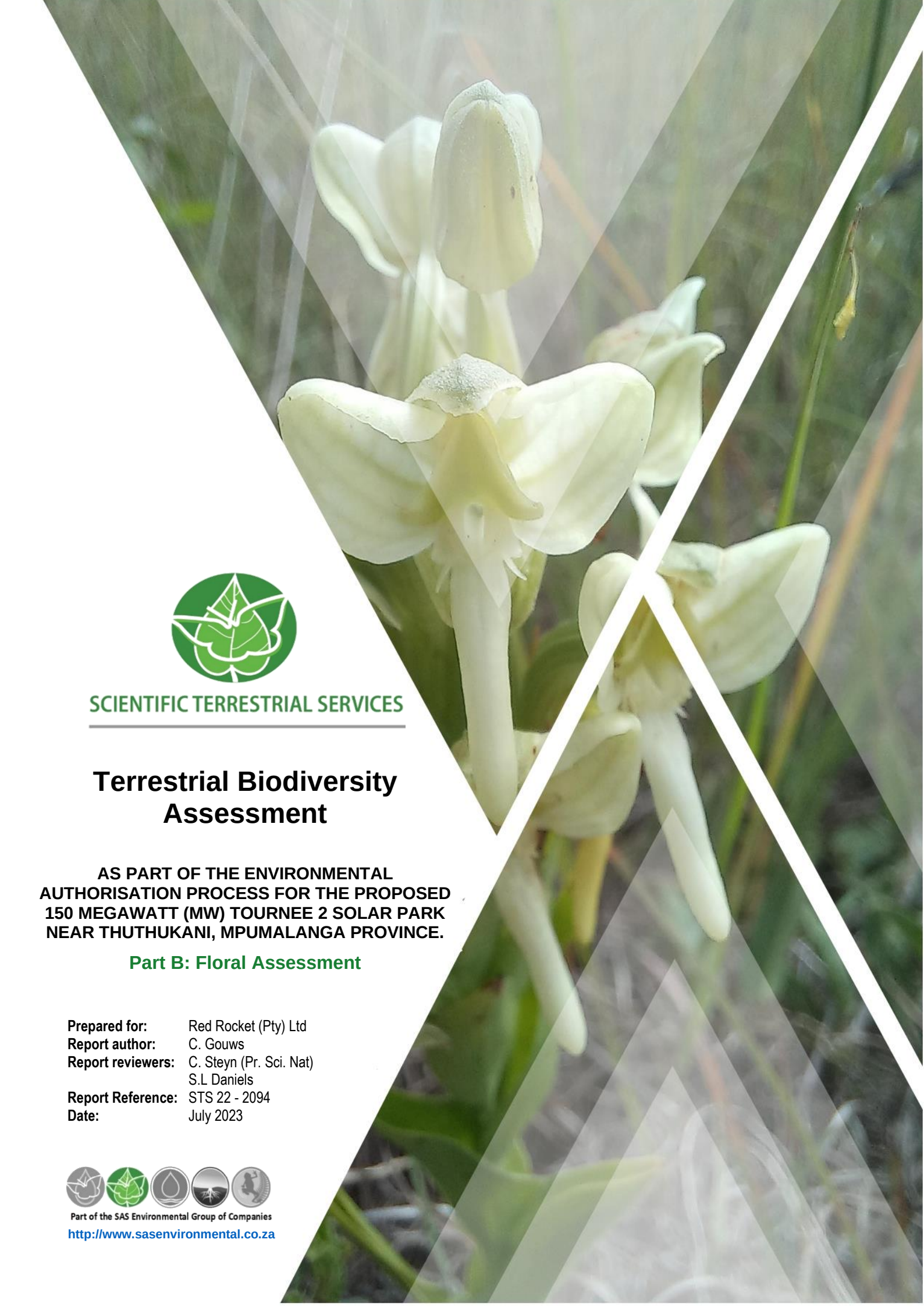
Appendix H.14

FLORAL IMPACT ASSESSMENT



SCIENTIFIC TERRESTRIAL SERVICES

Terrestrial Biodiversity Assessment

AS PART OF THE ENVIRONMENTAL AUTHORISATION PROCESS FOR THE PROPOSED 150 MEGAWATT (MW) TOURNEE 2 SOLAR PARK NEAR THUTHUKANI, MPUMALANGA PROVINCE.

Part B: Floral Assessment

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Part of the SAS Environmental Group of Companies

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DOCUMENT GUIDES

The table below provides a guide to the reporting of biodiversity impacts as they relate to Government Notice No. 320 Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on **Terrestrial Plant Species** as published in Government Gazette No 43855 dated 30 October 2020.

Theme-Specific Requirements as per Government Notice No. 320		
No.	**Specialist Assessment and Minimum Report Content Requirements**	**Section in report/Notes**
1.	**General Information**	
1.1	An applicant intending to undertake an activity identified in the scope of this protocol, on a site identified by the screening tool as being of "very high" or "high" sensitivity for terrestrial plant species, must submit a **Terrestrial Plant Species Specialist Assessment Report.**	**Not applicable. A medium sensitivity was verified for the Tournée 2 Solar Photovoltaic (PV) Park.**
1.2	An applicant intending to undertake an activity identified in the scope of this protocol, on a site identified by the screening tool as being of "medium sensitivity" for terrestrial plant species, must submit either a **Terrestrial Plant Species Specialist Assessment Report** or a **Terrestrial Plant Species Compliance Statement**, depending on the outcome of a site inspection undertaken in accordance with paragraph 4.	**A medium sensitivity was verified for the Tournée 2 Solar Photovoltaic (PV) Park and a Terrestrial Plant Species Specialist Assessment Report recommended.**
1.3	An applicant intending to undertake an activity identified in the scope of this protocol, on a site identified by the screening tool as being of "low" sensitivity for terrestrial plant species, must submit a **Terrestrial Plant Species Compliance Statement**.	**Not applicable. A medium sensitivity was verified for the Tournée 2 Solar PV Park.**
1.4	Where the information gathered from the site sensitivity verification differs from the screening tool designation of "very high" or "high" for terrestrial plant species sensitivity on the screening tool, and it is found to be of a "low" sensitivity, then a **Terrestrial Plant Species Compliance Statement** must be submitted	**Not applicable. A medium sensitivity was verified for the Tournée 2 Solar PV Park.**
1.5	Where the information gathered from the site sensitivity verification differs from the screening tool designation of "low" terrestrial plant species sensitivity and it is found to be of a "very high" or "high" terrestrial plant species sensitivity, a **Terrestrial Plant Species Specialist Assessment** must be conducted.	**A medium sensitivity was verified for the Tournée 2 Solar PV Park and a Terrestrial Plant Species Specialist Assessment Report recommended.**
1.6	If any part of the development falls within an area of confirmed "very high" or "high" sensitivity, the assessment and reporting requirements prescribed for the "very high" or "high" sensitivity, apply to the entire development footprint. Development footprint in the context of this protocol, means the area on which the proposed development will take place and includes the area that will be disturbed or impacted.	**Not applicable. A medium sensitivity was verified for the Tournée 2 Solar PV Park.**
1.7	The **Terrestrial Plant Species Specialist Assessment** and the **Terrestrial Plant Species Compliance Statement** must be undertaken within the *study area*.	**Part A:** Section 1 **Part B:** Section 1
1.8	Where the nature of the activity is not expected to have an impact on species of conservation concern (SCC) beyond the boundary of the preferred site, the study area means the proposed development footprint within the preferred site	**The larger property area was assessed to guide placement of the proposed activities.**
1.9	Where the nature of the activity is expected to have an impact on SCC beyond boundary of the preferred site, the project areas of influence (PAOI) must be determined by the specialist in accordance with Species Environmental Assessment Guideline[1], and the study area must include the PAOI, as determined.	**The larger property area was assessed to guide placement of the proposed activities.**
Theme-Specific Requirements as per Government Notice No. 320 Plant Species Theme – Medium Sensitivity Rating as per Screening Tool Output		
4	**Medium Sensitivity Species of Conservation Concern Confirmation**	

[1] Available at https://bgis.sanbi.org/

4.1	The presence or likely presence of the Species of Conservation Concern identified by the screening tool, must be confirmed through a site inspection by a specialist registered with the South African Council for Natural Scientific Professions in a field of practice relevant to the taxonomic group ("taxa") for which the assessment is being undertaken.	**Part A – C:** Cover Page **Part A:** Appendix E
4.2	The assessment must be undertaken within the study area.	**Part A**: Section 1 **Part B:** Section 1
4.3	The site inspection to determine the presence or likely presence of Species of Conservation Concern must be undertaken in accordance with the Species Environmental Assessment Guideline.	**Part B**: Section 2 and 3 **Part B**: Appendix A and C
4.4	The site inspection is to confirm the presence, likely presence or confirmed absence of a Species of Conservation Concern within the site identified as "medium" sensitivity by the screening tool.	**Part B**: Section 3 **Part B**: Appendix B & C
4.5	Where Species of Conservation Concern are found on site or have been confirmed to be likely present, a Terrestrial Plant Species Specialist Assessment must be submitted in accordance with the requirements specified for "very high" and "high" sensitivity in this protocol.	**Part B**: Section 3 **Part B**: Appendix B & C **Terrestrial Plant Species Specialist Assessment Recommended; however, no threatened species found within the Tournée 2 Solar PV Park and hence the Assessment is submitted in accordance with the requirements specified for the "medium" sensitivity protocol.**
4.6	Similarly, where no Species of Conservation Concern are found on site during the investigation or if the presence is confirmed to be unlikely, a Terrestrial Plant Species Compliance Statement must be submitted.	**Part B**: Appendix C **Compliance Statement not recommended. Medium sensitivity verified for the Tournée 2 Solar PV Park.**

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LIST OF ACRONYMS

AIP	Alien and Invasive Plant
ARC	Agricultural Research Council
BESS	Battery energy storage systems
BGIS	Biodiversity Geographic Information Systems
BODATSA	Botanical Database of Southern Africa
CBA	Critical Biodiversity Area
CR	Critically Endangered
CVB	Channel Valley Bottom
DFFE	Department of Forestry, Fisheries, and the Environment
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
E-GIS	Environmental Geographical Information Systems
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMPr	Environmental Management Programme
EN	Endangered
ESA	Ecological Support Area
ESMS	Environmental and Social Management System
EW	Extinct in the Wild
FMP	Fire Management Plan
GIS	Geographic Information System
GN	Government Notice
GNs	Guidance Notes
GPS	Global Positioning System
Ha	Hectares
IEM	Integrated Environmental Management
IFC	International Finance Corporation
IPP	Independent Power Producer
IUCN	International Union for Conservation of Nature
km	Kilometres
LC	Least Concern
MTPA	Mpumalanga Tourism and Parks Agency
MW	Megawatts
MWh	Megawatt-hours
NBA	National Biodiversity Assessment (2018) : The status of South Africa's ecosystems and biodiversity. Synthesis Report. South African National Biodiversity Institute, an entity of the Department of Environment, Forestry and Fisheries.
NEMA	National Environmental Management Act, 1998 [Act No. 107 of 1998]
NEMBA	National Environmental Management: Biodiversity Act, 2004 [Act No.10 of 2004]
NFA	National Forest Act, 1998 [Act No. 84 of 1998]
NP	Not Protected
NPAES	National Protected Areas Expansion Strategy
NT	Near Threatened
NWA	National Water Act, 1998 [Act No. 36 of 1998]
PES	Present Ecological State
POC	Probability of Occurrence
PV	Photovoltaic
PVSEF	Photovoltaic Solar Energy Facilities
QDS	Quarter Degree Square

RDL	Red Data Listed
SACNASP	South African Council for Natural Scientific Professions
SANBI	South African National Biodiversity Institute
SAS	Scientific Aquatic Services
SCC	Species of Conservation Concern
STS	Scientific Terrestrial Services [Pty] Ltd
TOPS	Threatened or Protected Species
VU	Vulnerable

GLOSSARY OF TERMS

Most definitions are based on terms and concepts elaborated by Richardson *et* al. (2011), Hui and Richardson (2017), Wilson *et* al. (2017), Skowno et al. (2019), and SANBI (2016), with consideration to their applicability in the South African context, especially South African legislation [notably the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), and the associated Alien and Invasive Species Regulations, 2020].

Alien species (syn. exotic species; non-native species)	A species that is present in a region outside its natural range due to human actions (intentional or accidental) that have enabled it to overcome biogeographic barriers.
Baseline (IEM Series)	Conditions that currently exist. Also called "existing conditions".
Baseline information (IEM Series)	Information derived from data that: - records the existing elements and trends in the environment; and - records the characteristics of a given project proposal.
Biological diversity or Biodiversity (as per the definition in NEMBA)	The variability among living organisms from all sources including, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part and includes diversity within species, between species, and of ecosystems.
Biodiversity priority areas	Features in the landscape or seascape that are important for conserving a representative sample of ecosystems and species, for maintaining ecological processes, or for the provision of ecosystem services. They include the following categories, most of which are identified based on systematic biodiversity planning principles and methods: Protected Areas, Critically Endangered and Endangered ecosystems, Critical Biodiversity Areas and Ecological Support Areas, Freshwater Ecosystem Priority Areas, high water yield areas, flagship free-flowing rivers, priority estuaries, Priority Areas for land-based protected area expansion, and study areas for offshore protection. Marine ecosystem priority areas and coastal ecosystem priority areas have yet to be identified but will be included in future. The different categories *are not mutually exclusive* and, in some cases, overlap, often because a particular area or site is important for more than one reason. They should be *complementary*, with overlaps *reinforcing the importance* of an area.
Biome - as per Mucina and Rutherford (2006)	A broad ecological spatial unit representing major life zones of large natural areas – defined mainly by vegetation structure, climate, and major large-scale disturbance factors (such as fires).
Bioregion (as per the definition in NEMBA)	A geographic region which has in terms of section 40(1) been determined as a bioregion for the purposes of this Act.
Community Characterisation	Comparisons can be made among communities using attributes such as species richness, species diversity, and evenness. - **Species richness** is simply the number of species in a community.

	- **Species diversity** is more complex and includes a measure of the number of species in a community, and a measure of the abundance of each species. - **Species evenness** is a description of the distribution of abundance across the species in a community. Species evenness is highest when all species in a sample have the same abundance. Evenness approaches zero as relative abundances vary. Source: https://tinyurl.com/2p9yr3j8
Corridor	A dispersal route or a physical connection of suitable habitats linking previously unconnected regions.
Critical Biodiversity Area (CBA)	A CBA is an area considered important for the survival of threatened species and includes valuable ecosystems such as wetlands, untransformed vegetation, and ridges.
Critically Endangered (CR) (IUCN[2] Red List category)	**Applied to both species/taxa and ecosystems**: A species is CR when the best available evidence indicates that it meets at least one of the five IUCN criteria for CR, indicating that the species is facing an extremely high risk of extinction. CR ecosystem types are at an extremely high risk of collapse. Most of the ecosystem type has been severely or moderately modified from its natural state. The ecosystem type is likely to have lost much of its natural structure and functioning, and species associated with the ecosystem may have been lost. CR species are those considered to be at extremely high risk of extinction.
Development footprint (as per the NEMA definition)	"in respect of land, means any evidence of its physical transformation as a result of the undertaking of any activity"
Degradation	The many human-caused processes that drive the decline or loss in biodiversity, ecosystem functions or ecosystem services in any terrestrial and associated aquatic ecosystems.
Disturbance	A temporal change, either regular or irregular (uncertain), in the environmental conditions that can trigger population fluctuations and secondary succession. Disturbance is an important driver of biological invasions.
Driver (ecological)	A driver is any natural or human-induced factor that directly or indirectly causes a change in ecosystem. A direct driver clearly influences ecosystem processes, where indirect driver influences ecosystem processes through altering one or more direct drivers.
Ecological Condition	"ecological condition" means the extent to which the composition, structure and function of an area or biodiversity feature has been modified from a reference condition of "natural". Various terminology can be used for precision of language: - Fair ecological condition: Areas that are moderately modified, semi-natural. An ecological condition class in which ecological function is maintained even though composition and structure have been compromised. Can apply to a site or an ecosystem. - Good ecological condition: Areas that are natural or near-natural. An ecological condition class in which composition, structure and function are still intact or largely intact. Can apply to a site or an ecosystem. - Poor ecological condition: Areas that are severely or irreversibly modified. An ecological condition class in which ecological function has been compromised in addition to structure and composition. Can apply to a site or an ecosystem.
Ecological processes	The functions and processes that operate to maintain and generate biodiversity. To include ecological processes in a biodiversity plan, their spatial components need to be identified and mapped.

[2] International Union for Conservation of Nature (IUCN)

Ecological Support Area (ESA)	An ESA provides connectivity and important ecological processes between CBAs and is therefore important in terms of habitat conservation.
Endangered (EN) (IUCN Red List category)	**Applied to both species/taxa and ecosystems**: A species is EN when the best available evidence indicates that it meets at least one of the five IUCN criteria for EN, indicating that the species is facing a very high risk of extinction. EN ecosystem types are at a very high risk of collapse. EN species are those considered to be at very high risk of extinction.
Endemic species	Species that are only found within a pre-defined area. There can therefore be sub-continental (e.g., southern Africa), national (South Africa), provincial, regional, or even within a particular mountain range.
Ground-truth	Ground truth is a term used in various fields to refer to information provided by direct observation (i.e., empirical evidence) as opposed to information provided by inference.
Habitat **(As per the definition in NEMBA)**	A place where a species or ecological community naturally occurs.
Habitat loss	Conversion of natural habitat in an ecosystem to a land use or land cover class that results in irreversible change in the composition, structure and functional characteristics of the ecosystem concerned.
Impact **(IEM Series, draft Offset policy, and NEMA)**	The positive or negative effects on human well-being and/or on the environment. Impact-related terminology: - Cumulative impact: Past, current and reasonably foreseeable future impacts of an activity, considered together with the impact of the proposed activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities. - Impact Significant/significance: Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e., intensity, duration, and likelihood). Impact significance is the value placed on the change by different affected parties (i.e., level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgements and science-based criteria (i.e., biophysical, social and economic). Such judgement reflects the political reality of impact assessment in which significance is translated into public acceptability of impacts. - Residual negative impacts: Negative impacts that remain after the proponent has made all reasonable and practicable changes to the location, siting, scale, layout, technology and design of the proposed development, in consultation with the environmental assessment practitioner and specialists (including a biodiversity specialist), in order to avoid and minimise negative impacts, and/or rehabilitate and/or restore impacted areas within 30 years (*It is acknowledged that the time it takes for full restoration differs from ecosystem type to ecosystem type, as well as the local conditions. Given that there is no readily accessible information on the recovery times of the different ecosystem types in South Africa, a general timeframe had to be used. The 30-year general timeframe in the definition of "residual impact" reflects that the difficulty in restoring South African ecosystems once they have been disturbed. It is based on the risk-averse and cautious approach.*). - Significant impact: An impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds, or targets.
Indigenous vegetation **(As per the definition in NEMA)**	Vegetation occurring naturally within a defined area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

Integrity (ecological)	The integrity of an ecosystem refers to its functional completeness, including its components (species) its patterns (distribution) and its processes.
Invasive species	Alien species that sustain self-replacing populations over several life cycles, produce reproductive offspring, often in very large numbers at considerable distances from the parent and/or site of introduction, and have the potential to spread over long distances.
Listed invasive species	All alien species that are regulated in South Africa under the NEMBA, Alien and Invasive Species Regulations, 2020.
Least Threatened	Least threatened ecosystems are still largely intact.
Native species (syn. indigenous species)	Species that are found within their natural range where they have evolved without human intervention (intentional or accidental). Also includes species that have expanded their range as a result of human modification of the environment that does not directly impact dispersal (e.g., species are still native if they increase their range as a result of watered gardens but are alien if they increase their range as a result of spread along human-created corridors linking previously separate biogeographic regions).
Near Threatened (according to IUCN)	Close to being at high risk of extinction in the near future.
Protected	Species of high conservation value or national importance that require protection, according to TOPS 2007 and NEMBA.
Red Data Listed (RDL) species	According to the Red List of South African plants (http://redlist.sanbi.org/) and the International Union for Conservation of Nature (IUCN), organisms that fall into the Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU) categories of ecological status.
Species of Conservation Concern (SCC)	The term SCC in the context of this report refers to all RDL and IUCN listed threatened species as well as provincially and nationally protected species of relevance to the project.
Threatened ecosystem	An ecosystem that has been classified as CR, EN or VU, based on an analysis of ecosystem threat status. A threatened ecosystem has lost or is losing vital aspects of its structure, function, or composition. The NEMBA allows the Minister of Environmental Affairs or a provincial MEC for Environmental Affairs to publish a list of threatened ecosystems. To date, threatened ecosystems have been listed only in the terrestrial environment. In cases where no list has yet been published by the Minister, such as for all aquatic ecosystems, the ecosystem threat status assessment in the National Biodiversity Assessment (NBA) can be used as an interim list in planning and decision making.
Threatened species	A species that has been classified as CR, EN or VU, based on a conservation assessment (Red List), using a standard set of criteria developed by the IUCN for determining the likelihood of a species becoming extinct. A threatened species faces a high risk of extinction in the near future.
Vulnerable (VU) (Red List category)	**Applied to both species/taxa and ecosystems**: A species is VU when the best available evidence indicates that it meets at least one of the five IUCN criteria for VU, indicating that the species is facing a high risk of extinction. An ecosystem type is VU when the best available evidence indicates that it meets any of the criteria A to E for VU and is then considered to be at a high risk of collapse.

1 INTRODUCTION

Scientific Terrestrial Services (Pty) Ltd. (STS) was appointed to conduct a terrestrial biodiversity assessment as part of the environmental authorisation application process for the proposed 150-Megawatt (MW) Tournée 2 Solar Photovoltaic (PV) Park near Thuthukani, Mpumalanga Province.

The purpose of this report is to define the floral ecology of the study area, to identify areas of increased Ecological Importance and Sensitivity (EIS), as well as the mapping of such areas, and to describe the Present Ecological State (PES) of the study area. The primary objective of the floral assessment is not to compile an exhaustive species list but rather to ensure that sufficient data are collected to describe all the vegetation communities present in the area of interest, to optimise the detection of species of conservation concern (SCC) and to assess habitat suitability for other potentially occurring SCC (SANBI, 2020).

The site verification and field assessments verified the medium plant species theme sensitivity for the Tournée 2 Solar PV Park the Terrestrial Plant Species Specialist Assessment Report follows the requirements specified for the “medium” sensitivity protocol (refer to the Document Guide of this report).

1.1 Background Information and Project description

Tournée 2 Solar PV Park is on the remaining portion of Portion 3 of the farm DWARS-IN-DE-WEG 350 (344.1 hectares (ha) in extent), and Portion 6 of the farm DWARS-IN-DE-WEG 350 (161.1 ha in extent). The Tournée 2 Solar PV Park is surrounded by various major roadways including the R39, which is located approximately 5 kilometres (km) south of the proposed Tournée 2 Solar PV Park and the R38 located 1.5 km West of the proposed Tournée 2 Solar PV Park. The closest town, Thuthukani, occurring within the Lekwa Local Municipality and Gert Sibande District Municipality, approximately 10.5 km west of the proposed Tournée 2 Solar PV Park area. The proposed Tournée 2 Solar PV Park is located adjacent to the Tutuka Power Station Ashing facility (Part A; Figure 1). The development footprint, and all the accompanying infrastructure associated with the proposed PV park, will henceforth be referred to as the " **Tournée 2 Solar PV Park” (Figure 1).**

The proposed Tournée 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 Tournée 2 Solar PV Park will also include an on-site Independent Power Producer (IPP), which includes

a back-to-back substation. The BESS's main components include the batteries installed in rows of containers, the power conversion system (inverters) and transformers.

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.

1.2 Scope of Work

Specific outcomes in terms of the report are as follows:

- To determine and describe habitat types, communities and the ecological state of the sites associated with the Tournée 2 Solar PV Park area and to rank each habitat type based on conservation importance and ecological sensitivity;
- To provide inventories of floral species as encountered within the Tournée 2 Solar PV Park area;
- To identify and consider all sensitive landscapes such as indigenous forests, rocky ridges, wetlands and/ or any other special features such as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs);
- To conduct a Red Data Listed (RDL) floral species assessment as well as an assessment of SCC, including the potential for such species to occur within the Tournée 2 Solar PV Park area;
- To provide detailed information to guide the activities associated with the proposed development within the Tournée 2 Solar PV Park area; and
- To ensure the ongoing functioning of the ecosystem in such a way as to support local and regional conservation requirements, to allow regional and national biodiversity targets to be met, and the provision of ecological services in the local area is sustained.

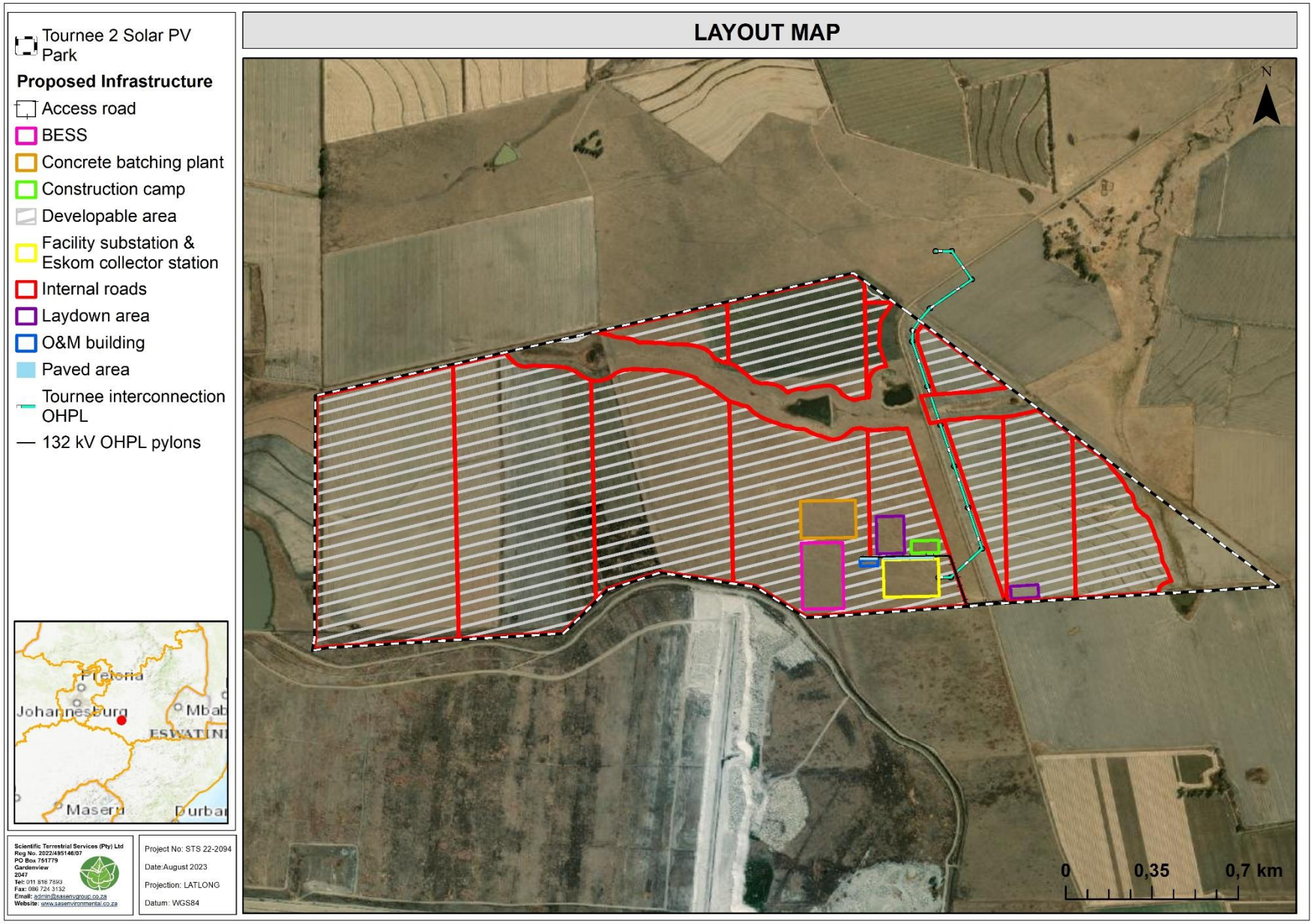


Figure 1: The proposed layout of the Tournée 2 Solar PV Park, overlaid on digital satellite imagery.

1.3 Assumptions and Limitations

The following assumptions and limitations are applicable to this report:

- The floral assessment is confined to the proposed Tournée 2 Solar PV Park and does not include the neighbouring and adjacent properties. The immediate surroundings were, however, included in the desktop analysis of which the results are presented in **Part A: Section 3**;
- Sampling by its nature means that not all individuals are assessed and identified. With ecology being dynamic and complex, some aspects (some of which may be important) may have been overlooked. A field assessment was undertaken from the 6th to 9th February 2023 (summer). According to the Species Environmental Assessment Guidelines (SANBI, 2020) summer assessments (December to February) are ideal for Grassland Biomes (i.e., Soweto Highveld Grasslands). The Mpumalanga Tourism and Parks Agency (MTPA) provides minimum requirements for the environmental studies where floristic (plant) surveys are suggested to be conducted during the growing season of all species that may potentially occur with two (2) visits undertaken (November & February, in particularly sensitive habitat). However, on-site data was also augmented with all available desktop data, together with project experience in the area to improve on the overall understanding of the assessment area's floral ecology. Additional floral assessments could be conducted, e.g., in November, to potentially account for different species flowering times; however, the findings of this assessment are considered an accurate reflection of the floral ecological characteristics associated with Tournée 2 Solar PV Park for the purposes of an informed decision-making processes;
- The Department of Forestry, Fisheries, and the Environment's (DFFE) Screening Tool (hereafter "Screening Tool") provides names of Sensitive Species likely to be present within Tournée 2 Solar PV Park and its surrounds. Within the Screening Tool outcome, the names of some species are not provided. These species are rather assigned a number keeping them unidentifiable (e.g., Sensitive Species 1). This procedure is followed because of the vulnerability of the species to threats such as illegal harvesting and overexploitation. According to the best practice guidelines provided by the South African National Biodiversity Institute (SANBI), the identity of Sensitive Species may not appear in the final Environmental Impact Assessment (EIA) report nor any of the specialist reports released into the public domain. However, the conservation threat status of such species has been provided; and

- The Decommissioning process and intended end-goal (of the rehabilitation) was not provided at the time of assessment. As such, it will be recommended that the post-closure landscape should attempt to reinstate, as far as is feasible, a wilderness landscape resembling the surrounding areas and comprising native vegetation from the reference states. The impact assessment will be undertaken with this assumption and when a post-closure goal is established and, if it differs from what is recommended in this report, the impact assessment will have to be updated accordingly.

2 ASSESSMENT APPROACH

An on-site visual investigation of the assessment areas was conducted during summer (6th and 9th of February) to confirm and ground-truth the assumptions made during the consultation of the background maps and to determine whether the sensitivity of the terrestrial biodiversity associated with the assessment areas confirms the results of the Screening Tool.

2.1 General Approach

The vegetation surveys are based on the subjective sampling method which is a technique where the specialist chooses specific sample sites within the area of interest, based on their professional experience in the area and background research done prior to the site visit. This allows representative recordings of floral communities and optimal detection of SCC (refer to the methodology description in **Appendix A**).

The below list includes the steps followed during the preparation for, and the conduction of, the field assessments:

- To guide the selection of appropriate sample sites, background data and digital satellite images were consulted before going to site, during which broad habitats, vegetation types and potentially sensitive sites were identified. The results of these analyses were then used to focus the fieldwork on specific areas of concern and to identify areas where targeted investigations were required (e.g., for SCC detection and within the direct footprint of the proposed mining project);
- All relevant resources and datasets as presented by the SANBI's Biodiversity Geographic Information Systems (BGIS) website (http://bgis.sanbi.org) and the Environmental Geographical Information Systems (E-GIS) website (https://egis.environment.gov.za/), including the Mpumalanga Biodiversity Sector Plan (MBSP) (2022) and the Screening Tool (2023), were consulted to gain background

information on the physical habitat and potential floral diversity associated with the assessment areas;

- Based on the broad habitat units delineated before going to site and the pre-identified points of interest, which is updated based on on-site observations and access constraints, the selected sample areas were surveyed on foot, following subjective transects, to identify the occurrence of the dominant plant species and habitat diversities, but also to detect SCC which tend to be sparsely distributed. The SCC assessment included the below aspects:
    - **Threatened species**. In terms of Section 56(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA), threatened species are RDL species falling into the following categories of ecological status: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Protected in terms of the NEMBA Threatened or Protected Species (TOPS) Regulations (Government Notice (GN) R152 of 2007, as amended). Removal, translocation and/or destruction of these species require authorisation from the DFFE; and
    - **Protected Species**. Species that do not necessarily fall in the above categories of ecological status, but that are deemed important from a provincial biodiversity perspective including provincially protected floral species as per the Mpumalanga Nature Conservation Act, 1998 (Act No. 10 of 1998; MNCA). Activities are restricted for these species and may not occur without permits from the relevant provincial authorities. Protected species include the List of Protected Tree Species (GN No. 536) as published in the Government Gazette 41887 dated 7 September 2018 as it relates to the National Forest Act, 1998 (Act No. 10 of 1998) (NFA) was also considered for the SCC assessment; and
- Photographs were taken of each vegetation community that is representative of typical vegetation structure of that community, as well as photographs of all detected SCC (except for sensitive species as identified by the DFFE's Screening Tool[3]).

Additional information on the method of assessment is provided in **Appendix A** of this report.

2.2 Definitions, descriptions, and taxon nomenclature

Scientific nomenclature for plant species in this report follows that of the SANBI's Red List of South African Plants Online, as it relates to the Botanical Database of Southern Africa

[3] The identity of sensitive species **may not appear** in the final EIA report **nor any of the specialist reports** released into the public domain.

(BODATSA) and BRAHMS Online. For alien species, the definitions of Richardson et al. (2011) are used. Vegetation structure is described as per Edwards (1983) (refer to Figure A1).

2.3 Sensitivity Mapping

All the ecological features of the assessment areas were considered, and sensitive areas were delineated with the use of a Global Positioning System (GPS). A Geographic Information System (GIS) was used to project these features onto satellite imagery. The sensitivity map should assist the Environmental Assessment Practitioner (EAP) / proponent as to the suitability of the proposed development within the assessment areas.

3 RESULTS OF FLORAL ASSESSMENT

The results of the floral assessment are presented in the below sections.

3.1 Broad-scale vegetation characteristics

The Tournée 2 Solar PV Park occurs within the remaining extent of the Soweto Highveld Grassland vegetation type. Based on spatial data from the National Biodiversity Assessment (NBA; 2018), this vegetation type is considered to be of VU in terms of threat status and is currently Not Protected (NP). This vegetation type was used as the reference state against which the ground-truthed vegetation communities were compared (descriptions as per Mucina and Rutherford (2006) are provided in Part A: Section 3).

The Soweto Highveld Grassland is described as: "…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 racemose, 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" by Mucina and Rutherford (2006).

3.2 Ground-truthed vegetation characteristics

Based on the results of the field investigations conducted between the 6th and 9th of February 2023, three habitat units were identified within the Tournée 2 Solar PV Park, namely:

- **Grassland Habitat (114,22 ha)**: The Grassland Habitat is located in the middle of the Tournée 2 Solar PV Park area, between the Transformed Habitat (i.e., cultivated

areas) and the Freshwater Ecosystems. The dominant land-use associated with these remaining sections of Grassland Habitat is grazing by livestock such as cattle;

- **Freshwater Ecosystem (13,48 ha):** Two freshwater features (i.e., Channel Valley Bottom [CVB] Wetlands) are located within the Tournée 2 Solar PV Park. The larger of the two CVB Wetlands is located in the north whereas the smaller CVB Wetland is located within the eastern portion of the Tournée 2 Solar PV Park. The Freshwater Ecosystems meets the definition of a watercourse in terms of the description provided within the National Water Act, 1998 (Act No. 36 of 1998) (NWA)[4] and have been delineated by a qualified freshwater ecologist (SAS 22- 1193, 2023); and
- **Transformed Habitat (202,5 ha):** The majority of the Tournée 2 Solar PV Park is comprised of Transformed Habitat. The Transformed Habitat is associated with *Zea mays* (i.e., maize) and *Glycine max* (i.e., soybean) plantations. These areas have been significantly transformed and are no longer considered to be indigenous vegetation[5] (as per National Environmental Management Act 107 of 1998 (NEMA) definition).

For a breakdown of the floral communities, habitat characteristics and conservation sensitivities associated with the above-mentioned habitat units, please refer to Section 3.2.1 – 3.2.4. Figures 2 and 3 below depict the full extent of the habitat units and proposed layout associated with the Tournée 2 Solar PV Park.

[4] The Freshwater Habitat meets the definition of a watercourse in terms of the definition contained within the National Water Act, 1998 (Act No. 36 of 1998) (NWA):

A river or spring;
A natural channel which water flows regularly or intermittently;
A wetland, dam or lake into which, or from which, water flows; and
Any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse;

and a reference to a watercourse includes, where relevant, its bed and banks.

[5] Vegetation occurring naturally within a defined area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

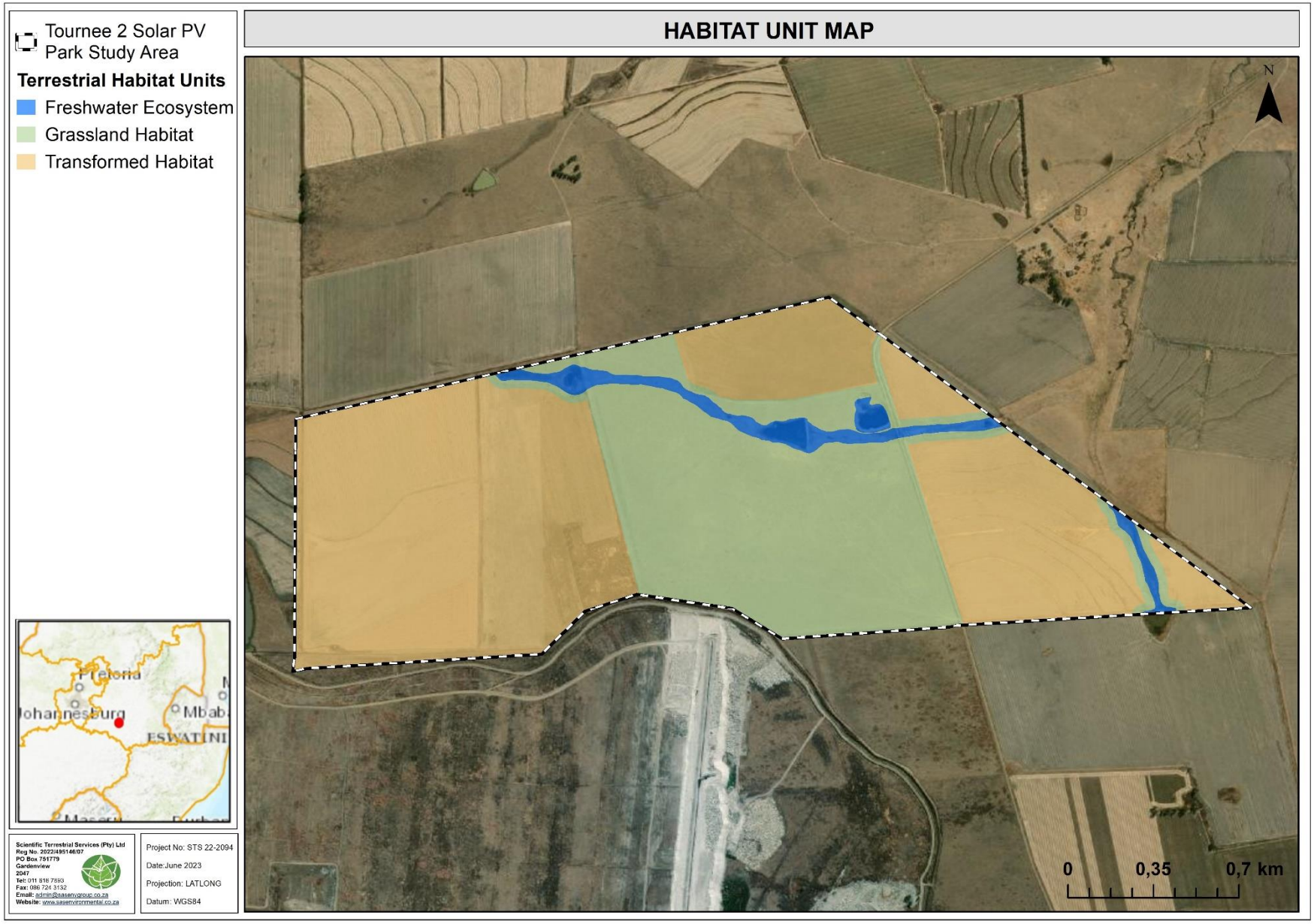


Figure 2: Terrestrial Habitat Units for Tournée 2 Solar PV Park.

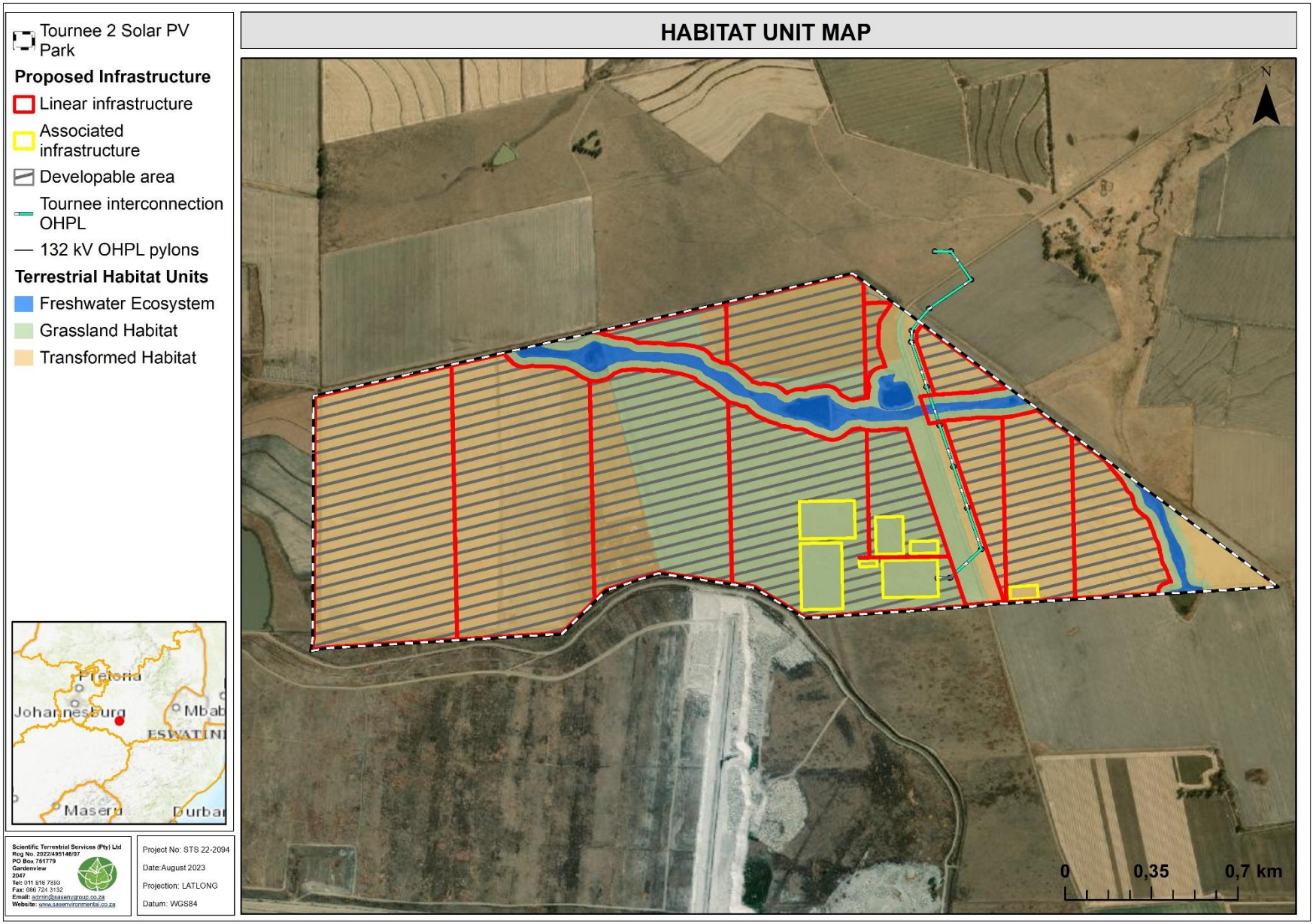


Figure 3: Terrestrial Habitat Units for Tournée 2 Solar PV Park along with the proposed infrastructure.

3.2.1 Grassland Habitat

REPRESENTATIVE PHOTOGRAPHS

The left photograph (a) depicts the general structure associated with the Grassland Habitat, i.e., a tall-closed grassland structure (as per Diagram A1 in Appendix A). The Grassland Habitat unit had little to no woody species present as seen in photograph (b), and the Grassland Habitat is mostly utilised for grazing as evident in photograph (c) where areas of more open grasslands are dispersed within the Grassland Habitat Unit.

HABITAT OVERVIEW

This habitat unit has a high diversity of graminoid species, however, is dominated by *Eragrostis tef* (an alien grass species) with high abundances of *Eragrostis chloromelas* and *Sporobolus fimbriatus.* The Grassland Habitat has a high diversity and abundance of AIPs, especially *Cirsium vulgare* and *Cosmos bipinnatus*. The management of certain AIPs (e.g., NEMBA category 1a, 1b and 2) is compulsory as stated in NEMBA section 73 (2). The habitat integrity is compromised, and the Grassland Habitat is present in an altered state since the grassland habitat has been modified by long term overutilisation by grazing. The Grassland habitat has furthermore experienced historic modification in the form of cultivation; however, the Grassland Habitat has recovered well (i.e., high species diversity) since the cultivation ceased >10 years prior. Therefore, the Grassland Habitat is still considered to be in fair ecological condition (i.e., areas that are moderately modified, semi-natural, and associated with an ecological condition class in which ecological function is maintained even though composition and structure have been compromised).

The Grassland Habitat shows indicators associated with that of a healthy mesic grassland ecosystem including; (i) a relatively high abundance of geophyte species (ii) a moderate diversity of flowering plants (other than grasses) and (iii) the presence of intact, healthy wetlands systems (SANBI, 2013).The vegetation structure of the Grassland Habitat is considered to be representative of the reference vegetation type (i.e., Soweto Highveld Grassland) however it is no longer considered to be a representative of the reference vegetation type in terms of species composition. The species composition of the Grassland Habitat has been modified where several of the species that are typically dominant within the reference state only occur in low abundances due to species such as *Eragrostis tef* now dominating in this habitat. This shift in species composition is likely due to the overarching agricultural land use in the area, which is further exacerbated by altered ecological drivers within the landscape (discussed below) and fragmentation of the habitat unit from larger, more intact grasslands (and hence, source pools).

Fire is an important ecosystem driver within the Mesic Highveld Grasslands (including the reference vegetation type; Soweto Highveld Grasslands); the occurrence of natural fires during the summer months help to maintain the structure of the grasslands and limit the presence and abundance of trees (SANBI, 2013). Furthermore, Mesic Highveld Grasslands are well adapted to grazing pressures when managed at low to moderate stocking rates with adequate rest periods for the veld to recover (SANBI, 2013). These ecological drivers (fire and herbivory) are not entirely absent within this habitat unit and, while fire is not excluded from the Grassland Habitat, the fire regime has been altered form the natural cycles. Furthermore,

while grazing is still present within the Grassland Habitat, the overutilisation and localised nature of grazing does not reflect acceptable levels to sustain healthy and functional Mesic Highveld Grassland communities in the long term (which is further exacerbated by the abundance and diversity of AIPs).

The Grassland Habitat is still regarded as indigenous vegetation (as per NEMA definition). While these Grasslands have not been irreversible modified in the past, the Grassland Habitat is not considered to be primary grasslands as land-use modification (i.e., long-term utilisation for grazing) and modified ecosystem drivers have resulted in changes in species composition and an overall lowered habitat integrity.

SPECIES OVERVIEW

The Grasslands Habitat had an overall high species diversity (i.e., native species). Refer to the below list for an indication of the dominant species recorded within the habitat:

- **Forb species:** The forb component was well represented and included *Asclepias stellifera, Cholophytum cooperi, Cyanotis speciosa, Gladiolus elliotii, Habenaria dives, Helichrysum nudifolium* and *Hypoxis rigidula*. Additional forbs associated with this habitat unit included various AIPs, namely *Datura stramonium, Hypochaeris radicata* and *Verbena bonariensis*;
- **Succulent species:** None recorded at the time of assessment;
- **Graminoid species**: A high diversity of graminoid species were associated with this habitat unit, the dominant species included *Eragrostis tef* and *Eragrostis plana*, other species that was also well represented included species such as *Themeda triandra*, *Aristida sciurus, Panicum ecklonii* and *Sporobolus pyramidalis;* and
- **Woody species:** None recorded for this habitat unit.

Refer to **Appendix B** for a more comprehensive floral inventory for this habitat unit. Refer to section 3.4 for a more comprehensive AIP list.

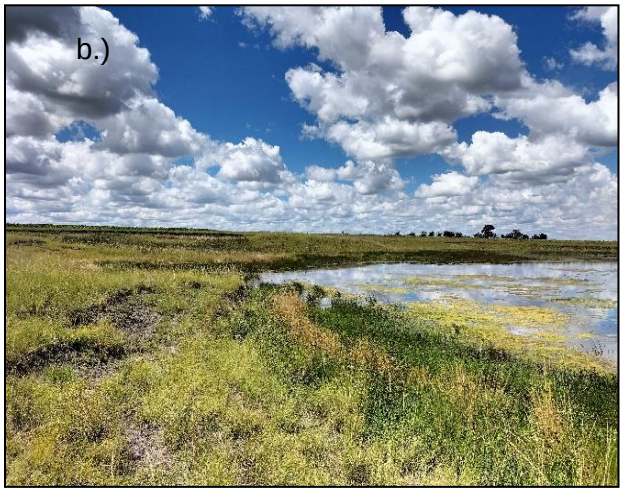
REFERENCE PHOTOGRAPHS OF SOME OF THE FLORA WITHIN THIS HABITAT UNIT

From left to right: *Habenaria falcicornis* subsp. *caffra* (**Provincially protected**), *Hypoxis acuminata, Cosmos bipinnatus* (AIP species)., *Cyanotis speciosa*, *Gladiolus elliotii* (**Provincially protected**), *Asclepias stellifera* and *Hermannia depressa*.

FLORAL SCC OVERVIEW
No floral SCC (i.e., RDL or TOPS listed species) in terms of Section 56(1) of the NEMBA, nor was there any suitable habitat present to support viable population of any threatened floral species. No protected tree species as per the National Forest Act (Act no. 84 of 1998, **NFA**), were identified during the site assessment for the Tournée 2 Solar PV Park footprint area. The Grassland Habitat unit did have several provincially protected species in terms of the MNCA Schedule 11 protected species list confirmed on site including the following: ➢ *Gladioulus elliotii* (**LC**; POC= **confirmed**); ➢ *Gladiolus crassifolius* (**LC**; POC= **confirmed)**; ➢ *Habenaria falcicornis* subsp. *caffra* (**LC**; POC= **confirmed**). ➢ *Eucomis autumnalis* (LC; POC= high); ➢ *Boophone disticha* (LC; POC= high); and ➢ *Habenaria epipactidea* (LC; POC= high). Other provincially protected species that have a high POC within the Grassland Habitat include: ➢ All species of Aloes (except those not occurring in Mpumalanga); and ➢ All species of *Crinum.* Refer to **Appendix C** for the complete floral SCC assessment results.

3.2.2 Freshwater Ecosystem

FRESHWATER ECOSYSTEMS (CVB's)



The vegetation structure of the Freshwater Ecosystems is described as tall, closed grassland (Appendix A; Diagram A1). As seen in photograph (a), the vegetation predominantly consists of grasses and sedges. However, as seen in photograph (b), there are some areas that comprise of short grasslands, which is potentially a result of trampling from grazers on the periphery of the dams.

HABITAT OVERVIEW

The Freshwater Ecosystem had a high species richness and was associated with a high abundance and diversity of native graminoid species; most abundant of which were *Calamagrostis epigejos* var. *capensis, Setaria sphacelate* var. *sphacelata, Kyllinga erecta* var. *erecta* and *Cyperus rotundus*. Several AIPs were noted within the Freshwater Ecosystem habitat which included, but are not limited to, *Conyza bonariensis*, *Tagetes minuta*, *Bidens pilosa*, *Oenothera rosea*, *Verbena bonariensis.* Within the Freshwater Ecosystems, the spread of AIPs is inevitable due to the occurrence of grazers within these systems, and the fact that watercourses act as dispersal channels for the downstream movement of seeds and other propagules. The movement of herbivores increases the potential for AIPs to spread within this habitat and the surrounding natural vegetation communities, therefore the management of AIPs within freshwater ecosystems should be prioritised as these systems often create dispersal pathways for AIPs. As mentioned within the Grassland Habitat, certain AIPs must be regulated under NEMBA, especially AIPs within freshwater ecosystems. The overall habitat integrity of the Freshwater Ecosystem was considered to be moderately intact, and the habitat was considered to be in a good ecological condition (i.e., areas that are natural or near natural and are associated with an ecological condition class in which composition, structure and function are still intact or largely intact).

The Freshwater Ecosystem is considered to be an important component of the reference vegetation type (i.e., Soweto Highveld Grassland) since the vegetation description provided by Mucina and Rutherford (2006) include the presence of scattered small wetlands, narrow streams and alluvia pans. Furthermore, the Grassland Ecosystem Guidelines (SANBI, 2013) indicate that healthy Mesic Highveld Grasslands are associated with intact, healthy wetlands and river ecosystems, and therefore the presence of intact freshwater features further contributes to the ecological integrity and functioning of the larger Tournée 2 Solar PV Park. Although the Freshwater Ecosystems are in a modified ecological condition, the wetlands still provide habitat for biota with the dominant vegetation cover comprised of graminoid, sedge and herbaceous species such as *Cyperus congestus, C. esculentus, C. rotundus*, *Kyllinga erecta* var. *erecta* and *Paspalum dilatatum*. The freshwater report (SAS 22 – 1193, 2023) states that the hydraulic regime and geomorphological processes (e.g., natural flow path, flood peaks and sediment balance) of the wetlands have been altered from the natural conditions, however the Freshwater Ecosystem is still considered to be important in providing suitable habitat for some threatened and provincially protected species and contribute to the larger landscape connectivity and ecosystem functioning.

The vegetation is considered indigenous vegetation (definition provided by NEMA), since it has not undergone significant clearance of vegetation within the past 10 years.

SPECIES OVERVIEW

The Freshwater Ecosystem is associated with a high species diversity, best represented by the grass and forb component, with the woody species being absent.
An overview of the species composition of this unit is presented below:

- **Woody species:** This growth form was absent within this habitat unit;
- **Forb species:** The forb component was well represented and included *Berkheya setifera, Lobelia flaccida* subsp. *flaccida, Monopsis decipiens* and *Ranunculus multifidus,* to name a few;
- **Graminoid species:** A high species richness was observed within the graminoid species within this habitat unit, especially several sedges, namely *Cyperus congestus, Cyperus esculentus, Cyperus rotundus, Isolepis fluitans* var. *fluitans* and *Kyllinga erecta* var. *erecta.* Grasses associated with this habitat unit included *Agrostis lachnantha, Brachiaria serrata, Calamagrostis epigejos* var. *capensis, Leersia hexandra* and *Helictotrichon turgidulum* to name a few*;* and
- **Succulent species:** Only *Aloe ecklonis* was recorded in this habitat unit.

Refer to **Appendix B – Table B1** for a more comprehensive list of species recorded within this habitat unit.

SELECTED PHOTOS OF FLORA RECORDED WITHIN THIS HABITAT UNIT

Freshwater Ecosystem (From Left to right): *Trifolium africanum, Paspalum dilatatum, Monopsis decipiens, Persicaria* cf. *lapathifolia, Kyllinga erecta var. erecta* and *Cyperus congestus.*

SPECIES OF CONSERVATION CONCERN

No Floral SCC (i.e., RDL or TOPS listed species) were recorded during the site assessment, however suitable habitat for two threatened species is considered to be present within this habitat unit namely:

- *Kniphofia typhoides* (**NT**; POC= **high**); and
- Sensitive species 691 (**VU**; POC= **medium**).

Furthermore, no protected tree species as per the NFA were identified during the site assessment for the Tournée 2 Solar PV Park footprint area and the POC for any to occur within the Freshwater Ecosystem is considered to be low.

The Freshwater Ecosystem Habitat is expected to provide suitable habitat for several provincially protected species in terms of the MNCA Schedule 11 protected species list, the following species have a high POC within the Freshwater Ecosystem Habitat;

- *Aloe ecklonis* (LC; POC = **confirmed**);
- *Eucomis autumnalis* (LC; POC= high);
- *Gladioulus elliotii* (LC; POC= high);
- *Gladiolus crassifolius (*LC; POC= high);
- *Habenaria epipactidea* (LC; POC= high); and
- *Habenaria falcicornis* subsp. *caffra* (LC; POC= high).

Other provincially protected species that have a **high** POC within the Freshwater Ecosystem include:

- All species of *Crinum.*

Refer to **Appendix C** for the complete floral SCC assessment results.

3.2.3 Transformed Habitat

TRANSFORMED HABITAT

The Transformed Habitat is represented by areas which no longer encompass natural vegetation as per the reference vegetation type, since these sections have been modified (completely transformed) by current agriculture practices. The majority of the Tournée 2 Solar PV Park area is represented by cultivated fields and based on the absence of indigenous vegetation (as per the NEMA definition) these sections are of little importance from a floral perspective.

HABITAT OVERVIEW
The Transformed Habitat includes areas cultivated with *Glycine max* (i.e., soybean; photograph [a]) and *Zea mays* (i.e., maize; photograph [b]), as seen in the photographs above. These areas have been significantly transformed and are no longer considered to be indigenous vegetation (as per NEMA definition). The boundaries of the cultivated areas are associated with a high abundance of AIPs, including *Ipomoea purpurea, Datura stramonium, Cirsium vulgare* and *Cosmos bipinnatus*. This habitat unit had the lowest native species richness of all the terrestrial habitat units and was mostly associated with AIPs. Ecosystem drivers such as fire and grazing are absent within these areas and therefore this habitat is no longer considered to be ecologically functional. The Transformed Habitat is no longer considered to contribute to ecological processes (e.g., habitat connectivity) due to the largely modified nature of this habitat unit. The Transformed Habitat unit is not representative of the reference vegetation type, as these areas mostly consist of monospecific crop stands and is not considered to be of ecological and conservation importance from a floral perspective. The habitat integrity is severely diminished, and the Transformed Habitat is in poor ecological condition (i.e., areas that are severely or irreversibly modified and associated with an ecological condition class in which ecological function has been compromised in addition to structure and composition).
SPECIES OVERVIEW
An overview of the species composition of this habitat unit is presented below: ➢ **Woody species:** This growth form was absent within this habitat unit; ➢ **Forb species:** The forb component was well represented and included *Bidens pilosa* (AIP), *Conyza bonariensis* (AIP), *Hypoxis rigidula, Senecio inornatus* and *Tagetes minuta* (AIP); ➢ **Succulent species:** None recorded at the time of assessment; and ➢ **Graminoid species:** The Transformed Habitat had a low species richness, where the graminoids were mostly represented by *Brachiaria serrata, Digitaria eriantha, Setaria sphacelata* var. *sphacelata, Sporobolus pyramidalis* and *Cyperus congestus.* Refer to **Appendix B** for a list of species recorded in this Habitat Unit.
SPECIES OF CONSERVATION CONCERN
No floral **SCC** from the **TOPS** or **RDL** list were found within the Transformed Habitat and no suitable habitat for such species is present within this habitat unit. No **NFA** protected trees were encountered within the Transformed Habitat unit and no suitable habitat for such species are present within this habitat unit. No Provincially protected species are expected to occur within this habitat unit as it is completely transformed, and no indigenous vegetation (as per NEMA definition) is present. The POC for the trigger species provided by the Screening Tool is low within the Transformed Habitat unit. Refer to **Appendix C** for a complete list of species assessed as part of the SCC assessment.

3.2.4 Concluding remarks

PRESENCE OF UNIQUE LANDSCAPES (CBAS, ESAS, PROTECTED AREAS, INDIGENOUS FOREST, ETC.)
According to the Screening Tool, the Terrestrial Sensitivity for the majority of the Tournée 2 Solar PV Park is considered to be of very high sensitivity. The triggered sensitivity features include: - **Optimal CBA:** Two very small section of the proposed Tournée 2 Solar PV Park is identified as Optimal CBA, located in the north-western and south-western corners of the proposed Tournée 2 Solar PV Park. This area corresponds with currently cultivated areas, i.e., Transformed Habitat, and is not considered to provide intact, functioning CBA habitat from a botanical perspective (attributed to the significantly modified habitat thereof and subsequent diminished capacity to contribute to conservation targets of floral species within the surrounding area); - **VU ecosystems:** Based on RLE, (2022) database, a large portion of the Tournée 2 Solar PV Park is identified as being within the remaining extent of the **VU** Soweto Highveld Grassland ecosystem**.** None of the habitat units within the Tournée 2 Solar PV Park were confirmed to be good representatives of the reference state; however, the Freshwater ecosystems habitat unit is considered to be an important feature of the reference vegetation type; and - **National Protected Areas Expansion Strategy (NPAES):** The NPAES (2018) database did not identify any priority focus areas within the Tournée 2 Solar PV Park, however, adjacent to the Tournée 2 Solar PV Park boundary (i.e., north-western corner) a small Priority Focus Area was identified. This does not intersect with the distribution of the Tournée 2 Solar PV Park itself and therefore the proposed development will not impact any NPAES focus areas.
CONCLUDING REMARKS
The Freshwater Ecosystems habitat unit is considered to be moderately intact and in good ecological conditions. It is therefore recommended that no development take place in this habitat unit and that edge effects of any development within adjacent habitats be strictly managed to limit the impact within these habitat units and to maintain ecological functioning within the remaining natural areas. The current Tournée 2 Solar PV Park layout mostly avoids the Freshwater Ecosystems; however, the interconnecting OHPL which crosses the Freshwater Ecosystems provide some potential risk (e.g., pylon placement and general operational activities) and mitigation measures should be implemented to avoid any direct and residual impacts within the Freshwater Ecosystems. Should this development be approved, the following should be taken into consideration: - All the habitat units (i.e., Grassland Habitat and Freshwater Ecosystems Habitat), except Transformed habitat, are considered to comprise of indigenous vegetation; - The Freshwater Ecosystem is considered to be an important component of the reference **VU** vegetation type (i.e., Soweto Highveld Grassland), i.e., the Freshwater Ecosystems contributes to the ecological integrity and functioning of the larger Soweto Highveld Grassland ecosystem; - A high diversity of AIPs was present within the Tournée 2 Solar PV Park of which NEMBA category 1b, NEMBA category 2, as well as several non-listed species, are present (**see section 3.3**). The NEMBA regulations require Category 1b Listed Invasive Species be managed. Category 3 species include plants used commercially that may be grown in demarcated areas, provided that there is a permit and that steps are taken to prevent their spread. **See section 3.3** for a complete list of AIPs encountered on site; and - A walkdown is suggested before any development takes place to account for the presence of any nationally or provincially protected plant species. Should any floral species protected under NEMBA, MNCA, or NFA be encountered within the Tournée 2 Solar PV Park and proposed development footprint areas, authorisation to relocate such species must be obtained from the DFFE and the MTPA.

3.3 Alien and Invasive Plant (AIP) Species

South Africa is home to an estimated 759 naturalised or invasive terrestrial plant species (Richardson et al., 2020), with 327 plant species, most of which are invasive, listed in national legislation[6]. Many introduced species are beneficial, e.g., almost all agriculture and forestry production are based on alien species, with alien species also widely used in industries such as horticulture. However, some of these species manage to "escape" from their original locations, spread and become invasive. Although only a small proportion of introduced species become invasive (~0.1–10%), those that do proceed to impact negatively on biodiversity and the services that South Africa's diverse natural ecosystems provide (from ecotourism to harvesting food, cut flowers, and medicinal products) (van Wilgen and Wilson, 2018).

3.3.1 Legal Context

South Africa has released several articles of legislation that are applicable to the control of alien species. Currently, invasive species are controlled by the NEMBA – Alien and Invasive Species Regulations, 2020, in Government Gazette 43735 dated 25 October 2020. AIP species defined in terms of NEMBA are assigned a category and listed within the NEMBA List of Alien and Invasive Species (2020) in accordance with Section 70(1)(a) of the NEMBA:

- **Category 1a** species are those targeted for urgent national eradication;
- **Category 1b** species must be controlled as part of a national management programme, and cannot be traded or otherwise allowed to spread;
- **Category 2** species are the same as category 1b species, except that permits can be issued for their usage (e.g., invasive tree species can still be used in commercial forestry, providing a permit is issued that specifies where they may be grown and that permit holders "*Unless otherwise specified in the Notice, any species listed as a Category 2 Listed Invasive Species that occurs outside the specified area contemplated in sub-regulation (1), must, for purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to Regulation 3*"); and
- **Category 3** are listed invasive species that can be kept without permits, although they may not be traded or further propagated, and must be considered a Category 1b species if they occur in riparian zones.

[6] Government Notice number 1003: Alien and Invasive Species Lists, 2020, in Government Gazette 43726 dated 18 September 2020, as it relates to the National Environmental Management Biodiversity Act, 2004 (Act No 10 of 2004).

Duty of care related to listed invasive species are referred to in NEMBA Section 73[7]. The motivation for this duty of care is both environmentally and economically driven. Management of alien species in South Africa is estimated to cost at least ZAR 2 billion (US$142 million) each year - this being the amount currently spent by the national government's DFFE - i.e., the Working for Water programme (van Wilgen, 2020). Managing AIPs early on will reduce clearing costs in the long run.

3.3.2 Site Results

A total of 19 AIPs (listed and non-listed) were found within the Tournée 2 Solar PV Park. Of the 19 species encountered on site, seven species are listed under NEMBA Category 1b, one species is listed under the NEMBA Category 3, and the remaining eleven species are not listed under NEMBA; however, these species are considered problem plants that often establish in disturbed sites or previously cultivated areas, including species such as *Bidens pilosa*, *Gomphrena celosioides* and *Tagetes minuta*. These species can often become problematic and pose a threat to biodiversity as these species compete with indigenous native floral species and often replace native floral species.

Due to the extent of AIPs within the Tournée 2 Solar PV Park, especially those falling in the Category 1b and which occur within the Freshwater Ecosystem, it is highly recommended that an Alien and Invasive Species Control and Management Plan be set up and implemented (by the proponent) to ensure further loss of indigenous floral communities do not occur, and that the freshwater ecosystems are not placed under additional pressure due to the presence of AIPs. Refer to Table 1 below for more information on the AIPs recorded on site.

[7] Section 73(2): A person who is the owner of land on which a listed invasive species occurs must-
a) notify any relevant competent authority, in writing, of the listed invasive species occurring on that land;
b) take steps to control and eradicate the listed invasive species and to prevent it from spreading; and
c) take all the required steps to prevent or minimise harm to biodiversity.

Table 1: Dominant alien floral species identified during the field assessment with their invasive status as per NEMBA: Alien and Invasive Species Lists, GN R1003 of 2020.

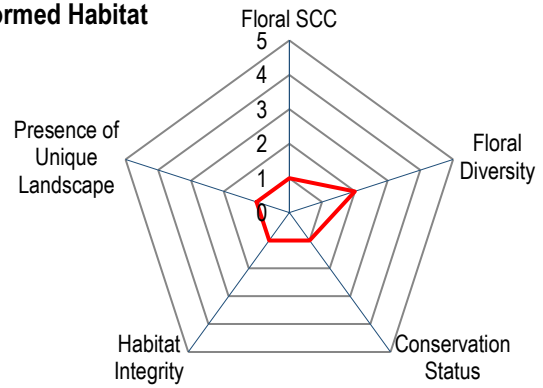
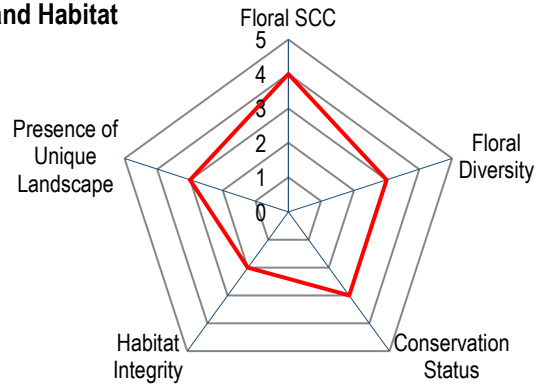
Scientific name / Common name	Origin	NEMBA Category	Grassland	Freshwater ecosystems	Transformed
WOODY SPECIES					
Eucalyptus camaldulensis/ **River red gum**	South-eastern Australia	1b	x	x	
Salix babylonica / **Weeping Willow**	Northern China	Not Listed		x	
HERBACEOUS SPECIES					
Amaranthus hybridus / **Smooth pigweed**	Eastern North America	Not Listed		x	
Bidens pilosa / **Blackjack**	South America	Not Listed	x	x	x
Cirsium vulgare / **Spear thistle**	Europe	1b	x	x	x
Conyza bonariensis / **Hairy fleabane**	South America	Not Listed	x	x	x
Cuscuta campestris / **Common dodder**	Tropical and subtropical Africa, as well as in southern Europe, Asia and Australia	1b			x
Datura stramonium / **Common thorn apple**	North America	1b	x	x	x
Gomphrena celosioides / **Bachelor's Button**	South America	Not Listed		x	x
Hibiscus trionium / **Flower-of-an-hour**	Europe	Not Listed	x	x	
Hypochaeris radicata / **Hairy cat's ear**	Native to Morocco	Not Listed	x	x	
Ipomoea purpurea / **Common morning glory**	Tropical America.	1b	x		
Oenothera rosea / **Evening primrose**	Central America (Mexico)	Not Listed	x	x	x
Tagetes minuta / **Khaki-weed**	Southern half of South America	Not Listed	x	x	x
Verbena bonariensis / **Purple top**	Tropical South America	1b	x	x	x
Xanthium strumarium / **Common cocklebur**	South America.	1b	x		
GRAMINOID SPECIES					
Paspalum dilatatum / **Dallisgrass**	South America. Brazil, Argentina, Bolivia, Chile, Guyana, Paraguay, and Uruguay	Not Listed		x	x
Cenchrus longisetus / **Feathertop**	Native to north-eastern Africa (i.e., Eritrea, Ethiopia and Somalia) and the Arabian Peninsula (i.e., Yemen)	3			x
Eragrsotis tef / **Teff**	Northern Ethiopia	Not Listed	x	x	

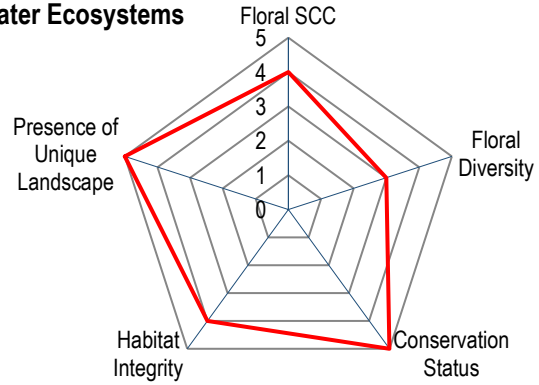
4 SENSITIVITY MAPPING

Based on the ground-truthed results of the site visit, Table 2 below presents the site sensitivity of each identified habitat unit along with an associated conservation objective and implications for development. These sensitivities consider various aspects, such as the presence or potential for floral SCC (both threatened species as well as protected species), habitat integrity and levels of disturbance, threat status of the habitat type, the presence of unique landscapes and overall levels of diversity (compared to a reference type).

Figures 4 - 5 conceptually illustrate the areas of varying ecological sensitivity and how they will be impacted by the proposed infrastructure development.

Table 2: A summary of the sensitivity of each habitat unit and implications for development.

Habitat Unit and Sensitivity	Conservation objective	Key habitat characteristics
Low		
Transformed Habitat 	Optimise development potential.	➢ No longer considered indigenous vegetation; ➢ Where vegetation is present, the floral communities are homogenous and / or AIP species present; ➢ No floral SCC (either threatened or protected) were associated with this habitat unit; ➢ Transformed habitat is in poor ecological condition; and ➢ No significant biodiversity features were confirmed for this habitat unit.
Intermediate		
Grassland Habitat 	Optimise development potential while improving biodiversity integrity of surrounding natural habitat and managing edge effects.	➢ The vegetation within the Grassland Habitat is considered to be indigenous vegetation (as per NEMA definition); ➢ Potential habitat for RDL floral SCC is available within this habitat unit (the NT *Kniphofia typhoides* was recorded in the neighbouring property). Additionally, several provincially protected floral species were recorded on site and additional species may be present in this habitat unit due to suitable conditions; ➢ The Grassland Habitat is still considered to be in fair ecological condition; however, ecosystem drivers have been modified and various disturbances such as AIP proliferation was evident – habitat integrity is thus reduced; and ➢ No significant biodiversity features were confirmed for this habitat unit.

Habitat Unit and Sensitivity	Conservation objective	Key habitat characteristics
Moderately high **Freshwater Ecosystems** 	Preserve and enhance biodiversity of the habitat unit and surrounds while optimising development potential.	➢ The Freshwater Ecosystem is considered to be an important feature of the reference vegetation type (VU; Soweto Highveld Grassland); ➢ This habitat unit meets the conditions as per NEMA Listing notices of indigenous vegetation; ➢ The Freshwater Ecosystem (CVB Wetlands) is identified as true watercourses as per the NWA definition (see Freshwater report SAS 22-1193; 2023) and thus enjoys protection under the NWA; ➢ The Freshwater Ecosystem habitat unit is moderately intact, and the habitat was considered to be within a good ecological condition; and ➢ The Freshwater Habitat is considered to provide suitable habitat for threatened species as well as MNCA-protected species. ➢

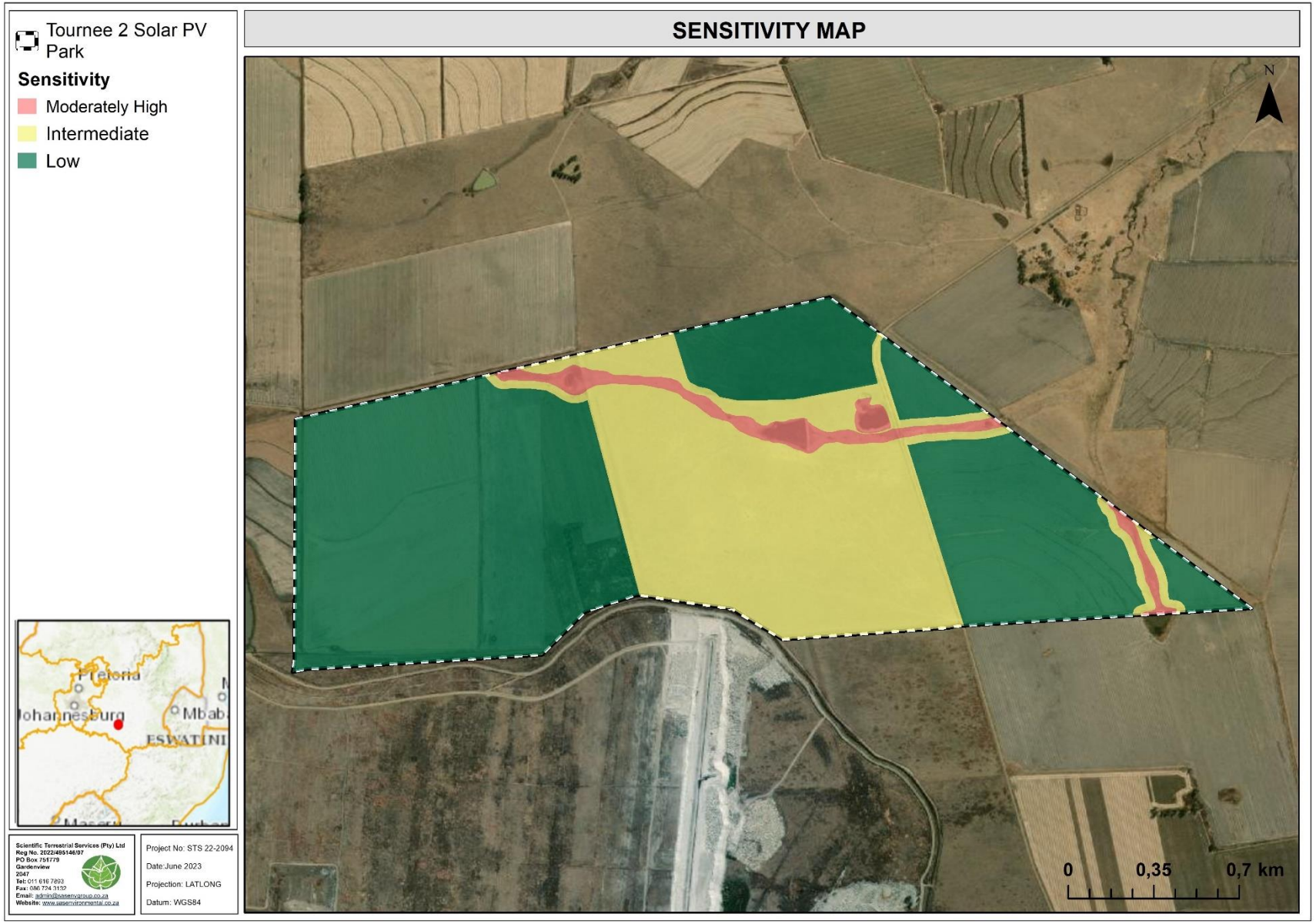


Figure 4: Sensitivity map for the Tournée 2 Solar PV Park.

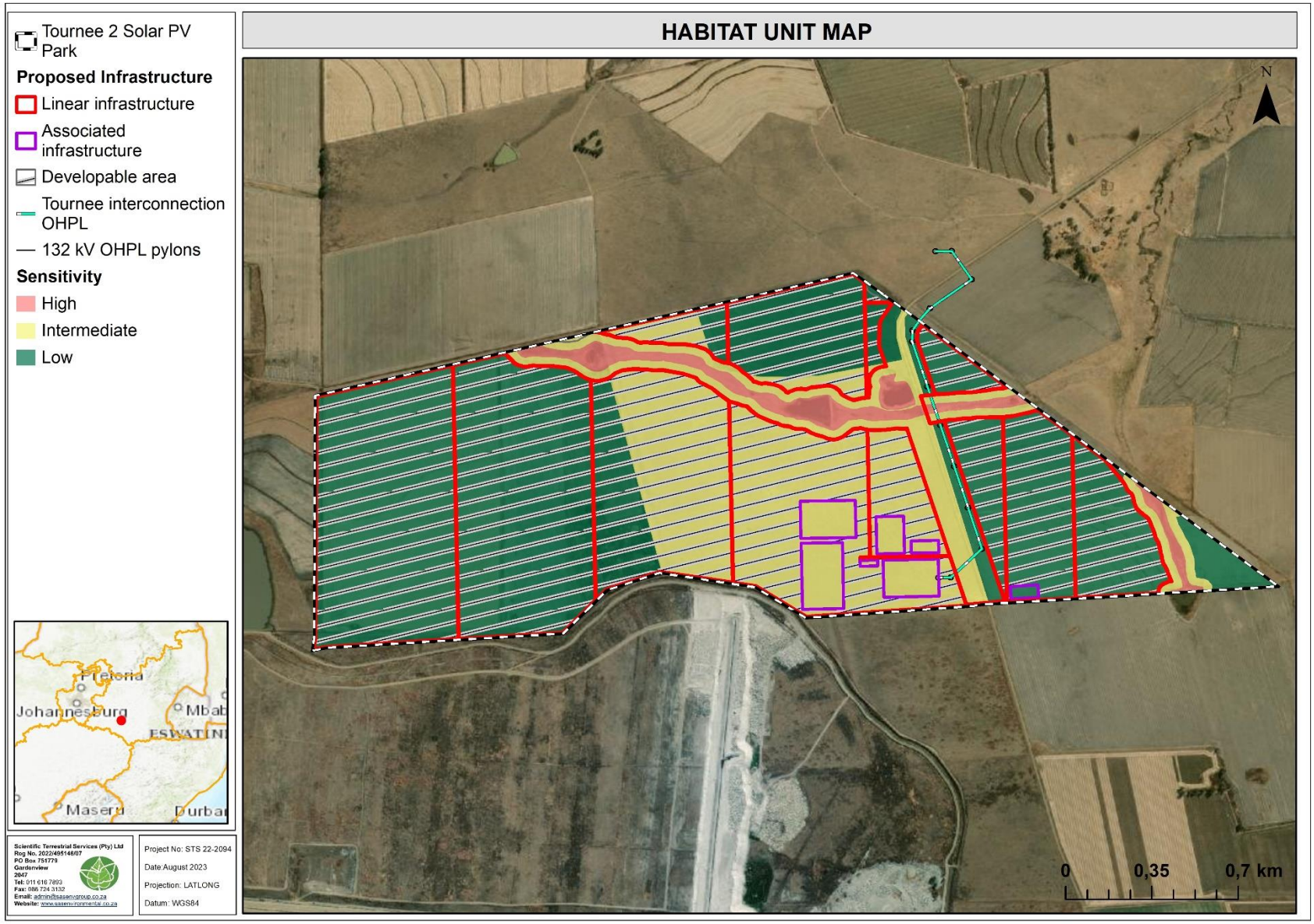


Figure 5: Sensitivity map, including proposed infrastructure within for the Tournée 2 Solar PV Park.

5 INTERNATIONAL FINANCE CORPORATION PERFORMANCE STANDARD 6

Based on the Performance Standard 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources) of the International Finance Corporation (IFC), the below table categorises the observed habitat units into the relevant IFC defined habitat categories (Table 3). For a description of the IFC Habitat categories refer to Appendix A.

Table 3: Habitat units classification based on the IFC PS6 standards.

Habitat Unit	Description	Applicable IFC Habitat and applicable Criteria
GRASSLAND HABITAT	The Grassland Habitat has undergone minor modifications and is considered to be in a **fair ecological condition**, i.e., moderately modified, semi-natural and in which ecological function is maintained even though composition and structure have been compromised.	**Natural habitat**, i.e., areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition. **Additional Considerations: Guidance Notes (**GNs) 9 as well as GNs104 and GNs106 are applicable within this habitat unit.
TRANSFORMED HABITAT	**Anthropogenic Landscapes** Habitat integrity has entirely been diminished. The habitat is in a **poor ecological condition**, i.e., severely, or irreversibly modified and in which ecological function has been compromised in addition to structure and composition of the habitat.	**Modified habitat** are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition. Modified habitats may include areas managed for agriculture, forest plantations, reclaimed coastal zones, and reclaimed wetlands. **Additional Considerations:** GNs36, GNs104 and GNs106, are applicable within this habitat unit.
FRESHWATER ECOSYSTEM	Habitat integrity of the Freshwater ecosystems are considered to be intact and within a **good ecological condition**, i.e., habitat still natural with an ecological condition class in which composition, structure and function are still intact or largely intact.	**Critical habitat**, i.e., Critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to CR and/or EN species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes **Additional Considerations:** GNs22, GNs9, GNs104 and GNs106 are applicable within this habitat unit.

The table below serves to define the corresponding Guidance Note 6 corresponds to Performance Standard 6 identified for the specific project. General Notices identified for the specific project are summarised in the table below (Table 4). For a list (description and IFC listed requirement) of the particular GNs applicable to this project please refer to Table A2 (Appendix A).

Table 4: Descriptions of the project requirements to meet IFC Standards and corresponding Guidance Notes for additional information.

IFC Habitat Unit Discussion	
GNs9	No significant loss of natural or critical habitat associated with the Transformed Habitat, due to these habitat units falling under the IFC's "Modified Habitat" classification. However, considering the Grassland Habitat (Natural Habitat) approximately **92 ha** is anticipated to be lost during the development of the Tournée 2 Solar PV Park. For the Freshwater Habitat, which are considered "Critical Habitat", the proposed Tournée 2 Solar PV Park footprint is not considered to impact on this habitat unit, based on preliminary layout provided. While the interconnected OHPL is shown to cross the Freshwater Ecosystems, recommendation for pylon placement and associated mitigation measures are suggested within the Impact assessment below (section 6.1). The GN9 states that the baseline should include field surveys over multiple seasons, to be undertaken by competent professionals and with the involvement of external experts, as necessary. While additional floral assessments can be conducted, for example in November (MTPA, 2006) the findings of this assessment are considered an accurate reflection of the floral ecological characteristics associated with Tournée 2 Solar PV Park for the purposes of an informed decision-making processes.
GNs22	The Freshwater Ecosystems are considered to be Critical Habitat, while no development is anticipated for this habitat unit the potential risk of residual impacts is expected to occur. Therefore, within the impact assessment section the residual impacts are assessed, and mitigation measures provided to minimise the potential risk and impacts to Freshwater Ecosystems.
GNs36	Not all the Natural Habitat within the site could be avoided (i.e., Grassland Habitat), however the proposed layout areas have avoided the habitat identified as Critical Habitat (i.e., Freshwater Ecosystems). The proposed Tournée 2 Solar PV Park layout mostly located within the remaining Modified Habitat within the Tournée 2 Solar PV Park area.
GNs104	All habitat units were associated with AIPs and will require a management plan to control spread of such species during all the phases of the proposed Tournée 2 Solar PV Park.
GNs106 and GNs109	Ecosystem services are largely associated with the Freshwater Ecosystem, which is completely avoided in the proposed layout. See the Freshwater report (SAS 22-1193; 2023) for mitigation measures (i.e., to conserve the ecosystem functioning of the freshwater habitat) of remaining extent of the Freshwater Ecosystems areas in the prosed layout of Tournée 2 Solar PV Park. The Grassland Habitat provides some ecosystem services, for example nutrient cycling, carbon storage and seed dissemination (to name a few). The loss of approximately 92 ha of habitat which can contribute to food provisioning and other supporting ecosystem services is expected with the loss of Grassland Habitat. The Transformed Habitat which is associated with cultivated areas (e.g., *Glycine max* and *Zea mays*) contributes largely to the provisioning of food sources as an ecosystems service. Approximately 195 ha of Transformed Habitat is expected to be utilised by the proposed Tournée 2 Solar PV Park layout.

6 IMPACT ASSESSMENT

Tables 5 - 12 serve to summarise the significance of perceived impacts on the floral ecology of the 150 MW Tournée 2 Solar PV Park, according to the method described in Part A (Appendix C), as provided by the proponent.

An impact discussion and assessment of all potential i) Pre-construction & Planning, ii) Construction, and iii) Operational and Maintenance, and iv) Decommissioning Phase impacts are provided in Section 6.1. All mitigatory measures required to minimise the perceived impacts are presented in the impact tables. The mitigation measures chosen are based on the mitigation sequence/hierarchy which allows for consideration of five (5) different levels, which include (consecutively) (1) avoid/prevent, (2) minimise, (3) rehabilitate/restore, (4) offset, and (5) no-go. 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 takes place. 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.

Impacts to each of the habitat units were assessed independently for each phase of the project. Where activities are perceived to have similar impacts to the receiving environment (or will be impacting in the same area), these were grouped and assessed together:

- **Associated Infrastructure:**
  - BESS;
  - Concrete batching plant;
  - Construction camp;
  - Facility substation & Eskom collector station;
  - Laydown area;
  - O&M building; and
  - Paved areas.
- **Surface Infrastructure:**
  - Developable areas (i.e., where the bi-facial panels will be placed).
- **Linear Developments:**
  - Access roads;
  - Internal roads; and
  - Interconnected OHPL.

The Decommissioning and Rehabilitation activities and intended end-goal was not provided at the time of assessment. As such, it will be recommended that the post-closure landscape should attempt to reinstate, as far as is feasible, a wilderness landscape resembling the surrounding areas and comprising indigenous vegetation from the reference states. The impact assessment will be undertaken with this assumption and when a post-closure goal is established and, if it differs from what is recommended in this report, the impact assessment will have to be updated accordingly.

6.1 Impact Assessment Tables

The below section provides the findings of the impact assessment undertaken with reference to the perceived impacts prior to the implementation of mitigation measures and following the implementation of mitigation measures. The mitigated results of the impact assessment have been calculated on the premise that all mitigation measures as stipulated in this report are adhered to and implemented. Should such actions not be adhered to, it is highly likely that post-mitigation impact scores will increase.

Table 5: Impact Assessment considering the impacts and mitigation surrounding the floral habitat and diversity during the Pre-construction and Planning phase of the 150 MW Tournée 2 Solar PV Park development.

IMPACT NATURE		Impact – floral habitat and diversity		STATUS	NEGATIVE
Impact Description		- Loss of favourable floral habitat beyond the authorised footprint, leading to a decline in floral diversity; - Loss of sensitive habitat and /or fragmentation of vegetation communities; - Increased risk of erosion and loss of topsoil; - Potential increase in fragmentation of vegetation communities and disruption of natural dispersal processes; and - Potential increase in fragmentation of ecological corridors and diminished ecological functionality.			
Impact Source(s)		- Potential failure to develop an AIP Management/Control plan before the commencement of activities; - Potential inadequate design and management planning of stormwater and erosion; and - Potential inconsiderate design of surface infrastructure layouts within sensitive habitat and/or species localities.			
Habitat Unit	**Driver / activity**	**Parameter**	**Pre - mitigation (Score)**	**Post - mitigation (Score)**	
Grassland Habitat	**Associated Infrastructure:** - **BESS;** - **Concrete batching plant;** - **Construction camp;** - **Facility substation & Eskom collector station;** - **Laydown area;** - **O&M building; and** - **Paved areas.**	**Impact Magnitude (M)**	**3**	**2**	
		Impact Extent (E)	**1**	**1**	
		Impact Reversibility (R)	**3**	**3**	
		Impact Duration (D)	**2**	**2**	
		Probability of Impact (P)	**3**	**2**	
		Significance (S)	(-) 27	(-) 16	
		Environmental Significance Rating	**Low**	**Low**	
	Surface infrastructure: - **Developable areas.**	**Impact Magnitude (M)**	**4**	**2**	
		Impact Extent (E)	**2**	**2**	
		Impact Reversibility (R)	**3**	**3**	
		Impact Duration (D)	**2**	**2**	
		Probability of Impact (P)	**3**	**2**	
		Significance (S)	(-) 33	(-) 18	
		Environmental Significance Rating	**Moderate**	**Low**	
	Linear development: - **Access roads;** - **Internal roads; and** - **Interconnected OHPL.**	**Impact Magnitude (M)**	**3**	**2**	
		Impact Extent (E)	**2**	**2**	
		Impact Reversibility (R)	**3**	**3**	
		Impact Duration (D)	**2**	**2**	
		Probability of Impact (P)	**3**	**2**	
		Significance (S)	(-) 30	(-) 18	
		Environmental Significance Rating	**Low**	**Low**	

Transformed Habitat	Associated Infrastructure: - Laydown area.	Impact Magnitude (M)	2	2
		Impact Extent (E)	1	1
		Impact Reversibility (R)	1	1
		Impact Duration (D)	2	2
		Probability of Impact (P)	3	2
		Significance (S)	(-) 18	(-)12
		Environmental Significance Rating	Low	Very Low
	Surface infrastructure: - Developable areas.	Impact Magnitude (M)	2	2
		Impact Extent (E)	2	2
		Impact Reversibility (R)	1	1
		Impact Duration (D)	2	2
		Probability of Impact (P)	3	2
		Significance (S)	(-) 21	(-) 14
		Environmental Significance Rating	Low	Very Low
	Linear development: - Access roads; - Internal roads; and - Interconnected OHPL.	Impact Magnitude (M)	2	1
		Impact Extent (E)	1	1
		Impact Reversibility (R)	1	1
		Impact Duration (D)	2	2
		Probability of Impact (P)	3	2
		Significance (S)	(-) 18	(-) 10
		Environmental Significance Rating	Low	Very Low
Freshwater Ecosystems	Linear development: - Internal roads; and - Interconnected OHPL.	Impact Magnitude (M)	4	2
		Impact Extent (E)	2	1
		Impact Reversibility (R)	3	3
		Impact Duration (D)	2	2
		Probability of Impact (P)	3	2
		Significance (S)	(-) 33	(-) 16
		Environmental Significance Rating	Moderate	Low

CUMULATIVE IMPACTS	Cumulative Impacts will only be realised after the Pre-construction and Planning phase and will be discussed in the Construction, Operational and Maintenance, and Decommissioning and Rehabilitation phases. However, during the planning phase, it will be important to consider additional known, planned developments within the area that may contribute towards cumulative impacts during the later phases of the project.
CONFIDENCE	High
MITIGATION MEASURES	- At all times, ensure that sound environmental management is in place during the planning phase; - The design plans should take cognisance of sensitive habitats described during the EIA phase, in line with the DFFE mitigation hierarchy. As far as feasibly possible, sensitive habitats must be excluded from the proposed activities; - Development should be prioritised in habitats of decreased sensitivity; - Access roads should be kept to existing roads were possible so to reduce further fragmentation of existing natural habitat. - A rehabilitation plan should be developed that will promote habitat reinstatement in disturbed sites and allow for increased habitat connectivity during the operation and maintenance phase of the project; - The placement of pylons for the interconnected OHPL will need to be optimised to avoid any footprint areas within the Freshwater Ecosystems; and - A Stormwater management plan should be developed to ensure sound stormwater design and management planning.

Table 6: Impact Assessment considering the impacts and mitigation surrounding the floral SCC during the Pre-construction and Planning phase of the 150 MW Tournée 2 Solar PV Park development. Since the Transformed Habitat does not support any floral SCC this habitat unit was not assessed within the SCC impact tables.

IMPACT NATURE		Impact – floral SCC		STATUS	NEGATIVE
Impact Description		- Potential loss of habitat for SCC through inconsiderate planning of layout placement; and - Potential unmitigated loss of floral SCC.			
Impact Source(s)		- Failure to undertake a walkdown of the finalised footprints and 200 m buffer surrounding these footprints, which should take place during the Pre-construction and Planning phase prior to any construction taking place, during which floral SCC and protected floral species are searched for and marked; - Unnecessary or unlawful destruction/removal of floral SCC and protected species due to a neglection of a final site walkdown and undertaking of the relevant permit application processes; - Failure to either adapt the proposed layout to avoid SCCs, or failure to relocate floral SCC within the footprint areas (following the adequate permitting process); and - Potential failure to develop an AIP Management/Control plan before the commencement of activities.			
Habitat Unit	**Driver / activity**	**Parameter**	**Pre - mitigation (Score)**		**Post - mitigation (Score)**
Grassland Habitat	- Threatened Floral SCC	Impact Magnitude (M)	2		1
		Impact Extent (E)	1		1
		Impact Reversibility (R)	5		3
		Impact Duration (D)	3		3
		Probability of Impact (P)	4		3
		Significance (S)	(-) 44		(-) 24
		Environmental Significance Rating	Moderate		Low
	- Protected Floral SCC	Impact Magnitude (M)	2		1
		Impact Extent (E)	1		1
		Impact Reversibility (R)	5		3
		Impact Duration (D)	3		3
		Probability of Impact (P)	5		3
		Significance (S)	(-) 55		(-) 24
		Environmental Significance Rating	Moderate		Low
Freshwater Ecosystems	- Threatened Floral SCC	Impact Magnitude (M)	2		1
		Impact Extent (E)	1		1
		Impact Reversibility (R)	5		3
		Impact Duration (D)	3		3
		Probability of Impact (P)	4		3

		Significance (S)	(-) 44	(-) 24
		Environmental Significance Rating	**Moderate**	**Low**
	- **Protected Floral SCC**	**Impact Magnitude (M)**	**2**	**1**
		Impact Extent (E)	**1**	**1**
		Impact Reversibility (R)	**5**	**3**
		Impact Duration (D)	**3**	**3**
		Probability of Impact (P)	**3**	**2**
		Significance (S)	(-) 30	(-) 16
		Environmental Significance Rating	**Low**	**Low**
CUMULATIVE IMPACTS		Cumulative Impacts ill only be determined after the Pre-construction and Planning phase and will be discussed in the Construction and Operational and Maintenance phases.		
CONFIDENCE		High		
MITIGATION MEASURES		- A walkdown of the footprint area (including a 200 m buffer surrounding the footprint area) is required before construction activities can commence, where all anticipated floral SCC are searched and marked for relocation and/or destruction so that all necessary permits and authorisations can be obtained from authorities; - Should any floral species protected under NEMBA or NFA be encountered within the Tournée 2 Solar PV Park and proposed development footprint areas, authorisation to relocate such species must be obtained from the DFFE. Additionally, should any threatened floral SCC be observed, it is recommended that they be avoided (first and foremost) and only rescued and relocated if the project is authorised and the species will be impacted by the proposed activities; - Should any provincially protected species be impacted by the proposed Tournée 2 Solar PV Park footprint areas, the necessary permits should be obtained from regulatory government agencies within the MTPA; - The rescue and relocation of any floral SCC but be undertaken by a suitably qualified specialist, either to suitable habitat (outside the development) yet within the Tournée 2 Solar PV Park, or to registered nurseries such as the Agricultural Research Council (ARC) or the SANBI; - Should any threatened floral species be encountered during the walkdown, an expert (botanist or SANBI horticulturist familiar with the species) should assess the feasibility of the plant Rescue and Relocation plan to monitor the success (or failure) of relocation activities, by collecting data regarding the condition of any relocated species (along with photographic evidence), and monitoring should continue through all phase of the Tournée 2 Solar PV Park (including decommission and rehabilitation); - No collection of floral SCC must be allowed; and - Edge effect control needs to be implemented to prevent further degradation and potential loss of floral SCC outside of the proposed disturbance footprint area.		

Table 7: Impact Assessment considering the impacts and mitigation surrounding the floral habitat and diversity during the Construction phase of the 150 MW Tournée 2 Solar PV Park development.

IMPACT NATURE		Impact – floral habitat and diversity		STATUS	NEGATIVE
Impact Description		- Loss of indigenous vegetation through vegetation clearing (specifically within the Grassland and Freshwater Ecosystems); - Decline of species diversity; - Loss of topsoil and seedbanks; - Soil-compaction, -erosion and AIP proliferation within disturbed areas; - Loss of floral habitat and diversity; - Loss of floral habitat beyond the project footprint due potential footprint creep as a result from increased erosion; - Lowered photosynthetic abilities of nearby plants, decreasing optimal growth/re-establishment conditions due to dust pollution; and - Potential decrease in floral diversity.			
Impact Source(s)		- Vegetation clearing and construction activities will lead to habitat destruction and disturbance within the direct footprint area; - Placement of infrastructure in close proximity to sensitive habitat (i.e., Freshwater Ecosystems), may lead to footprint creep impacting on sensitive habitat; - Changes in surface characteristics may lead to increased runoff and erosion; - Introduction of foreign material (e.g., soil) during construction activities may lead to the further introduction of alien invader species; - Failure to implement an alien floral control plan may result in widespread AIP proliferation; - Ineffective removal and control of AIP species, and poor rehabilitation of exposed areas could lead to re-establishment of invasive species; - Compaction of soil due to the movement of construction vehicles (especially within Freshwater Ecosystems); - Alteration of runoff patterns; - Disturbance of soil leading to increased AIP proliferation; - Risk of contamination from all construction activities which may pollute receiving environment; - Probability of unplanned fires; and - Dust generation during construction and operation activities.			
Habitat Unit	**Driver / activity**	**Parameter**	**Pre - mitigation (Score)**		**Post - mitigation (Score)**
Grassland Habitat	Associated Infrastructure: - BESS; - Concrete batching plant; - Construction camp; - Facility substation & Eskom collector station; - Laydown area;	Impact Magnitude (M)	3		3
		Impact Extent (E)	2		1
		Impact Reversibility (R)	3		3
		Impact Duration (D)	4		4
		Probability of Impact (P)	5		5
		Significance (S)	(-) 60		(-) 55

	- O&M building; and - Paved areas.	Environmental Significance Rating	Moderate	Moderate
	Surface infrastructure: - Developable areas.	Impact Magnitude (M)	5	4
		Impact Extent (E)	3	2
		Impact Reversibility (R)	3	3
		Impact Duration (D)	4	4
		Probability of Impact (P)	5	5
		Significance (S)	(-) 75	(-) 65
		Environmental Significance Rating	High	High
	Linear development: - Access roads; - Internal roads; and - Interconnected OHPL	Impact Magnitude (M)	3	3
		Impact Extent (E)	2	1
		Impact Reversibility (R)	3	3
		Impact Duration (D)	4	4
		Probability of Impact (P)	5	5
		Significance (S)	(-) 60	(-) 55
		Environmental Significance Rating	Moderate	Moderate
Transformed Habitat	Associated Infrastructure: - Laydown area	Impact Magnitude (M)	1	1
		Impact Extent (E)	1	1
		Impact Reversibility (R)	1	1
		Impact Duration (D)	1	1
		Probability of Impact (P)	5	3
		Significance (S)	(-) 20	(-)12
		Environmental Significance Rating	Low	Very Low
	Surface infrastructure: - Developable areas	Impact Magnitude (M)	1	1
		Impact Extent (E)	1	1
		Impact Reversibility (R)	1	1
		Impact Duration (D)	1	1
		Probability of Impact (P)	5	3
		Significance (S)	(-) 20	(-)12
		Environmental Significance Rating	Low	Very Low
	Linear development: - Access roads; - Internal roads; and - Interconnected OHPL	Impact Magnitude (M)	1	1
		Impact Extent (E)	1	1
		Impact Reversibility (R)	1	1
		Impact Duration (D)	1	1
		Probability of Impact (P)	5	3
		Significance (S)	(-) 20	(-)12

		Environmental Significance Rating	**Low**	**Very Low**
Freshwater Ecosystems	**Surface infrastructure:** **- Developable areas**	**Impact Magnitude (M)**	**3**	**3**
		Impact Extent (E)	**1**	**1**
		Impact Reversibility (R)	**3**	**3**
		Impact Duration (D)	**3**	**3**
		Probability of Impact (P)	**4**	**3**
		Significance (S)	(-) 40	(-)30
		Environmental Significance Rating	**Moderate**	**Low**
	Linear development: **- Internal roads; and** **- Interconnected OHPL**	**Impact Magnitude (M)**	**3**	**3**
		Impact Extent (E)	**1**	**1**
		Impact Reversibility (R)	**3**	**1**
		Impact Duration (D)	**3**	**3**
		Probability of Impact (P)	**4**	**3**
		Significance (S)	(-) 40	(-)24
		Environmental Significance Rating	**Moderate**	**Low**
CUMULATIVE IMPACTS		Three areas of concern were identified for Tournée 2 Solar PV Park in terms of cumulative impacts, namely habitat fragmentation, spread of AIPs, and additional (known) planned projects in the area. During the Construction phase where vegetation clearance is the main activity impacting on floral habitat, the cumulative impacts under consideration include the following: - Cumulative loss of vegetation (remaining extent of natural grasslands within an area that is already heavily cultivated) resulting from several known development projects within 30 m of the Tournée 2 Solar PV Park (i.e., the proposed Tournée 1 Solar PV Park, the approved 65.9 MW Tutuka PV Energy Facility, and potential expansion of agricultural activities due to the loss of cultivated fields associated with the proposed projects, etc.); and - - Cumulative contribution to fragmented landscapes and associated loss of movement and dispersal corridors within the landscape.		
CONFIDENCE		High		
MITIGATION MEASURES		- The construction footprint must be kept as small as possible to minimise the impact on the surrounding environment (edge effect management); - Construction footprint areas should be clearly demarcated to monitor footprint extent and avoid footprint creep; - Removal of vegetation must be restricted to what is necessary and should remain within the approved development footprint; - Clearing of vegetation should take place in a phased manner if feasible as to keep bare soil areas as small as possible to limit the erosion potential; - Access roads should be kept to existing roads as far as is feasible so to reduce fragmentation of existing natural habitat; - Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of construction activities;		

	- No indiscriminate movement of construction vehicles or personnel are allowed in the Freshwater Habitat particularly during intense rainfall events as water may flow with greater intensity within these areas; - Dust suppression must be undertaken as required and especially in dry seasons in order to mitigate the impact thereof on flora within a close proximity of construction activities; - Care should be taken during the construction of the proposed development to limit edge effects to surrounding natural habitat. At minimum, this can be achieved by: (i) Demarcating all footprint areas during construction activities, (ii) No construction rubble or cleared AIPs are to be disposed of outside of demarcated areas and should be taken to a registered waste disposal facility and (iii) manage the spread of AIP species, which may affect remaining natural habitat within surrounding areas. Any areas that have been left bare or disturbed because of the construction activities should be rehabilitated using indigenous species. Ensure AIP vegetation cuttings/propagules are disposed of adequately, i.e., it must be ensured that the spread of these species is prevented. Designated spots for cuttings are highly recommended, or potentially make use of registered waste sites; - No chemical control of AIP is permitted within the 32 m buffer of any Freshwater Ecosystem unless it has been approved as safe for use in wetlands by the Working for Water group, and the application of herbicide should only be carried out by suitably trained personnel; - Roadsides and linear developments serve as common corridors along which alien and invasive floral species are introduced and dispersed. Therefore, an AIP control plan should be implemented along all linear disturbances; - No illicit fires must be allowed during the construction of the proposed development. A Fire Management Plan (FMP) should be set in place to ensure that any fires that do originate can be managed and / or stopped before significant damage to the environment occurs; - If any spills occur, they should be immediately cleaned up to avoid soil contamination that can hinder floral rehabilitation later down the line. Spill kits should be kept on-site within workshops. In the event of a breakdown, maintenance of vehicles must take place with care, and the recollection of spillage should be practised, preventing the ingress of hydrocarbons into the topsoil. An emergency spill kit must be available at the plant and must take cognisance should any spill near any Freshwater Ecosystems in the vicinity of the infrastructure; - No dumping of general or hazardous waste should take place. If any spills occur, they should be immediately cleaned up, and be disposed of at a registered waste facility; - Special attention should be paid to AIP control within these areas; - Avoid soil sealing (i.e., the destruction or covering of the ground by an impermeable material). Ensure that a vegetation layer is maintained (where possible). In this regard, use of indigenous plants from the reference vegetation type is recommended for best biodiversity outcomes; and - The design of internal access roads should consider semi-permeable surfaces that allow continuation of nutrient cycling.

Table 8: Impact Assessment considering the impacts and mitigation surrounding the floral SCC during the Construction phase of the 150 MW Tournée 2 Solar PV Park development. Since the Transformed Habitat does not support any floral SCC this habitat unit was not assessed within the SCC impact tables.

IMPACT NATURE		Impact – floral SCC		STATUS	NEGATIVE
Impact Description		- Loss of habitat for SCC through site clearing; and - Potential loss of floral SCC.			
Impact Source(s)		- Vegetation clearing compromising suitable conditions for floral SCC to establish successfully; - Footprint creep leading to additional loss of SCC habitat and floral SCC species; - Failure to have conducted a floral walkdown and where necessary floral rescue and relocation prior to construction actives; - Potential ineffective monitoring of relocated SCC; and. - Unnecessary or unlawful destruction/removal of floral SCC and protected species.			
Habitat Unit	**Driver / activity**	**Parameter**	**Pre - mitigation (Score)**	**Post - mitigation (Score)**	
Grassland Habitat	- Threatened Floral SCC	Impact Magnitude (M)	2	2	
		Impact Extent (E)	2	1	
		Impact Reversibility (R)	3	3	
		Impact Duration (D)	4	4	
		Probability of Impact (P)	3	2	
		Significance (S)	(-) 33	(-) 20	
		Environmental Significance Rating	Moderate	Low	
	- Protected Floral SCC	Impact Magnitude (M)	2	2	
		Impact Extent (E)	2	1	
		Impact Reversibility (R)	3	3	
		Impact Duration (D)	4	4	
		Probability of Impact (P)	5	3	
		Significance (S)	(-) 55	(-) 30	
		Environmental Significance Rating	Moderate	Low	
Freshwater Ecosystems	- Threatened Floral SCC	Impact Magnitude (M)	2	2	
		Impact Extent (E)	2	1	
		Impact Reversibility (R)	3	3	
		Impact Duration (D)	4	4	
		Probability of Impact (P)	3	2	
		Significance (S)	(-) 33	(-) 20	
		Environmental Significance Rating	Moderate	Low	
	- Protected Floral SCC	Impact Magnitude (M)	2	2	

		Impact Extent (E)	**2**	**1**
		Impact Reversibility (R)	**3**	**3**
		Impact Duration (D)	**4**	**4**
		Probability of Impact (P)	**2**	**1**
		Significance (S)	(-) 22	(-) 10
		Environmental Significance Rating	**Low**	**Very Low**
CUMULATIVE IMPACTS		As previously mentioned, there are three areas of concern in terms of cumulative impacts associated with the Tournée 2 Solar PV Park (habitat fragmentation, spread of AIPs, and additional (known) planned projects in the area). During the Construction phase, and specifically relating to threatened and protected floral SCC, the cumulative impacts under consideration include the following: - Cumulative loss of suitable habitat for both threatened and protected floral SCCs within the landscape, especially considering additional, known developments that are proposed or approved within the area (refer to Table 7 and section 6.2.5); and - Cumulative contribution to fragmentation within the landscape which ultimately results in decreased potential for geneflow of threatened and protected floral SCCs within the landscape.		
CONFIDENCE		Medium		
MITIGATION MEASURES		- Impact must be limited to the footprint area and kept to what is essential only; - If any floral SCC are found during the Construction phase, that was missed during the floral walkdown, these individuals should be marked for relocation and/or destruction so that all necessary permits and authorisations can be obtained from authorities; - Monitor, where applicable, the success or failures of relocated floral SCC; - Demarcate and monitor the floral SCC populations outside of the footprint areas to ensure construction activities do not infringe onto these species; - No collection of floral SCC must be allowed; and. - Edge effect control needs to be implemented to prevent further degradation and potential loss of floral SCC outside of the proposed disturbance footprint area.		

Table 9: Impact Assessment considering the impacts and mitigation surrounding the floral habitat diversity during the Operational and Maintenance Phase of the 150 MW Tournée 2 Solar PV Park development.

IMPACT NATURE		Impact – floral habitat and diversity		STATUS	NEGATIVE
Impact Description		- Potential loss of floral habitat beyond the project footprint; - Potential loss of floral habitat and species diversity; - Potential loss of productive topsoil; - Potential loss of downslope vegetation communities; and - Potential loss of viable soils, increasing erosion risk and/or further exacerbating the proliferation of AIPs.			
Impact Source(s)		- Failure to concurrently rehabilitate bare areas or disturbed sites as soon as they become available; - Poorly managed stormwater management systems, leading to increased probability of soil erosion; - Soil erosion, exacerbated by potentially inadequate stormwater management, can lead to contamination of downstream freshwater ecosystems as a result of sedimentation; - Potential footprint creep associated with operational activities; - Potential unplanned fires resulting from operational and maintenance activities; - Additional pressure on floral habitat by increased human populations associated with the proposed development activities, contributing to increases in the collection of plant material for medicinal purposes and promoting the introduction and spread of AIPs; - Risk of chemical contamination of soil, which can occur if herbicides are used to control vegetation growth under solar panels; and - Risk of contamination from all operational facilities may pollute receiving environment.			
Habitat Unit	**Driver / activity**	**Parameter**	**Pre - mitigation (Score)**		**Post - mitigation (Score)**
Grassland Habitat	Associated Infrastructure: - BESS; - Concrete batching plant; - Construction camp; - Facility substation & Eskom collector station; - Laydown area; - O&M building; and - Paved areas.	Impact Magnitude (M)	3		2
		Impact Extent (E)	2		2
		Impact Reversibility (R)	3		3
		Impact Duration (D)	4		4
		Probability of Impact (P)	4		2
		Significance (S)	(-) 48		(-) 22
		Environmental Significance Rating	Moderate		Low
	Surface infrastructure: - Developable areas.	Impact Magnitude (M)	4		3
		Impact Extent (E)	2		2
		Impact Reversibility (R)	3		3
		Impact Duration (D)	4		4
		Probability of Impact (P)	4		2
		Significance (S)	(-) 52		(-) 24

		Environmental Significance Rating	Moderate	Low
	Linear development: - Access roads; - Internal roads; and - Interconnected OHPL.	Impact Magnitude (M)	2	2
		Impact Extent (E)	2	2
		Impact Reversibility (R)	3	3
		Impact Duration (D)	4	4
		Probability of Impact (P)	4	3
		Significance (S)	(-) 44	(-) 33
		Environmental Significance Rating	Moderate	Moderate
Transformed Habitat	Associated Infrastructure: - Laydown area.	Impact Magnitude (M)	1	1
		Impact Extent (E)	1	1
		Impact Reversibility (R)	1	1
		Impact Duration (D)	5	4
		Probability of Impact (P)	1	1
		Significance (S)	(-) 8	(-) 7
		Environmental Significance Rating	Very Low	Very Low
	Surface infrastructure: - Developable areas.	Impact Magnitude (M)	1	1
		Impact Extent (E)	1	1
		Impact Reversibility (R)	1	1
		Impact Duration (D)	5	4
		Probability of Impact (P)	1	1
		Significance (S)	(-) 8	(-) 7
		Environmental Significance Rating	Very Low	Very Low
	Linear development: - Access roads; - Internal roads; and - Interconnected OHPL.	Impact Magnitude (M)	1	1
		Impact Extent (E)	1	1
		Impact Reversibility (R)	1	1
		Impact Duration (D)	4	4
		Probability of Impact (P)	1	1
		Significance (S)	(-) 7	(-) 7
		Environmental Significance Rating	Very Low	Very Low
Freshwater Ecosystems	Surface infrastructure: - Developable areas.	Impact Magnitude (M)	3	3
		Impact Extent (E)	2	2
		Impact Reversibility (R)	3	3
		Impact Duration (D)	4	4
		Probability of Impact (P)	3	2
		Significance (S)	(-) 36	(-) 24
		Environmental Significance Rating	Moderate	Low

	Linear development: - **Internal roads; and** - **Interconnected OHPL.**	**Impact Magnitude (M)**	**3**	**2**
		Impact Extent (E)	**1**	**1**
		Impact Reversibility (R)	**1**	**1**
		Impact Duration (D)	**4**	**4**
		Probability of Impact (P)	**4**	**3**
		Significance (S)	(-) 36	(-) 24
		Environmental Significance Rating	**Moderate**	**Low**
CUMULATIVE IMPACTS		Three areas of concern were identified for Tournée 2 Solar PV Park in terms of cumulative impacts, namely habitat fragmentation, spread of AIPs, and additional (known) planned projects in the area. During the Operational and Maintenance Phase where vegetation clearance has already taken place, the cumulative impacts under consideration include the following: - Cumulative degradation of the remaining extent of natural grasslands (loss of species diversity and habitat integrity) within the landscape due to uncontrolled AIP proliferation; - Cumulative degradation of the remaining extent of natural grasslands within the landscape due to fragmented landscapes; - Cumulative loss of floral habitat outside of the proposed footprints due to poor rehabilitation of disturbed areas that resulted from either the construction activities, or from maintenance activities; and - Cumulative loss of habitat integrity of the CVB wetlands due to poorly managed stormwater and erosion associated with the proposed Tournée 2 Solar PV Park activities during the maintenance phase. -		
CONFIDENCE		High		
MITIGATION MEASURES		- All areas of increased ecological sensitivity beyond the approved footprint must be designated as No-Go areas and be off-limits to all vehicles and personnel; - No additional habitat is to be disturbed during the operational phase of the project outside of the demarcated approved footprints (being applied for); - Monitor the Freshwater Habitat to ensure that floral communities are not degraded; - Ongoing erosion and stormwater monitoring and control to be implemented throughout the operational and maintenance phase; - The use of species-specific control methods and mechanical removal should be used to manage the regrowth if vegetation underneath solar panels; - Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the operational activities; - Manage the spread of AIP species, which may affect remaining natural habitat within surrounding areas; - Ongoing AIP monitoring and clearing/control should take place throughout all phases of the project activities. The project perimeters should regularly be checked for AIP proliferation to prevent spread into surrounding natural areas; - No illicit fires must be allowed during the operational phases; and - Fire breaks should be maintained during the operational and maintenance phases.		

Table 10: Impact Assessment considering the impacts and mitigation surrounding the floral SCC during the Operational and Maintenance Phase of the 150 MW Tournée 2 Solar PV Park development. Since the Transformed Habitat does not support any floral SCC this habitat unit was not assessed within the SCC impact tables.

IMPACT NATURE		Impact – floral SCC		STATUS	NEGATIVE
Impact Description		- Potential loss of habitat for SCC through habitat change; and - Potential loss of floral SCC.			
Impact Source(s)		- Continued AIP proliferation into the remaining favourable habitat of SCCs or within relocated sites (where applicable); - Ineffective monitoring of relocated SCC and nursery specimens (where applicable); - Harvesting of SCC; and - Unnecessary or unlawful destruction/removal of floral SCC and protected species.			
Habitat Unit	**Driver / activity**	**Parameter**	**Pre – mitigation (Score)**	**Post – mitigation (Score)**	
Grassland Habitat	- Threatened Floral SCC	Impact Magnitude (M)	2	1	
		Impact Extent ®	1	1	
		Impact Reversibili®(R)	3	3	
		Impact Duration (D)	4	4	
		Probability of Impact (P)	3	2	
		Significance (S)	(-) 30	(-)18	
		Environmental Significance Rating	Low	Low	
	- Protected Floral SCC	Impact Magnitude (M)	2	1	
		Impact E®nt (E)	1	1	
		Impact Rever®ility (R)	3	3	
		Impact Duration (D)	4	4	
		Probability of Impact (P)	3	2	
		Significance (S)	(-) 30	(-) 18	
		Environmental Significance Rating	Low	Low	
Freshwater Ecosystems	- Threatened Floral SCC	Impact Magnitude (M)	3	2	
		Im®t Extent (E)	1	1	
		Impact®versibility (R)	3	3	
		Impact Duration (D)	5	5	
		Probability of Impact (P)	1	1	
		Significance (S)	(-) 12	(-)11	
		Environmental Significance Rating	Low	Very Low	
	- Protected Floral SCC	Impact Magnitude (M)	3	2	
		Impact Extent (E)	1	1	

		Imp® Reversibility (R)	**3**	**3**
		Impact Duration (D)	**5**	**5**
		Probability of Impact (P)	**1**	**1**
		Significance (S)	(-) 24	(-) 11
		Environmental Significance Rating	**Low**	**Very Low**
CUMULATIVE IMPACTS		- During the Operational and Maintenance phase, the only cumulative impacts to threatened and protected floral SCCs include the cumulative loss of habitat for such species due to AIP proliferation and habitat fragmentation.		
CONFIDENCE		Medium		
MITIGATION MEASURES		- Any unauthorised collection of floral material is to be prohibited; - Monitoring of any rescued and relocated floral SCC should commence during the construction phase and continue until it is evident that relocated species have successfully established and population are stable; - Maintenance activities must ensure that floral SCC and protected flora (where present outside of the footprint areas) will not be adversely impacted; - Harvesting of protected and threatened floral species by operational personnel should be strictly prohibited; and - Edge effect control needs to be implemented to prevent further degradation and potential loss of floral SCC outside of the proposed development footprint area.		

Table 11: Impact Assessment considering the impacts and mitigation surrounding the floral habitat diversity during the Decommissioning Phase of the 150 MW Tournée 2 Solar PV Park development.

IMPACT NATURE		Impact – floral habitat and diversity		STATUS	NEGATIVE
Impact Description		- Loss of floral habitat and species diversity; - Loss of productive topsoil; - Landscapes left fragmented, resulting in reduced dispersal capabilities of floral species and an overall decrease in floral diversity; - Compacted soils limiting the re-establishment of natural vegetation; and - Increased risk of erosion in areas left disturbed.			
Impact Source(s)		- Failure to monitor rehabilitation efforts; - Failure to rehabilitate bare areas or disturbed sites, potentially resulting in loss of viable soils, increasing erosion risk and/or further permitting the proliferation of AIPs; - Poorly managed stormwater management systems; - Poorly implemented AIP management; - Disturbance of soil profiles as part of the demolition activities; - Potential poor management and failure to monitor rehabilitation efforts.			
Habitat Unit	**Driver / activity**	**Parameter**	**Pre - mitigation (Score)**	**Post - mitigation (Score)**	
Grassland Habitat	Associated Infrastructure: - BESS; - Concrete batching plant; - Construction camp; - Facility substation & Eskom collector station; - Laydown area; - O&M building; and - Paved areas.	Impact Magnitude (M)	4	3	
		Impact Extent (E)	2	1	
		Impact Reversibility (R)	3	3	
		Impact Duration (D)	5	3	
		Probability of Impact (P)	3	2	
		Significance (S)	(-) 42	(-) 20	
		Environmental Significance Rating	Moderate	Low	
	Surface infrastructure: - Developable areas.	Impact Magnitude (M)	4	3	
		Impact Extent (E)	3	2	
		Impact Reversibility (R)	3	3	
		Impact Duration (D)	5	3	
		Probability of Impact (P)	3	2	
		Significance (S)	(-) 45	(-) 22	
		Environmental Significance Rating	Moderate	Low	
	Linear development: - Access roads;	Impact Magnitude (M)	3	2	
		Impact Extent (E)	2	1	

	- Internal roads; and - Interconnected OHPL.	Impact Reversibility (R)	3	3
		Impact Duration (D)	5	3
		Probability of Impact (P)	3	2
		Significance (S)	(-) 39	(-) 18
		Environmental Significance Rating	Moderate	Low
Transformed Habitat	Associated Infrastructure: - Laydown area	Impact Magnitude (M)	2	1
		Impact Extent (E)	1	1
		Impact Reversibility (R)	1	1
		Impact Duration (D)	3	2
		Probability of Impact (P)	2	1
		Significance (S)	(-) 14	(-) 5
		Environmental Significance Rating	Very Low	Very Low
	Surface infrastructure: - Developable areas	Impact Magnitude (M)	2	1
		Impact Extent (E)	2	2
		Impact Reversibility (R)	3	3
		Impact Duration (D)	3	2
		Probability of Impact (P)	2	1
		Significance (S)	(-) 20	(-) 8
		Environmental Significance Rating	Low	Very Low
	Linear development: - Access roads; - Internal roads; and - Interconnected OHPL	Impact Magnitude (M)	2	1
		Impact Extent (E)	2	1
		Impact Reversibility (R)	1	1
		Impact Duration (D)	3	2
		Probability of Impact (P)	2	1
		Significance (S)	(-) 16	(-) 5
		Environmental Significance Rating	Low	Very Low

CUMULATIVE IMPACTS	- Cumulative impacts during the Decommissioning phase will largely be associated with poorly rehabilitated landscapes which may result in a cumulative loss of species diversity, habitat connectivity, and overall levels of habitat integrity.
CONFIDENCE	High
MITIGATION MEASURES	- Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the decommissioning activities; - No dumping of litter, rubble or cleared vegetation on site must be allowed. Infrastructure and rubble generated during the decommissioning activities should be disposed of at an appropriate registered dump site. No temporary dump sites should be allowed in areas with natural vegetation. Waste disposal containers and bins should be provided during the decommissioning phase for all rubble and general waste. Vegetation cuttings must be carefully collected and disposed of at a separate waste facility; - Ongoing AIP monitoring and clearing/control should take place throughout all phases of the project activities. The project perimeters should regularly be checked for AIP proliferation to prevent spread into surrounding natural areas; - Management of AIPs during the Decommissioning phase activities must be focused on limiting their spread. For example, roadsides should be monitored, as they serve as common corridors along which AIP species are introduced and dispersed, and disturbed areas should regularly be monitored for AIP recruitment until successfully rehabilitated; - Gravel form the Developable areas should be removed, as soon as PV panels are removed, and a vegetation cover should be reinstated (using naturally occurring species from surrounding areas or use of ecological suitable seed mixes incorporated). Bulbous and geophytes species (from the reference vegetation) should be reinstated into the rehabilitated vegetation to recover some ecological functioning of the grassland habitat; and - Compacted soils will need to be tilled and the soils will potentially need additional nutrients to account for the altered nutrient cycles during the life time of the project.

Table 12: Impact Assessment considering the impacts and mitigation surrounding the floral SCC during the Decommissioning Phase of the 150 MW Tournée 2 Solar PV Park development.

IMPACT NATURE		Impact – floral SCC		STATUS	NEGATIVE
Impact Description		- Potential loss of favourable habitat compromising of suitable conditions for floral SCC to establish successfully. - Potential loss of floral SCC.			
Impact Source(s)		- Unnecessary or unlawful destruction/removal of floral SCC and protected species; - Failure to rehabilitate bare areas or disturbed sites; - Inadequate stormwater management resulting in loss of viable soils and potentially increasing erosion risk;. - AIP proliferation within the Tournée 2 Solar PV Park area; and - Ineffective monitoring of relocated SCC resulting in the loss of SCC within the Tournée 2 Solar PV Park area.			
Habitat Unit	**Driver / activity**	**Parameter**	**Pre - mitigation (Score)**	**Post - mitigation (Score)**	
Grassland Habitat	- Threatened Floral SCC	Impact Magnitude (M)	3	2	
		Impact Extent (E)	2	1	
		Impact Reversibility (R)	3	3	
		Impact Duration (D)	3	2	
		Probability of Impact (P)	3	2	
		Significance (S)	(-) 33	(-)16	
		Environmental Significance Rating	Moderate	Low	
	- Protected Floral SCC	Impact Magnitude (M)	3	2	
		Impact Extent (E)	2	1	
		Impact Reversibility (R)	3	3	
		Impact Duration (D)	2	1	
		Probability of Impact (P)	1	2	
		Significance (S)	(-) 30	(-) 14	
		Environmental Significance Rating	Moderate	Low	

CUMULATIVE IMPACTS	- Cumulative impacts during the Decommissioning phase will largely be associated with poorly rehabilitated landscapes and poorly managed AIP proliferation, which continue to degrade the overall extent of suitable habitat for threatened and protected flora SCC within the area.
CONFIDENCE	High
MITIGATION MEASURES	- Any unauthorised collection of floral material is to be prohibited during decommissioning activities; - Harvesting of protected and threatened floral species by personnel should be strictly prohibited; - Edge effect control needs to be implemented to prevent further habitat degradation and potential loss of floral SCC where footprint areas are located (or demolished); and - Floral SCC relocated during the Pre-construction phase of the development should be reinstated within the Tournée 2 Solar PV Park area where appropriate and as soon as the habitat is rehabilitated, and relocated floral SCC should be monitored to ensure success of translocation.

6.2 Impact Discussion

The sections below provide the significance of apparent impacts arising from the proposed Tournée 2 Solar PV Park development.

The proposed activities will impact on floral ecology within the Tournée 2 Solar PV Park, resulting in the loss of approximately 287 ha of habitat, of which approximately 92 ha (approx. 32%) encompasses natural habitat (i.e., Grassland Habitat) that is moderately intact. The greatest impacts to floral communities and ecology (i.e., habitat, diversity, and floral SCC) are anticipated from the Construction Phase of the project, where direct loss of habitat and species will take place through vegetation clearing activities. The Decommissioning Phase can allow for reinstatement of some native vegetation, and it is deemed possible to achieve the pre-development landscape (or potentially improved functionality) given that monitoring and management during the rehabilitation is adequately implemented. Rehabilitation to the pre-development state will, however, require a significant input into getting the soils fertile again and the importation of topsoil may be required.

The most significant impacts to affect the floral habitat, species diversity, and floral SCC resulting from the proposed activities include, but are not limited to, the following:

- Clearance of indigenous floral habitat;
- Increase risk of erosion and poor stormwater management - resulting in loss of soils, the down-slope sedimentation of habitat and the consequent loss of habitat beyond the planned footprint;
- AIP proliferation into natural vegetation, displacing indigenous flora and altering favourable habitat conditions for the establishment of native species;
- Fragmentation of indigenous vegetation communities; and
- Destruction, removal, or harvesting of floral SCC during any phase of the project and potential poor implementation and monitoring of rescued and relocated plants, leading to unmitigated impacts to, and loss of, SCC individuals.

The below sections provide a discussion of the impact assessment outcome in more detail.

6.2.1 Impacts on Floral Diversity and Habitat Integrity

The proposed activities will impact on the habitat units identified on site to varying degrees, as depicted in the below table.

Table 13: Breakdown of the extent of habitat units lost within the Tournée 2 Solar PV Park.

Habitat Unit	Proposed infrastructure	Extent of habitat units impacted by proposed activities (ha)
Grassland Habitat	Internal roads	2,60
	Access road	0,04
	Facility substation & Eskom collector station	3,00
	Cement batching	3,01
	BESS	4,01
	O&M building	0,15
	Construction camp	0,50
	Paved area	0,25
	Laydown area	1,50
	Developable area	75,77
	Interconnected OHPL	4,9
Freshwater Ecosystems	Interconnected OHPL	0,76
Transformed Habitat	Laydown area	0,50
	Internal roads	4,95
	Developable area	188,12
	Access roads	0,03
	Interconnected OHPL	56,4

The various aspects of this project will impact differently on the habitats identified within the Tournée 2 Solar PV Park. The Construction Phase is expected to have the greatest negative impact on the floral habitat and diversity within the Tournée 2 Solar PV Park (i.e., direct removal of floral communities). Large extents of the Tournée 2 Solar PV Park are located within the Transformed Habitat (i.e., low sensitivity areas); however, the remaining footprint areas are located in the Grassland Habitat (i.e., intermediate sensitivity areas). Taking the current layout into account (where sensitive habitat such as the Freshwater Ecosystems are already excluded from the proposed footprint areas), avoidance of impacts within habitat units of **intermediate** sensitivity is not possible. As such, mitigation of impacts should focus on minimisation through 1) adequate planning, 2) ensuring footprints remain within authorised areas only, 3) edge effect management such as AIP control, and 4) sound planning of stormwater management, erosion control and rehabilitation activities.

The highest negative impacts are considered to be associated with the Developable Areas as bi-facial panels are proposed to be constructed which requires the complete modification of ground cover with semi-reflective gravel. The complete loss of vegetation communities and alteration of associated nutrient cycles are considered to significantly impact on the longevity and productivity of the soils over the long-term. Therefore, any further permanent loss of natural communities outside of the PV panel footprint areas must be avoided, for example, by considering semi-permeable surfaces for the access roads to maintain soil health for increased rehabilitation success during the decommissioning and subsequent rehabilitation

phases. The incorporation of stormwater management plans and AIP control plans is recommended to ultimately reduce indirect impacts associated with the Tournée 2 Solar PV Park development.

With mitigation implemented (specifically during the Construction Phase as well as the Operation and Maintenance Phases), the impact significance from the proposed Tournée 2 Solar PV Park on the Grassland Habitat is expected to vary between **moderate and high**, where the greatest impacts are anticipated for the Developable areas during the Construction Phase. The post-mitigation significance levels for the Transformed Habitat can be reduced to **very low and low** levels and the significance levels of the indirect impacts anticipated within the Freshwater Habitat is expected to be **very low and low** after mitigation.

The impact summary for the Tournée 2 Solar PV Park is provided in the Table 14.

Table 14: Impact summary table for the proposed Tournée 2 Solar PV Park on floral habitat and diversity.

		Pre-construction and Planning Phase		Construction Phase		Operational and Maintenance Phase		Decommissioning Phase	
		Pre-mitigation	Post-mitigation	Pre-mitigation	Post-mitigation	Pre-mitigation	Post-mitigation	Pre-mitigation	Post-mitigation
Grassland Habitat	Associated Infrastructure	L	L	M	M	M	L	M	L
	Surface infrastructure	M	L	H	H	M	L	M	L
	Linear development	L	L	M	M	M	M	M	L
Transformed Habitat	Associated Infrastructure	L	VL	L	VL	VL	VL	VL	VL
	Surface infrastructure	L	VL	L	VL	VL	VL	L	VL
	Linear development	L	VL	L	VL	VL	VL	L	VL
Freshwater Ecosystem	Surface infrastructure	NA	NA	M	L	M	L	NA	NA
	Linear development	M	L	M	L	M	L	NA	NA

6.2.2 Impacts on Floral SCC

The exact impact on threatened floral SCC and protected floral SCC will only be determined after the final floral walkdown of the authorised footprints have been undertaken. However, given the current site data and position of the proposed development, both threatened (high likelihood) and protected (several confirmed localities) species are anticipated to be impacted

by the Tournée 2 Solar PV Park. The proposed Tournée 2 Solar PV Park can attempt to avoid destruction of threatened floral SCC and protected flora SCC by conducting a floral walkdown prior to any construction activities commencing (i.e., Pre-construction and Planning Phase) and making changes to the proposed layout to avoid destruction (as per SANBI's guidelines, translocation of threatened species is not seen as a mitigation measure). If the proposed layout cannot be changed, and the project receives authorisation nonetheless, it will be essential to investigate the possibility of rescuing and relocating threatened species that would be impacted by the proposed activities. For MNCA-protected species (where such species are of least concern), obtaining the relevant permits form either national or provincial bodies to relocate floral SCC (and by incorporating the necessary management and monitoring plans).

Habitat for two threatened species is considered to be present within the Freshwater Ecosystems namely, *Kniphofia typhoides* (near-threatened (NT)) (flowering season: February-March) and Sensitive species 691 (VU) (flowering season: February-March). Neither of these species are anticipated to be impacted by the proposed project given that the footprint areas were designed in such a way that the Freshwater Ecosystems and their associated 32 m buffer (as stipulated by the Freshwater Ecological Report (SAS 22-1193, 2023)) are excluded from the final layout. However, if any of these species are encountered within the footprint areas (however unlikely) during the pre-construction floral walkdown (which must take place during the species flowering season), the number of individuals within the direct footprint areas must be recorded. In the case of *Kniphofia typhoides* (which has a high Probability of Occurrence within the Freshwater Ecosystems) and Sensitive species 691 (which has a medium Probability of Occurrence within the Freshwater Ecosystems), the current exclusion of the Freshwater Ecosystems (and a 32 m buffer) from the proposed layout of the Tournée 2 Solar PV Park provides a substantial environmental buffer for this species and protection of this species' habitat to sustain viable populations. Should any individuals of *Kniphofia typhoides* or Sensitive species 691 be encountered during the pre-construction walkdown, these species must be relocated to the protected Freshwater Ecosystems. Fire is an important environmental driver for the species *Kniphofia typhoides*, therefore a Fire Management Plan should also be investigated and developed before the commencement of the construction activities.

Furthermore, the Tournée 2 Solar PV Park is associated with habitat that supports provincially protected floral species (as per the Mpumalanga Nature Conservation Act, 1998 (Act No. 10 of 1998) (MNCA)) and habitat for other provincially protected species (see Section 3; Part B). The proposed activities will therefore directly impact on these species' numbers within the footprint areas. Consultation with the MTPA (for provincially protected species) regarding permits or authorisation for the relocation will be dependent on the outcome of the pre-

construction floral walkdown. Where provincially protected species are encountered, permits from the regional authorities need to be obtained to remove affected individuals before any construction commences.

It is important to consider the following regarding 'search and rescue' operations for threatened species (SANBI, 2020):

- Translocation of species may only occur onto directly adjacent areas (including protected areas) considered to be part of the same original population and within the same home range; and
- Translocation of particular species through search and rescue operations may not be considered as an impact minimisation mitigation measure during the significance calculation of anticipated post-mitigation impacts, to provide justification/ motivation for the development to proceed.

The impact summary for the Tournée 2 Solar PV Park is provided in the Table 15.

Table 15: Impact summary for the proposed Tournée 2 Solar PV Park on floral SCC.

		Pre-construction and Planning Phase		Construction Phase		Operational and Maintenance Phase		Decommissioning Phase	
		Pre-mitigation	Post-mitigation	Pre-mitigation	Post-mitigation	Pre-mitigation	Post-mitigation	Pre-mitigation	Post-mitigation
Grassland Habitat	Threatened Floral SCC	M	L	M	L	L	L	M	L
	Protected Floral SCC	M	L	M	L	L	L	L	VL
Freshwater Ecosystems	Threatened Floral SCC	M	L	M	L	L	VL	**NA**	**NA**
	Protected Floral SCC	L	L	L	VL	L	VL	**NA**	**NA**

6.2.3 Impact on CBAs, ESAs, Threatened Vegetation and Protected Areas

The Tournée 2 Solar PV Park development will not impact on any CBAs or threatened vegetation types, threatened ecosystems, or protected areas. The Freshwater Ecosystems are considered to be important component of the **VU** Soweto Highveld Grassland Ecosystem type, however the current Tournée 2 Solar PV Park layout has excluded the Freshwater Ecosystems from its developable areas (or any footprint areas). While no development is anticipated within the Freshwater Ecosystems it important that edge effects be managed and mitigated accordingly to avoid any habitat degradation as a result of the Tournée 2 Solar PV Park development.

6.2.4 Probable Residual Impacts

Even with mitigation, residual impacts on the receiving floral ecological environment are deemed likely. The following points highlight the key residual impacts that have been identified:

- Edge effects such as further habitat fragmentation and AIP proliferation;
- Permanent loss of affected protected and threatened floral species and suitable habitat for such species; and
- Disturbed areas not rehabilitated to an ecologically functioning state with resulting significant loss of floral habitat, species diversity and SCC/protected floral species likely to be permanent.

6.2.5 Cumulative Impacts

For the assessment of potential cumulative impacts to vegetation and plant species associated with Tourneé 2 Solar PV Park, consideration was given to past, present, and future (known) projects and natural drivers that affect these aspects. Three areas of concern were identified for Tourneé 2 Solar PV Park:

- Additional (known) planned projects in the area;
- Habitat fragmentation; and
- Spread of AIPs.

According to the South African Renewable Energy EIA Application Database (2022), 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 the 65.9 MW Tutuka PV Energy Facility and its associated infrastructure on portion 4, 10, 11 and 12 of the Farm Pretorius Vley 374, near Standerton within Lekwa, Mpumalanga Province (Applicant: Eskom Holdings SOC Limited. Status: Approved. DFFE Ref: 14/12/16/3/3/2/754). This indicates that apart from the Tournée 2 Solar PV Park, there are additional renewable energy developments planned within the area. Moreover, immediately north of the Tournée 2 Solar PV Park, there is an application for the Tournée 1 Solar PV Park. As such, if the project is authorised, there will be a cumulative loss of habitat in the area and specifically habitat associated with the remaining extent of the Soweto Highveld Grassland and associated floral SCCs. However, in terms of known renewable energy projects in the larger area, the Tournée 2 Solar PV Park is unlikely to contribute towards cumulative impacts in the area which are of unacceptably high significance. This does not, however, consider additional planned developments such as mining projects and/or urban developments within the area (for which less details were available) and there

could therefore be more significant, cumulative impacts associated with the proposed Tournée 2 Solar PV Park in terms overall habitat loss within the area.

The proposed project could further impact on the floral habitat and diversity as well as floral SCC through fragmentation of natural habitat. The habitat is already significantly fragmented by cultivation and very few movement and dispersal corridors remain in the landscape between the remaining extent of natural grasslands (i.e., the Soweto Highveld Grassland). The proposed layout of the Tournée 2 Solar PV Park has ensured that the CVB wetlands will not directly be impacted by the development and that these features will not be fragmented. As such, despite the definite fragmentation of the Grassland Habitat, the remaining CVB wetlands will allow for some connectivity to remain between natural patches of vegetation within the area. The cumulative impact from additional fragmentation to the landscape is therefore not anticipated to be significantly (or unacceptably) high in the long-term.

AIPs are reported to be one of the greatest threats to biodiversity and are closely associated with disturbance; these species are able to colonise disturbed areas rapidly. Several sections of Tournée 2 Solar PV Park are already associated with AIP proliferation and, if not controlled, these species can continue to spread across the landscape, resulting in a cumulative loss of indigenous floral species and potential permanent displacement of floral SCC and their habitat. Ongoing degradation of the remaining extent of the Soweto Highveld Grassland due to uncontrolled spread of AIPs could result in a significant, cumulative loss of the VU vegetation type within the area; however, the spread of AIPs is deemed mitigatable and is not anticipated to be a significant issue that could rise from the Tournée 2 Solar PV Park's activities (if sufficiently mitigated).

Given that the Tournée 2 Solar PV Park will be decommissioned and rehabilitated, the cumulative loss of habitat and fragmentation of the landscape is deemed to be temporary.

6.3 Floral Monitoring

A floral monitoring plan must be designed and implemented (by the proponent) during the Operational and Maintenance Phase of the project as well as post-decommissioning and rehabilitation of the project (should the project be approved). The following points aim to guide the design of the monitoring plan, and it must be noted that the monitoring plan must be continually updated and refined for site-specific requirements:

- Alien vegetation monitoring should take place across the Tournée 2 Solar PV Park to identify sites that should be prioritised for AIP control. The clearing and management of AIP priority areas should be monitored for re-emerging alien vegetation. Follow-up work can be undertaken on a three (3) to six (6) monthly basis, depending on the rate of re-growth;
- Threatened floral SCC and protected floral SCC that have been relocated (if applicable) must be monitored;
- Monitoring of all the natural areas surrounding the project's activities should continue throughout the operational and maintenance phase to ensure these areas are not adversely affected by the proposed project activities, especially with regards to edge effect impacts that can stem from AIP proliferation or from a fragmented landscape; and
- The method of monitoring must be designed to be subjective and repeatable to ensure consistent results.

7 CONCLUSION

STS was appointed to conduct a terrestrial biodiversity assessment as part of the EA application process for the proposed 150 MW Tournée 2 Solar PV Park near Thuthukani, Mpumalanga Province.

The Tournée 2 Solar PV Park is associated with habitat of varying degrees of ecological importance, and each will be impacted to different extents. That is, the floral communities identified for the Tournée 2 Solar PV Park that will be impacted by the proposed activities include the following:

- Transformed Habitat of **low sensitivity** (within the proposed project footprint);
- Grassland Habitat of **intermediate sensitivity** (within the proposed project footprint); and
- Freshwater Ecosystems of **moderately high sensitivity** (will not directly be impacted by the proposed activities).

The proposed activities will largely take place within Transformed Habitat (approximately 190 ha); the remaining developments will occur within the Grassland Habitat (approximately 92 ha). The Grassland Habitat is somewhat modified (e.g., by long term grazing) and as such has a lowered habitat integrity; however, the Grassland Habitat still provides suitable habitat for several confirmed occurrences of provincially protected floral species present. The proposed project activities will directly and indirectly impact on floral habitat and will infringe upon habitat where floral SCC were observed during the site assessments. The significance of biodiversity

impacts varied depending on the floral habitat and proposed activities; however, with mitigation measures effectively implemented, the impacts on floral habitat, diversity, protected flora, and threatened flora can be acceptably reduced. A floral walkdown of the authorised footprint is required to obtain exact numbers and localities of floral SCC and protected species that will be impacted.

It is the opinion of the ecologists that this study provides the relevant information required to implement Integrated Environmental Management (IEM) and to ensure that the best long-term use of the ecological resources in the Tournée 2 Solar PV Park will be made in support of the principle of sustainable development.

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APPENDIX A: Floral Method of Assessment

The methods outlined in this document are aligned with the assessment guidelines provided by the South African National Biodiversity Institute (SANBI) (SANBI, 2020). SANBI is the regulatory body within South Africa that is responsible for ensuring sustainable development through facilitating access to biodiversity data, generating information and knowledge, building capacity, providing policy advise, and showcasing and conserving biodiversity in respective botanical and zoological gardens.

As the regulatory body for biological data, SANBI provides assessment and reporting protocols. These protocols provide a minimum set of assessment and reporting criteria that must form the basis of specialist investigations required for many of the country's environmental processes. As such, the proposed methodology, as described below, is in accordance with in-country standardised field assessment methodologies.

Vegetation Surveys

Various field sampling methods are available for the purpose of collecting floristic data. Generally, the selection of chosen field methods is dependent on serval factors, including the size of the area to be assessed, the heterogeneity of the vegetation/habitat present, time and budget allocated for field assessments, the scale and magnitude of potential project impacts, and the scope of work to be assessed.

When planning the timing of a floristic survey, it is important to remember that the primary objective is not an exhaustive species list but rather to ensure that sufficient data are collected to describe all the vegetation communities present in the area of interest, to optimise the detection of SCC and to assess habitat suitability for other potentially occurring SCC (SANBI, 2020). An understanding of the location and extent of vegetation types of increased sensitivity, and the location of areas of increased importance for various species of SCC, will focus efforts for the identification and marking of SCC during detailed pre-construction walkdown efforts.

Given the restricted time frames in which the proposed field surveys need to be conducted and the combined objective of accurately demarcating sensitive habitats within the area of interest, the method chosen needs to allow for:

I. Rapid, accurate data collection; and
II. The optimisation of time spent in habitats that are likely to sustain SCC.

Several survey methods, known as rapid biological assessments (Larsen, 2016)[8], can be employed. Example of rapid biological assessments include plot-based assessments or transect-based assessments. SANBI (2020) recommends the use of a transect-based approach, namely timed-meander searches (TMS; Goff et al., 1982[9]). The vegetation surveys presented below are a modified version of the TMS methods (hereafter referred to as modified-meander searches (MMS)). The TMS and MMS are subjective sampling methods which employs techniques where the specialist chooses specific sample sites within the area of interest, based on their professional experience in the area and background research done prior to the site visit. This allows representative recordings of floral communities and optimal detection of SCC.

The difference in the TMS and MMS is that the MMS is not timed. The below list presents the reasons for selection of a modified approach:

- Time, access, and safety constraints are often unpredictable and cannot be planned for prior to a site assessment, especially within remote areas and areas where local communities may not provide consent to specialist to survey their lands. As such, a timed approach may result in disproportionate efforts in some pre-defined habitats.

[8] Larsen, T.H. ed., 2016. Core standardized methods for rapid biological field assessment. Conservation International.
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- Vegetation surveys are conducted at the same time as the SCC assessments which limits the potential for timed assessments as SCC often occur either sporadically, or are difficult to detect and hence, longer surveys in certain areas are necessary (skewing the timed approach). This is especially true for the pre-defined broad habitats within more sensitive areas such as the Sekhukhune Centre of Plant Endemism where desktop databases may not be a true reflection of on-site habitat extent and heterogeneity. Micro habitats where SCC are often found, are often difficult to detect on digital satellite imagery. As such, timing the surveys according to unverified field data will increase the risk of overlooking importance SCC data or habitat integrity features.
- Subjective decisions need to be made on-site that would otherwise interfere with a times-meander approach.

The employment of the presented field methods is beneficial because they allow for rapid data collection and subjective placement (based on professional experience and previous fieldwork knowledge) of the MMSs in habitats that have a higher likelihood of sustaining SCC. Furthermore, this method allows for extensive coverage of the subject property, thus increasing the probability of SCC and micro habitat detection. Extensive coverage of the area of interest will also be advantageous where properties are of large extents that need to be assessed.

Based on the broad habitat units delineated before going to site and the pre-identified points of interest, which is updated based on on-site observations and access constraints, the selected sample areas are surveyed on foot, following the subjective MMT, to identify the occurrence of the dominant plant species and habitat diversities, but also to detect SCC which tend to be sparsely distributed. Photographs are taken of each vegetation community that is representative of typical vegetation structure of that community, as well as photos of all detected SCC (sensitive species will not be presented in the report).

Vegetation structure has been described following the guideline in Edwards (1983). Refer to Figure A1 below:

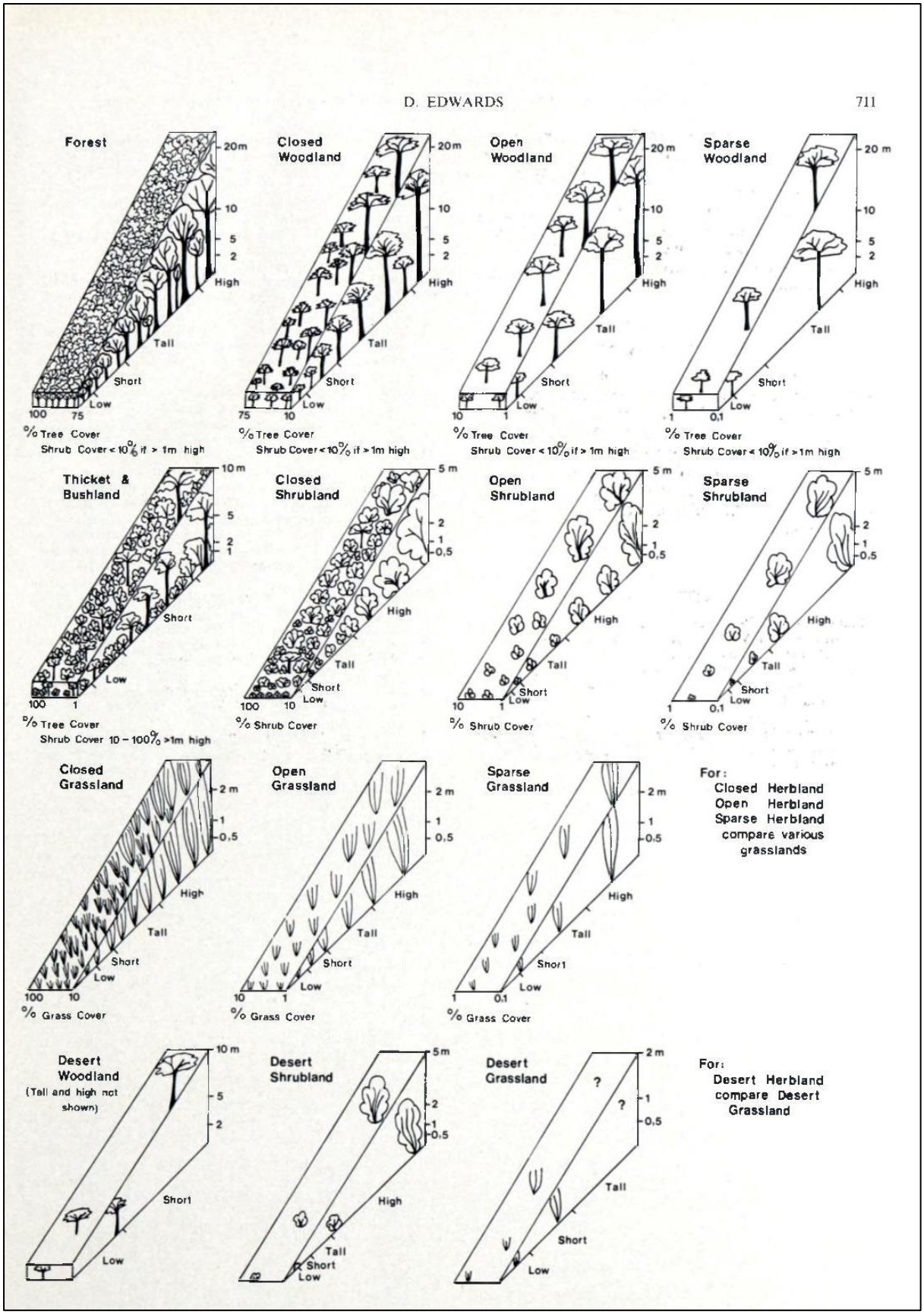

Figure A1: Diagrammatic representation of structural groups and formation classes. Only dominant growth forms are shown.

Floral Species of Conservational Concern Assessment

Prior to the site visit, a record of floral SCC and their habitat requirements was developed for the study area, which includes consulting the National Web-based Environmental Screening Tool. Because not all SCC have been included in the Screening Tool layers (e.g., NT and DD taxa), it remains important for the specialist to be on the lookout for additional SCC. For this study, two several sources were consulted and are described below.

The National Web-Based Environmental Screening Tool

The Screening Tool was accessed to obtain a list of potentially occurring species of conservation concern for the study area. Each of the themes in the Screening Tool consists of theme-specific spatial datasets which have been assigned a sensitivity level namely, "*low*," "*medium*," "*high*" and "*very high*" sensitivity. The four levels of sensitivity are derived and identified in different ways, e.g., for **confirmed** areas of occupied habitat for SCC a Very High and High Sensitivity is assigned and for areas of suitable habitat where SCC may occur based on spatial models only, a Medium Sensitivity is assigned. The different sensitivity ratings pertaining to the Plant [and Animal] Protocols are described below[10]:

- **Very High**: Habitat for species that are endemic to South Africa, where all the known occurrences of that species are within an area of 10 km^2 are considered Critical Habitat, as all remaining habitat is irreplaceable. Typically, these include species that qualify under Critically Endangered (CR), Endangered (EN), or Vulnerable (VU) D criteria of the IUCN or species listed as Critically/ Extremely Rare under South Africa's National Red List Criteria. For each species reliant on a Critical Habitat, all remaining suitable habitat has been manually mapped at a fine scale.
- **High**: Recent occurrence records for all threatened (CR, EN, VU) and/or rare endemic species are included in the high sensitivity level. Spatial polygons of suitable habitat have been produced for each species by intersecting recently collected occurrence records (those collected since the year 2000) that have a spatial confidence level of less than 250 m with segments of remaining natural habitat.
- **Medium**: Model-derived suitable habitat areas for threatened and/or rare species are included in the medium sensitivity level. Two types of spatial models have been included. The first is a simple rule-based habitat suitability model where habitat attributes such as vegetation type and altitude are selected for all areas where a species has been recorded to occur. The second is a species distribution model which uses species occurrence records combined with multiple environmental variables to quantify and predict areas of suitable habitat. The models provide a probability-based distribution indicating a continuous range of habitat suitability across areas that have not been previously surveyed. A probability threshold of 75% for suitable habitat has been used to convert the modelled probability surface and reduce it into a single spatial area which defines areas that fall within the medium sensitivity level.
- **Low**: Areas where no SCC are known or expected to occur.

BRAHMS Online Website

The Botanical Database of Southern Africa (BODATSA) is accessed to obtain plant names and floristic details (http://posa.sanbi.org/) for species of conservation concern within a selected boundary;

- This website provides access to South African plant names (taxa), specimens (herbarium sheets) and observations of plants made in the field (botanical records). Data is obtained from the BODATSA, which contains records from the National Herbarium in Pretoria (PRE), the Compton Herbarium in Cape Town (NBG & SAM) and the KwaZulu-Natal Herbarium in Durban (NH).

[10] More details on the use of the Screening Tool for Species of Conservation Concern can be found in the below resources:

- South African National Biodiversity Institute (SANBI). 2020. Draft Species Environmental Assessment Guideline. Guidelines for the implementation of the Terrestrial Flora (3c) & Terrestrial Fauna (3d) Species Protocols for environmental impact assessments in South Africa. South African National Biodiversity Institute, Pretoria. Version 1.0.
- The National Web based Environmental Screening Tool website: https://screening.environment.gov.za/screeningtool/#/pages/welcome

- Information on habitat requirements etc. is obtained from the SANBI Red List of South African Plants website (http://redlist.sanbi.org/).
- Typically, data is extracted for the Quarter Degree Square (QDS) in which the study area is situated but where it is deemed appropriate, a larger area can be included.

NEMBA TOPS Species

The National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004) (NEMBA) Threatened or Protected Species (TOPS) list (Government Gazette [GN] 29657, as amended in GN R1187 in Government Gazette 30568 of 2007 and again in GN 627 in Government Gazette 43386 of 2020) were taken into consideration.

The Mpumalanga Nature Conservation Act, 1998 (Act No. 10 Of 1998) (MNCA)

The Mpumalanga Nature Conservation Act, 1998 (Act No. 10 of 1998) (MNCA) provides a list of Protected Species (Schedule 11) (Section 69(1)(a) of the MNCA) and Specially Protected Species (Schedule 12) (Section 69(1)(b) of the MNCA) for the Mpumalanga Province. These species formed part of the SCC assessment.

Throughout the floral assessment, special attention was paid to the identification of any of these SCC as well as the identification of suitable habitat that could potentially support these species.

The Probability of Occurrence (POC) for each floral SCC is described:

- "**Confirmed'**: if observed during the survey;
- "**High**": if within the species' known distribution range and suitable habitat is available;
- "**Medium**": if either within the known distribution range of the species or if suitable habitat is present; or
- "**Low**": if the habitat is not suitable and falls outside the distribution range of the species.

Low POC	Medium POC	High POC	Confirmed

The accuracy of the POC is based on the available knowledge about the species in question, with many of the species lacking in-depth habitat research.

Consideration and application of the precautionary approach

The precautionary principle is defined by Tickner & Raffensperger (1999) as follows:

"*When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically*".

Given time and resource constraints within the field, it is not always feasible to definitively state the presence or absence of particular Species of Conservation Concern (SCC) or sensitive habitats. In such instances, the precautionary principle should be applied (SANBI, 2020). By applying such principles, a preventative action is taken in the face of uncertainty. Furthermore, for cryptic species that are often difficult to detect, it is not always easy to provide undeniable proof that a species occurs within a particular area within a subject property. As such, if suitable habitat is identified within the subject property and there is potential evidence to suggest the species did or can occur within the subject property (i.e., confirmed sightings in adjacent properties), then the precautionary principle will be to assume that the species does indeed occur within the area of interest. Appropriate mitigation and management efforts would then need to follow accordingly.

Floral Habitat Sensitivity

The floral habitat sensitivity of each habitat unit was determined by calculating the mean of five different parameters which influence floral communities and provide an indication of the overall floristic ecological integrity, importance, and sensitivity of the habitat unit. Each of the following parameters are subjectively rated on a scale of 1 to 5 (1 = lowest and 5 = highest):

- **Floral SCC:** The confirmed presence or potential for floral SCC or any other significant species, such as endemics, to occur within the habitat unit;
- **Unique Landscapes:** The presence of unique landscapes or the presence of an ecologically intact habitat unit in a transformed region;
- **Conservation Status:** The conservation status of the ecosystem or vegetation type in which the habitat unit is situated based on local, regional and national databases. Whether the habitat is representative of a Critical Biodiversity Area or forms part of an Ecological Support Area is also taken into consideration;
- **Floral Diversity:** The recorded floral diversity compared to a suitable reference condition such as surrounding natural areas or available floristic databases; and
- **Habitat Integrity:** The degree to which the habitat unit is transformed based on observed disturbances which may affect habitat integrity.

Each of these values contribute equally to the mean score, which determines the floral habitat sensitivity class in which each habitat unit falls. A conservation and land-use objective is also assigned to each sensitivity class which aims to guide the responsible and sustainable utilisation of the habitat unit in question. To present the results use is made of spider diagrams to depict the significance of each aspect of floral ecology for each vegetation type. The different classes and land-use objectives are presented in the table below:

Table A1: Floral habitat sensitivity rankings and associated land-use objectives.

Score	Rating significance	Conservation objective
1 < 1.5	Low	Optimise development potential.
≥1.5 <2.5	Moderately low	Optimise development potential while improving biodiversity integrity of surrounding natural habitat and managing edge effects.
≥2.5 <3.5	Intermediate	Preserve and enhance biodiversity of the habitat unit and surrounds while optimizing development potential.
≥3.5<4.5	Moderately high	Preserve and enhance the biodiversity of the habitat unit, limit development and disturbance.
≥4.5 ≤5.0	High	Preserve and enhance the biodiversity of the habitat unit, no-go alternative must be considered.

International Finance Corporation Performance Standard 6

The IFC habitat categories are defined as follows:

Modified Habitat

Modified habitats are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition. Modified habitats may include areas managed for agriculture, forest plantations, reclaimed coastal zones, and reclaimed wetlands.

This Performance Standard applies to those areas of modified habitat that include significant biodiversity value, as determined by the risks and impacts identification process required in Performance Standard 1. The client should minimise impacts on such biodiversity and implement mitigation measures as appropriate.

Natural Habitat

Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.

The client will not significantly convert or degrade natural habitats, unless all of the following are demonstrated:

- No other viable alternatives within the region exist for development of the project on modified habitat;
- Consultation has established the views of stakeholders, including Affected Communities, with respect to the extent of conversion and degradation; and
- Any conversion or degradation is mitigated according to the mitigation hierarchy.

In areas of natural habitat, mitigation measures will be designed to achieve no net loss of biodiversity where feasible. Appropriate actions include:

- Avoiding impacts on biodiversity through the identification and protection of set-asides;
- Implementing measures to minimise habitat fragmentation, such as biological corridors;
- Restoring habitats during operations and/or after operations; and
- Implementing biodiversity offsets.

Critical Habitat

Critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to CR and/or EN species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.

In areas of critical habitat, the client will not implement any project activities unless all of the following are demonstrated:

- No other viable alternatives within the region exist for development of the project on modified or natural habitats that are not critical;
- The project does not lead to measurable adverse impacts on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values;
- The project does not lead to a net reduction in the global and/or national/regional population of any CR or EN species over a reasonable period of time; and
- A robust, appropriately designed, and long-term biodiversity monitoring and evaluation program is integrated into the client's management program.

The table below serves to define the corresponding Guidance Note 6 corresponds to Performance Standard 6 identified for the specific project. General Notices identified for the specific project are summarised in the table below (Table A2).

Table A2: Descriptions of the project requirements to meet IFC Standards and corresponding Guidance Notes for additional information.

Guidance Notes	GN Description and project requirements
GN9	The requirements for the baseline study will vary depending on the nature and scale of the project. For sites with potentially significant impacts on natural and critical habitats and ecosystem services, the baseline should include field surveys over multiple seasons, to be undertaken by competent professionals and with the involvement of external experts, as necessary. Field surveys and assessments should be recent, and data should be acquired for the direct project footprint, including related and associated facilities, the project's area of influence, and potentially beyond.
GN22	For projects located in critical habitat (including legally protected, and internationally recognized areas), clients must ensure that external experts with regional experience are involved in the biodiversity and/or critical habitat assessment. If habitat is critical due to the presence of critically endangered or endangered species, recognized species specialist must be involved (for example, including individuals from IUCN Species Survival Commission Specialist Group). In areas of critical habitat, clients will benefit from establishing a mechanism for external review of the projects risk and impacts identifications process and proposed mitigation strategy. This is especially relevant where uncertainty is high, where potential impacts are complex and/or controversial, and/or where no precedent exist for proposed mitigations (such as some types of offsets). Such a mechanism would also promote the sharing of good international practice between projects and improve transparency in decision making.
GN36	Clients should endeavour to site the project in modified habitat rather than on natural or critical habitat and demonstrate this effort through a project alternatives analysis conducted during the risks and impacts identification process.
GN37	Performance Standard 6 requires that projects with significant biodiversity values in modified habitats minimise their impacts and implement mitigation and management measures as needed to conserve those values. Significant biodiversity values that might occur in modified habitat include species of conservation concern (for example, species that are threatened or otherwise identified as important by stakeholders) and remnant ecological features that persist in the modified landscape, especially those that perform important ecological functions. In some cases, significant biodiversity values may cause natural or critical habitat requirements to be applied, in which case they should be treated using the guidelines for those habitat designations
GN104	In many cases, invasive species will have already been established in the region in which the project is located. In these cases, the client has the responsibility to take measures to prevent the species from further spread into areas in which it has not already been established. For example, in the case of linear infrastructure, invasive weeds might be spread into forested habitats, especially if the forest canopy is not able to re-establish itself (due to maintenance of the right-of-way for operational purposes). This is exacerbated if opportunistic agricultural or logging activities further widen the right-of-way, thereby facilitating spread. In these cases, the client is expected to determine the severity of the threat and the mode of spread of that species. The situation should be monitored as part of the overall Environmental and Social Management System (ESMS), and the client should seek effective mitigation measures in coordination with local and national authorities.
GN106	Performance Standard 6 defines ecosystem services as "the benefits that people, including businesses, obtain from ecosystems" (paragraph 2), which is in line with the definition provided by the Millennium Ecosystem Assessment (GN23). As described in paragraph 2 and footnote 1 of Performance Standard 6, ecosystem services are organized into four major categories: • Provisioning ecosystem services, include, among others, (i) agricultural products, seafood and game, wild foods, and ethnobotanical plants; (ii) water for drinking, irrigation, and industrial purposes; and (iii) forest areas, which provide the basis for many biopharmaceuticals, construction materials, and biomass for renewable energy; • Regulating ecosystem services, include, among others, (i) climate regulation and carbon; • Storage and sequestration; (ii) waste decomposition and detoxification; (iii) purification of water and air; (iv) control of pests, disease, and pollination; and (v) natural hazard mitigation; • Cultural services, include, among others, (i) spiritual and sacred sites; (ii) recreational purposes such as sport, hunting, fishing, and ecotourism; and(iii) scientific exploration and education; and • Supporting services, are the natural processes that maintain the other services, such as (i) nutrient capture and recycling, (ii) primary production, and (iii) pathways for genetic exchange.
GN109	Consider the mitigation of impacts on ecosystem services and the benefits that ecosystem services might bring to companies rather than on the economic valuation for such services. If PES schemes exist in or near areas where clients are doing business, the client should be aware of them in accordance with any existing regulatory framework and/or other ongoing initiatives.

APPENDIX B: Floral Species List

Table B1: Dominant floral species encountered during the field assessment. Alien species identified during the field assessment are indicated with an asterisk (*). Protected species are emboldened.

Scientific name	Freshwater Habitat	Grassland Habitat	Transformed Habitat
Woody species			
**Salix babylonica*	x		
**Eucalyptus camaldulensis*	x	x	
Forb species			
**Amaranthus hybridus*	x		
Asclepias gibba var. *media*	x	x	
Asclepias stellifera	x	x	
Berkheya setifera	x	x	
Berkheya cf. onopordifolia		x	
Berkheya pinnatifida		x	
**Bidens pilosa*	x	x	x
Centella asiatica	x		
Chironia krebsii	x		
Chlorophytum cooperi		x	
**Cirsium vulgare*	x	x	x
Commelina africana var. *africana*	x	x	
Convolvulus sagittatus var. *aschersonii*		x	
**Conyza bonariensis*	x	x	x
Crabbea hirsuta		x	
** Cuscuta campestris*			x
Cyanotis speciosa		x	
**Datura stramonium*	x	x	x
Dicerocaryum eriocarpum		x	
Gerbera piloselloides	x		
Gladiolus elliotii		x	
Gladiolus crassifolius		x	
Gomphocarpus fruticosus	x	x	
**Gomphrena celosioides*	x	x	
Haplocarpha scaposa	x		
Habenaria falcicornis subsp. caffra		x	
Helichrysum nudifolium		x	
Helichrysum rugulosum		x	
Hermannia depressa	x	x	
Hibiscus microcarpus		x	
Hibiscus pusillus	x	x	
**Hibiscus trionum*	x	x	
**Hypochaeris radicata*	x	x	
Hypoxis acuminata		x	
Hypoxis hemerocallidea		x	
Hypoxis rigidula		x	x

Scientific name	Freshwater Habitat	Grassland Habitat	Transformed Habitat
**Ipomoea purpurea*		x	
Ipomoea crassipes		x	
Ledebouria ovatifolia	x		
Lobelia flaccida subsp *flaccida*	x	x	
Monopsis decipiens	x		
**Oenothera rosea*	x	x	x
Oenothera sp.	x	x	
Oxalis depressa	x	x	
Plantago lanceolata	x		
Persicaria lapathifolia	x		
Ranunculus multifidus	x	x	
Rumex crispus		x	
Scabiosa columbaria		x	
Senecio inornatus	x	x	x
Solanum sp.			x
**Tagetes minuta*	x	x	x
**Verbena bonariensis*	x	x	x
Wahlenbergia krebsii subsp. *krebsii*	x	x	
**Xanthium spinosum*		x	
Xysmalobium undulatum		x	
Graminoid species			
Agrostis lachnantha	x		
Aristida sciurus		x	
Brachiaria serrata	x		x
Calamagrostis epigejos var. *capensis*	x		
**Cenchrus longisetus*			x
Chloris virgata	x	x	
Cymbopogon pospischilii		x	
Cyperus congestus	x	x	x
Cyperus esculentus	x	x	
Cyperus rotundus	x	x	
Digitaria eriantha		x	x
Echinochloa crus-galli	x		x
Eleocharis limosa	x		
Eragrostis patentipilosa		x	
Eragrostis plana		x	
Eragrostis racemosa		x	
**Eragrostis tef*		x	
Helictotrichon turgidulum	x	x	
Hyparrhenia hirta	x	x	
Isolepis fluitans var. *fluitans*	x		
Kyllinga erecta var. *erecta*	x		
Leersia hexandra	x	x	
Panicum ecklonii		x	
**Paspalum dilatatum*	x	x	x
Setaria plumila	x		

Scientific name	Freshwater Habitat	Grassland Habitat	Transformed Habitat
Setaria sphacelata var. *sphacelata*	x	x	x
Sporobolus fimbriatus		x	
Sporobolus pyramidalis		x	x
Themeda triandra		x	
Typha capensis	x		
**Zea mays*			x
Succulent species			
Aloe ecklonis	x		

APPENDIX C: Floral SCC

South Africa uses the internationally endorsed IUCN Red List Categories and Criteria in the Red List of South African plants. This scientific system is designed to measure species' risk of extinction. The purpose of this system is to highlight those species that are most urgently in need of conservation action. Due to its strong focus on determining risk of extinction, the IUCN system does not highlight species that are at low risk of extinction but may nonetheless be of high conservation importance. Because the Red List of South African plants is used widely in South African conservation practices such as systematic conservation planning or protected area expansion, we use an amended system of categories designed to highlight those species that are at low risk of extinction but of conservation concern.

Definitions of the national Red List categories

Categories marked with **N** are non-IUCN, national Red List categories for species not in danger of extinction but considered of conservation concern. The IUCN equivalent of these categories is Least Concern (LC).

- **Extinct (EX)** A species is Extinct when there is no reasonable doubt that the last individual has died. Species should be classified as Extinct only once exhaustive surveys throughout the species' known range have failed to record an individual.
- **Extinct in the Wild (EW)** A species is Extinct in the Wild when it is known to survive only in cultivation or as a naturalised population (or populations) well outside the past range.
- **Regionally Extinct (RE)** A species is Regionally Extinct when it is extinct within the region assessed (in this case South Africa), but wild populations can still be found in areas outside the region.
- **Critically Endangered, Possibly Extinct (CR PE)** Possibly Extinct is a special tag associated with the category Critically Endangered, indicating species that are highly likely to be extinct, but the exhaustive surveys required for classifying the species as Extinct has not yet been completed. A small chance remains that such species may still be rediscovered.
- **Critically Endangered (CR)** A species is Critically Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Critically Endangered, indicating that the species is facing an extremely high risk of extinction.
- **Endangered (EN)** A species is Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Endangered, indicating that the species is facing a very high risk of extinction.
- **Vulnerable (VU)** A species is Vulnerable when the best available evidence indicates that it meets at least one of the five IUCN criteria for Vulnerable, indicating that the species is facing a high risk of extinction.
- **Near Threatened (NT)** A species is Near Threatened when available evidence indicates that it nearly meets any of the IUCN criteria for Vulnerable and is therefore likely to become at risk of extinction in the near future.
- [N]**Critically Rare** A species is Critically Rare when it is known to occur at a single site but is not exposed to any direct or plausible potential threat and does not otherwise qualify for a category of threat according to one of the five IUCN criteria.
- [N]**Rare** A species is Rare when it meets at least one of four South African criteria for rarity but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to one of the five IUCN criteria. The four criteria are as follows:
  - Restricted range: Extent of Occurrence (EOO) <500 km^2, OR
  - Habitat specialist: Species is restricted to a specialized microhabitat so that it has a very small Area of Occupancy (AOO), typically smaller than 20 km^2, OR
  - Low densities of individuals: Species always occurs as single individuals or very small subpopulations (typically fewer than 50 mature individuals) scattered over a wide area, OR
  - Small global population: Less than 10 000 mature individuals.
- **Least Concern (LC)** A species is Least Concern when it has been evaluated against the IUCN criteria and does not qualify for any of the above categories. Species classified as Least Concern are considered at low risk of extinction. Widespread and abundant species are typically classified in this category.
- **Data Deficient - Insufficient Information (DDD)** A species is DDD when there is inadequate information to make an assessment of its risk of extinction, but the species is well defined. Listing of species in this category indicates that more information is required, and that future research could show that a threatened classification is appropriate.
- **Data Deficient - Taxonomically Problematic (DDT)** A species is DDT when taxonomic problems hinder the distribution range and habitat from being well defined, so that an assessment of risk of extinction is not possible.
- **Not Evaluated (NE)** A species is Not Evaluated when it has not been evaluated against the criteria. The national Red List of South African plants is a comprehensive assessment of all South African indigenous plants, and therefore all species are assessed and given a national Red List status. However, some species included in Plants of southern Africa: an online checklist are species that do not qualify for national listing because they are naturalised exotics, hybrids (natural or cultivated), or synonyms. These species

are given the status Not Evaluated and the reasons why they have not been assessed are included in the assessment justification.

POC Results for RDL Floral SCC obtained from BODATSA and the Online National Environmental Screening Tool

For this aspect of the POC assessment, a list of RDL species previously recorded within the areas surrounding the Tournée 2 Solar PV Park within the QDS 2629CB and 2629CD were pulled from BODATSA / newPOSA (http://posa.sanbi.org/) – refer to the below image (Figure C1). This list was further cross-checked with the Screening Tool outcome as well as the MNCA (1998) flora list (Schedule 11 and Schedule 12) to identify provincially protected species previously recorded for the area.

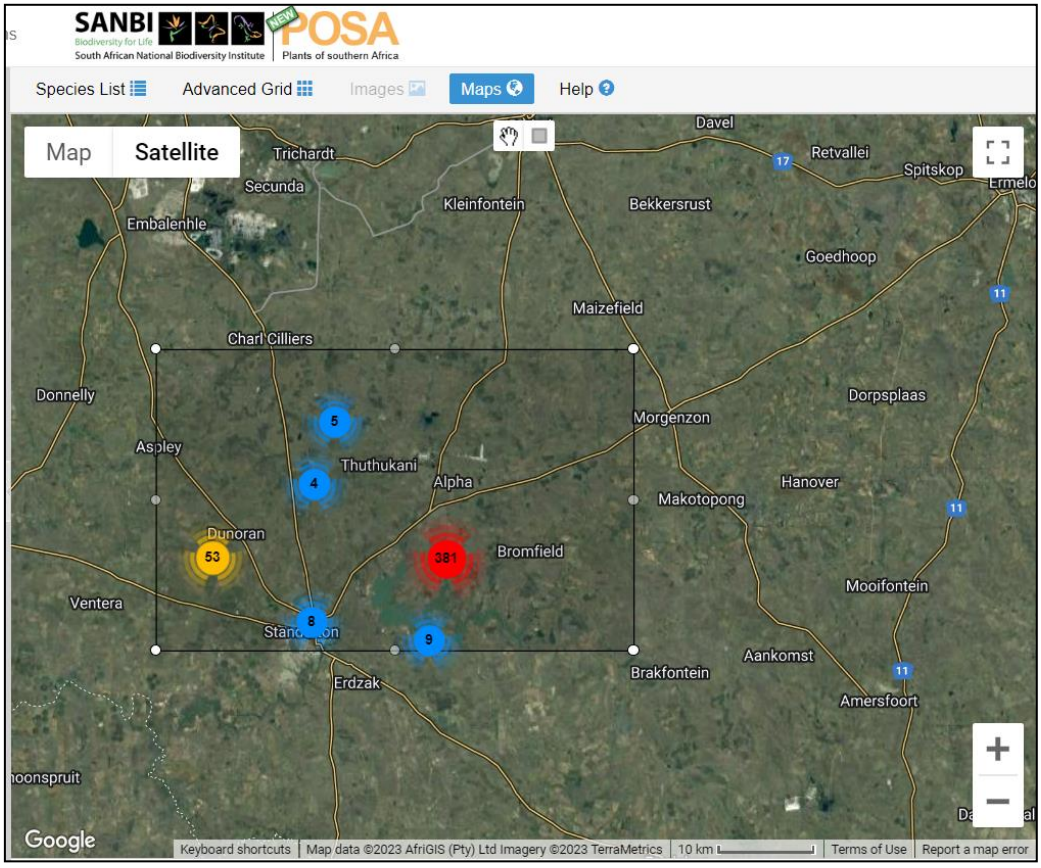

Figure C1: DL species previously recorded within the areas surrounding the Tournée 2 Solar PV Park within the QDS 2629CB and 2629CD were pulled from BODATSA / newPOSA (http://posa.sanbi.org/).

Table C1: POC assessment results for threatened species as identified for the assessed area by the Screening Tool, the BODATSA/newPOSA database. Additionally, the below table provides the POC assessment results for provincially protected floral species as per the Mpumalanga Nature Conservation Act, 1998 (Act No. 10 of 1998; MNCA). **Threatened status and additional information on species habitat and distribution was obtained from The Red List of South African Plants (http://redlist.sanbi.org/index.php). The POC of these floral SCC within the Tournée 2 Solar PV Park is also provided.

Family	Species	Triggered Schedule	IUCN	Description	Habitat within the Tournée 2 Solar PV Park	POC
BODATSA / newPOSA						
Asteraceae	*Cineraria austrotransvaalensis*	-	**NT**	Scattered throughout Gauteng and the North West Province and at Standerton in southern Mpumalanga.		**Low**
Asphodelaceae	*Kniphofia typhoides*	-	**NT**	Parys to Lydenburg to Paulpietersburg to Newcastle.	**Freshwater Ecosystems**	**High**
Iridaceae	*Gladiolus robertsoniae*	-	**NT**	Free State, Gauteng, KwaZulu-Natal, Mpumalanga		**Low**
Provincially protected species (MTPA)						
All species of *Aloes* (except those not occurring in Mpumalanga, and *Haworthia, Agaphanthus* and *Scilla* spp.)	*Aloe sp.*	Schedule 11	**-**	-	**Freshwater Ecosystems**	**High**
Eucomis spp	*Eucomis autumnalis*	Schedule 11	**LC**	Damp, open grassland and sheltered places from the coast to 2450 m	**Freshwater Ecosystems**	**High**
All species of paint brush (*Haemanthus* spp and *Scadoxis* spp)	-	Schedule 11	**-**	-		**Low**
Cape poison bulb	*Boophane disticha*	Schedule 11	**LC**	Dry grassland and rocky areas.	**Grassland Habitat**	**High**
All species of *Crinum*	-	Schedule 11	**-**	-	**Freshwater Ecosystems**	**High**
All species of Gladioli	*Gladiolus elliotii* *Gladiolus crassifolius*	Schedule 11	**LC**	Free State, Gauteng, KwaZulu-Natal, Mpumalanga	**Grassland Habitat**	**Confirmed**
All species of Orchids	*Habenaria epipactidea* *Habenaria falcicornis* subsp. *caffra*	Schedule 11	**LC**	Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, North West	**Grassland Habitat**	**High** **Confirmed**
National Screening Tool (trigger species)						
Sensitive species 1252	-	Medium sensitivity	**VU**	**Range:** Western Cape, Eastern Cape, KwaZulu-Natal, Free State, Gauteng, Mpumalanga, Limpopo Province, Swaziland, Zimbabwe and Zambia. **Major Habitats:** Leolo Summit Sourveld, KaNgwane Montane Grassland, Wakkerstroom Montane Grassland, Rand Highveld Grassland, Granite Lowveld, Steenkampsberg Montane Grassland, Soweto Highveld Grassland, Eastern Free State Sandy Grassland.		**Low**

Family	Species	Triggered Schedule	IUCN	Description	Habitat within the Tournée 2 Solar PV Park	POC
				Description: Wooded and relatively mesic places, such as the moister bushveld areas, coastal bush and wooded mountain kloofs.		
Sensitive species 691	-	Medium sensitivity	**VU**	**Range:** Belfast and Ermelo to Wolmaransstad. **Major habitats:** Ithala Quartzite Sourveld, Soweto Highveld Grassland, Frankfort Highveld Grassland, Steenkampsberg Montane Grassland, Sekhukhune Montane Grassland, Paulpietersburg Moist Grassland, Eastern Highveld Grassland, Rand Highveld Grassland, Western Highveld Sandy Grassland **Description**: Undulating grasslands in damp areas.	**Freshwater Ecosystems**	**Medium**

LC = Least Concern; **NT** = Near Threatened; **POC** = Probability of Occurrence