AVIFAUNA IMPACT ASSESSMENT– LANGSIDE RENEWABLE ENERGY FACILITY

Komani, Eastern Cape Province

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CLIENT

Prepared by:

The Biodiversity Company

Cell: +27 81 319 1225

Fax: +27 86 527 1965

info@thebiodiversitycompany.com

wwww.thebiodiversitycompany.com

Report Name	**AVIFAUNA IMPACT ASSESSMENT– LANGSIDE RENEWABLE ENERGY FACILITY**
Submitted to	
Fieldwork	**Daniel Meintjes** Daniel Meintjes obtained his B.Sc. Honours (*Cum Laude*) degree in Geography at the University of Johannesburg. Daniel has been conducting EIA's, Basic Assessments and Terrestrial Biodiversity Surveys since 2020.
Report Writing & Fieldwork	**Ryno Kemp** Ryno Kemp is Pr Sci Nat registered (117462/17) in Zoological Science and is finalising his PhD in Zoology from the University of Pretoria. Ryno is a qualified Avifauna specialist with just over year's experience, three years of experience in conservation and more than eight years of scientific research experience across South Africa.
Report Reviewer	**Lindi Steyn** Dr Lindi Steyn has completed her PhD in Biodiversity and Conservation from the University of Johannesburg. Lindi is a terrestrial ecologist with a special interest in ornithology. She has completed numerous studies ranging from Basic Assessments to Environmental Impact Assessments following IFC standards.
Report Reviewer	**Andrew Husted** Andrew Husted is Pr Sci Nat registered (400213/11) in the following fields of practice: Ecological Science, Environmental Science and Aquatic Science. Andrew is an Aquatic, Wetland and Biodiversity Specialist with more than 12 years' experience in the environmental consulting field.
Declaration	The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, 2017. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principals of science.

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List of Acronyms and Abbreviations

%	**Percent**
ADU	Animal Demography Unit
BESS	Battery Energy Storage System
BI	Biodiversity Importance
CAR	Coordinated Avifaunal Roadcounts
CBA	Critical Biodiversity Area
CI	Conservation Importance
CR	Critically Endangered
CWAC	Coordinated Waterbird Counts
DC	Direct Current
EAP	Environmental Assessment Practitioner
EGI	Electricity Grid Infrastructure
EI	Ecological Importance
EIA	Environmental Impact Assessment
EMPr	Environmental Management Plan report
EN	Endangered
EOO	Extent of occurrence
ESA	Ecological Support Area
EWT	Endangered Wildlife Trust
FFG	Functional Feeding Guild
FI	Functional Integrity
GIS	Geographic Information Systems
ha	hectares
IBA	Important Bird and Biodiversity Area
KBA	Key Biodiversity Area
km	kilometres
kV	kilo Volt
LC	Least Concern
m	metres
m^2	square metres
MTS	Main Transmission Substation
MW	Mega Watt
NBA	National Biodiversity Assessment
NEMA	National Environmental Management Act
NFEPA	National Freshwater Ecosystem priority Areas
NPAES	National Protected Areas Expansion Strategy
NT	Near Threatened
ONA	Other Natural Areas
PAOI	Project Area of Influence
PV	Photo Voltaic
REDZ	Renewable Energy Development Zones
REEA	Renewable Energy EIA Application
RR	Receptor Resilience
SABAP2	South African Bird Atlas Project 2
SACAD	South African Conservation Areas Database
SAIIAE	South African Inventory of Inland Aquatic Ecosystems
SANBI	South African National Biodiversity Institute
SAPAD	South African Protected Areas Database
SCC	Species of Conservation Concern
SEI	Site ecological Importance
TBC	The Biodiversity Company
V	Volt
VU	Vulnerable

1 Introduction

1.1 Background

The Biodiversity Company was appointed to undertake an avifauna baseline and impact assessment for the proposed Photovoltaic (PV) Solar Facility on the Farm Langside near Queenstown, Eastern Cape (Figure 1-1).

The National Web-based Environmental Screening Tool (Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended) indicated that the Animal Species Theme Sensitivity was rated as 'medium' due to the possible presence of Species of Conservation Concern (see section 2.2 of this report for the definition), including avifauna species. Accordingly, The Biodiversity Company was sub-contracted to undertake an Avifauna Impact Assessment to inform on the impact of the proposed PV to the avifauna community within the receiving environment. The approach was informed by the Environmental Impact Assessment Regulations. 2014 (GNR 326, 7 April 2017) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The approach has taken cognisance of the recently published Government Notices 320 (20 March 2020 amended 28 July 2023) in terms of NEMA, dated 20 March, 30 October 2020 and 28 July 2023: "*Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation*" (Reporting Criteria). Based on the size of the photovoltaic (PV) project and the associated risks, a Regime 2 assessment was undertaken.

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

A map of the project area in relation to the local region is presented in Figure 1-1, and a map of the project area with the proposed site layout is presented in Figure 1-2.

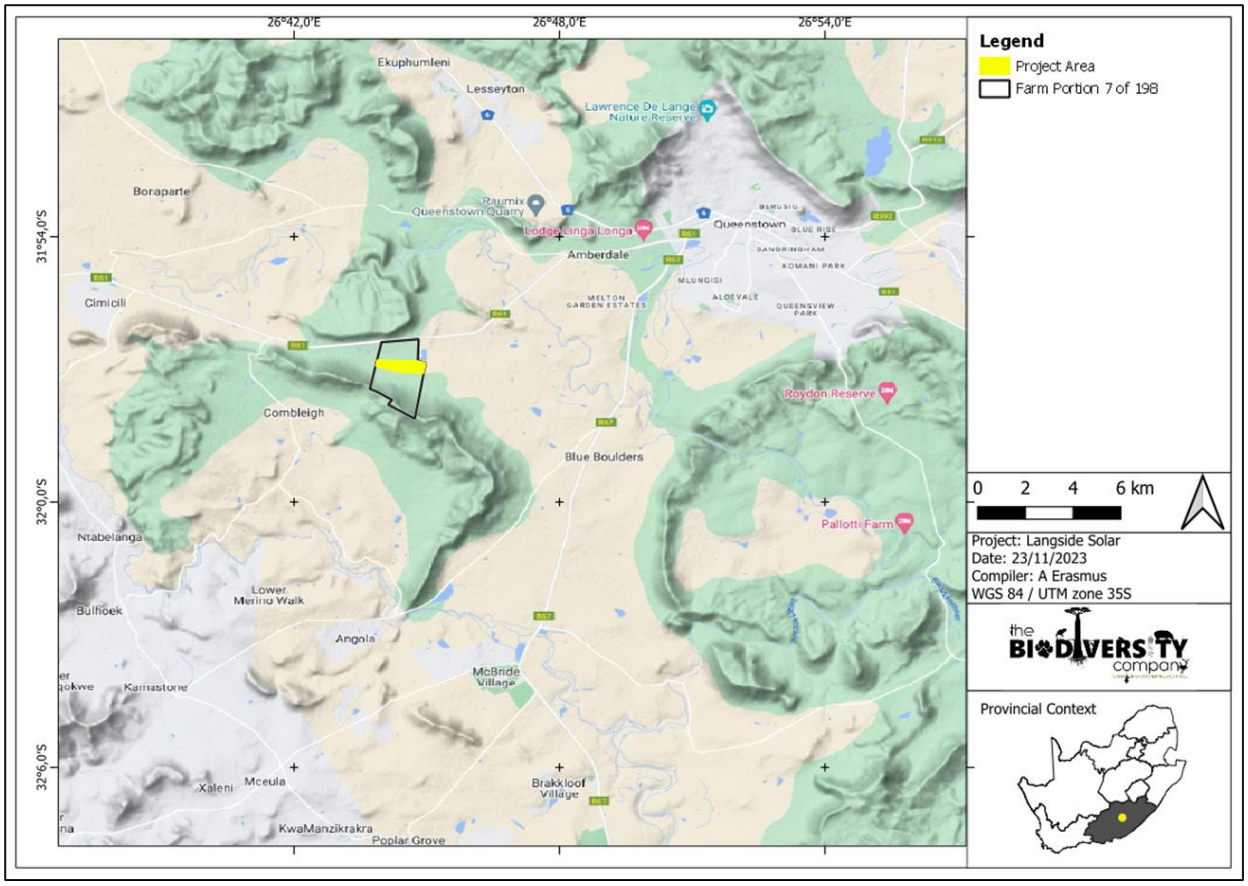


Figure 1-1 Proposed Solar PV project

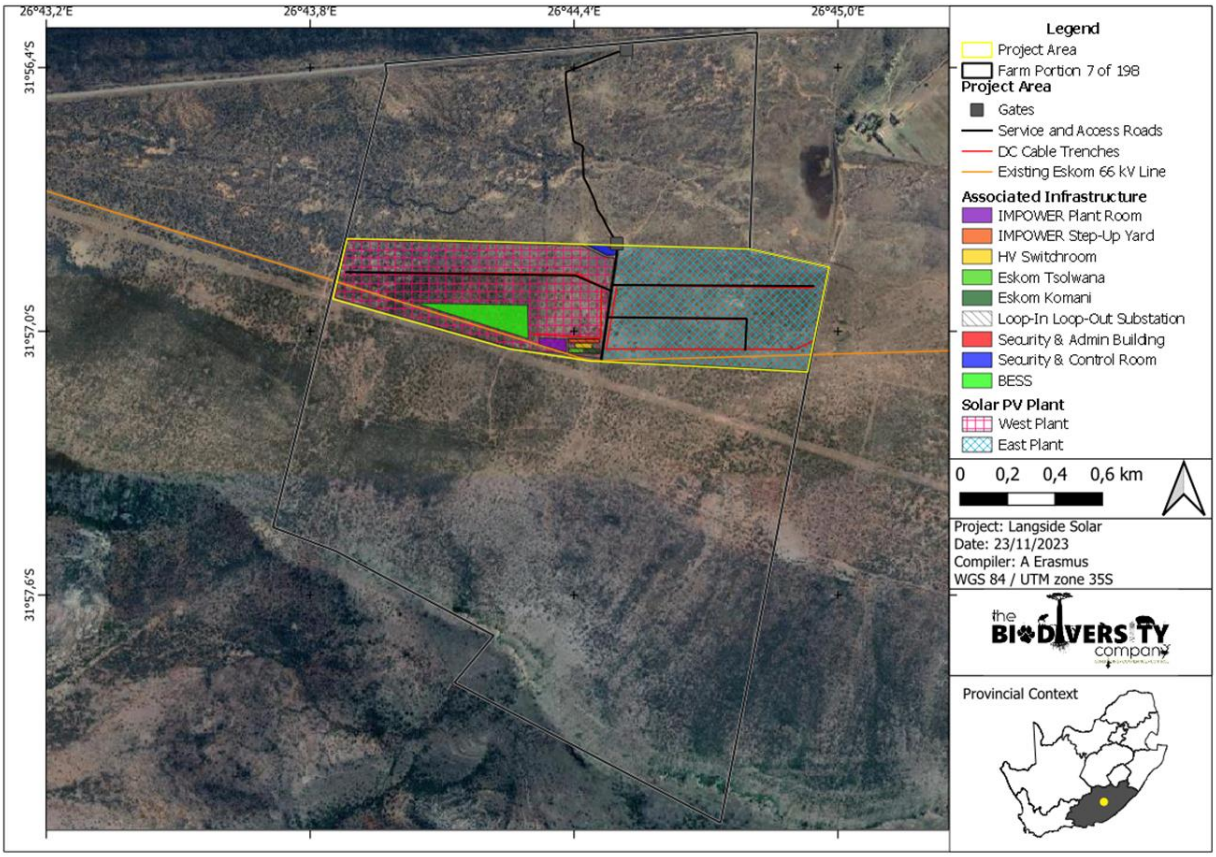


Figure 1-2 Map illustrating the location of the proposed PV Project and associated infrastructure.

1.2 Terms of Reference

The assessment was achieved under the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Section 24(5) (a) and (h) and 44 of NEMA ("the Protocols") promulgated in GN No. 320 of 20 March 2020. Where no specific environmental theme protocol has been prescribed, the level of assessment must be based on the findings of the site verification. It must comply with Appendix 6 of the EIA Regulations of 2014 (as amended), and the best-practice guidelines and principles for Avifaunal Impact Assessments within the context of PVs as outlined by BirdLife South Africa (2017).

The scope of the Avifaunal Impact Assessment included the following:

- Desktop assessment to identify the relevant ecologically important geographical features within the Project Area of Influence (PAOI) and surrounding landscape;
- Desktop assessment to compile an expected species list and possible avifauna Species of Conservation Concern (SCC) that potentially occur within the PAOI;
- Description of the baseline avifauna species and Functional Feeding Guild (FFG) composition assemblage within the PAOI;
- A field assessment was conducted to determine the species composition and densities;
- Delineate site sensitivity or sensitivities i.e., the Site Ecological Importance (SEI) within the context of the avifauna species assemblage of the PAOI;

- Identify the manner that the proposed development impacts the avifauna community and evaluate the level of risk of these potential impacts; and

- Additional data outside the PAOI was added to obtain a more comprehensive understanding of the avifauna community within the area.

1.3 Assumptions and Limitations

The following assumptions and limitations should be noted for the assessment:

- The proposed project area, and was delineated to provide the Project Area of influence (PAOI). See section 2.1 of this report for additional details. Any alterations to the area and/or missing Geographic Information Systems (GIS) information pertaining to the assessment area would have affected the area surveyed and hence the results of this assessment;

- Two site visits were conducted for this regime 2 [1]assessment. The first was conducted in summer, over 1 day on 18 October 2022 and the second summer survey, over 1 day on 19th October 2023. However, no point counts were conducted during the first survey. The second survey covered the entire proposed area. Although it is different from the recommended surveying technique as described, the specialist does believe these two site visits are considered sufficient from a seasonal perspective and require no additional season assessment;

- Whilst every effort was made to cover as much of the PAOI as possible, it is possible that some species that are present within the PAOI were not recorded during the field investigations due to their secretive behaviour; and

- The GPS used in the assessment has an accuracy of 5 m, and consequently, any spatial features delineated may be offset by up to 5 m.

1.4 Key Legislative Requirements

The legislation, policies and guidelines listed below in Table 1-1 are applicable to the proposed project. The list below, although extensive, may not be complete and other legislation, policies and guidelines may apply in addition to those listed below.

Table 1-1 A list of key legislative requirements relevant to biodiversity and conservation in the Eastern Cape Province

Region	Legislation / Guideline
	Constitution of the Republic of South Africa (Act No. 108 of 1996)
	The National Environmental Management Act (NEMA) (Act No. 107 of 1998)
	The National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
	The National Environmental Management: Biodiversity Act (Act No. 10 of 2004), Threatened or Protected Species Regulations
	Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, GNR 320 of Government Gazette 43310 (March 2020)
	Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, GNR 1150 of Government Gazette 43855 (October 2020)
	The National Environmental Management: Waste Act, 2008 (Act 59 of 2008);
	The Environment Conservation Act (Act No. 73 of 1989)
	National Protected Areas Expansion Strategy (NPAES)

[1] In terms of the Birdlife SA Birds and Solar Energy Best Practice Guidelines 2017

Region	Legislation / Guideline
	Natural Scientific Professions Act (Act No. 27 of 2003)
	National Biodiversity Framework (NBF, 2009)
	National Forest Act (Act No. 84 of 1998)
	National Veld and Forest Fire Act (101 of 1998)
	National Water Act (NWA) (Act No. 36 of 1998)
	National Spatial Biodiversity Assessment (NSBA)
	World Heritage Convention Act (Act No. 49 of 1999)
	Municipal Systems Act (Act No. 32 of 2000)
	Alien and Invasive Species Regulations and, Alien and Invasive Species List 20142020, published under NEMBA
	South Africa's National Biodiversity Strategy and Action Plan (NBSAP)
	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA)
	Sustainable Utilisation of Agricultural Resources (Draft Legislation).
	White Paper on Biodiversity
Provincial	Eastern Cape Environmental Management Bill, in terms of Rule 147 (2019)
	Transkei Environmental Conservation Decree 9 of 1992
	Eastern Cape Biodiversity Conservation Plan (ECBCP) (2019)

2 Definitions

2.1 Project Area of Influence (PAOI)

The Project Area of Influence (PAOI) encompasses the geographical extent of the potential impacts of the proposed development on the receiving environment. Essentially, the PAOI is defined according to the important ecosystem processes and functions that may be plausibly affected by the proposed development and its associated activities.

2.2 Species of Conservation Concern (SCC)

According to the National Red List of South African Plants website, managed and maintained by the South African National Biodiversity Institute (SANBI), a Species of Conservation Concern (SCC) is a species with high conservation importance in terms of preserving South Africa's rich biodiversity. This classification covers a range of conservation status categories, as illustrated in Figure 2-1.

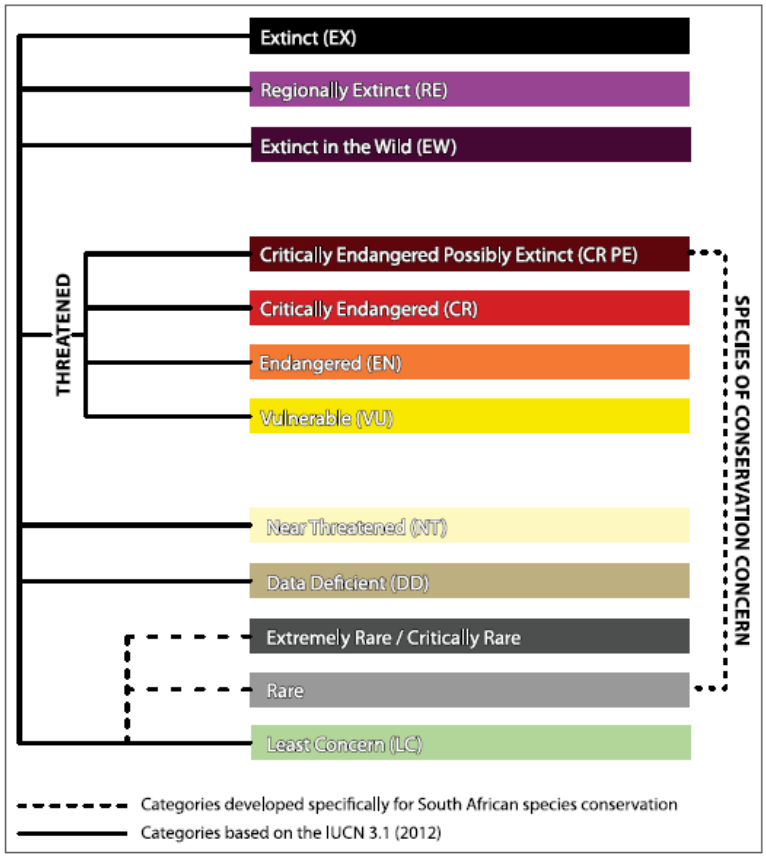


Figure 2-1 The different Species of Conservation Concern categories were modified from the IUCN's extinction risk categories. Source: SANBI (2020)

South Africa uses the internationally endorsed International Union for Conservation of Nature (IUCN) Red List Categories and Criteria (IUCN, 2021). This scientific system is designed to measure species' risk of extinction, and its purpose is to highlight those species that are in need of critical conservation action. As this system has been adopted from the IUCN, the definition of an SCC as described and categorised above is extended to all red list classifications relevant to fauna and the IUCN categories for this report.

2.3 Risk Species

Priority species are susceptible to impacts from energy developments (Ralston Paton *et al.* 2017). These species are typically susceptible to collisions. This list was initially developed for use with Wind Energy Facilities (Ralston Paton *et al.* 2017); however, the collision, electrocution and habitat loss risks are

considered appropriate for renewable energy developments and re-utilised here. Also utilised here is the Eskom and Endangered Wildlife Trust (EWT) poster: Birds and Powerlines (Eskom & EWT, no date), identifying birds most prone to collision and electrocution from powerlines. Some birds are not included in these lists but are considered by the TBC avifauna specialists as risk species for collisions, electrocutions and habitat loss as a result of Solar PV infrastructure. All species are referred to collectively in this report as “Risk Species”.

3 Methods

3.1 Desktop Assessment

The desktop assessment was principally undertaken using GIS to access the latest available spatial datasets to develop digital cartographs and species lists. These datasets and their date of publishing are provided below.

3.1.1 Ecologically Important Landscape Features

Existing ecologically relevant data layers were incorporated into GIS to establish how the proposed development might interact with any ecologically important entities. Emphasis was placed around the following spatial datasets:

- Protected areas:
    - South Africa Protected Areas Database (SAPAD) (DFFE, 2023) – The South African Protected Areas Database (SAPAD) contains spatial data for the conservation of South Africa. It includes spatial and attribute information for both formally protected areas and areas that have less formal protection. SAPAD is updated on a continuous basis and forms the basis for the Register of Protected Areas which is a legislative requirement under the National Environmental Management: Protected Areas Act, Act 57 of 2003.
    - National Protected Areas Expansion Strategy (NPAES) (DFFE, 2021) – The National Protected Area Expansion Strategy (NPAES) provides spatial information on areas that are suitable for terrestrial ecosystem protection. These focus areas are large, intact and unfragmented and are therefore, of high importance for biodiversity, climate resilience and freshwater protection.
- Important Bird and Biodiversity Areas (BirdLife South Africa, 2022) – Important Bird and Biodiversity Areas (IBAs) constitute a global network of over 13 500 sites, of which 112 sites are found in South Africa. IBAs are sites of global significance for bird conservation, identified through multi-stakeholder processes using globally standardised, quantitative and scientifically agreed criteria;
- Eastern Cape Biodiversity Plan - The Biodiversity Conservation Plan classifies areas within the province on the basis of their contributions to reaching the associated conservation targets within the province. These areas are primarily classified as either Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs). These biodiversity priority areas, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species, as well as the long-term ecological functioning of the landscape as a whole.
    - Critical Biodiversity Area 1 (CBA1);
    - Critical Biodiversity Area 2 (CBA2);
    - Ecological Support Area 1 (ESA1);
    - Ecological Support Area 2 (ESA2);

- Other;
- Degraded; and
- Protected Area (PA).
- Hydrological Context

- South African Inventory of Inland Aquatic Ecosystems (SAIIAE) (Van Deventer *et al.,* 2018) – A South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was established during the National Biodiversity Assessment of 2018. It is a collection of data layers that represent the extent of river and inland wetland ecosystem types as well as pressures on these systems.
    - Strategic Water Source Areas (SWSAs) (Le Maitre *et al,* 2021) – SWSAs are defined as areas of land that supply a quantity of mean annual surface water runoff in relation to their size and therefore, contribute considerably to the overall water supply of the country. These are key ecological infrastructure assets and the effective protection of surface water SWSAs areas is vital for national security because a lack of water security will compromise national security and human wellbeing.

- National Freshwater Ecosystem Priority Area (NFEPA) (Nel *et al.,* 2011) – The NFEPA database provides strategic spatial priorities for conserving the country's freshwater ecosystems and associated biodiversity as well as supporting sustainable use of water resources.

3.1.2 Expected Avifauna Species

The following resources were considered during the desktop assessment and for the compilation of the expected species list:

- South African Bird Atlas Project 2 (SABAP2). Full protocol data from 9 relevant pentads (3150_2640, 3150_2645, 3150_2650, 3155_2640, 3155_2645, 3155_2650, 3200_2640, 3200_2645, 3200_2650) were used to compile the expected species list;

- Coordinated Water Bird Counts (CWAC) – The Animal Demography Unit (ADU) launched the Coordinated Waterbird Counts (CWAC) project in 1992 as part of South Africa's commitment to international waterbird conservation. The primary aim of CWAC is to act as an effective long-term waterbird monitoring tool. This is done through a programme of regular mid-summer and mid-winter censuses at several wetlands. The database is located at https://cwac.birdmap.africa/index.php;

- Coordinated Avifaunal Roadcounts (CAR) – The Coordinated Avifaunal Roadcounts (CAR) were pioneered in July 1993 in a joint Cape Bird Club/ADU project to monitor the populations of two threatened species: *Anthropoides paradiseus* (Blue Crane) and *Neotis denhamii* (Denham's Bustard). Presently it monitors 36 species of large terrestrial birds along 350 fixed routes covering over 19 000 km using a standardised method;

- Important Bird and Biodiversity Areas (BirdLife South Africa, 2022) – Important Bird and Biodiversity Areas (IBAs) constitute a global network of over 13 500 sites, of which 112 are found in South Africa. IBAs are sites of global significance for bird conservation, identified through multi-stakeholder processes using globally standardised, quantitative and scientifically agreed criteria;

- Hockey *et al*. (2005), Roberts Birds of Southern Africa (7th edition). The primary source for species identification, geographic range, and life history information;

- Sinclair and Ryan (2010), Birds of Africa South of the Sahara. Secondary source for identification; and

- Taylor *et al*. (2015), Eskom Red Data Book of Birds of South Africa, Lesotho, and Swaziland. Used for conservation status, nomenclature, and taxonomical ordering.

3.2 Field Survey

Two site visits were conducted for this regime 2 assessment. The first was conducted in summer, over 1 day on 18 October 2022 and the second summer survey, over 1 day on 19th October 2023. However, no point counts were conducted during the first survey. The second survey covered the entire proposed area. Although it is different from the recommended surveying technique as described, the specialist does believe these two site visits are considered sufficient from a seasonal perspective and require no additional season assessment.

Sampling consisted of Standardised Point Counts as well as random diurnal incidental surveys. Standardised Point Counts (Buckland et al., 1993) were conducted to gather data on the species composition and relative abundance of species within the broad habitat types identified. The Standardized Point Count technique was utilised as it was demonstrated to outperform line routes (Cumming & Henry, 2019). Each point count was run over 10 minutes. The horizontal detection limit was set at 150 m. At each point, the observer would document the date, start time, and end time, habitat, numbers of each species, detection method (seen or heard), behaviour (perched or flying) and general notes on habitat and nesting suitability for conservation important species. Diurnal and nocturnal incidental searches were conducted to supplement the species inventory with cryptic and elusive species that may not be detected during the rigid point count protocol. This involved opportunistic species sampling between point count periods, random meandering and road cruising. An effort was made to cover all the different habitat types within the limits of time and access (Figure 3-1).

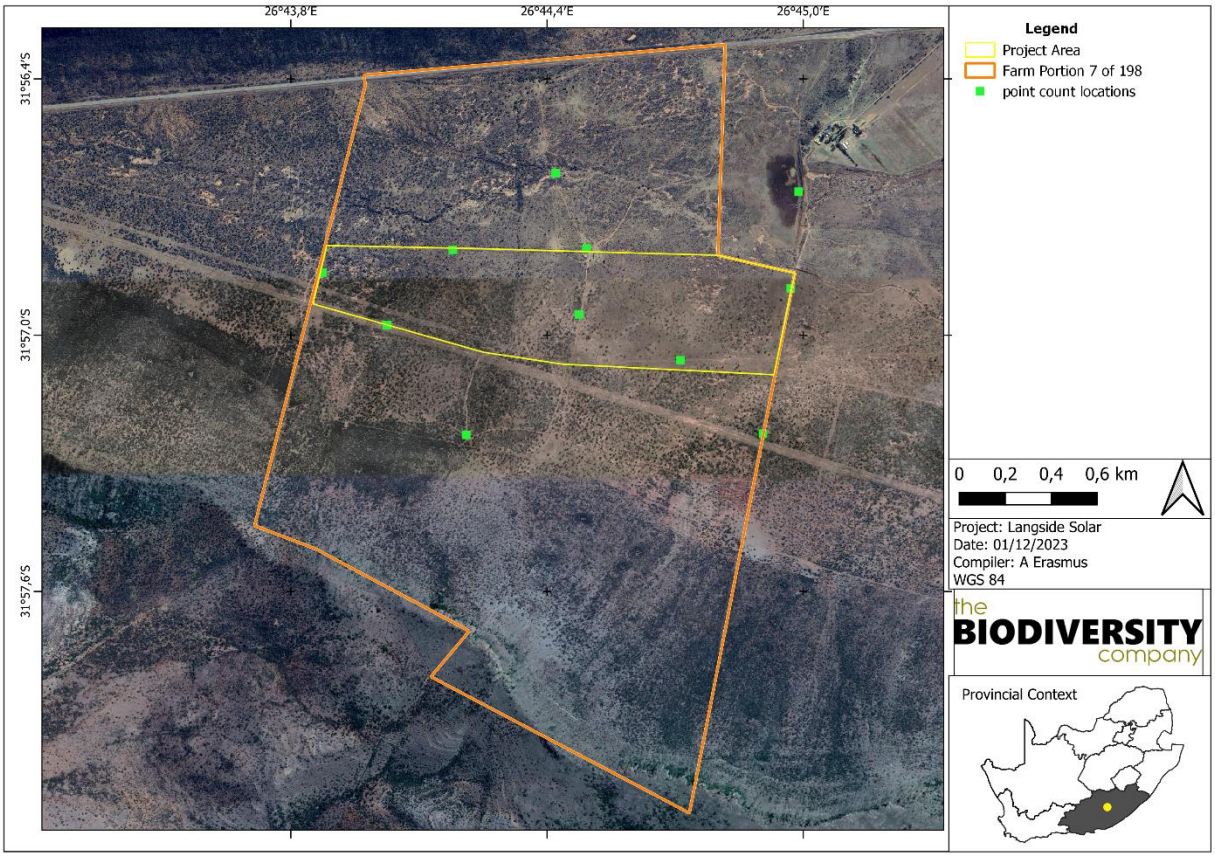


Figure 3-1 Map illustrating the field survey area and locations of Standardised Point Counts used for the analysis in this report

3.3 Data Analysis

The analyses described below only used the data collected from the Standardised Point Counts for this proposed project. However, if there are any distinct differences between the report, it will be highlighted. Raw count data were converted to relative abundance values and used to establish dominant species and calculate the diversity of each habitat. Present and potentially occurring species were assigned to 13 major trophic guilds loosely based on the classification system developed by González-Salazar *et al.* (2014). Species were first classified by their dominant diet (carnivore, herbivore, granivore, frugivore, nectarivore, omnivore), then by the medium upon/within which they most frequently forage (ground, water, foliage, air) and lastly by their activity period (nocturnal or diurnal).

3.4 Site Ecological Importance (SEI)

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

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

BI is a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor as follows. The criteria for the CI and FI ratings are provided in Table 3-1 and Table 3-2, respectively.

Table 3-1 Summary of Conservation Importance (CI) criteria

Conservation Importance	Fulfilling Criteria
Very High	Confirmed or highly likely occurrence of Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Extremely Rare or CR species that have a global extent of occurrence (EOO) of < 10 km^2. Any area of natural habitat of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent) of natural habitat of an EN ecosystem type. Globally significant populations of congregatory species (> 10% of global population).
High	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km^2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A. If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining. Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (> 0.1%) of natural habitat of VU ecosystem type. Presence of Rare species. Globally significant populations of congregatory species (> 1% but < 10% of global population).
Medium	Confirmed or highly likely occurrence of populations of Near Threatened (NT) species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals. Any area of natural habitat of threatened ecosystem type with status of VU. Presence of range-restricted species. > 50% of receptor contains natural habitat with potential to support SCC.
Low	No confirmed or highly likely populations of SCC. No confirmed or highly likely populations of range-restricted species. < 50% of receptor contains natural habitat with limited potential to support SCC.
Very Low	No confirmed and highly unlikely populations of SCC. No confirmed and highly unlikely populations of range-restricted species. No natural habitat remaining.

Table 3-2 Summary of Functional Integrity (FI) criteria

Functional Integrity	Fulfilling Criteria
Very High	Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types. High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. No or minimal current negative ecological impacts, with no signs of major past disturbance.

Functional Integrity	Fulfilling Criteria
High	Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types. Good habitat connectivity, with potentially functional ecological corridors and a regularly used road network between intact habitat patches. Only minor current negative ecological impacts, with no signs of major past disturbance and good rehabilitation potential.
Medium	Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type or > 20 ha for VU ecosystem types. Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches. Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.
Low	Small (> 1 ha but < 5 ha) area. Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy used road network surrounds the area. Low rehabilitation potential. Several minor and major current negative ecological impacts.
Very Low	Very small (< 1 ha) area. No habitat connectivity except for flying species or flora with wind-dispersed seeds. Several major current negative ecological impacts.

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

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

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

The fulfilling criteria to evaluate RR are based on the estimated recovery time required to restore an appreciable portion of functionality to the receptor, as summarised in Table 3-4.

Table 3-4 Summary of Receptor Resilience (RR) criteria

Resilience	Fulfilling Criteria
Very High	Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.
High	Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.
Medium	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.
Low	Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.
Very Low	Habitat that is unable to recover from major impacts, or species that are unlikely to: (i) remain at a site even when a disturbance or impact is occurring, or (ii) return to a site once the disturbance or impact has been removed.

Subsequent to the determination of the BI and RR, the SEI can be ascertained using the matrix as provided in Table 3-5.

Table 3-5 Matrix used to derive Site Ecological Importance from Receptor Resilience (RR) and Biodiversity Importance (BI)

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

Interpretation of the SEI in the context of the proposed project is provided in Table 3-6.

Table 3-6 Guidelines for interpreting Site Ecological Importance in the context of the proposed development activities

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

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

3.5 Environmental Impact Assessment

The environmental assessment aims to identify the various possible environmental impacts that could result from the proposed activity. Different impacts need to be evaluated in terms of its significance and in doing so highlight the most critical issues to be addressed.

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale i.e., site, local, national or global whereas intensity is defined by the severity of the impact e.g., the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in Table 4.1.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

3.5.1 Impact Rating System

The Impact assessment must take account of the nature, scale, duration, extent of impacts on the environment whether such impacts are positive or negative. Each impact is also assessed according to the project phases:

- Planning;
- Construction;
- Operation; and
- Decommissioning.

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance should also be included. The significance of the identified impacts was determined using an accepted methodology from the Department of Environmental Affairs and Tourism Guideline document on EIA Regulations, April 1998. As with all impact methodologies, the impact is defined in a semi-quantitative way and was assessed according to methodology as per the scale utilised for the evaluation of Environmental Impact Ratings in Table 3-7,

Table 3-8 and Table 3-9. First, the impact is assigned a score based on Likelihood descriptors Probability and Sensitivity (Likelihood = Probability + Sensitivity) (Table 3-7), and then assigned a Severity rating based on Consequence descriptors Severity, Scope and Duration (Severity = Severity + Scope + Duration) (

Table 3-8). Overall Consequence and Likelihood scores are then used to Determine the Significance Rating (Table 3-9).

Table 3-7 Environmental Impact Assessment: Likelihood Descriptors

Probability of impact	Rating
Highly unlikely	1
Possible	2
Likely	3
Highly likely	4
Definite	5
Sensitivity of receiving environment	**Rating**
Ecology not sensitive/important	1
Ecology with limited sensitivity/importance	2
Ecology moderately sensitive/ /important	3
Ecology highly sensitive /important	4
Ecology critically sensitive /important	5

Table 3-8 Environmental Impact Assessment: Consequence Descriptors

Severity of impact	Rating
Insignificant / ecosystem structure and function unchanged	1
Small / ecosystem structure and function largely unchanged	2
Significant / ecosystem structure and function moderately altered	3
Great / harmful/ ecosystem structure and function largely altered	4

Disastrous / ecosystem structure and function seriously to critically altered	5
Spatial scope of impact	**Rating**
Activity specific/ < 5 ha impacted / Linear features affected < 100m	1
Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	2
Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	3
Regional within 5 km of the site boundary / < 2000ha impacted / Linear features affected < 3000m	4
Entire habitat unit / Entire system/ > 2000ha impacted / Linear features affected > 3000m	5
Duration of impact	**Rating**
One day to one month: Temporary	1
One month to one year: Short Term	2
One year to five years: Medium Term	3
Life of operation or less than 20 years: Long Term	4
Permanent	5

Table 3-9 Environmental Impact Assessment: Significance Rating Matrix

	CONSEQUENCE (Severity + Spatial Scope + Duration)															
LIKELIHOOD (Probability of impact + Sensitivity of receiving environment)	**0**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**Absent**
	2	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**22**	**24**	**26**	**28**	**30**	**Low**
	3	**6**	**9**	**12**	**15**	**18**	**21**	**24**	**27**	**301**	**33**	**36**	**39**	**42**	**45**	
	4	**8**	**12**	**16**	**20**	**24**	**28**	**32**	**36**	**40**	**44**	**48**	**52**	**56**	**60**	**Moderate**
	5	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**	**65**	**70**	**75**	
	6	**12**	**18**	**24**	**30**	**36**	**42**	**48**	**54**	**60**	**66**	**72**	**78**	**84**	**90**	**Moderately High**
	7	**14**	**21**	**28**	**35**	**42**	**49**	**56**	**63**	**70**	**77**	**84**	**91**	**98**	**105**	**High**
	8	**16**	**24**	**32**	**40**	**48**	**56**	**64**	**72**	**80**	**88**	**96**	**104**	**112**	**120**	
	9	**18**	**27**	**36**	**45**	**54**	**63**	**72**	**81**	**90**	**99**	**108**	**117**	**126**	**135**	**Critical**
	10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**	**130**	**140**	**150**	

4 Results & Discussion

4.1 Desktop Assessment

4.1.1 Ecologically Important Landscape Features

The following features describe the general area and habitat. This assessment is based on spatial data from various sources, such as the provincial environmental authority and SANBI. The desktop analysis and its relevance to this project are listed in Table 4-1.

Table 4-1 Summary of the relevance of the proposed development to ecologically important landscape features

Desktop Information Considered	Relevant/Irrelevant	Section
Biodiversity Spatial Plan	Relevant - The PAOI overlaps with ESA1	4.1.1.1
Ecosystem Threat Status	Relevant - The proposed PAOI overlaps with LC ecosystems	4.1.1.2
Ecosystem Protection Level	Relevant - The proposed PAOI project overlaps NP ecosystem	4.1.1.3
Protected Areas	Relevant - The PAOI it is located approximately 10.22 km south-west from the Lawrence De Lange Nature Reserve	4.1.1.4
National Protected Areas Expansion Strategy	Irrelevant - The PAOI does not overlap with NPAES areas	4.1.1.5
Important Bird and Biodiversity Areas	Irrelevant - The PAOI does not overlap with any IBA	4.1.1.6
Coordinated Avifaunal Road Count	Irrelevant - The PAOI does not overlaps with any Coordinated Avifaunal Roadcount	4.1.1.7
Coordinated Waterbird Count	Irrelevant - The PAOI is approximately 10 km away from the Queenstown Sewage Works	4.1.1.8
South African Inventory of Inland Aquatic Ecosystems	Irrelevant - The PAOI does not overlap with NBA threatened wetlands and rivers	4.1.1.9
National Freshwater Priority Area	Relevant - The 500 m regulated area overlaps with two non-priority FEPA wetlands	4.1.1.9
Powerline Corridor	Relevant - The PAOI overlaps with the eastern EGI corridor	4.1.1.10
Renewable Energy Development Zone (REDZ)	Relevant - The PAOI overlaps with the Stomberg Wind REDZ	4.1.1.11
Renewable Energy EIA Application Database (REEA)	Irrelevant - The PAOI is in not in close proximity to already approved REEA project	4.1.1.12

4.1.1.1 Eastern Cape Conservation Plan

The conservation of CBAs is crucial, in that if these areas are not maintained in a natural or near-natural state, biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity compatible land uses and resource uses (SANBI-BGIS, 2017).

The provincial CBA spatial data for the Eastern Cape province indicates that the project area overlaps with a Terrestrial ESA 1 and is situated near an Aquatic ESA 1 to the north of the project area.

The purpose of the Eastern Cape Biodiversity Conservation Plan (2018) is to inform land-use planning and development on a provincial scale and to aid in natural resource management. One of the outputs is a map of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). These are classified into different categories, namely Protected Areas, CBA1 areas, CBA2 areas, ESA1 areas, ESA2 areas, Other Natural Areas (ONAs) and areas with No Natural Habitat Remaining (NNR) based on biodiversity characteristics, spatial configuration, and requirements for meeting targets for both biodiversity patterns and ecological processes.

Relevant - The PAOI overlaps with ESA1 (Figure 4-1).

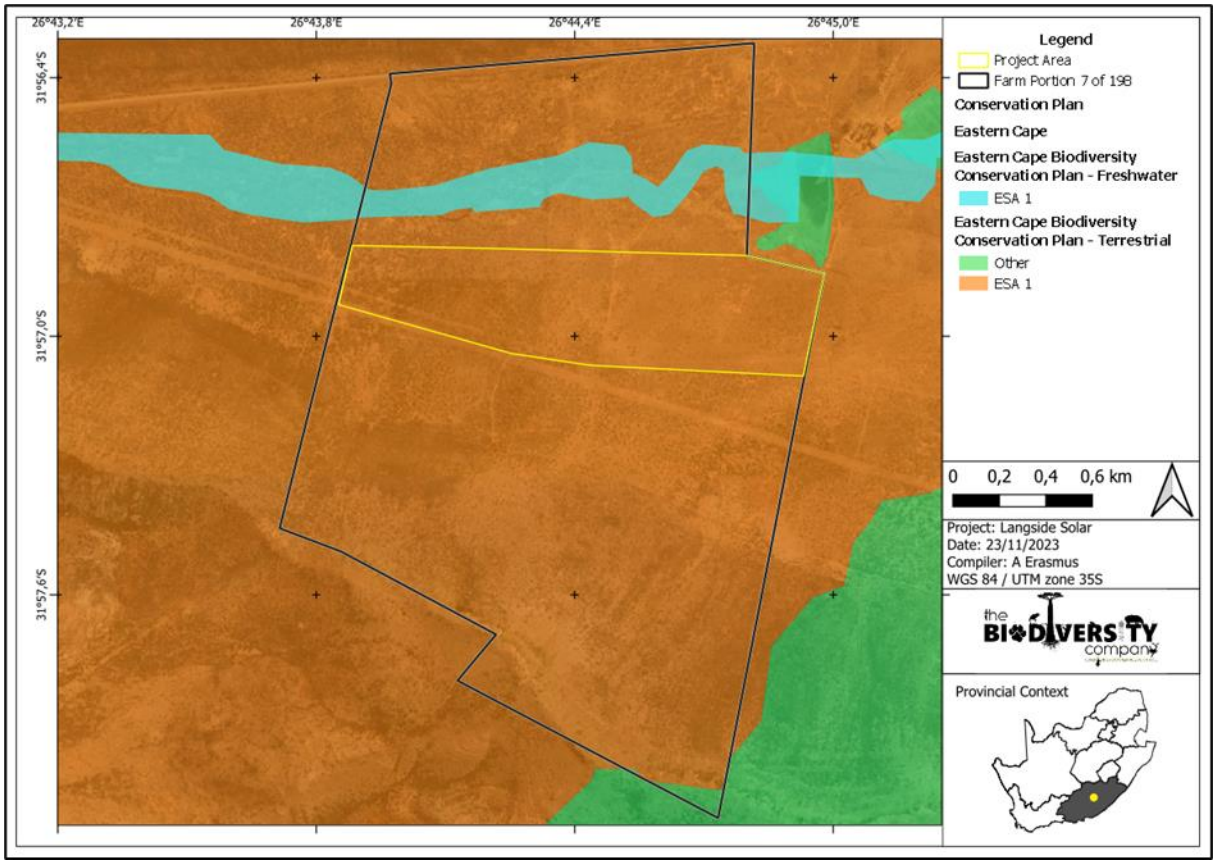


Figure 4-1 Map illustrating the location of Critical Biodiversity and Ecological Support Areas proximal to the Project Area of Influence.

4.1.1.2 Ecosystem Threat Status

The Ecosystem Threat Status is an indicator of an ecosystem's well-being based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition. Relevant - The proposed PAOI overlaps with LC ecosystems (Figure 4-2).

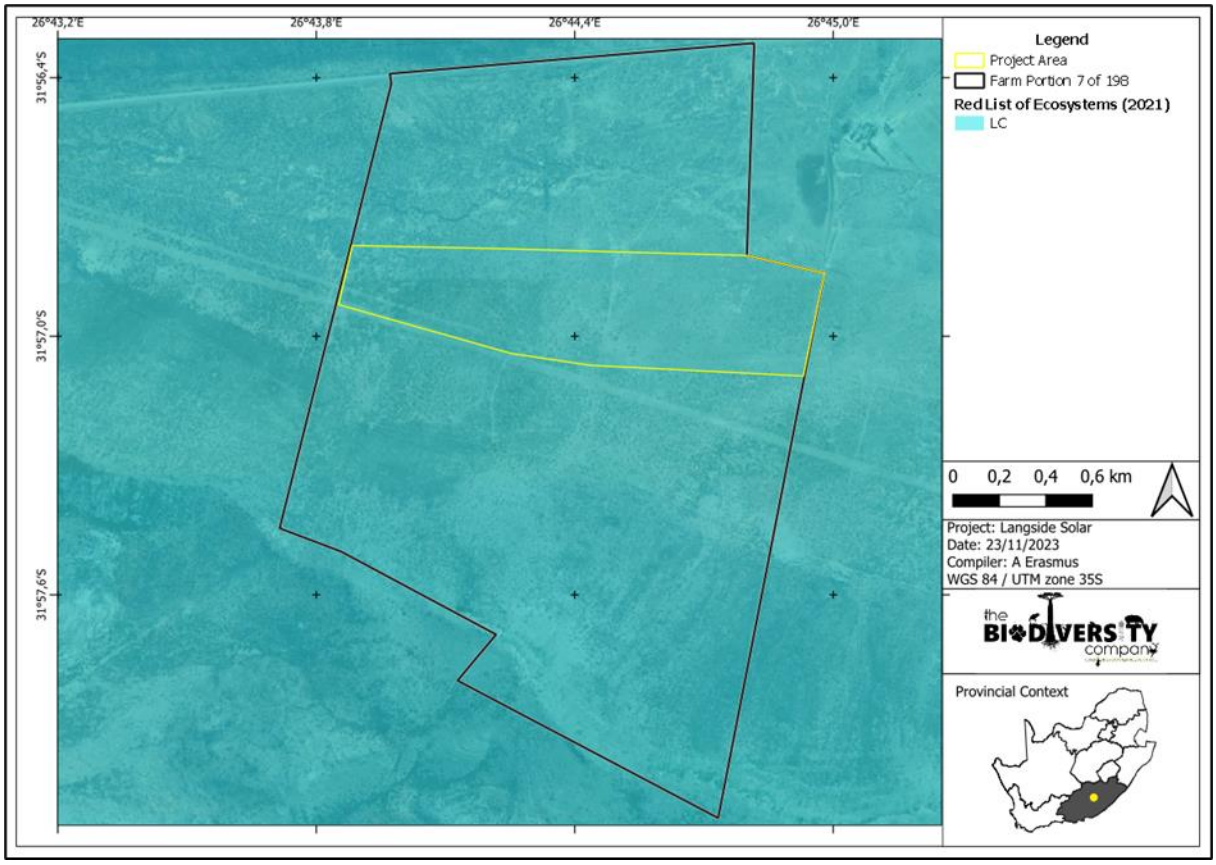


Figure 4-2 Map illustrating the ecosystem threat status associated with the PAOI.

4.1.1.3 Ecosystem Protection Level

This is an indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP), or Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems. Relevant - The proposed PAOI project overlaps NP ecosystem (Figure 4-3).

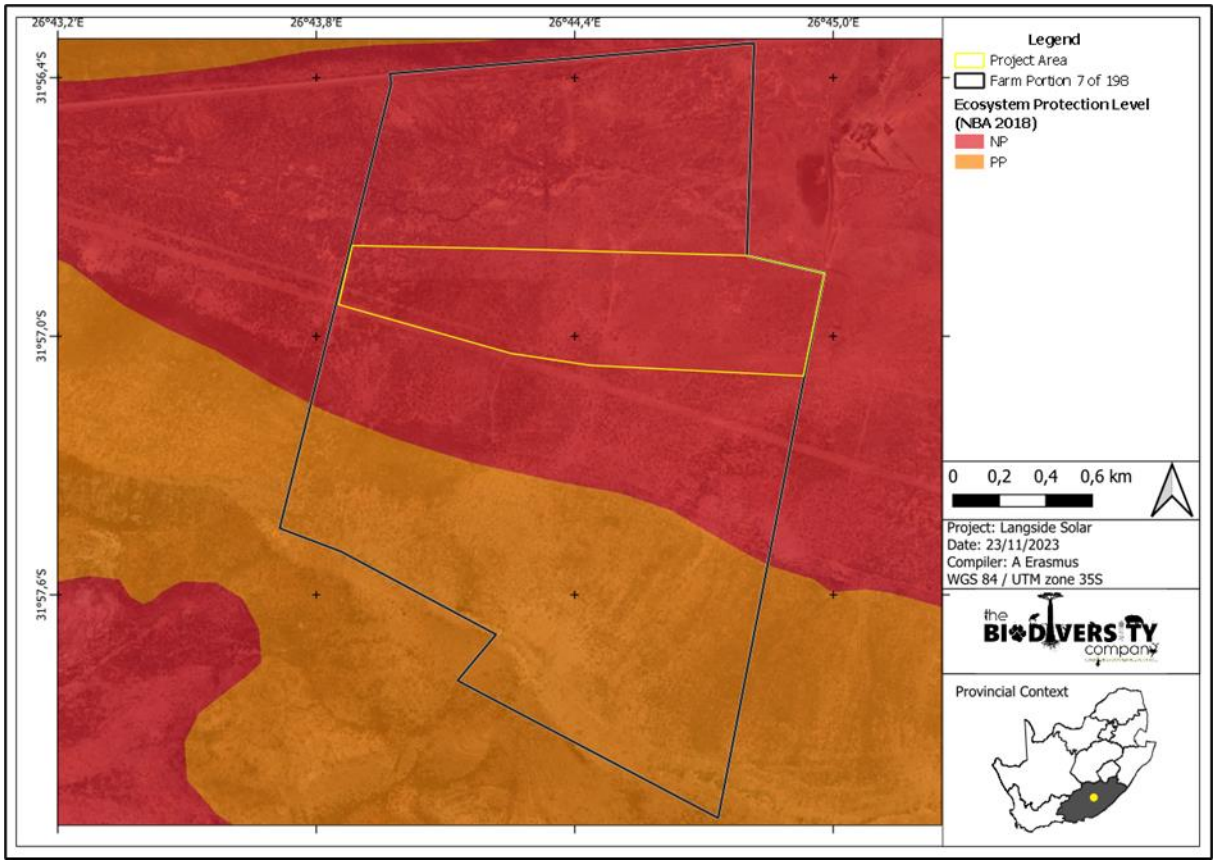


Figure 4-3 Map illustrating the ecosystem protection level associated with the PAOI

4.1.1.4 Protected Areas

According to the protected area spatial datasets from SAPAD (DFFE, 2022) and SACAD (DFFE, 2022). Relevant - The PAOI it is located approximately 10.22 km south-west from the Lawrence De Lange Nature Reserve (Figure 4-4).

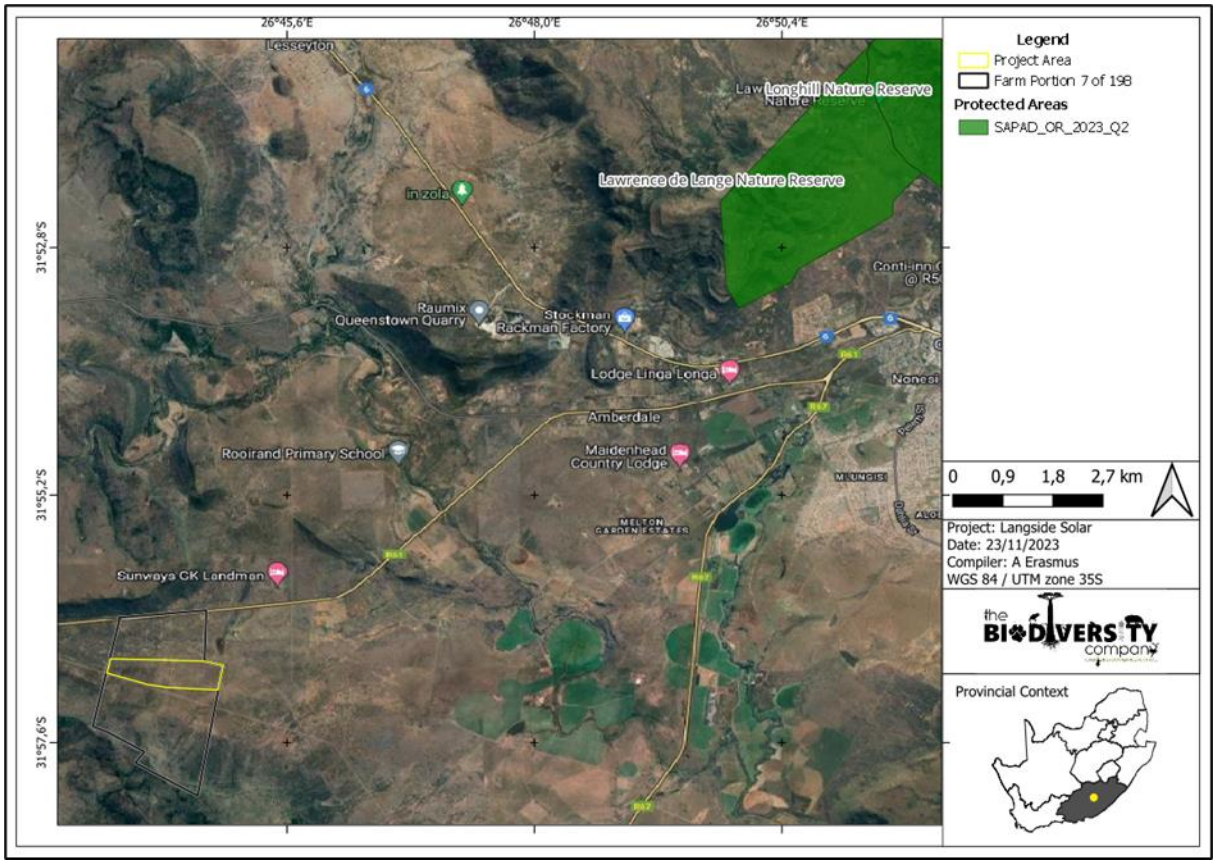


Figure 4-4 Map illustrating the Project Area of Influence (PAOI) in relation to Conservation and Protected Areas

4.1.1.5 National Protected Area Expansion Strategy

National Protected Area Expansion Strategy (NPAES) areas were identified through a systematic biodiversity planning process. They presented the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with a strong emphasis on climate change resilience and requirements for protecting freshwater ecosystems. These areas should not be seen as future boundaries of protected areas, as in many cases, only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. They are also not a replacement for fine-scale planning, which may identify different priority sites based on local requirements, constraints and opportunities (DFFE, 2021). Irrelevant - The PAOI does not overlap with NPAES areas (Figure 4-5).The closest NPAES is 39 km from the PAOI.

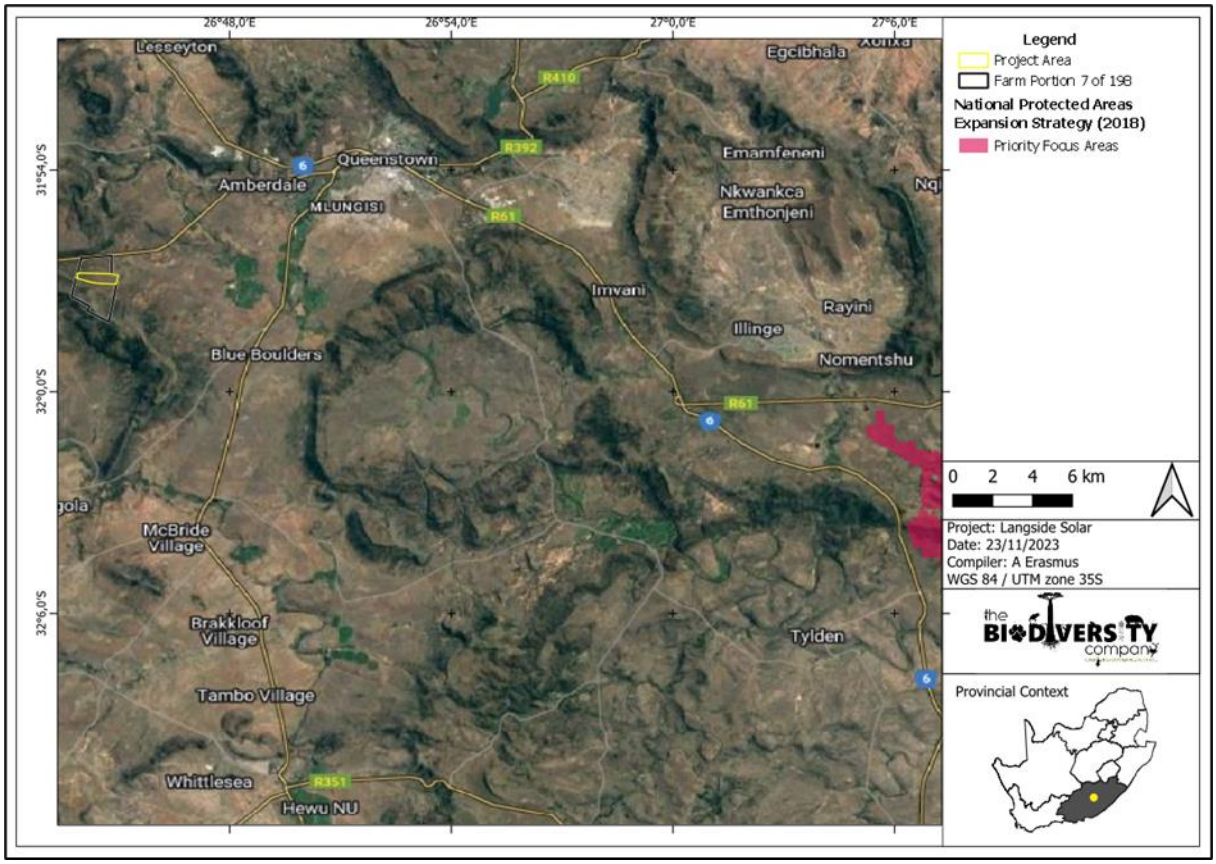


Figure 4-5 Map illustrating the Project Area of Influence (PAOI) in relation to NPAES Focus Areas

4.1.1.6 Important Bird and Biodiversity Area

Important Bird & Biodiversity Areas (IBAs) are the sites of international significance for the conservation of the world's birds and other conservation significant species as identified by BirdLife International. These sites are also all Key Biodiversity Areas; sites that contribute significantly to the global persistence of biodiversity (BirdLife South Africa, 2017).

According to Birdlife South Africa (2017), selecting IBAs is achieved by applying quantitative ornithological criteria grounded in up-to-date knowledge of the sizes and trends of bird populations. The criteria ensure that the sites selected as IBAs have true significance for the international conservation of bird populations and provide a common currency that all IBAs adhere to, thus creating consistency among and enabling comparability between sites at national, continental and global levels. Irrelevant - The PAOI does not overlap with any IBA. The Amatola Katberg Mountain IBA is approximately 50 km from the PAOI

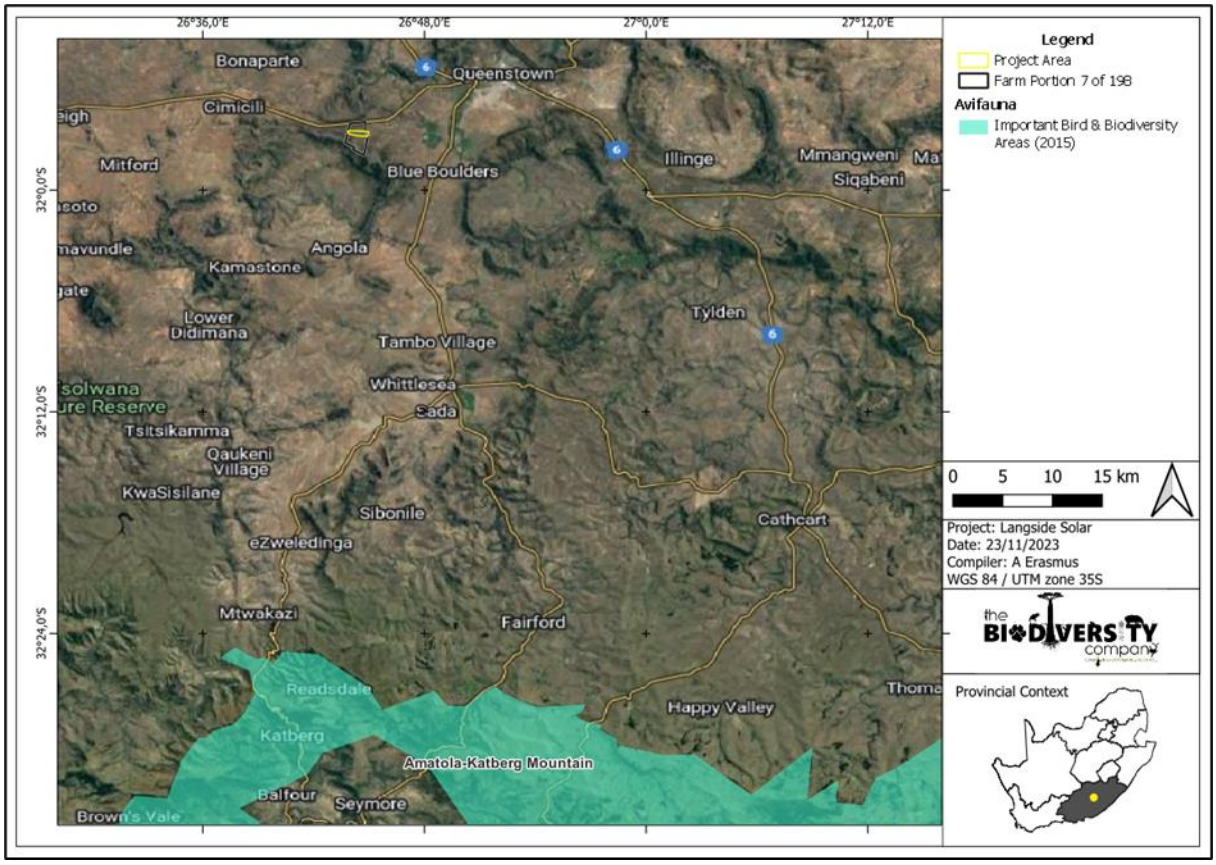


Figure 4-6 Map illustrating the Project Area of Influence (PAOI) in relation to Important Birding Areas

4.1.1.7 Coordinated Avifaunal Roadcount (CAR)

The Animal Demographic Unit (ADU)/Cape bird club pioneered the avifaunal road counts of larger birds in 1993 in South Africa. Originally it was started to monitor the Blue Crane (*Anthropoides paradiseus*) and Denham's/Stanley's Bustard (*Neotis Denham*). Today it has been expanded to monitor 36 species of large terrestrial birds (cranes, bustards, korhaans and storks) along 350 fixed routes covering over 19 000 km. Road counts are carried out twice yearly in midsummer (the last Saturday in January) and midwinter (the last Saturday in July) using this standardised method. These counts are essential for conserving these larger species that are under threat due to habitat loss through land use changes, increases in crop agriculture and human population densities, poisoning, and man-made structures like powerlines. With the prospect of increasing wind and solar farms, using renewable energy sources and monitoring these species is most important (CAR, 2020). Irrelevant - The PAOI does not overlaps with any Coordinated Avifaunal Roadcount Routes (Figure 4-7).

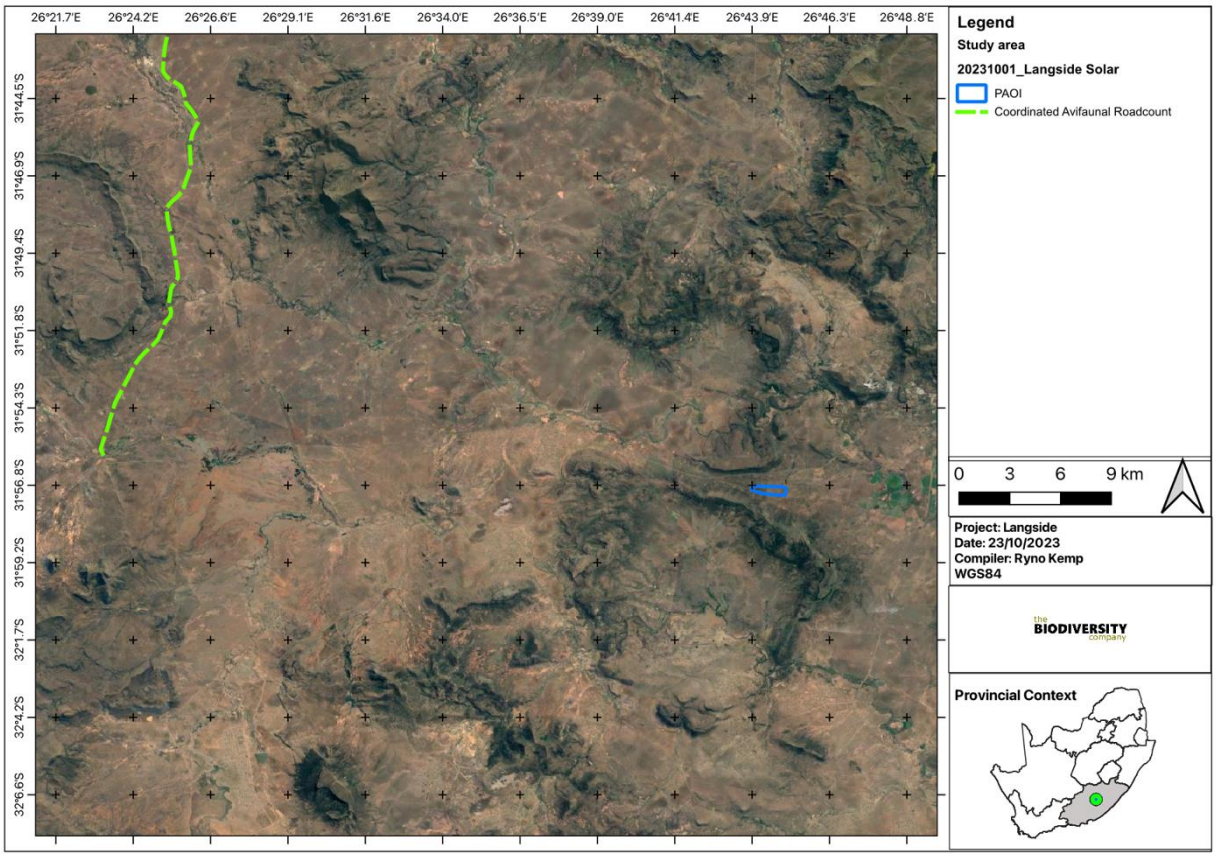


Figure 4-7 Map illustrating the locations of Coordinated Avifaunal Roadcount proximal to the Project Area of Influence (PAOI)

4.1.1.8 Coordinated Waterbird Count

The ADU launched the Coordinated Waterbird Counts (CWAC) project in 1992 as part of South Africa's commitment to international waterbird conservation. Regular mid-summer and mid-winter censuses are done to determine the various features of water birds, including population size, how waterbirds utilise water sources and determining the health of wetlands. For a full description of CWAC, please refer to http://cwac.birdmap.africa/about.php. Irrelevant - The PAOI is approximately 10 km away from the Queenstown Sewage Works (Figure 4-8).

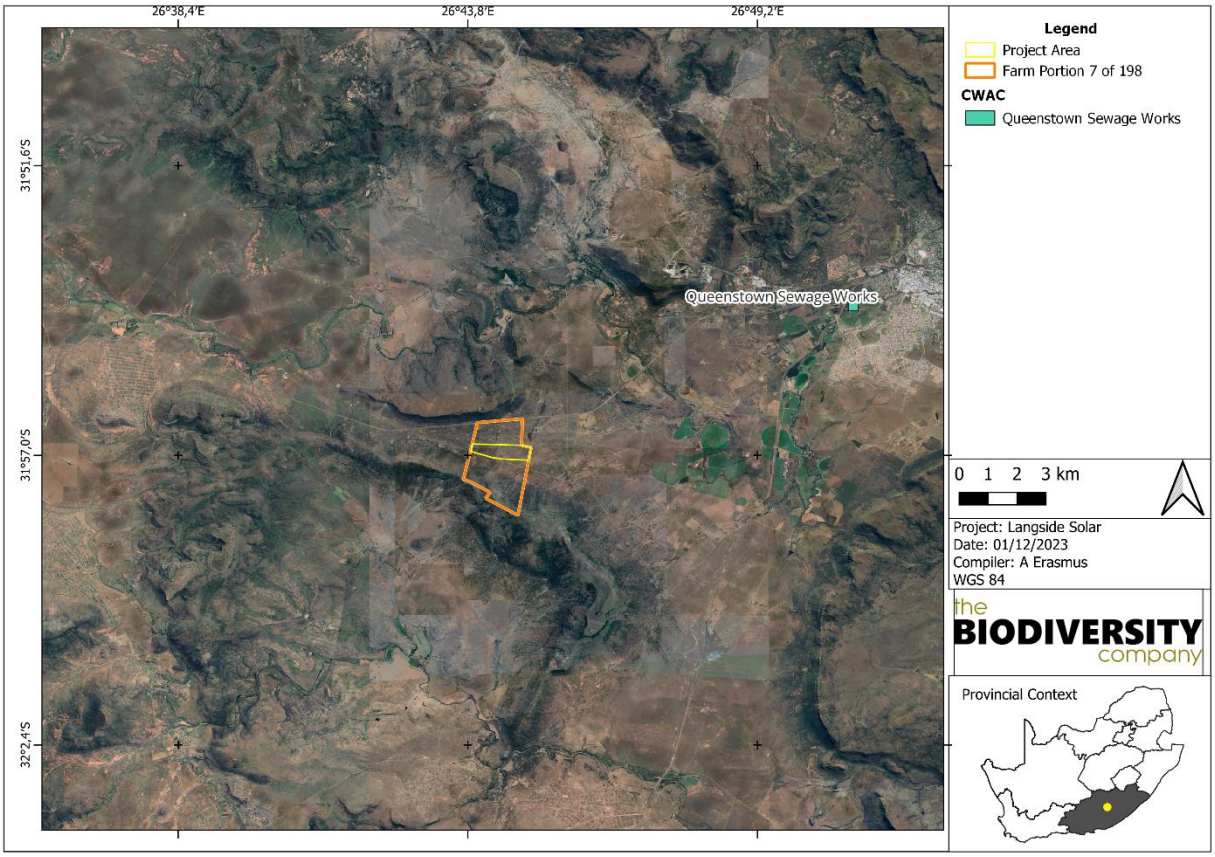


Figure 4-8 Map illustrating the locations of Coordinated Waterbird Count proximal to the Project Area of Influence (PAOI)

4.1.1.9 Freshwater Ecology

The South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was released with the NBA 2018. The ecosystem threat status (ETS) of the river and wetland ecosystem types is based on the extent to which each river ecosystem type has been altered from its natural condition. Ecosystem types are categorised as CR, EN, VU or LT, with CR, EN and VU ecosystem types collectively referred to as 'threatened' (Van Deventer *et al.,* 2019; Skowno *et al.,* 2019). Irrelevant - The PAOI does not overlap with NBA threatened wetlands and rivers (Figure 4-9).

In an attempt to better conserve aquatic ecosystems, South Africa has categorised its river systems according to set ecological criteria (i.e., ecosystem representation, water yield, connectivity, unique features, and threatened taxa) to identify Freshwater Ecosystem Priority Areas (FEPAs) (Driver *et al.,* 2011). The FEPAs are intended to be conservation support tools and are envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act's (NEMBA) biodiversity goals (Nel *et al.,* 2011). Relevant - The 500 m regulated area overlaps with two non-priority FEPA wetlands (Figure 4-10). The project infrastructure does not overlap with these.

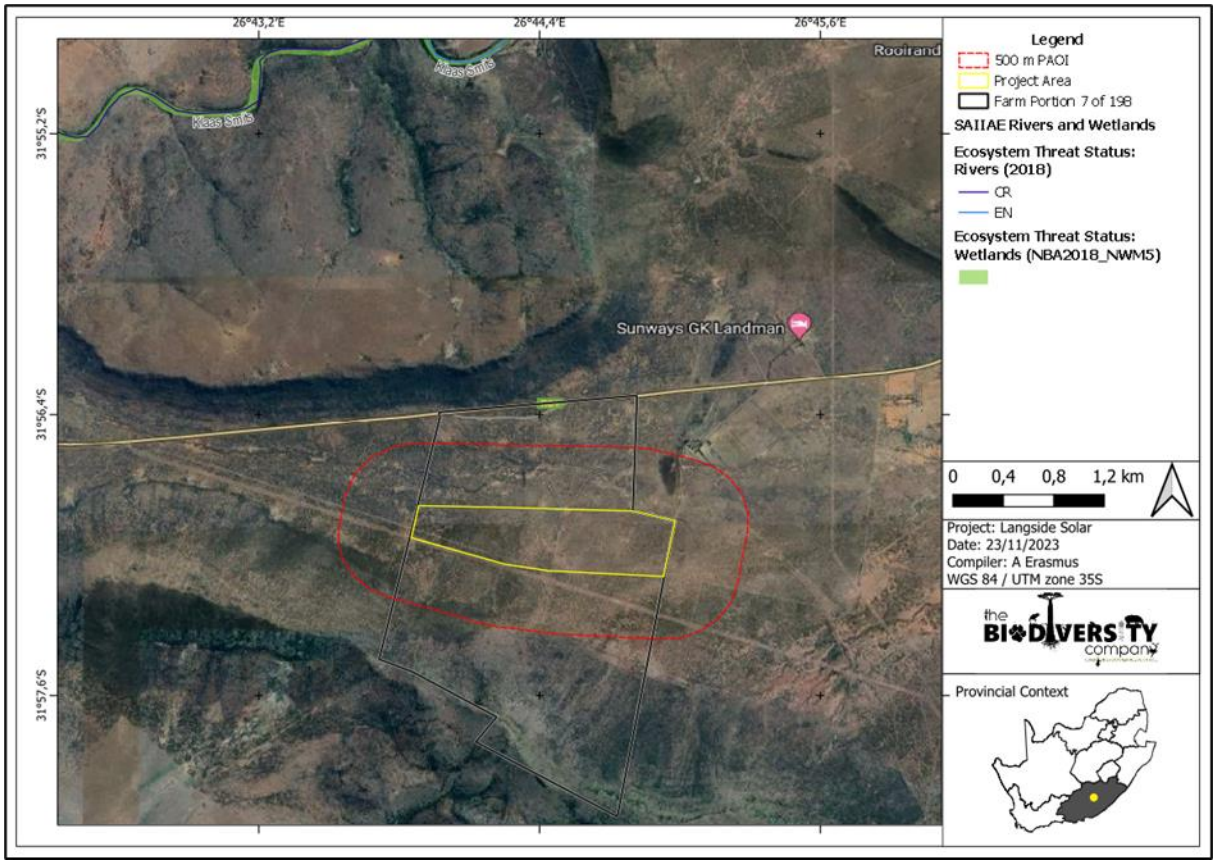


Figure 4-9 Map illustrating the Project Area of Influence (PAOI) in relation to South African Inventory of Inland Aquatic Ecosystems (SAIIAE) features

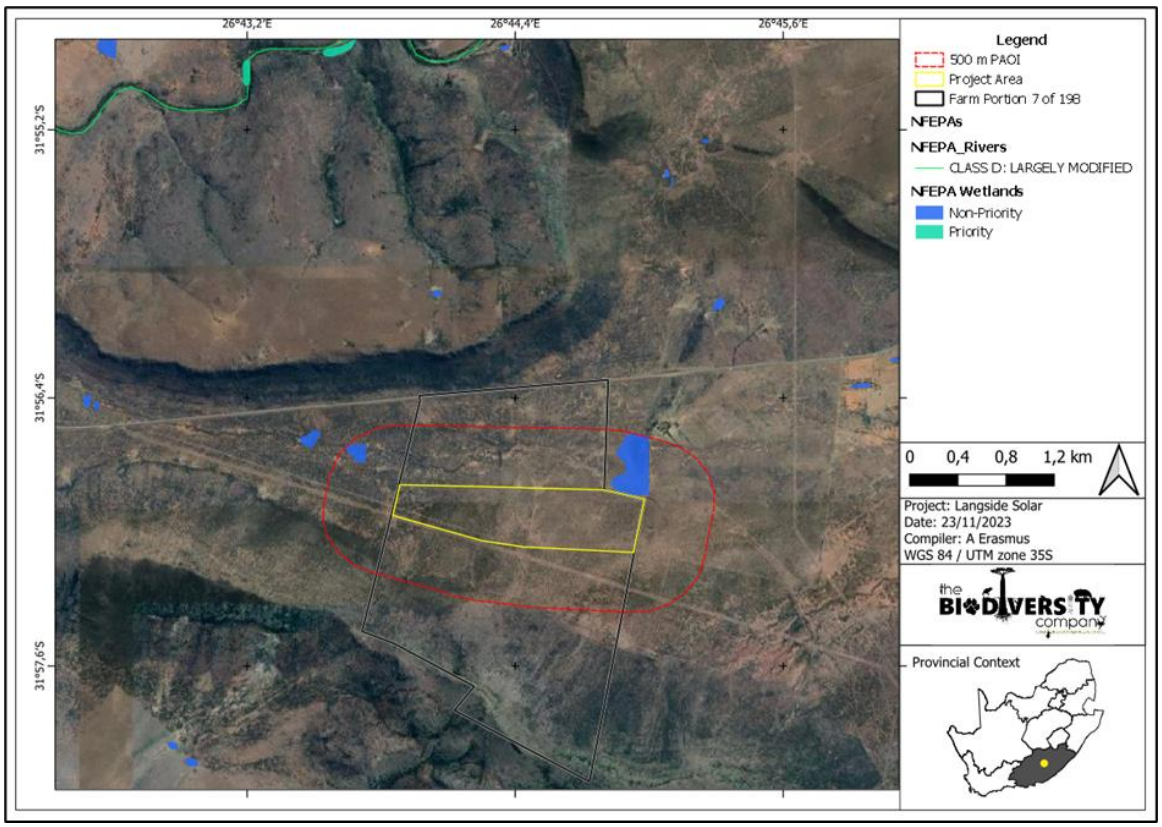


Figure 4-10 Map illustrating the Project Area of Influence (PAOI) in relation to the National Freshwater Ecosystem Priority Areas

4.1.1.10 Strategic Transmission Corridors (EGI)

On the 16 February 2018, Minister Edna Molewa published Government Notice No. 113 in Government Gazette No. 41445, which identified 5 strategic transmission corridors important for the planning of electricity transmission and distribution infrastructure as well as the procedure to be followed when applying for environmental authorisation for electricity transmission and distribution expansion when occurring in these corridors.

On 29 April 2021, Minister Barbara Dallas Creecy published Government Notice No. 383 in Government Gazette No. 44504, which expanded the eastern and western transmission corridors and gave notice of the applicability of the application procedures identified in Government Notice No. 113, to these expanded corridors. More information on this can be obtained from https://egis.environment.gov.za/egi. Relevant - The PAOI overlaps with the eastern EGI corridor. (Figure 4-11)

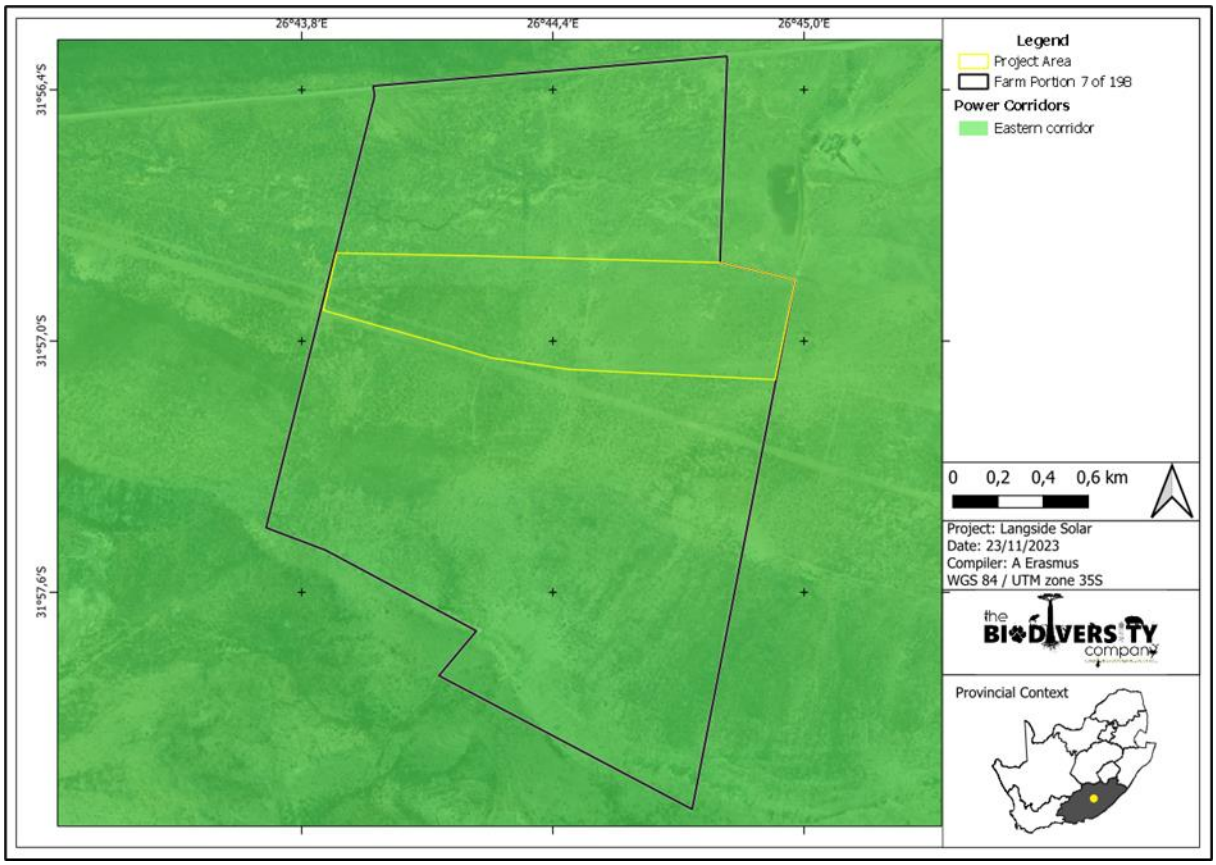


Figure 4-11 Map illustrating the locations of the Strategic Transmission Corridors proximal to the Project Area of Influence (PAOI)

4.1.1.11 Renewable Energy Development Zones (REDZ)

In 2018 the Government Notice No. 114 in Government Gazette No. 41445 was published where 8 renewable energy development zones important for the development of large-scale wind and solar photovoltaic facilities were identified. In 2021 an additional 3 sites were included. The REDZs were identified through the undertaking of 2 Strategic Environmental Assessments. Relevant - The PAOI overlaps with the Stomberg Wind REDZ (Figure 4-12).

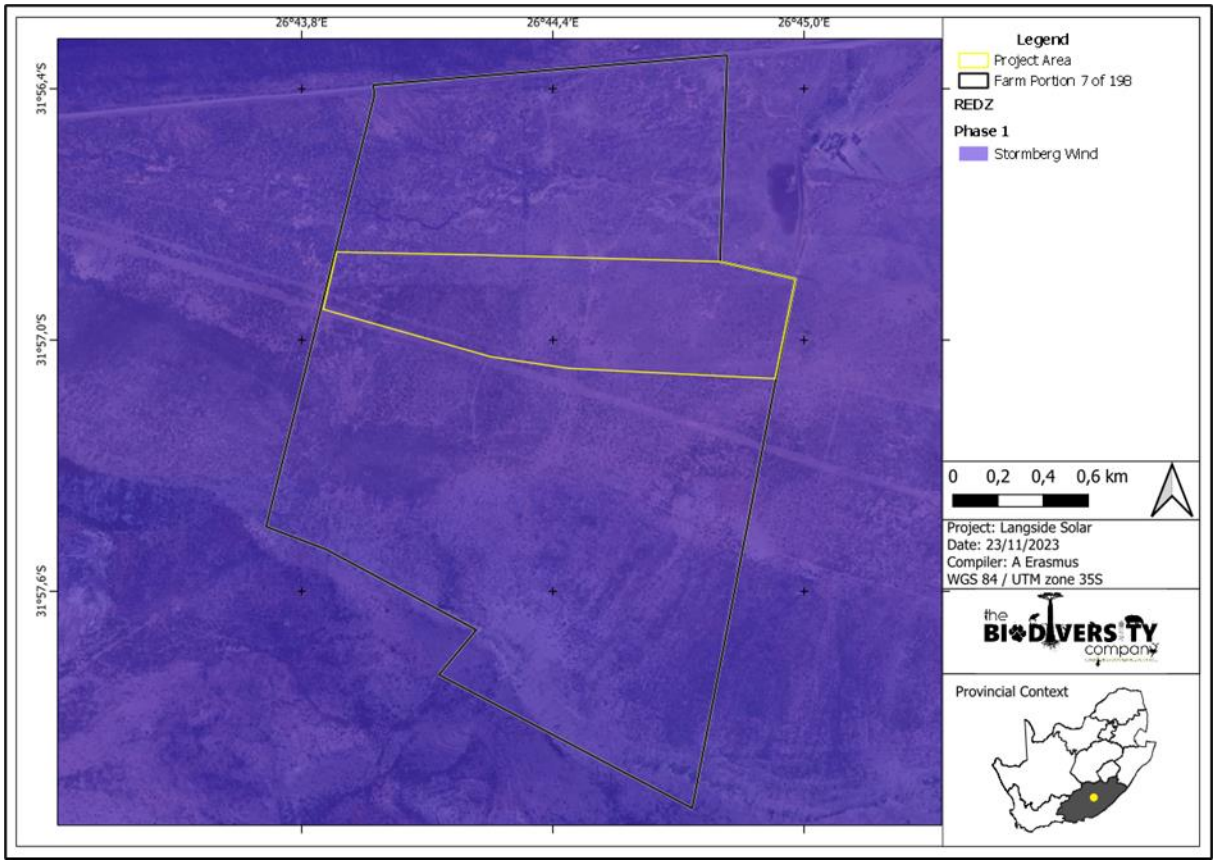


Figure 4-12 Map illustrating the locations of the Renewable Energy Development Zones proximal to the Project Area of Influence (PAOI)

4.1.1.12 Renewable Energy EIA Application Database

The Renewable Energy Database (http://egis.environment.gov.za/), shows that there several other projects in the near vicinity (Figure 4-13). This increases the overall impact on the habitats in the area. Irrelevant - The PAOI is in not in close proximity to already approved REEA project (Figure 4-13).The closest project is 74 km from the PAOI

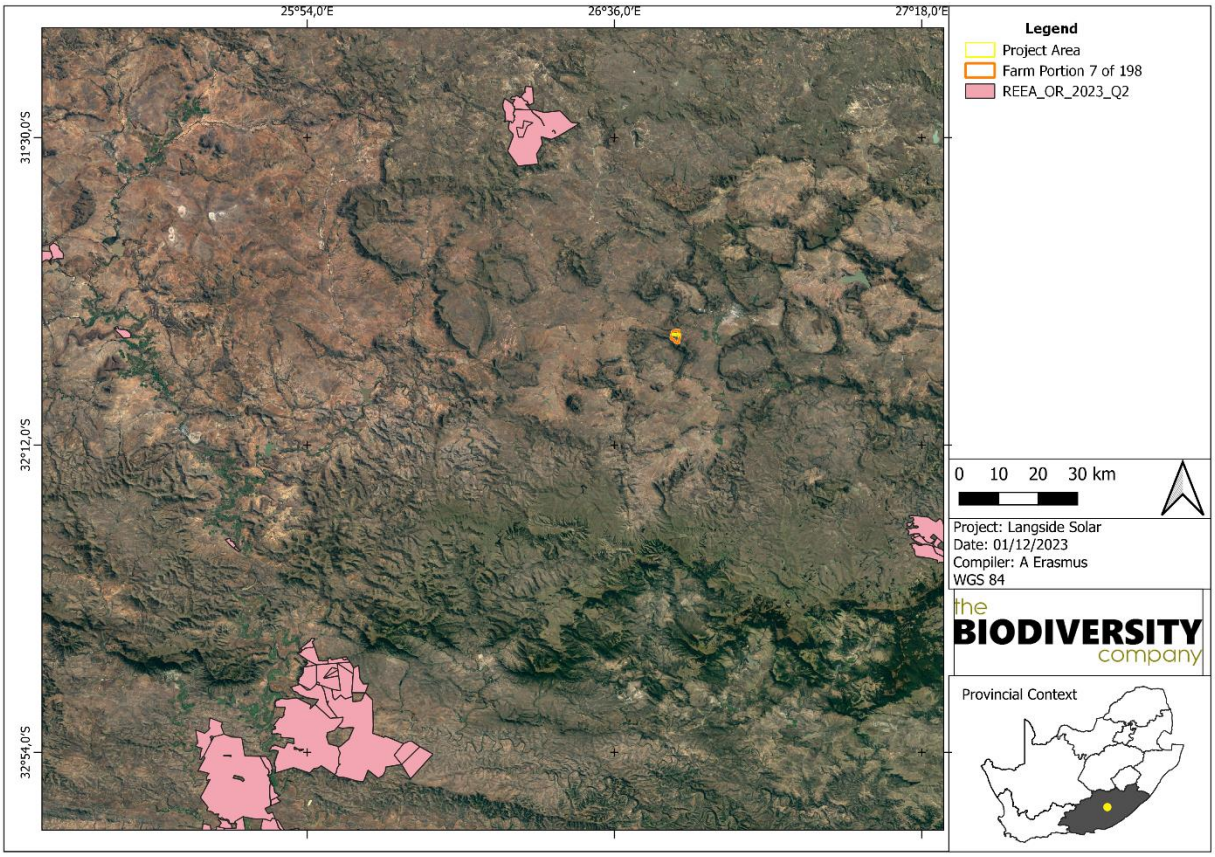


Figure 4-13 The PAOI in relation to the Renewable Energy EIA Application Database projects in the area.

4.2 Expected Species of Conservation Concern

SABAP2 data indicate that 212 avifauna species are expected for the PAOI and surrounding landscape (Appendix A). Of these, 13 are considered SCC and include those listed in Table 4-2. These species are described below.

Table 4-2 Expected avifauna Species of Conservation Concern that are expected to occur within the PAOI. CR = Critically Endangered, EN = Endangered, LC = Least Concern, NT = Near Threatened and VU = Vulnerable

Scientific Name	Common Name	Regional	Global	Likelihood of Occurrence
Anthus crenatus	African Rock Pipit	NT	LC	Low
Anthus hoeschi	Mountain Pipit	NT	NT	Low
Aquila verreauxii	Verreaux's Eagle	NA	LC	Low
Balearica regulorum	Grey Crowned Crane	EN	EN	Low
Circus maurus	Black Harrier	EN	EN	Low
Cursorius rufus	Burchell's Courser	VU	LC	Low
Eupodotis caerulescens	Blue Korhaan	LC	NT	Low
Eupodotis senegalensis	White-bellied Korhaan	VU	LC	Low
Falco biarmicus	Lanner Falcon	VU	LC	Moderate
Geocolaptes olivaceus	Ground Woodpecker	LC	NT	Low
Gyps coprotheres	Cape Vulture	EN	VU	Confirmed
Neotis denhami	Denham's Bustard	VU	NT	Low

Sagittarius serpentarius	Secretarybird	VU	EN	Confirmed

Falco biarmicus (Lanner Falcon) is native to South Africa and inhabits a wide variety of habitats, from lowland deserts to forested mountains (IUCN, 2017). They may occur in groups up to 20 individuals, but have also been observed solitary. Their diet is mainly composed of small birds such as pigeons and francolins.

Gyps coprotheres (Cape Vulture) is listed as Endangered (EN) on both a regional and global scale. Cape Vultures are long-lived carrion-feeders specialising on large carcasses, they fly long distances over open country, although they are usually found near steep terrain, where they breed and roost on cliffs (IUCN, 2017).

Sagittarius serpentarius (Secretary bird) occurs in sub-Saharan Africa and inhabits grasslands, open plains, and lightly wooded savanna. It is also found in agricultural areas and sub-desert (IUCN, 2017).

4.3 Field Assessment

4.3.1 Species List of the Field Survey

Two site visits were conducted for this regime 2 assessment. The first was conducted in summer, over 1 day on 18 October 2022 and the second summer survey, over 1 day on 19th October 2023. However, no point counts were conducted during the first survey. The second survey covered the entire proposed area. Although it is different from the recommended surveying technique as described, the specialist does believe these two site visits are considered sufficient from a seasonal perspective and require no additional season assessment.

A total of 78 species were observed during the field investigation which accounts for approximately 36.7% of the total number of expected species. Two SCCs were recorded during the survey period. These were Cape vulture and Secretarybird.

4.3.1.1 Risk Species

As aforementioned, Priority Species are considered threatened, rare or prone to impacts from energy development (Ralston Paton *et al*, 2017), which is indicated by ”X”. TBC has defined Risk Species as those species that are listed in Ralston Paton *et al* (2017) as Priority Species, as well as those listed in the Eskom poster of Birds and Power Lines (Eskom and EWT, no date), which together include all species, common or red-listed that may be at risk of collision, electrocution or habitat loss as a result of the proposed activity, which is indicated by “O”. Eight (8) of the species observed within the PAOI are regarded as priority species (Table 4-3).

Table 4-3 Summary of Priority Species recorded within and around the proposed development

Common Name	Scientific Name	Sources	Collision	Electrocution	Disturbance/Habitat Loss
Black-headed Heron	*Ardea melanocephala*	O	X	X	
Egyptian Goose	*Alopochen aegyptiaca*	O	X		
Pale Chanting Goshawk	*Melierax canorus*	X	X	X	
Secretarybird	*Sagittarius serpentarius*	X	X		X
Gabar goshawk	*Micronisus gabar*	O	X	X	
Yellow-billed Duck	*Anas undulata*	O	X		
Cape Vulture	*Gyps coprotheres*	X	X	X	X
African harrier-hawk	*Polyboroides typus*	X	X	X	

4.3.1.2 Dominant Species

Table 4-4 provides the relative abundance of the dominant species as well as the frequency with which each species appeared in the point count samples. The most abundant species was the *Cisticola fulvicapilla* (Neddicky), with a relative abundance of 0.107 and a frequency of occurrence of 72.727 % (Table 4-4) followed by *Streptopelia capicola* (Ring-necked Dove) with a relative abundance of 0.08 and a frequency of occurrence of 54.545 %.

Table 4-4 Relative abundance and frequency of occurrence of dominant avifauna species recorded during the standardised point counts within and around the proposed development during the field survey.

Name	Scientific Name	Relative abundance	Frequency (%)
Neddicky	*Cisticola fulvicapilla*	0.107	72.727
Ring-necked Dove	*Streptopelia capicola*	0.080	54.545
Chestnut-vented Warbler	*Curruca subcoerulea*	0.067	45.455
Pied Crow	*Corvus albus*	0.053	36.364
Southern Boubou	*Laniarius ferrugineus*	0.053	36.364
Golden-breasted Bunting	*Emberiza flaviventris*	0.053	36.364
Emerald-spotted Wood Dove	*Turtur chalcospilos*	0.053	18.182
Acacia Pied Barbet	*Tricholaema leucomelas*	0.040	27.273
Karoo Prinia	*Prinia maculosa*	0.040	27.273
Southern Fiscal	*Lanius collaris*	0.040	18.182
Cape White-eye	*Zosterops virens*	0.027	9.091
Helmeted Guineafowl	*Numida meleagris*	0.027	18.182
Southern Grey-headed Sparrow	*Passer diffusus*	0.027	18.182
African Hoopoe	*Upupa africana*	0.027	18.182
Grey Tit	*Melaniparus afer*	0.027	18.182
Diederik Cuckoo	*Chrysococcyx caprius*	0.027	18.182
African Pipit	*Anthus cinnamomeus*	0.013	9.091
Bar-throated Apalis	*Apalis thoracica*	0.013	9.091
Black-headed Heron	*Ardea melanocephala*	0.013	9.091
Bokmakierie	*Telophorus zeylonus*	0.013	9.091
Cape Sparrow	*Passer melanurus*	0.013	9.091
Cape Wagtail	*Motacilla capensis*	0.013	9.091
Cardinal Woodpecker	*Dendropicos fuscescens*	0.013	9.091
Hadada Ibis	*Bostrychia hagedash*	0.013	9.091
Levaillant's Cisticola	*Cisticola tinniens*	0.013	9.091
Pale Chanting Goshawk	*Melierax canorus*	0.013	9.091
Red-faced Mousebird	*Urocolius indicus*	0.013	9.091
Western Barn Owl	*Tyto alba*	0.013	9.091
Greater Striped Swallow	*Cecropis cucullata*	0.013	9.091
Yellow-fronted Canary	*Crithagra mozambica*	0.013	9.091
Chinspot Batis	*Batis molitor*	0.013	9.091
Ant-eating Chat	*Myrmecocichla formicivora*	0.013	9.091
Pin-tailed Whydah	*Vidua macroura*	0.013	9.091
Amethyst Sunbird	*Chalcomitra amethystina*	0.013	9.091
Yellow-billed Duck	*Anas undulata*	0.013	9.091

4.3.1.3 Trophic Guilds

Trophic guilds are defined as a group of species that exploit the same class of environmental resources in a similar way (González-Salazar *et al,* 2014). The guild classification used in this assessment is as per González-Salazar *et al* (2014); they divided avifauna into 13 major groups based on their diet, habitat, and main area of activity. Although species to tend to exhibit varied diet with invertivores consuming fruit and frugivores consuming insects for example, the dominant composition of the diet was considered.

The analysis of the major avifaunal guilds reveals that the species composition during the survey was dominated by invertivores birds that feed on the ground during the day (IGD) (Figure 4-14). The species composition is spread throughout the various groups (Figure 4-15).

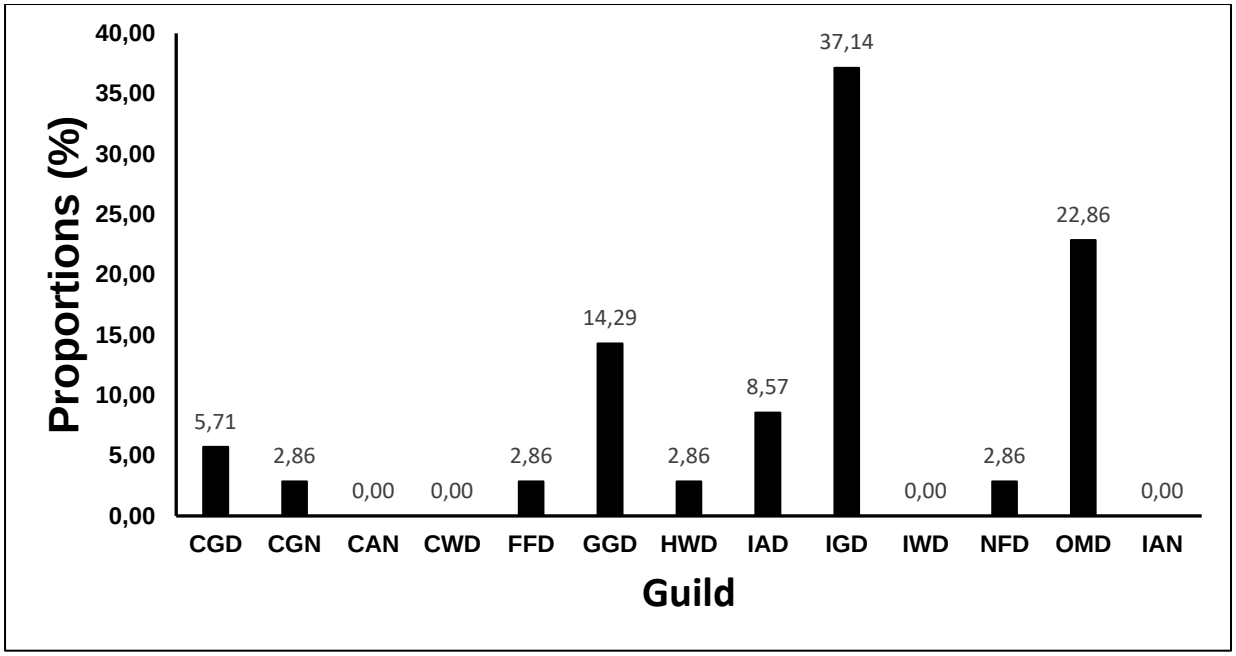


Figure 4-14 ***Column plot illustrating the proportion of each Functional Feeding Guild to the total abundance. Avifaunal trophic guilds – CGD, Carnivore Ground Diurnal; CGN, Carnivore Ground Nocturnal, CAN, Carnivore Air Nocturnal, CWD, Carnivore Water Diurnal; FFD, Frugivore Foliage Diurnal; GGD, Granivore Ground Diurnal; HWD, Herbivore Water Diurnal; IAD, Invertivore Air Diurnal; IGD, Insectivore Ground Diurnal; IWD, Invertivore Water Diurnal; NFD, Nectivore Foliage Diurnal; OMD, Omnivore Multiple Diurnal; IAN, Invertivore Air Nocturnal.***

Figure 4-15 Bird species within the PAOI –Pin-tailed Whydah

4.3.1.4 Flight and Nest Analysis

Observing and monitoring flight paths and nesting sites of SCC and/or priority species are important in ascertaining habitat sensitivity and evaluating the impact risk significance of any proposed development. Flight analysis is also important for species that exhibit diel movement between roosting and foraging sites to prevent the risk of collision with infrastructure. A very condensed version of flight path analysis was done, the aim of this was to determine if there is a general direction of most birds on site. This section needs to be interpreted cautiously based on the limited time spent on this component.

No specific flight paths were noted.

No active nests were observed during any of the field investigation and fell outside the PV area, but a final walkthrough will be required prior to construction.

4.4 Fine-Scale Habitat Use

The main habitat types identified across the project area were initially identified largely based on aerial imagery. These main habitat types were refined based on the field coverage and data collected during the survey; the delineated habitats can be seen in Figure 4-16. Emphasis was placed on limiting timed meander searches along the proposed project area within the natural habitats and therefore habitats with a higher potential of hosting SCC.

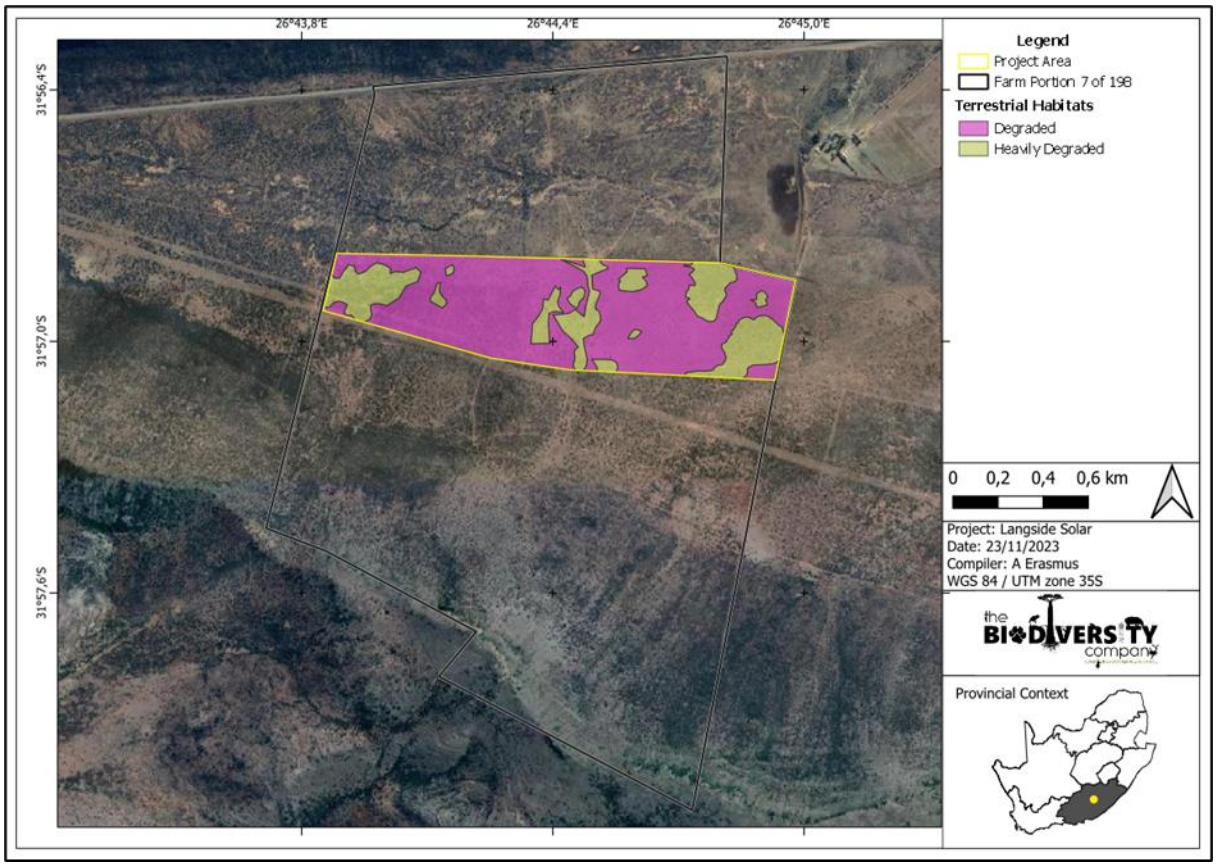


Figure 4-16 Map illustrating the habitats identified in the PAOI

Degraded Habitat

This habitat type is regarded as degraded or semi-natural, it is the remainder of the habitat that has not been as disturbed by recent and historic grazing. This habitat represents an amalgamation of grassland-woodland vegetation resulting in a complex with slightly undulating landscape. The habitat is almost exclusively dominated by *Vachellia natalitia* trees. The habitat type was found to be more intact than the heavily degraded habitat type, although historical and ongoing grazing pressure and tree clearance has decreased the species diversity. The unit also serves as a movement corridor for fauna within a landscape. A medium sensitivity rating was given to this habitat. Avifauna species such as Grey Tit, Golden-breasted Bunting were observed in this habitat type.

Figure 4-17 Representative example of the degraded grassland-woodland vegetation unit identified on the project area.

Heavily Degraded Habitat

This area has been significantly disturbed and modified from its natural state, it represents habitat that is more disturbed than the 'degraded habitat' area. This habitat is linked to areas that have been impacted more by historic overgrazing (waterpoints), tree clearance and mismanagement. These habitats aren't entirely transformed but exist in a constant disturbed state as it can't recover to a more natural state due to ongoing disturbances and impacts it receives from grazing and mismanagement. These areas are considered to have a low sensitivity based on the overall functional integrity of the site that is low. The functional integrity is related to the habitat connectivity, the rehabilitation potential, and the current minor and major ecological impacts. Generalist avifauna species such as Southern Grey-headed Sparrow, Ring-necked Dove and Common Myna were observed in this habitat type.

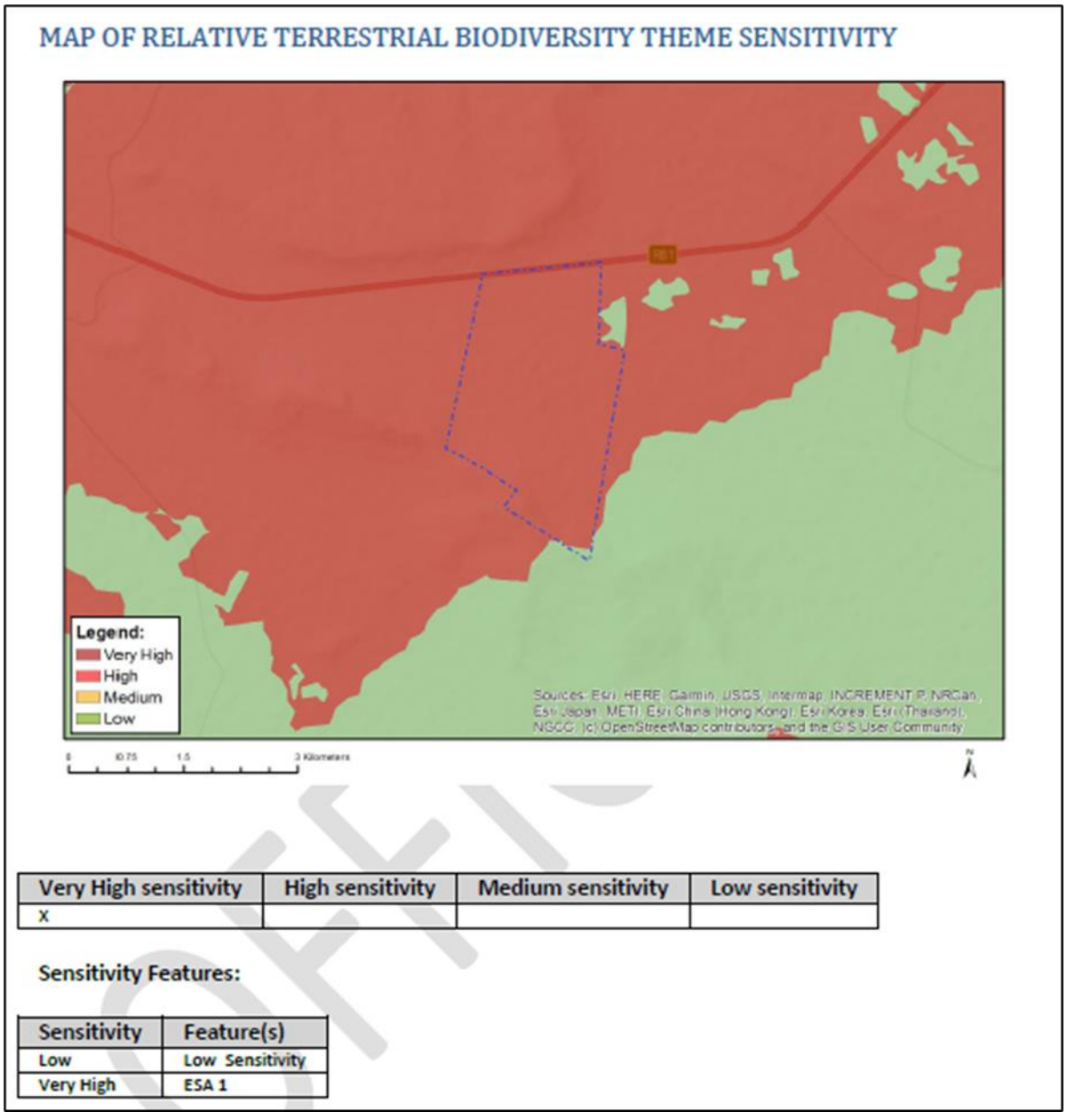
Figure 4-18 Representative example of the heavily degraded habitat units identified on the project area.

5 Site Ecological Importance (SEI)

5.1 Environmental Screening Tool

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

- Terrestrial Biodiversity Theme sensitivity is 'Very High' for the project area due to the presence of an Ecological support area 1 (Figure 5-1); and



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

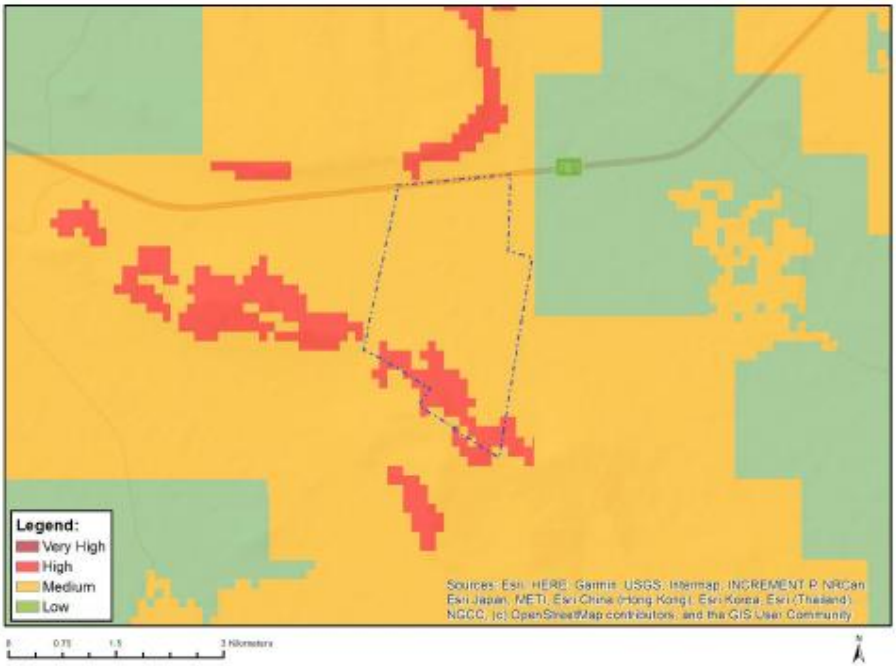
Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	ESA 1

Figure 5-1 Map of Relative Terrestrial Biodiversity Theme Sensitivity for the proposed Solar Power Plant (SPP) Project Area generated by the Environmental Screening Tool

- Animal Species Theme sensitivity is 'Medium' for the project area, with no Avifauna Species of Conservation Concern (SCC) highlighted during the screening (Figure 5-2).

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



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

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Falco biarmicus
Medium	Mammalia-Hydrictis maculicollis
Medium	Mammalia-Ourebia ourebi ourebi

Figure 5-2 Map of Relative Animal Biodiversity Theme Sensitivity for the proposed Solar Power Plant (SPP) Project Area generated by the Environmental Screening Tool

Based on the criteria provided in section 3.4 of this report, the two delineated habitat types have each been allocated a sensitivity category, or SEI, and this breakdown is presented in Table 5-1 below. In Figure 5-3 order to identify and spatially present sensitive features in terms of the relevant specialist discipline, the sensitivities of each of the habitat types delineated within the PAOI are mapped in below.

It is important to note that this map does not replace any local, provincial, or national government legislation relating to these areas or the land use capabilities or sensitivities of these environments.

Table 5-1 SEI Summary of habitat types delineated within field assessment area of project area

Habitat Type	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI) Guidelines for interpreting SEI in the context of the proposed development activities
Degraded	Medium Confirmed or highly likely occurrence of populations of Near Threatened (NT) species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals.	High Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types	Medium	Medium Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality.	Medium
Heavily Degraded	Low	Low Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy used road network surrounds the area.	Low	Very High Habitat that can recover rapidly	Very Low

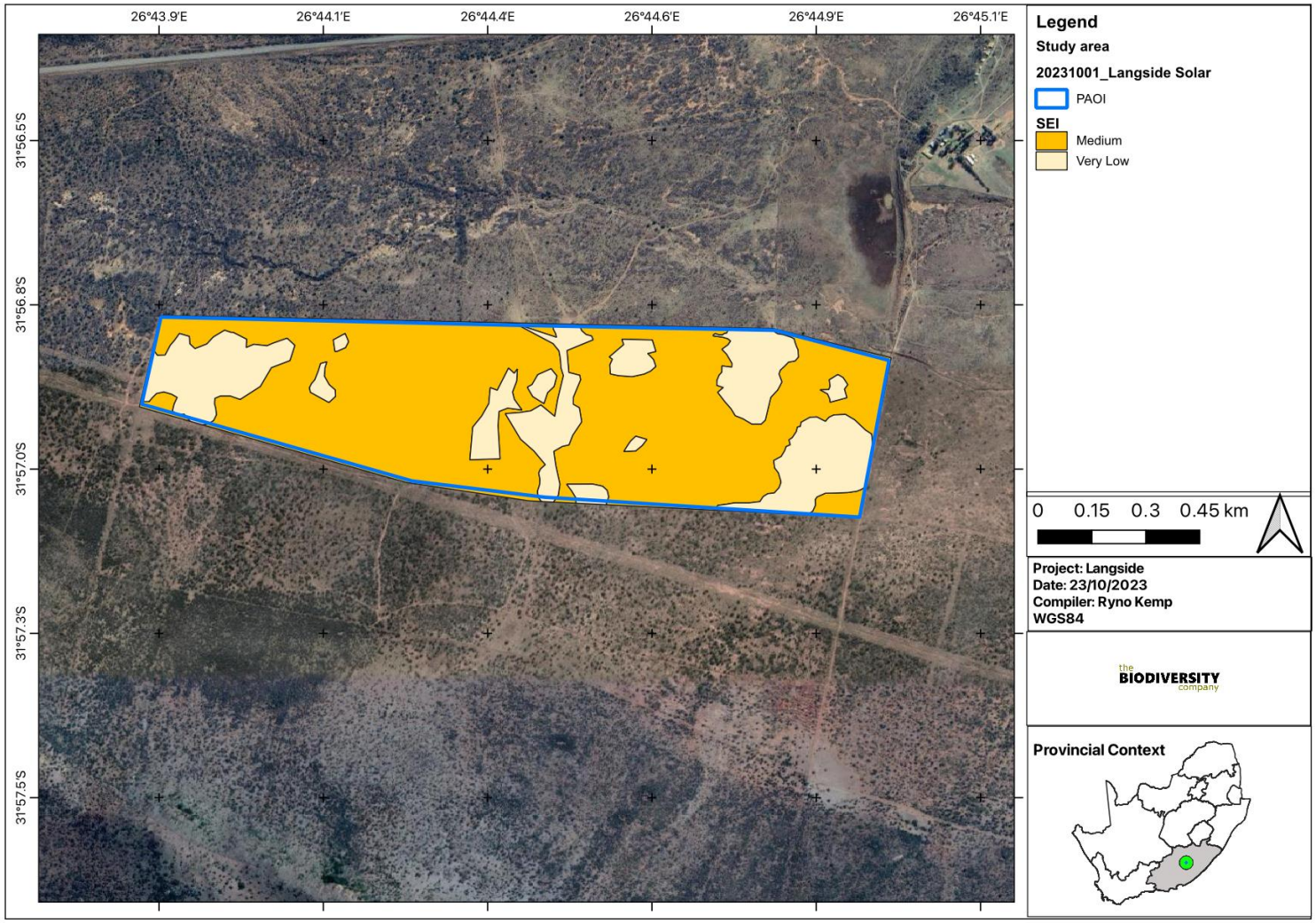


Figure 5-3 Map illustrating the Site Ecological Importance of the proposed development within an avifauna context

5.2 Screening Tool Comparison

Table 5-2 provides a comparison between the Environmental Screening Tool and the specialist determined Site Ecological Importance (SEI). The specialist-assigned sensitivity ratings are based largely on the SEI process followed in the previous section, and consideration is given to any observed or likely presence of SCC. Due to the different distinctive habitats present within the Project Area, these were compared separately.

Table 5-2 Summary of the Screening Tool Sensitivity versus the Specialist assigned Site Ecological Importance (SEI) for the proposed Solar Power Plant (SPP) Project Area

Screening Tool Theme	Screening Tool	Habitat	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Animal Theme	Medium	Heavily Degraded	Very Low	Disputed – Habitat is generally modified and won't support SCC
		Degraded	Medium	Validated – Habitat has the potential to support SCC.

6 Impact Assessment

Potential impacts were evaluated against the data captured during the fieldwork and from a desktop perspective to identify relevance to the project site, specifically the proposed development footprint area. The assessment of the significance of direct, indirect and cumulative impacts was undertaken. Bennun *et al* (2021) describes three broad types of impacts associated with solar energy development:

- Direct impacts – Impacts that result from project activities or operational decisions that can be predicted based on planned activities and knowledge of local biodiversity, such as habitat loss under the project footprint, habitat fragmentation as a result of project infrastructure and species disturbance or mortality as a result of project operations;
- Indirect impacts – Impacts induced by, or 'by-products' of, project activities within a project's area of influence; and
- Cumulative impacts – Impacts that result from the successive, incremental and/or combined effects of existing, planned and/or reasonably anticipated future human activities in combination with project development impacts.

The assessment of impact significance considers pre-mitigation as well as implemented post-mitigation scenarios. Three phases were considered for the impact assessment:

- Construction Phase;
- Operational Phase; and
- Decommission/Closure/Rehabilitation Phase.

6.1 Present Impacts to Avifauna

In consideration that there are anthropogenic activities and influences are present within the landscape, there are several negative impacts to biodiversity, including avifauna (Figure 6-1). These include:

- Existing electrical infrastructure;
- Farm roads and main roads (and associated traffic and wildlife road mortalities);
- Grazing and trampling of natural vegetation by livestock;
- Invasive species; and

- Fences and associated maintenance.

Figure 6-1 Negative impacts identified across the project area

6.2 Anticipated Impacts

The impacts anticipated for the proposed activities are considered in order to predict and quantify these impacts and assess & evaluate the magnitude of the identified terrestrial biodiversity (Table 6-1).

Table 6-1 Anticipated impacts of the proposed activities on avifauna

Main Impact	Project activities that can cause loss/impacts to habitat (especially with regard to the proposed infrastructure areas):	Secondary impacts anticipated
1. Destruction, fragmentation and degradation of habitats and ecosystems	Physical removal of vegetation, including protected species.	Displacement/loss of avifauna (including possible SCC)
	Access roads and servitudes	Increased potential for soil erosion
	Soil dust precipitation	Habitat fragmentation
	Dumping of waste products	Increased potential for establishment of alien & invasive vegetation
	Random events such as fire (cooking fires or cigarettes)	Erosion
Main Impact	**Project activities that can cause the spread and/or establishment of alien and/or invasive species**	**Secondary impacts anticipated**

2. Spread and/or establishment of alien and/or invasive species	Vegetation removal	Habitat loss for native avifauna (including SCC)
	Vehicles potentially spreading seed	Spreading of potentially dangerous diseases due to invasive and pest species
	Unsanitary conditions surrounding infrastructure promoting the establishment of alien and/or invasive rodents	Alteration of fauna assemblages due to habitat modification
	Creation of infrastructure suitable for breeding activities of alien and/or invasive birds	
Main Impact	**Project activities that can cause direct mortality of avifauna**	**Secondary impacts anticipated**
3. Direct mortality of avifauna	Clearing of vegetation	Loss of habitat
		Loss of ecosystem services
	Roadkill due to vehicle collision	Increase in rodent populations and associated disease risk
	Pollution of water resources due to dust effects, chemical spills, etc.	
	Intentional killing of avifauna for food (hunting)	
Main Impact	**Project activities that can cause reduced dispersal/migration of avifauna**	**Secondary impacts anticipated**
4. Reduced dispersal/migration of avifauna	Loss of landscape used as corridor	Reduced dispersal/migration of avifauna
		Loss of ecosystem services
	Compacted roads	Reduced plant seed dispersal
	Removal of vegetation	
Main Impact	**Project activities that can cause pollution in watercourses and the surrounding environment**	**Secondary impacts anticipated**
5. Environmental pollution due to water runoff, spills from vehicles and erosion	Chemical (organic/inorganic) spills	Pollution in watercourses and the surrounding environment
	Erosion	avifauna mortality (direct and indirectly)
		Groundwater pollution
		Loss of ecosystem services
Main Impact	**Project activities that can cause disruption/alteration of ecological life cycles due to sensory disturbance.**	**Secondary impacts anticipated**
6.Disruption/alteration of ecological life cycles (breeding, migration, feeding) due to noise, dust and light pollution.	Operation of machinery (Large earth moving machinery, vehicles)	Disruption/alteration of ecological life cycles due to noise
		Loss of ecosystem services
	Project activities that can cause disruption/alteration of ecological life cycles due to dust	Secondary impacts associated with disruption/alteration of ecological life cycles due to dust

	Vehicles	Loss of ecosystem services
Main Impact	**Project activities that can cause staff to interact directly with potentially dangerous avifauna**	**Secondary impacts anticipated**
7. Staff and others interacting directly with avifauna (potentially dangerous) or poaching of animals	All unregulated/supervised activities outdoors	Loss of SCCs
Main Impact	**Project activities that can cause staff to interact directly with potentially dangerous avifauna**	**Secondary impacts anticipated**
8. Collision and electrocution with any infrastructure and existing electrical infrastructure (PV panel, power lines, fencing)	Collisions are thought to arise when birds (particularly waterbirds) mistake the panels for waterbodies, known as the "lake effect" (Lovich & Ennen, 2011). Migrating or dispersing birds become disorientated by the polarised light reflected by the panels. Visser *et al* (2019) performed a study at a utility-scale PV SEF in the Northern Cape and found that most of the species affected by the facility were passerine species. This is due to collisions with solar panels from underneath. During a predator attack while foraging under the panels, individuals may alight and then collide with the panel Fencing of the PV site can influence birds in six ways (BirdLife South Africa, 2015): • Snagging – occurs when a body part is impaled on one or more barbs or razor points of a fence; • Snaring – when a bird's foot/leg becomes trapped between two overlapping wires; • Impact injuries – birds flying into a fence, the impact may kill or injure the bird; • Snarling – when birds try and push through a mesh or wire stands, ultimately becoming trapped (uncommon); • Electrocution – electrified fence can kill or severely injure birds; and • Barrier effect – fences may limit flightless birds including moulting waterfowl from resources.	Loss of avifauna species and SCCs

6.3 Alternatives considered

No layout alternatives were considered.

6.4 Loss of Irreplaceable Resources

The proposed activities will be conducted over several habitats mainly degraded due to agricultural activities. Result in the loss of the following resources:

- ESA1
- SCC avifauna species (through direct mortality during clearing and construction activities);

6.5 Assessment of Impact Significance

The assessment of impact significance considers the implementation of post-mitigation scenarios. Although different species and groups will react differently to the development, the risk assessment was undertaken, bearing in mind the potential impacts on the priority species listed in this report.

6.5.1.1 Construction Phase

The following potential main impacts on biodiversity (based on the framework above) were considered for the construction phase of the proposed development. This phase refers to the period during construction when the proposed features are constructed; and is considered to have the largest direct impact on biodiversity. The following potential impacts on avifauna biodiversity were considered:

- Destruction, further loss and fragmentation of the of habitats, ecosystems and vegetation community, foraging and potential breeding habitats for SCC;
- Introduction of alien species, especially plants, altering natural vegetation for avifauna;
- Displacement of the indigenous avifauna communities (including SCC) due to habitat loss, direct mortalities, and disturbance (road collisions, noise, dust, light, vibration, and poaching);
- Direct mortality from persecution or poaching of avifauna species and collection of eggs.
- Chemical pollution associated with dust suppressants

All likely impacts are rated as Medium-High negative significance pre-mitigation but may be reduced to Low significance through the proper implementation of effective mitigation measures. The most important mitigation measures for this phase are as follows:

- Ensure that the site footprint is as small as possible and responsibly positioned, the development area must be properly fenced off during construction;
- De-stumping and brush cutting must be done over at least three days and conducted linearly and successively from the south to the north; and
- No trapping, killing, or poisoning of any wildlife is to be allowed and signs must be put up to enforce this. Monitoring must take place in this regard.

6.5.1.2 Operational Phase

The operational phase of the impact of daily activities is anticipated to spread further the IAP, as well as the deterioration of the habitats due to the increase of dust and edge effect impacts. Moving maintenance vehicles do not only cause sensory disturbances to avifauna, affecting their life cycles and movement, but will lead to direct mortalities due to collisions.

The following potential impacts were considered:

- Continued fragmentation and degradation of natural habitats and ecosystems;
- The continuing spread of IAP and weed species;
- Ongoing displacement and direct mortalities of the avifauna communities (including SCC) due to continued disturbance (road collisions, noise, light, dust, vibration, poaching, etc.); and
- Heat Radiation from the BESS and Solar Panels; and
- Electrocution and collision risk with infrastructure associated with the PV Facility and existing electrical infrastructure

All potential impacts may be reduced from a significance rating of Medium to Low with the proper implementation of ongoing mitigation measures. The most important mitigation measures to implement during this phase include:

- The continual usage of the same roadways, parking areas and walkways, and the following of speed limits;
- The responsible management of all waste;
- An IAP management and habitat rehabilitation plan must be implemented;

- Ongoing post-construction monitoring should be conducted to determine the impact of PV facilities as required by Jenkins *et al.* (2017).

6.5.2 Construction Phase

Impact	Prior to mitigation						Post mitigation					
	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance
Habitat destruction within the project footprint	4	3	3	3	4		3	2	2	2	4	
	Life of operation or less than 20 years: Long Term	Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	Significant / ecosystem structure and function moderately altered	Ecology moderately sensitive/ /important	Highly likely	**Moderate**	One year to five years: Medium Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Likely	**Low**
Destruction, degradation and fragmentation of surrounding habitats	4	3	3	3	4		3	2	2	2	4	
	Life of operation or less than 20 years: Long Term	Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	Significant / ecosystem structure and function moderately altered	Ecology moderately sensitive/ /important	Highly likely	**Moderate**	One year to five years: Medium Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Likely	**Low**
Displacement/emigration of avifauna community (including SCC) due to noise pollution	4	3	2	3	3		3	2	2	2	2	
	Life of operation or less than 20 years: Long Term	Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	Small / ecosystem structure and function largely unchanged	Ecology moderately sensitive/ /important	Likely	**Moderate**	One year to five years: Medium Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Possible	**Low**

Impact	Prior to mitigation						Post mitigation					
	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance
Direct mortality from persecution or poaching of avifauna species and collection of eggs	3	3	2	2	3		2	2	2	2	2	
	One year to five years: Medium Term	Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Likely	**Low**	One month to one year: Short Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Possible	**Absent**
Direct mortality from increased vehicle and heavy machinery traffic	4	3	3	3	4		2	2	2	2	1	
	Life of operation or less than 20 years: Long Term	Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	Significant / ecosystem structure and function moderately altered	Ecology moderately sensitive/ /important	Highly likely	**Moderate**	One month to one year: Short Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Highly unlikely	**Absent**
Chemical pollution associated with dust suppressants	4	4	4	3	4		2	2	2	2	1	
	Life of operation or less than 20	Regional within 5 km of the site boundary / < 2000ha impacted	Great / harmful/ ecosystem structure and	Ecology moderately sensitive/ /important	Highly likely	**Moderately High**	One month to one year:	Development specific/ within the site boundary / < 100 ha impacted /	Small / ecosystem structure and function	Ecology with limited sensitivity/importance	Highly unlikely	**Absent**

Impact	Prior to mitigation						Post mitigation					
	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance
	years: Long Term	/ Linear features affected < 3000m	function largely altered				Short Term	Linear features affected < 100m	largely unchanged			

6.5.3 Operational Phase

Impact	Prior to mitigation						Post mitigation					
	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance
Collisions with infrastructure associated with the PV Facility and existing electrical infrastructure	5	2	3	3	4		4	2	2	2	3	
	Permanent	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Significant / ecosystem structure and function moderately altered	Ecology moderately sensitive/ /important	Highly likely	**Moderate**	Life of operation or less than 20 years: Long Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Possible	**Low**
Electrocution due to infrastructure associated with the PV Facility and existing electrical infrastructure	5	2	3	3	4		4	2	2	2	3	
	Permanent	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Significant / ecosystem structure and function moderately altered	Ecology moderately sensitive/ /important	Highly likely	**Moderate**	Life of operation or less than 20 years: Long Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Possible	**Low**
Ongoing displacement and Direct mortality from roadkills, persecution or poaching of avifauna species and	4	3	3	3	3		4	2	2	2	2	
	Life of operation or less than 20 years: Long Term	Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features	Significant / ecosystem structure and function moderately altered	Ecology moderately sensitive/ /important	Likely	**Moderate**	Life of operation or less than 20 years: Long Term	Development specific/ within the site boundary / < 100 ha impacted / Linear	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Possible	**Low**

Impact	Prior to mitigation						Post mitigation					
	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance
collection of eggs		affected < 1000m						features affected < 100m				
Direct mortalities and hinderance of movement from fencing infrastructure	5	3	3	3	3		4	2	2	2	3	
	Permanent	Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	Significant / ecosystem structure and function moderately altered	Ecology moderately sensitive/ /important	Likely	**Moderate**	Life of operation or less than 20 years: Long Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Likely	**Low**
Pollution due to chemicals used to keep the PV panels clean	4	3	3	3	3		4	2	2	2	3	
	Life of operation or less than 20 years: Long Term	Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	Significant / ecosystem structure and function moderately altered	Ecology moderately sensitive/ /important	Likely	**Moderate**	Life of operation or less than 20 years: Long Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Likely	**Low**

6.5.4 Decommissioning Phase

Impact	Prior to mitigation						Post mitigation					
	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance
Direct mortality due to earthworks, vehicle collisions and persecution	5	3	3	3	3		2	2	2	2	2	
	Permanent	Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	Significant / ecosystem structure and function moderately altered	Ecology moderately sensitive/ /important	Likely	**Moderate**	One month to one year: Short Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Possible	**Absent**
Direct mortality due to infrastructure including collisions with PV infrastructure, fences etc	5	3	3	3	4		2	2	2	2	1	
	Permanent	Local area/ within 1 km of the site boundary / < 5000ha impacted / Linear features affected < 1000m	Significant / ecosystem structure and function moderately altered	Ecology moderately sensitive/ /important	Highly likely	**Moderately High**	One month to one year: Short Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Highly unlikely	**Absent**
Continued habitat degradation due to Invasive Alien Plant encroachment and erosion	5	3	3	3	4		2	2	2	2	2	
	Permanent	Local area/ within 1 km of the site boundary / < 5000ha impacted /	Significant / ecosystem structure and function moderately altered	Ecology moderately sensitive/ /important	Highly likely	**Moderately High**	One month to one year: Short Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features	Small / ecosystem structure and function largely unchanged	Ecology with limited sensitivity/importance	Possible	**Absent**

Impact	Prior to mitigation						Post mitigation					
	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance
		Linear features affected < 1000m						affected < 100m				

6.6 Unplanned Events

The planned activities will have anticipated impacts as discussed above; however, unplanned events may occur on any project, leading to potential impacts that will require appropriate management.

Table 6-2 is a summary of the findings of an unplanned event assessment conducted from a terrestrial ecology perspective. Note that not all potential unplanned events may be captured herein, and this process must therefore be managed throughout all phases and according to events that take place or have a high likelihood of taking place.

Table 6-2 Summary of unplanned events, potential impacts and mitigations

Unplanned Event	Potential Impact	Mitigation
Spills into the surrounding environment	Contamination of habitat as well as water resources associated with a spillage.	A spill response kit must be available at all times. The incident must be reported on, and if necessary, a biodiversity specialist must investigate the extent of the impact and provide rehabilitation recommendations.
Fire	Uncontrolled/unmanaged fire that spreads to the surrounding natural savannah.	An appropriate fire management plan needs to be compiled and implemented.
Erosion caused by water runoff from the surface	Erosion on the side of the roads and cleared areas.	A storm water management plan must be compiled and implemented.

6.7 Cumulative Impacts

The impacts of projects are often assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation this provides a good method of assessing a project's impact. However, in areas where baselines have already been affected, or where future development will continue to add to the impacts pre-existing in an area or region, it is appropriate to consider the cumulative effects of development or disturbance activities. This is similar to the concept of shifting baselines, which describes how the environmental baseline at a specific point in time may actually represent a significant change from the original state of the system. This section describes the potential cumulative impacts of the project on local fauna and flora specifically.

Cumulative impacts are assessed within the context of the extent of the proposed PAOI, other similar developments and activities in the area (existing and in-process), and general habitat loss and transformation resulting from any other activities in the area. Localised cumulative impacts include those from operations that are close enough (within 30 km) to potentially cause additive effects on the local environment or any sensitive receptors (relevant operations include nearby large road networks, other solar PV facilities, agricultural activities, dense urban development, and power infrastructure). Relevant impacts include the overall reduction of foraging and nesting habitat, dust deposition, noise and vibration, disruption of functional corridors of habitat important for movement and migration, disruption of waterways, groundwater drawdown, and groundwater and surface water quality depletion.

Long-term cumulative impacts associated with the site development activities can lead to the loss of endemic and threatened species, including natural habitat and vegetation types, and these impacts can even lead to the degradation of conserved areas such as regional game parks and reserves.

In order to spatially quantify the cumulative effects of the proposed development, the PAOI is compared with the overall effects of surrounding development (including total transformation, and transformation as a result of new and proposed developments of a similar type, i.e., solar). Note that this spatial assessment is only conducted for the proposed solar development footprint area, the powerline area is omitted.

The total area within the 30 km buffer around the PV development area amounts to 293894 ha, but when considering the transformation (37321 ha) that has taken place within this radius, 256573 ha of

intact habitat remains according to the RLE. Therefore, the area within 30 km of the project has experienced approximately 12.7% loss in natural habitat.

Considering this context, the PV footprint is 76 ha and no other similar projects exists in the 30 km region (as per the latest South African Renewable Energy EIA Application Database) which means that the total amount of remaining habitat lost as a result of the solar project amounts to 0.0003% (PV developments as a percentage of the total remaining habitat). Table 6-3 outlines the calculation procedure for the spatial assessment of cumulative impacts.

Table 6-3 Loss of natural habitat within a 30 km radius

	Total Habitat (ha)	Tot. Remaining Habitat (ha)	Total Historical Loss	Footprint (ha)	Similar Projects (ha)	Cumulative Habitat Lost
Project cumulative effects (Spatial)	293894	256573	**12.7%**	76	0	**0.0003%**

Refer to Figure 6-2for a map illustrating the amount of remaining natural habitat within a 30 km radius of the proposed project. Considering the PV, the area is 76 ha, will contribute 0.0003% in the cumulative impact.

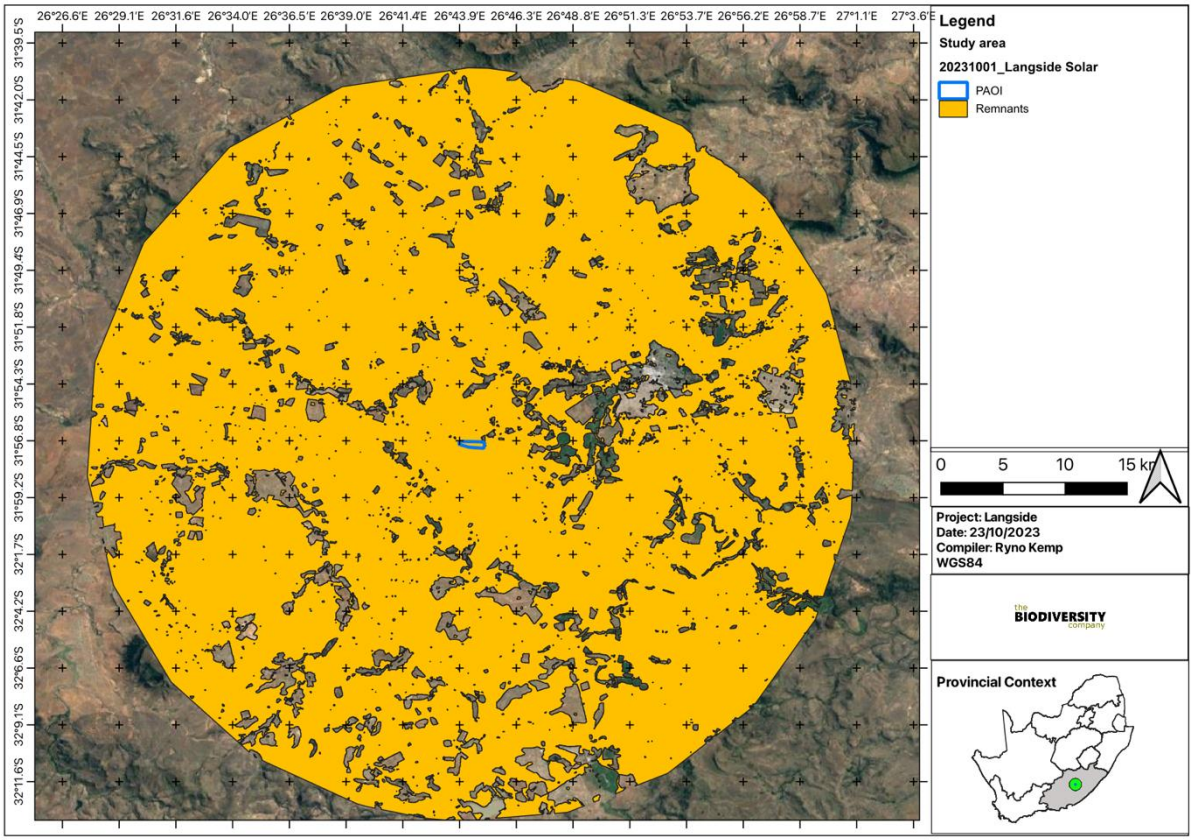


Figure 6-2 Map of the remaining natural vegetation and approved PV projects within the PAOI region.

7 Environmental Management Programme (EMPr)

The aim of the management outcomes is to present the mitigations in such a way that the can be incorporated into the Environmental Management Programme (EMPr), allowing for more successful implementation and auditing of the mitigations and monitoring guidelines. Table 7-1 presents the recommended mitigation measures and the respective timeframes, targets and performance indicators for the terrestrial study.

The focus of mitigation measures is to reduce the significance of potential impacts associated with the development and thereby to:

- Prevent the further loss and fragmentation of vegetation communities and the ESA areas in the vicinity of the project area;
- As far as possible, reduce the negative fragmentation effects of the development and enable safe movement of faunal species;
- Prevent the direct and indirect loss and disturbance of faunal species and community (including potentially occurring species of conservation concern); and

Follow the guidelines for interpreting Site Ecological Importance (SEI).

Table 7-1 presents the recommended mitigation measures and the respective timeframes, targets, and performance indicators pertaining to the avifaunal component.

Table 7-1 Summary of management outcomes pertaining to impacts on avifauna and their habitats

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
Management outcome: Habitats				
The areas to be developed must be specifically demarcated to prevent movement into surrounding environments.	Life of operation	Project Manager Environmental Officer	Development footprint	Ongoing
Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, must under no circumstances be fragmented or disturbed further.	Life of operation	Project Manager Environmental Officer	Areas of indigenous vegetation	Ongoing
If possible solar panels must be mounted on pile driven or screw foundations, such as post support spikes, rather than heavy foundations, such as trench-fill or mass concrete foundations, to reduce the negative effects on natural soil functioning, such as its filtering and buffering characteristics, while maintaining habitats for both below and above-ground biodiversity.	Life of operation	Project Manager	Solar panels must be mounted on pile driven or screw foundations, such as post support spikes, rather than heavy foundations, such as trench-fill or mass concrete foundations, to reduce the negative effects on natural soil functioning, such as its filtering and buffering characteristics, while maintaining habitats for both below and above-ground biodiversity	Life of operation

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
Indigenous vegetation to be maintained under the solar panels to ensure biodiversity is maintained and to prevent soil erosion (Beatty et al, 2017; Sinha et al, 2018).	Life of operation	Project Manager	Indigenous vegetation to be maintained under the solar panels to ensure biodiversity is maintained and to prevent soil erosion (Beatty et al, 2017; Sinha et al, 2018).	Life of operation
Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien invasive plant species. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are indigenous to this vegetation type.	Decommissioning /Rehabilitation	Project Manager	Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien invasive plant species. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are indigenous to this vegetation type.	Decommissioning /Rehabilitation
A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. Servicing of vehicles only allowed in the site camp in a dedicated impermeable service bay with catch pit. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment.	Life of operation	Environmental Officer Contractor	Spill events, Vehicles dripping.	Ongoing
Cement must be mixed in a designated area on a liner away from water sources and buffers so that successful rehabilitation of the construction areas can take place	Planning and Construction	Project Manager Environmental Officer Contractor Engineer	Water pollution and restricted rehabilitation	During phase
Leaking equipment and vehicles must be repaired immediately or be removed from PAOI to facilitate repair.	Life of operation	Environmental Officer Contractor	Leaks and spills	Ongoing
A fire management plan needs to be complied to restrict the impact of fire.	Life of operation	Environmental Officer Contractor	Fire Management	During Phase
Management outcome: Avifauna				

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	Responsible Party	Aspect	Frequency
All personnel should undergo environmental induction with regards to avifauna and in particular awareness about not harming, collecting, or hunting terrestrial species, and owls, which are often persecuted out of superstition. Signs must be put up to enforce this.	Life of operation	Environmental Officer	Evidence of trapping etc	Ongoing
The duration of the construction must be kept to a minimum to avoid disturbing avifauna.	Construction/Operational Phase	Project Manager Environmental Officer	Construction/Closure Phase	Ongoing
Outside lighting must be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (red/green) lights should be used wherever possible.	Construction/Operational Phase	Project Manager Environmental Officer Design Engineer	Light pollution and period of light.	Ongoing
All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limit (40km/h on the main access and 25km/h on the internal roads), to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited.	Life of Operation	Health and Safety Officer	Compliance to the training.	Ongoing
All project activities must be undertaken with appropriate noise mitigation measures to avoid disturbance to avifauna population in the region	Construction/Operational Phase	Project Manager Environmental Officer	Noise	Ongoing
All areas to be developed must be walked through prior to any activity to ensure no SCC nests or avifauna species are found in the area. Should any Species of Conservation Concern be found and not move out of the area, or their nest be found in the area a suitably qualified specialist must be consulted to advise on the correct actions to be taken.	Construction	Environmental Officer	Presence of avifauna species and nests	During Phase
Infrastructure must be consolidated where possible in order to minimise the amount of ground and air space used.	Planning and Construction	Project Manager Environmental Officer Contractor Engineer	Presence of bird collisions	During phase
All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution	Planning and Construction	Environmental Officer Contractor Engineer	Presence of electrocuted birds	During phase
Use environmentally friendly cleaning and dust suppressant products	Construction and Operation	Environmental Officer Contractor	Chemicals used	During phase

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
		Engineer		
Fencing mitigations: • Top 2 strands must be smooth wire; • Routinely retention loose wires; • Minimum 300 mm between wires; and • Place markers on fences.	Life of Operation	Project Manager Environmental Officer Contractor Design Engineer	Presence of birds stuck /dead in fences Monitor fences for slack wires	During phase
As far as possible power cables within the PAOI should be thoroughly insulated and preferably buried.	Construction and Operation	Project Manager Environmental Officer Design Engineer	Exposed cables	During phase
Any exposed parts must be covered (insulated) to reduce electrocution risk	Planning and construction	Environmental Officer & Contractor, Engineer	Presence of electrocuted birds	During phase
The BESS must be enclosed in a structure with a non-reflective surface	Construction and Operation	Project Manager Environmental Officer Design Engineer	Reflective surfaces on BESS	During phase
Post-construction monitoring should follow the BirdLife South Africa best practice guidelines for solar energy facilities (BirdLife South Africa, 2017). If monitoring results indicate excessive bird fatalities, then adaptive mitigations should be implemented. Before implementation, these should be discussed with the avifaunal specialist and ECO and could include the retrofitting/incorporation of additional visual cues/diverters to existing PV panels/infrastructure. Post-construction monitoring should assess if there are any changes in a) habitat available to birds in and around the PV, b) abundance and species composition of birds, c) movements of priority species, and d) breeding success of priority species. It should also provide an indication of fatality rates as a result of collisions, burning and electrocution, and if there are any spatial, temporal or conditional patterns to the frequency of collisions. Most importantly, post-construction monitoring should highlight if additional mitigation is required to reduce impacts to acceptable levels. Data collection should be repeated during the first two years of operation (e.g. 6 months in year 1, and 6 months in year 2 for Regime 2 sites), and should be combined with monitoring of fatalities over the full two-year period.	Operational	Project Manager Environmental Officer Design Engineer	Presence of dead birds in the project site. Monitoring must be undertaken in accordance with the BirdLife South Africa best practice guidelines for solar energy facilities (BirdLife South Africa, 2017). The precise location of any dead birds found should be recorded and mapped (using GPS). All carcasses should be photographed as found then placed in a plastic bag, labelled as to the location and date, and preserved (refrigerated or frozen) until identified. Feather spots (e.g., a group of feathers attached to skin) and body parts should also be collected.	During phase. The monitoring frequency is based on the collision rate.

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
Infrastructure should be consolidated where possible in order to minimise the amount of ground and air space used.	Planning and Construction	Project Manager Environmental Officer Contractor Engineer	Presence of bird collisions	During phase
All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution	Planning and Construction	Environmental Officer Contractor Engineer	Presence of electrocuted birds	During phase
Any exposed parts must be covered (insulated) to reduce electrocution risk	Planning and construction	Environmental Officer & Contractor, Engineer	Presence of electrocuted birds	During phase
Overhead cables/lines must be fitted with bird diverters or flappers. Eskom/line owners must be consulted on the addition of diverters to existing overhead cables within a 500m buffer	Operational	Project Manager Environmental Officer Design Engineer	Collisions. Monitoring must be undertaken in accordance with the BirdLife South Africa best practice guidelines for solar energy facilities (BirdLife South Africa, 2017).	During phase. The monitoring frequency is based on the collision rate.
All infrastructure including powerlines must be removed if the facility is decommissioned	Closure/Rehabilitation	Project Manager Environmental Officer	Infrastructure removal	During Process

Management outcome: Alien species				
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	Responsible Party	Aspect	Frequency
An Invasive Alien Plant Management Plan must be compiled and implemented. This should regularly be updated to reflect the annual changes in IAP composition.	Life of operation	Project manager, Environmental Officer & Contractor	Manage and assess presence and encroachment of alien vegetation	Twice a year
The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. Footprints of the roads must be kept to prescribed widths.	Construction/Operational Phase	Project manager, Environmental Officer & Contractor	Footprint Area	Life of operation

Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site. A location specific waste management plan must be put in place to limit the presence of rodents and pests and waste must not be allowed to enter surrounding areas.	Life of operation	Environmental Officer & Health and Safety Officer	Presence of waste	Life of operation
A pest control plan must be put in place and implemented; it is imperative that poisons not be used to control pests due to the likely occasional presence of SCC.	Life of operation	Environmental Officer & Health and Safety Officer	Evidence or presence of pests	Life of operation

Management outcome: Dust				
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	Responsible Party	Aspect	Frequency
Dust-reducing mitigation measures must be put in place and must be strictly adhered to. This includes the wetting of exposed soft soil surfaces. No non-environmentally friendly suppressants may be used as this could result in the pollution of water sources.	Construction phase	Contractor	Dustfall	Dust monitoring program.

Management outcome: Waste management				
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	Responsible Party	Aspect	Frequency
Waste management must be a priority and all waste must be collected and stored effectively and responsibly according to a site-specific waste management plan. Dangerous waste such as metal wires and glass must only be stored in fully sealed and secure containers, before being moved off site as soon as possible.	Life of operation	Environmental Officer & Contractor	Waste Removal	Weekly
Litter, spills, fuels, chemical and human waste in and around the project area must be minimised and controlled according to the waste management plan.	Construction/Closure Phase	Environmental Officer & Health and Safety Officer	Presence of Waste	Daily
Cement mixing may not be performed on the ground. It is recommended that only closed side drum or pan type concrete mixers be utilised. Any spills must be immediately contained and isolated from the natural environment, before being removed from site.	Construction Phase	Environmental Officer & Contractor	Cement mixing and spills	Every occurrence

A minimum of one toilet must be provided per 10 persons. Portable toilets must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area.	Life of operation	Environmental Officer & Health and Safety Officer	Number of toilets per staff member. Waste levels	Daily
The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility within every 10 days at least.	Life of operation	Environmental Officer & Health and Safety Officer	Availability of bins and the collection of the waste	Ongoing
Where a registered disposal facility is not available close to the project area, the Contractor shall provide a method statement with regards to waste management. Under no circumstances may domestic waste be burned on site or buried on open pits.	Life of operation	Environmental Officer, Contractor & Health and Safety Officer	Collection/handling of the waste	Ongoing
Refuse bins will be responsibly emptied and secured. Temporary storage of domestic waste shall be in covered and secured waste skips. Maximum domestic waste storage period will be 10 days.	Life of operation	Environmental Officer, Contractor & Health and Safety Officer	Management of bins and collection of waste	Ongoing, every 10 days

Management outcome: Environmental awareness training				
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	Responsible Party	Aspect	Frequency
All personnel and contractors are to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the PAOI to inform contractors and site staff of the presence of protected species and sensitive habitat, their identification, conservation status and importance, biology, habitat requirements and management requirements in line with the Environmental Authorisation and within the EMPr. Contractors and employees must all undergo the induction and must be made aware of any sensitive areas to be avoided.	Pre-construction phase	Health and Safety Officer, Environmental Officer	Compliance to the training	Ongoing

Management outcome: Erosion				
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	Responsible Party	Aspect	Frequency

Speed limits of 40km/h must be put in place to reduce erosion. Soil surfaces must be wetted as necessary to reduce the dust generated by the project activities. Speed bumps and signs must be erected to enforce slow speeds.	Life of operation	Project manager, Environmental Officer	Water Runoff from road surfaces	Ongoing
Only existing access routes and walking paths may be made use of.	Life of operation	Project manager, Environmental Officer	Routes used within the area	Ongoing
Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events etc.	Life of operation	Project manager, Environmental Officer	Re-establishment of indigenous vegetation	Progressively
A stormwater management plan must be compiled and implemented.	Life of operation	Project manager, Environmental Officer	Management plan	Before construction phase: Ongoing

8 Conclusion and Impact Statement

8.1 Conclusion

This Avifauna Impact Assessment aimed to provide information to guide the risk of the proposed Solar PV project and the associated infrastructure to the Avifauna community likely affected by its development.

Two site visits were conducted for this regime 2 assessment. The first was conducted in summer, over 1 day on 18 October 2022 and the second summer survey, over 1 day on 19th October 2023. However, no point counts were conducted during the first survey. The second survey covered the entire proposed area. Although it is different from the described recommended surveying technique, the specialist believes these two site visits are considered sufficient from a seasonal perspective and require no additional season assessment.

Sampling consisted of Standardised Point Counts as well as random diurnal incidental surveys. A total of 78 species were observed during the field investigation which accounts for approximately 36.7% of the total number of expected species. Two SCCs were recorded during the survey period. These were Cape vulture and Secretarybird. Eight (8) risk species were recorded in the field investigation. These are species at risk for collisions, electrocutions or sensitive to habitat loss.

Management measures include ensuring the construction footprint is kept small and industry-standard mitigations are put into place for solar panels, fencing and electrical infrastructure, among other measures. The project area is located within the Stormberg REDZ, facilitating the process for responsible renewable development. All project aspects can be effectively mitigated to an acceptable residual impact in support of the renewable energy project.

8.2 Impact Statement

The main expected impacts of the proposed infrastructure will include the following:

- Habitat loss and fragmentation;
- Degradation of surrounding habitat;
- Disturbance and displacement caused during the construction and maintenance phases; and
- Direct mortality during the construction phase.

Mitigation measures, as described in this report, can be implemented to reduce the significance of the risk to an acceptable residual risk level. The cumulative impact of the project, taking into account the transformation of surrounding land, is rated as ‘Low’. Nevertheless, it is important to consider careful regional spatial planning and management in order to maintain the functionality of the remaining corridors of habitat. Considering the above-mentioned information, it is the opinion of the specialist that the project may be favourably considered, on condition that all the mitigation and recommendations provided in this report and other specialist reports are implemented. The proposed PV development already avoids sensitive areas. However, it is recommended that a final walkthrough be done, and the purpose of the walkthrough would be for any additional mitigation, which does not constitute post-EA studies.

9 References

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10 Appendix Items

10.1 Appendix A: Expected species

Scientific Name	Common Name	Family Name	Regional	Global (IUCN)
Accipiter rufiventris	Rufous-breasted Sparrowhawk	Accipitridae	Unlisted	Unlisted
Acrocephalus baeticatus	Common Reed Warbler	Acrocephalidae	Unlisted	Unlisted
Acrocephalus baeticatus	Common Reed Warbler	Acrocephalidae	Unlisted	Unlisted
Acrocephalus gracilirostris	Lesser Swamp Warbler	Acrocephalidae	Unlisted	Unlisted
Alopochen aegyptiaca	Egyptian Goose	Anatidae	Unlisted	Unlisted
Amadina erythrocephala	Red-headed Finch	Estriididae	Unlisted	Unlisted
Amblyospiza albifrons	Thick-billed Weaver	Ploceidae	Unlisted	Unlisted
Anas capensis	Cape Teal	Anatidae	Unlisted	Unlisted
Anas erythrorhyncha	Red-billed Teal	Anatidae	Unlisted	Unlisted
Anas sparsa	African Black Duck	Anatidae	Unlisted	Unlisted
Anas undulata	Yellow-billed Duck	Anatidae	Unlisted	Unlisted
Andropadus importunus	Sombre Greenbul	Pycnonotidae	Unlisted	Unlisted
Anhinga rufa	African Darter	Anhingidae	Unlisted	Unlisted
Anthus cinnamomeus	African Pipit	Motacillidae	Unlisted	Unlisted
Anthus crenatus	African Rock Pipit	Motacillidae	NT	LC
Anthus hoeschi	Mountain Pipit	Motacillidae	NT	NT
Anthus leucophrys	Plain-backed Pipit	Motacillidae	Unlisted	Unlisted
Apalis thoracica	Bar-throated Apalis	Cisticolidae	Unlisted	Unlisted
Apus affinis	Little Swift	Apodidae	Unlisted	Unlisted
Apus apus	Common Swift	Apodidae	Unlisted	Unlisted
Apus barbatus	African Black Swift	Apodidae	Unlisted	Unlisted
Apus caffer	White-rumped Swift	Apodidae	Unlisted	Unlisted
Apus horus	Horus Swift	Apodidae	Unlisted	Unlisted
Aquila verreauxii	Verreaux's Eagle	Accipitridae	NA	LC
Ardea cinerea	Grey Heron	Ardeidae	Unlisted	Unlisted
Ardea melanocephala	Black-headed Heron	Ardeidae	Unlisted	Unlisted
Balearica regulorum	Grey Crowned Crane	Gruidae	EN	EN
Batis molitor	Chinspot Batis	Platysteiridae	Unlisted	Unlisted
Bostrychia hagedash	Hadada Ibis	Threskiornithidae	Unlisted	Unlisted
Bubo africanus	Spotted Eagle-Owl	Strigidae	Unlisted	Unlisted
Bubulcus ibis	Western Cattle Egret	Ardeidae	Unlisted	Unlisted
Burhinus capensis	Spotted Thick-knee	Burhinidae	Unlisted	Unlisted
Buteo buteo	Common Buzzard	Accipitridae	Unlisted	Unlisted
Buteo rufofuscus	Jackal Buzzard	Accipitridae	Unlisted	Unlisted
Calandrella cinerea	Red-capped Lark	Alaudidae	Unlisted	Unlisted
Campephaga flava	Black Cuckooshrike	Campephagidae	Unlisted	Unlisted

Campicoloides bifasciatus	Buff-streaked Chat	Muscicapidae	Unlisted	Unlisted
Caprimulgus pectoralis	Fiery-necked Nightjar	Caprimulgidae	Unlisted	Unlisted
Cecropis abyssinica	Lesser Striped Swallow	Hirundinidae	Unlisted	Unlisted
Cecropis cucullata	Greater Striped Swallow	Hirundinidae	Unlisted	Unlisted
Cercotrichas coryphoeus	Karoo Scrub Robin	Muscicapidae	Unlisted	Unlisted
Cercotrichas leucophrys	White-browed Scrub Robin	Muscicapidae	Unlisted	Unlisted
Certhilauda semitorquata	Eastern Long-billed Lark	Alaudidae	Unlisted	Unlisted
Chalcomitra amethystina	Amethyst Sunbird	Nectariniidae	Unlisted	Unlisted
Charadrius tricollaris	Three-banded Plover	Charadriidae	Unlisted	Unlisted
Chersomanes albofasciata	Spike-heeled Lark	Alaudidae	Unlisted	Unlisted
Chlidonias hybrida	Whiskered Tern	Laridae	Unlisted	Unlisted
Chlorophoneus sulfureopectus	Orange-breasted Bush-shrike	Malaconotidae	Unlisted	Unlisted
Chrysococcyx caprius	Diederik Cuckoo	Cuculidae	Unlisted	Unlisted
Chrysococcyx klaas	Klaas's Cuckoo	Cuculidae	Unlisted	Unlisted
Ciconia ciconia	White Stork	Ciconiidae	Unlisted	Unlisted
Cinnyricinclus leucogaster	Violet-backed Starling	Sturnidae	Unlisted	Unlisted
Cinnyris afer	Greater Double-collared Sunbird	Nectariniidae	Unlisted	Unlisted
Cinnyris chalybeus	Southern Double-collared Sunbird	Nectariniidae	Unlisted	Unlisted
Circus maurus	Black Harrier	Accipitridae	EN	EN
Cisticola aridulus	Desert Cisticola	Cisticolidae	Unlisted	Unlisted
Cisticola ayresii	Wing-snapping Cisticola	Cisticolidae	Unlisted	Unlisted
Cisticola fulvicapilla	Neddicky	Cisticolidae	Unlisted	Unlisted
Cisticola juncidis	Zitting Cisticola	Cisticolidae	Unlisted	Unlisted
Cisticola lais	Wailing Cisticola	Cisticolidae	Unlisted	Unlisted
Cisticola subruficapilla	Grey-backed Cisticola	Cisticolidae	Unlisted	Unlisted
Cisticola textrix	Cloud Cisticola	Cisticolidae	Unlisted	Unlisted
Cisticola tinniens	Levaillant's Cisticola	Cisticolidae	Unlisted	Unlisted
Clamator jacobinus	Jacobin Cuckoo	Cuculidae	Unlisted	Unlisted
Coccopygia melanotis	Swee Waxbill	Estrildidae	Unlisted	Unlisted
Colius striatus	Speckled Mousebird	Coliidae	Unlisted	Unlisted
Columba guinea	Speckled Pigeon	Columbidae	Unlisted	Unlisted
Columba livia	Rock Dove	Columbidae	Unlisted	Unlisted
Corvus albicollis	White-necked Raven	Corvidae	Unlisted	Unlisted
Corvus albus	Pied Crow	Corvidae	Unlisted	Unlisted
Corvus capensis	Cape Crow	Corvidae	Unlisted	Unlisted
Corythornis cristatus	Malachite Kingfisher	Alcedinidae	Unlisted	Unlisted
Cossypha caffra	Cape Robin-Chat	Muscicapidae	Unlisted	Unlisted
Coturnix coturnix	Common Quail	Phasianidae	Unlisted	Unlisted
Creatophora cinerea	Wattled Starling	Sturnidae	Unlisted	Unlisted

Crithagra atrogularis	Black-throated Canary	Fringillidae	Unlisted	Unlisted
Crithagra flaviventris	Yellow Canary	Fringillidae	Unlisted	Unlisted
Crithagra gularis	Streaky-headed Seedeater	Fringillidae	Unlisted	Unlisted
Crithagra mozambica	Yellow-fronted Canary	Fringillidae	Unlisted	Unlisted
Cuculus clamosus	Black Cuckoo	Cuculidae	Unlisted	Unlisted
Cuculus solitarius	Red-chested Cuckoo	Cuculidae	Unlisted	Unlisted
Curruca subcoerulea	Chestnut-vented Warbler	Sylviidae	Unlisted	Unlisted
Cursorius rufus	Burchell's Courser	Glareolidae	VU	LC
Cypsiurus parvus	African Palm Swift	Apodidae	Unlisted	Unlisted
Delichon urbicum	Common House Martin	Hirundinidae	Unlisted	Unlisted
Dendrocygna viduata	White-faced Whistling Duck	Anatidae	Unlisted	Unlisted
Dendropicos fuscescens	Cardinal Woodpecker	Picidae	Unlisted	Unlisted
Dendropicos griseocephalus	Olive Woodpecker	Picidae	Unlisted	Unlisted
Dicrurus adsimilis	Fork-tailed Drongo	Dicruridae	Unlisted	Unlisted
Elanus caeruleus	Black-winged Kite	Accipitridae	Unlisted	Unlisted
Emberiza capensis	Cape Bunting	Emberizidae	Unlisted	Unlisted
Emberiza flaviventris	Golden-breasted Bunting	Emberizidae	Unlisted	Unlisted
Emberiza impetuani	Lark-like Bunting	Emberizidae	Unlisted	Unlisted
Emberiza tahapisi	Cinnamon-breasted Bunting	Emberizidae	Unlisted	Unlisted
Eremomela icteropygialis	Yellow-bellied Eremomela	Cisticolidae	Unlisted	Unlisted
Estrilda astrild	Common Waxbill	Estrildidae	Unlisted	Unlisted
Euplectes afer	Yellow-crowned Bishop	Ploceidae	Unlisted	Unlisted
Euplectes orix	Southern Red Bishop	Ploceidae	Unlisted	Unlisted
Euplectes progne	Long-tailed Widowbird	Ploceidae	Unlisted	Unlisted
Eupodotis caerulescens	Blue Korhaan	Otididae	LC	NT
Eupodotis senegalensis	White-bellied Korhaan	Otididae	VU	LC
Falco amurensis	Amur Falcon	Falconidae	Unlisted	Unlisted
Falco biarmicus	Lanner Falcon	Falconidae	VU	LC
Falco naumanni	Lesser Kestrel	Falconidae	Unlisted	Unlisted
Falco peregrinus	Peregrine Falcon	Falconidae	Unlisted	Unlisted
Falco rupicolus	Rock Kestrel	Falconidae	Unlisted	Unlisted
Fulica cristata	Red-knobbed Coot	Rallidae	Unlisted	Unlisted
Galerida magnirostris	Large-billed Lark	Alaudidae	Unlisted	Unlisted
Gallinula chloropus	Common Moorhen	Rallidae	Unlisted	Unlisted
Geocolaptes olivaceus	Ground Woodpecker	Picidae	LC	NT
Gymnoris superciliaris	Yellow-throated Bush Sparrow	Passeridae	Unlisted	Unlisted
Gyps coprotheres	Cape Vulture	Accipitridae	EN	VU
Halcyon albiventris	Brown-hooded Kingfisher	Alcedinidae	Unlisted	Unlisted
Haliaeetus vocifer	African Fish Eagle	Accipitridae	Unlisted	Unlisted

Hieraaetus pennatus	Booted Eagle	Accipitridae	Unlisted	Unlisted
Himantopus himantopus	Black-winged Stilt	Recurvirostridae	Unlisted	Unlisted
Hirundo albigularis	White-throated Swallow	Hirundinidae	Unlisted	Unlisted
Hirundo rustica	Barn Swallow	Hirundinidae	Unlisted	Unlisted
Indicator indicator	Greater Honeyguide	Indicatoridae	Unlisted	Unlisted
Indicator minor	Lesser Honeyguide	Indicatoridae	Unlisted	Unlisted
Indicator variegatus	Scaly-throated Honeyguide	Indicatoridae	Unlisted	Unlisted
Jynx ruficollis	Red-throated Wryneck	Picidae	Unlisted	Unlisted
Lagonosticta rubricata	African Firefinch	Estriididae	Unlisted	Unlisted
Lamprotornis bicolor	Pied Starling	Sturnidae	Unlisted	Unlisted
Lamprotornis nitens	Cape Starling	Sturnidae	Unlisted	Unlisted
Laniarius ferrugineus	Southern Boubou	Malaconotidae	Unlisted	Unlisted
Lanius collaris	Southern Fiscal	Laniidae	Unlisted	Unlisted
Lanius collurio	Red-backed Shrike	Laniidae	Unlisted	Unlisted
Lophoceros alboterminatus	Crowned Hornbill	Bucerotidae	Unlisted	Unlisted
Lybius torquatus	Black-collared Barbet	Lybiidae	Unlisted	Unlisted
Macronyx capensis	Cape Longclaw	Motacillidae	Unlisted	Unlisted
Megaceryle maxima	Giant Kingfisher	Alcedinidae	Unlisted	Unlisted
Melaenornis silens	Fiscal Flycatcher	Muscicapidae	Unlisted	Unlisted
Melaniparus afer	Grey Tit	Paridae	Unlisted	Unlisted
Melaniparus niger	Southern Black Tit	Paridae	Unlisted	Unlisted
Microcarbo africanus	Reed Cormorant	Phalacrocoracidae	Unlisted	Unlisted
Micronisus gabar	Gabar Goshawk	Accipitridae	Unlisted	Unlisted
Milvus aegyptius	Yellow-billed Kite	Accipitridae	Unlisted	Unlisted
Mirafra africana	Rufous-naped Lark	Alaudidae	Unlisted	Unlisted
Mirafra cheniana	Melodious Lark	Alaudidae	Unlisted	Unlisted
Mirafra fasciolata	Eastern Clapper Lark	Alaudidae	Unlisted	Unlisted
Monticola rupestris	Cape Rock Thrush	Muscicapidae	Unlisted	Unlisted
Motacilla capensis	Cape Wagtail	Motacillidae	Unlisted	Unlisted
Muscicapa adusta	African Dusky Flycatcher	Muscicapidae	Unlisted	Unlisted
Muscicapa striata	Spotted Flycatcher	Muscicapidae	Unlisted	Unlisted
Myrmecocichla formicivora	Ant-eating Chat	Muscicapidae	Unlisted	Unlisted
Myrmecocichla monticola	Mountain Wheatear	Muscicapidae	Unlisted	Unlisted
Nectarinia famosa	Malachite Sunbird	Nectariniidae	Unlisted	Unlisted
Neotis denhami	Denham's Bustard	Otididae	VU	NT
Numida meleagris	Helmeted Guineafowl	Numididae	Unlisted	Unlisted
Nycticorax nycticorax	Black-crowned Night Heron	Ardeidae	Unlisted	Unlisted
Oenanthe familiaris	Familiar Chat	Muscicapidae	Unlisted	Unlisted
Onychognathus morio	Red-winged Starling	Sturnidae	Unlisted	Unlisted

Oriolus larvatus	Black-headed Oriole	Oriolidae	Unlisted	Unlisted
Ortygospiza atricollis	Quailfinch	Estrildidae	Unlisted	Unlisted
Passer diffusus	Southern Grey-headed Sparrow	Passeridae	Unlisted	Unlisted
Passer domesticus	House Sparrow	Passeridae	Unlisted	Unlisted
Passer melanurus	Cape Sparrow	Passeridae	Unlisted	Unlisted
Petrochelidon spilodera	South African Cliff Swallow	Hirundinidae	Unlisted	Unlisted
Phalacrocorax lucidus	White-breasted Cormorant	Phalacrocoracidae	Unlisted	Unlisted
Phoeniculus purpureus	Green Wood Hoopoe	Phoeniculidae	Unlisted	Unlisted
Phylloscopus trochilus	Willow Warbler	Phylloscopidae	Unlisted	Unlisted
Platalea alba	African Spoonbill	Threskiornithidae	Unlisted	Unlisted
Plocepasser mahali	White-browed Sparrow-Weaver	Ploceidae	Unlisted	Unlisted
Ploceus capensis	Cape Weaver	Ploceidae	Unlisted	Unlisted
Ploceus cucullatus	Village Weaver	Ploceidae	Unlisted	Unlisted
Ploceus ocularis	Spectacled Weaver	Ploceidae	Unlisted	Unlisted
Ploceus velatus	Southern Masked Weaver	Ploceidae	Unlisted	Unlisted
Polyboroides typus	African Harrier-Hawk	Accipitridae	Unlisted	Unlisted
Prinia maculosa	Karoo Prinia	Cisticolidae	Unlisted	Unlisted
Psalidoprocne pristoptera	Black Saw-wing	Hirundinidae	Unlisted	Unlisted
Ptyonoprogne fuligula	Rock Martin	Hirundinidae	Unlisted	Unlisted
Pycnonotus nigricans	African Red-eyed Bulbul	Pycnonotidae	Unlisted	Unlisted
Pycnonotus tricolor	Dark-capped Bulbul	Pycnonotidae	Unlisted	Unlisted
Quelea quelea	Red-billed Quelea	Ploceidae	Unlisted	Unlisted
Recurvirostra avosetta	Pied Avocet	Recurvirostridae	Unlisted	Unlisted
Riparia cincta	Banded Martin	Hirundinidae	Unlisted	Unlisted
Riparia paludicola	Brown-throated Martin	Hirundinidae	Unlisted	Unlisted
Sagittarius serpentarius	Secretarybird	Sagittariidae	VU	EN
Saxicola torquatus	African Stonechat	Muscicapidae	Unlisted	Unlisted
Scleroptila afra	Grey-winged Francolin	Phasianidae	Unlisted	Unlisted
Scopus umbretta	Hamerkop	Scopidae	Unlisted	Unlisted
Serinus canicollis	Cape Canary	Fringillidae	Unlisted	Unlisted
Spatula smithii	Cape Shoveler	Anatidae	Unlisted	Unlisted
Spilopelia senegalensis	Laughing Dove	Columbidae	Unlisted	Unlisted
Stenostira scita	Fairy Flycatcher	Muscicapidae	Unlisted	Unlisted
Streptopelia capicola	Ring-necked Dove	Columbidae	Unlisted	Unlisted
Streptopelia semitorquata	Red-eyed Dove	Columbidae	Unlisted	Unlisted
Struthio camelus	Common Ostrich	Struthionidae	Unlisted	Unlisted
Sturnus vulgaris	Common Starling	Sturnidae	Unlisted	Unlisted
Sylvietta rufescens	Long-billed Crombec	Macrosphenidae	Unlisted	Unlisted
Tachybaptus ruficollis	Little Grebe	Podicipedidae	Unlisted	Unlisted

Tachymarptis melba	Alpine Swift	Apodidae	Unlisted	Unlisted
Tadorna cana	South African Shelduck	Anatidae	Unlisted	Unlisted
Tchagra senegalus	Black-crowned Tchagra	Malaconotidae	Unlisted	Unlisted
Tchagra tchagra	Southern Tchagra	Malaconotidae	Unlisted	Unlisted
Telophorus zeylonus	Bokmakierie	Malaconotidae	Unlisted	Unlisted
Terpsiphone viridis	African Paradise Flycatcher	Monarchidae	Unlisted	Unlisted
Thamnolaea cinnamomeiventris	Mocking Cliff Chat	Muscicapidae	Unlisted	Unlisted
Threskiornis aethiopicus	African Sacred Ibis	Threskiornithidae	Unlisted	Unlisted
Tricholaema leucomelas	Acacia Pied Barbet	Lybiidae	Unlisted	Unlisted
Tringa glareola	Wood Sandpiper	Scolopacidae	Unlisted	Unlisted
Tringa nebularia	Common Greenshank	Pycnonotidae	Unlisted	Unlisted
Tringa stagnatilis	Marsh Sandpiper	Scolopacidae	Unlisted	Unlisted
Turdus olivaceus	Olive Thrush	Turdidae	Unlisted	Unlisted
Turdus smithi	Karoo Thrush	Turdidae	Unlisted	Unlisted
Upupa africana	African Hoopoe	Upupidae	Unlisted	Unlisted
Urocolius indicus	Red-faced Mousebird	Coliidae	Unlisted	Unlisted
Vanellus armatus	Blacksmith Lapwing	Charadriidae	Unlisted	Unlisted
Vanellus coronatus	Crowned Lapwing	Charadriidae	Unlisted	Unlisted
Vidua macroura	Pin-tailed Whydah	Viduidae	Unlisted	Unlisted
Zosterops virens	Cape White-eye	Zosteropidae	Unlisted	Unlisted

*(Taylor *et al*. 2015), + (IUCN 2021)

10.2 Appendix B

Species list during the two field investigations

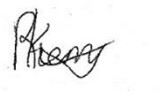
Common Name	Scientific Name	Family Name	**RD (Regional, Global)**
Acacia Pied Barbet	*Tricholaema leucomelas*	Lybiidae	
African Hoopoe	*Upupa africana*	Upupidae	
African Pipit	*Anthus cinnamomeus*	Motacillidae	
African sacred ibis	*Threskiornis aethiopicus*	Threskiornithidae	
Ant-eating Chat	*Myrmecocichla formicivora*	Muscicapidae	
Bar-throated Apalis	*Apalis thoracica*	Cisticolidae	
Black-headed Heron	*Ardea melanocephala*	Ardeidae	
Bokmakierie	*Telophorus zeylonus*	Malaconotidae	
Cape Robin-chat	*Cossypha caffra*	Muscicapidae	
Cape Sparrow	*Passer melanurus*	Passeridae	
Cape Wagtail	*Motacilla capensis*	Motacillidae	
Cape weaver	*Ploceus capensis*	Ploceidae	
Cape White-eye	*Zosterops virens*	Zosteropidae	
Cardinal Woodpecker	*Dendropicos fuscescens*	Picidae	
Chestnut-vented Warbler	*Curruca subcoerulea*	Sylviidae	
Common Moorhen	*Gallinula chloropus*	Rallidae	
Common starling	*Sturnus vulgaris*	Sturnidae	
Common waxbill	*Estrilda astrild*	Estrildidae	
Dark-capped Bulbul	*Pycnonotus tricolor*	Pycnonotidae	
Desert Cisticola	*Cisticola aridulus*	Cisticolidae	
Egyptian Goose	*Alopochen aegyptiaca*	Anatidae	
Fiscal Flycatcher	*Melaenornis silens*	Muscicapidae	
Fork-tailed Drongo	*Dicrurus adsimilis*	Dicruridae	
Greater Striped Swallow	*Cecropis cucullata*	Hirundinidae	
Grey Tit	*Melaniparus afer*	Paridae	
Hadada Ibis	*Bostrychia hagedash*	Threskiornithidae	
Helmeted Guineafowl	*Numida meleagris*	Numididae	
Karoo Prinia	*Prinia maculosa*	Cisticolidae	
Karoo Scrub Robin	*Cercotrichas coryphoeus*	Muscicapidae	
Layard's warbler	*Curruca layardi*	Sylviidae	
Lesser honeyguide	*Indicator minor*	Indicatoridae	
Levaillant's Cisticola	*Cisticola tinniens*	Cisticolidae	
Long-billed crombec	*Sylvietta rufescens*	Macrosphenidae	
Pale Chanting Goshawk	*Melierax canorus*	Accipitridae	
Pied Crow	*Corvus albus*	Corvidae	
Red-eyed Dove	*Streptopelia semitorquata*	Columbidae	
Red-faced Mousebird	*Urocolius indicus*	Coliidae	
Ring-necked Dove	*Streptopelia capicola*	Columbidae	
Secretarybird	*Sagittarius serpentarius*	Sagittariidae	VU, EN
Southern Fiscal	*Lanius collaris*	Laniidae	

Southern Grey-headed Sparrow	*Passer diffusus*	Passeridae	
Southern Masked Weaver	*Ploceus velatus*	Ploceidae	
Southern tchagra	*Tchagra tchagra*	Malaconotidae	
Speckled pigeon	*Columba guinea*	Columbidae	
Western Barn Owl	*Tyto alba*	Strigidae	
White-rumped Swift	*Apus caffer*	Apodidae	
White-browed Sparrow-weaver	*Plocepasser mahali*	Ploceidae	
Black-collared Barbet	*Lybius torquatus*	Lybiidae	
Neddicky	*Cisticola fulvicapilla*	Cisticolidae	
Yellow-fronted Canary	*Crithagra mozambica*	Fringillidae	
Western Cattle Egret	*Bubulcus ibis*	Ardeidae	
Cape Starling	*Lamprotornis nitens*	Sturnidae	
Southern Boubou	*Laniarius ferrugineus*	Malaconotidae	
Chinspot Batis	*Batis molitor*	Platysteiridae	
House sparrow	*Passer domesticus*	Passeridae	
Amethyst Sunbird	*Chalcomitra amethystina*	Nectariniidae	
Gabar goshawk	*Micronisus gabar*	Accipitridae	
Golden-breasted Bunting	*Emberiza flaviventris*	Emberizidae	
African Red-eyed bulbul	*Pycnonotus nigricans*	Pycnonotidae	
Green wood hoopoe	*Phoeniculus purpureus*	Phoeniculidae	
Pin-tailed Whydah	*Vidua macroura*	Viduidae	
Emerald-spotted Wood Dove	*Turtur chalcospilos*	Columbidae	
Diederik Cuckoo	*Chrysococcyx caprius*	Cuculidae	
Yellow-billed Duck	*Anas undulata*	Anatidae	
Sombre greenbul	*Andropadus importunus*	Pycnonotidae	
African black swift	*Apus barbatus*	Apodidae	
Pririt batis	*Batis pririt*	Platysteiridae	
Lesser striped swallow	*Cecropis abyssinica*	Hirundinidae	
Klaas's Cuckoo	*Chrysococcyx klaas*	Cuculidae	
Speckled Mousebird	*Colius striatus*	Coliidae	
Cape Crow	*Corvus capensis*	Corvidae	
Streaky-headed Seedeater	*Crithagra gularis*	Fringillidae	
Cape Vulture	*Gyps coprotheres*	Accipitridae	EN, VU
Red-winged starling	*Onychognathus morio*	Sturnidae	
Black-headed oriole	*Oriolus larvatus*	Oriolidae	
African harrier-hawk	*Polyboroides typus*	Accipitridae	
Brown-backed Honeybird	*Prodotiscus regulus*	Indicatoridae	
Cape Canary	*Serinus canicollis*	Fringillidae	

10.3 Appendix C: Specialist Declaration of Independence

I, Ryno Kemp, declare that:

- 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 form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.



Ryno Kemp

Biodiversity Specialist

The Biodiversity Company

October 2023

I, Lindi Steyn, declare that:

- 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 form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.

Lindi Steyn

Biodiversity Specialist

The Biodiversity Company

October 2023