental Group of Companies	2003 (year of establishment)

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Registered Professional Scientist at South African Council for Natural Scientific Professions (SACNASP)
Accredited River Health practitioner by the South African River Health Program (RHP)
Member of the South African Soil Surveyors Association (SASSO) Member of the Gauteng Wetland Forum
Member of the Gauteng Wetland Forum;
Member of International Association of Impact Assessors (IAIA) South Africa;
Member of the Land Rehabilitation Society of South Africa (LaRSSA)

EDUCATION

Qualifications

MSc Environmental Management (University of Johannesburg)	2003
BSc (Hons) Zoology (Aquatic Ecology) (University of Johannesburg)	2001
BSc (Zoology, Geography and Environmental Management) (University of Johannesburg)	2000
Tools for wetland assessment short course Rhodes University	2016
Legal liability training course (Legricon Pty Ltd)	2018
Hazard identification and risk assessment training course (Legricon Pty Ltd)	2013

Short Courses

Certificate – Department of Environmental Science in Legal context of Environmental Management, Compliance and Enforcement (UNISA)	2009
Introduction to Project Management - Online course by the University of Adelaide	2016
Integrated Water Resource Management, the National Water Act, and Water Use Authorisations, focusing on WULAs and IWWMPs	2017

AREAS OF WORK EXPERIENCE

South Africa – All Provinces
Southern Africa – Lesotho, Botswana, Mozambique, Zimbabwe Zambia
Eastern Africa – Tanzania Mauritius
West Africa – Ghana, Liberia, Angola, Guinea Bissau, Nigeria, Sierra Leona
Central Africa – Democratic Republic of the Congo

SELECTED PROJECT EXAMPLES OUT OF OVER 2000 PROJECTS WORKED ON

1 Mining: Coal, Chrome, PGM's, Mineral Sands, Gold, Phosphate, river sand, clay, fluorspar
2 Linear developments
3 Energy Transmission, telecommunication, pipelines, roads
4 Minerals beneficiation
5 Renewable energy (wind and solar)
6 Commercial development
7 Residential development
8 Agriculture
9 Industrial/chemical

KEY SPECIALIST DISCIPLINES

Biodiversity Assessments
- Floral Assessments
- Biodiversity Actions Plan (BAP)
- Biodiversity Management Plan (BMP)
- Alien and Invasive Control Plan (AICP)
- Ecological Scan
- Terrestrial Monitoring
- Protected Tree and Floral Marking and Reporting
- Biodiversity Offset Plan

Freshwater Assessments
- Desktop Freshwater Delineation
- Freshwater Verification Assessment
- Freshwater (wetland / riparian) Delineation and Assessment
- Freshwater Eco Service and Status Determination
- Rehabilitation Assessment / Planning
- Maintenance and Management Plans
- Plant species and Landscape Plan
- Freshwater Offset Plan
- Hydropedological Assessment
- Pit Closure Analysis

Aquatic Ecological Assessment and Water Quality Studies
- Habitat Assessment Indices (IHAS, HRC, IHIA & RHAM)
- Aquatic Macro-Invertebrates (SASS5 & MIRAI)
- Fish Assemblage Integrity Index (FRAI)
- Fish Health Assessments
- Riparian Vegetation Integrity (VEGRAI)
- Toxicological Analysis
- Water quality Monitoring
- Screening Test
- Riverine Rehabilitation Plans

Soil and Land Capability Assessment
- Soil and Land Capability Assessment
- Soil Monitoring
- Soil Mapping

Visual Impact Assessment
- Visual Baseline and Impact Assessments
- Visual Impact Peer Review Assessments
- View Shed Analyses
- Visual Modelling

Legislative Requirements, Processes and Assessments
- Water Use Applications (Water Use Licence Applications / General Authorisations)
- Environmental and Water Use Audits
- Freshwater Resource Management and Monitoring as part of EMPR and WUL conditions.

SAS ENVIRONMENTAL GROUP OF COMPANIES – SPECIALIST CONSULTANT INFORMATION CURRICULUM VITAE OF SANJA ERWEE

PERSONAL DETAILS

Position in Company	GIS Technician and Visual Specialist
Joined SAS Environmental Group of Companies	2014

EDUCATION

Qualifications

BSC Zoology (University of Pretoria)	2013

Short Courses

Global Mapper	2015
SANBI BGIS Course	2017
Global Mapper Lidar Course	2017
ESRI MOOC ARCGIS Cartography	2018

AREAS OF WORK EXPERIENCE

South Africa – Gauteng, Mpumalanga, North West, Limpopo, KwaZulu-Natal, Northern Cape, Western Cape Free State

KEY SPECIALIST DISCIPLINES

Freshwater Assessments

- Desktop Freshwater Delineation
- Plant species and Landscape Plan

Visual Impact Assessment

- Visual Baseline and Impact Assessments
- Visual Impact Peer Review Assessments
- View Shed Analyses
- Visual Modelling

GIS

- Mapping and GIS for various sectors and various disciplines (biodiversity, freshwater, aquatic, soil and land capability).

Scientific Aquatic Services
Applying science to the real world

29 Arterial Road West, Oriel, Bedfordview, 2007
Tel 011 616 7893
Fax 011 615-6240
admin@sasenvgroup.co.za
www.sasenvironmental.co.za

APPENDIX I – SITE VERIFICATION

VISUAL (LANDSCAPE [SOLAR]) SITE SENSITIVITY VERIFICATION REPORT FOR THE PROPSOSED TOURNEÉ SOLAR 1 PHOTOVOLTAIC (PV) FACILITY PARK, NEAR TUTUKANI, MPUMALANGA PROVINCE.

Introduction

According to the "Protocols for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes ("the Protocols") published in Government Gazette No. 43110 on 20 March 2020 and Government Gazette No. 43855 on 30 October 2020, the Environmental Assessment Practitioner (EAP) must verify the current use of the site in question and its environmental sensitivity as identified by the Screening Tool to determine the need for specialist inputs in relation to the themes included in the Protocols. The Protocols are allowed for in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"). The Protocols must be complied with for every new application for Environmental Authorisation that is submitted after 9 May 2020.

This document serves as the Visual (Landscape [Solar]) Site Sensitivity Verification Report for the proposed Tourneé 2 Solar PV Park, near Tutukani, Mpumalanga Province. The proposed Tourneé 2 Solar PV Park requires environmental authorisation in terms of the NEMA EIA Regulations (2014), as amended and a Water Use Licence (WUL).

Study Area

The Tourneé 2 Solar PV Park is located within the Lekwa Local Municipality, an administration of the Gert Sibande District Municipality. Tourneé 2 Solar PV Park is located on the remainder of portion 3 of the Farm Dwars-In-De-Weg 350 IS and on portion 9 of the Farm Dwars-In-De-Weg 350 IS. The Tourneé 2 Solar PV Park is situated within a landscape that is associated with open grassland, often utilised for grazing, cultivated fields and freshwater ecosystems.

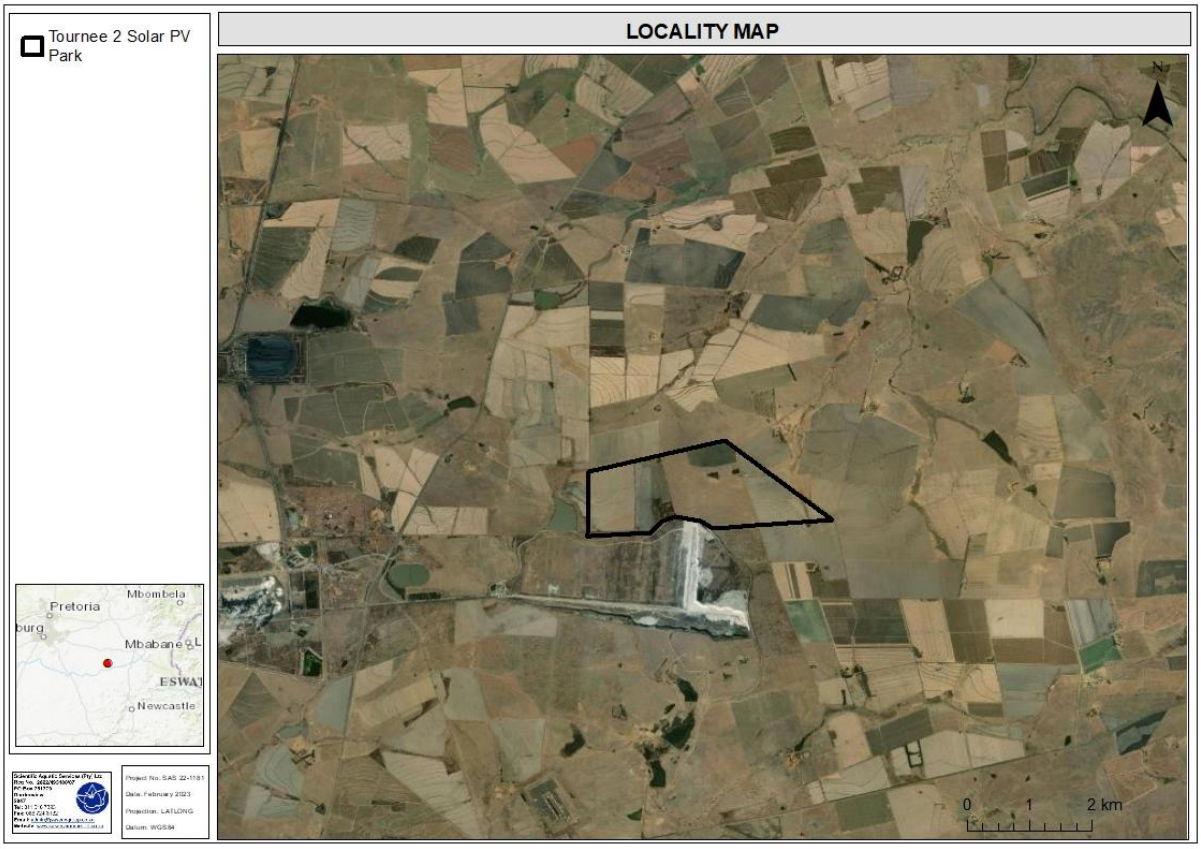


Figure N1: Digital satellite image depicting the location of the proposed Tourneé 2 Solar PV Park in relation to the surrounding area.

This Visual (Landscape [Solar]) site sensitivity verification report relates to a Screening Tool Report (STR) completed for the site in February 2023.

Site Verification Methodology

A site visit was conducted by the specialist to inform the specialist reports required for the proposed project.

Visual (Landscape) Site Verification

The table below provides information regarding the outcome of the Screening tool in terms of the landscape (Solar) theme sensitivity associated with the proposed project as well as a brief summary of the outcome of the Visual Impact Assessment report in response.

Table N1: Visual (Landscape [Solar]) Theme Sensitivity analysis for the proposed project.

Environmental Theme	Applicable Protocol	Response
Visual (Landscape [Solar]) <u>Sensitivity Rating:</u> The western and eastern portions of the Tourneé 2 Solar PV Park has a **very high sensitivity** in terms of the landscape (solar) theme	No specific protocol - consider general requirements (GG 45421 of 10/05/2019)_DRAFT)	A Visual Impact Assessment was conducted by Scientific Aquatic Services (SAS, 2023). During the site visit it was determined that the landscape associated with the Tourneé 2 Solar PV Park is similar to its surroundings and the larger

Environmental Theme	Applicable Protocol	Response
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. Requirement: Visual Impact Assessment Ground-truthed Sensitivity: The very high sensitivity was not supported for Tourneé 2 Solar PV Park as no mountain tops or high ridges are present in the site.		region. No prominent outcrops or ridges were associated with the Tourneé 2 Solar PV Park and it was dominated by grazing and crop cultivation practices. The EIA report will provide a detailed description of the quality of the landscape prior to development taking place. The scoping report guided the proposed project footprint to avoid potential sensitive receptors and the visual impact they may experience. Once a layout is finalised the possible visual impacts after development associated with the proposed project will be defined and suitable mitigation measures to best minimise the potential visual impact on the receiving environment will be provided.