



# **Proposed Zwartwitpensbokfontein 480MW Solar Photovoltaic Facility – Terrestrial Ecology Site Sensitivity Verification**

## **Waterberg District Municipality, Limpopo Province, South Africa**

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**CLIENT**



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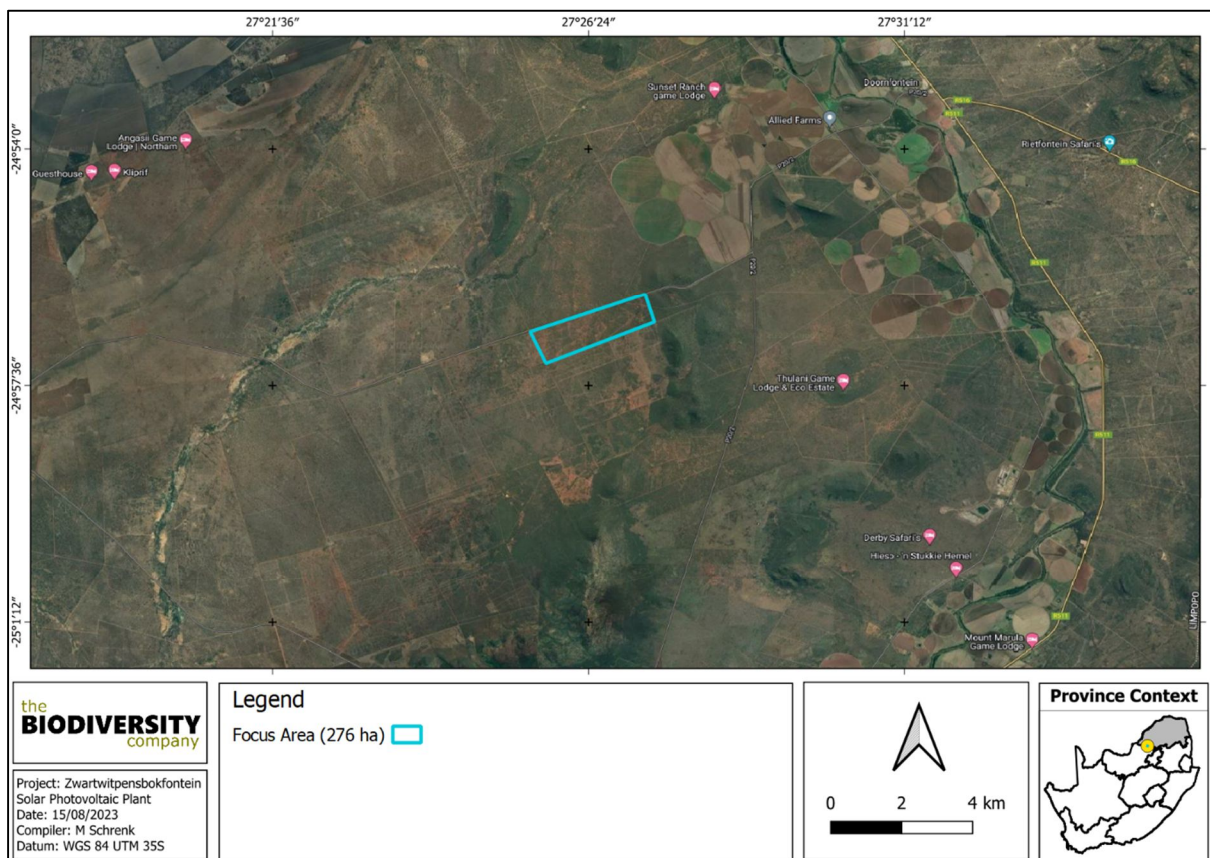
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# 1 Introduction

The Biodiversity Company was appointed to undertake a Terrestrial Ecology Site Sensitivity Verification for the proposed Zwartwitpensbokfontein Solar Photovoltaic Facility project. The proposed project involves the development of a solar facility and associated infrastructure and is located on Portion 1 of the farm Zwartwitpensbokfontein 434-KQ, approximately 10 km southwest of Koedoeskop in the Waterberg District Municipality within the Limpopo Province (Figure 1-1).

This assessment was conducted in accordance with the amendments to the Environmental Impact Assessment Regulations, 2014 (GNR 326, 7 April 2017) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The approach has taken cognisance of the recently published Government Notices (GN) 320 (20 March 2020) and GN 1150 (30 October 2020) in terms of NEMA: “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation” (Reporting Criteria). A single field survey was conducted on the 3<sup>rd</sup> of August 2023 in order to assess the baseline ecological state of the site.

This report, after taking into consideration the findings and recommendations provided by the specialist herein, should inform and guide the Environmental Assessment Practitioner (EAP) and regulatory authorities, enabling informed decision making, as to the ecological viability of the proposed project.



**Figure 1-1 Map: Proposed Zwartwitpensbokfontein Solar Photovoltaic Facility**

## 1.1 Technical Details

The proposed solar facility will have a total power generation capacity of up to 480MW, covering a total area of approximately 275-hectares. The facility will connect to the Eskom grid via the existing 132kV Spitskop-Mamba power line crossing the application property. The facility will link using an onsite substation and 132kV power line connection.

The solar facility components will include:

- 480MW Solar PV arrays consisting of 1000-Watt mono-facial solar panels;
- Mounting structures and underground cabling (AC/DC);
- Inverters and transformers;
- 132kV Onsite substation;
- Short onsite 132kV power line connection to Eskom grid;
- Operations building and Guardhouse;
- Main entrance from the D1234 Northam- Koedoeskop Road including internal access roads;
- Security residence (existing building to be upgraded);
- Perimeter fence and stormwater infrastructure;
- Laydown area;
- The facility will exclude a Battery Energy Storage System (BESS).

## 2 Site Sensitivity Verification Methods

### 2.1 Desktop Assessments

The following information sources were consulted to compile this report:

- The Limpopo Conservation Plan (LCPv2) was updated in 2018 for the Limpopo Department of Economic Development, Environment & Tourism (LEDET, 2018). The purpose of the LCPv2 was to develop the spatial component of a bioregional plan (i.e. map of Critical Biodiversity Areas and associated land-use guidelines). The previous Limpopo Conservation Plan (LCPv1) was completely revised and updated (Desmet et al., 2013). A Limpopo Conservation Plan map was produced as part of this plan and sites were assigned to the following CBA categories based on their biodiversity characteristics, spatial configuration and requirement for meeting targets for both biodiversity pattern and ecological processes:
  - Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then biodiversity targets cannot be met.
  - Ecological Support Areas (ESAs) are areas that are not essential for meeting biodiversity representation targets but play an important role in supporting the ecological functioning of ecosystems as well as adjacent Critical Biodiversity Areas, and/or in delivering ecosystem services that support socio-economic development (SANBI, 2017).
- National Biodiversity Assessment 2018 (Skowno et al, 2019) - The purpose of the National Biodiversity Assessment (NBA) is to assess the state of South Africa's biodiversity based on best available science, with a view to understanding trends over time and informing policy and

decision-making across a range of sectors. The NBA deals with all three components of biodiversity: genes, species and ecosystems; and assesses biodiversity and ecosystems across terrestrial, freshwater, estuarine and marine environments. The two headline indicators assessed in the NBA are:

- Ecosystem Threat Status – indicator of an ecosystem’s wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition.
- Ecosystem Protection Level – indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP), or Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. Not Protected, Poorly Protected or Moderately Protected ecosystem types are collectively referred to as under-protected ecosystems.
- South Africa’s Red List of Terrestrial Ecosystems: Skowno & Monyeke (2021) applied a systematic Red List of Ecosystems (RLE) assessment to 456 terrestrial ecosystems in South Africa between 2017 and 2021, in order to support the replacement of the existing list of threatened ecosystems (2011) with the RLE (2021). The revision is based on the best available data and used the IUCN RLE risk assessment framework version 1.1. Ecosystems are categorised into one of four classes representing their risk of collapse; in descending order of risk: Critically Endangered, Endangered, Vulnerable, Least Concern. The revised list identifies 120 threatened terrestrial ecosystem types (55 Critically Endangered, 51 Endangered and 14 Vulnerable types).

The RLE is an important input into spatial planning and decision making in South Africa. The list and the spatial data underpinning it is referred to in national regulations relating to environmental impact assessment (EIA); specifically – Critically Endangered and Endangered ecosystem types trigger additional steps and processes during environmental authorisation processes (SANBI & DFFE, 2021). The 2021 RLE has been legislated by the publication of the Revised National List of Ecosystems that are Threatened and in need of Protection, under the National Environmental Management: Biodiversity Act, 2004 – published in Government Gazette No. 47526, 18th of November 2022.

For reference purposes this database is used in conjunction with the NBA 2018 database as discussed above, however it is noted that the 2021 RLE database is regarded as the most recent and relevant database that is actively legislated and managed by provincial and national authorities.

- Protected areas:
  - South Africa Protected Areas Database (SAPAD) and South Africa Conservation Areas Database (SACAD) (DFFE, 2023 and DFFE, 2023a) – The South African Protected Areas Database (SAPAD) and South Africa Conservation Areas Database (SACAD) contains spatial data for the conservation of South Africa. It includes spatial and attribute information for both formally protected areas and areas that have less formal protection. The database is updated on a continuous basis and forms the basis for the

Register of Protected Areas which is a legislative requirement under the National Environmental Management: Protected Areas Act, Act 57 of 2003.

- National Protected Areas Expansion Strategy (NPAES) (DEA, 2016) – The National Protected Area Expansion Strategy (NPAES) provides spatial information on areas that are suitable for terrestrial ecosystem protection. These focus areas are large, intact and unfragmented and are therefore highly important for biodiversity, climate resilience and freshwater protection.

## 2.2 Field Survey

The fieldwork and sample sites were placed within targeted areas (i.e., target sites) perceived as ecologically sensitive based on the preliminary interpretation of satellite imagery (Google Corporation) and GIS analysis (which included the latest applicable biodiversity datasets) available prior to the fieldwork. The focus of the fieldwork was therefore to maximise coverage and navigate to each target site in the field in order to perform a rapid vegetation and ecological assessment at each sample site.

At each target site notes were made regarding current impacts (e.g., roads, erosion etc.), and this included the subjective recording of any SCC and dominant vegetation species and any sensitive features (e.g., wetlands, rock outcrops etc.). In addition, opportunistic observations were made while navigating through the area.

## 2.3 Site Ecological Importance

The different habitat types within the project area were delineated and identified based on observations during the field assessment and available satellite imagery. These habitat types were assigned Ecological Importance (EI) categories based on their ecological integrity, conservation value, the presence of species of conservation concern and their ecosystem processes.

Site Ecological Importance (SEI) is a function of the Biodiversity Importance (BI) of the receptor (e.g., SCC, the vegetation/fauna community or habitat type present on the site) and Receptor Resilience (RR) (its resilience to impacts).

BI is a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor. The criteria for the CI and FI ratings are provided in Table 2-1 and Table 2-2, respectively.

**Table 2-1 Summary of Conservation Importance (CI) criteria**

Conservation Importance	Fulfilling Criteria
<b>Very High</b>	Confirmed or highly likely occurrence of Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Extremely Rare or CR species that have a global extent of occurrence (EOO) of < 10 km <sup>2</sup> . Any area of natural habitat of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent) of natural habitat of an EN ecosystem type. Globally significant populations of congregatory species (> 10% of global population).
<b>High</b>	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km <sup>2</sup> . IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A. If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining. Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (> 0.1%) of natural habitat of VU ecosystem type.

Conservation Importance	Fulfilling Criteria
	<p>Presence of Rare species.</p> <p>Globally significant populations of congregatory species (&gt; 1% but &lt; 10% of global population).</p>
<b>Medium</b>	<p>Confirmed or highly likely occurrence of populations of Near Threatened (NT) species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals.</p> <p>Any area of natural habitat of threatened ecosystem type with status of VU.</p> <p>Presence of range-restricted species.</p> <p>&gt; 50% of receptor contains natural habitat with potential to support SCC.</p>
<b>Low</b>	<p>No confirmed or highly likely populations of SCC.</p> <p>No confirmed or highly likely populations of range-restricted species.</p> <p>&lt; 50% of receptor contains natural habitat with limited potential to support SCC.</p>
<b>Very Low</b>	<p>No confirmed and highly unlikely populations of SCC.</p> <p>No confirmed and highly unlikely populations of range-restricted species.</p> <p>No natural habitat remaining.</p>

**Table 2-2 Summary of Functional Integrity (FI) criteria**

Functional Integrity	Fulfilling Criteria
<b>Very High</b>	<p>Very large (&gt; 100 ha) intact area for any conservation status of ecosystem type or &gt; 5 ha for CR ecosystem types.</p> <p>High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches.</p> <p>No or minimal current negative ecological impacts, with no signs of major past disturbance.</p>
<b>High</b>	<p>Large (&gt; 20 ha but &lt; 100 ha) intact area for any conservation status of ecosystem type or &gt; 10 ha for EN ecosystem types.</p> <p>Good habitat connectivity, with potentially functional ecological corridors and a regularly used road network between intact habitat patches.</p> <p>Only minor current negative ecological impacts, with no signs of major past disturbance and good rehabilitation potential.</p>
<b>Medium</b>	<p>Medium (&gt; 5 ha but &lt; 20 ha) semi-intact area for any conservation status of ecosystem type or &gt; 20 ha for VU ecosystem types.</p> <p>Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches.</p> <p>Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.</p>



Functional Integrity	Fulfilling Criteria
Low	Small (> 1 ha but < 5 ha) area.
	Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy used road network surrounds the area.
	Low rehabilitation potential.
	Several minor and major current negative ecological impacts.
Very Low	Very small (< 1 ha) area.
	No habitat connectivity except for flying species or flora with wind-dispersed seeds.
	Several major current negative ecological impacts.

BI can be derived from a simple matrix of CI and FI as provided in Table 2-3.

**Table 2-3 Matrix used to derive Biodiversity Importance (BI) from Functional Integrity (FI) and Conservation Importance (CI)**

Biodiversity Importance (BI)		Conservation Importance (CI)				
		Very High	High	Medium	Low	Very Low
Functional Integrity (FI)	Very High	Very High	Very High	High	Medium	Low
	High	Very High	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very Low
	Low	Medium	Medium	Low	Low	Very Low
	Very Low	Medium	Low	Very Low	Very Low	Very Low

The fulfilling criteria to evaluate RR are based on the estimated recovery time required to restore an appreciable portion of functionality to the receptor, as summarised in Table 2-4.

**Table 2-4 Summary of Receptor Resilience (RR) criteria**

Resilience	Fulfilling Criteria
Very High	Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.
High	Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.

Resilience	Fulfilling Criteria
Medium	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.
Low	Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.
Very Low	Habitat that is unable to recover from major impacts, or species that are unlikely to: (i) remain at a site even when a disturbance or impact is occurring, or (ii) return to a site once the disturbance or impact has been removed.

Subsequent to the determination of the BI and RR, the SEI can be ascertained using the matrix as provided in Table 2-5.

**Table 2-5 Matrix used to derive Site Ecological Importance from Receptor Resilience (RR) and Biodiversity Importance (BI)**

Site Ecological Importance		Biodiversity Importance (BI)				
		Very high	High	Medium	Low	Very low
Receptor Resilience (RR)	Very Low	Very high	Very high	High	Medium	Low
	Low	Very high	Very high	High	Medium	Very low
	Medium	Very high	High	Medium	Low	Very low
	High	High	Medium	Low	Very low	Very low
	Very High	Medium	Low	Very low	Very low	Very low

Interpretation of the SEI in the context of the proposed project is provided in Table 2-6.

**Table 2-6 Guidelines for interpreting Site Ecological Importance in the context of the proposed development activities**

Site Ecological Importance	Interpretation in relation to proposed development activities
Very High	Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e., last remaining populations of species, last remaining good condition patches of ecosystems/unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
High	Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted, limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.
Medium	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.

Site Ecological Importance	Interpretation in relation to proposed development activities
Low	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Very Low	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

The SEI evaluated for each taxon can be combined into a single multi-taxon evaluation of SEI for the assessment area. Either a combination of the maximum SEI for each receptor should be applied, or the SEI may be evaluated only once per receptor but for all necessary taxa simultaneously. For the latter, justification of the SEI for each receptor is based on the criteria that conforms to the highest CI and FI, and the lowest RR across all taxa.

### 3 Site Sensitivity Verification

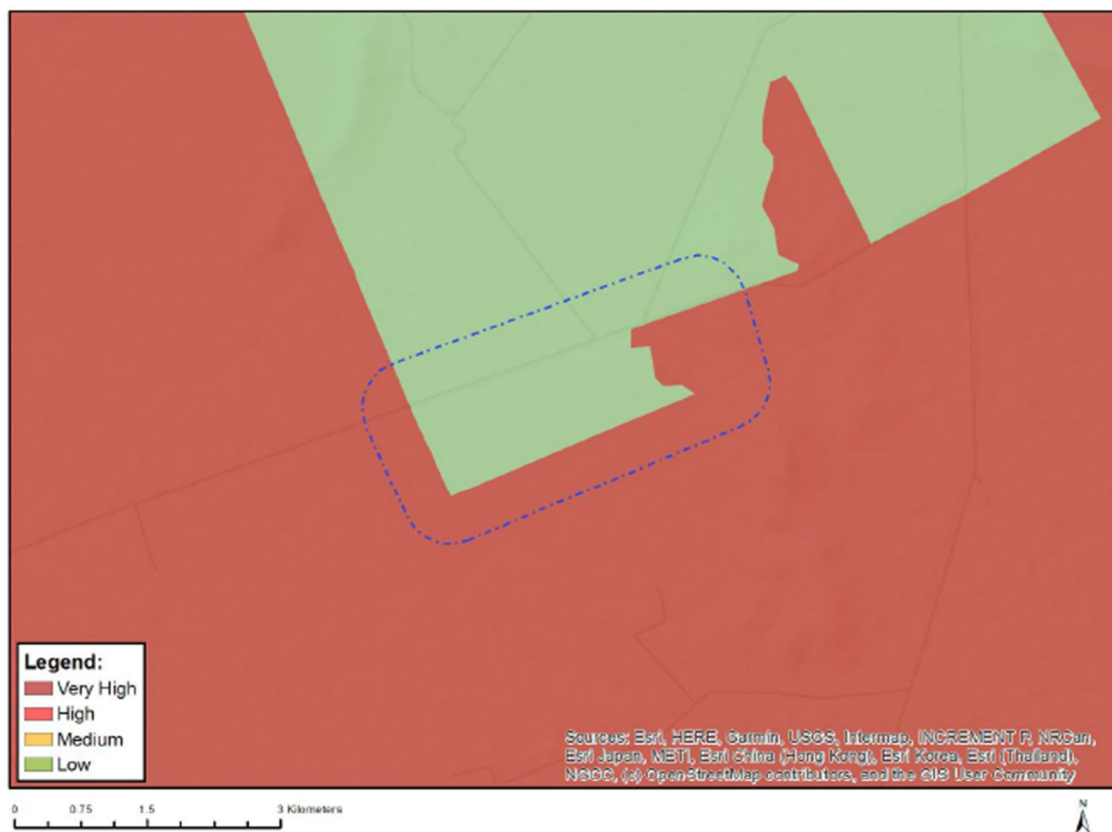
#### 3.1 Screening Report

The following is deduced from the National Web-based Environmental Screening Tool (Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended):

Note: The assessment area utilised for the screening tool is the 500 m buffered polygon of the 276 ha focus area.

- Terrestrial Biodiversity Theme sensitivity is Very High and Low, with CBA, ESA and protected areas being present (Figure 3-1);
- Plant Species Theme sensitivity is Low (Figure 3-2). No sensitive species potentially occur in the PAOI according to the screening tool; and
- Animal Species Theme sensitivity is Medium (Figure 3-3). Three sensitive species may occur (excluding avifauna).

**MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY**



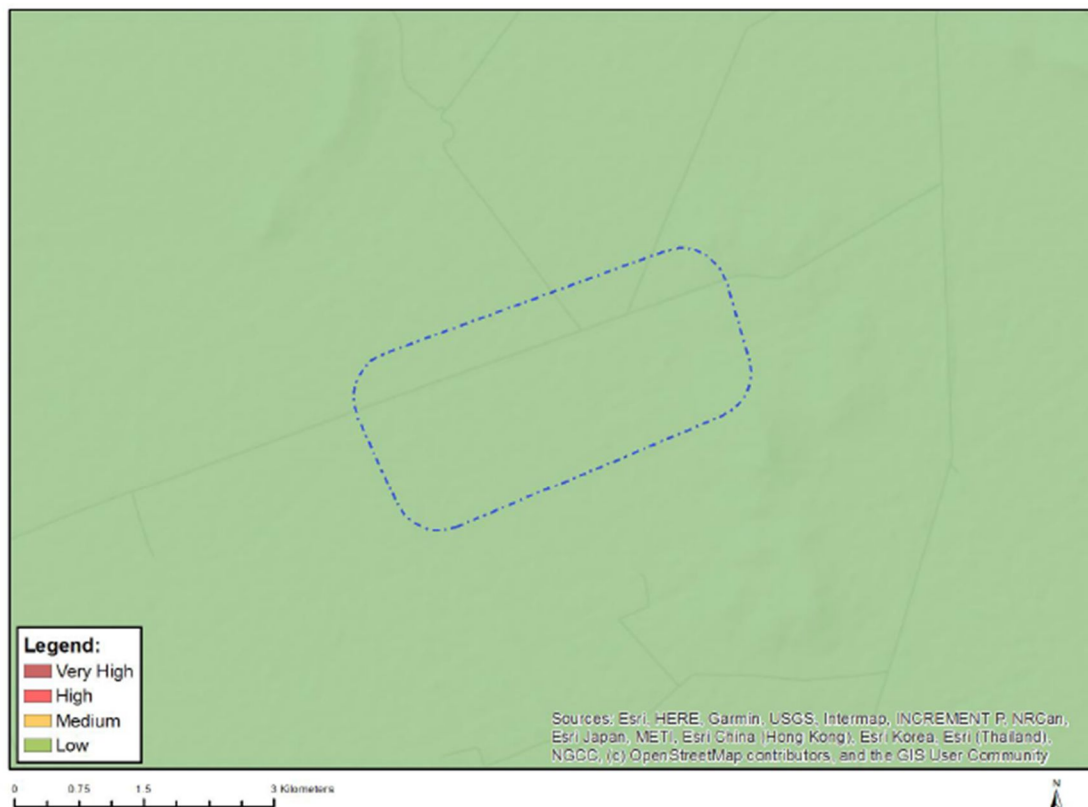
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

**Sensitivity Features:**

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	CBA 1
Very High	CBA 2
Very High	ESA 1
Very High	Koerooi Private Nature Reserve
Very High	Tortoiseshell Private Nature Reserve

**Figure 3-1 Terrestrial Biodiversity Theme Sensitivity**

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

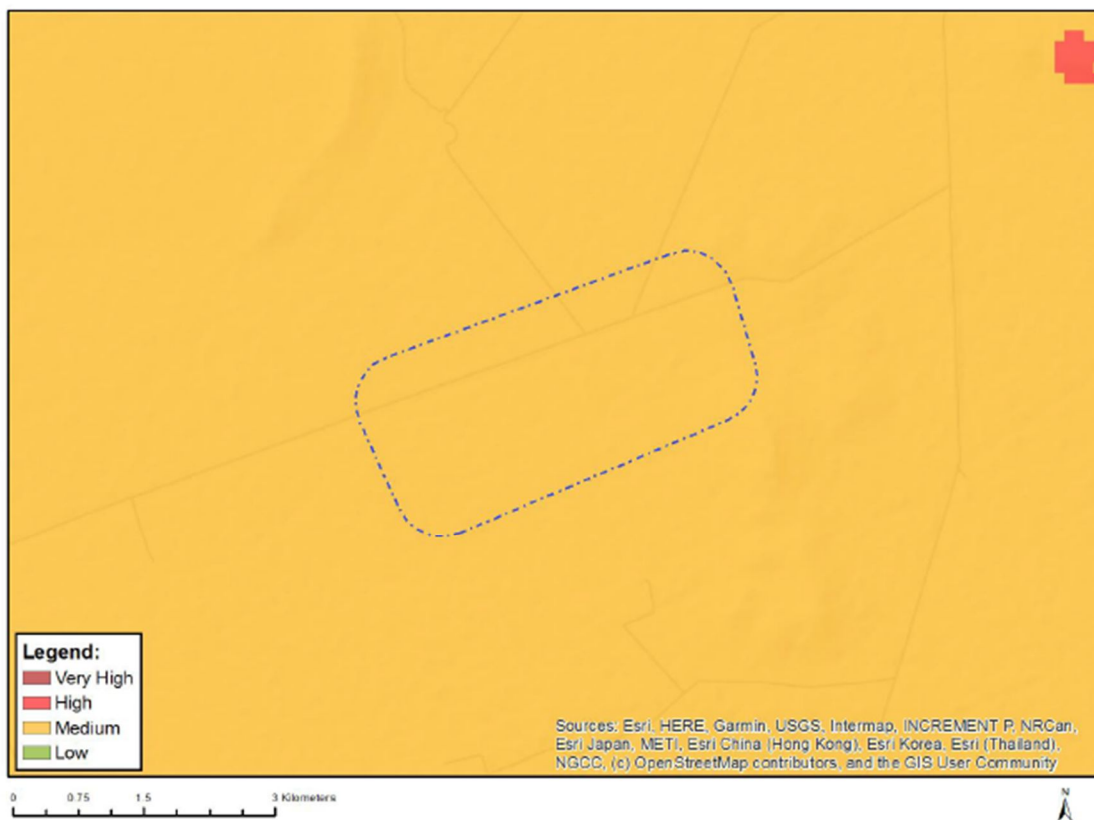
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

Figure 3-2 Plant Species Theme Sensitivity

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

**Sensitivity Features:**

Sensitivity	Feature(s)
Medium	Aves-Aquila rapax
Medium	Sensitive species 5
Medium	Mammalia-Crocidura maquassiensis
Medium	Reptilia-Kinixys lobatsiana

Figure 3-3 Animal Species Theme Sensitivity

### 3.2 Site Ecological Importance (SEI)

This site assessment was undertaken in August 2023, which constitutes a late dry-season survey. The different habitat types within the site were identified and delineated based on observations made during the field assessment, and available satellite imagery. These habitat types were assigned Ecological Importance (EI) categories based on their ecological integrity, conservation value, the presence of species of conservation concern and their ecosystem processes.

Three (3) different terrestrial habitat types were delineated within the site (Table 3-1) and based on the sensitivity criteria all habitats within the area were allocated a sensitivity category. The sensitivities of the habitat types delineated are illustrated in Figure 3-5. Note: Only terrestrial habitats, excluding avifauna considerations, are included in this assessment. For these results, please refer to the separate avifauna assessment. Refer to Figure 3-4 below for photographs of the different habitats observed within the site area.

Note: The 276 ha focus area lies adjacent to the nationally protected Tortoiseshell Private Nature Reserve, which is also largely a CBA1 (Irreplaceable) area. In order to mitigate against the negative edge effects of the proposed development activities (such as noise, erosion, the spreading of invasive flora and fauna, etc.) a 50 m high sensitivity buffer is imposed on this protected area. This is not considered a unique habitat type; however, it is presented as part of the delineations in Figure 3-5 below.

**Table 3-1 Summary of habitat types delineated within the Project Area, and assigned EI values**

Habitat Type	Description	Ecosystem Processes and Services	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
<b>Degraded Thornveld</b>	<p>Low – functionality savannah habitat. Supports some key ecosystem services and provides basic habitat connectivity.</p> <p>Most portions of this unit have been subject to extensive historical overgrazing and bush encroachment which has led to partial desertification in areas, and a loss to much of the herbaceous layer.</p>	<p>Some foraging habitat for fauna species.</p> <p>Basic erosion control and nutrient cycling. Grazing land.</p> <p>Carbon sequestration and nectar resources for pollinators.</p> <p>Movement corridors for all types of fauna.</p> <p>Wood source for local community.</p>	<p><b>Medium</b></p> <p>Confirmed or highly likely occurrence of populations of Near Threatened (NT) species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals.</p> <p>Any area of natural habitat of threatened ecosystem type with status of VU.</p> <p>Presence of range-restricted species.</p> <p>&gt; 50% of receptor contains natural habitat with potential to support SCC.</p>	<p><b>Medium</b></p> <p>Medium (&gt; 5 ha but &lt; 20 ha) semi-intact area for any conservation status of ecosystem type or &gt; 20 ha for VU ecosystem types.</p> <p>Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches.</p> <p>Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.</p>	<b>Medium</b>	<p><b>High</b></p> <p>Habitat that can recover relatively quickly (~ 5–10 years) to restore &gt; 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.</p>	<p><b>Low</b></p> <p>Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.</p>
<b>Dolomite Bushveld</b>	<p>Semi-functional savannah ESA habitat defined by a diversity of trees and shrubs, including numerous large mature trees.</p> <p>Bush encroachment and erosion is less severe than within the Degraded Thornveld habitat unit, and as such a more defined herbaceous layer is present.</p>	<p>Foraging habitat for fauna species, including likely SCC.</p> <p>Erosion control and nutrient cycling. Grazing land.</p> <p>Carbon sequestration and nectar resources for pollinators.</p> <p>Important movement corridors for all types of fauna.</p> <p>Wood source for local community.</p>	<p><b>High</b></p> <p>Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of &gt; 10 km<sup>2</sup>. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.</p> <p>If listed as threatened only under Criterion A, include if there are less than 10 locations or &lt; 10 000 mature individuals remaining.</p> <p>Small area (&gt; 0.01% but &lt; 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (&gt; 0.1%) of natural habitat of VU ecosystem type. Presence of Rare species.</p> <p>Globally significant populations of congregatory species (&gt; 1% but &lt; 10% of global population).</p>	<p><b>Medium</b></p> <p>Medium (&gt; 5 ha but &lt; 20 ha) semi-intact area for any conservation status of ecosystem type or &gt; 20 ha for VU ecosystem types.</p> <p>Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches.</p> <p>Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.</p>	<b>Medium</b>	<p><b>Medium</b></p> <p>Will recover slowly (~ more than 10 years) to restore &gt; 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.</p>	<p><b>Medium</b></p> <p>Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.</p>



Habitat Type	Description	Ecosystem Processes and Services	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Dam	Small, isolated depressions that are likely supplemented by an artificial supply of water throughout the year.	Important permanent and seasonal water sources for regional fauna moving through the area.	<b>High</b>	<b>Medium</b>	<b>Medium</b>	<b>Low</b>	<b>High</b>
			<p>Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of &gt; 10 km<sup>2</sup>. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.</p> <p>If listed as threatened only under Criterion A, include if there are less than 10 locations or &lt; 10 000 mature individuals remaining.</p> <p>Small area (&gt; 0.01% but &lt; 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (&gt; 0.1%) of natural habitat of VU ecosystem type. Presence of Rare species.</p> <p>Globally significant populations of congregatory species (&gt; 1% but &lt; 10% of global population).</p>	<p>Medium (&gt; 5 ha but &lt; 20 ha) semi-intact area for any conservation status of ecosystem type or &gt; 20 ha for VU ecosystem types.</p> <p>Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches.</p> <p>Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.</p>		<p>Habitat that is unlikely to be able to recover fully after a relatively long period: &gt; 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.</p>	



**Figure 3-4** *Representative photographs of each delineated habitat type (A – Degraded Thornveld; B – Dolomite Bushveld; C – Dam)*

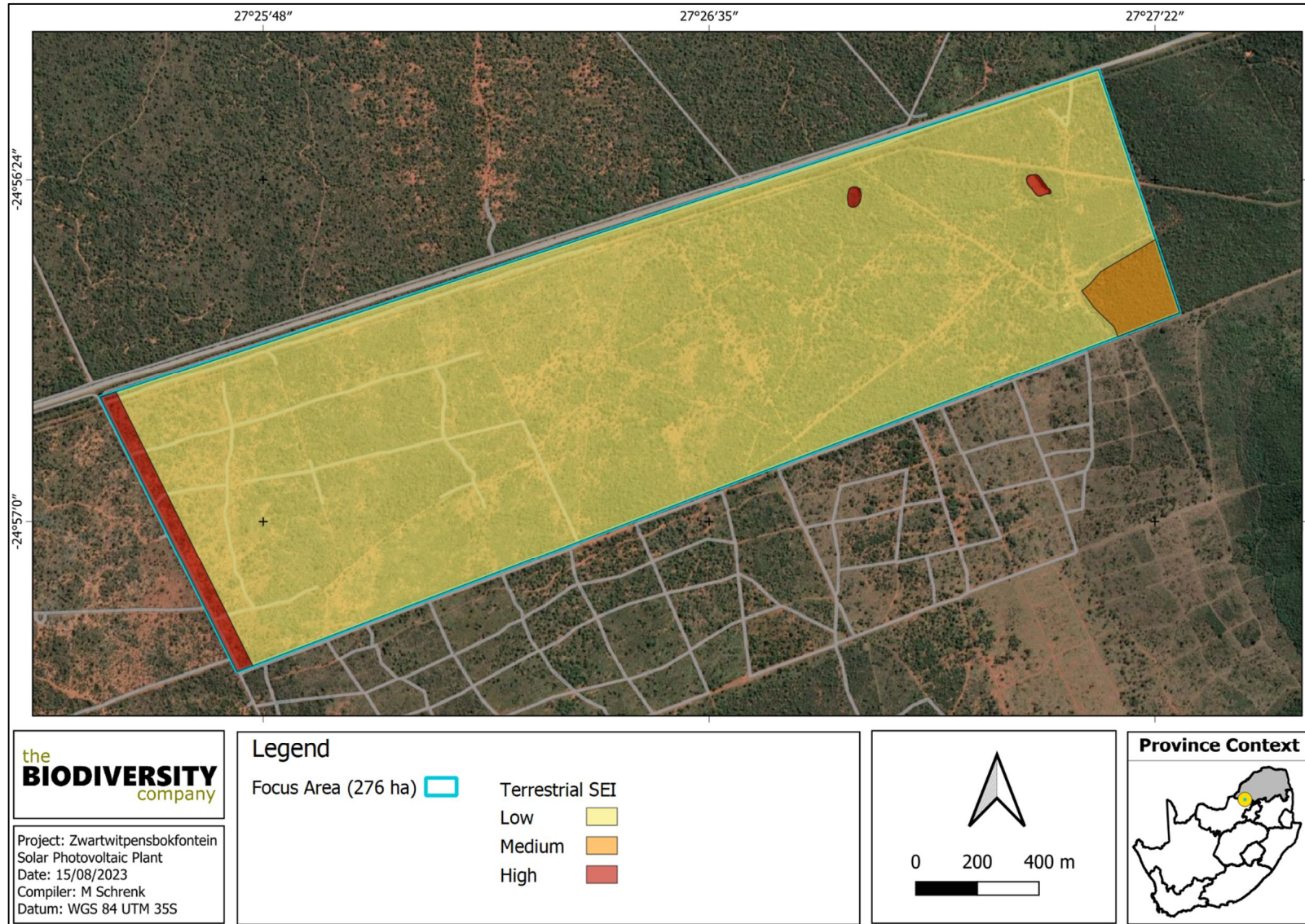


Figure 3-5 Map illustrating the Site Ecological Importance of the Site Area

### 3.3 Screening Tool Comparison

The allocated sensitivities for each of the relevant themes are either disputed or validated for the overall site in Table 3-2 below. A summative explanation for each result is provided as relevant. The specialist-assigned sensitivity ratings are based largely on the SEI process followed in the previous section, and consideration is given to any observed or likely presence of SCC or protected species.

**Table 3-2 Summary of the screening tool vs specialist assigned sensitivities**

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

### 3.4 Key Management & Mitigation Measures

The Dolomite Bushveld habitat features were found to be in a largely functional state that serves as an important foraging corridor and potential nesting habitat for a range of fauna species (including SCC), and the Dams are likely to support these species throughout the drier seasons. Development footprints should be amended to avoid these habitat features, in order to preserve the functional/important ecology.

A number of protected trees were recorded during the survey, of the species *Sclerocarya birrea* (Marula), *Combretum imberbe* (Leadwood), and *Boscia albitrunca* (Shepherd's tree). Due to the recording of these protected trees, a site walkthrough and Search and Rescue must be conducted before development activities commence, in order to GIS tag all specimen occurring within the site area. It is noted that the application of permits will be required for any protected flora that need to be relocated or destroyed.

## 4 Conclusion

Proposed assessment level: If the development footprint avoids all high and medium SEI areas then a terrestrial biodiversity compliance statement should be sufficient to fulfil protocol requirements, due to the fact that only low sensitivity habitat would then be directly impacted by construction activities.

It is the specialist's opinion that the proposed developability of the site area is as follows (this must be noted in line with the provincial guidelines for development in ESA areas – as these do occur within the project area):

**Avoidance (High SEI Areas):** Only limited low-impact development activities should be considered for High SEI habitat units.

**Minimisation (High SEI Areas):** Any development in these areas will lead to the direct destruction and loss of portions of functional/important habitat. Guidelines for development in high sensitivity areas require avoidance mitigation as much as possible. This must include concerted efforts to avoid these sensitive areas where feasible, and disturbances must be kept to an absolute minimum. Changes must be made to project infrastructure design to limit the amount of area/habitat impacted in relation to the title deed area (for example 10-50% reduction in footprint size). The minimisation of the disturbance footprint is also considered to be avoidance, this will include brush cutting beneath panels as opposed to the complete clearance of vegetation. Limited development activities of low-medium impact acceptable, followed by appropriate restoration activities. The infrastructure layout should consider habitat connectivity to avoid fragmentation, and technology alternatives should opt to retain vegetation under the PV. Offset mitigation may be required for high impact activities.

**Minimisation and restoration mitigation (Medium SEI Areas):** Any development activities of medium impact acceptable followed by appropriate restoration activities.

**Minimisation and restoration mitigation (Low SEI Areas):** Any development activities of medium-high impact acceptable followed by appropriate restoration activities.

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