TERRESTRIAL BIODIVERSITY, PLANT AND ANIMAL SPECIES THEME SITE SENSITIVITY VERIFICATION REPORT FOR THE PROPOSED KLIPPUT SOLAR PV, LIMPOPO PROVINCE

Prepared for:

KLIPPUT SOLAR PV (PTY) LTD

Prepared by:

Biodiversity Africa

30 Chudleigh Road
Plumstead, 7800
Cape Town, Western Cape



April 2025

Details of Company

Name	Biodiversity Africa
Email	Tarryn@biodiversityafrica.com
Tel	071 332 3994 or 078 340 6295
Address	30 Chudleigh Road Plumstead, 7800 Cape Town

Authors

Tarryn Martin (Botanical Specialist) (*Pri. Sci. Nat* 008745)
Tarryn has over ten years of experience working as a botanist, nine of which are in the environmental sector. She has worked as a specialist and project manager on projects within South Africa, Mozambique, Lesotho, Zambia, Tanzania, Cameroon, Swaziland and Malawi. The majority of these projects required lender finance and consequently met both in-country and lender requirements.

Tarryn has extensive experience writing botanical impact assessments, critical habitat assessments, biodiversity management plans, biodiversity monitoring plans and Environmental Impact Assessments to International Standards, especially to those of the International Finance Corporation (IFC). Her experience includes working on large mining projects such as the Kenmare Heavy Minerals Mine, where she monitored forest health, undertook botanical impact assessments for their expansion projects and designed biodiversity management and monitoring plans. She has also project managed Environmental Impact Assessments for graphite mines in northern Mozambique and has a good understanding of the Mozambique Environmental legislation and processes.

Tarryn holds a BSc (Botany and Zoology), a BSc (Hons) in African Vertebrate Biodiversity and an MSc with distinction in Botany from Rhodes University. Tarryn's Master's thesis examined the impact of fire on the recovery of C3 and C4 Panicoid and non-Panicoid grasses within the context of climate change for which she won the Junior Captain Scott-Medal (Plant Science) for producing the top MSc of 2010 from the South African Academy of Science and Art as well as an Award for Outstanding Academic Achievement in Range and Forage Science from the Grassland Society of Southern Africa.
Tarryn is a professional member of the South African Council for Natural Scientific Professionals (since 2014).

Nicole Dealtry (née Wienand) (Pri. Sci. Nat. 130289)
Nicole is a Senior Botanical Specialist with over 6 years' experience. She obtained her BSc Honours in Botany (Environmental Management) from Nelson Mandela University (NMU) in December 2018 and holds a BSc Degree in Environmental Management (Cum Laude) from NMU. Nicole is a professional member of the South African Council for Natural Scientific Professionals (SACNASP) (Pri. Sci. Nat. Botany Reg No. 130289), the International Association for Impact Assessment (IAIAsa) (Membership No. 6176), and the South African Association of Botanists.

During her first four years of working, Nicole gained experience as an Ecological Specialist and an Environmental Assessment Practitioner (EAP) undertaking Basic Assessments and assisting with the general Environmental Impact Assessment (EIA) process, including compiling Scoping and

Environmental Impact Assessment Reports, Environmental Management Programmes, and managing the Public Participation Process. Nicole went on to specialise in the field of ecology, ensuring compliance with the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity (GN R. 320 of 2020), Plant and Animal Species (GN R. 1150 of 2020), as well as the Species Environmental Assessment Guidelines (SANBI, 2020).

Nicole has undertaken numerous Ecological Impact Assessments for a range of developments, including Wind Energy Facilities (WEFs), Solar Energy Facilities (SEFs), mines, powerlines, housing developments, and roads and has worked in South Africa, Mozambique, Malawi and Sierra Leone, working closely with developers and Environmental Assessment Practitioners to ensure these developments are environmentally sustainable, as well as financially and technically feasible. Additionally, she has experience in compiling Alien Invasive Species Management Plans, Ecosystem Services Assessments, Rehabilitation and Restoration Plans, Plant Search and Rescue Plans, performing ecological walk-through assessments, and obtaining permits for plant removal and translocation. Some of these assessments have been conducted in accordance with the IFC's Performance Standards.

Amber Jackson (Faunal Specialist) (*Cand. Nat. Sci)*
Amber has over ten years' experience in environmental consulting and has managed projects across various sectors including mining, agriculture, forestry, renewable energy, housing, coastal and wetland recreational infrastructure. Most of these projects required lender finance and therefore met both in-country, lender and sector specific requirements.

Amber completed the IFC lead and Swiss funded programme in Environmental and Social Risk Management course in 2018. The purpose of the course was to upskill Sub-Saharan African environmental consultants to increase the uptake of E&S standards by Financial Institutions.

Amber specialises in terrestrial vertebrate faunal assessments. She has conducted large scale faunal impact assessments that are to international lender's standards in Mozambique, Tanzania, Lesotho and Malawi. In South Africa her faunal impact assessments comply with the protocols for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity and follows the SANBI Species Environmental Assessment Guideline. Her specialist input goes beyond impact assessments and includes faunal opportunities and constraints assessments, Critical Habitat Assessments, Biodiversity related Management Plans and Biodiversity Monitoring Programmes.

Amber holds a BSc (Zoology and Ecology, Environment & Conservation) and BSc (Hons) in Ecology, Environment & Conservation from WITS University and an MPhil in Environmental Management from University of Cape Town. Amber's honours focused on the landscape effects on Herpetofauna in Kruger National Park and her Master's thesis focused on the management of social and natural aspects of environmental systems with a dissertation in food security that investigated the complex food system of informal and formal distribution markets.

Declaration

I, Tarryn Martin, declare that, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amended Environmental Impact Assessment Regulations, 2017;

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this report are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signed:  **Date:** 23/04/2025

Declaration

I, Nicole Dealtry, declare that, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amended Environmental Impact Assessment Regulations, 2017;

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this report are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

24/04/2025

Signed: **Date:**

Declaration

I, Amber Jackson, declare that, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amended Environmental Impact Assessment Regulations, 2017;

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this report are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signed:  **Date:** 23/04/2025

Executive Summary

Introduction

Klipput Solar PV (Pty) Ltd are proposing the construction of a Solar Photovoltaic (PV) Energy Facility and associated infrastructure, known as Klipput Solar PV, on Portion 1 of Farm 425, Portion 1 of Farm 466 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province. A study site of approximately 601ha is being assessed as part of this Environmental Process and the infrastructure associated with an up to 240 Megawatt (MW) Solar PV facility.

This report outlines the findings of the Site Sensitivity Verification undertaken for the Terrestrial Biodiversity, Plant and Animal Species Theme Sensitivity.

Method

A desktop assessment of the project area was undertaken prior to the field assessment. The purpose of this was to identify any sensitive areas or SCC that needed to be verified. Following the desktop assessment, two field surveys were undertaken for the project area. The initial survey was undertaken from the 18th to the 21st of June 2024 at the start of the dry season when most species were fruiting, and a second survey was undertaken on the 13th of February 2025 when most species were in flower. A combined total of ninety (90) sample sites were assessed during the field surveys within the PAOI which is estimated to be 3500 ha. This equates to a density of 1 sample site per 39 ha.

The findings of the desktop assessment and field survey were utilised to determine the actual Site Ecological Importance (SEI) of the project area which ultimately informs the land use guideline and mitigation requirements for the project area.

Results

Animal Species Theme

The DFFE screening tool report indicates that entire project area is of medium sensitivity for the animal species theme (excluding birds), due to the possible occurrence of two mammal species.

Based on the findings from the desktop assessment and field survey, the specialist agrees that the faunal habitat for all intact plant communities as well as the secondary vegetation has a MEDIUM SEI due to the confirmed occurrence of Tsessebe (*Damaliscus lunatus)* (which has been stocked by the landowner) and likely occurrence of three VU species (Black-footed Cat – *Felis nigripes,* Leopard – *Panthera pardus* and Temminick's Pangolin – *Smutsia temminckii*) and three NT species (African Striped Weasel - *Poecilogale albinucha*, Brown Hyaena - *Parahyaena brunnea*, Southern African Hedgehog - *Atelerix frontalis*).

However, transformed areas should be reclassified as LOW sensitivity due to the unlikely occurrence of SCC.

Plant Species Theme

The overall plant species theme was classified as low by the DFFE screening tool report due to the unlikely occurrence of SCC. Based on the results of the desktop analysis and field survey, which confirm that no SCC occur or are highly likely to occur within the project area, the specialist agrees with the DFFE Screening Tool report of Low sensitivity.

Terrestrial Biodiversity Theme

The DFFE Screening Tool Report classifies the Terrestrial Biodiversity Theme sensitivity of the project area as LOW.

The terrestrial biodiversity assessment confirmed the following:

- The project area occurs within one vegetation types, namely Makhado Sweet Bushveld. The overall sensitivity for this vegetation type was determined to be of Medium sensitivity.
- Most of the project area falls within an area classified as "Other Natural Area (ONA)" with minor patches classified as "No Natural Remaining (NNR)".
- The project area occurs within the Vhembe Biosphere Reserve (VBR). The VBR supports development that is ecologically and socio-culturally sustainable, promoting both conservation and economic growth. As such, the VBR does not preclude development.
- The project area does not occur within a KBA, protected area, or NPAES Focus Area.

The specialist disagrees with the findings of the DFFE Screening Tool which indicates a Low Sensitivity and is of the opinion that the overall sensitivity should be MEDIUM as per the SEI analysis for the vegetation types and VERY LOW for the transformed areas.

Conclusion

The overall combined SEI of the project area was found to be MEDIUM for intact and secondary plant communities and VERY LOW for the transformed areas.

The management guidelines for interpreting SEI in the context of the proposed development activities, outlined in the Species Environmental Assessment Guideline (SANBI, 2020), specify the following:

- For areas of **medium SEI,** development activities of medium impact are acceptable provided appropriate mitigation and management measures are implemented.
- For areas of **very low SEI**, development activities of medium to high impact are acceptable and mitigation and management measures may not be required although they are good practice.

Potential impacts associated with the development are likely to include:

- Permanent loss of vegetation, loss of faunal habitat and habitat fragmentation through clearing of vegetation for the placement project infrastructure.
- Short term impacts on faunal livelihoods during the construction phase that could cause faunal mortalities and/or disturbance to faunal species through increased noise which could cause them to move away or skip a breeding cycle.
- Infestation of alien invasive plant species in disturbed areas.

Impacts can be mitigated, and it is anticipated that the residual impacts will be of low to medium significance once mitigation measures are implemented. No residual impacts of high or very high significance are anticipated but these will need to be assessed in the impact assessment phase.

Based on the MEDIUM SEI and likely occurrence of the animal SCC, and as per paragraph 4.10 of the National Environmental Management Act No. 107 of 1998: Adoption of the Solar Exclusion Norm and Exclusion of the Development and Expansion of Solar Photovoltaic Facilities from the Requirement to obtain an Environmental Authorisation (27 March 2024) does not apply due to the high likelihood of occurrence of SCC. As such, the botanical, faunal and terrestrial biodiversity specialists are of the opinion that a full Ecological Impact assessment Report is required for the proposed project area.

Table of Contents

List of Figures

List of Tables

Glossary of Terms

Alien Invasive Species refers to an exotic species that can spread rapidly and displace native species causing damage to the environment

Biodiversity is the term that is used to describe the variety of life on Earth and is defined as "*the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems*" (Secretariat of the Convention on Biological Diversity, 2005).

Biome - Groupings based on dominant forms of plant life and prevailing climatic factors. Biomes have plants and/or animals living together with some degree of permanence, and one can observe large-size patterns in global plant cover. Biomes broadly correspond with climatic regions as moisture and temperature strongly influence plant establishment and survival, although other environmental controls are sometimes important (SANBI, 2020).

Ecosystem - A dynamic complex of animal, plant and micro-organism communities and their non-living environment interacting as a functional unit (SANBI, 2020).

Habitat Fragmentation occurs when large expanses of habitat are transformed into smaller patches of discontinuous habitat units isolated from each other by transformed habitats such as farmland.

Natural Habitat refers to habitats 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 function and species composition.

Project Area is defined as the area that will be directly impacted by project infrastructure such as the roads, solar panels, and offices.

Project area of influence (PAOI) refers to the broader area around the project area that may be indirectly impacted by project activities.

Protected Area is a clearly defined geographical space, recognised, dedicated, and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values *(IUCN Definition 2008).*

Sensitive Species are species that are sensitive to illegal harvesting. As such, their names are obscured and listed as "Sensitive species #". As per the best practice guideline that accompanies the protocol and screening tool, the name of the sensitive species may not appear in any BAR or EIA report, nor any specialist reports released into the public domain.

Species of Conservation Concern (SCC) includes all species that are assessed according the IUCN Red List Criteria as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Data Deficient (DD) or Near Threatened (NT), as well as range-restricted species which are not declining and are nationally listed as Rare or Extremely Rare [also referred to in some Red Lists as Critically Rare] (SANBI, 2021).

Study Area *r*efers to the extent of analysis that extends beyond the project area and includes the broader surrounding area which may not necessarily be impacted by project activities e.g the Quarter Degree Square in which the project area occurs.

Vegetation Type is defined in terms of dominant, common as well as rare species, as well as association with landscape features such as soil or geology, topography, and climate (SANBI).

Acronyms

BI	Biodiversity Importance
CBA	Critical Biodiversity Area
CI	Conservation Importance
CR	Critically Endangered
DFFE	Department of Forestry, Fisheries and Environment
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EN	Endangered
EOO	Extent of Occupancy
FI	Functional Integrity
GIS	Geographical Information System
GN	Government Notice
IUCN	International Union for Conservation of Nature
LC	Least Concern
NEM:BA	National Environmental Management: Biodiversity Act
NT	Near Threatened
PAOI	Project Area of Influence
POSA	Plants of Southern Africa
PV	Photovoltaic
QDS	Quarter Degree Square
RR	Receptor Resilience
SA	South Africa
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SEF	Solar Energy Facility
SEI	Site Ecological Importance
TOPS	Threatened and Protected Species
VU	Vulnerable

Specialist Check List

The contents of this specialist report complies with the legislated requirements as described in the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity, Plant and Animal Species (GN R. 320 of March 2020 and GN R1150 of 30 October 2020).

GENERAL SITE SENSITIVITY VERIFICATION AND MINIMUM REPORT REQUIREMENTS (GN 320 OF 2020)		COMMENT
2.1	The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.	Refer to pages 2-4 and Appendix 2 and 3
2.2	The site sensitivity verification must be undertaken through the use of: (a) a desk top analysis, using satellite imagery;	Refer to section 2.2 and chapters 3, 4 and 5
	(b) a preliminary on-site inspection; and	Refer to section 2.3 and chapters 3, 4 and 5
	(c) any other available and relevant information.	Refer to chapters 2, 3, 4 and 5
2.3	2.3. The outcome of the site sensitivity verification must be recorded in the form of a report that: (a) confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;	Refer to chapter 7
	b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and	Refer to chapters 3, 4 , 5, 6 and 7
	(c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations	**Requirement to be fulfilled by the Environmental Assessment Practitioner.**

SPECIALIST REPORT REQUIREMENTS ACCORDING TO GN 1150			SECTION OF REPORT
3.1	The Terrestrial **ANIMAL SPECIES** Specialist Assessment Report must contain, as a minimum, the following information:		
	3.1.1	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Page 3; Appendix 2 & 3
	3.1.2	A signed statement of independence by the specialist;	Page 5
	3.1.3	A statement of the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 1.3 and 2.3
	3.1.4	A description of the methodology used to undertake the site sensitivity verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Chapter 2
	3.1.5	A description of the mean density of observations/number of sample sites per unit area and the site inspection observations;	Section 2.3 and Figure 2.1
	3.1.6	A description of the assumptions made and any uncertainties or gaps in knowledge or data;	Section 1.3

	3.1.7	Details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported;	Chapter 3
	3.1.8	The online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area;	N/A as no SCC observed within the project area
	3.1.9	A location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Chapter 6
	3.1.10	A discussion on the cumulative impacts;	N/A. This will be assessed during the Impact Assessment Phase
	3.1.11	Impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	N/A. This will be assessed during the Impact Assessment Phase
	3.1.12	A reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not of the development and if the development should receive approval or not, related to the specific theme being considered, and any conditions to which the opinion is subjected if relevant; and	Chapter 7
	3.1.13	A motivation must be provided if there were development footprints identified as per paragraph 2.2.12 above that were identified as having a "low" or "medium" terrestrial animal species sensitivity and were not considered appropriate;	N/A
3.2	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.		

SPECIALIST REPORT REQUIREMENTS ACCORDING TO GN R. 320			SECTION OF REPORT
3.1	The Terrestrial **PLANT SPECIES** Specialist Assessment Report must contain, as a minimum, the following information:		
	3.1.1	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Page 2-3; Appendix 2 & 3
	3.1.2	A signed statement of independence by the specialist;	Page 4
	3.1.3	A statement of the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 1.3 and 2.3
	3.1.4	A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Chapter 2
	3.1.5	A description of the assumptions made and any uncertainties or gaps in knowledge or data;	Section 1.3
	3.1.6	A description of the mean density of observations/number of samples sites per unit area of site inspection observations;	Section 2.3 and Figure 2.1
	3.1.7	Details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported;	Chapter 4
	3.1.8	The online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area;	Section 2.3 however no SCC

			recorded within the project area or likely to occur in the project area
	3.1.9	A location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Chapter 6
	3.1.10	A discussion on the cumulative impacts;	N/A. This will be assessed during the Impact Assessment Phase
	3.1.11	Impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	N/A. This will be assessed during the Impact Assessment Phase
	3.1.12	A reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the development related to the specific theme considered, and if the development should receive approval or not, related to the specific theme being considered, and any conditions to which the opinion is subjected if relevant; and	Chapter 7
	3.1.13	A motivation must be provided if there were any development footprints identified as per paragraph 2.3.12 above that were identified as having "low" or "medium" terrestrial plant species sensitivity and were not considered appropriate.	N/A
3.3	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.		

SPECIALIST REPORT REQUIREMENTS ACCORDING TO GN R. 320			SECTION OF REPORT
3.1	The **TERRESTRIAL BIODIVERSITY** Specialist Assessment Report must contain, as a minimum, the following information:		
	3.1.1	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Page 2-4; Appendix 2 & 3
	3.1.2	A signed statement of independence by the specialist;	Pages 4 & 5
	3.1.3	A statement of the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 1.3 & 2.3
	3.1.4	A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Chapter 2
	3.1.5	A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	Section 1.3
	3.1.6	A location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Section 5.2, 5.3 and Chapter 6

	3.1.7	Additional environmental impacts expected from the proposed development;	N/A. This will be assessed during the Impact Assessment Phase
	3.1.8	Any direct, indirect and cumulative impacts of the proposed development;	
	3.1.9	The degree to which the impacts and risks can be mitigated;	
	3.1.10	The degree to which the impacts and risks can be reversed;	
	3.1.11	The degree to which the impacts and risks can cause loss of irreplaceable resources;	
	3.1.12	Proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	N/A. This will be assessed during the Impact Assessment Phase
	3.1.13	A motivation must be provided if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a "low" terrestrial biodiversity sensitivity and that were not considered appropriate;	N/A
	3.1.14	A substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and	Chapter 7
	3.1.15	Any conditions to which this statement is subjected.	
3.2	The findings of the Terrestrial Biodiversity Specialist Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr where relevant.		
3.3	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.		

1. INTRODUCTION

1.1. Project Description

Klipput Solar PV (Pty) Ltd are proposing the construction of a Solar Photovoltaic (PV) Energy Facility and associated infrastructure, known as Klipput Solar PV, on Portion 1 of Farm 425, Portion 1 of Farm 466 and the Remainder of Farm 466 located South of Louis Trichardt in the Makhado Local Municipality, Vhembe District, Limpopo Province.

A study site of approximately 601ha is being assessed as part of this Environmental Process and the infrastructure associated with an up to 240 Megawatt (MW) PV facility.

For a more detailed project description, please refer to the Scoping Report compiled for this project by Cape EAPrac.

1.2. Objectives

The objectives of this Site Sensitivity Verification Report (SSVR) are to:

- Undertake a desktop assessment of the project area to determine its sensitivity and Species of Conservation Concern (SCC) (plants, amphibians, reptiles, mammals) that could be present.
- Conduct a field survey to record the following information and verify the findings of the desktop assessment:
    - Species present (Plant and Animal)
    - Identification of species that are either protected (Threatened or Protected Species (TOPS) and Provincial Nature Conservation Ordinance (PNCO)) or considered threatened (Critically Endangered (CR), Endangered (EN), Vulnerable (VU)) on the South African Red Data List
    - Assess the level of degradation/ecological status of the project area (i.e. intact, near natural, transformed).
- Assess the sensitivity of the project area using the sensitivity analysis outlined in the Species Environmental Assessment Guideline (2020).
- Comment on the sensitivity of the project area in terms of the Animal, Plant and Terrestrial Biodiversity Themes and how this relates to the findings from the DFFE screening tool report. If the specialist disagrees with the sensitivity rating in the screening tool, a reason will be provided, and the sensitivity provided based on the findings from the field survey.
- Make recommendations regarding the minimum report content requirements (if any) in support of an Application for Environmental Authorisation (EA).

1.3. Limitations and Assumptions

This report is based on current available information and, as a result, the following limitations and assumptions are implicit:

- SCC are difficult to find and may be difficult to identify, thus species described in this report do not comprise an exhaustive list. It is possible that additional SCCs are present. However, every effort was made to identify SCC present on site during the field survey. Furthermore, a desktop assessment to identify SCC that could occur within the project area was undertaken, and the likelihood of occurrence assessed based on the species known distribution, available habitat recorded during the field survey within the project area, and previous recorded observations near the project area.
- Sampling was carried out at two stages in the annual or seasonal cycle. The initial survey was undertaken from the 18-21 June 2024 at the start of the dry season when most species were fruiting, and a second survey was undertaken during the peak flowering season on the 13th February 2025 when most species are in flower or fruiting. Although it is possible that some early flowering species, such as geophytes, have gone undetected, the time available in the field and information gathered during the survey was sufficient to provide enough information to determine the status of the affected area and provide comment on the likelihood of occurrence of SCC with a high level of confidence.
- This assessment includes plants, mammals, amphibians and reptiles. It does not include the assessment of birds or invertebrates. Birds have been assessed separately by a qualified avifaunal specialist.
- The faunal assessment is based on a desktop assessment coupled with a field survey to assess available habitat and active searching.
- The assessment has been undertaken inline with the Protocol for the Specialist Assessment and Minimum Report Requirements for Environmental Impacts on Terrestrial Biodiversity (2020) and Terrestrial Animal and Plant Species (GN R. 1150) as well as the Species Environmental Assessment Guideline (2020).

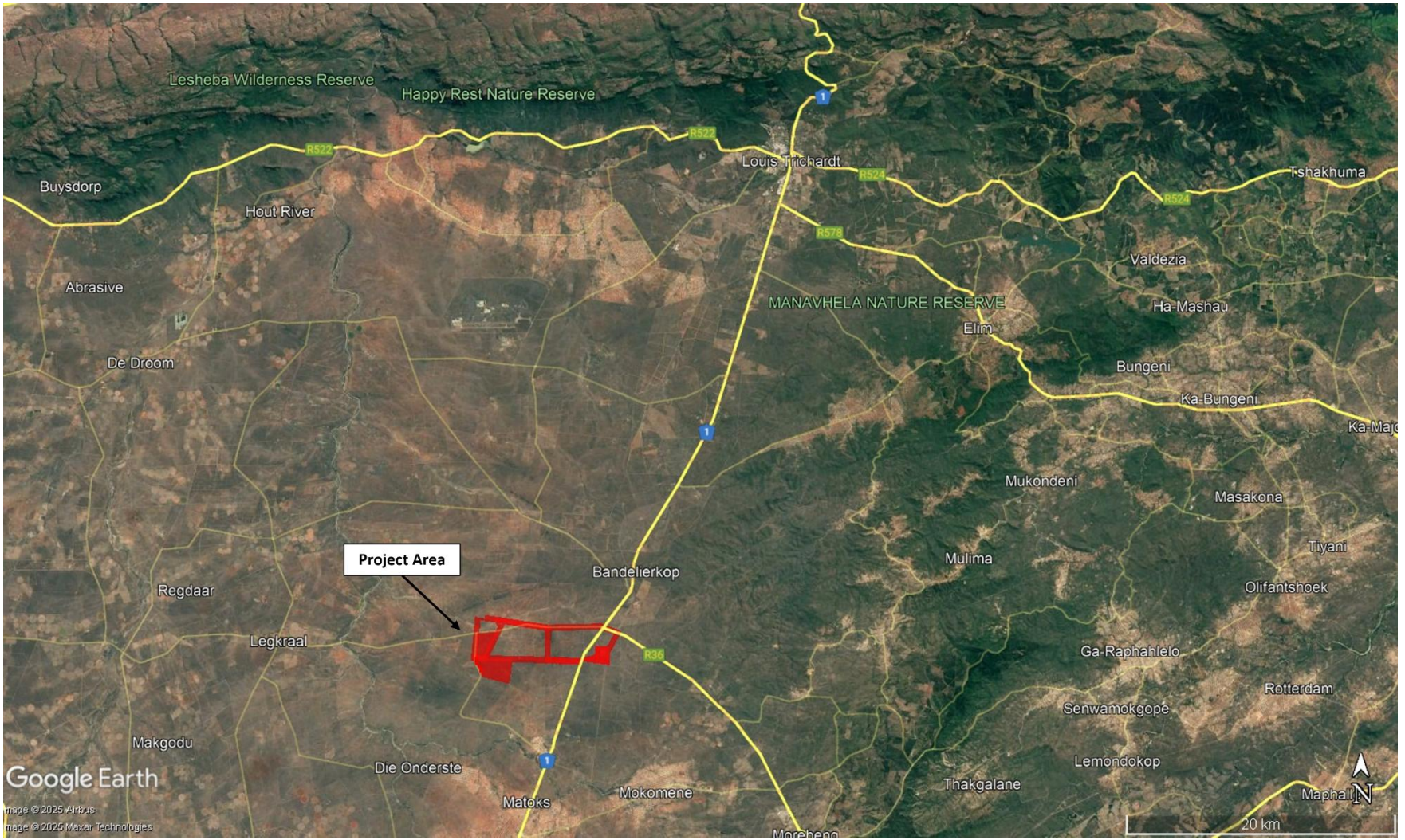


Figure 1.1: Locality Map indicating the location of the project area (in red) in relation to Louis Trichardt.

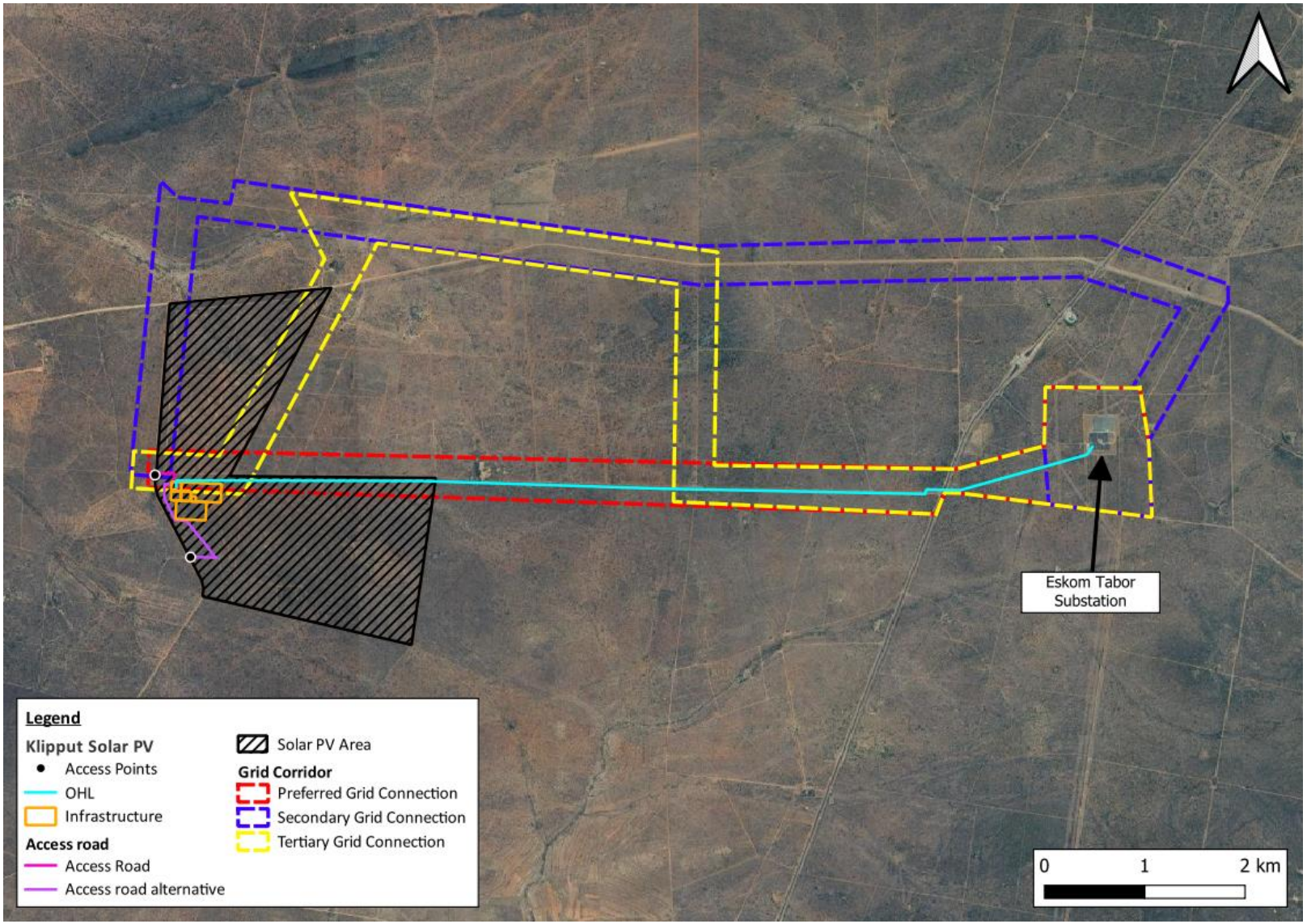


Figure 1.2: Infrastructure map showing the project's footprint.

2. METHODOLOGY

2.1. DFFE Screening Report

The DFFE Screening report identifies environmental sensitivities for the project area. This is based on available desktop data and requires that a suitably qualified specialist verify the findings. Of relevance to this report is the terrestrial biodiversity, plant, and animal species theme (refer to Table 2.1 below). A desktop assessment of available spatial data and literature resources was undertaken to verify the sensitivity features contributing to the sensitivity rating for each of the themes and this was supplemented with data gathered during the field survey. The key resources that were consulted for each theme are summarised in Section 2.2.1 to 2.2.3 below

Table 2.1: Summary of DFFE screening report themes relevant to this study.

Theme	Sensitivity	Sensitivity Features	Relevant Section of the Report
	Solar PV		
Animal Species	**MEDIUM**[1]	• One Sensitive Bird Species • Sensitive species 5 • One Sensitive invertebrate	The animal species theme has been categorised as medium due to the possible presence of Sensitive Species 5. Chapter 3 of this report provides an assessment of faunal species occurring in the project area. Birds are addressed separately in the avifaunal assessment.
Plant Species	**LOW**	• None identified	A desktop assessment that includes records from both Plants of Southern Africa (POSA) and iNaturalist databases was undertaken in conjunction with a field survey. For SCC that might occur within the project area, the likelihood of occurrence has been assessed based on distribution records and available habitat on site (Refer to Chapter 4).

[1] 'Medium' sensitivity does not indicate the known presence of a threatened plant within the proposed development footprint/PAOI but could indicate moderate likelihood of occurrence based on species distribution modelling, which relies on data such as habitat preferences and proximity to known locations of specific species (SANBI, 2020).

Terrestrial Biodiversity (Figure 2.1)	**LOW**	• None Identified	The Solar PV facility was categorised as having a Low Sensitivity. Comment on how development will impact on this has been included in Chapter 5.

2.2. Desktop Assessment

2.2.1. Animal Species Theme

The known diversity of the vertebrate fauna (excluding birds and bats) in the project area was determined by a literature review. Species known from the region, or from adjacent regions, whose preferred habitat(s) were known to occur within the project area, were also included. The most recent literature sources were consulted and include:

- DFFE Screening Tool Reports (2025)
- Amphibians –Du Preez & Carruthers (2017), FrogMap (Fitz Patrick Institute of African Ornithology, 2024).
- Reptiles – Branch (1998), ReptileMap (Fitz Patrick Institute of African Ornithology, 2024).
- Mammals – Stuart & Stuart (2014), MammalMap (Fitz Patrick Institute of African Ornithology, 2024).
- IUCN, 2024.
- iNaturalist.

To establish which of those species identified in the literature review are SCC, the following sources were consulted:

- Conservation status of the reptiles of South Africa, Eswatini and Lesotho (Tolley *et al*., 2023);
- Ensuring a future for South Africa's frogs: a strategy for conservation research (Measey 2011);
- Red List of Mammals of South Africa, Swaziland and Lesotho (Child, *et al.,* 2016);
- IUCN (2024);
- NEM:BA (10 OF 2004) and TOPS

2.2.2. Plant Species Theme

A species list was compiled for the site and the likelihood of occurrence assessed for species listed as CR, EN, VU and Near Threatened (NT). Key resources consulted include:

- The DFFE Screening Tool Reports (2025)
- The Plants of Southern Africa (POSA) database.
- iNaturalist.

Species threat status was checked against the South African Red Data List.

2.2.3. Terrestrial Biodiversity Theme

A desktop assessment was undertaken prior to the field survey to determine whether there are any terrestrial biodiversity features within the project area that are considered sensitive. The vegetation types present within the project area and key features driving the CBA status of the project area were identified and confirmed during the field survey. Key resources consulted include:

- The DFFE Screening Tool Reports (2025).
- The South African Vegetation Map (SANBI, 2024).
- The 2018 Limpopo Province Map of Critical Biodiversity Areas and Ecological Support Areas.
- The International Union for the Conservation of Nature (IUCN) Red List of Ecosystems for South Africa (SANBI, 2021).
- South African Red List of Terrestrial Ecosystems: assessment details and ecosystem descriptions (SANBI, 2022).
- National Protected Area Expansion Strategy (NPAES) (2018).
- The South African Protected Areas Database (SAPAD, Q3, 2024) and the South African Conservation Areas Database (SACAD, Q3, 2024).
- Key Biodiversity Areas (2024).

2.3. Field Survey

Two surveys were undertaken for the project area. The initial survey was undertaken from the 18th to the 21st of June 2024 at the start of the dry season when most species were fruiting, and a second survey was undertaken on the 13th of February 2025 when most species were in flower. Sufficient information was gathered during the two surveys to provide comment on the species present and the state of the ecosystem.

A combined total of ninety (90) sample sites were assessed during the field surveys within the PAOI which is estimated to be 3500 ha. This equates to a density of 1 sample site per 39 ha. Given the uniformity of the project area, this was considered sufficient to characterise the vegetation and faunal habitats present. Figure 2.1 provides a map of the tracks and sample sites assessed for the project as well as the GPS location of faunal species recorded within the project area.

2.3.1. Terrestrial Biodiversity and Plant Species Theme

The purpose of the botanical survey was to assess the site-specific botanical state of the Project Area of Influence (PAOI) by recording the species present (both indigenous and alien invasive species), identifying sensitive plant communities such as vegetation associated with rocky outcrops, riparian areas, or areas with Species of Conservation Concern (SCC), and identifying the current land use.

During the survey, the project area was driven and walked, and sample plots were analysed by determining the dominant species in each plot, as well as any alien invasive species and potential SCC occurring within the plots (Figure 2.1). Each sample plot was sampled until no new species were

recorded. The distance walked at each sample plot depended on the diversity of species present. Distances ranged from 300m in degraded or modified habitat to 1km in habitat with a higher species diversity. Vegetation communities were then described according to the dominant species recorded from each type, and these were mapped and assigned a sensitivity score.

2.3.2. Animal Species Theme

The purpose of the faunal field survey was to determine the faunal habitats present within the project area and conduct searches for mammal, reptile, and amphibian species that may utilise these habitats.

The project area was driven, and active searching conducted in various habitats present (Figure 2.1). Active searching for amphibians, reptiles, and mammals includes direct and indirect observation:

- Direct observations were made by walking and driving through the project area and recording species seen. The GPS location and number of individuals present were recorded using Orux Maps. Where feasible, photographs were taken.
- Indirect observation is the searching for evidence of faunal presence and includes spoor, skat, roadkill, skulls, quills, dens, burrows, hairs, scrapings, and diggings.

In addition, habitats that typically provide refuge for faunal species were targeted to search for specific species:

- Reptiles and terrestrial amphibians were targeted in microhabitats by lifting rocks and logs, peeling away bark and scraping through leaf litter. A minimum of twenty minutes was spent searching.
- Amphibians were targeted at water bodies where individuals were searched for along the banks and verge vegetation.
- Camera and binoculars were used to view mammal species from a distance without disturbing them. While walking the site, mammals are often flushed from hiding and were recorded.
- Riparian and wetland habitat was targeted to establish the ecological state of the habitat to establish the likelihood of occurrence of SCC.

All species observations were uploaded to iNaturalist:
https://www.inaturalist.org/observations?nelat=-23.28362004838525&nelng=29.813118802100984&subview=map&swlat=-23.453806607150614&swlng=29.563179837257234&user_id=nicole_wienand&view=species

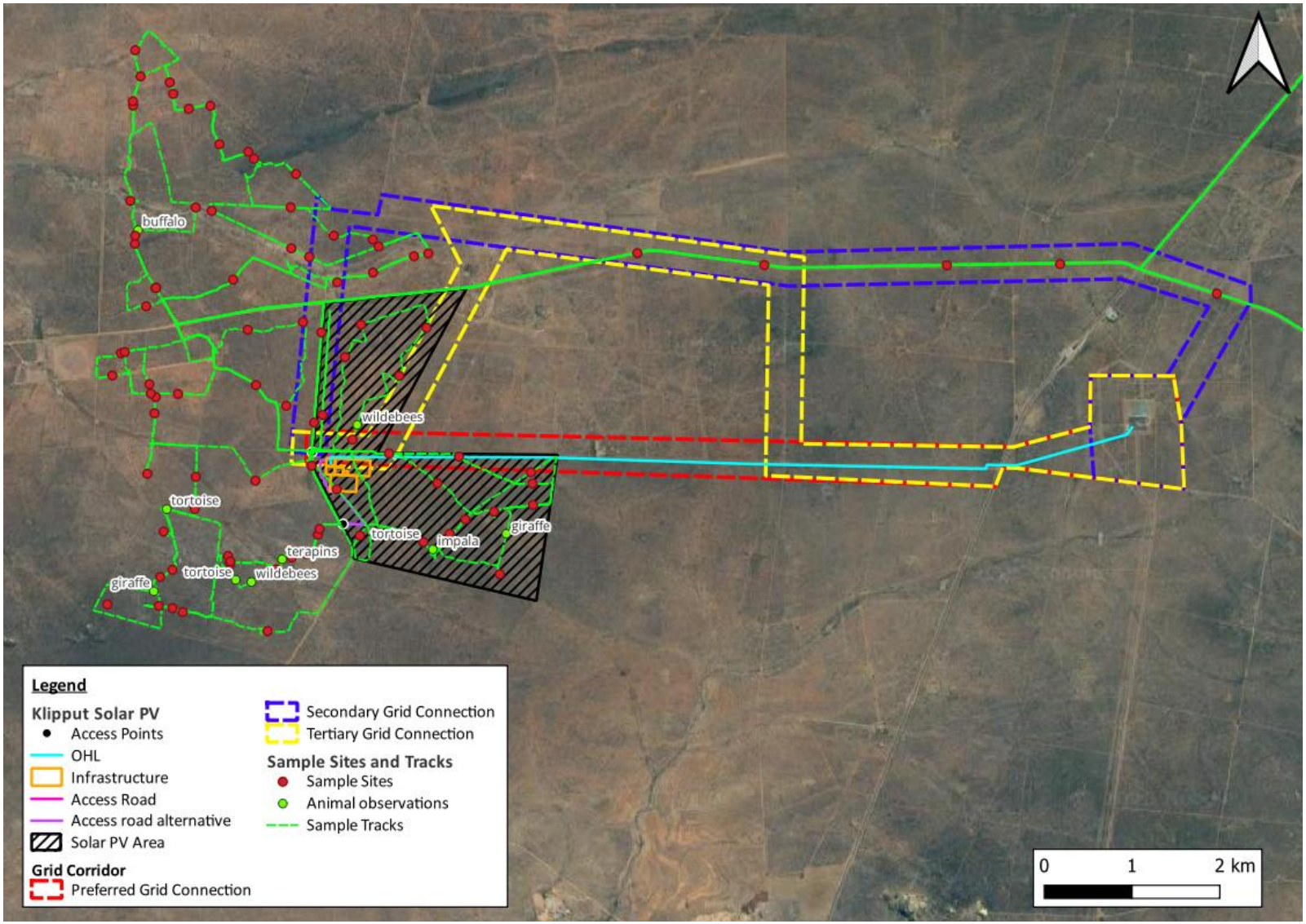


Figure 2.1: Map illustrating sample sites and tracks in relation to the project area.

2.4. Site Sensitivity Assessment

The Species Environmental Assessment Guideline (SANBI, 2020) was applied to assess the Site Ecological Importance (SEI) of the project area. The habitats and the SCC in the project area were assessed based on their conservation importance (CI), functional integrity (FI) and receptor resilience (RR) (Table 2.2). The combination of these resulted in a rating of SEI and interpretation of mitigation requirements based on the ratings.

The sensitivity map was developed using a combination of satellite imagery, information gathered from the desktop assessment, and data gathered from the field survey.

Table 2.2: Criteria for establishing Site Ecological Importance and description of criteria.

Criteria	Description
Conservation Importance (CI)	*The importance of a site for supporting biodiversity features of conservation concern present e.g. populations of Threatened and Near-Threatened species (CR, EN, VU & NT), Rare, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes.*
Functional Integrity (FI)	*A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.*
Biodiversity Importance (BI) is a function of Conservation Importance (CI) and the Functional Integrity (FI) of a receptor.	
Receptor Resilience (RR)	*The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.*
Site Ecological Importance (SEI) is a function of Biodiversity Importance (BI) and Receptor Resilience (RR)	

3. ANIMAL SPECIES THEME

The DFFE classifies the Animal Species Theme Sensitivity of the project area as MEDIUM due to the possible occurrence of one bird species, one sensitive species, and one invertebrate species (Figure 3.1). This report only deals with amphibians, reptiles and mammals. This chapter describes the faunal habitats and sensitive species identified for the project area of influence (PAOI).

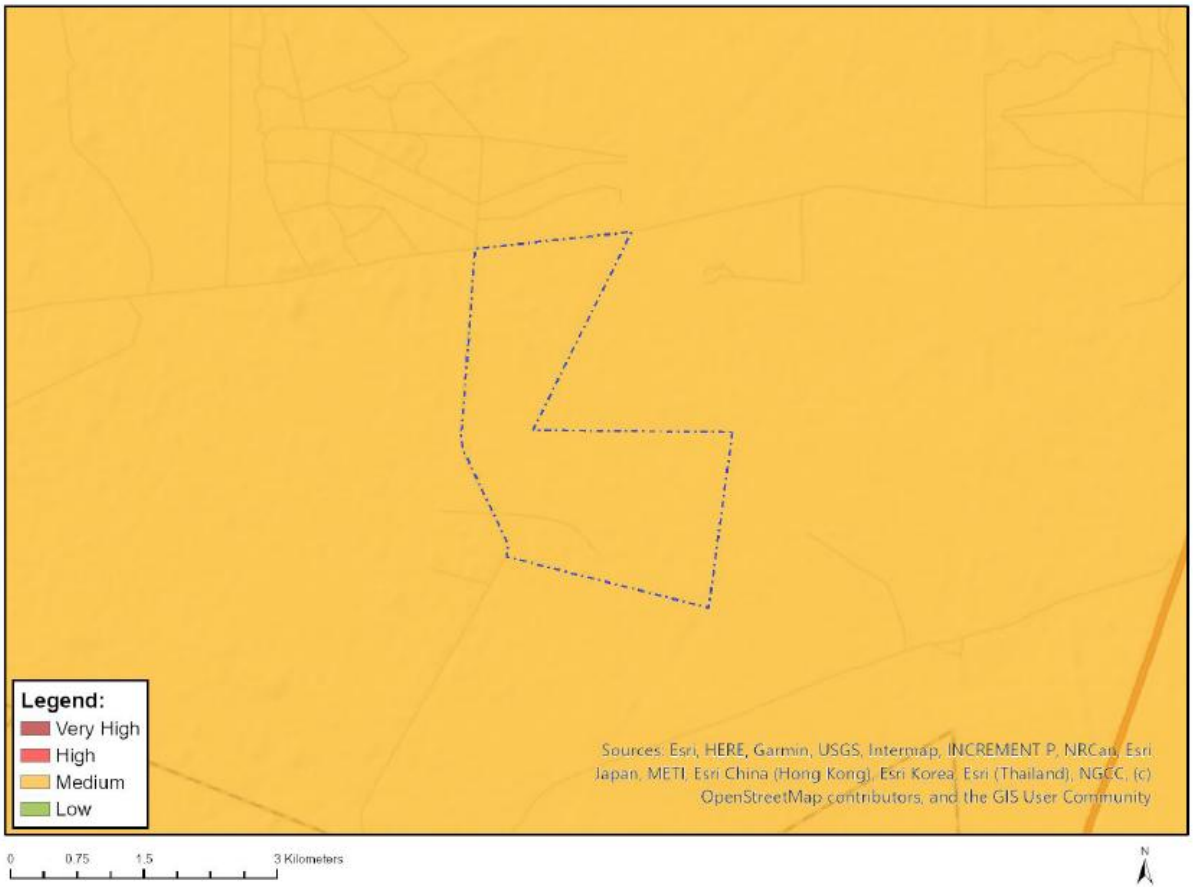


Figure 3.1: Animal Species Theme Sensitivity of the project area as per the DFFE Screening Tool Report.

3.1. Faunal habitats

To determine the likelihood of occurrence of SCC, an assessment of the habitats available within the project area is required. Habitats are defined in this study as the natural environment or place where faunal species *live, breed and/or forage*. Each habitat type has different environmental conditions and structure which influences a species' distribution range.

Faunal habitats recorded within the project area include (Figure 3.2 and 3.3):

- **Makhado Sweet Bushveld** characterised by a matrix of grasses, shrubs and trees. Trees were typically 3-4m in height with an open canopy of 50% and a grass understory interspersed with shrubs. This habitat was located in the flat, open areas.

- **Riparian Areas** characterised by a dry riverbed material/sediment surrounded by a denser tree/shrub canopy cover along streams and drainage lines.
- **Rocky outcrops** characterised by large rocks with a few trees growing between.
- **Secondary Vegetation** characterised by open areas of grassland and a tree canopy cover of 25-50%.
- **Transformed Areas** characterised by buildings and homesteads.

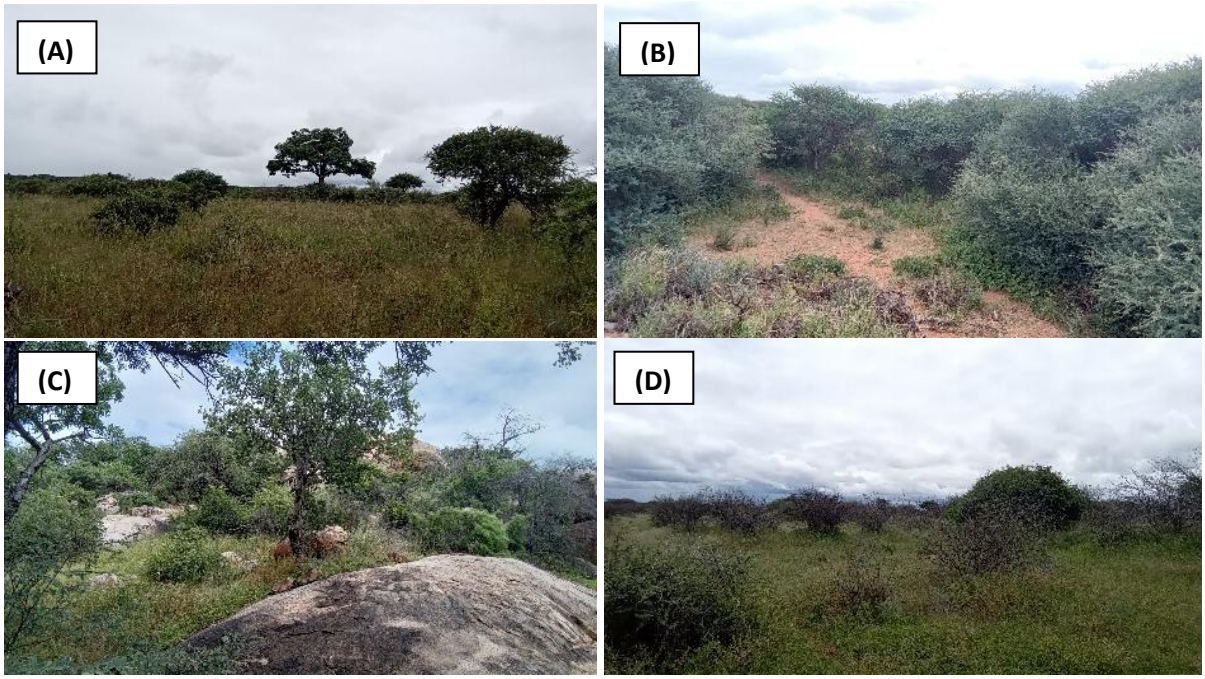


Figure 3.2: Photographs illustrating faunal habitat present within the PAOI. A) Makhado Sweet Bushvled, B) Riparian Areas, C) Rocky Outcrop, D) Secondary Vegetation.

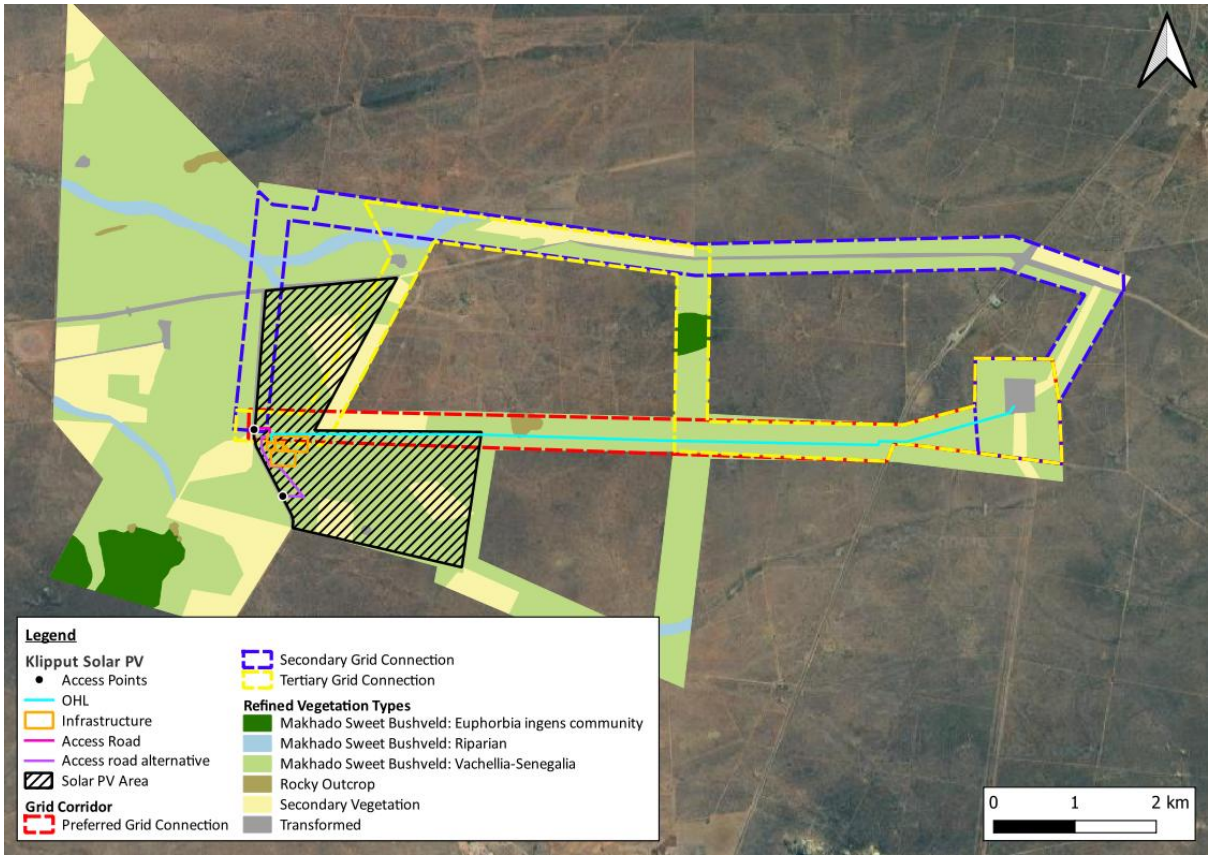


Figure 3.3: Map of the faunal habitats within the project area based on field survey findings.

3.2. Fauna species distribution in relation to the project area

It is important to note that although an area may be within a species distribution, the species may no longer inhabit the area or may not inhabit it permanently. For example, many large mammals have a distribution which includes the project area, but these animals no longer occur outside of reserves and private game farms. Furthermore, a species may occur in the broader area where habitat is available but since its preferred habitat is not present in the project area, it is unlikely to occur there. Therefore, the number of species that could occur in the project area is far fewer than species distributions suggest.

The project area intersects the distribution range of 33 amphibian species, 118 reptile species, and 138 mammal species (IUCN, 2024). Of these five amphibian species, 21 reptile species and 16 mammal species have been recorded from the general area (iNaturalist, 2025).

The project area is currently managed as a game reserve and stocks a number of game species. During the field survey in June 2024 and February 2025 the following species were observed:

- Reptiles: Variable Skink, Serrated Tortoise, Leopard Tortoise and Helmeted Terrapin
- Mammals: Giraffe, Zebra, Kudu, Eland, Vervet Monkey and Grey Mongoose.

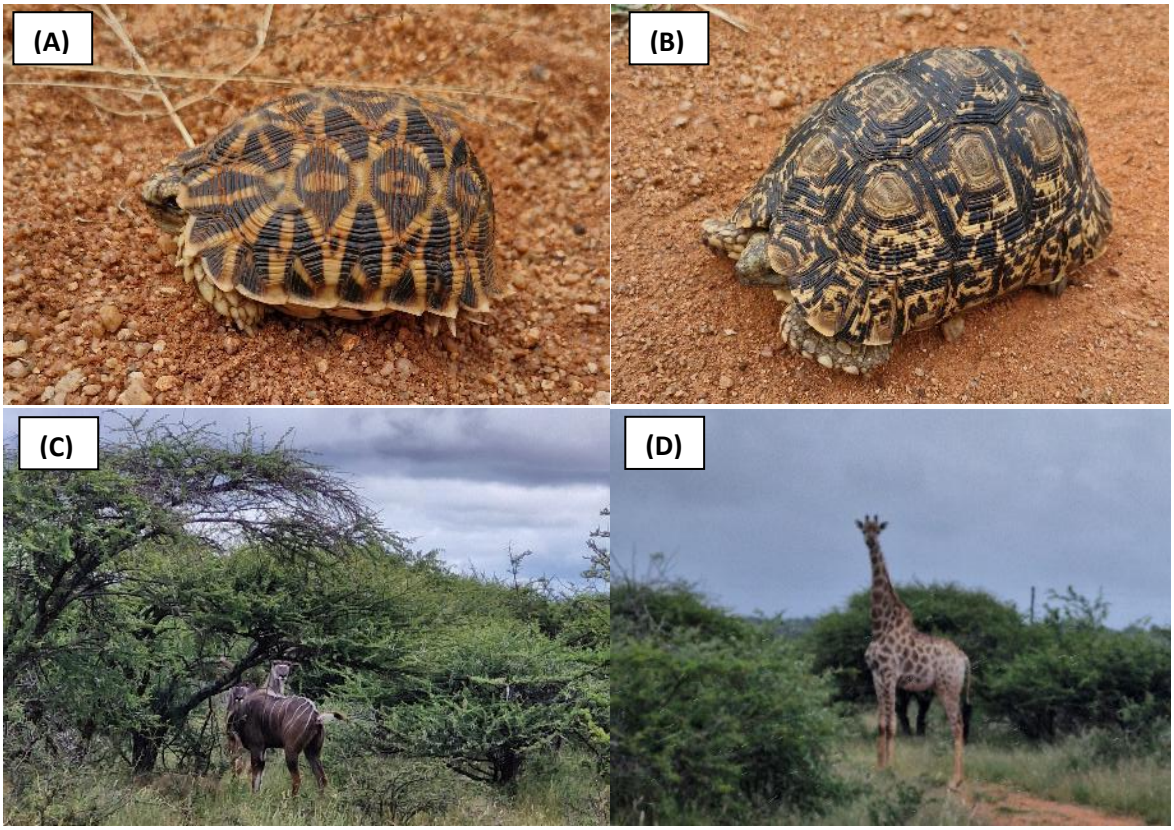


Figure 3.4: Faunal species observed within the project area: (A) Serrated Tortoise - *Psammobates oculifer* (B) Leopard Tortoise - *Stigmochelys pardalis* (C) Greater Kudu - *Tragelaphus strepsiceros* and (D) Giraffe - *Giraffa camelopardalis*.

3.3. Faunal Species of Conservation Concern in relation to the Project Area

3.3.1. Amphibians

No amphibian SCC have a distribution which includes the project area.

3.3.2. Reptiles

No reptile SCC have a distribution which includes the project area. However, there are two endemic (Giant Legless Skink (*Acontias plumbeus*) and Common Flat Lizard (*Platysaurus intermedias)* and one near-endemic species (Large-scale Grass Lizard (*Chamaesaura macrolepis*)) that have distribution ranges that intersect the project area. All three species are listed as Least Concern.

3.3.3. Mammals

Nine threatened and eleven near-threatened mammal species have a distribution which includes the project area (Table 3.1). Of these, one species has been stocked by the landowner for hunting and six species have a high likelihood of occurrence based on available habitat and species records for the area. Four have a medium likelihood of occurrence, and nine have a low likelihood of occurrence (Table 3.1).

Table 3.1: Summary of threatened and near-threatened mammal species with a distribution that includes the project area

Common Name	Scientific Name	Threat Status	Likelihood of occurrence within project area	Habitat within the Project Area	Likely Impact on the Species
African Striped Weasel	*Poecilogale albinucha*	NT	High	All vegetation types	Loss/Degradation of Habitat, Disturbance
Black-footed Cat	*Felis nigripes*	VU	High	Makhado Sweet Bushveld	Loss/Degradation of Habitat, Disturbance
Brown Hyena	*Parahyaena brunnea*	NT	High	Makhado Sweet Bushveld	Disturbance
Leopard	*Panthera pardus*	VU	High	Makhado Sweet Bushveld and Rocky Outcrops	Disturbance
Southern African Hedgehog	*Atelerix frontalis*	NT	High	Rocky Outcrops	Loss/Degradation of Habitat, Disturbance
Temminick's Pangolin	*Smutsia temminckii*	VU	High	Makhado Sweet Bushveld	Loss/Degradation of Habitat, Disturbance
Tsessebe	*Damaliscus lunatus*	VU	Confirmed but this species has been stocked by the landowner	Makhado Sweet Bushveld	Disturbance
Maquassie (Makwassie) Musk Shrew	*Crocidura maquassiensis*	VU	Medium	No suitable habitat	Loss/Degradation of Habitat, Disturbance
Serval	*Leptailurus serval*	NT	Medium	No suitable habitat	Loss/Degradation of Habitat, Disturbance
Gunnings Golden Mole	*Neamblysomus gunningi*	EN	Medium	No suitable habitat	Loss/Degradation of Habitat, Disturbance
Swamp Musk Shrew	*Crocidura mariquensis*	NT	Medium	No suitable habitat	Loss/Degradation of Habitat, Disturbance
African Marsh Rat	*Dasymys incomtus*	VU	Low	Limited habitat available.	Loss/Degradation of Habitat, Disturbance
African Clawless Otter	*Aonyx capensis*	NT	Low	No permanent water sources available	Disturbance

Grey Rhebok	*Pelea capreolus*	NT	Low	Limited suitable habitat present	Disturbance
Mountain Reedbuck	*Redunca fulvorufula*	EN	Low	Limited suitable habitat present	Disturbance
Spotted Hyena	*Crocuta crocuta*	NT	Low	Species is largely confined to protected areas.	Disturbance
Nyika Climbing Mouse	*Dendromus nyikae*	NT	Low	No suitable habitat	Loss/Degradation of Habitat, Disturbance
South East African Vlei Rat	*Otomys auratus*	NT	Low	No suitable habitat	Loss/Degradation of Habitat, Disturbance
Spotted -necked Otter	*Hydrictis maculicollis*	NT	Low	No suitable habitat	Disturbance
Sensitive Species 5		VU	Low	Low unless stocked	Disturbance

4. PLANT SPECIES THEME

The plant species theme in the DFFE screening tool report is based on the presence/absence of Species of Conservation Concern (SCC). It does not include an assessment of the vegetation type in which the species occur. Rather, the assessment of each vegetation type is included in the Terrestrial Biodiversity Theme in the DFFE screening tool report. As such, the assessment of the vegetation types (also referred to as ecosystems in the DFFE screening tool report), has been included in chapter 5 below.

According to the DFFE Screening Tool Report, the Plant Species Theme Sensitivity of the project area is classified as LOW with no sensitive plant species identified (Figure 4.1).

Figure 4.1: Map of the Plant Species Theme Sensitivity of the project area as per the DFFE Screening Tool Report.

4.1. Floristics

A total of 119 plant species from 41 families were recorded within the PAOI (Table 4.1) (a full species list has been included in Appendix 1). The Fabaceae and Poaceae families had the highest number of species, both with 17 species each, followed by the Asteraceae family with 11 species, and the Malvaceae family with 8 species. The remaining families each had 5 or less species.

Table 4.1: Number of families and species recorded within the project area.

Family	No. of Species	Family	No. of Species
Fabaceae	17	Bignoniaceae	1
Poaceae	17	Campanulaceae	1
Asteraceae	11	Celastraceae	1
Malvaceae	8	Commelinaceae	1
Asparagaceae	5	Crassulaceae	1
Anacardiaceae	4	Ebenaceae	1
Boraginaceae	4	Euphorbiaceae	1
Burseraceae	4	Geraniaceae	1
Cactaceae	4	Iridaceae	1
Amaranthaceae	3	Loranthaceae	1
Cyperaceae	3	Olacaceae	1
Hyacinthaceae	3	Pedaliaceae	1
Apocynaceae	2	Portulacaceae	1
Capparaceae	2	Rhamnaceae	1
Combretaceae	2	Rubiaceae	1
Convolvulaceae	2	Sapindaceae	1
Cucurbitaceae	2	Scrophulariaceae	1
Lamiaceae	2	Solanaceae	1
Moraceae	2	Vitaceae	1
Acanthaceae	1	Zygophyllaceae	1
Asphodelaceae	1	**Total**	**119**

4.2. Species of Conservation Concern

A list of SCC was created for the project area using records from the Plants of Southern Africa (POSA) database, iNaturalist, and the species list from the DFFE screening tool. This was supplemented with data collected from the field survey.

No SCC were identified by the DFFE Screening Tool Report. However, a desktop assessment of the broader POAI identified three plant SCC that may occur in the project area. A description of the distribution, habitat requirements and likelihood of occurrence within the project area has been provided in Table 4.2 below. Based on the field survey and desktop assessment, two of the three species have a medium likelihood of occurrence, and one has a low likelihood of occurrence. No SCC were recorded during the field survey.

Table 4.2: Plant Species of Conservation Concern (SCC) identified for the PAOI.

Species	Threat Status	Distribution and Habitat Requirements	Likelihood of Occurrence (Low, Medium, High or Confirmed)
Sensitive Species	VU A2cd	This species is widely distributed throughout South Africa (EOO not specified), occurring in the Western Cape, Eastern Cape, Free State, Gauteng, Limpopo, Mpumalanga, and KwaZulu-Natal. Its habitat includes forested and fairly moist environments, including wetter bushveld regions, coastal thickets, and wooded mountain ravines (Williams *et al*., 2022). Although this species has been recorded 33 km southeast of the project area (iNaturalist, 2025), there was no suitable habitat present in the project area for this species.	LOW
Merwilla plumbea	NT A2bd	This species is fairly widely distributed, occurring in the Eastern Cape, Free State and Mpumalanga Province. It has been recorded 28 km southeast of the project area (iNaturalist, 2025). *M. plumbea* occurs in a wide variety of habitats including forest, grassland, bushveld (Williams *et al*., 2008).	MEDIUM
Mystacidium brayboniae	NT D2	This species is an epiphyte that typically occurs in the Soutspanberg Mountains (EOO 1050 km², AOO <30 km²). It is known from less than 10 subpopulations where it occurs in moist, high altitude misbelt forests and woodland (van Staden, 2008). This species has been recorded 13 km southeast of the project area (iNaturalist, 2025). Although a research grade observation, it is likely that the coordinates are misplaced as this species is typically restricted to the Soutpansberg Mountains and its preferred habitat is not present in the project area or surrounding PAOI.	LOW

4.3. Alien Invasive Plant Species

Fifteen exotic plant species were recorded within the project area (Table 4.3). The density of exotic plant species was highest in disturbed sites, however scattered individuals were recorded through the project area. Of the 15 exotic plant species recorded, six species are listed under the NEM:BA (Act No. 10 0f 2004) and five species are listed under the Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983).

Under the NEM: BA act, Category 1b species must be eradicated and under CARA, Category 1 plant species must be removed & destroyed immediately. No trade in these plants is permitted.

Table 4.3: List of exotic plant species recorded in the Project Area.

Scientific name	Common name	SA Red List	NEM:BA (2016)	CARA (1983)
Alternanthera pungens	creeping chaffweed	NE	-	-
Hermbstaedtia odorata albi-rosea		NE	-	-
Acanthospermum hispidum	Bindii	NE	-	-
Bidens pilosa	Hairy Beggarticks	NE	-	-
Schkuhria pinnata	dwarf marigold	NE	-	-
Tagetes minuta	wild marigold	NE	-	-
Xanthium strumarium	rough cocklebur	NE	1b	1
Zinnia peruviana	Peruvian zinnia	NE	-	-
Cylindropuntia imbricata	tree cholla	NE	1b	1
Nyctocereus serpentinus	Serpent Cactus	NE	1b	-
Opuntia ficus-indica	Indian fig opuntia	NE	1b	1
Combretum hereroense	Russet Bushwillow	NE	-	-
Tipuana tipu	Pride of Bolivia	NE	3	3
Paspalum dilatatum	Dallis Grass	NE	-	-
Datura ferox	long-spined thorn-apple	NE	1b	1

4.4. Protected Plant Species

Five protected plant species were recorded within the PAOI during the field survey, including four tree species protected in terms of Schedule A of the National Forests Act (Act No. 84 of 1998): Publication of the Annual List of All Tree Species which are protected, and two are protected in terms of Schedule 12 of the Limpopo Environmental Management Act (Act No. 7 of 2003) (Table 4.4). The Baobab individuals recorded were only observed around the Makoppa Game Farm Lodge which falls outside of the project area and were not recorded in the project area itself.

Table 4.4: List of protected plant species recorded in the Project Area.

Scientific name	Common name	SA Red List	Limpopo EMA (2003)	NEM:BA (2007)	DFFE (2024)
Sclerocarya birrea	marula	LC	-	-	Schedule A
Boscia albitrunca	Shepherds tree	LC	-	-	Schedule A
Boscia foetida	Stink Shepherdstree	LC	Schedule 12	-	-
Adansonia digitata	African baobab	LC	Schedule 12	-	Schedule A
Balanites maughamii	greenthorn	LC	-	-	Schedule A

5. TERRESTRIAL BIODIVERSITY THEME

The DFFE Screening Tool Report classifies the Terrestrial Biodiversity Theme sensitivity of the project area as LOW. Section 5.2 assesses the biodiversity priority areas, affected by the project area.

Figure 5.1: Terrestrial Biodiversity Theme Sensitivity of the project area as per the DFFE Screening Tool Report.

5.1. Vegetation Types Present

The project area occurs within the Savanna Biome which constitutes the southernmost extent of the most widespread biome in Africa. In South Africa, it is estimated to cover 32.8% of the total land surface area (399 600 km^2) with the largest portion of the biome occurring in the north of the country, and extending down the eastern seaboard interior and valleys, where it grades into Albany Thicket in the Eastern Cape (Mucina *et al*., 2011).

According to the National Vegetation Map (2018), which was compiled to provide a greater level of detail for floristically based vegetation units in South Africa, the project area occurs within one vegetation type, namely Makhado Sweet Bushveld (Figure 5.2).

The field survey confirmed that the major vegetation type within the project area is Makhado Sweet Bushveld but vegetation communities within this vegetation type has been mapped at a finer scale (Figure 5.3) and described below.

Figure 5.2: SA VEGMAP (2024) of the project area.

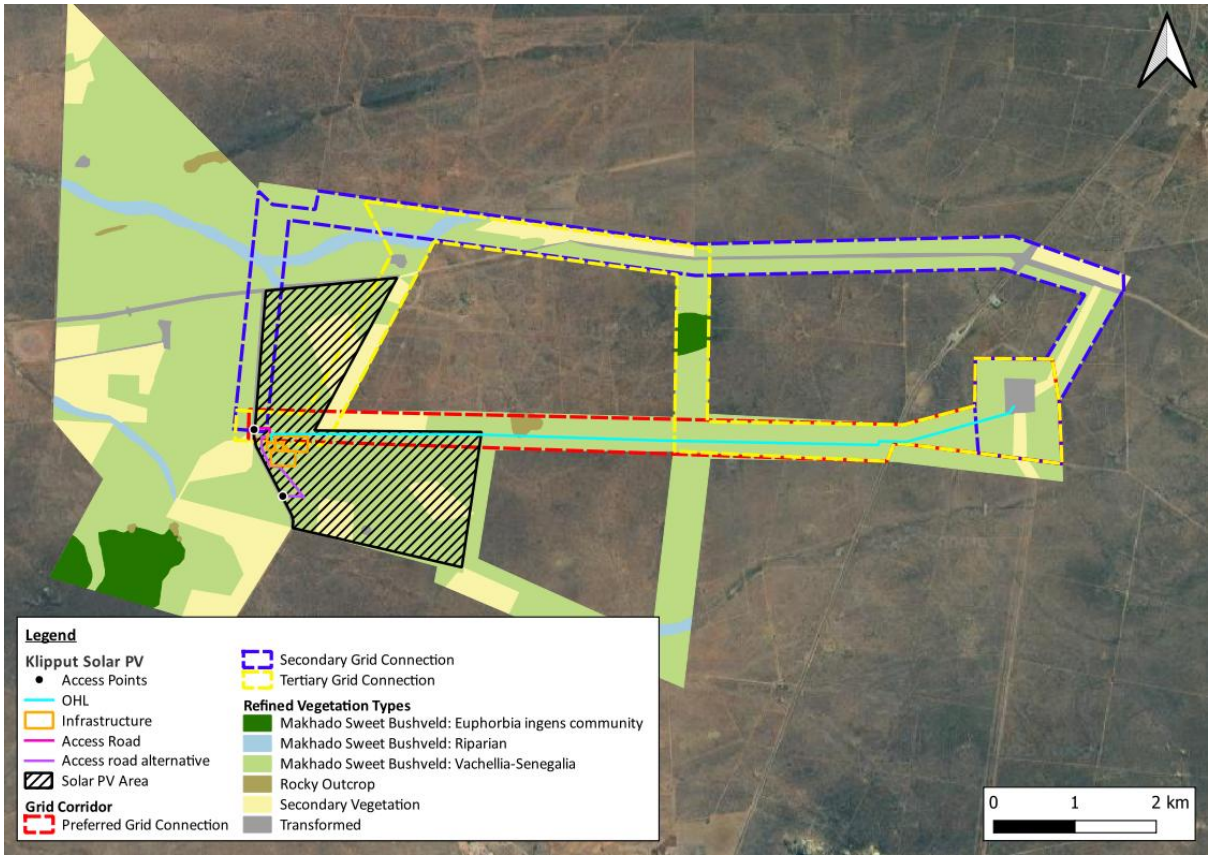


Figure 5.3: Fine-scale vegetation map illustrating vegetation communities within the project area based on field survey findings.

5.1.1. Makhado Sweet Bushveld Communities

Makhado Sweet Bushveld occurs on plains and slopes of the Soutspanberg, east of the Waterberg and surrounding the Blouberg and Leraataupje Mountains, and north of the Polokwane Plateau and west of the escarpment, extending south to Mokopane and north to Vivo in the Limpopo Province. The landscape is characterised by slightly to moderately undulating plains, with altitude ranging from 850-1200 m. The vegetation is described as short stubby bushveld with a poorly developed grass layer (Mucina *et al*., 2011).

Makhado Sweet Bushveld is classified as Least Concern with 63% (~6370 km^2) of the historical extent remaining. The conservation target is 19% and it is considered poorly protected (Government of South Africa, 2022).

The Makhado Sweet Bushveld has been subdivided into three (3) vegetation communities based on the dominant plant species present:

Makhado Sweet Bushveld: *Euphorbia ingens* community characterised by relatively open bushveld with a cover of 50-60% and canopy height of roughly 3-5 m dominated by **trees** and **shrubs** such as *Commiphora glandulosa, C. Africana, C. mollis, Senegalia burkei, Grewia bicolor, Combretum apiculatum, Ormocarpum trichocarpum, Sclerocarya birrea* (Marula), *Dichrostachys cinerea, Boscia*

albitrunca (Sheperd's tree), *Grewia bicolor, G. flavescens, G. flava, Peltophorum africanum, Ziziphus mucronata, Ormocarpum trichocarpum, Vachellia tortilis, Ozoroa paniculosa, Senegalia mellifera*, with an abundance of *E. ingens*, surrounded by a matrix of **grasses**, such as *Chloris virgata, Schmidtia pappophoroides, Digitaria eriantha, Urochloa trichopus, Setaria pumila, Dactyloctenium aegyptium, Melinis repens, Themeda triandra, Pogonarthria squarrosa*, and **herbs** such as *Tephrosia capensis, Afrosolen sandersonii, Indigofera filipes, Emilia transvaalensis, Clerodendrum ternatum, Dicoma tomentosa, Hibiscus calyphyllus, Ipomoea obscura, Rhynchosia totta*, and *Commelina* spp. (Figure 5.4).

Figure 5.4: Makhado Sweet Bushveld: *Euphorbia ingens* community within the project area.

Makhado Sweet Bushveld: Riparian characterised by dense, semi-closed bushveld with a cover of 80-90% and canopy height of roughly 3-5 m present along the banks of dry rivers, drainage lines, and streams (Figure 5.5). This vegetation type is characterised by a similar species composition to that listed for Makhado Sweet Bushveld: *Euphorbia ingens* community however with a lower abundance of *E. ingens* and a higher abundance of *Senegalia mellifera*. Some scattered grasses, low shrubs and pioneer species are present within the dry riverbeds.

Figure 5.5: Makhado Sweet Bushveld: River community within the project area.

Makhado Sweet Bushveld: *Vachellia senegalia* community characterised by relatively open bushveld with a cover of 50-60% and canopy height of roughly 3-5 m characterised by a similar species composition to that listed for Makhado Sweet Bushveld: *Euphorbia ingens* community however with a lower abundance of *E. ingens* surrounded by a matrix of grasses and herbs (Figure 5.6). *Vachellia senegalia* is a dominant species in this community.

Figure 5.6: Makhado Sweet Bushveld: *Vachellia senegalia* community within the project area.

5.1.2. Rocky Outcrops

Rocky Outcrops within the project area include large gneiss and granite boulders and flats interspersed with trees and shrubs such as *Ficus tettensis, Boscia albitrunca, Dichrostachys cinerea, Sclerocarya birrea, Pappea capensis*, *Euphorbia ingens* and other species typical to Makhado Sweet Bushveld (see Section 5.1.1 above). Vegetation cover ranged from dense (70-80%) to open (10-20%) depending on the spacing between flats and boulders (Figure 5.7).

Figure 5.7: Rocky outcrops vegetation communities within the project area.

5.1.3. Secondary Vegetation

Secondary vegetation occurs in areas that were previously cultivated. This vegetation community was characterised by low to medium shrubveld dominated by *Vachellia tortilis* and *Dichrostachys cinerea* with a grassy understorey. Species diversity was low (Figure 5.8).

Figure 5.8: Secondary vegetation within the project area.

5.1.4. Transformed

These include areas that have been modified areas that are devoid of natural vegetation.

5.2. Biodiversity Priority Areas

The 2018 Limpopo Province Map of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) provides a map of important biodiversity areas, outside of the Protected Areas network, which is used to inform planning and land-use authorisation processes. According to the spatial dataset, the project area does not occur within a CBA or ESA. Most of the project area falls within an area classified as "Other Natural Area (ONA)" with a minor patch classified as "No Natural Remaining (NNR)" (Figure 5.9). The areas classified as NNR correlates with the previously transformed portions of the project area.

According to LEDET (2016), ONAs are all remaining natural areas not included in the CBA or ESA categories while NNRs are areas that have been irreversibly modified and do not contribute significantly to maintaining biodiversity pattern or ecological processes and include urban and rural settlements; croplands; mining areas; and forest plantations.

No management guidelines are offered for areas classified as ONA and NNR, however these are considered 'production landscapes' and land management objectives for these areas is to manage land to optimize sustainable utilization of natural areas (LEDET, 2016).

The project development will not impact on any CBAs or ESAs. As such, impacts on the management objectives of these features is not expected.

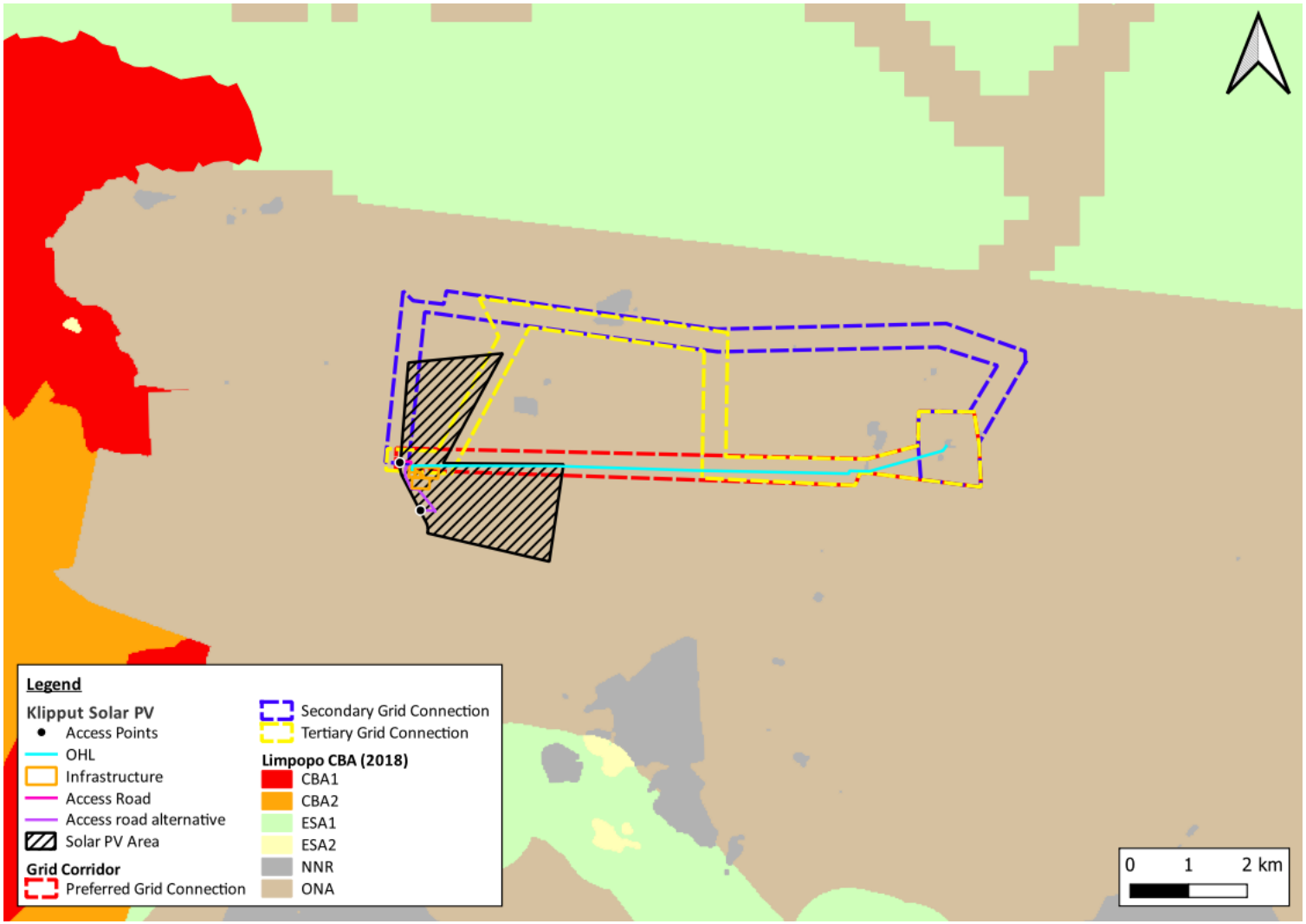


Figure 5.9: The Project area in relation to CBAs and ESAs. The project area occurs in a ONA.

5.3. Protected Areas, Conservation Areas, National Protected Area Expansion Strategy, and Key Biodiversity Areas

5.3.1. Protected Areas and Conservation Areas

The South African Protected Areas Database (SAPAD) and the South African Conservation Areas Database (SACAD) is a spatial dataset that includes all the protected areas (PA) and conservation areas (CA) within South Africa. Data on privately owned PAs are also included in the dataset which is maintained and updated on a quarterly basis. This dataset therefore provides the most up to date information on protected areas and conservation areas in South Africa. According to SAPAD (Q3, 2024), the project area does not occur within a protected area. The nearest protected area is the Blijdschap Private Nature Reserve located approximately 9 km northeast from the edge of the SEF and 8 km north from the grid corridor along the project area (Figure 5.10).

Although the project area is not located within a protected area, it is located within a conservation area – the Vhembe Biosphere Reserve (VBR). The Vhembe Biosphere Reserve (VBR), covering 30,700 square kilometers, is one of South Africa's largest biosphere reserves and part of the Greater Mapungubwe and Great Limpopo Transfrontier Conservation Areas. It collaborates in various national and international conservation initiatives and is recognized as a 'Smart Biosphere Reserve' meaning it actively participates in various national and international conservation initiatives, including World Heritage Sites, Transfrontier Conservation Areas (TFCA), Ramsar Sites, Stewardship Programs, and the Southern African Development Community (SADC).

Locally, the VBR fosters partnerships between communities, the private sector, and government to manage natural resources sustainably. The VBR supports development that is ecologically and socio-culturally sustainable, promoting both conservation and economic growth.

5.3.2. Protected Area Expansion Strategy priority areas (PAES areas)

PAES areas have been strategically mapped to determine the best areas in which to increase South Africa's protected area network. This has been conducted at a National and Provincial level using different criteria. Although these areas have not undergone comprehensive stakeholder engagement and fine-scale feasibility/suitability assessments, development in these areas needs to be carefully considered.

Consultation of the most recent NPAES dataset (2018) confirms that the project area does not occur within an NPAES Focus Area (Figure 5.10).

5.3.3. Key Biodiversity Areas

Key Biodiversity Areas (KBAs) are critical locations for conserving species and their habitats, identified globally for their significant role in maintaining biodiversity. In South Africa, establishing KBAs was essential for enabling the country to report on global conservation targets. These areas will now be included in the range of tools used to monitor and assess biodiversity, guiding policy and decision-making across various sectors.

According to South Africa's Key Biodiversity Areas (2024) spatial dataset, the project area does not occur within a KBA (Figure 5.11). The nearest KBA is the Soutpansberg KBA which is located 33 km north of the project area.

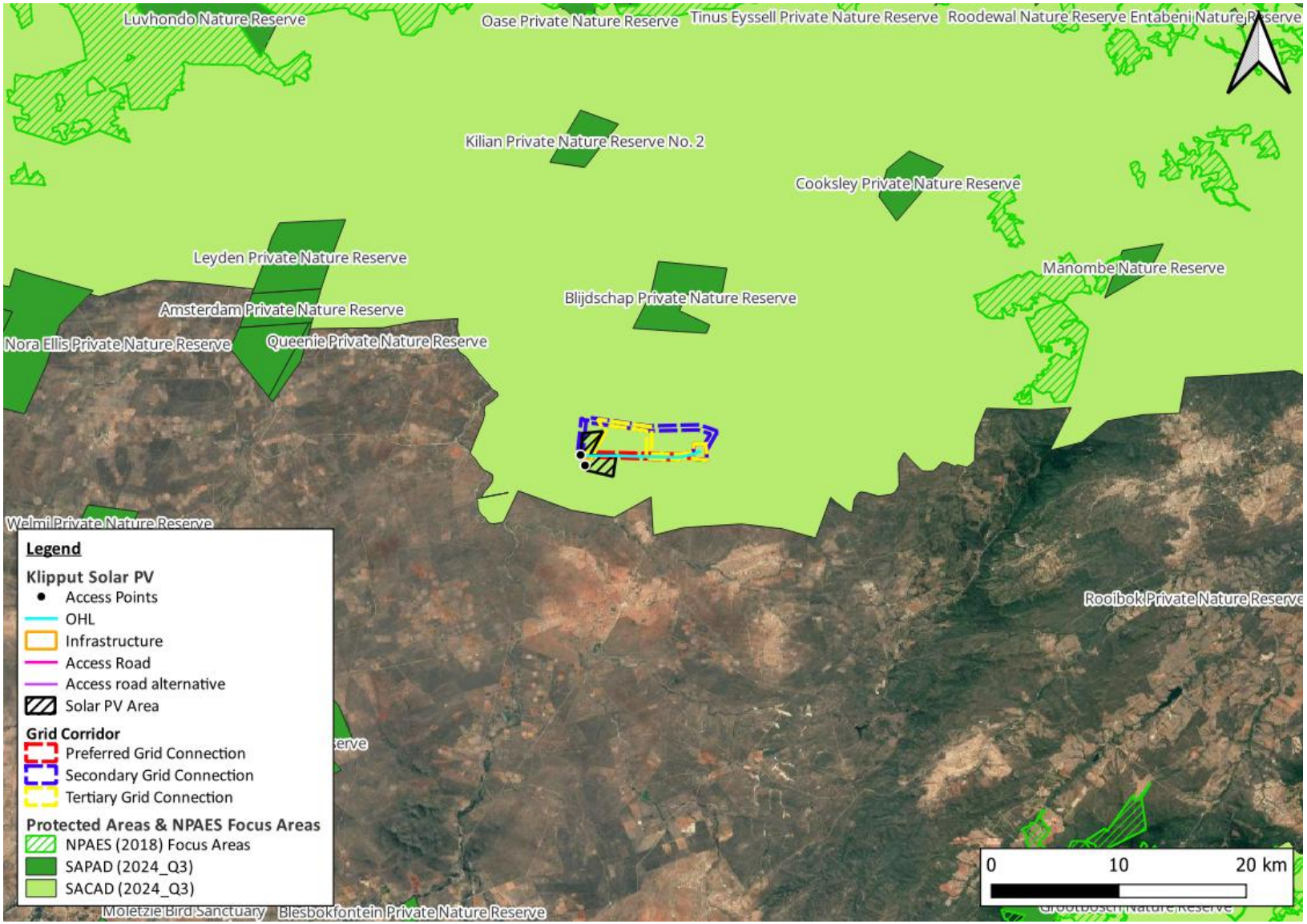


Figure 5.10: Map illustrating the project area in relation to conservation areas and NPAES.

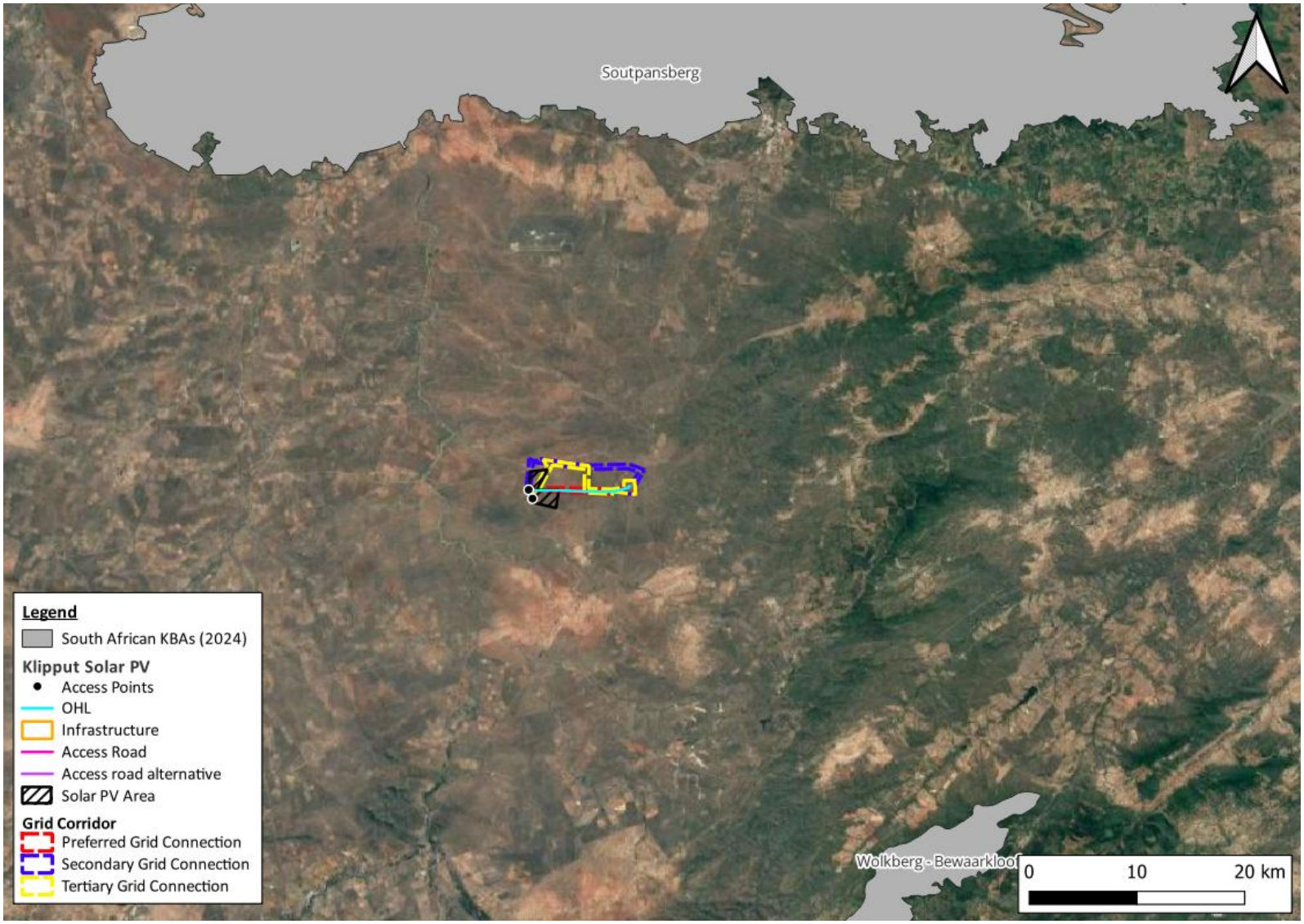


Figure 5.11: Map illustrating the project area in relation to Key Biodiversity Areas (KBAs).

6. SITE ECOLOGICAL IMPORTANCE

This chapter assessed the site ecological importance (SEI) for animal SCC, plant SCC and the ecosystems in which they occur.

The SEI analysis **does not** assess the sensitivity associated with the 2018 Limpopo Province Map of CBAs and ESAs (CBAs and ESAs) nor sensitivities associated with PA and PAES. Comment is provided on these respective plans under sections 5.2 and 5.3 above. It is important to note that the management objective related to these features can include other ecological features which are specific to the project area and require input from the respective specialists e.g. bird specialist, aquatic specialist etc. Where appropriate, this has been discussed in the relevant section above.

6.1. Site Ecological Importance - Fauna

Faunal habitat for all intact plant communities as well as secondary vegetation was determined to have medium sensitivity (Table 6.1 and Figure 6.1). Transformed areas have a very low sensitivity.

6.2. Site Ecological Importance - Flora

Makhado Sweet Bushveld is comprised of three distinct communities, namely Makhado *Sweet Bushveld: Euphorbia ingens* community, *Makhado Sweet Bushveld*: *Vachellia-Senegalia* community and Riparian, all of which have been mapped as medium sensitivity (Table 6.2 and Figure 6.3).

Secondary vegetation and Transformed areas were determined to have a very low sensitivity.

Table 6.1: Sensitivity assessment for faunal species within the project area.

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Makhado Sweet Bushveld: *Euphorbia ingens* community & Makhado Sweet Bushveld: *Vachellia-Senegalia* community	High	Medium	Medium	Medium	**Medium**
	Highly likely occurrence of four VU species (Tsessebe - *Damaliscus lunatus,* Black-footed Cat – *Felis nigripes*, Leopard – *Panthera pardus* and Temminick's Pangolin – *Smutsia temminckii*) and three NT species (African Striped Weasel - *Poecilogale albinucha,* Brown Hyaena - *Parahyaena brunnea,* Southern African Hedgehog - *Atelerix frontalis)*	The project area is large relatively large. However, the vegetation has been fragmented by establishment of fence lines/gravel roads. Despite these negative ecological impacts, narrow corridors of good habitat connectivity and large areas of poor habitat connectivity between intact patches are present.		Receptor resilience is based on the specific project activities. In this instance the project footprint is relatively small compared to available habitat present within the PAOI and the construction phase will be relatively short meaning that the disturbance to these species will be in the short term with a small spatial extent. As such, species have a high likelihood of returning to the PAOI once the disturbance has ceased.	
Makhado Sweet Bushveld: Riparian	High	Medium	Medium	Medium	**Medium**
	Highly likely occurrence of three VU species (Tsessebe -*Damaliscus lunatus,* Black-footed Cat – *Felis nigripes*, Leopard – *Panthera pardus)* and two NT species (African Striped Weasel - *Poecilogale albinucha,* Brown Hyaena - *Parahyaena brunnea)*	The project area is large relatively large. However, the vegetation has been fragmented by establishment of fence lines/gravel roads. Despite these negative ecological impacts, narrow corridors of good habitat connectivity and		Receptor resilience is based on the specific project activities. In this instance the project footprint is relatively small compared to available habitat present within the PAOI and the construction phase will be relatively short meaning that the disturbance to these species will be in the short term with a small spatial extent. As such,	

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
		large areas of poor habitat connectivity between intact patches are present.		species have a high likelihood of returning to the PAOI once the disturbance has ceased.	
Rocky Outcrop	High	Medium	Medium	Medium	**Medium**
	Highly likely occurrence of one VU species (Leopard – *Panthera pardus)*	The project area is large relatively large. However, the vegetation has been fragmented by establishment of fence lines/gravel roads. Despite these negative ecological impacts, narrow corridors of good habitat connectivity and large areas of poor habitat connectivity between intact patches are present.		Receptor resilience is based on the specific project activities. In this instance the project footprint is relatively small compared to available habitat present within the PAOI and the construction phase will be relatively short meaning that the disturbance to these species will be in the short term with a small spatial extent. As such, species have a high likelihood of returning to the PAOI once the disturbance has ceased.	
Secondary Vegetation	Medium	Medium	Medium	Medium	**Medium**

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
	Habitat has some potential to support foraging for SCC listed for the Makhado Sweet Bushveld: *Euphorbia ingens* community & Makhado Sweet Bushveld: *Vachellia-Senegalia* community	The project area is large relatively large. However, the vegetation has been fragmented by establishment of fence lines/gravel roads. Despite these negative ecological impacts, narrow corridors of good habitat connectivity and large areas of poor habitat connectivity between intact patches are present.		Receptor resilience is based on the specific project activities. In this instance the project footprint is relatively small compared to available habitat present within the PAOI and the construction phase will be relatively short meaning that the disturbance to these species will be in the short term with a small spatial extent. As such, species have a high likelihood of returning to the PAOI once the disturbance has ceased.	
Transformed	Very Low	Low	Very Low	High	**Very Low**
	No confirmed or highly likely populations of SCC.	Major ecological impacts have occurred.		SCC are unlikely using these areas for breeding and foraging. If present, they are only likely to be transient in these areas.	

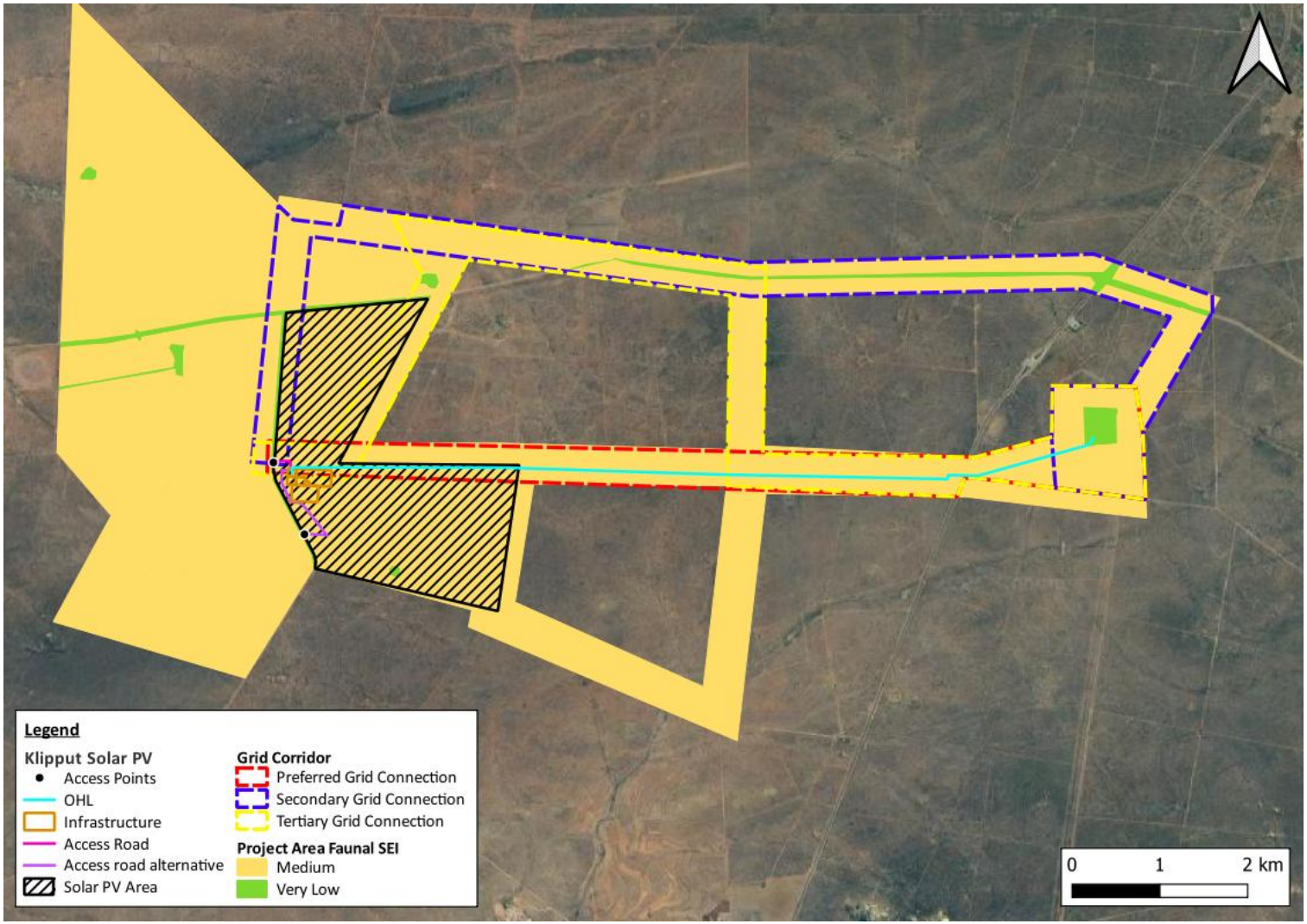


Figure 6.1: Sensitivity map for the Animal Species Theme.

Table 6.2: Sensitivity assessment for each vegetation type within the project area.

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Makhado Sweet Bushveld: *Euphorbia ingens* community & Makhado Sweet Bushveld: *Vachellia-Senegalia* community	Low No confirmed or highly likely populations of SCC.	Very High Intact areas of more than 100ha with good habitat connectivity serving as functional ecological corridors	Medium	Medium Habitat will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the Receptor functionality. According to the Ecosystem Guidelines for the Savanna Biome (SANBI, 2021), recovery of the woody layer may take longer than 10 years, as pioneer species such as *Dichrostachys cinerea* and *Vachellia tortilis* establish on denuded sites and may exist as dense monospecific stands for a very long time, though this is a natural process under post-disturbance recovery.	**Medium**
Makhado Sweet Bushveld: Riparian	Low No confirmed or highly likely populations of SCC.	High Intact areas with good habitat connectivity serving as functional ecological corridors	Medium	Medium Habitat will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the Receptor functionality. According to the Ecosystem Guidelines for the Savanna Biome (SANBI, 2021), recovery of the	**Medium**

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
				woody layer may take longer than 10 years, as pioneer species such as *Dichrostachys cinerea* and *Vachellia tortilis* establish on denuded sites and may exist as dense monospecific stands for a very long time, though this is a natural process under post-disturbance recovery.	
Rocky Outcrop	Low	High	Medium	Medium	**Medium**
	No confirmed or highly likely populations of SCC.	Intact areas with good habitat connectivity serving as functional ecological corridors		Habitat will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the Receptor functionality.	
Secondary Vegetation	Low	Medium	Low	High	**Very Low**
	No confirmed or highly likely populations of SCC.	Semi-intact area of vegetation with good habitat connectivity with intact vegetation. Evidence of minor and major historical ecological impacts.		Habitat will recover relatively quickly (5-10 years) to its current state.	
Transformed	Very Low	Very low	Very Low	Very High	**Very Low**
	No confirmed or highly likely populations of SCC and no natural habitat remaining.	These areas have been cleared and transformed and provide limited ecological functions.		Habitat can recover rapidly (less than 5 years) to its current state.	

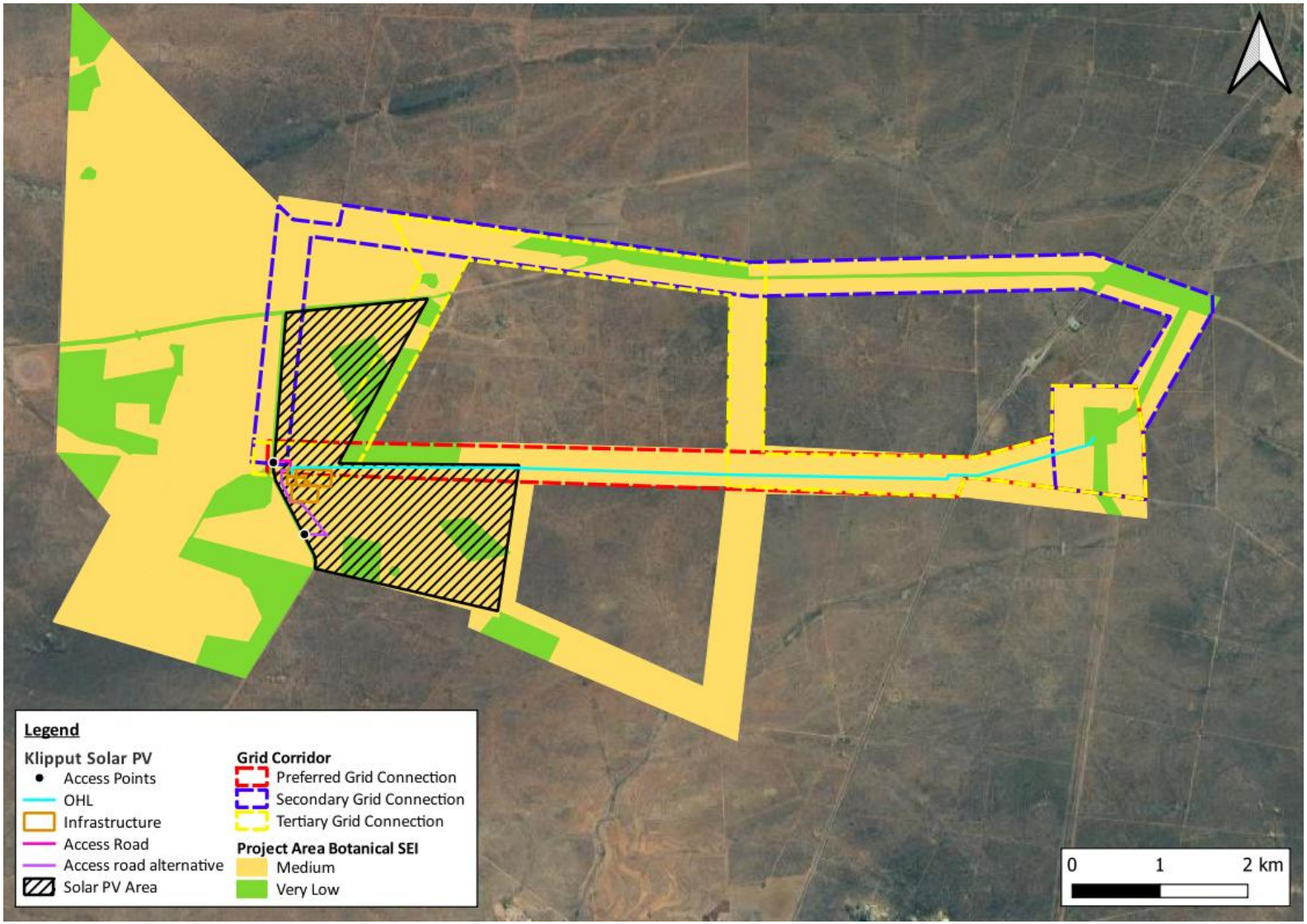


Figure 6.2: Fine scale Sensitivity Map of the vegetation types that occur within the project area.

6.3. Combined SEI

According to the Species Environmental Assessment Guideline (SANBI, 2020), the SEI evaluated for each taxon/receptor should be combined into a single multi-taxon/receptor evaluation of SEI for the project area to allow the component authority to evaluate the SEI for the entire project area rapidly and at a single glance. As such, the highest overall SEI rating has been applied to each habitat type assessed in terms of the faunal and botanical sensitivity. Table 6.3 combines the overall SEI for each habitat type based on the assessment in Table 6.1 and 6.2. The management guidelines for each SEI are summarised below.

Table 6.3: Combined overall SEI for each habitat type.

Habitat	BOTANICAL SEI	FAUNAL SEI	OVERALL COMBINED SEI
Makhado Sweet Bushveld: Euphorbia ingens community & Makhado Sweet Bushveld: Vachellia-Senegalia community	Medium	Medium	Medium
Makhado Sweet Bushveld: Riparian	Medium	Medium	Medium
Rocky Outcrop	Medium	Medium	Medium
Secondary Vegetation	MEDIUM	Very Low	Medium
Transformed	VERY LOW	Very Low	VERY LOW

The management guidelines for interpreting SEI in the context of the proposed development activities, outlined in the Species Environmental Assessment Guideline (SANBI, 2020), specify the following:

- For areas of **medium SEI,** development activities of medium impact are acceptable provided appropriate mitigation and management measures are implemented.
- For areas of **very low SEI**, development activities of medium to high impact are acceptable and mitigation and management measures may not be required although they are good practice.

7. CONCLUSIONS

7.1. Conclusions

The DFFE screening tool report suggests the following sensitivity for the project area:

- Medium Sensitivity for the **Animal Species Theme** based on the presence of one sensitive species. Sensitive bird species have been addressed by the avifaunal specialist and are therefore not included in this report.
- Low Sensitivity for the **Plant Species Theme** based on the unlikely occurrence of SCC.
- Low Sensitivity for the **Terrestrial Biodiversity Theme** as there are no sensitive features present.

The specialists' findings for each theme are summarised in sections Table 7.1 below.

7.2. Potential Impacts

Potential impacts associated with the development are likely to include:

- Permanent loss of vegetation, loss of faunal habitat and habitat fragmentation through clearing of vegetation for the placement project infrastructure.
- Short term impacts on faunal livelihoods during the construction phase that could cause faunal mortalities and/or disturbance to faunal species through increased noise which could cause them to move away or skip a breeding cycle.
- Infestation of alien invasive plant species in disturbed areas.

Impacts can be mitigated, and it is anticipated that the residual impacts will be of low to medium significance once mitigation measures are implemented. No residual impacts of high or very high significance are anticipated but these will need to be assessed in the impact assessment phase.

7.3. Way Forward

Although the sensitivity for the Animal, Plant and Terrestrial Biodiversity Themes are of medium and low sensitivity, there is the confirmed occurrence of Tsessebe (*Damaliscus lunatus)* (which has been stocked by the landowner) and likely occurrence of three VU species (Black-footed Cat – *Felis nigripes,* Leopard – *Panthera pardus* and Temminick's Pangolin – *Smutsia temminckii*) and three NT species (African Striped Weasel - *Poecilogale albinucha*, Brown Hyaena - *Parahyaena brunnea*, Southern African Hedgehog - *Atelerix frontalis*). As per paragraph 4.10 of the National Environmental Management Act No. 107 of 1998: Adoption of the Solar Exclusion Norm and Exclusion of the Development and Expansion of Solar Photovoltaic Facilities from the Requirement to obtain an Environmental Authorisation (27 March 2024) does not apply due to the high likelihood of occurrence of SCC. As such, the botanical, faunal and terrestrial biodiversity specialists are of the opinion that a full ecological impact assessment is required for the proposed project area.

Table 7.1: Summary of the specialist's findings for each of the themes

Theme	DFFE Screening Tool Report	Specialist's Findings	Reason
Animal Species Theme	**MEDIUM** Reason: • Sensitive species 5	**MEDIUM** Intact habitat **VERY LOW** Transformed areas	Based on the findings from the desktop assessment and field survey, the specialist agrees that the faunal habitat for all intact plant communities as well as the secondary vegetation has a MEDIUM SEI due to the confirmed occurrence of Tsessebe (*Damaliscus lunatus)* (which has been stocked by the landowner) and likely occurrence of three VU species (Black-footed Cat – *Felis nigripes,* Leopard – *Panthera pardus* and Temminick's Pangolin – *Smutsia temminckii*) and three NT species (African Striped Weasel - *Poecilogale albinucha*, Brown Hyaena - *Parahyaena brunnea*, Southern African Hedgehog - *Atelerix frontalis*). However, transformed areas should be reclassified as VERY LOW sensitivity due to the unlikely occurrence of SCC.
Plant Species Theme	**LOW** Reason: No SCC likely to occur	**LOW**	The overall plant species theme was classified as low by the DFFE screening tool report due to the unlikely occurrence of SCC. Based on the results of the desktop analysis and field survey, which confirm that no SCC occur or are highly likely to occur within the project area, the specialist agrees with the DFFE Screening Tool report of Low sensitivity.
Terrestrial Biodiversity Theme	**LOW** Reason: No identified sensitive features	**MEDIUM** Intact vegetation **VERY LOW** Secondary Vegetation and Transformed areas	The DFFE Screening Tool Report classifies the Terrestrial Biodiversity Theme sensitivity of most of the project area as LOW. The terrestrial biodiversity assessment confirmed the following: • The project area occurs within one vegetation types, namely Makhado Sweet Bushveld. The overall sensitivity for this vegetation type was determined to be of medium sensitivity. • The project area (including the powerline corridor) falls within an area classified as "Other Natural Area (ONA)" with a minor patch classified as "No Natural Remaining (NNR)". • The project area occurs within the Vhembe Biosphere Reserve (VBR). The VBR supports development that is ecologically and

			socio-culturally sustainable, promoting both conservation and economic growth. As such, the VBR does not preclude development. • The project area does not occur within a KBA, protected area, or NPAES Focus Area. The specialist disagrees with the findings of the DFFE Screening Tool which indicates a LOW Sensitivity and is of the opinion that the overall sensitivity should be MEDIUM as per the SEI analysis for the vegetation types and VERY LOW for secondary vegetation and transformed areas.

8. REFERENCES

Bates, Michael & Branch, William & Bauer, A. & Burger, Marius & Marais, Johan & Alexander, Graham & de Villiers, Marienne. (2014). Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland.

Branch, B. (1998) Field Guide to the Snakes and Other Reptiles of Southern Africa. Ralph Curtis Pub., Florida, 328.

Child MF, Rowe-Rowe D, Birss C, Wilson B, Palmer G, Stuart C, Stuart M, West S, Do Linh San E. 2016. A conservation assessment of Poecilogale albinucha. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa

Du Preez, L. H., and V. C. Carruthers. 2017. Frogs of Southern Africa: A Complete Guide. Cape Town, South Africa: Struik Nature.

Government of South Africa (2022) South African Red List of Terrestrial Ecosystems: assessment details and ecosystem descriptions. Government Notice 2747, Gazette 4526. Technical Report #7664, SANBI Pretoria, South Africa.

iNaturalist. https://www.inaturalist.org. Accessed [Accessed January 2025].

IUCN SSC Antelope Specialist Group. 2017. Redunca fulvorufula. The IUCN Red List of Threatened Species 2017: e.T19391A50193881. https://dx.doi.org/10.2305/IUCN.UK.2017-2.RLTS.T19391A50193881.en. Accessed January 2025.

Jacques, H., Reed-Smith, J. & Somers, M.J. 2021. Aonyx capensis. The IUCN Red List of Threatened Species 2021: e.T1793A164575819. https://dx.doi.org/10.2305/IUCN.UK.2021-3.RLTS.T1793A164575819.en. Accessed January 2025.

Minter, Leslie & Burger, Marius & Harrison, James & Braack, Harold & Bishop, Phil & Kloepfer, Diane. (2004). Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland.

Okes N, Ponsonby DW, Rowe-Rowe D, Avenant NL, Somers MJ. 2016. A conservation assessment of Aonyx capensis. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa

Ponsonby DW, Rowe-Rowe D, Power RJ, Somers MJ. 2016. A conservation assessment of Hydrictis maculicollis. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

Ramesh T, Downs CT, Power RJ, Laurence S, Matthews W, Child MF. 2016. A conservation assessment of Leptailurus serval. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

Reed-Smith, J., Jacques, H. & Somers, M.J. 2021. Hydrictis maculicollis. The IUCN Red List of Threatened Species 2021: e.T12420A164578992. https://dx.doi.org/10.2305/IUCN.UK.2021-3.RLTS.T12420A164578992.en. Accessed January 2025.

Stuart, C., Stuart, M. & Do Linh San, E. 2015. Poecilogale albinucha. The IUCN Red List of Threatened Species 2015: e.T41662A45215258. https://dx.doi.org/10.2305/IUCN.UK.2015-4.RLTS.T41662A45215258.en. Accessed January 2025.

Sliwa, A., Wilson, B., Küsters, M. & Tordiffe, A. 2016. Felis nigripes (errata version published in 2020). The IUCN Red List of Threatened Species 2016: e.T8542A177944648. https://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T8542A177944648.en. Accessed January 2025.

Stein, A.B., Athreya, V., Gerngross, P., Balme, G., Henschel, P., Karanth, U., Miquelle, D., Rostro-Garcia, S., Kamler, J.F., Laguardia, A., Khorozyan, I. & Ghoddousi, A. 2020. Panthera pardus (amended version of 2019 assessment). The IUCN Red List of Threatened Species 2020: e.T15954A163991139. https://dx.doi.org/10.2305/IUCN.UK.2020-1.RLTS.T15954A163991139.en. Accessed on 9 May 2024.

Swanepoel LH, Balme G, Williams S, Power RJ, Snyman A, Gaigher I, Senekal C, Martins Q, Child MF. 2016. A conservation assessment of Panthera pardus. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

Taylor, A., Cowell, C. & Drouilly, M. 2017. Pelea capreolus. The IUCN Red List of Threatened Species 2017: e.T16484A50192715. https://dx.doi.org/10.2305/IUCN.UK.2017-2.RLTS.T16484A50192715.en. Accessed on 13 June 2022.

Taylor A, Cowell C, Drouilly M, Schulze E, Avenant N, Birss C, Child MF. 2016. A conservation assessment of Pelea capreolus. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

Taylor A, Avenant N, Schulze E, Viljoen P, Child MF. 2016. A conservation assessment of Redunca fulvorufula fulvorufula. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

Thiel, C. 2019. Leptailurus serval (amended version of 2015 assessment). The IUCN Red List of Threatened Species 2019: e.T11638A156536762. https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T11638A156536762.en

von Staden, L. 2008. Mystacidium brayboniae Summerh. National Assessment: Red List of South African Plants version . Accessed on 2025/03/24.

Wiesel, I. 2015. Parahyaena brunnea. The IUCN Red List of Threatened Species 2015: e.T10276A82344448. https://dx.doi.org/10.2305/IUCN.UK.2015-4.RLTS.T10276A82344448.en. Accessed on 09 March 2023.

Williams, V.L., Raimondo, D., Crouch, N.R., Cunningham, A.B., Scott-Shaw, C.R., Lötter, M. & Ngwenya, A.M. 2022. [redacted]National Assessment: Red List of South African Plants version . Accessed on 2025/03/24.

Williams, V.L., Cunningham, A.B. & Raimondo, D. 2008. Merwilla plumbea (Lindl.) Speta. National Assessment: Red List of South African Plants version . Accessed on 2025/03/24.

Wilson B, Sliwa A, Drouilly M. 2016. A conservation assessment of Felis nigripes. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

Yarnell RW, Richmond-Coggan L, Bussière E, Williams K, Bissett C, Welch R, Wiesel I. 2016. A conservation assessment of Parahyaena brunnea. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

APPENDIX 1: LIST OF PLANT SPECIES RECORDED DURING THE FIELD SURVEY

Family	Scientific name	Common name	SA Red List	Limpopo EMA (2003)	NEM:BA (2007)	DFFE (2024)
Acanthaceae	*Blepharis subvolubilis*	Eye Lashes	LC	-	-	-
Amaranthaceae	*Alternanthera pungens*	creeping chaffweed	NE	-	-	-
Amaranthaceae	*Cyphocarpa angustifolia*	Silky Burweed	LC	-	-	-
Amaranthaceae	*Hermbstaedtia odorata albi-rosea*		NE	-	-	-
Anacardiaceae	*Ozoroa paniculosa*	bushveld ozoroa	LC	-	-	-
Anacardiaceae	*Sclerocarya birrea*	marula	LC	-	-	Schedule A
Anacardiaceae	*Searsia leptodictya*	Mountain Karree	LC	-	-	-
Anacardiaceae	*Searsia magalismontana*	Mountain Currentrhus	LC	-	-	-
Apocynaceae	*Cynanchum viminale*	Caustic Vine	LC	-	-	-
Apocynaceae	*Pergularia daemia*	Trellis-Vine	LC	-	-	-
Asparagaceae	*Asparagus africanus*	Bush Asparagus	LC	-	-	-
Asparagaceae	*Asparagus aspergillus*		LC	-	-	-
Asparagaceae	*Asparagus buchananii*		LC	-	-	-
Asparagaceae	*Asparagus suaveolens*	Catthorn Asparagus	LC	-	-	-
Asparagaceae	*Sansevieria aethiopica*	Mother-in-law's Tongue	LC	-	-	-
Asphodelaceae	*Aloe marlothii*	mountain aloe	LC	-	-	-
Asteraceae	*Acanthospermum hispidum*	Bindii	NE	-	-	-
Asteraceae	*Bidens pilosa*	Hairy Beggarticks	NE	-	-	-
Asteraceae	*Dicoma tomentosa*	Woolly Karmedik	LC	-	-	-
Asteraceae	*Emilia transvaalensis*	Transvaal Tasselflower	LC	-	-	-
Asteraceae	*Geigeria burkei*	Button Vomitdaisy	LC	-	-	-
Asteraceae	*Psiadia punctulata*	Sticky Psiadia	LC	-	-	-
Asteraceae	*Schkuhria pinnata*	dwarf marigold	NE	-	-	-
Asteraceae	*Senecio madagascariensis*	Madagascar Ragwort	LC	-	-	-

Family	Scientific name	Common name	SA Red List	Limpopo EMA (2003)	NEM:BA (2007)	DFFE (2024)
Asteraceae	*Tagetes minuta*	wild marigold	NE	-	-	-
Asteraceae	*Xanthium strumarium*	rough cocklebur	NE	-	-	-
Asteraceae	*Zinnia peruviana*	Peruvian zinnia	NE	-	-	-
Bignoniaceae	*Rhigozum brevispinosum*	Kalahari Gold	LC	-	-	-
Boraginaceae	*Cordia quercifolia*	Bushveld Saucerberry	LC	-	-	-
Boraginaceae	*Ehretia alba*	Puzzlebush	LC	-	-	-
Boraginaceae	*Ehretia rigida*	Puzzle Bush	LC	-	-	-
Boraginaceae	*Heliotropium nelsonii*	Common String-of-Stars	LC	-	-	-
Burseraceae	*Commiphora africana africana*	Poison-Grub Commiphora	LC	-	-	-
Burseraceae	*Commiphora glandulosa*	Tall Common Corkwood	LC	-	-	-
Burseraceae	*Commiphora marlothii*	Paperbark Corkwood	LC	-	-	-
Burseraceae	*Commiphora mollis*	Velvet Corkwood	LC	-	-	-
Cactaceae	*Cylindropuntia imbricata*	tree cholla	NE	-	-	-
Cactaceae	*Nyctocereus serpentinus*	Serpent Cactus	NE	-	-	-
Cactaceae	*Opuntia ficus-indica*	Indian fig opuntia	NE	-	-	-
Cactaceae	*Opuntia ficus-indica*	Prickly Pear	NE	-	-	-
Campanulaceae	*Wahlenbergia undulata*	African Blue Bell	LC	-	-	-
Capparaceae	*Boscia albitrunca*	Shepherds tree	LC	-	-	Schedule A
Capparaceae	*Boscia foetida*	Stink Shepherdstree	LC	Schedule 12	-	-
Celastraceae	*Gymnosporia buxifolia*	Common Spikethorn	LC	-	-	-
Combretaceae	*Combretum apiculatum*	red bushwillow	LC	-	-	-
Combretaceae	*Combretum hereroense*	Russet Bushwillow	NE	-	-	-
Commelinaceae	*Commelina africana*	African Yellow Dayflower	LC	-	-	-
Convolvulaceae	*Evolvulus alsinoides*	tropical speedwell	LC	-	-	-
Convolvulaceae	*Ipomoea obscura*	Obscure Morning Glory	LC	-	-	-
Crassulaceae	*Kalanchoe brachyloba*	short-lobed kalanchoe	LC	-	-	-
Cucurbitaceae	*Coccinia rehmannii*	Cucumber Bushpumpkin	LC	-	-	-
Cucurbitaceae	*Cucumis hirsutus*	Hairy Wild Cucumber	LC	-	-	-

Family	Scientific name	Common name	SA Red List	Limpopo EMA (2003)	NEM:BA (2007)	DFFE (2024)
Cyperaceae	*Cyperus cristatus*	White Flat-Sedge	LC	-	-	-
Cyperaceae	*Cyperus decurvatus*		LC	-	-	-
Cyperaceae	*Cyperus rupestris*	Red Sedge	LC	-	-	-
Ebenaceae	*Euclea divinorum*	Magic Gwarrie	LC	-	-	-
Euphorbiaceae	*Euphorbia ingens*	Common Tree Euphorbia	LC	-	-	-
Fabaceae	*Chamaecrista absus*	Hairy Cassia	LC	-	-	-
Fabaceae	*Crotalaria capensis*	Cape Rattle Pod	LC	-	-	-
Fabaceae	*Dichrostachys cinerea*	aroma	LC	-	-	-
Fabaceae	*Elephantorrhiza elephantina*	Dwarf Elephantroot	LC	-	-	-
Fabaceae	*Indigofera filipes*	Finefoot Indigo	LC	-	-	-
Fabaceae	*Ormocarpum trichocarpum*	Caterpillar Bush	LC	-	-	-
Fabaceae	*Otoptera burchellii*	Purple Desert Bean	LC	-	-	-
Fabaceae	*Peltophorum africanum*	Weeping wattle	LC	-	-	-
Fabaceae	*Ptycholobium contortum*		LC	-	-	-
Fabaceae	*Rhynchosia totta*	Carpet Snoutbean	LC	-	-	-
Fabaceae	*Senegalia burkei*	Black Monkeythorn	LC	-	-	-
Fabaceae	*Senegalia mellifera*	Black thorn	LC	-	-	-
Fabaceae	*Senegalia senegal leiorhachis*	Three-Hooked Thorn	LC	-	-	-
Fabaceae	*Tephrosia capensis*	Cape Hoarypea	LC	-	-	-
Fabaceae	*Tipuana tipu*	Pride of Bolivia	NE	-	-	-
Fabaceae	*Vachellia permixta*	Slender Thorn	LC	-	-	-
Fabaceae	*Vachellia tortilis*	umbrella thorn	LC	-	-	-
Geraniaceae	*Monsonia angustifolia*	Narrow-leaved Dysentry-herb	LC	-	-	-
Hyacinthaceae	*Albuca abyssinica*		LC	-	-	-
Hyacinthaceae	*Drimia altissima*	Tall Squill	LC	-	-	-
Hyacinthaceae	*Ledebouria marginata*	Tough-leaved African Hyacinth	LC	-	-	-
Iridaceae	*Afrosolen sandersonii*	Autumn Painted Petals	LC	-	-	-
Lamiaceae	*Clerodendrum ternatum*	Tube Flower	LC	-	-	-

Family	Scientific name	Common name	SA Red List	Limpopo EMA (2003)	NEM:BA (2007)	DFFE (2024)
Lamiaceae	*Leucas sexdentata*	Bushveld Tumbleweed	LC	-	-	-
Loranthaceae	*Erianthemum ngamicum*		LC	-	-	-
Malvaceae	*Adansonia digitata*	African baobab	LC	Schedule 12	-	Schedule A
Malvaceae	*Grewia bicolor*	Bastard Raisin Bush	LC	-	-	-
Malvaceae	*Grewia flava*	Velvet Raisin	LC	-	-	-
Malvaceae	*Grewia flavescens*	Sandpaper Raisin	LC	-	-	-
Malvaceae	*Hermannia depressa*	Purpleleaf Dollsrose	LC	-	-	-
Malvaceae	*Hibiscus calyphyllus*	Lemonyellow Rosemallow	LC	-	-	-
Malvaceae	*Sterculia rogersii*	Common Star-Chestnut	LC	-	-	-
Malvaceae	*Waltheria indica*	Sleepy Morning	LC	-	-	-
Moraceae	*Ficus abutilifolia*	Large-leaved Rock Fig	LC	-	-	-
Moraceae	*Ficus tettensis*	Small-leaved Rock Fig	LC	-	-	-
Olacaceae	*Ximenia caffra*	smooth sourplum	LC	-	-	-
Pedaliaceae	*Sesamum triphyllum triphyllum*	Wild Sesame	LC	-	-	-
Poaceae	*Cenchrus ciliaris*	Buffelgrass	LC	-	-	-
Poaceae	*Chloris virgata*	feather finger grass	LC	-	-	-
Poaceae	*Dactyloctenium aegyptium*	Durban Crowfoot	LC	-	-	-
Poaceae	*Digitaria eriantha*	Digitgrass	LC	-	-	-
Poaceae	*Eragrostis lehmanniana*	Lehmann's Lovegrass	LC	-	-	-
Poaceae	*Eragrostis sp.*	Lovegrass	LC	-	-	-
Poaceae	*Eragrostis superba*	Wilman lovegrass	LC	-	-	-
Poaceae	*Eragrostis tenella*	Feather Lovegrass	LC	-	-	-
Poaceae	*Heteropogon contortus*	Tanglehead	LC	-	-	-
Poaceae	*Melinis repens*	Natal grass	LC	-	-	-
Poaceae	*Paspalum dilatatum*	Dallis Grass	NE	-	-	-
Poaceae	*Pogonarthria squarrosa*	Herringbone Grass	LC	-	-	-
Poaceae	*Schmidtia pappophoroides*	Kalahari Sand Quick	LC	-	-	-
Poaceae	*Setaria pumila*	Yellow Foxtail	LC	-	-	-

Family	Scientific name	Common name	SA Red List	Limpopo EMA (2003)	NEM:BA (2007)	DFFE (2024)
Poaceae	*Themeda triandra*	Kangaroo Grass	LC	-	-	-
Poaceae	*Tragus berteronianus*	African Bur-Grass	LC	-	-	-
Poaceae	*Urochloa trichopus*	Gonyagrass	LC	-	-	-
Portulacaceae	*Portulaca obtusa*		LC	-	-	-
Rhamnaceae	*Ziziphus mucronata*	buffalo-thorn	LC	-	-	-
Rubiaceae	*Vangueria parvifolia*	mountain medlar	LC	-	-	-
Sapindaceae	*Pappea capensis*	Jacket plum	LC	-	-	-
Scrophulariaceae	*Antherothamnus pearsonii*	False-Honeythorn	LC	-	-	-
Solanaceae	*Datura ferox*	long-spined thorn-apple	NE	-	-	-
Vitaceae	*Cyphostemma cirrhosum*	Pucker Grape	LC	-	-	-
Zygophyllaceae	*Balanites maughamii*	greenthorn	LC	-	-	Schedule A

APPENDIX 2: PROOF OF SACNASP REGISTRATION AND HIGHEST QUALIFICATION

SACNASP
South African Council for Natural Scientific Professions

herewith certifies that

Tarryn Barbara Lee Martin

Registration Number: 008745

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)
Botanical Science (Professional Natural Scientist)

Effective **29 January 2014** Expires **31 March 2026**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

RHODES UNIVERSITY

THIS IS TO CERTIFY THAT

TARRYN BARBARA LEE MARTIN

WAS THIS DAY AT A CONGREGATION OF THE UNIVERSITY
ADMITTED TO THE DEGREE OF

MASTER OF SCIENCE

IN

BOTANY

WITH DISTINCTION

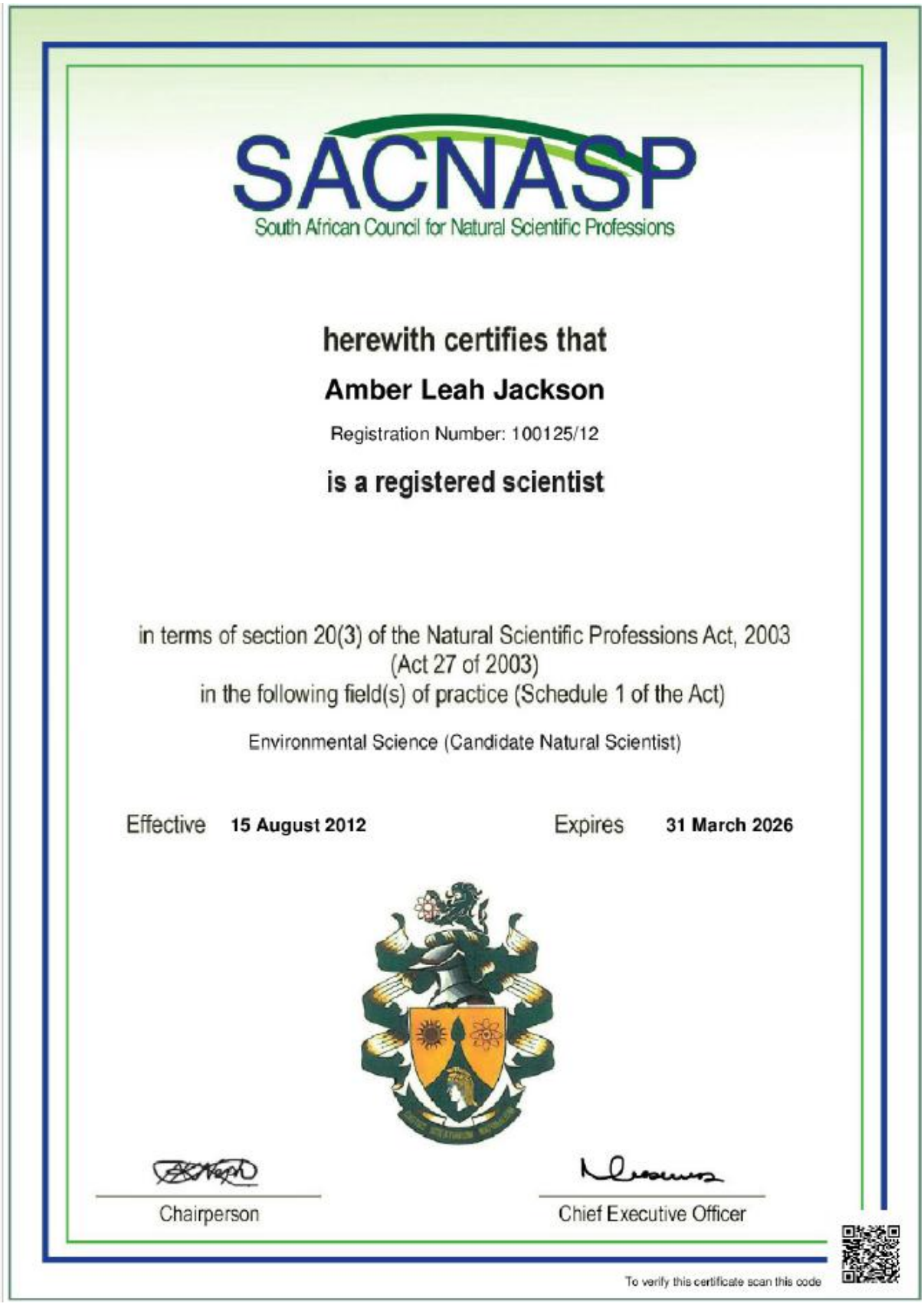
VICE CHANCELLOR

DEAN OF THE FACULTY OF SCIENCE

REGISTRAR

GRAHAMSTOWN
10 APRIL 2010

Application for Professional Natural Science in the field of Zoology is currently awaiting approval.



SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Amber Leah Jackson

Registration Number: 100125/12

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Candidate Natural Scientist)

Effective **15 August 2012** Expires **31 March 2026**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

University of Cape Town • iYunivesithi yaseKapa • Universiteit van Kaapstad

we certify that

Amber Leah Jackson

was admitted to the degree of

Master of Philosophy

in Environmental Management

on 9 June 2011

Vice-Chancellor

Registrar

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Nicole Nadine Wienand

Registration Number: 130289

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Certificated Natural Scientist)
Botanical Science (Professional Natural Scientist)

Effective **3 March 2021** Expires **31 March 2026**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

NELSON MANDELA
UNIVERSITY

This is to certify that, all the requirements
having been met, the degree

Bachelor of Science Honours in Botany

with all the associated rights and privileges
was conferred upon

Nicole Nadine Wienand
ID no.: 9501170150088

at a congregation of the Nelson Mandela University on
13 December 2018

Certificate no.: 20185249

Vice-Chancellor

Registrar

00008632

APPENDIX 3: CV

CONTACT DETAILS

Name	**Tarryn Martin**
Name of Company	**Biodiversity Africa**
Designation	Director
Profession	Botanical Specialist and Environmental Manager
E-mail	tarryn@biodiversityafrica.com
Office number	+27 (0)71 332 3994
Education	2010: Master of Science with distinction (Botany) 2004: Bachelor of Science (Hons) in African Terrestrial Vertebrate Biodiversity 2003: Bachelor of Science
Nationality	**South African**
Professional Body	**SACNASP**: South African Council for Natural Scientific Profession: Professional Natural Scientist (400018/14) **SAAB**: Member of the South African Association of Botanists **IAIASa**: Member of the International Association for Impact Assessments South Africa Member of Golden Key International Honour Society
Key areas of expertise	• Biodiversity Surveys and Impact Assessments • Environmental Impact Assessments • Critical Habitat Assessments • Biodiversity Management and Monitoring Plans

PROFILE

Tarryn has over ten years of experience working as a botanist, nine of which are in the environmental sector. She has worked as a specialist and project manager on projects within South Africa, Mozambique, Lesotho, Zambia, Tanzania, Cameroon and Malawi.

She has extensive experience writing botanical impact assessments, critical habitat assessments, biodiversity management plans, biodiversity monitoring plans and Environmental Impact Assessments to International Standards, especially to those of the International Finance Corporation (IFC). Her experience includes working on large mining projects such as the Kenmare Heavy Minerals Mine, where she monitored forest health, undertook botanical impact assessments for their expansion projects and designed biodiversity management and monitoring plans. She has also project managed Environmental Impact Assessments for graphite mines in northern Mozambique and has a good understanding of the Mozambique Environmental legislation and processes.

Tarryn holds a BSc (Botany and Zoology), a BSc (Hons) in African Vertebrate Biodiversity and an MSc with distinction in Botany from Rhodes University. Tarryn's Master's thesis examined the impact of fire on the

recovery of C_3 and C_4 Panicoid and non-Panicoid grasses within the context of climate change for which she won the Junior Captain Scott-Medal (Plant Science) for producing the top MSc of 2010 from the South African Academy of Science and Art as well as an Award for Outstanding Academic Achievement in Range and Forage Science from the Grassland Society of Southern Africa. Tarryn is a professional member of the South African Council for Natural Scientific Professionals (since 2014).

EMPLOYMENT EXPERIENCE

Director and Botanical Specialist, Biodiversity Africa

July 2021 - present

- Botanical and ecological assessments for local and international EIAs in Southern Africa
- Identifying and mapping vegetation communities and sensitive areas
- Designing and implementing biodiversity management and monitoring plans
- Designing rehabilitation plans
- Designing alien management plans
- Critical Habitat Assessments
- Large ESIA studies
- Managing budgets

Principal Environmental Consultant, Branch Manager and Botanical Specialist, Coastal and Environmental Services

May 2012-June 2021

- Botanical and ecological assessments for local and international EIAs in Southern Africa
- Identifying and mapping vegetation communities and sensitive areas
- Designing and implementing biodiversity management and monitoring plans
- Designing rehabilitation and biodiversity offset plans
- Designing alien management plans
- Critical Habitat Assessments
- Large ESIA studies
- Managing budgets
- Cape Town branch manager
- Coordinating specialists and site visits

Accounts Manager, Green Route DMC

October 2011- January 2012

- Project and staff co-ordination
- Managing large budgets for incentive and conference groups travelling to southern Africa
- Creating tailor-made programs for clients
- Negotiating rates with vendors and assisting with the ground management of inbound groups to ensure client satisfaction.

Camp Administrator and Project Co-ordinator, Windsor Mountain International Summer Camp, USA

April 2011 - September 2012

- Co-ordinated staff and camper travel arrangements, main camp events and assisted with marketing the camp to prospective families.

Freelance Project Manager, Green Route DMC

November 2010 - April 2011

- Project and staff co-ordination
- Managing large budgets for incentive and conference groups travelling to southern Africa
- Creating tailor-made programs for clients
- Negotiating rates with vendors and assisting with the ground management of inbound groups to ensure client satisfaction.

Camp Counselor, Windsor Mountain Summer Camp, USA

June 2010 - October 2010

NERC Research Assistant, Botany Department, Rhodes University, Grahamstown in collaboration with Sheffield University, Sheffield, England

April 2009 - May 2010

- Set up and maintained experiments within a common garden plot experiment
- collected, collated and entered data
- Assisted with the analysis of the data and writing of journal articles

Head Demonstrator, Botany Department, Rhodes University

March 2007 - October 2008

Operations Assistant, Green Route DMC

September 2005 - February 2007

- Project and staff co-ordination
- Managing large budgets for incentive and conference groups travelling to southern Africa
- Creating tailor-made programs for clients
- Negotiating rates with vendors and assisting with the ground management of inbound groups to ensure client satisfaction

PUBLICATIONS

- Ripley, B.; Visser, V.; Christin, PA.; Archibald, S.; Martin, T and Osborne, C. Fire ecology of C_3 and C_4 grasses depends on evolutionary history and frequency of burning but not photosynthetic type. *Ecology.* 96 (10): 2679-2691. 2015
- Taylor, S.; Ripley, B.S.; Martin, T.; De Wet, L-A.; Woodward, F.I.; Osborne, C.P. Physiological advantages of C_4 grasses in the field: a comparative experiment demonstrating the importance of drought. *Global Change Biology*. 20 (6): 1992-2003. 2014
- Ripley, B; Donald, G; Osborne, C; Abraham, T and Martin, T. Experimental investigation of fire ecology in the C3 and C4 subspecies of *Alloteropsis semialata. Journal of Ecology.* 98 (5): 1196 - 1203. 2010
- South African Association of Botanists (SAAB) conference, Grahamstown. Title: Responses of C3 and C4 Panicoid and non-Panicoid grasses to fire. January 2010
- South African Association of Botanists (SAAB) conference, Drakensberg. Title: Photosynthetic and Evolutionary determinants of the response of selected C3 and C4 (NADP-ME) grasses to fire. January 2008

COURSES

- Rhodes University and CES, Grahamstown
- EIA Short Course 2012
- Fynbos identification course, Kirstenbosch, 2015.
- Photography Short Course, Cape Town School of Photography, 2015.
- Using Organized Reasoning to Improve Environmental Impact Assessment, 2018, International IAIA conference, Durban

CONSULTING EXPERIENCE

International Projects

- 2020 – 2021: Project manager for the 2Africa subsea cable ESIA in Mozambique.
- 2020 – 2021: Project manager for the Category B EIA for the Wihinana Graphite Mine, Cabo delgado, Mozambique
- 2020 – 2021: Project manager for the category B exploration ESIA for Sofala Heavy Minerals Mine, Inhambane, Mozambique
- 2020: Critical Habitat Assessment for a graphite mine in Cabo Delgado, Mozambique. This assessment was to IFC standards.
- 2020: Analysed the botanical dataset for Lurio Green Resources and provided comment on the findings and gaps.
- 2020: Biodiversity Management Plan and Monitoring Plan for mine at Pilivilli in Nampula Province, Mozambique. This assessment was to IFC standards.
- 2019: Botanical Assessment for a cocoa plantation, Tanzania. This assessment was to IFC standards.
- 2019: Critical Habitat Assessment, Biodiversity Management Plan and Ecosystem Services Assessment for JCM Solar Farm in Cameroon. This assessment was to IFC standards.
- 2019: Undertook the Kenmare Road and Infrastructure Botanical Baseline Survey and Impact Assessment for an infrastructure corridor that will link the existing mine at Moma to the new proposed mine at Pillivilli in Nampula Province, Mozambique. This assessment was to IFC standards.
- 2012 – Present: Kenmare Terrestrial Monitoring Program Project Manager and Specialist Survey, Nampula Province, Mozambique.
- 2018: Conducted a field survey and wrote a botanical report to IFC standards for the proposed Balama Graphite Mine Environmental and Social Impact Assessment (ESIA) in Cabo Delgado Province, Mozambique.
- 2018: Co-authored the critical habitat assessment chapter for the proposed Kenmare Pilivilli Heavy Minerals Mine.
- 2018: Authored the Conservation Efforts chapter for the Kenmare Pilivilli Heavy Minerals Mine.
- 2017-2018: Co-authored and analysed data for the Kenmare Bioregional Survey of *Icuria dunensis* (species trigger for critical habitat) in Nampula Province, Mozambique. This was for a mining project that needed to be IFC compliant.
- 2017: Conducted a field survey and wrote a botanical report to IFC standards for the proposed Ancuabe Graphite Mine Environmental and Social Impact Assessment (ESIA) in Cabo Delgado Province, Mozambique.
- 2017-2018: Managed the Suni Resources Montepuez Graphite Mine Environmental Impact Assessment. This included the management of ten specialists, the co-ordination of their field surveys, regular client liaison and the writing of the Environmental Impact Assessment Report which summarised the specialists findings, assessed the impacts of the proposed mine on the environment and provided mitigation measures to reduce the impact.
  I was also the lead botanist for this baseline survey and impact assessment and undertook the required field work and analysed the data and wrote the report.
- 2017: Undertook the botanical baseline survey and impact assessment for the proposed Kenmare Pilivili Heavy Mineral Mine in Nampula Province, Mozambique. This was to IFC Standards.
- 2017: Ecological Survey for the Megaruma Mining Limitada Ruby Mine Exploration License, Cabo Delgado, Mozambique.

- 2016: Undertook the botanical baseline survey and impact assessment, wrote an alien invasive management plan and co-authored the biodeiveristy monitoring plan for this farm. The project was located in Zambezia Province, Mozambique.
- 2015-2016: Conducted the Triton Minerals Nicanda Hills Graphite Mine Botanical Survey and Impact Assessment. Was also the project manager and specialist co-ordinator for this project. The project was located in Cabo Delgado Province, Mozambique.
- 2015: Was part of the team that undertook a Critical Habitat Assessment for the Nhangonzo Coastal Stream site at Inhassora in Mozambique that Sasol intend to establish drill pads at. This project needed to meet the IFC standards.
- 2014: Lurio Green Resources Wood Chip Mill and Medium Density Fibre-board Plant, Project Manager and Ecological Specialist, Nampula Province, Mozambique. 2014-2015.
- 2013-2014: LHDA Botanical Survey, Baseline and Impact assessment, Lesotho.
- 2014: Biotherm Solar Voltaic Ecological Assessment, Zambia.
- 2013-2014: Lurio Green Resources Plantation Botanical Assessment, Vegetation and Sensitivity Mapping, Specialist Co-ordination, Nampula Province, Mozambique.
- 2013: Syrah Resources Botanical Baseline Survey and Ecological Assessment., Cabo Delgado Mozambique.
- 2013-2014: Baobab Mining Ecological Baseline Survey and Impact Assessment, Tete, Mozambique.

South African Projects

- 2021 - Present: Project Manager for the Sturdee Energy Solar PV facility, Western Cape
- 2021: Ecological Assessment for the Sturdee Energy Solar PV facility, Western Cape
- 2021: Rehabilitation plan for a housing development (Hope Village)
- 2020: Ecological Assessment for the Eskom Juno-Gromis Powerline deviation, Western Cape
- 2020: Project Manager for the Basic Assessment for SANSA development at Matjiesfontein (Western Cape). Project received authorization in 2021.
- 2020: Ecological Assessment for construction of satellite antennae, Matjiesfontein, Western Cape
- 2019: Ecological Assessment for a wind farm EIA, Kleinzee, Northern Cape
- 2019: Ecological Assessment for two housing developments in Zeerust, North West Province
- 2019: Botanical Assessment in Retreat, Cape Town for the DRDLR land claim.
- 2019: Cape Agulhas Municipality Botanical Assessment for the expansion of industrial zone, Western Cape, South Africa, 2019.
- 2018: Ecological Assessment for the construction of a farm dam in Greyton, Western Cape.
- 2018: Conducted the Ecological Survey for a housing development in Noordhoek, Cape Town
- 2018: Conducted the field survey and developed an alien invasive management plan for the Swartland Municipality, Western Cape.
- 2017: Undertook the field survey and co-authored a coastal dune study that assesses the impacts associated with the proposed rezoning and subdivision of Farm Bookram No. 30 to develop a resort.
- 2017: Project managed and co-authored a risk assessment for the use of Marram Grass to stabilise dunes in the City of Cape Town.
- 2015-2016: iGas Saldanha to Ankerlig Biodiversity Assessment Project Manager, Saldanha.
- 2015: Innowind Ukomoleza Wind Energy Facility Alien Invasive Management Plan, Eastern Cape Province, South Africa.

- 2015: Savannah Nxuba Wind Energy Facility Powerline Ecological Assessment, ground truthing and permit applications, Eastern Cape South Africa.
- 2014: Cob Bay botanical groundtruthing assessment, Eastern Cape, South Africa.
- 2013-2016: Dassiesridge Wind Energy Facility Project Manager, Eastern Cape, South Africa.
- 2013: Harvestvale botanical groundtruthing assessment, Eastern Cape, South Africa.
- 2012: Tsitsikamma Wind Energy Facility Community Power Line Ecological Assessment, Eastern Cape, South Africa.
- 2012: Golden Valley Wind Energy Facility Power Line Ecological Assessment, Eastern Cape, South Africa.
- 2012: Middleton Wind Energy Facility Ecological Assessment and Project Management, Eastern Cape, South Africa.
- 2012: Mossel Bay Power Line Ecological Assessment, Western Cape, South Africa.
- 2012: Groundtruthing the turbine sites for the Waainek Wind Energy Facility, Eastern Cape, South Africa.
- 2012: Toliara Mineral Sands Rehabilitation and Offset Strategy Report, Madagascar.

CONTACT DETAILS

Name	**Amber Jackson**
Name of Company	**Biodiversity Africa**
Designation	Director
Profession	Faunal Specialist and Environmental Manager
E-mail	amber@biodiversityafrica.com
Office number	+27 (0)78 340 6295
Education	2011 M. Phil Environmental Management (University of Cape Town) 2008 BSc (Hons) Ecology, Environment and Conservation (University of the Witwatersrand) 2007 BSc 'Ecology, Environment and Conservation' and Zoology (WITS)
Nationality	**South African**
Professional Body	**SACNASP**: South African Council for Natural Scientific Profession (100125/12) **ZSSA**: Zoological Society of Southern Africa **HAA**: Herpetological Association of Southern Africa **IAIASa**: Member of the International Association for Impact Assessments South Africa
Key areas of expertise	• Biodiversity Surveys and Impact Assessments • Environmental Impact Assessments • Critical Habitat Assessments • Biodiversity Management and Monitoring Plans

PROFILE

Amber has over ten years' experience in environmental consulting and has managed projects across various sectors including mining, agriculture, forestry, renewable energy, housing, coastal and wetland recreational infrastructure. Most of these projects required lender finance and therefore met both in-country, lender and sector specific requirements.

Amber completed the IFC lead and Swiss funded programme in Environmental and Social Risk Management course in 2018. The purpose of the course was to upskill Sub-Saharan African environmental consultants to increase the uptake of E&S standards by Financial Institutions.

Amber specialises in terrestrial vertebrate faunal assessments. She has conducted large scale faunal impact assessments that are to international lender's standards in Mozambique, Tanzania, Lesotho and Malawi. In South Africa her faunal impact assessments comply with the protocols for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity and follows the SANBI Species Environmental Assessment Guideline. Her specialist input goes beyond impact assessments and includes faunal opportunities and constraints assessments, Critical Habitat Assessments, Biodiversity related Management Plans and Biodiversity Monitoring Programmes.

Amber holds a BSc (Zoology and Ecology, Environment & Conservation) and BSc (Hons) in Ecology, Environment & Conservation from WITS University and an MPhil in Environmental Management from University of Cape Town. Amber's honours focused on the landscape effects on Herpetofauna in Kruger National Park and her Master's thesis focused on the management of social and natural aspects of environmental systems with a dissertation in food security that investigated the complex food system of informal and formal distribution markets

EMPLOYMENT EXPERIENCE

Director and Faunal Specialist, Biodiversity Africa

July 2021 - present

- Faunal assessments for local and international EIAs in Southern Africa
- Identifying and mapping habitats and sensitive areas
- Designing and implementing biodiversity management and monitoring plans
- Critical Habitat Assessments
- Large ESIA studies
- Managing budgets

Principal Environmental Consultant and Faunal,

Coastal and Environmental Services

September 2011-June 2021

- Faunal and ecological assessments for local and international EIAs in Southern Africa
- Identifying and mapping habitat and sensitive areas
- Designing and implementing biodiversity management and monitoring plans
- Critical Habitat Assessments
- Large ESIA studies
- Coordinating specialists and site visits
- Faunal Impact Assessment
- Project Management, including budgets, deliverables and timelines.
- Environmental Impact Assessments and Basic Assessments project
- Environmental Control Officer
- Public/client/authority liaison
- Mentoring and training of junior staff

COURSES

- **Herpetological Association of Southern Africa Conference- Cape St Frances** September 2019
- **International Finance Corporation Environmental and Social Risk Management (ESRM) Program** January – November 2018
- **IAIA WC EMP Implementation Workshop** 27 February 2018
- **IAIAsa National Annual Conference** August 2017
  Goudini Spa, Rawsonville.
- **Biodiversity & Business Indaba, NBBN** April 2017
  Theme: Moving Forward Together (Partnerships & Collaborations)
- **Snake Awareness, Identification and Handling course, Cape Reptile Institute (CRI)** November 2016
- **Coaching Skills programme, Kim Coach** November 2016
- **Western Cape Biodiversity Information Event, IAIAsa** May 2016
  Theme: Biodiversity offsets & the launch of a Biodiversity Information Tool
- **Photography Short Course** 2015.
  Cape Town School of Photography,
- **Mainstreaming Biodiversity into Business: WHAT, WHY, WHEN and HOW** June 2014 Hosted by Dr Marie Parramon Gurney on behalf of the NBBN at the Rhodes Business School
- **IAIAsa National Annual Conference** September 2013
  Thaba'Nchu Sun, Bloemfontein
- **St Johns Life first aid course** July 2012

CONSULTING EXPERIENCE

International Projects

- 2018-Crooks Brothers Post EIA Work- Environmental and Social EMPr, Policies, E&S Management Plans and Monitoring Programmes
- 2018-Triton Ancuabe Graphite Mine (ESHIA), Mozambique. IFC Standards.
- 2016-Bankable Feasibility Study of Simandou Infrastructure Project – Port and Railway Summary of critical habitat, biodiversity offset plan and monitoring and evaluation plan.
- 2016-Lurio Green Resources Forestry Projects ESIA project upgrade to Lender standards including IFC, EIB, FSC and AfDB.
- 2014-Green Resources Woodchip and MDF plant (EPDA).
- 2014-Niassa Green Resources Forestry Projects ESIA to Lender standards including IFC, EIB, FSC and AfDB.

- 2020-Kenmare Faunal Biodiversity Management Plan, Mozambique.
- 2020-Kenmare Faunal Monitoring Pogramme (year 1)- Baseline, Mozambique.
- 2019-Kenmare addendum ESIA Faunal Impact Assessment, Mozambique.
- 2019-Kenmare infrastructure corridor ESIA Faunal Impact Assessment, Mozambique.
- 2019/20-Olam Cocoa Plantation Faunal Impact Assessment, Tanzania.
- 2019-JCM Solar Voltaic project Faunal desktop critical habitat assessment, Cameroon.
- 2018-Suni Resources Balama Graphite Mine Project Faunal Impact Assessment, Mozambique.
- 2017/18-Battery Minerals Montepuez Graphite Mine Project Faunal Impact Assessment, Mozambique.
- 2017-Triton Minerals Nicanda Hills Graphite Mine Project Faunal Impact Assessment, Mozambique.
- 2017-Sasol Biodiversity Assessment, Mozambique.
- 2014-Lesotho Highlands Water Project Faunal Impact Assessment, Lesotho.
- 2012-Malawi Monazite mine Projects (ESIA) EMP ecological management contribution
- Liberia Palm bay & Butow (ESIA)
- PGS Seismic Project (ESIA), Mozambique.

South African Projects

- 2018-Port St Johns Second Beach Coastal Infrastructure Project - E&S Risk Assessment
- 2015-Blouberg Development Initiative- E&S Risk Assessment
- 2019-Boulders Powerline BA Faunal desktop impact assessment, WC, SA.
- 2019-Ramotshere housing development BA Faunal desktop impact assessment, NW, SA.
- 2019-Cape Agulhas Municipality Industrial development faunal impact assessment, WC, SA.
- 2019-SANSA Solar PV BA Faunal desktop impact assessment, WC, SA.
- 2019-Wisson Coal to Urea Faunal desktop assessment, Mpumalanga.
- 2019-Assessment Boschendal Estate Faunal Opportunities and Constraints, WC, SA.
- 2019-Ganspan-Pan Wetland Reserve Recreational and Tourist Development Avifaunal Impact Assessment, NC, SA.
- 2018-City of Johannesburg Municipal Reserve Proclamation for Linksfield Ridge and Northcliff Hill Faunal Assessment, South Africa.
- 2017-Augrabies falls hydro-electric project Hydro-SA Faunal Impact Assessment.
- Port St Johns Second Beach Coastal Infrastructure Project (EIA), South Africa.
- Woodbridge Island Revetment checklist.
- Belmont Valley Golf Course and Makana Residential Estate (EIA)
- Belton Farm Eco Estate (BA).
- Ramotshere housing development (BA).
- G7 Brandvalley Wind Energy Project (EIA)
- G7 Rietkloof Wind Energy Project (EIA)
- G7 Brandvalley Powerlines (BA)
- G7 Rietkloof Powerlines (BA)
- Boschendal wine estate Hydro-electric schemes (BA, 24G and WULA)
- Mossel Bay Wind Energy Project (EIA)
- Mossel Bay Powerline (BA) 132kV interconnection
- Inyanda Farm Wind Energy (EIA)
- Middleton Wind Energy (EIA)
- Peddie Wind Energy (EIA)

- Cookhouse Wind Energy Project (EIA)
- Haverfontein Wind Energy Project (EIA)
- Plan 8 Wind Energy Project (EIA)
- Brakkefontein Wind Energy Project (EIA)
- Grassridge Wind Energy Project (EIA) (Coega)
- St Lucia Wind Energy Project (EIA)
- ACSA ECO CT (Lead ECO)
- Enel Paleisheuwel Solar farm (Lead ECO)
- NRA Caledon road upgrade ECO
- Solar Capital DeAar Solar farm annual audits
- Eskom Pinotage substation WUL offset compliance

CONTACT DETAILS

Name	**Nicole Dealtry**
Name of Company	**Biodiversity Africa**
Designation	Senior Botanist
E-mail	nicole@biodiversityafrica.com
Contact Number	+27 (0)81 044 1925
Education	April 2018: Bachelor of Science (BSc) Bontany and Geology December 2018: Bachelor of Science (BSc) Honours (Hons) Botany
Nationality	**South African**
Professional Affiliations	**SACNASP** Pri. Sci. Nat. Botany Reg No. 130289 **IAIAsa** Membership No. 6176 **SAAB:** Member of the South African Association of Botanists
Key areas of expertise	• Terrestrial Biodiversity Specialist Assessments • Plant Species Specialist Assessments • Alien Invasive Management Plans • Plant Search and Rescue Plans • GIS Mapping • Biodiversity Management and Monitoring Plans

PROFILE

Nicole is a Senior Botanical Specialist with over 5 and a half years' experience. She obtained her BSc Honours in Botany (Environmental Management) from Nelson Mandela University (NMU) in December 2018 and holds a BSc Degree in Environmental Management (Cum Laude) from NMU. Nicole is a professional member of the South African Council for Natural Scientific Professionals (SACNASP) (Pri. Sci. Nat. Botany Reg No. 130289), the International Association for Impact Assessment (IAIAsa) (Membership No. 6176), and the South African Association of Botanists.

During her first four years of working, Nicole gained experience as an Ecological Specialist and an Environmental Assessment Practitioner (EAP) undertaking Basic Assessments and assisting with the general Environmental Impact Assessment (EIA) process, including compiling Scoping and Environmental Impact Assessment Reports, Environmental Management Programmes, and managing the Public Participation Process. Nicole went on to specialise in the field of ecology, ensuring compliance with the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity (GN R. 320 of 2020), Plant and Animal Species (GN R. 1150 of 2020), as well as the Species Environmental Assessment Guidelines (SANBI, 2020).

Nicole has undertaken numerous Ecological Impact Assessments for a range of developments, including Wind Energy Facilities (WEFs), Solar Energy Facilities (SEFs), mines, powerlines, housing developments, and roads and has worked in South Africa, Mozambique and Sierra Leone, working closely with developers and Environmental Assessment Practitioners to ensure these developments are environmentally sustainable, as well as financially and technically feasible. Additionally, she has experience in compiling Alien Invasive Species Management Plans, Ecosystem Services Assessments, Rehabilitation and Restoration Plans, Plant Search and Rescue Plans, performing ecological walk-through assessments, and obtaining permits for plant removal and translocation. Some of these assessments have been conducted in accordance with the IFC's Performance Standards.

EMPLOYMENT EXPERIENCE

Botanical Specialist, Biodiversity Africa

March 2023 – present

- Terrestrial Biodiversity Impact Assessments
- Plant Species Specialist Assessments
- Alien Management Plans
- Plant Search and Rescue Plans
- Ecological Walk-through/micro-siting Assessments
- Assistant for Animal Species Specialist
- GIS Mapping
- Ecosystem Services Assessments

Environmental Consultant and Botanical Specialist, Coastal and Environmental Services (CES)

07 January 2019 – February 2023

- Basic Assessments
- Scoping and Environmental Impact Assessments
- Environmental Management Programmes (EMPrs)
- Ecological Impact Assessments
- Botanical Micro-siting
- GIS Mapping
- Public Participation
- Environmental Auditing/Compliance Monitoring

ACADEMIC QUALIFICATIONS

Nelson Mandela University, Port Elizabeth

BSc Honours Botany (Environmental Management)

2018

Nelson Mandela Metropolitan University, Port Elizabeth

BSc Environmental Sciences

2015-2017

RECENT CONSULTING EXPERIENCE

Ecological Impact Assessments and Related Work

- **2024**: Ecological Baseline and Sensitivity Screening Assessment Report for The Proposed Dunoon and Doornbach Stormwater Master Plan, City Of Cape Town, Western Cape Province (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024**: Terrestrial Biodiversity, Plant and Animal Species Site Sensitivity Verification (SSV) Reports (x6) for the proposed Mokolo Solar 1-6 Photovoltaic Solar Energy Facilities and Associated Infrastructure Near Lephalale, Limpopo Province (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024**: Terrestrial Biodiversity, Plant and Animal Species Compliance Statement Reports (x6) for the Proposed Mokolo Solar 1-6 Photovoltaic Solar Energy Facilities and Associated Infrastructure Located Near Lephalale, Limpopo Province (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024**: Terrestrial Biodiversity, Plant and Animal Species Specialist Assessment Report for The Proposed House Naidoo Located Near Rooi-Els, Western Cape Province (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024**: Terrestrial Biodiversity, Plant and Animal Species Site Sensitivity Verification (SSV) Report for the Proposed Electrical Grid Infrastructure (EGI) Corridor near Lephalale, Limpopo Province (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024**: Terrestrial Biodiversity, Plant and Animal Species Site Sensitivity Verification (SSV) Report for the Proposed Lephalale Solar Pv Facility, Limpopo Province (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024**: Terrestrial Biodiversity, Plant and Animal Species Site Sensitivity Verification (SSV) Report for a proposed WEF located near Kareedouw, Eastern Cape Province (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024**: Terrestrial Biodiversity, Plant and Animal Species Compliance Statement Report for the Proposed Mixed Development on Erf 139, Zandhoogte, Located Near Groot Brakrivier, Western Cape Province (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024**: Terrestrial Biodiversity Compliance Statement for the proposed Wild Olive Chicken Farm near Tulbagh, Western Cape Province (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024:** Terrestrial Animal Species Compliance Statement for the Proposed Bushmanskrantz Water Treatment Works and Associated Infrastructure (Role: Lead Report Writer).
- **2024:** Louis Fourie Corridor Mixed-Use Development Terrestrial Animal Species Specialist Assessment Report (Role: Report Review and Update).
- **2024**: Ecological Baseline and Sensitivity Screening Assessment Report for The Proposed Elsieskraal River Corridor Plan, City Of Cape Town, Western Cape Province (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024**: Terrestrial Biodiversity, Plant and Animal Species Compliance Statement for the Proposed Kany Wine Farm Development near Stellenbosch, Western Cape Province (Role: Lead Report Writer and GIS).
- **2024**: Terrestrial Biodiversity, Plant and Animal Species Site Sensitivity Verification Report for the proposed 1000 MW Liquified Natural Gas (LNG) To Power Plant; LNG Storage and Regassification Facility, Overhead Electrical Transmission Line, And Associated Infrastructure Across Various Farm Portions, Saldanha, Western Cape (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024**: Terrestrial Biodiversity, Plant and Animal Species Site Sensitivity Verification Report for the Proposed Development of A 100 MW Liquified Petroleum Gas (LPG)–To–Power Facility, Overhead Electricity Transmission

Line And Associated Infrastructure Across Various Farm Portions, Saldanha, Western Cape (Role: Project management, Lead Report Writer, GIS, and field survey).

- **2024**: Terrestrial Biodiversity, Plant and Animal Species Site Sensitivity Verification Report the Proposed Development of a Liquified Petroleum Gas (LPG)–To–Power Facility, Overhead Electricity Transmission Line And Associated Infrastructure Across Various Farm Portions (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2024**: Alien Invasive Plant Management Plan for The Kudusberg Wind Energy Facility Near Sutherland, Northern Cape and Western Cape Province (Role: Lead Report Writer and Field Survey).
- **2024**: Plant Rescue and Protection Plan for the Kudusberg Wind Energy Facility and Associated Infrastructure (Role: Lead Report Writer and Field Survey).
- **2024**: Alien Invasive Plant Management Plan for the Rondekop Wind Energy Facility Near Sutherland, Northern Cape Province (Role: Lead Report Writer and Field Survey).
- **2024:** Plant Rescue and Protection Plan for the Rondekop Wind Energy Facility Near Sutherland, Northern Cape Province (Role: Lead Report Writer and Field Survey).
- **2023**: Ecological Screening Assessment for The Proposed Development of Erf 4833 And Erf 4831 In Hermanus, Western Cape (Role: Lead Report Writer and GIS).
- **2023**: Terrestrial Ecological Compliance Statement for Erf 7105 And 7131, Bellville, Cape Town, Western Cape Province (Role: Project management, Lead Report Writer, GIS, and field survey).
- **2023**: Ecosystem Services Assessment Report for The Karreebosch Wind Energy Facility and Electrical Gridline Infrastructure, Northern Cape and Western Cape Provinces, South Africa (Role: Lead Report Writer).
- **2023**: Alien invasive Management Plan for Portion 31 of Klipheuvel Farm No. 143 located along the banks of the Kleinbrak River, in the Western Cape Province (Role: Lead Report Writer and GIS).
- **2023**: Botanical Specialist Input regarding the Suitability of Biodiversity Offset Sites for the proposed Nordex Concrete Tower Manufacturing Facility near Jeffreys Bay, Eastern Cape Province (Role: Site Visit and Author).
- **2023**: Terrestrial Ecological Compliance Statement For The Proposed Cape Flats Wastewater Treatment Works (Wwtw) Upgrade, Situated In Cape Town, Western Cape (Role: Lead Report Writer, GIS, and field survey).
- **2023**: Terrestrial Ecological Compliance Statement for The Proposed Landsdowne Housing Development on Erf 62594, Cape Town, Western Cape Province (Role: Lead Report Writer, GIS, and field survey).
- **2023**: Terrestrial Plant Species Specialist Assessment Report for The Proposed Plettenberg Bay Lagoon Residential Estate, Western Cape Province (Role: Lead Report Writer, GIS, and field survey).
- **2023**: Terrestrial Biodiversity Compliance Statement for The Proposed Plettenberg Bay Lagoon Residential Estate (Role: Lead Report Writer, GIS, and field survey).
- **2023**: Method Statement for the Translocation of the Cape Dwarf Chameleon (*Bradypodion pumilum*) (Role: Lead Report Writer).

Older:

- ZMY Steel Traders (Pty) Ltd., Steel Recycling Plant, Zone 5 of the Coega SEZ, Eastern Cape Province (Role: Ecological Specialist and Ecological Chapter Writer).
- Ecological Impact Assessment for the proposed Kareekrans Boerdery Agricultural Development near Kirkwood Eastern Cape Province (Role: Botanical specialist and Lead Report Writer).

- Ecological Impact Assessment for the proposed Sitrusrand Dwarsleegte Farm Citrus Development near Kirkwood, Eastern Cape Province – Ecological Impact Assessment and Report Writing (Role: Botanical Specialist and Lead Report Writer).
- Ecological Impact Assessment for the proposed Uitsig Boerdery Trust Citrus Development near Kirkwood, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Ground Truthing Survey for *Aloe bowiea* on Portion 2 of Farm 683 for the proposed Uitsig Boerdery Trust Citrus Development near Kirkwood, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Mosselbankfontein Coastal Dune and Ecological Impact Assessment near Witsand, Western Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Mangrove Forest Survey for the Kenmare Biodiversity Management Plan, Topuito, Mozambique (Role: Botanical Specialist and Lead Report Writer).
- Ecological Impact Assessment for the proposed Refele Village Sports Facility, Mount Fletcher, Elundini Local Municipality, Eastern Cape Province of South Africa (Role: Lead Report Writer).
- Ecological Impact Assessment for the proposed Hamburg Quarry Expansion, R72, Ngqushwa Local Municipality (Role: Lead Report Writer).
- Ecological Opinion and Site Sensitivity Report for the proposed Woodlands Dairy 22kV Overhead Line near Humandsdorp, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Ecological Impact Assessment Report for the proposed Edendale Quarry, R56, Matatiele Local Municipality, Eastern Cape Province (Role: Report Writer).
- Ecological Impact Assessment for the proposed TWFT Piggery near Tsitsikamma, Koukama Local Municipality, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Ecological Impact Assessment for the proposed Oudtshoorn Cemetery Expansion, Oudtshoorn Local Municipality, Western Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Tyolomnqa River Estuary Situation Assessment (Role: Assistant Report Writer).
- Ecological Opinion Letter for the Proposed Umsobomvu Infrastructure Development, Eastern and Northern Cape Provinces (DEFF Reference Number: 14/12/16/3/3/1/2040) (Role: Report Writer).
- Ecological Opinion Letter for the Proposed Coleskop Infrastructure Development, Eastern and Northern Cape Provinces (DEFF Reference Number: 14/12/16/3/3/1/2039) (Role: Report Writer).
- Quinera Estuary Draft Situation Assessment Report (Role: Report Writer).
- Ecological Impact Assessment for the Proposed Umoyilanga 132 kV Overhead Line in the Sundays River Valley Local Municipality and the Nelson Mandela Bay Municipality, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Ecological Impact Assessment for the Proposed Umoyilanga Ancillary Infrastructure near Uitenhage, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Ecological Impact Assessment Report for the proposed Marine Servitude Project, Zone 10, Coega SEZ, Eastern Cape Province, South Africa (Role: Botanical Specialist and Lead Report Writer).
- Botanical Micro-siting Report for the proposed Umoyilanga 132 kV Overhead Line in the Sundays River Valley Local Municipality and the Nelson Mandela Bay Municipality, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Botanical Micro-siting Report for the Proposed Dassiesridge (Umoyilanga) Wind Energy Facility near Uitenhage, Nelson Mandela Bay Municipality and Sundays River Valley Local Municipality, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).

- Ecological Screening Report for the Proposed Hlaziya 400-132 kV Powerline Project (the MTS Integration Project) from close to Jeffrey's Bay to Grassridge, near the Coega Sez, Eastern Cape Province (Role: Lead Report Writer).
- Ecological Impact Assessment for the proposed Umsobomvu Substation, Concrete Tower Manufacturing Facilities and Temporary Laydown Area, situated in the Umsobomvu Local Municipality (Northern Cape Province) and the Inxuba Yethemba Local Municipality (Eastern Cape Province) (Role: Botanical Specialist and Lead Report Writer).
- Botanical Micro-siting Report for the Eskom Infrastructure MTS situated in the Umsobomvu Local Municipality (Northern Cape Province) (Role: Botanical Specialist and Lead Report Writer).
- Botanical Micro-siting Report for the Proposed Coleskop Wind Energy Facility situated in the Umsobomvu Local Municipality (Northern Cape Province) and the Inxuba Yethemba Local Municipality (Eastern Cape Province) (Role: Botanical Specialist and Lead Report Writer).
- Botanical Micro-siting Report for the Proposed Umsobomvu Wind Energy Facility situated in the Umsobomvu Local Municipality (Northern Cape Province) and the Inxuba Yethemba Local Municipality (Eastern Cape Province) (Role: Botanical Specialist and Lead Report Writer).
- Ecological Impact Assessment for the Proposed Ganspan Pering 132 kV Overhead Line near Pampierstand, North West and Northern Cape Provinces (Role: Botanical Specialist and Lead Report Writer).
- Botanical Micro-Siting Investigation for the R342 Road Upgrade Between Paterson and Addo, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Terrestrial Biodiversity Compliance Statement for the proposed Stedin College, Walmer, Nelson Mandela Bay Municipality, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Ecological Impact Assessment Report for a proposed Hippo Enclosure on Glen Boyd Farm, Makana Local Municipality, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Ecological Impact Assessment for the Proposed Senqu Rural Water Supply Scheme, Joe Gqabi District Municipality, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Environmental Management Site Specification for the Rehabilitation of Land within the Coastal Dune System Impacted by the Zone 10 Services Project, Coega SEZ, Eastern Cape Province (Role: Site Visit and Assistant Report Writer).
- Botanical Assessment Report for the proposed Agricultural Development on the Remainder of Erf 60845, Zone 1, East London Industrial Development Zone, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Botanical Impact Assessment for the proposed FG Gold Limited Baomahun Gold Project, Sierra Leone (Role: Botanical Specialist and Lead Report Writer).
- Biodiversity Management Plan for the proposed FG Gold Limited Baomahun Gold Project, Sierra Leone (Role: Lead Report Writer).
- Ecological Baseline Assessment for the proposed Jeffreys Bay Eco-Estate, Eastern Cape Province (Role: Botanical Specialist and Co-Author).
- Ecological Impact Assessment for the proposed Mulilo Newcastle Wind Energy Facility, KwaZulu-Natal Province (Role: Botanical Specialist and Assistant Report Writer).
- Ecological Impact Assessment for the proposed Ngxwabangu Wind Energy Facility and Grid Connection near Cofimvaba, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).
- Ecological Impact Assessment for the proposed Umoyilanga Buffer Yard, Site Camp and Site Camp Access Road near Uitenhage, Nelson Mandela Bay Municipality and Sundays River Valley Local Municipality, Eastern Cape Province (Role: Botanical Specialist and Lead Report Writer).

- Terrestrial Biodiversity Compliance Statement for the proposed Reverse Osmosis Plant for the Matla Power Station near Kriel, Mpumalanga Province (Role: Lead Report Writer).
- Ecological Impact Assessment for the proposed Great Kei Ancillary Infrastructure located near Komga, Eastern Cape Province.

Basic Assessments

- Basic Assessment Report (BAR) for the proposed Duyker Island Prospecting Right, North West Province (Role: Assistant Report Writer).
- Basic Assessment Report (BAR) for the proposed Fairview Sand Mine near Port Alfred, Eastern Cape Province (Role: Report Writer).
- Basic Assessment Report (BAR) for the proposed Kareekrans Boerdery Agricultural Development near Kirkwood, Eastern Cape Province (Role: Report Writer).
- Basic Assessment Report (BAR) for the proposed Sitrusrand Dwarsleegte Farm Citrus Development near Kirkwood, Eastern Cape Province (Role: Report Writer).
- Basic Assessment Report (BAR) for the Proposed Private Jetty in Bushman's Estuary near Kenton-On-Sea, within the Eastern Cape Province (Role: Report Writer).

Environmental Auditing

- Khayamnandi Extension on Erven 114, 609, 590 and 24337, Bethelsdorp, within the Nelson Mandela Bay Municipality;
- Aberdeen Bulk Water Supply Phase 2, Dr Beyers Naude Local Municipality, Eastern Cape Province, South Africa;
- The Milkwoods Integrated Residential Development, Remainder Erf 1953, Victoria Drive, Walmer, Nelson Mandela Bay Municipality, Eastern Cape Province;
- Fishwater Flats Wastewater Treatment Works Refurbishment, Nelson Mandela Bay Municipality, Eastern Cape Province;
- The Refurbishment of the Kwanobuhle Wastewater Treatment Plant, Nelson Mandela Bay Municipality, Eastern Cape Province, South Africa; and
- Driftsands Sewer Collector Augmentation (Phase Ii), Within the Nelson Mandela Bay Municipality, Eastern Cape Province.

Public Participation process

- Duyker Island Prospecting Right, North West Province St Francis Coastal Protection Scheme.
- Fairview Sand Mine near Port Alfred, Eastern Cape Province.
- Kareekrans Boerdery Agricultural Development near Kirkwood Eastern Cape Province,
- Proposed Coastal Protection Scheme, St Francis Bay, Kouga Local Municipality, Eastern Cape Province; and
- Sitrusrand Dwarsleegte Farm Citrus Development near Kirkwood, Eastern Cape Province.
- Marine Intake and Outfall Infrastructure Servitude Project, Zone 10, Coega SEZ, Eastern Cape Province, South Africa.
- Proposed Hlaziya 400-132 kV Powerline Project (the MTS Integration Project) from close to Jeffrey's Bay to Grassridge, near the Coega Sez, Eastern Cape Province.

Social Auditing

- Malawi Millennium Development Trust – Resettlement Action Plan Implementation Auditing.