Avifauna Assessment for the proposed Prospecting Mining Right Application for Klipvley 153

Western Cape Province, South Africa

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CLIENTS

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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
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

The Biodiversity Company was appointed to undertake an avifauna baseline and impact assessment for the proposed prospecting rights application for the Klipvley 153, South Africa. The proposed extent of the area for prospecting (3635 ha) is located 40 km west of the town Lutzville, within the western Cape Province. The extent of the propsecting area has been considered for the Project Area of Influence (PAOI).

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 'High' 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) in terms of NEMA, dated 20 March and 30 October 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, when applying for Environmental Authorisation*" (Reporting Criteria).

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

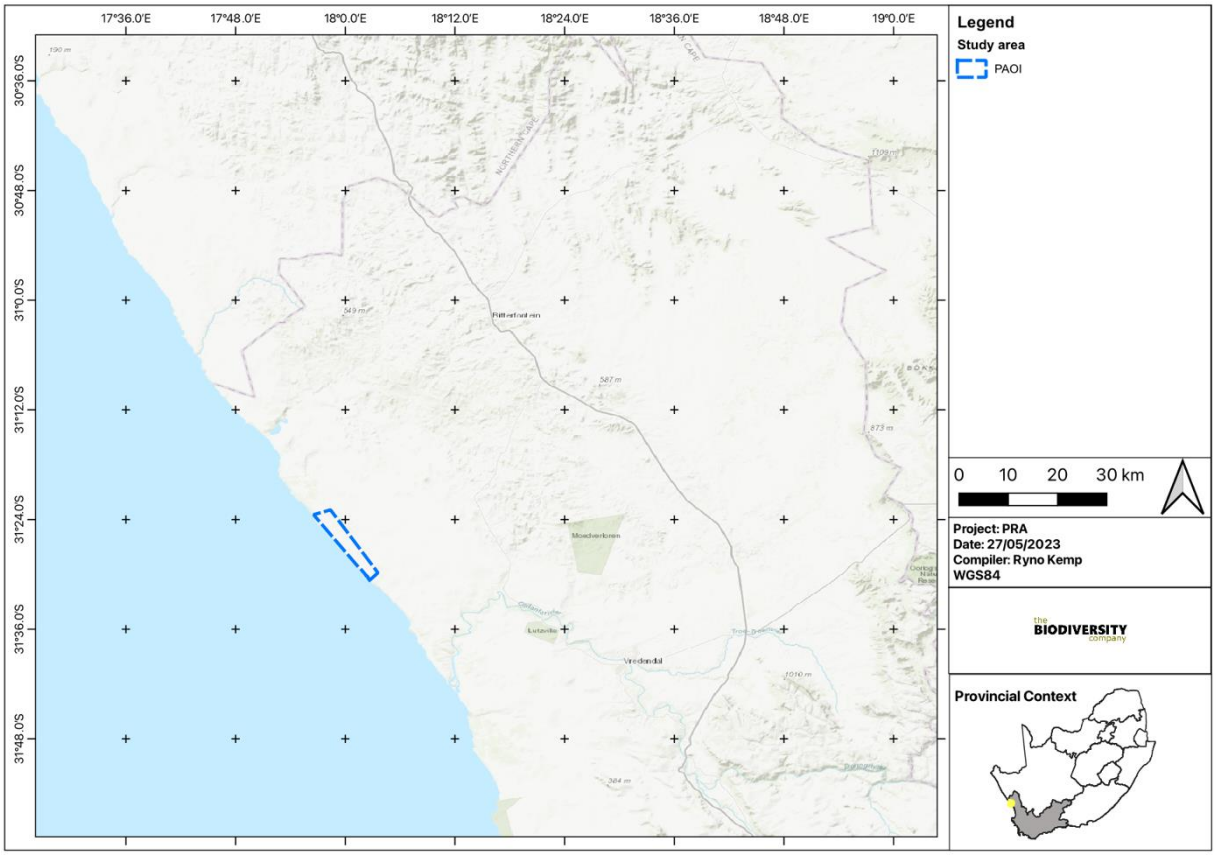

Figure 1-1 Map illustrating the location of the proposed PAOI

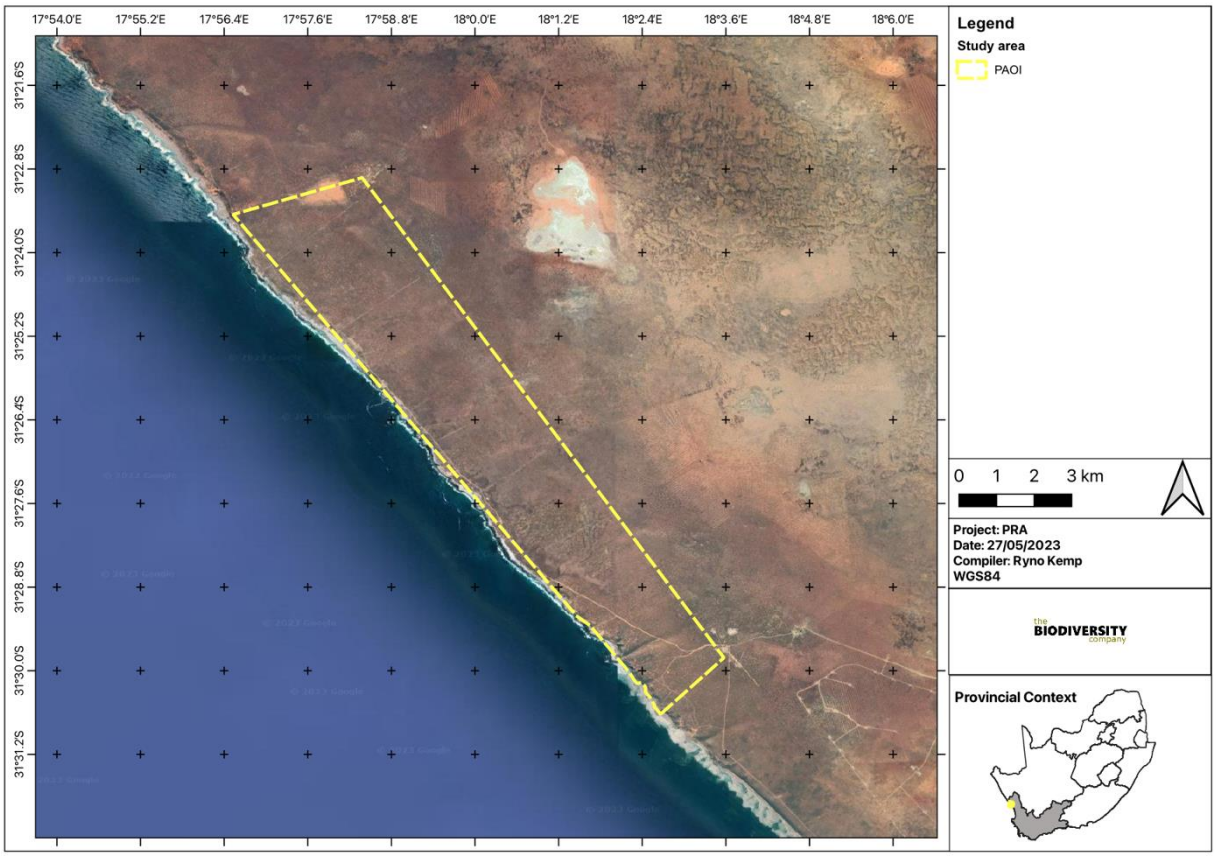

Figure 1-2 Proposed Solar Energy Facility Infrastructure

1.1 Project Description

The existence and possible size of heavy mineral deposits in the application area will be determined as follows:

- Data review and desk top studies will involve the following desk-top activities: data acquisition from government and private sources, and analysis of any existing/previous prospecting and drilling data, satellite (Landsat) imagery, aerial photos, and terrain data, as well as geological map interpretation. The synthesis and interpretation of such information will contribute towards providing a clearer picture of the location and characteristics of the heavy mineral deposit/s and will guide the in-field prospecting programme.
- Mapping and surface sampling: Surface mapping will be conducted by the project geologist and assistants and will take place over a period of 3 months. Such mapping will encompass GPS controlled traverses, and aerial photo mapping. Surface sampling. Where heavy mineral concentrations are noted on surface 25-liter surface samples will be collected manually with a shovel and plastic sampling bag for concentration and laboratory analysis to determine the type of minerals present and the tenor of mineralization. Each pit will be 50cm x 50cm in size and dug to a maximum depth of 1m. The final number of samples will be determined by the size of surface mineralized areas if any, 200 samples are planned for initially. Each sample locality will be backfilled and fully rehabilitated concurrently with sampling.
- Reconnaissance Drilling will involve surveying and pegging of the anticipated deposit. This sub-phase will include the following activities: Surveying of the mapped area to be prospected. A grid (average 500m x 500m) will be marked on the map, after which those positions will be marked in the field by a surveyor with labelled droppers (pegs). Shallow small diameter auger drilling will take place at these positions down to a depth of 4m. A total of 100 auger drill holes are planned

initially and may be followed up with additional drilling. Access routes to the drill sites will also be located (existing roads will used and new tracks only permitted in exceptional circumstances).

- Evaluation drilling will be conducted with the Air-core drilling method to access the deeper lying sediment package. Existing geological information in the area indicate mineralization down to 10m depth. A total of 250 Air-core holes are planned to an average depth of 30m. More drilling may be required depending on results. Drill cutting will be sampled and analysed for heavy mineral content as described above for surface sampling.
- Analytical desk-top study. All the data collected will be analysed and compiled into a final report/model in order to determine the potential of the project and to outline possible future drill sampling programs if any.

The prospecting will be conducted in 3 phases, each one dependent on the results of the previous.

- Phase 1 will involve the following desk-top activities: data acquisition from government and private sources, and analysis of any existing/previous prospecting and drilling data, satellite (Landsat) imagery, aerial photos, and terrain data, as well as geological map interpretation. The synthesis and interpretation of such information will contribute towards providing a clearer picture of the location and characteristics of the heavy mineral deposit/s, and will guide the in-field prospecting programme.
- Phase 2: Surface mapping will be conducted by the project geologist and assistants, and will take place over a period of 3 months. Such mapping will encompass GPS controlled traverses, and aerial photo mapping. Surface sampling. Where heavy mineral concentrations are noted on surface 25 liter surface samples will be collected manually with a shovel and plastic sampling bag for concentration and laboratory analysis to determine the type of minerals present and the tenor of mineralization. Each pit will be 50cm x 50cm in size and dug to a maximum depth of 1m. The final number of samples will be determined by the size of surface mineralized areas if any, 200 samples are planned for initially. Each sample locality will be backfilled and fully rehabilitated concurrently with sampling.
- Phase 3 will involve surveying and pegging of the anticipated deposit. This sub-phase will include the following activities: Surveying of the mapped area to be prospected. A grid (average 500m x 500m) will be marked on the map, after which those positions will be marked in the field by a surveyor with labelled droppers (pegs). Shallow small diameter auger drilling will take place at these positions to an average depth of 4m. A total of 100 auger drill holes are planned initially and may be followed up with additional drilling Access routes to the drill sites will also be located (existing roads will used and new tracks only permitted in exceptional circumstances)
- Phase 4 will be conducted with Air Core drilling method to access the deeper lying sediment package. A total of 250 Air-core holes are planned down to an average depth of 30m. More drilling may be required depending on results. Drill cutting will be sampled and analyzed for heavy mineral content as described above for surface sampling.
- Phase 5 will involve analytical desk-top study. All the data collected will be analyzed and compiled into a final report/model in order to determine the potential of the project and to outline possible future drill sampling programs if any.

Table 1-1 Planned prospecting activities must be conducted in phases and within specific timeframes

Phase	Operation	Time Frame	Quantities
Phase 1	Data review and desk top studies	6 months	Entire area
Phase 2	Mapping and surface sampling	12 months	Phase 1b: 200 samples
Phase 3	Reconnaissance drilling	18 months	Phase 2a: 100 holes
Phase 4	Evaluation Air-core drilling	12 months	Phase 2b: 250 holes
Phase 5	Analytical desktop study	12 months	All Data

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 and must comply with Appendix 6 of the EIA Regulations of 2014 (as amended).

The scope of the Avifaunal Impact Assessment included the following:

- Desktop assessment to identify the relevant ecologically important geographical features within the 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;
- 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
- Provide mitigation measures to prevent or reduce the possible impacts.

1.3 Assumptions and Limitations

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

- The PAOI was based on the project footprint area as provided by the client. 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;
- Only one site visit was conducted. The field investigation was conducted in over 6 days from the 13th to the 18th of May, 2023.
- 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 sampling time; 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 1-2 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 1-2 A list of key legislative requirements relevant to biodiversity and conservation in the Western Cape Province

Region	Legislation / Guideline
International	Convention on Biological Diversity (CBD, 1993)
	The Convention on Wetlands (RAMSAR Convention, 1971)

Region	Legislation / Guideline
	The United Nations Framework Convention on Climate Change (UNFCC,1994)
	The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 1973)
	The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention, 1979)
National	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)
	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	Western Cape Land Use Planning Act (2015)
	Western Cape Biodiversity Sector Plan (WCBSP) (DEADP, 2017)

2 Definitions

2.1 Project Area of Influence

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. In consideration that the project is not located within the Strategic Transmission Corridor, the PAOI was delineated as the project border.

2.2 Species of Conservation Concern

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.

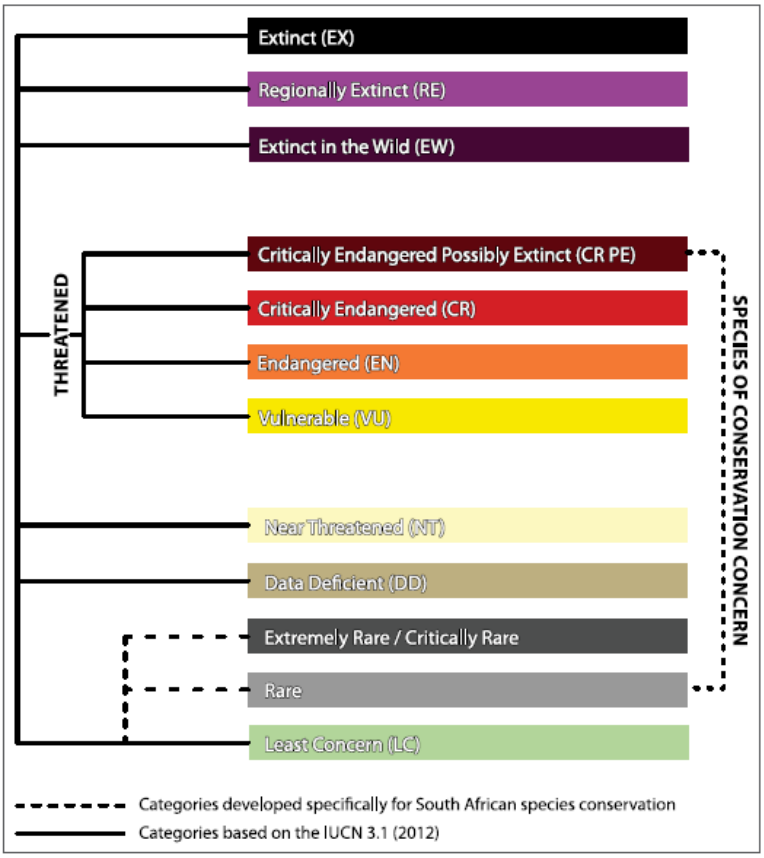

Figure 2-1 The different Species of Conservation Concern categories were modified from the IUCN's extinction risk categories. Source: SANBI (2020)

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.

3 Methods

3.1 Desktop Assessment

The desktop assessment was undertaken using GIS to access 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, 2022) – 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;
- Coordinated Water Bird Counts (CWAC) – The Animal Demography Unit (ADU) launched the Coordinated Waterbird Counts (CWAC) project in 1992 as part 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 being done by means of 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/Animal Demography Unit (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.
- The Western Cape Biodiversity Spatial Plan (WCBSP) - The Western Cape Department of Environmental Affairs and Planning (WCDEAP), as custodian of the environment in the Western Cape is the primary implementing agent of the Biodiversity Spatial Plan. The spatial component of the Biodiversity Sector Plan is based on systematic biodiversity planning undertaken by WCDEAP. The Biodiversity Sector Plan aims to inform land-use planning, environmental assessments, land, and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact biodiversity. This is done by providing a map of biodiversity priority areas, referred to as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), with accompanying land-use planning and decision-making guidelines (WCDEAP, 2017), and

- 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.
    - 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 13 relevant pentads (3115_1750; 3115_1755; 3120_1750; 3120_1755; 3120_1810, 3125_1755; 3125_1800; 3125_1805; 3125_1810; 3130_1800; 3130_1805; 3130_1810; 3130_1815) 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;
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- 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

Only one site visit was conducted. The field investigation was conducted over 6 days from the 13th to the 18th of May, 2023. 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).

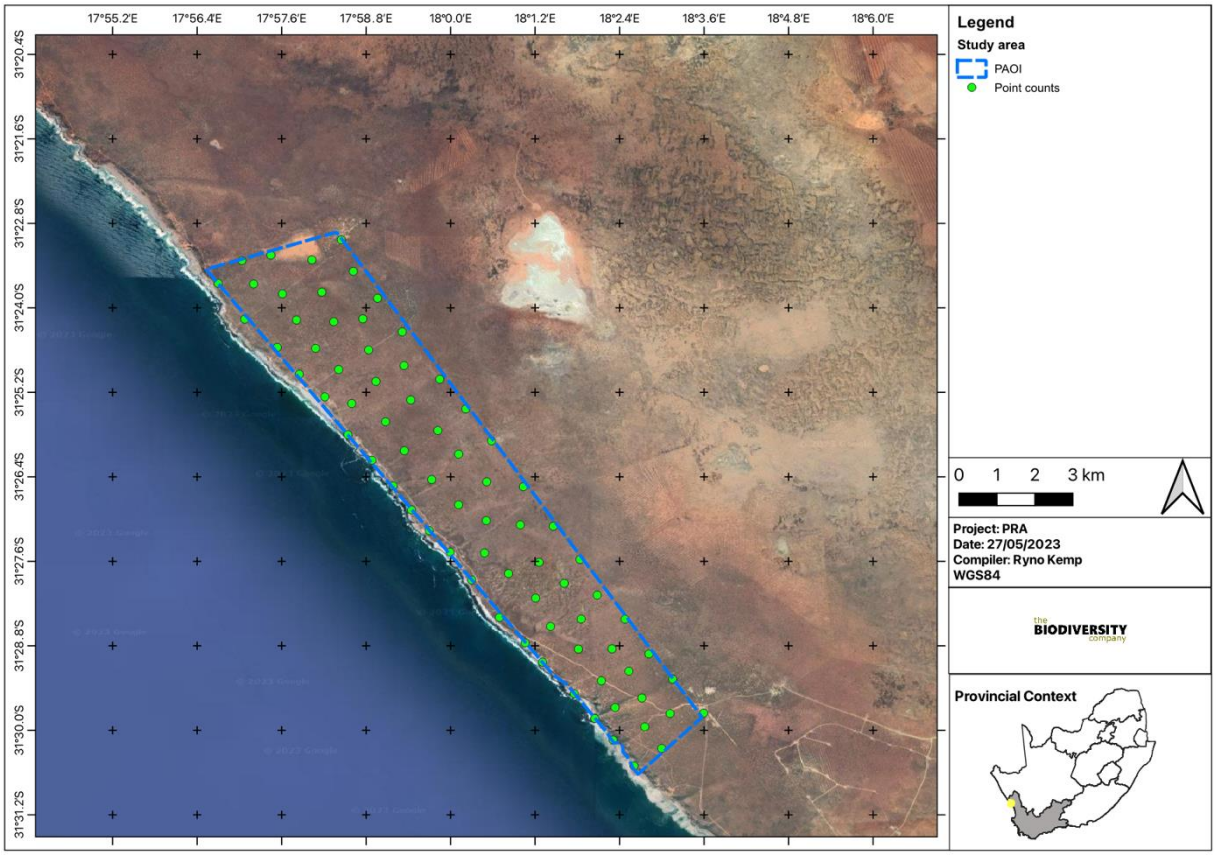

Figure 3-1 Map illustrating the field survey area and locations of Standardised Point Counts for the proposed development PAOI

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 difference between the report it will be highlighted. Raw count data was 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

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

Site Ecological Importance (SEI) is a function of the Biodiversity Importance (BI) of the receptor (e.g., SCC, the vegetation/fauna community or habitat type present on the site) and Receptor Resilience (RR) (its resilience to impacts) 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.
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
sReceptor 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 impact significance rating methodology, is guided by the requirements of the NEMA EIA Regulations 2014 (as amended). Direct, indirect and cumulative impacts associated with the projects must be assessed in terms of the following criteria:

- The extent, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The duration, wherein it will be indicated whether:
    - the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
    - the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
    - medium-term (5–15 years) – assigned a score of 3;
    - long term (> 15 years) - assigned a score of 4; or
    - permanent - assigned a score of 5;
- The magnitude, quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The probability of occurrence, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility),

4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).

- the significance, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the status, which will be described as either positive, negative or neutral.
- the degree to which the impact can be reversed.
- the degree to which the impact may cause irreplaceable loss of resources.
- the degree to which the impact can be mitigated.

The **significance** is calculated by combining the criteria in the following formula:

S = (E+D+M) P

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- > 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

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 CBA1, ESA	4.1.1.1
Ecosystem Threat Status	Relevant - The proposed PAOI overlaps with a LC ecosystem	4.1.1.2
Ecosystem Protection Level	Relevant - The proposed PAOI project overlaps mainly with PP ecosystem	4.1.1.3
Protected Areas	Irrelevant - The PAOI is not in close proximity to nature reserves	4.1.1.4
National Protected Areas Expansion Strategy	Irrelevant - The PAOI does not overlap with any 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 overlap with Coordinated Avifaunal Roadcount	4.1.1.7
Coordinated Waterbird Count	Irrelevant - The PAOI does not overlap Coordinated Waterbird Count	4.1.1.8
Strategic Water Source Areas	Irrelevant - The PAOI does not fall within any Strategic Water Source Areas	4.1.1.9
South African Inventory of Inland Aquatic Ecosystems	Relevant - The PAOI does overlap with threatened wetlands	4.1.1.9
National Freshwater Priority Area	Relevant - The PAOI does overlaps with some FEPA wetlands	4.1.1.9

4.1.1.1 Western Cape Conservation Plan

The Western Cape Department of Environmental Affairs and Planning (WCDEAP) developed the Western Cape Biodiversity Sector Plan (WCBSP) in 2017. It is a spatial database guiding areas of conservation concern and biodiversity planning for the Western Cape Province. Two databases have been developed, one for terrestrial biodiversity and the other for freshwater/aquatic biodiversity. The spatial component of the Biodiversity Sector Plan is based on systematic biodiversity planning undertaken by WCDEADP. A Biodiversity Sector Plan aims to inform land-use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact biodiversity. This is done by providing a map of biodiversity priority areas, referred to as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), with accompanying land-use planning and decision-making guidelines (WCDEADP, 2017).

Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. Thus, biodiversity targets cannot be met if these areas are not maintained in a natural or near-natural state. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses (WCDEADP, 2017).

Ecological Support Areas (ESAs) are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets (thresholds) but play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree or extent of the restriction on land use and resource use in these areas may be lower than that recommended for CBAs (WCDEADP, 2017).

Relevant - The PAOI overlaps with CBA1, ESA1, ESA2 as well as ONA (Figure 4-1).

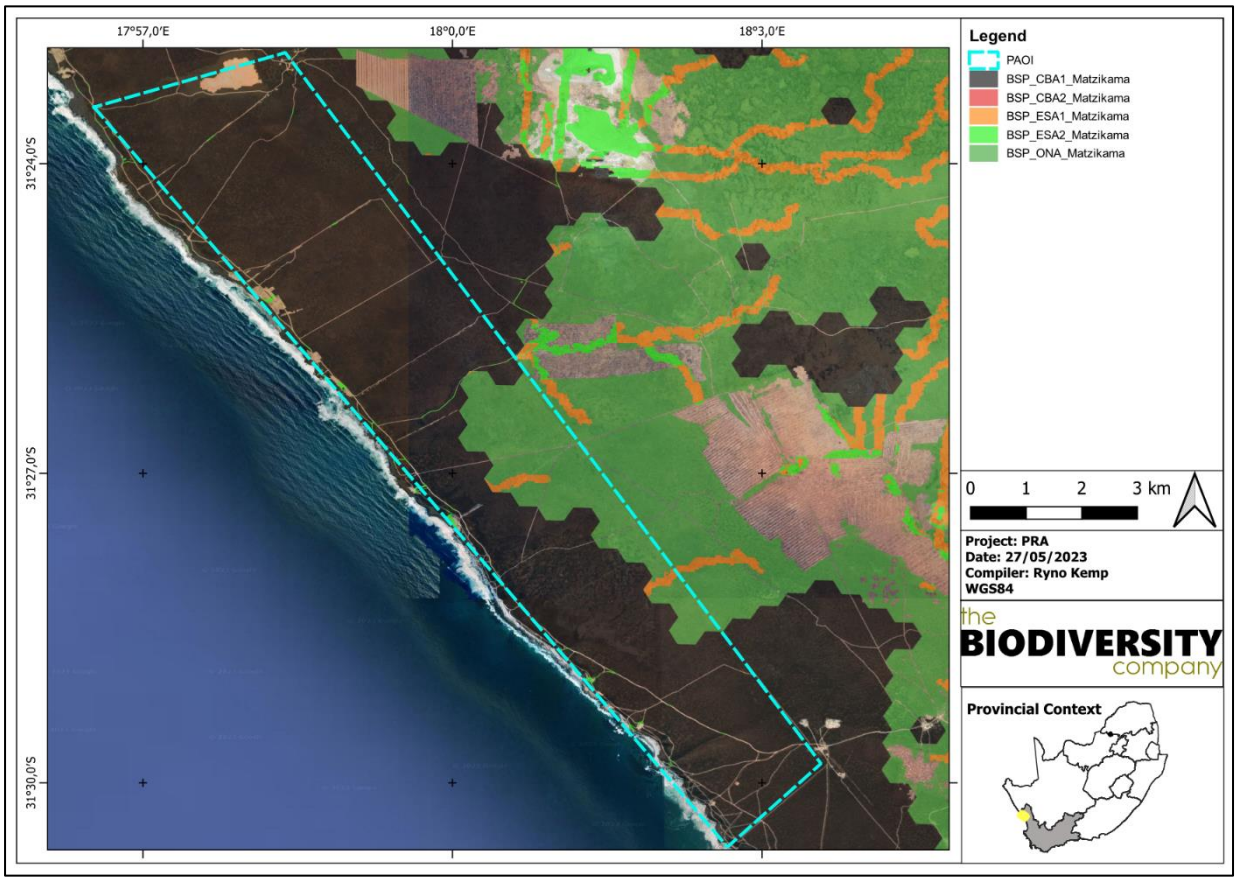

Figure 4-1 Map illustrating the WCBSP associated with the PAOI.

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 a LC ecosystem (Figure 4-2).

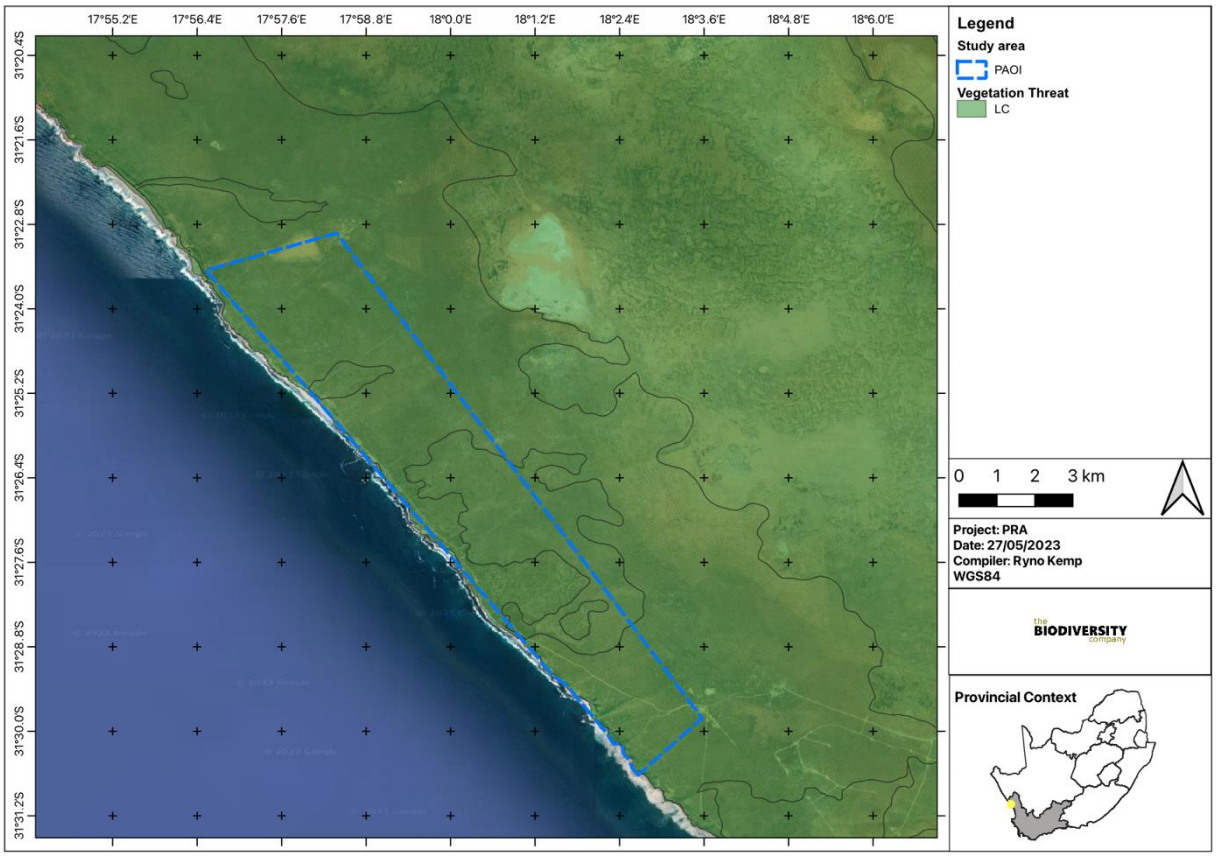

Figure 4-2 Map illustrating the ecosystem threat status associated with the PAOI.

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 mainly with PP ecosystem (Figure 4-3).

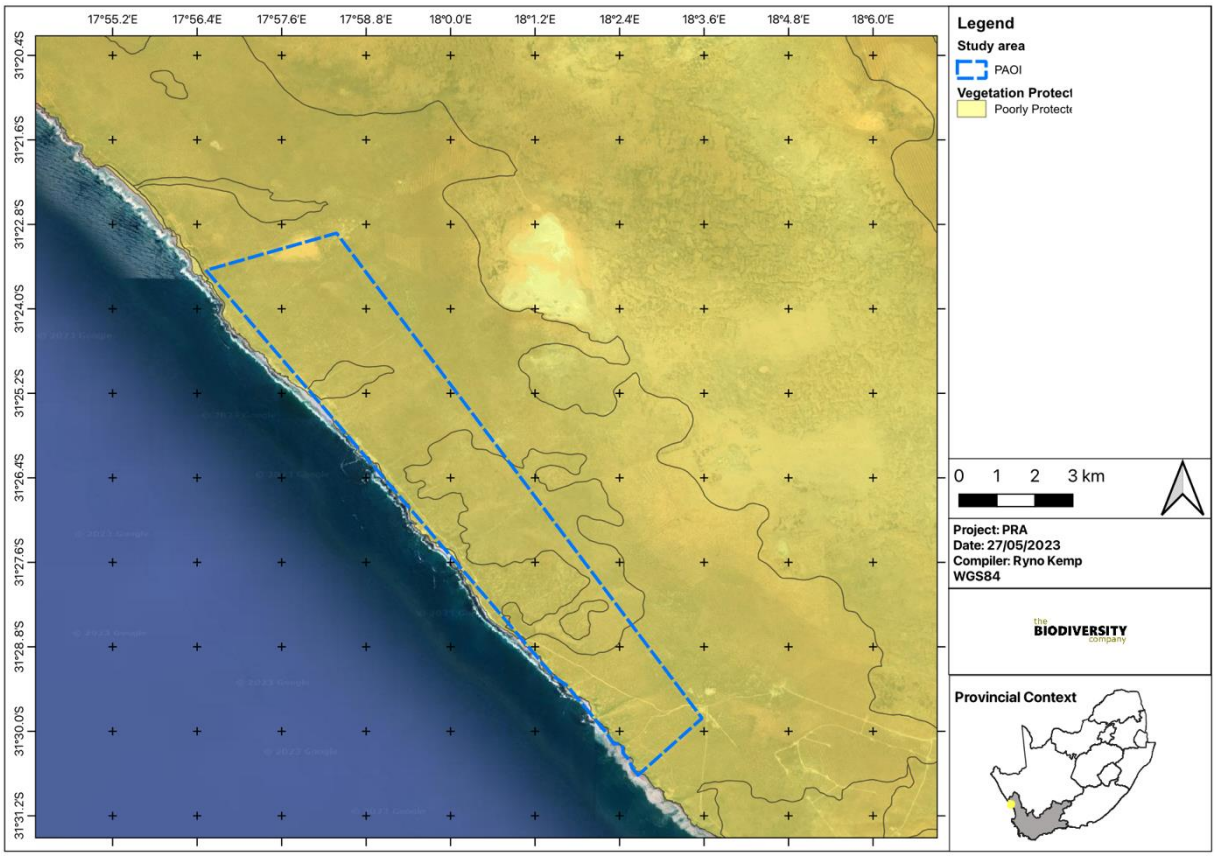

Figure 4-3 Map illustrating the ecosystem protection level associated with the PAOI

4.1.1.4 Protected Areas

According to the protected area spatial datasets from SAPAD (DFFE, 2022) and SACAD (DFFE, 2022). Irrelevant - The PAOI is not in close proximity to nature reserves (Figure 4-4).

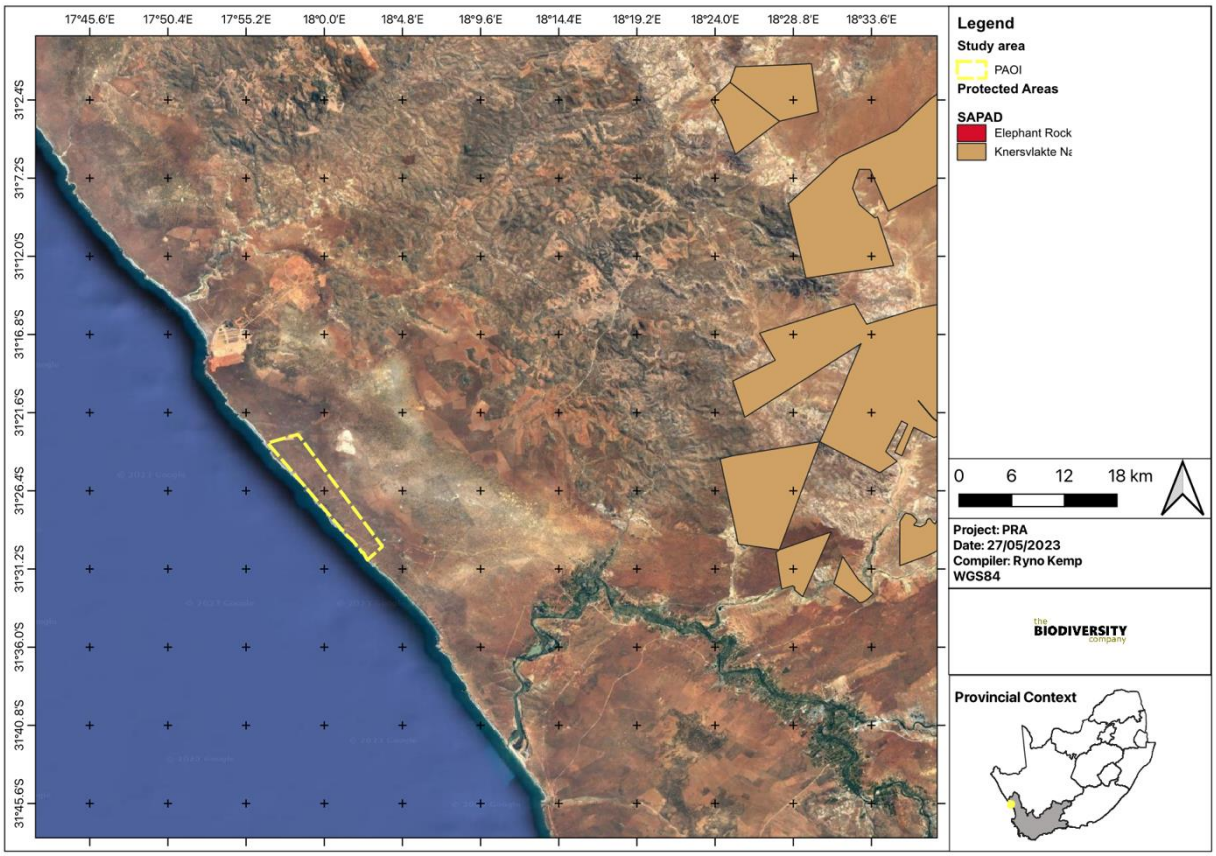

Figure 4-4 Map illustrating the Project Area of Influence (PAOI) in relation to Conservation and Protected Areas

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 any NPAES areas (Figure 4-5).

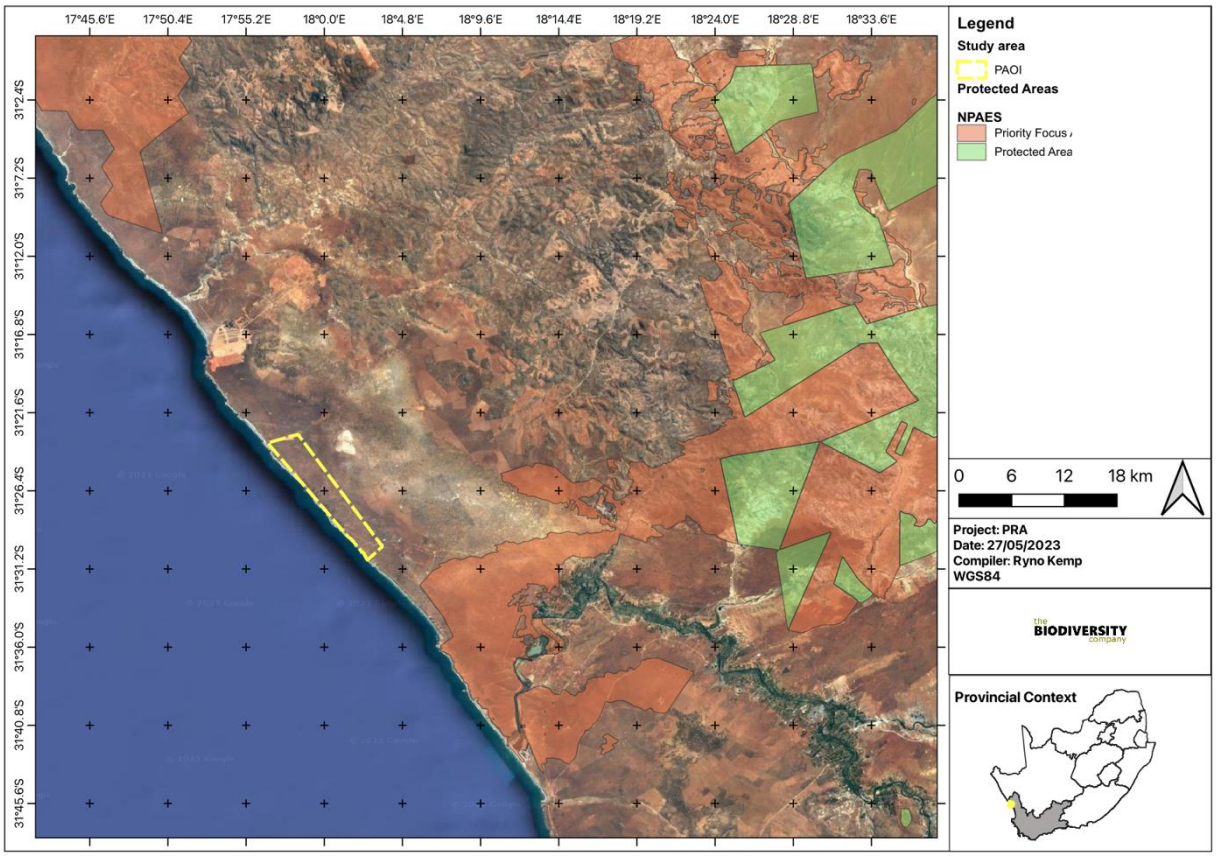

Figure 4-5 Map illustrating the Project Area of Influence (PAOI) in relation to NPAES Focus Areas

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 (Figure 4-6).

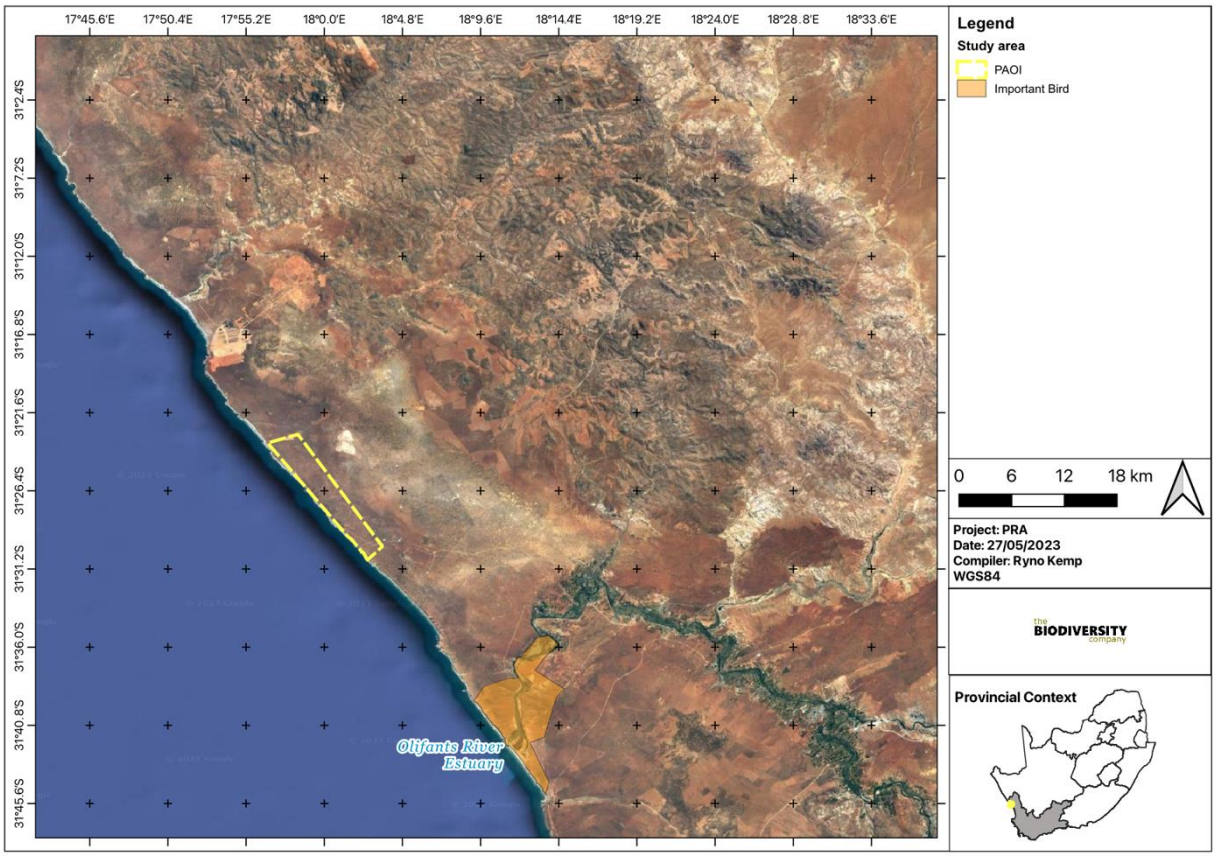

Figure 4-6 Map illustrating the locations of Important Bird and Biodiversity Areas proximal to the Project Area of Influence (PAOI)

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 overlap with Coordinated Avifaunal Roadcount Routes (Figure 4-7).

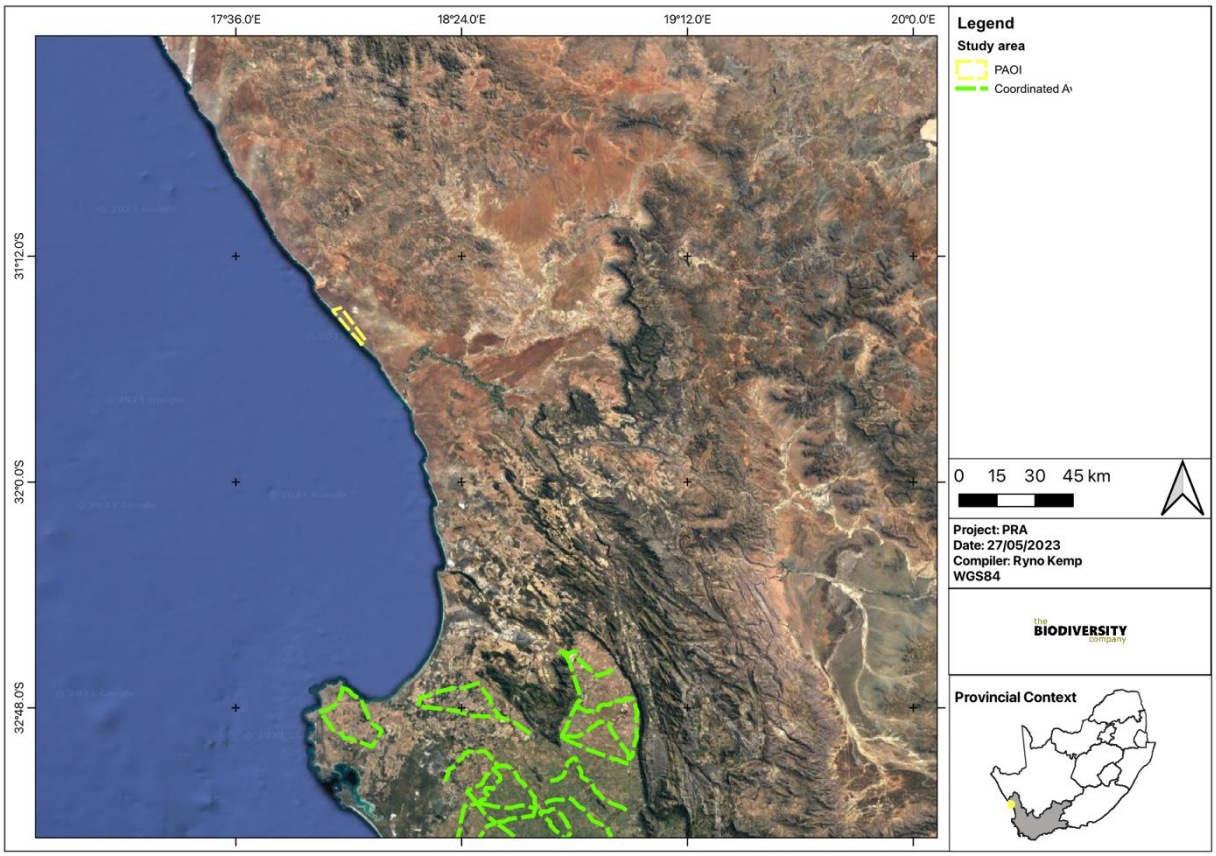

Figure 4-7 Map illustrating the locations of Coordinated Avifaunal Roadcount proximal to the Project Area of Influence (PAOI)

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 does not overlap Coordinated Waterbird Count sites (Figure 4-8).

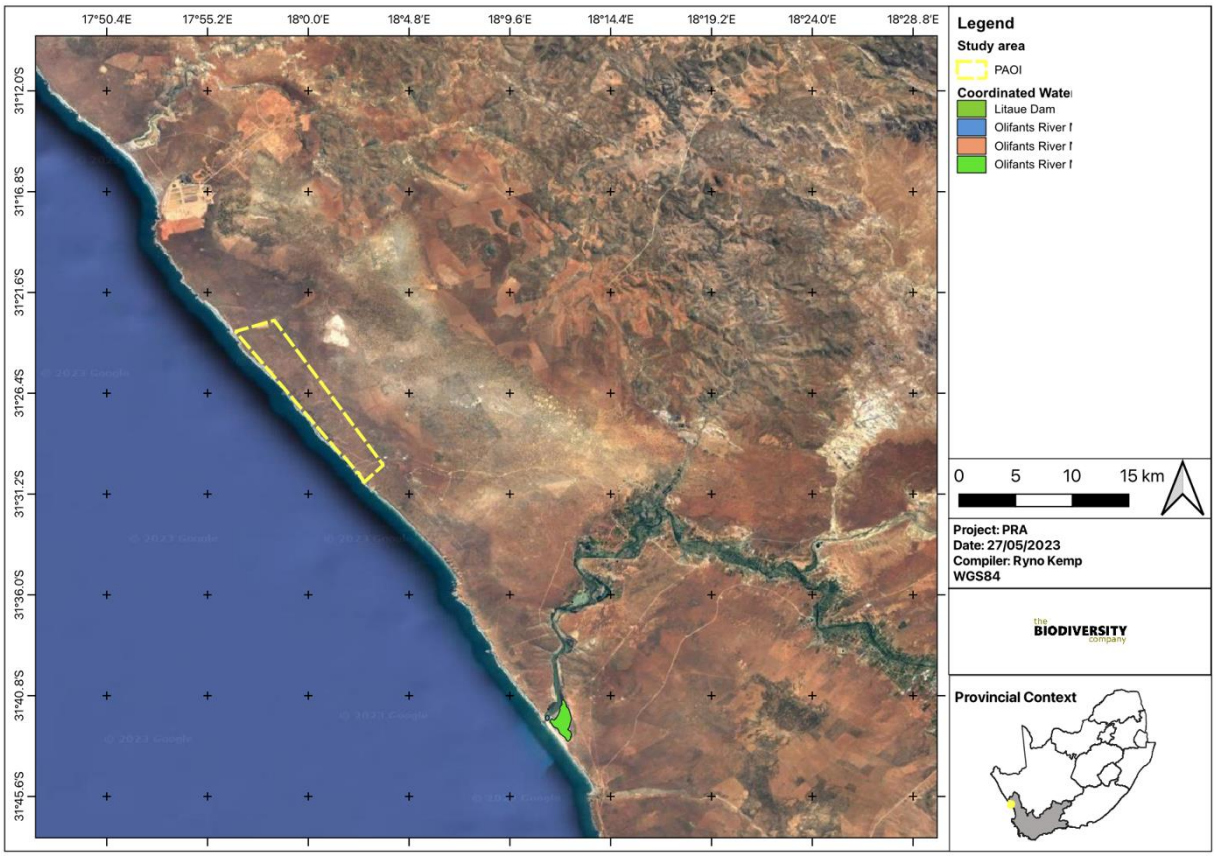

Figure 4-8 Map illustrating the locations of Coordinated Waterbird Counts proximal to the Project Area of Influence (PAOI)

4.1.1.9 Hydrological Context

Irrelevant - The PAOI does not fall within any Strategic Water Source Areas (SWSA).

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). Relevant - The PAOI does overlap with threatened wetlands (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 PAOI does overlaps with some FEPA wetlands (Figure 4-10).

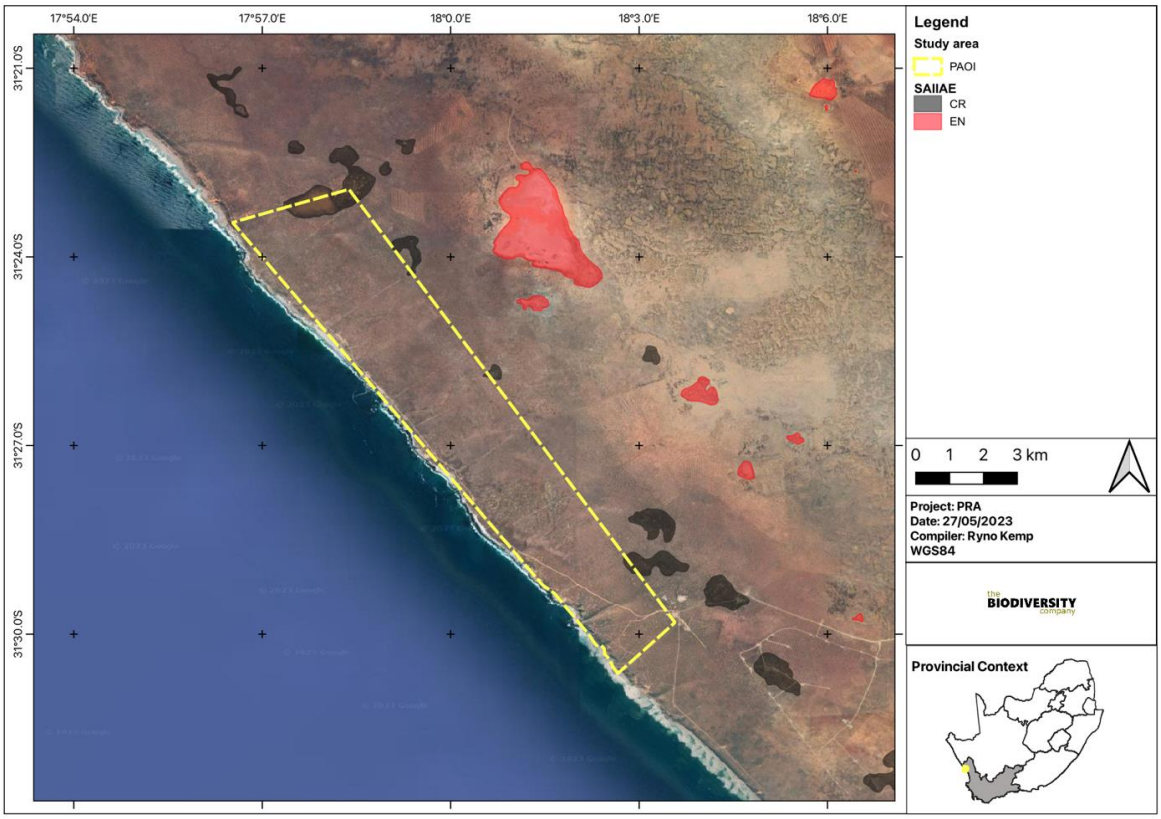

Figure 4-9 ***Map illustrating the Project Area of Influence (PAOI) in relation to South African Inventory of Inland Aquatic Ecosystems (SAIIAE) features***

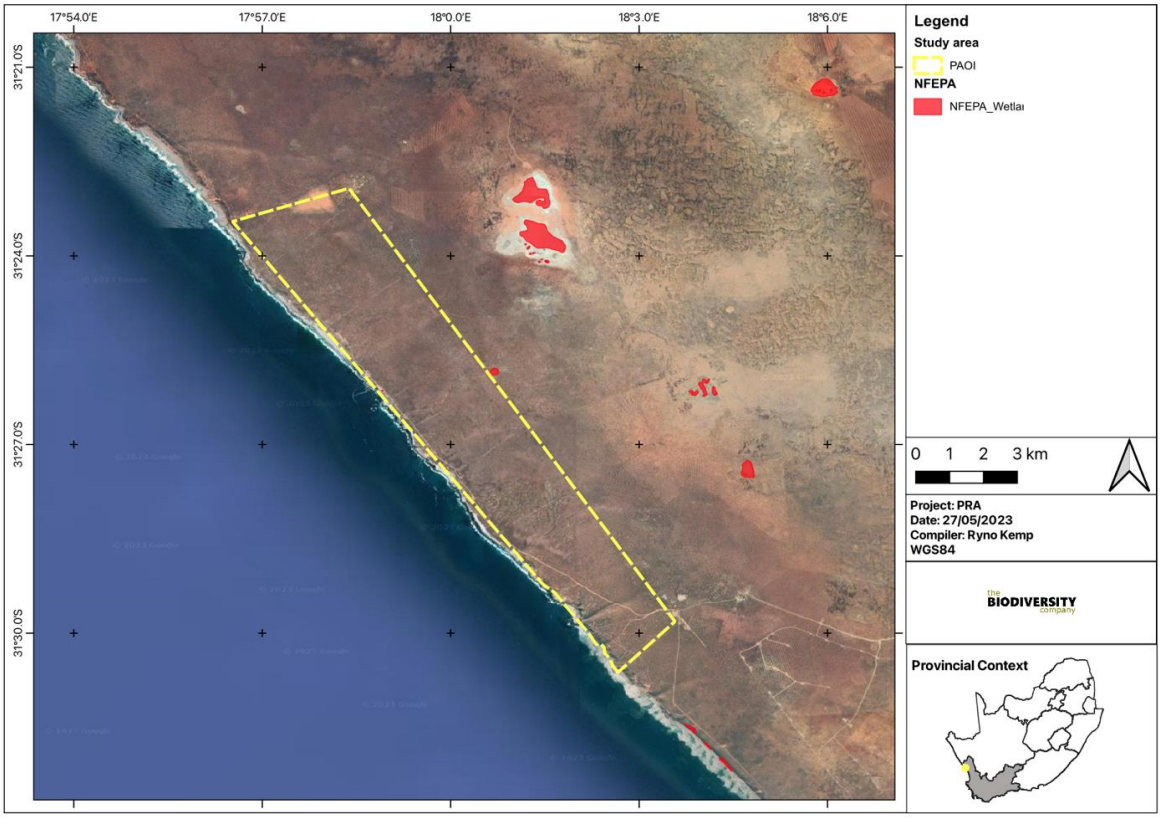

Figure 4-10 ***Map illustrating the Project Area of Influence (PAOI) in relation to the National Freshwater Ecosystem Priority Areas***

4.2 Expected Species of Conservation Concern

The SABAP2 Data lists 138 indigenous avifauna species that could be expected to occur within the PAOI and surrounding landscape (Figure 4-11; Appendix A). One 1) of these expected species is regarded as SCC (Table 4-2). These species are described below. However, this is not a true representation of the area.

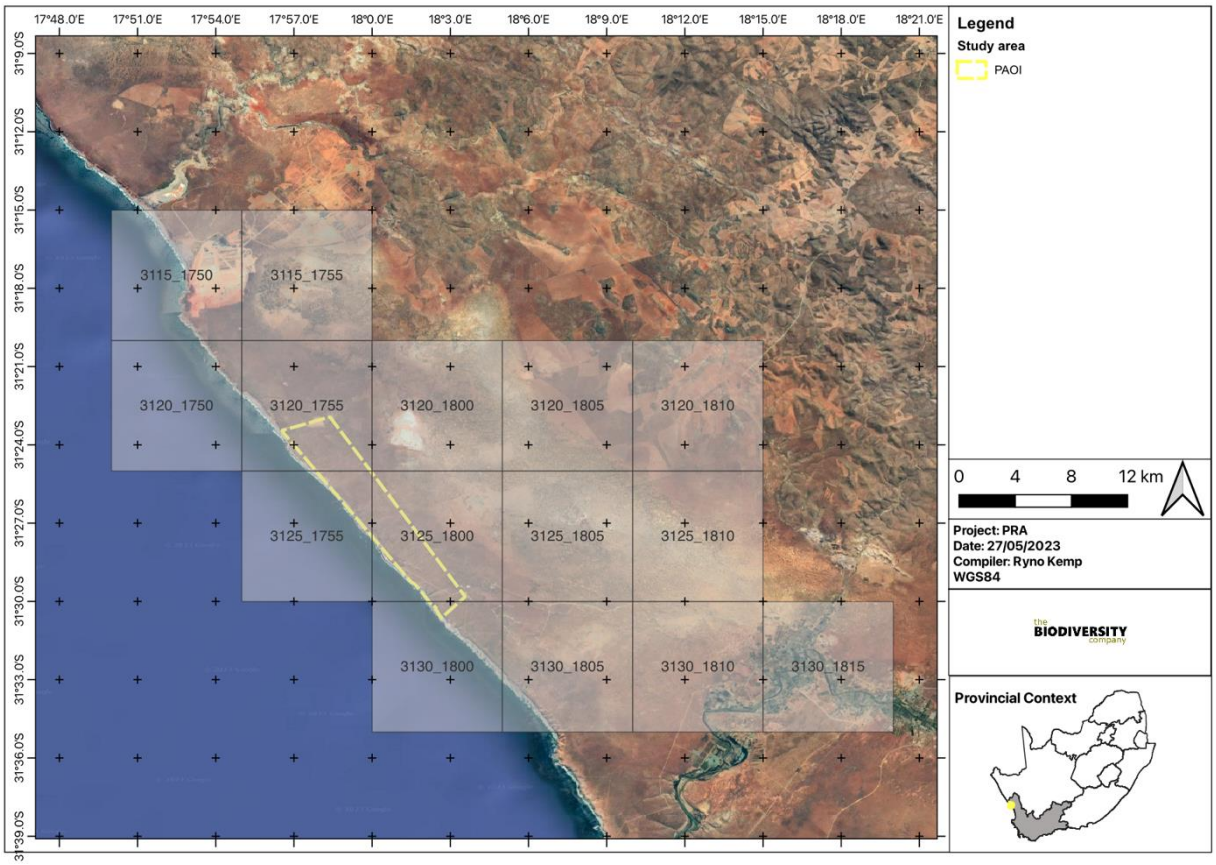

Figure 4-11 Map illustrating the SABAP2 pentads used to compile the expected species list

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
Afrotis afra	Southern Black Korhaan	VU	VU	High
Anthropoides paradiseus	Blue Crane	NT	VU	low
Calidris ferruginea	Curlew Sandpiper	LC	NT	low
Circus maurus	Black Harrier	EN	EN	Moderate
Geocolaptes olivaceus	Ground Woodpecker	LC	NT	Moderate
Hydropogne caspia	Caspian Tern	VU	LC	low
Microcarbo coronatus	Crowned Cormorant	NT	LC	low
Morus capensis	Cape Gannet	VU	EN	Moderate
Neotis ludwigii	Ludwig's Bustard	EN	EN	High
Phalacrocorax capensis	Cape Cormorant	EN	EN	High
Phalacrocorax neglectus	Bank Cormorant	EN	EN	Low
Phoeniconaias minor	Lesser Flamingo	NT	NT	Low
Phoenicopterus roseus	Greater Flamingo	NT	LC	High

Polemaetus bellicosus	Martial Eagle	EN	EN	High

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

Afrotis afra (Southern Black Korhaan) is listed as Vulnerable (VU) on a regional and global scale (IUCN, 2017). They are endemic to the South-Western side of South Africa. Their habitat varies from non-grassy areas to the Fynbos biome, Karoo biome and the western coastline of South Africa. The main threat to them is habitat loss, in an eight year span they loss 80% of their range due to agricultural developments. Their diet consists of insects, small reptiles and plant material, including seeds and green shoots (Hockey *et al.* 2005).

Circus maurus (Black Harrier) is listed as Endangered (EN) on a local basis and is restricted to southern Africa, where it is mainly found in the fynbos and Karoo of the Western and Eastern Cape. It is also found in the grasslands of Free State, Lesotho and KwaZulu-Natal. Harriers breed close to coastal and upland marshes, damp sites, near vleis or streams with tall shrubs or reeds. South-facing slopes are preferred in mountain areas where temperatures are cooler, and vegetation is taller (IUCN, 2017). During the non-breeding season, they will also be found in dry grassland areas further north and they also visit coastal river floodplains in Namibia. The likelihood of occurrence is rated as moderate.

Geocolaptes olivaceus (Ground Woodpecker) is categorised as near-threatened on a global scale. It occurs on rocky slopes, mostly in areas dominated by grass and shrubs; including road cuttings or derelict buildings (Hockey *et al.* 2005). It is mainly sedentary but there is some suggestion that it could be an altitudinal migrant, and individuals may wander away from mountainous areas in the non-breeding season. Afforestation may be a threat to the species and this species has also been considered to be potentially under threat from climate change, and temperatures in South Africa have been reported to be rising. Due to the rocky habitat the likelihood of occurrence in the project area is rated as high.

Morus capensis (Cape Gannet) is listed as vulnerable on a regional scale and as endangered on a global scale. This species has undergone a large population reduction over the past three generations and is projected to continue to decline rapidly over the next three generations. The species is a marine species that during the non breeding season can be found as far as 120km inland. The likelihood of this species being present in the project site is rated as high.

Phalacrocorax capensis (Cape Cormorant) is endemic to the southwestern coast of Africa, but during the non breeding season they spread inland and up the east coast of South Africa. The IUCN as well as Birdlife South Africa lists these birds as endangered, and the main cause of the decline is as a result of the decline of the epipelagic fish stock, oil spills and avian cholera. Due to the lack of suitable habitat and proximity of the urban area, the likelihood of occurrence is rated as low.

Phoenicopterus roseus (Greater Flamingo) is listed as NT on a regional scale only. This species breed on large undisturbed alkaline and saline lakes, salt pans or coastal lagoons, usually far out from the shore after seasonal rains have provided the flooding necessary to isolate remote breeding sites from terrestrial predators and the soft muddy material for nest building (IUCN, 2017). Due to the absence of its preferred habitat within the Project area, combined the proximity of the urban area, the likelihood of occurrence is rated as low.

Polemaetus bellicosus (Martial Eagle) is listed as EN on a regional scale and VU on a global scale. This species has an extensive range across much of sub-Saharan Africa, but populations are declining due to deliberate and incidental poisoning, habitat loss, reduction in available prey, pollution and collisions with power lines (IUCN, 2017). It inhabits open woodland, wooded savanna, bushy grassland, thorn-bush and, in southern Africa, more open country and even sub-desert (IUCN, 2017). With the presence of good grassland habitat in the project area but an absence of large trees for roosting and nesting this species may only use the site for foraging and thus there is a moderate chance of this species occurring.

4.3 Field Assessment

4.3.1 Species List of the Field Survey

Only one site visit was conducted. The field investigation was conducted over 6 days from the 13th to the 18th of May, 2023 (Appendix B). The total number of individual species accounts for approximately 34.3% of the total number of expected species

Eight SCC was recorded within the PAOI during the survey period *Phalacrocorax capensis* (Cape Cormorant), *Phoenicopterus roseus* (Greater Flamingo), *Sagittarius serpentarius* (Secretarybird), *Afrotis afra* (Southern Black Korhaan), *Neotis ludwigii* (Ludwig's Bustard), *Ardeotis kori* (Kori Bustard), *Geocolaptes olivaceus* (Ground Woodpecker), *Polemaetus bellicosus* (Martial Eagle) and they were recorded 46 times during the surveying period.

Figure 4-12 Sagittarius serpentarius (Secretarybird) observed in the northern parts of the proposed prospecting site.

4.3.1.1 Dominant Species

Table 4-3 provides the relative abundance of the 220 most dominant species as well as the frequency with which each species appeared in the point count samples. The most abundant species were the *Larus moninicarus* (Kelp Gull) and *Passer melanuruss* (Cape Sparrow), with a relative abundance of 0.121 and 0.112, respectively (Table 4-3). Additional ubiquitous species was *Cinnyris chalybeus* (Southern Double-collared Sunbird), with a frequency of occurrence of 78.667%.

Table 4-3 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.

4.3.1.2 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). Followed by Omnivore (OMD) (Figure 4-13). The species composition is spread throughout the various groups.

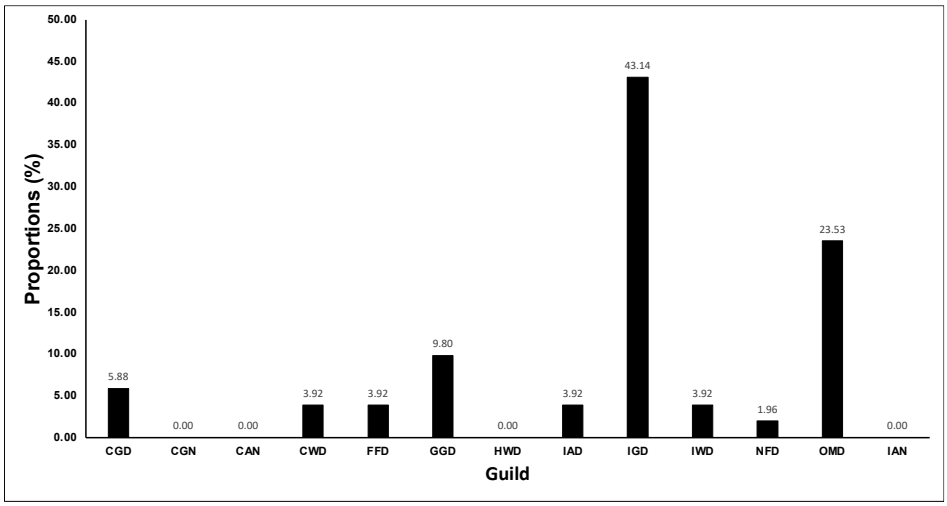

Figure 4-13 ***Column plot illustrating the proportion of each Functional Feeding Guild to the total abundance. Avifaunal trophic guilds – CGD, Carnivore Ground Diurnal; CGN, Carnivore Ground Nocturnal, CAN, Carnivore Air Nocturnal, CWD, Carnivore Water Diurnal; FFD, Frugivore Foliage Diurnal; GGD, Granivore 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.***

4.3.1.3 Nest Analysis

One confirmed nest site was recorded during the field investigation; however, it was approximately 11km from the PAOI.

4.4 Fine-Scale Habitat Use

Fine-scale habitats within the landscape are important in supporting a diverse avifauna community as they provide differing nesting, foraging and reproductive opportunities. Four different habitat types were delineated within the PAOI, comprising of mainly of Namaqualand Heuweltjie Strandveld, Namaqualand Inland Duneveld, Namaqualand Seashore Vegetation and modified landscape.

4.4.1 Namaqualand Heuweltjie Strandveld

Namaqualand Strandveld (which is part of the Namaqualand Sandveld bioregion) occurs in the Northern and Western Cape Provinces and is characterised by a flat to slightly undulating landscape of coastal peneplain. It is found on Quaternary stabilised deep aeolian red or yellow sands and on stable dunes and deep sand overlying marine sediments and gneisses. These sands are alkaline or neutral, as opposed to the Sand Fynbos sands which are usually slightly acidic. Sometimes weakly defined scattered heuweltjies (circular, abandoned termite mounds) are found further away from the sea. Although predominantly coastal, this vegetation may penetrate as far as 40 km inland from the sea, especially where coastal dune plumes extend inland and where there is a high incidence of coastal fog. Strandveld vegetation structure is highly variable, ranging in height from an average 30 cm to an average 1.2 m, but it is typically low, species-rich shrubland dominated by a variety of erect and creeping succulent and often deciduous shrubs. This widespread vegetation type could perhaps be divided into at least 6 or 8 distinct forms based on morphology and species composition, but this has not yet been done on a formal basis.

Figure 4-14 Photograph illustrating an example of intact strandveld observed in the PAOI

4.4.2 Namaqualand Inland Duneveld

This vegetation type occurs in the Western and Northern Cape along the coastal plains. The vegetation is typically dwarf shrubland dominated by erect succulent shrubs and non-succulent shrubs. Spiny grasses are common on the windblown semi-stable dunes.

Figure 4-15 Photograph illustrating an example of the Duneveld habitat observed in the PAOI

4.4.3 Namaqualand Seashore Vegetation

Figure 4-16 Photograph illustrating an example of the seashore habitats observed in the PAOI

4.4.4 Modified Landscape

The modified area consisted primarily of urban development and existing electricity infrastructure and roads (Figure 4-17). These areas were mostly void of avifauna species, with the species recorded here being those resilient to disturbance. Species occurring here included *Passer melanurus* (Cape Sparrow), *Streptopelia capicola* (Cape Turtle Dive).

Figure 4-17 Photograph illustrating an example of the modified habitats observed in the broader assessment area

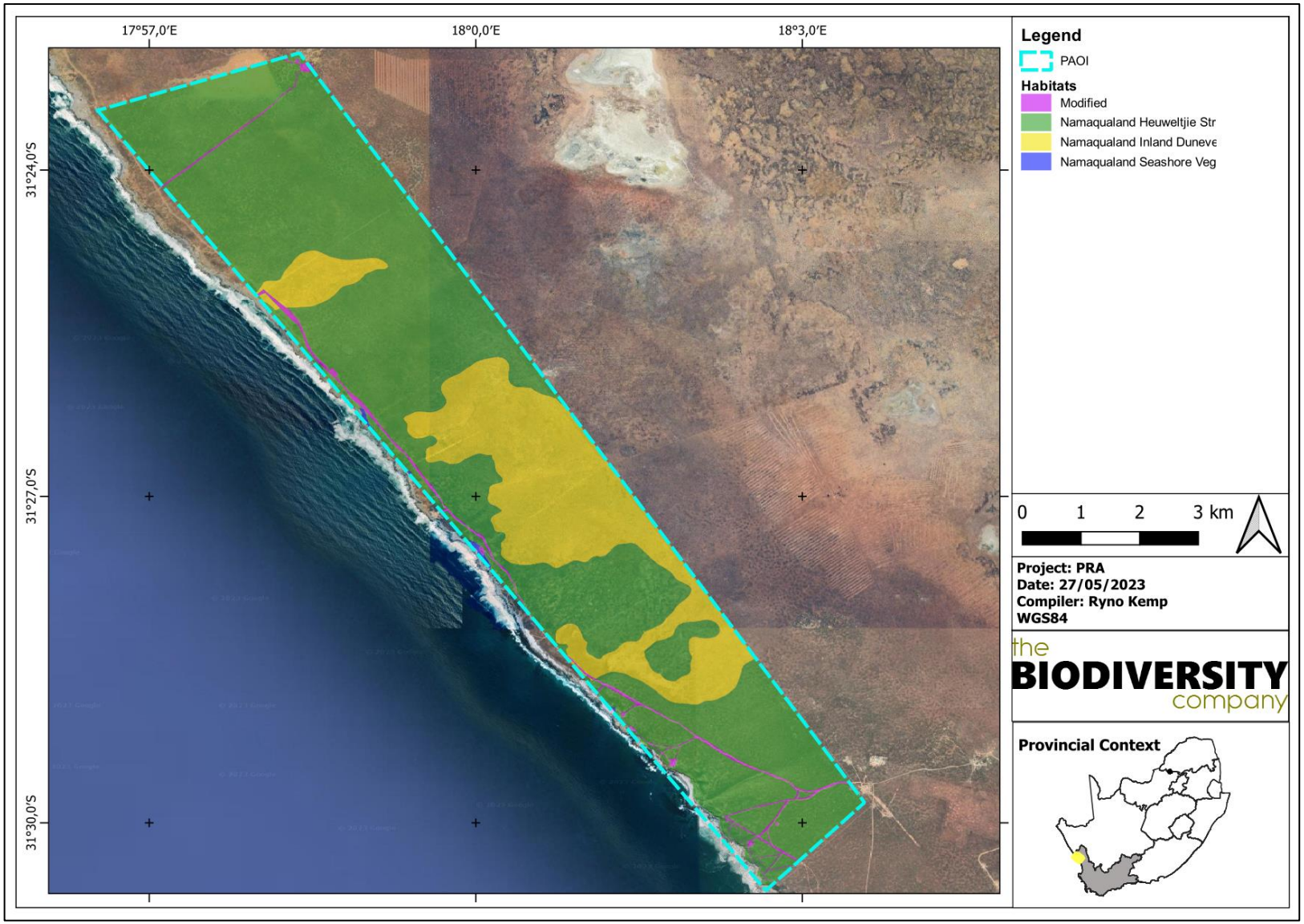

Figure 4-18 Map illustrating the habitat types delineated within the proposed development PAOI

5 Site Ecological Importance (SEI)

5.1 Environmental Screening Tool

The terrestrial biodiversity theme sensitivity as indicated by the screening tool report for the project area of influence, was derived to be 'Very High' as the proposed development PAOI overlaps with CBA1 and Ecological supporting areas (Figure 5-1).

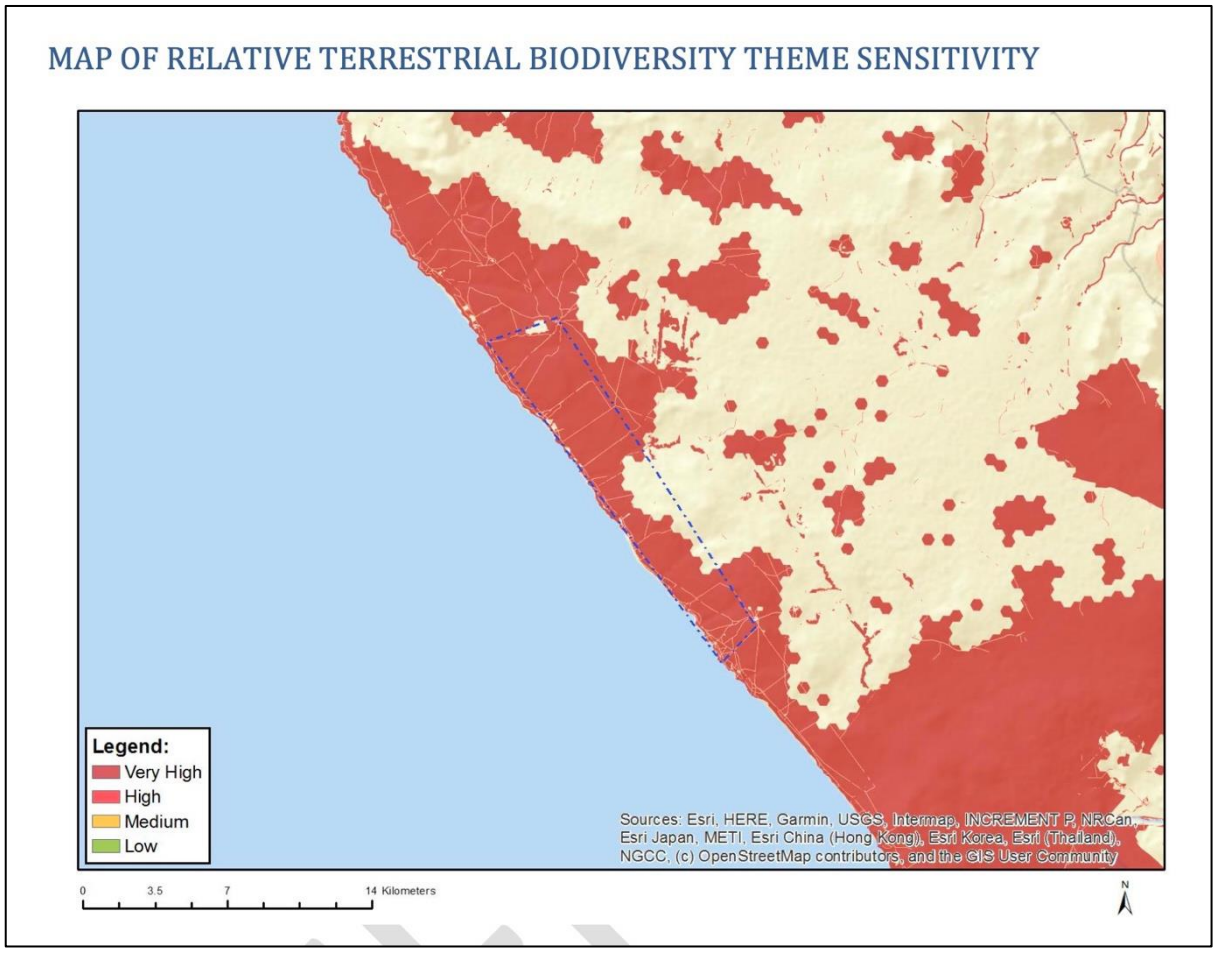

Figure 5-1 Terrestrial Biodiversity Theme Sensitivity for the PAOI, National Web based Environmental Screening Tool

As indicated in the screening report, the Animal Species Theme sensitivity was derived from being 'High' for the PAOI (Figure 5-2), due to the likely presence of *Afrotis afra* and *Circus maurus*.

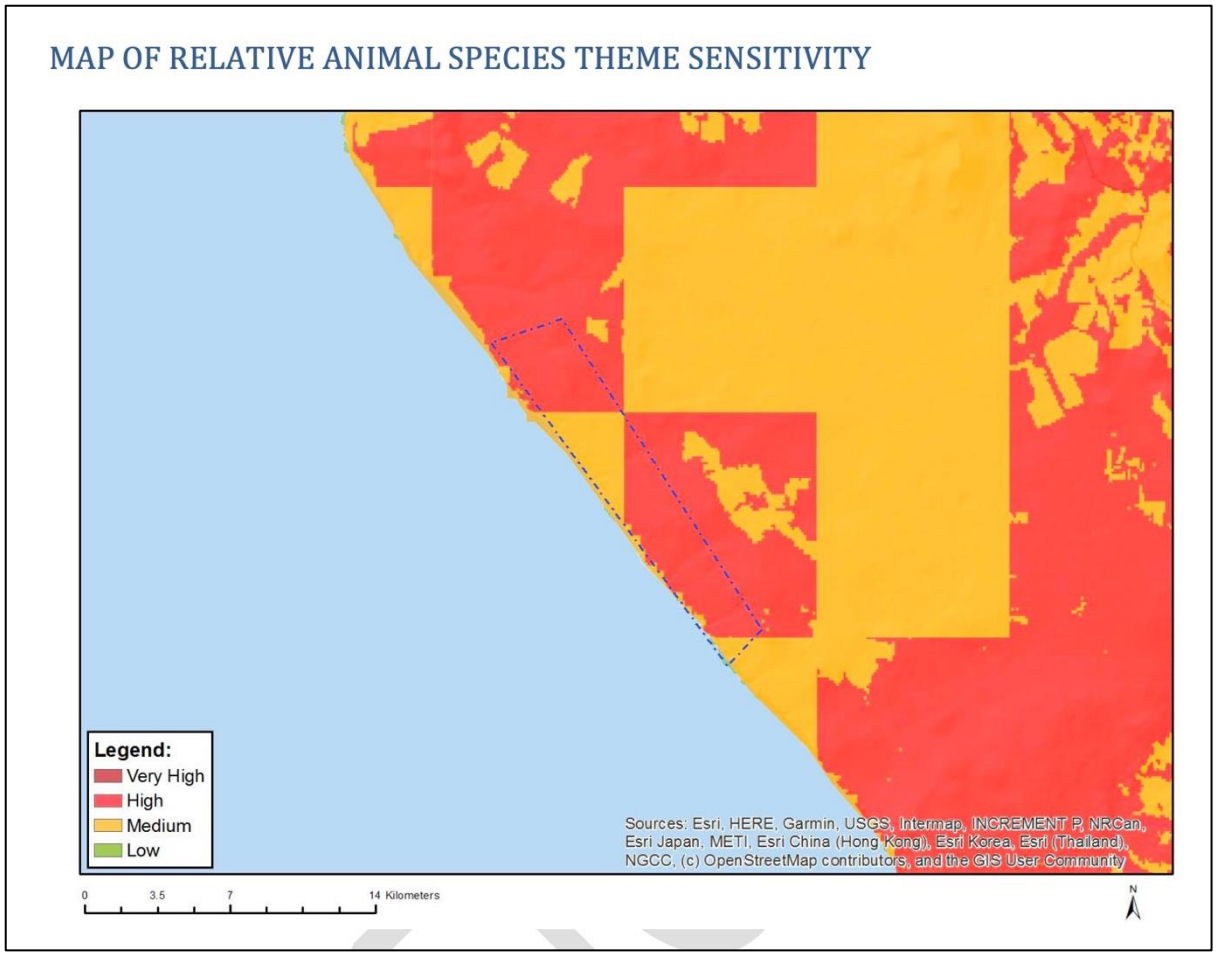

Figure 5-2 Fauna Theme Sensitivity for the PAOI, National Web based Environmental Screening Tool

5.2 Site Ecological Importance (SEI)

Based on the criteria provided in Section 3.4 of this report, all habitats within the assessment area of the proposed project were allocated a sensitivity or SEI category (Table 5-1).The SEI of the PAOI within an avifauna context was based on both the field results and desktop information. The SEI of the habitat types delineated is illustrated in Figure 5-3. The degraded grassland was given a medium rating based on the high likelihood of supporting SCCs. Only three SCC was recorded close to the PAOI, but a medium diversity of species in the Degraded Grasslands and Open Savannah was assigned a medium SEI and the modified area a very low SEI.

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

Habitat	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance	Site Ecological Importance (SEI) Guidelines for interpreting SEI in the context of the proposed development activities
Strandveld	High Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of >	High Only minor current negative ecological impacts with no signs of	**High**	Low Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore	**Very High**	Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e., last remaining

Habitat	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance	Site Ecological Importance (SEI) Guidelines for interpreting SEI in the context of the proposed development activities
	10 km^2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	major past disturbance and good rehabilitation potential.		~ 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.		populations of species, last remaining good condition patches of ecosystems/unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
Duneveld	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.	High Only minor current negative ecological impacts with no signs of major past disturbance and good rehabilitation potential.	**High**	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 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.
Seashore	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.	High Only minor current negative ecological impacts with no signs of major past disturbance and good rehabilitation potential.	**High**	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:	**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.

Habitat	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance	Site Ecological Importance (SEI) Guidelines for interpreting SEI in the context of the proposed development activities
				(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.		
Modified	Very Low No confirmed and highly unlikely populations of SCC. No confirmed and highly unlikely populations of range-restricted species. No natural habitat remaining.	Very Low Several major current negative ecological impacts.	**Very Low**	Very High Habitat that can recover rapidly	**Very Low**	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

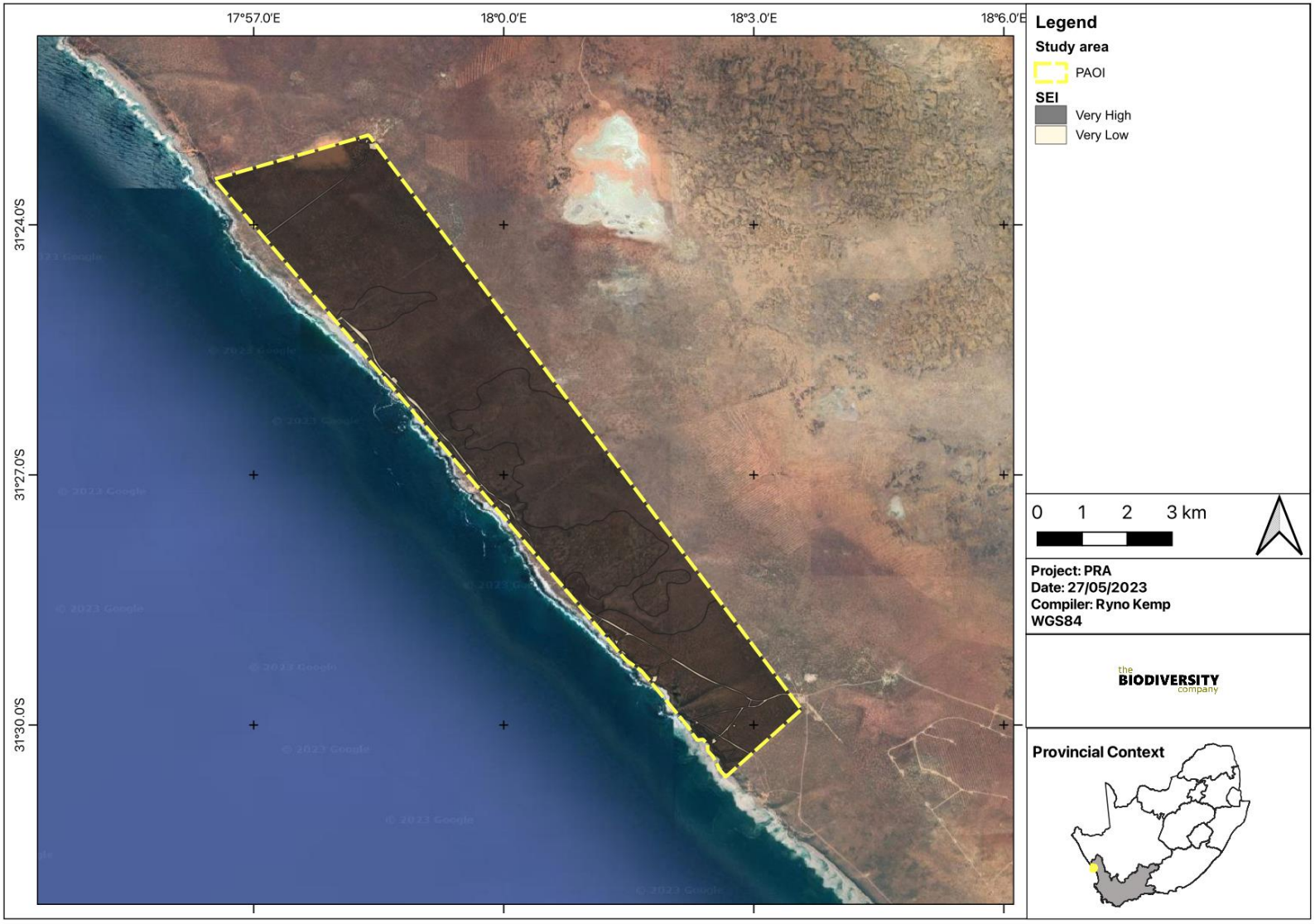

Figure 5-3 Map illustrating the Site Ecological Importance of the proposed development within an avifauna context

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.

- 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.

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:

- Current Mining Activities;
- Noise pollution;
- Minor and major gravel roads and associated vehicle traffic;
- Invasive Alien Plants;
- Livestock agriculture; and
- Fences and associated infrastructure.

Figure 6-1 Photograph illustrating an example of impacts observed within the proposed development.

6.2 Anticipated Impacts

This section describes the potential impacts on avifauna associated with prospecting rights within the project area of interest. During the prospecting, vegetation clearing will occur, leading to direct habitat loss. Vegetation clearing will create a disturbance and potentially lead to avifaunal species' displacement. The operation of prospecting machinery on site will generate noise pollution. Increased human presence can lead to poaching, and the increase in vehicle traffic and heavy machinery may lead to roadkill.

6.3 Alternatives

No alternatives were considered.

6.1 Loss of Irreplaceable Resources

The proposed prospecting will lead to the loss of the following irreplaceable resources:

- Habitat and possible nesting sites for avifauna SCC.

6.2 Assessment of Impact Significance

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

6.2.1 Prospecting phase

The following potential main impacts on the biodiversity were considered for the prospecting phase within the proposed area.

The following potential impacts were considered:

- Loss of habitat within the project footprint (Table 6-1);
- Displacement of avifauna community (including SCC) due to disturbance from increased human presence and noise pollution (Table 6-2); and
- Direct mortality from vegetation clearing, increased vehicle traffic and poaching, including the collection of eggs (Table 6-3).

Table 6-1 Loss of habitat within the PAOI

Impact Nature: Loss of habitat within prospecting footprint		
Habitat destruction within the prospecting footprint		
	Without mitigation	**With mitigation**
Extent	Low (2)	Very Low (1)
Duration	Very short duration (1)	Very short duration (1)
Magnitude	Moderate and will result in processes continuing but in a modified way (6)	Minor and will not result in an impact on processes (2)
Probability	Highly probable (4)	Probable (3)
Significance	**Medium (36)**	**Low (12)**
Status (positive or negative)	Negative	Negative

Reversibility	Low	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, each prospecting site can be mitigated. 5 sites can be drilled at a time and before they can continue with any additional prospecting sites the rehabilitation process should have started.	
Mitigation:		
• Minimal clearing of all 'Very High' habitats. • Avoid prospecting along the Namaqualand Seashore Vegetation. Offset mitigation will be required for activities within these areas. • Demarcate prospecting areas to avoid affecting outside areas. Use physical barriers and signage. • Do not clear areas of indigenous vegetation outside of the direct project footprint. • Minimise vegetation clearing to the minimum required. • Environmental Officer (EO) to provide supervision and oversight of vegetation clearing activities. • Compile and implement a Rehabilitation Plan from the onset of the project. • A maximum of 5 sites can be drilled at a time and before they can continue with any additional prospecting sites the rehabilitation process should have started and signed off by EO. • A long-term rehabilitation plan needs to be followed and monitored carefully. • Progressive rehabilitation will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seedbank. Surplus rehabilitation material can be applied to other others in need of stabilisation and vegetation cover. • Indigenous vegetation to be maintained as far as possible • Environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, remaining within demarcated construction areas etc.		
Residual Impacts:		
The loss of currently intact vegetation is an unavoidable consequence of the project and cannot be entirely mitigated. The residual impact would however be low.		

Table 6-2 Displacement of avifauna community (including SCC) due to disturbance from increased human presence and noise pollution

Impact Nature: Displacement of avifauna community (including SCC) due to noise pollution		
Noise pollution generated from prospecting activities will lead to the displacement of avifauna. Noise pollution leads to changes in vocal communication and concomitantly to reproductive success. Many species may consequently avoid these areas completely. Larger species tend to also be wary of humans and therefore will emigrate to areas away from increased human presence.		
	Without mitigation	**With mitigation**
Extent	Low (2)	Very Low (1)
Duration	Very short duration (1)	Very short duration (1)
Magnitude	High (8)	Low and will cause a slight impact on processes (4)
Probability	Highly probable (4)	Probable (3)
Significance	**Medium (44)**	**Low (18)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, albeit only to a certain level. Impacts are difficult to mitigate against.	
Mitigation:		
• Minimise the prospecting time at a site. • No prospecting from Sunrise until 09:00 and 16:00 and Sunset to minimise noise disturbance during their peak activity times. Allowing for vocalisation. • No prospecting during nights. • Minimal staff should be considered at the prospecting site to minimise additional noise disturbance. • Noise must be kept to a minimum and when possible. • Baffle boxes or noise-reduction equipment should be used if possible. • Implement an avifauna monitoring program during the prospecting. This is of utmost importance to implement this due to the very high sensitivity of the PAOI and will provide valuable information for any future prospecting activities in the areas. However, this should be conducted by an avifauna specialist		
Residual Impacts:		
Due to the sensitivity and furtive behaviour of the SCC within the region, residual impacts are expected to remain with this impact.		

Table 6-3 Direct mortality from vegetation clearing, increased vehicle traffic and poaching, including the collection of eggs

Impact Nature: Direct mortality from vegetation clearing, increased vehicle traffic and poaching, including the collection of eggs		
Direct mortality may arise when the area is cleared, especially for species whose predator response is to remain still and camouflaged against the substrate, as well as those species that are ground-nesting. Increased vehicle traffic will result in an increased likelihood of roadkill.		
	Without mitigation	**With mitigation**
Extent	Low (2)	Very Low (1)
Duration	Very short duration (1)	Very short duration (1)
Magnitude	High (8)	Minor (2)

Probability	Highly probable (4)	Improbable (2)
Significance	**Medium (44)**	**Low (8)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	
Mitigation:		
• Any avifauna threatened by the activities should be removed safely by an appropriately qualified environmental officer or removal specialist. • All construction vehicles should adhere to a speed limit of maximum 20 km/h to avoid collisions. Appropriate speed control measures and signs must be erected. • Poaching must be made a punishable offence and any incidences must be reported to the relevant conservation body. • All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof of attendance.		
Residual Impacts:		
It is probable that some individuals of susceptible species will be lost to construction-related activities despite mitigation. However, this is not likely to impact the viability of the local population of any avifauna species.		

7 Avifauna Impact Management Actions

The purpose of the Biodiversity Impact Management Actions of is to present the mitigations in such a way that they 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 pertaining to the avifaunal component.

Table 7-1 Summary of management outcomes pertaining to impacts to 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
Seashore areas must be declared No-go areas, they must be demarcated to ensure no vehicles or people move into these areas.	Life of operation	Project Manager Environmental Officer	Development footprint	Ongoing
Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further.	Life of operation	Project Manager Environmental Officer	Areas of indigenous vegetation	Ongoing
Areas that are denuded during prospecting 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.	Rehabilitation	Project Manager	Areas that are denuded during prospecting 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
Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.	Life of operation	Environmental Officer Contractor	Leaks and spills	Ongoing
Management outcome: Avifauna				
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	Life of operation	Environmental Officer	Evidence of trapping etc	Ongoing

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
harming, collecting, or hunting terrestrial species, and owls, which are often persecuted out of superstition. Signs must be put up to enforce this.				
The duration of the prospecting should be kept to a minimum to avoid disturbing avifauna, but also outside prime activity hours of avifauna.	Life of Operation	Project Manager Environmental Officer	Construction/Closure Phase	Ongoing
All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limit (20 km/h), to respect all forms of wildlife. Speed limits must still 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.	Life of Operation	Project Manager Environmental Officer	Noise	Ongoing
All areas to be developed must be walked through prior to any activity to ensure no 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.	Life of Operation	Environmental Officer	Presence of avifauna species and nests	Ongoing
Implement an avifauna monitoring program during the prospecting. This is of utmost importance to implement this due to the very high sensitivity of the PAOI and will provide valuable information for any future prospecting activities in the areas. However, this should be conducted by an avifauna specialist	Life of Operation	Project Manager Environmental Officer Avifauna specialist	Understand the impact of the noise on avifauna prior, during and post prospecting	Ongoing

8 Conclusion and Impact Statement

8.1 Conclusion

This Avifauna Assessment aimed to provide information to guide the risk of the proposed prospecting to the avifauna community.

Only one site visit was conducted. The field investigation was conducted over 6 days from the 13th to the 18th of May, 2023. The total number of individual species accounts for approximately 34.3% of the total number of expected species Eight SCC was recorded within the PAOI during the survey period *Phalacrocorax capensis* (Cape Cormorant), *Phoenicopterus roseus* (Greater Flamingo), *Sagittarius serpentarius* (Secretarybird), *Afrotis afra* (Southern Black Korhaan), *Neotis ludwigii* (Ludwig's Bustard), *Ardeotis kori* (Kori Bustard), *Geocolaptes olivaceus* (Ground Woodpecker), *Polemaetus bellicosus* (Martial Eagle) and they were recorded 46 times during the surveying period.

The SEI of the proposed PAOI was found to be Very High. However, the overall residual impacts expected for the prospecting activities is low. Management measures include ensuring the prospecting footprints are minimised and restored after prospecting.

8.2 Impact Statement

The main expected impacts of the proposed prospecting activities will include the following:

- Habitat loss and fragmentation; and
- Noise disturbance.

Mitigation measures, as described in this report, can be implemented to reduce the significance of the risk to an acceptable residual risk level. Considering the above-mentioned information, the specialist believes the project may be favourably considered on condition that all the mitigation and recommendations provided in this report and other specialist reports are implemented.

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10 Appendix Items

10.1 Appendix A: Expected species

Scientific Name	Common Name	Familie Name	Regional	Global (IUCN)
Telophorus zeylonus	*Bokmakierie*	*Malaconotidae*	Unlisted	Unlisted
Nilaus afer	*Brubru*	*Malaconotidae*	Unlisted	Unlisted
Cisticola fulvicapilla	*Neddicky*	*Cisticolidae*	Unlisted	Unlisted
Ortygospiza atricollis	*Quailfinch*	*Estrildidae*	Unlisted	Unlisted
Sagittarius serpentarius	*Secretarybird*	*Sagittariidae*	VU	EN
Tricholaema leucomelas	*Acacia Pied Barbet*	*Lybiidae*	Unlisted	Unlisted
Lybius torquatus	*Black-collared Barbet*	*Lybiidae*	Unlisted	Unlisted
Trachyphonus vaillantii	*Crested Barbet*	*Lybiidae*	Unlisted	Unlisted
Batis molitor	*Chinspot Batis*	*Platysteiridae*	Unlisted	Unlisted
Batis pririt	*Pririt Batis*	*Platysteiridae*	Unlisted	Unlisted
Merops apiaster	*European Bee-eater*	*Meropidae*	Unlisted	Unlisted
Merops hirundineus	*Swallow-tailed Bee-eater*	*Meropidae*	Unlisted	Unlisted
Euplectes orix	*Southern Red Bishop*	*Ploceidae*	Unlisted	Unlisted
Euplectes afer	*Yellow-crowned Bishop*	*Ploceidae*	Unlisted	Unlisted
Pycnonotus nigricans	*African Red-eyed Bulbul*	*Pycnonotidae*	Unlisted	Unlisted
Pycnonotus tricolor	*Dark-capped Bulbul*	*Pycnonotidae*	Unlisted	Unlisted
Emberiza tahapisi	*Cinnamon-breasted Bunting*	*Emberizidae*	Unlisted	Unlisted
Buteo buteo	*Common Buzzard*	*Accipitridae*	Unlisted	Unlisted
Crithagra atrogularis	*Black-throated Canary*	*Fringillidae*	Unlisted	Unlisted
Crithagra flaviventris	*Yellow Canary*	*Fringillidae*	Unlisted	Unlisted
Myrmecocichla formicivora	*Ant-eating Chat*	*Muscicapidae*	Unlisted	Unlisted
Oenanthe familiaris	*Familiar Chat*	*Muscicapidae*	Unlisted	Unlisted
Cisticola textrix	*Cloud Cisticola*	*Cisticolidae*	Unlisted	Unlisted
Cisticola aridulus	*Desert Cisticola*	*Cisticolidae*	Unlisted	Unlisted
Cisticola tinniens	*Levaillant's Cisticola*	*Cisticolidae*	Unlisted	Unlisted
Cisticola chiniana	*Rattling Cisticola*	*Cisticolidae*	Unlisted	Unlisted
Cisticola juncidis	*Zitting Cisticola*	*Cisticolidae*	Unlisted	Unlisted
Fulica cristata	*Red-knobbed Coot*	*Rallidae*	Unlisted	Unlisted
Corvus capensis	*Cape Crow*	*Corvidae*	Unlisted	Unlisted

Corvus albus	*Pied Crow*	*Corvidae*	Unlisted	Unlisted
Chrysococcyx caprius	*Diederik Cuckoo*	*Cuculidae*	Unlisted	Unlisted
Clamator jacobinus	*Jacobin Cuckoo*	*Cuculidae*	Unlisted	Unlisted
Streptopelia capicola	*Ring-necked Dove*	*Columbidae*	Unlisted	Unlisted
Spilopelia senegalensis	*Laughing Dove*	*Columbidae*	Unlisted	Unlisted
Oena capensis	*Namaqua Dove*	*Columbidae*	Unlisted	Unlisted
Streptopelia semitorquata	*Red-eyed Dove*	*Columbidae*	Unlisted	Unlisted
Columba livia	*Rock Dove*	*Columbidae*	Unlisted	Unlisted
Ardea intermedia	*Yellow-billed Egret*	*Cisticolidae*	Unlisted	Unlisted
Bubulcus ibis	*Western Cattle Egret*	*Ardeidae*	Unlisted	Unlisted
Falco amurensis	*Amur Falcon*	*Falconidae*	Unlisted	Unlisted
Amadina erythrocephala	*Red-headed Finch*	*Estriididae*	Unlisted	Unlisted
Lagonosticta rhodopareia	*Jameson's Firefinch*	*Estriididae*	Unlisted	Unlisted
Lanius collaris	*Southern Fiscal*	*Laniidae*	Unlisted	Unlisted
Melaenornis silens	*Fiscal Flycatcher*	*Muscicapidae*	Unlisted	Unlisted
Muscicapa striata	*Spotted Flycatcher*	*Muscicapidae*	Unlisted	Unlisted
Scleroptila gutturalis	*Orange River Francolin*	*Phasianidae*	Unlisted	Unlisted
Alopochen aegyptiaca	*Egyptian Goose*	*Anatidae*	Unlisted	Unlisted
Plectropterus gambensis	*Spur-winged Goose*	*Anatidae*	Unlisted	Unlisted
Melierax canorus	*Pale Chanting Goshawk*	*Accipitridae*	Unlisted	Unlisted
Tachybaptus ruficollis	*Little Grebe*	*Podicipedidae*	Unlisted	Unlisted
Numida meleagris	*Helmeted Guineafowl*	*Numididae*	Unlisted	Unlisted
Ardea melanocephala	*Black-headed Heron*	*Ardeidae*	Unlisted	Unlisted
Ardea cinerea	*Grey Heron*	*Ardeidae*	Unlisted	Unlisted
Upupa africana	*African Hoopoe*	*Upupidae*	Unlisted	Unlisted
Plegadis falcinellus	*Glossy Ibis*	*Threskiornithidae*	Unlisted	Unlisted
Bostrychia hagedash	*Hadada Ibis*	*Threskiornithidae*	Unlisted	Unlisted
Falco rupicoloides	*Greater Kestrel*	*Falconidae*	Unlisted	Unlisted
Falco naumanni	*Lesser Kestrel*	*Falconidae*	Unlisted	Unlisted
Falco rupicolus	*Rock Kestrel*	*Falconidae*	Unlisted	Unlisted
Elanus caeruleus	*Black-winged Kite*	*Accipitridae*	Unlisted	Unlisted
Afrotis afraoides	*Northern Black Korhaan*	*Otididae*	Unlisted	Unlisted

Vanellus armatus	*Blacksmith Lapwing*	*Charadriidae*	Unlisted	Unlisted
Vanellus coronatus	*Crowned Lapwing*	*Charadriidae*	Unlisted	Unlisted
Mirafra fasciolata	*Eastern Clapper Lark*	*Alaudidae*	Unlisted	Unlisted
Certhilauda semitorquata	*Eastern Long-billed Lark*	*Alaudidae*	Unlisted	Unlisted
Calandrella cinerea	*Red-capped Lark*	*Alaudidae*	Unlisted	Unlisted
Mirafra africana	*Rufous-naped Lark*	*Alaudidae*	Unlisted	Unlisted
Calendulauda sabota	*Sabota Lark*	*Alaudidae*	Unlisted	Unlisted
Chersomanes albofasciata	*Spike-heeled Lark*	*Alaudidae*	Unlisted	Unlisted
Macronyx capensis	*Cape Longclaw*	*Motacillidae*	Unlisted	Unlisted
Riparia cincta	*Banded Martin*	*Hirundinidae*	Unlisted	Unlisted
Delichon urbicum	*Common House Martin*	*Hirundinidae*	Unlisted	Unlisted
Urocolius indicus	*Red-faced Mousebird*	*Coliidae*	Unlisted	Unlisted
Colius striatus	*Speckled Mousebird*	*Coliidae*	Unlisted	Unlisted
Colius colius	*White-backed Mousebird*	*Coliidae*	Unlisted	Unlisted
Acridotheres tristis	*Common Myna*	*Sturnidae*	Unlisted	Unlisted
Struthio camelus	*Common Ostrich*	*Struthionidae*	Unlisted	Unlisted
Columba guinea	*Speckled Pigeon*	*Columbidae*	Unlisted	Unlisted
Anthus cinnamomeus	*African Pipit*	*Motacillidae*	Unlisted	Unlisted
Anthus vaalensis	*Buffy Pipit*	*Motacillidae*	Unlisted	Unlisted
Anthus nicholsoni	*Nicholson's Pipit*	*Motacillidae*	Unlisted	Unlisted
Charadrius tricollaris	*Three-banded Plover*	*Charadriidae*	Unlisted	Unlisted
Netta erythrophthalma	*Southern Pochard*	*Anatidae*	Unlisted	Unlisted
Prinia flavicans	*Black-chested Prinia*	*Cisticolidae*	Unlisted	Unlisted
Pytilia melba	*Green-winged Pytilia*	*Estrildidae*	Unlisted	Unlisted
Coturnix coturnix	*Common Quail*	*Phasianidae*	Unlisted	Unlisted
Quelea quelea	*Red-billed Quelea*	*Ploceidae*	Unlisted	Unlisted
Cossypha caffra	*Cape Robin-Chat*	*Muscicapidae*	Unlisted	Unlisted
Pterocles namaqua	*Namaqua Sandgrouse*	*Pteroclidae*	Unlisted	Unlisted
Rhinopomastus cyanomelas	*Common Scimitarbill*	*Phoeniculidae*	Unlisted	Unlisted
Cercotrichas paena	*Kalahari Scrub Robin*	*Muscicapidae*	Unlisted	Unlisted
Laniarius atrococcineus	*Crimson-breasted Shrike*	*Malaconotidae*	Unlisted	Unlisted
Lanius minor	*Lesser Grey Shrike*	*Laniidae*	Unlisted	Unlisted

Lanius collurio	*Red-backed Shrike*	*Laniidae*	Unlisted	Unlisted
Gallinago nigripennis	*African Snipe*	*Scolopacidae*	Unlisted	Unlisted
Passer melanurus	*Cape Sparrow*	*Passeridae*	Unlisted	Unlisted
Passer domesticus	*House Sparrow*	*Passeridae*	Unlisted	Unlisted
Passer diffusus	*Southern Grey-headed Sparrow*	*Passeridae*	Unlisted	Unlisted
Eremopterix leucotis	*Chestnut-backed Sparrow-Lark*	*Alaudidae*	Unlisted	Unlisted
Eremopterix verticalis	*Grey-backed Sparrow-Lark*	*Alaudidae*	Unlisted	Unlisted
Plocepasser mahali	*White-browed Sparrow-Weaver*	*Ploceidae*	Unlisted	Unlisted
Accipiter melanoleucus	*Black Sparrowhawk*	*Accipitridae*	Unlisted	Unlisted
Pternistis swainsonii	*Swainson's Spurfowl*	*Phasianidae*	Unlisted	Unlisted
Lamprotornis nitens	*Cape Starling*	*Sturnidae*	Unlisted	Unlisted
Lamprotornis bicolor	*Pied Starling*	*Sturnidae*	Unlisted	Unlisted
Creatophora cinerea	*Wattled Starling*	*Sturnidae*	Unlisted	Unlisted
Himantopus himantopus	*Black-winged Stilt*	*Recurvirostridae*	Unlisted	Unlisted
Saxicola torquatus	*African Stonechat*	*Muscicapidae*	Unlisted	Unlisted
Hirundo rustica	*Barn Swallow*	*Hirundinidae*	Unlisted	Unlisted
Cecropis cucullata	*Greater Striped Swallow*	*Hirundinidae*	Unlisted	Unlisted
Cecropis semirufa	*Red-breasted Swallow*	*Hirundinidae*	Unlisted	Unlisted
Petrochelidon spilodera	*South African Cliff Swallow*	*Hirundinidae*	Unlisted	Unlisted
Hirundo albigularis	*White-throated Swallow*	*Hirundinidae*	Unlisted	Unlisted
Apus affinis	*Little Swift*	*Apodidae*	Unlisted	Unlisted
Apus caffer	*White-rumped Swift*	*Apodidae*	Unlisted	Unlisted
Tchagra australis	*Brown-crowned Tchagra*	*Malaconotidae*	Unlisted	Unlisted
Turdus litsitsirupa	*Groundscraper Thrush*	*Turdidae*	Unlisted	Unlisted
Turdus smithi	*Karoo Thrush*	*Turdidae*	Unlisted	Unlisted
Motacilla capensis	*Cape Wagtail*	*Motacillidae*	Unlisted	Unlisted
Curruca subcoerulea	*Chestnut-vented Warbler*	*Sylviidae*	Unlisted	Unlisted
Phylloscopus trochilus	*Willow Warbler*	*Phylloscopidae*	Unlisted	Unlisted
Brunhilda erythronotos	*Black-faced Waxbill*	*Estrildidae*	Unlisted	Unlisted
Uraeginthus angolensis	*Blue Waxbill*	*Estrildidae*	Unlisted	Unlisted
Estrilda astrild	*Common Waxbill*	*Estrildidae*	Unlisted	Unlisted
Granatina granatina	*Violet-eared Waxbill*	*Estrildidae*	Unlisted	Unlisted

Bubalornis niger	*Red-billed Buffalo Weaver*	*Ploceidae*	Unlisted	Unlisted
Sporopipes squamifrons	*Scaly-feathered Weaver*	*Ploceidae*	Unlisted	Unlisted
Ploceus velatus	*Southern Masked Weaver*	*Ploceidae*	Unlisted	Unlisted
Oenanthe pileata	*Capped Wheatear*	*Muscicapidae*	Unlisted	Unlisted
Zosterops virens	*Cape White-eye*	*Zosteropidae*	Unlisted	Unlisted
Zosterops pallidus	*Orange River White-eye*	*Zosteropidae*	Unlisted	Unlisted
Vidua paradisaea	*Long-tailed Paradise Whydah*	*Viduidae*	Unlisted	Unlisted
Vidua macroura	*Pin-tailed Whydah*	*Viduidae*	Unlisted	Unlisted
Euplectes progne	*Long-tailed Widowbird*	*Ploceidae*	Unlisted	Unlisted
Euplectes ardens	*Red-collared Widowbird*	*Ploceidae*	Unlisted	Unlisted
Euplectes albonotatus	*White-winged Widowbird*	*Ploceidae*	Unlisted	Unlisted
Phoeniculus purpureus	*Green Wood Hoopoe*	*Phoeniculidae*	Unlisted	Unlisted
Dendropicos fuscescens	*Cardinal Woodpecker*	*Picidae*	Unlisted	Unlisted

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

10.2 Appendix B

Point count data

10.2.1 Common Name	10.2.2 *Scientific Name*	10.2.3 Family Name	10.2.4 RD (R Gl
10.2.5 African Pipit	10.2.6 Anthus cinnamomeus	10.2.7 Motacillidae	10.2.8 0
10.2.9 African Stonechat	10.2.10 Saxicola torquatus	10.2.11 Muscicapidae	10.2.12 0
10.2.13 Ant-eating Chat	10.2.14 Myrmecocichla formicivora	10.2.15 Muscicapidae	10.2.16 0
10.2.17 Black-winged Kite	10.2.18 Elanus caeruleus	10.2.19 Accipitridae	10.2.20 0
10.2.21 Blacksmith Lapwing	10.2.22 Vanellus armatus	10.2.23 Charadriidae	10.2.24 0
10.2.25 Brown-throated Martin	10.2.26 Riparia paludicola	10.2.27 Hirundinidae	10.2.28 0
10.2.29 Cape Longclaw	10.2.30 Macronyx capensis	10.2.31 Motacillidae	10.2.32 0
10.2.33 Cape Sparrow	10.2.34 Passer melanurus	10.2.35 Passeridae	10.2.36 0
10.2.37 Capped Wheatear	10.2.38 Oenanthe pileata	10.2.39 Muscicapidae	10.2.40 0
10.2.41 Cloud Cisticola	10.2.42 Cisticola textrix	10.2.43 Cisticolidae	10.2.44 0
10.2.45 Common Quail	10.2.46 Coturnix coturnix	10.2.47 Phasianidae	10.2.48 0
10.2.49 Crowned Lapwing	10.2.50 Vanellus coronatus	10.2.51 Charadriidae	10.2.52 0
10.2.53 Desert Cisticola	10.2.54 Cisticola aridulus	10.2.55 Cisticolidae	10.2.56 0
10.2.57 Egyptian Goose	10.2.58 Alopochen aegyptiaca	10.2.59 Anatidae	10.2.60 0
10.2.61 Greater Kestrel	10.2.62 Falco rupicoloides	10.2.63 Falconidae	10.2.64 0
10.2.65 Grey Heron	10.2.66 Ardea cinerea	10.2.67 Ardeidae	10.2.68 0
10.2.69 Grey-backed Sparrow-Lark	10.2.70 Eremopterix verticalis	10.2.71 Alaudidae	10.2.72 0
10.2.73 Helmeted Guineafowl	10.2.74 Numida meleagris	10.2.75 Numididae	10.2.76 0
10.2.77 Namaqua Dove	10.2.78 Oena capensis	10.2.79 Columbidae	10.2.80 0
10.2.81 Pied Crow	10.2.82 Corvus albus	10.2.83 Corvidae	10.2.84 0
10.2.85 Ring-necked Dove	10.2.86 Streptopelia capicola	10.2.87 Columbidae	10.2.88 0
10.2.89 South African Shelduck	10.2.90 Tadorna cana	10.2.91 Anatidae	10.2.92 0
10.2.93 Southern Fiscal	10.2.94 Lanius collaris	10.2.95 Laniidae	10.2.96 0
10.2.97 Southern Masked Weaver	10.2.98 Ploceus velatus	10.2.99 Ploceidae	10.2.100
10.2.101 Southern Red Bishop	10.2.102 Euplectes orix	10.2.103 Ploceidae	10.2.104
10.2.105 Speckled Pigeon	10.2.106 Columba guinea	10.2.107 Columbidae	10.2.108
10.2.109 Spotted Eagle-Owl	10.2.110 Bubo africanus	10.2.111 Strigidae	10.2.112
10.2.113 Spotted Thick-knee	10.2.114 Burhinus capensis	10.2.115 Burhinidae	10.2.116
10.2.117 Zitting Cisticola	10.2.118 Cisticola juncidis	10.2.119 Cisticolidae	10.2.120
10.2.121 Northern Black Korhaan	10.2.122 Afrotis afraoides	10.2.123 Otididae	10.2.124
10.2.125 White-browed Sparrow-Weaver	10.2.126 Plocepasser mahali	10.2.127 Ploceidae	10.2.128
10.2.129 Black-chested Prinia	10.2.130 Prinia flavicans	10.2.131 Cisticolidae	10.2.132
10.2.133 Orange River Francolin	10.2.134 Scleroptila gutturalis	10.2.135 Phasianidae	10.2.136

10.2.137 Brown-crowned Tchagra	10.2.138 Tchagra australis	10.2.139 Malaconotidae	10.2.140
10.2.141 Scaly-feathered Weaver	10.2.142 Sporopipes squamifrons	10.2.143 Ploceidae	10.2.144
10.2.145 Black-throated Canary	10.2.146 Crithagra atrogularis	10.2.147 Fringillidae	10.2.148
10.2.149 Red-billed Quelea	10.2.150 Quelea quelea	10.2.151 Ploceidae	10.2.152
10.2.153 Spike-heeled Lark	10.2.154 Chersomanes albofasciata	10.2.155 Alaudidae	10.2.156
10.2.157 Western Cattle Egret	10.2.158 Bubulcus ibis	10.2.159 Ardeidae	10.2.160
10.2.161 Swainson's Spurfowl	10.2.162 Pternistis swainsonii	10.2.163 Phasianidae	10.2.164
10.2.165 Rattling Cisticola	10.2.166 Cisticola chiniana	10.2.167 Cisticolidae	10.2.168
10.2.169 Plain-backed Pipit	10.2.170 Anthus leucophrys	10.2.171 Motacillidae	10.2.172
10.2.173 Sabota Lark	10.2.174 Calendulauda sabota	10.2.175 Alaudidae	10.2.176
10.2.177 Wing-snapping Cisticola	10.2.178 Cisticola ayresii	10.2.179 Cisticolidae	10.2.180
10.2.181 Buffy Pipit	10.2.182 Anthus vaalensis	10.2.183 Motacillidae	10.2.184
10.2.185 Long-tailed Widowbird	10.2.186 Euplectes progne	10.2.187 Ploceidae	10.2.188
10.2.189 Great Egret	10.2.190 Ardea alba	10.2.191 Ardeidae	10.2.192
10.2.193 Banded Martin	10.2.194 Riparia cincta	10.2.195 Hirundinidae	10.2.196
10.2.197 Melodious Lark	10.2.198 Mirafra cheniana	10.2.199 Alaudidae	10.2.200
10.2.201 Red-headed Finch	10.2.202 Amadina erythrocephala	10.2.203 Estriididae	10.2.204
10.2.205 African Palm Swift	10.2.206 Cypsiurus parvus	10.2.207 Apodidae	10.2.208
10.2.209 Red-collared Widowbird	10.2.210 Euplectes ardens	10.2.211 Ploceidae	10.2.212
10.2.213 Quailfinch	10.2.214 Ortygospiza atricollis	10.2.215 Estrildidae	10.2.216
10.2.217 Great Reed Warbler	10.2.218 Acrocephalus arundinaceus	10.2.219 Acrocephalidae	10.2.220
10.2.221 Yellow-fronted Canary	10.2.222 Crithagra mozambica	10.2.223 Fringillidae	10.2.224
10.2.225 Pink-billed Lark	10.2.226 Spizocorys conirostris	10.2.227 Alaudidae	10.2.228
10.2.229 Great Sparrow	10.2.230 Passer motitensis	10.2.231 Passeridae	10.2.232
10.2.233 African Black Duck	10.2.234 Anas sparsa	10.2.235 Anatidae	10.2.236
10.2.237 Speckled Mousebird	10.2.238 Colius striatus	10.2.239 Coliidae	10.2.240

Common Name	Scientific Name	Family Name	RD (Regional, Global)
African Stonechat	*Saxicola torquatus*	Muscicapidae	0
Ant-eating Chat	*Myrmecocichla formicivora*	Muscicapidae	0
Bar-throated Apalis	*Apalis thoracica*	Cisticolidae	0

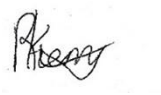
Black-headed Heron	*Ardea melanocephala*	Ardeidae	0
Bokmakierie	*Telophorus zeylonus*	Malaconotidae	0
Cape Bunting	*Emberiza capensis*	Emberizidae	0
Cape Clapper Lark	*Mirafra apiata*	Alaudidae	0
Cape Cormorant	*Phalacrocorax capensis*	Phalacrocoracidae	EN, EN
Cape Long-billed Lark	*Certhilauda curvirostris*	Alaudidae	0
Cape Penduline Tit	*Anthoscopus minutus*	Remizidae	0
Cape Robin-Chat	*Cossypha caffra*	Muscicapidae	0
Cape Sparrow	*Passer melanurus*	Passeridae	0
Cape Spurfowl	*Pternistis capensis*	Phasianidae	0
Cape Wagtail	*Motacilla capensis*	Motacillidae	0
Cape Weaver	*Ploceus capensis*	Ploceidae	0
Chestnut-vented Warbler	*Curruca subcoerulea*	Sylviidae	0
Common Quail	*Coturnix coturnix*	Phasianidae	0
Common Starling	*Sturnus vulgaris*	Sturnidae	0
Common Tern	*Sterna hirundo*	Laridae	0
Familiar Chat	*Oenanthe familiaris*	Muscicapidae	0
Greater Flamingo	*Phoenicopterus roseus*	Phoenicopteridae	NT, LC
Grey Tit	*Melaniparus afer*	Paridae	0
Grey-backed Cisticola	*Cisticola subruficapilla*	Cisticolidae	0
Hadada Ibis	*Bostrychia hagedash*	Threskiornithidae	0
Hartlaub's Gull	*Chroicocephalus hartlaubii*	Laridae	0
Karoo Lark	*Calendulauda albescens*	Alaudidae	0
Karoo Prinia	*Prinia maculosa*	Cisticolidae	0
Karoo Scrub Robin	*Cercotrichas coryphoeus*	Muscicapidae	0
Kelp Gull	*Larus dominicanus*	Laridae	0
Large-billed Lark	*Galerida magnirostris*	Alaudidae	0
Layard's Warbler	*Curruca layardi*	Sylviidae	0
Pale Chanting Goshawk	*Melierax canorus*	Accipitridae	0
Pied Crow	*Corvus albus*	Corvidae	0
Pied Starling	*Lamprotornis bicolor*	Sturnidae	0
Ring-necked Dove	*Streptopelia capicola*	Columbidae	0
Rock Kestrel	*Falco rupicolus*	Falconidae	0
Rock Martin	*Ptyonoprogne fuligula*	Hirundinidae	0
Rufous-eared Warbler	*Malcorus pectoralis*	Cisticolidae	0
Secretarybird	*Sagittarius serpentarius*	Sagittariidae	VU, EN
Southern Black Korhaan	*Afrotis afra*	Otididae	VU, VU
Southern Double-collared Sunbird	*Cinnyris chalybeus*	Nectariniidae	0
Southern Fiscal	*Lanius collaris*	Laniidae	0
Speckled Pigeon	*Columba guinea*	Columbidae	0
Spotted Eagle-Owl	*Bubo africanus*	Strigidae	0
Spotted Thick-knee	*Burhinus capensis*	Burhinidae	0
White-backed Mousebird	*Colius colius*	Coliidae	0
White-breasted Cormorant	*Phalacrocorax lucidus*	Phalacrocoracidae	0

White-throated Canary	*Crithagra albogularis*	Fringillidae	0
Yellow Canary	*Crithagra flaviventris*	Fringillidae	0
Yellow-bellied Eremomela	*Eremomela icteropygialis*	Cisticolidae	0
Spike-heeled Lark	*Chersomanes albofasciata*	Alaudidae	0
Karoo Chat	*Emarginata schlegelii*	Muscicapidae	0
White-fronted Plover	*Charadrius marginatus*	Charadriidae	0
Chat Flycatcher	*Melaenornis infuscatus*	Muscicapidae	0
Ludwig's Bustard	*Neotis ludwigii*	Otididae	EN, EN
Kori Bustard	*Ardeotis kori*	Otididae	NT, NT
Ground Woodpecker	*Geocolaptes olivaceus*	Picidae	LC, NT
Martial Eagle	*Polemaetus bellicosus*	Accipitridae	EN, EN
African Oystercatcher	*Haematopus moquini*	Haematopodidae	0

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

June 2023