AVIFAUNAL IMPACT ASSESSMENT FOR THE PROPOSED PAARDEVLEI SOLAR PHOTOVOLTAIC FACILITY NEAR CAPE TOWN, WESTERN CAPE PROVINCE

FINAL

Prepared for:

JG AFRIKA
EXPERIENCE QUALITY INTEGRITY

Prepared by:

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[redacted]



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

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

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

Amber holds a BSc (Zoology and Ecology, Environment & Conservation) and BSc (Hons) in Ecology, Environment & Conservation from WITS University and an MPhil in Environmental Management from University of Cape Town. She was awarded the Denzil and Dorethy Carr Prize for her plant collection in 2006. Amber's honours focused on the landscape effects on Herpetofauna in Kruger National Park and her Master's thesis focused on the management of social and natural aspects of environmental systems with a dissertation in food security that investigated the complex food system of informal and formal distribution markets.

Table of Contents

List of Tables

List of Figures

Acronyms

BESS	Battery Energy Storage System
CAR	Coordinated Avifaunal Roadcount
CoCT.	City of Cape Town
CR	Critically Endangered
CWAC	Coordinated Waterbird Counts
EAP	Environmental Assessment Practitioner
EN	Endangered
EIA	Environmental Impact Assessment
IUCN	International Union for Conservation of Nature
LC	Least Concern
m	Meter
MAP	Mean Annual Precipitation
NT	Near Threatened
OHL	overhead powerlines
SACNASP	South African Council for Natural Scientific Professions
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SA	South Africa
SABAP	Southern African Bird Atlas Project
SCC	Species of Conservation Concern
TOPS	Threatened and Protected Species
VRLA	Valve Regulated Lead Acid Batteries
VU	Vulnerable

Specialist Check List

The contents of this specialist report complies with the legislated requirements as described in the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on **Terrestrial Animal Species Specialist Assessment** (GN No. 1150 of 2020).

SPECIALIST REPORT REQUIREMENTS ACCORDING TO GN 1150			SECTION OF REPORT
3.1	The Terrestrial Animal Species Specialist Assessment Report must contain, as a minimum, the following information:		
	3.1.1	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Page 2 and Appendix 3 and 4
	3.1.2	A signed statement of independence by the specialist;	Appendix 5
	3.1.3	A statement of the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 2.3
	3.1.4	A description of the methodology used to undertake the site sensitivity verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Chapter 2
	3.1.5	a description of the mean density of observations/number of sample sites per unit area and the site inspection observations;	Section 2.3
	3.1.6	A description of the assumptions made and any uncertainties or gaps in knowledge or data;	Section 1.4
	3.1.7	details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported;	Chapter 4 & Chapter 5
	3.1.8	the online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area;	Section 2.3
	3.1.9	A location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Chapter 5
	3.1.10	a discussion on the cumulative impacts;	Chapter 6
	3.1.11	impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	Mitigation measures. Chapter 6.
	3.1.12	a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not of the development and if the development should receive approval or not, related to the specific theme being considered, and any conditions to which the opinion is subjected if relevant; and	Section 7.1, 7.2 & 7.3.
	3.1.13	A motivation must be provided if there were development footprints identified as per paragraph 2.2.12 above that were identified as having a “low” or “medium” terrestrial animal species sensitivity and were not considered appropriate;	Section 4.7
3.2	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.		Refer to EIA

1. INTRODUCTION

1.1. Overview

The City of Cape Town is proposing the development of a 30 to 60 MW Solar Photovoltaic (PV) Facility and Battery Energy Storage System (BESS) on City-owned vacant land within Somerset West, known as Paardevlei (Figure 1.1).

This project falls under the C40 Cities Finance Facility (CFF) framework of support that engages primary and secondary cities worldwide to mobilise financial resources for transformative actions, which significantly reduces their Green House Gas emissions and builds climate resilience.

JG Afrika have been appointed to conduct the environmental assessment for the proposed project's environmental licence application and Biodiversity Africa have, in turn, been contracted to conduct the avifaunal impact assessment.

This avifaunal impact assessment will undertake a desktop assessment and field survey, the results of which will be used to:

- Describe the avifaunal species present and/or likely to occur within the project area,
- Describe the avifaunal habitats present in the project area,
- Describe and map the sensitivity of the site showing areas of very low, low, moderate, high and very high sensitivity,
- Assess the impact of the project on avifauna and their habitats,
- Where feasible, provide mitigation measures to reduce the impact of the project on avifaunal species and their habitats; and
- Comment on the sensitivity of the site in relation to the DFFE screening tool report.

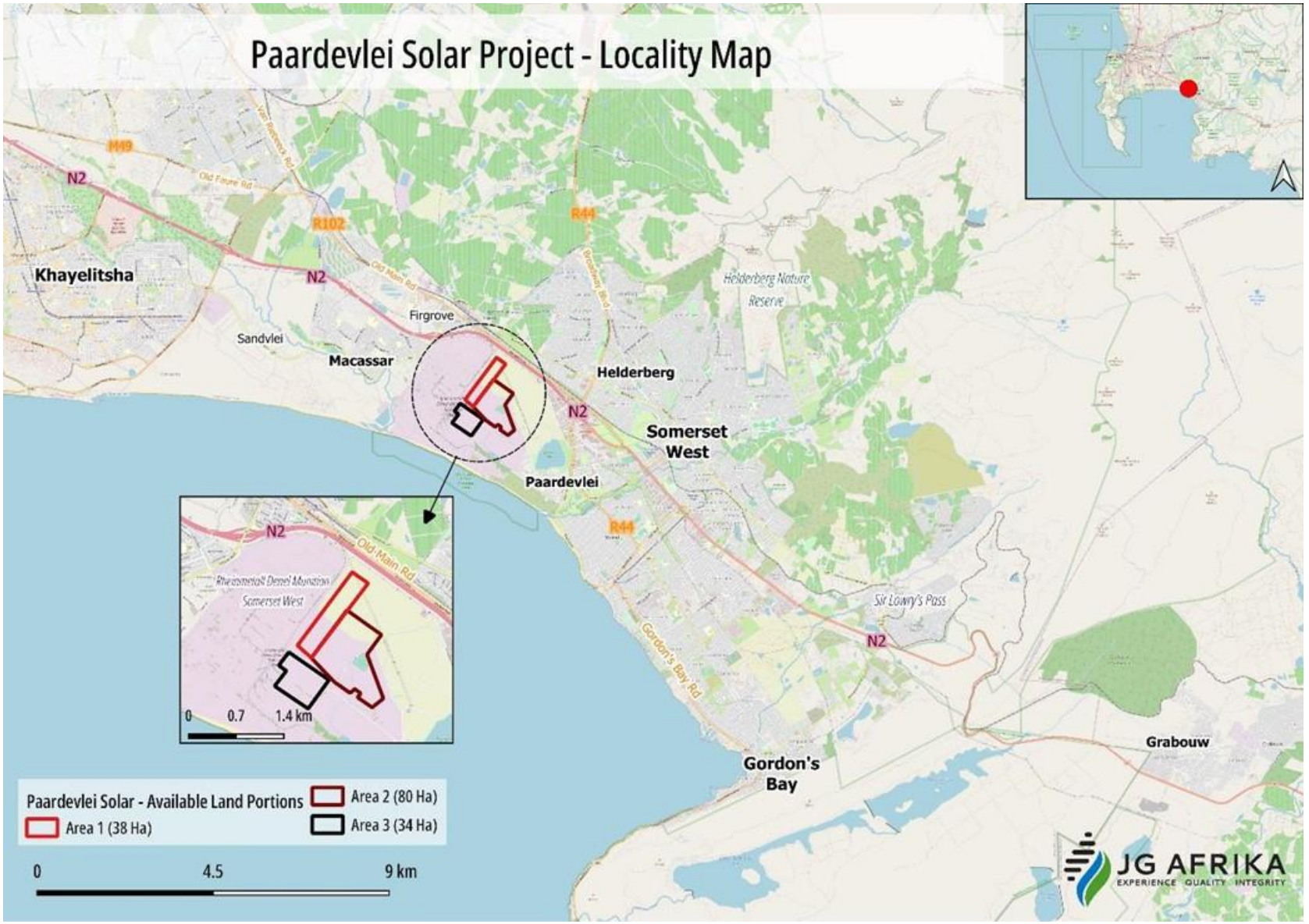

Figure 1.1: Locality map illustrating the proposed project area in relation to the N2 and major suburbs in the CoCT.

1.2. Project description

It is anticipated that the proposed project will extend over an area of 152ha and will be comprised of five property portions belonging to the CoCT. The project will include (Figure 1.3):

- Solar Photovoltaic (PV) Facility - 30 to 60 MW,
- Battery Energy Storage System (BESS) - 27-43 MWh,
- Inverters, switchgears and transformers,
- Access roads (new and existing),
- 33kV powerline, overhead and/or underground, and
- 33-132kV Substation connecting to the existing 132kV Paardevlei switching station.

Construction is planned to start in the first quarter of 2026.

For detailed information on each project component refer to the Scoping and Environmental Impact Assessment reports. The components are presented briefly below.

Solar Photovoltaic (PV) Facility

The PV panels (fixed tilt or horizontal tracker-type) will be mounted on metallic structures that are secured to the ground (Figure 1.2). Various solar modules technologies, configurations and layout alternatives are currently being assessed.

Battery Energy Storage System (BESS)

The Battery Energy Storage System (BESS) will consist of containerized solutions with battery racks inside, in a temperature-controlled and fire protected environment (Figure 1.2)**.** Four types of battery technology alternatives have been proposed including Valve Regulated Lead Acid Batteries (VRLA), Lithium-ion Battery, Hydrogen and flow batteries (fuel cells) and Molten-salt Battery.

Figure 1.2: Solar PV array and BESS example

Substation

The PV plant substation will be erected adjacent to the existing 132kV CCT substation. The MV/132kV transformers will convert the AC power to 132kV. The 132kV cables will connect the Plant substation to the CCT Paardevlei substation.

Powerline

Two powerline route alternatives have been proposed to connect the solar PV plant to the CCT Paardevlei substation and will either be placed underground or overhead or a combination of the two.

- Alternative 1: PV (northwest/N2) to SS – underground (±950m).
- Alternative 2: PV (northwest/N2) to SS – underground and overhead (±950m).
- Alternative 3: PV (southeast) to SS – underground (±1100m).
- Alternative 4: PV (southeast) to SS – underground (±1100m).

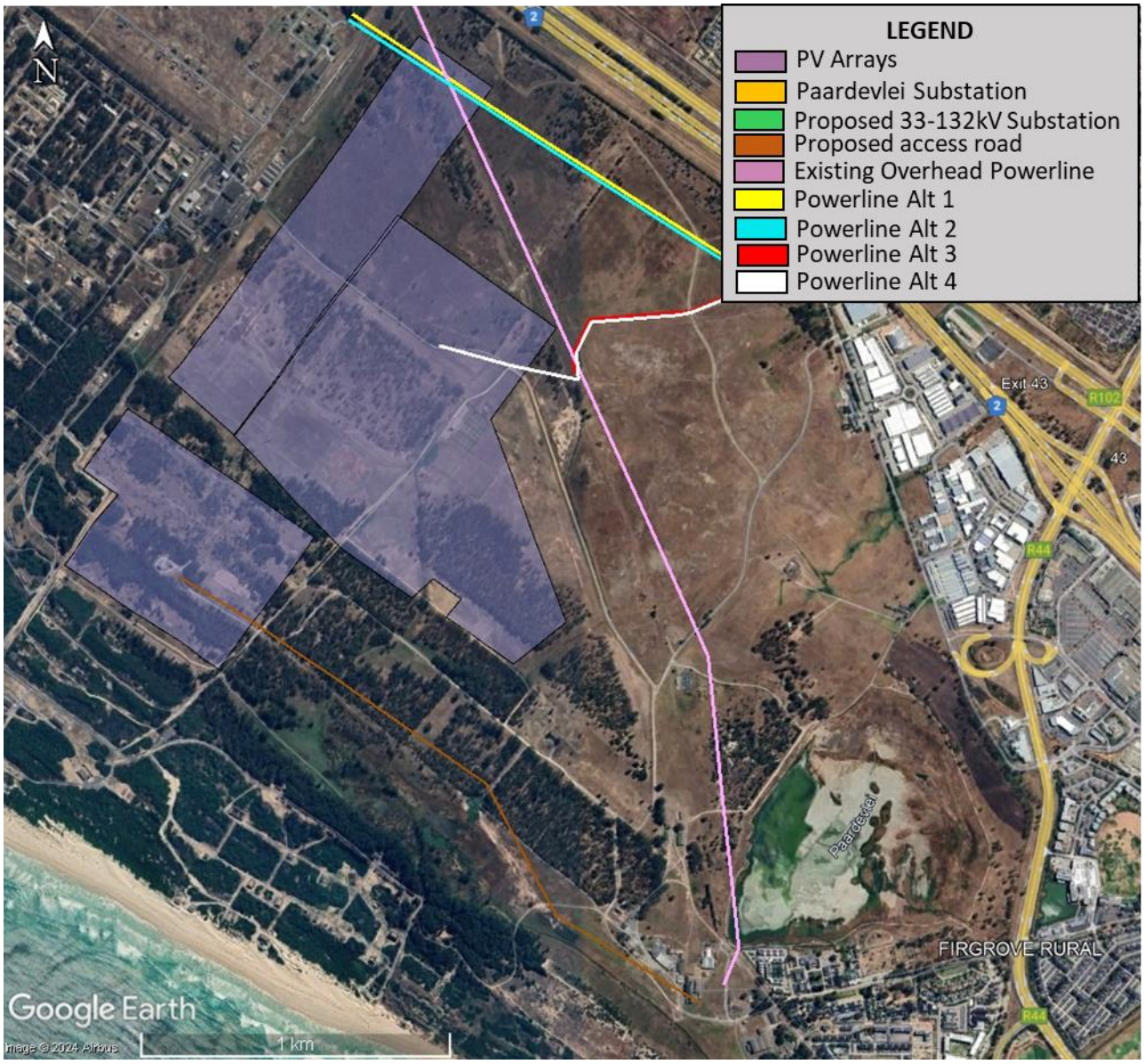

Figure 1.3: Proposed project layout of the Paardevlei PV, BESS and associated infrastructure.

1.3. Objectives

The objectives of the avifaunal sensitivity screening assessment are as follows:

- Undertake a desktop assessment to determine the project areas sensitivity and species of conservation concern (SCC) that could be present within the project area.
- Undertake a field survey, to record the following information:
  - Avifaunal habitat present and condition of each habitat.
  - Avifaunal species present.
  - Avifaunal species of conservation concern present.
- Evaluate the likely presence of Species of Conservation Concern in the project area.
- Assess the site ecological importance (SEI) using the sensitivity analysis outlined in the Species Guideline Document (SANBI, 2021).
- For areas of moderate and high SEI, assess the impact that the construction of the project infrastructure will have on avifaunal species.
- Where necessary, provide mitigation measures to reduce the impact of the infrastructure on the environment.
- Provide a specialist statement/opinion.

1.4. Limitations and Assumptions

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

- This report is based on the most up to date information/litertaure currently available on public sources as well as information gathered from a field survey. It is assumed that the information/literature available is accurate and up to date.
- Where there is uncertainty, the precautionary principal has been applied.
- Mapping has been done at a high level using a combination of available spatial planning tools as well as satellite imagery available on Google Earth to create a map showing the terrestrial site ecological importance of the project area for avifauna.
- The assessment has been undertaken to meet the Protocol for the Specialist Assessment and Minimum Report Requirements for Environmental Impacts on terrestrial Biodiversity (2020), Species Environmental Assessment Guidelines (SANBI, 2021) and Birds and Solar Energy Best Practice Guidelines (BirdlifeSA, 2017).
- Stochastic events (e.g., wind, rain, temperature) impacts sampling to a degree. However, the timing of the survey and time available in the field provided sufficient information to determine the SEI of the project area and assess the impacts of the infrastructure on avifauna

2. METHODOLOGY

2.1. Requirement for Avifaunal Assessment

The DFFE Screening Tool Report generated for the project area indicated that the site falls within an area Low Avian Sensitivity and of high and medium Animal Sensitivity for six threatened bird species (Table 2.1). The threatened species include four endangered (EN) and two vulnerable (VU) species. The inclusion of these species in the DFFE Screening Tool Report is based on, inter alia, the species distribution, potential habitat available in the project area and records in the South African Bird Atlas Project (SABAP2) database. The project falls within two of the SABAP2 pentads, 3405_1845 and 3400_1845. The high sensitivity rating for birds requires that a bird impact assessment (this report) must be conducted.

Table 2.1: DFFE Screening Tool Report Avifaunal sensitivity of the project area.

Sensitivity	Species Name	Common Name	Threat Status
High	*Polemaetus bellicosus*	Martial Eagle	Endangered
High	*Circus ranivorus*	African Marsh Harrier	Endangered
High & Medium	*Circus maurus*	Black Harrier	Endangered
Medium	*Turnix hottentottus*	Fynbos Button Quail	Endangered
Medium	*Afrotis afra*	Southern Black Korhaan	Vulnerable
Medium	*Sarothrura affinis*	Striped Flufftail	Vulnerable

According to the Birds and Solar Energy Best Practice Guidelines (BirdlifeSA, 2017) the level of assessment required is 'Regime 2' if the avifaunal theme is of low sensitivity and the proposed project area larger than 150ha (Table 2.2). Regime 2 requires a minimum of two (2) site visits of 3 days each and at least 1 site visit must be between October to February.

Should there be sufficient information /data to support that the project area is of low sensitivity then 'Regime 1' which requires one (1) site visit of 1-5 days in peak season (Oct – Feb) may be applied.

Table 2.2: Level of avifaunal assessment required for a PV Facility based on size and sensitivity

Type	Size	Avifaunal Sensitivity		
		Low	Medium	High
PV Facility	Small (<30ha)	Regime 1	Regime 1	Regime 2
	Medium (30-150ha)	Regime 1	Regime 2	Regime 2
	Large (>150ha)	Regime 2*	Regime 2	Regime 3

* Regime 1 may be applied to some large sites, but only in instances where there is abundant existing data to support the assessment of low sensitivity.

2.2. Desktop Assessment

Prior to conducting the site visit, a desktop assessment was undertaken for the site using the available spatial planning tools and literature. These include, but are not limited to:

- BirdLife South Africa / Endangered Wildlife Trust avian wind farm sensitivity map for South Africa (Retief *et al.*, 2012),
- Southern African Bird Atlas Project data (SABAP1 – (Harrison et al. 1997), and SABAP 2, *http://sabap2.adu.org.za*),
- Coordinated Waterbird Counts (CWAC, *http://cwac.adu.org.za*, Taylor *et al.* 1999),
- Coordinated Avifaunal Roadcounts (CAR, *http://car.adu.org.za*, Young *et al.* 2003),
- Birds in Reserves Project (BIRP, *http://birp.adu.org.za*),

- Important Bird and Biodiversity Areas initiative (Barnes 1998, *www.birdlife.org.za/conservation/important-bird-areas/iba-directory*),
- Information associated with the National Strategic Environmental Assessment for wind and solar energy (Renewable Energy Development Zones) (when available),
- Provincial conservation plans and provincial species databases (where available),
- Data from the Endangered Wildlife Trust's programmes (*www.ewt.org.za*) and associated specialist research studies, and
- Data from impact assessments and monitoring at nearby sites.

2.3. Field Survey

An initial site visit was conducted on the morning of the 22 September 2023 where the applicant explained to proposed project and placement of components. The avifaunal field survey was then conducted from the 20-22 October 2023. The methods employed for the avifaunal assessment were conducted as per the Birds and Solar Energy Best Practice Guidelines (BirdlifeSA, 2017). Data was recorded using the BirdLasser APP and has been included in Appendix 4.

The sampling techniques employed for the project area included (Figure 2.1):

- General sightings,
- Transects,
- Point counts,
- Vantage Point and
- Powerline inspection.

Transect sampling was conducted in the open grass habitat and included a 200m walked transect conducted between first light and 8am and between 4-6pm. Data collection included records of all species encountered, number of individuals, direction and distance from observer, and behaviour observed. The approximate wind speed and direction as well as temperature was recorded for each transect.

Point counts were conducted in the alien plantation habitat for 10 minutes each. Data collection included records of all species encountered, number of individuals, direction and distance from observer, and behaviour observed. The approximate wind speed and direction as well as temperature was recorded for each point.

The focal or vantage point survey was conducted in the open area with maximum view shed between 9-11am and the sky was searched for soaring raptors. Data collection included species and number of individuals.

An inspection of existing powerlines and substations in and immediately surrounding the project area was conducted during the field survey to establish the utilization of lines and pylons by raptors for perching and/or nesting.

All birds encountered between survey points were recorded to gather a general species list for the project area.

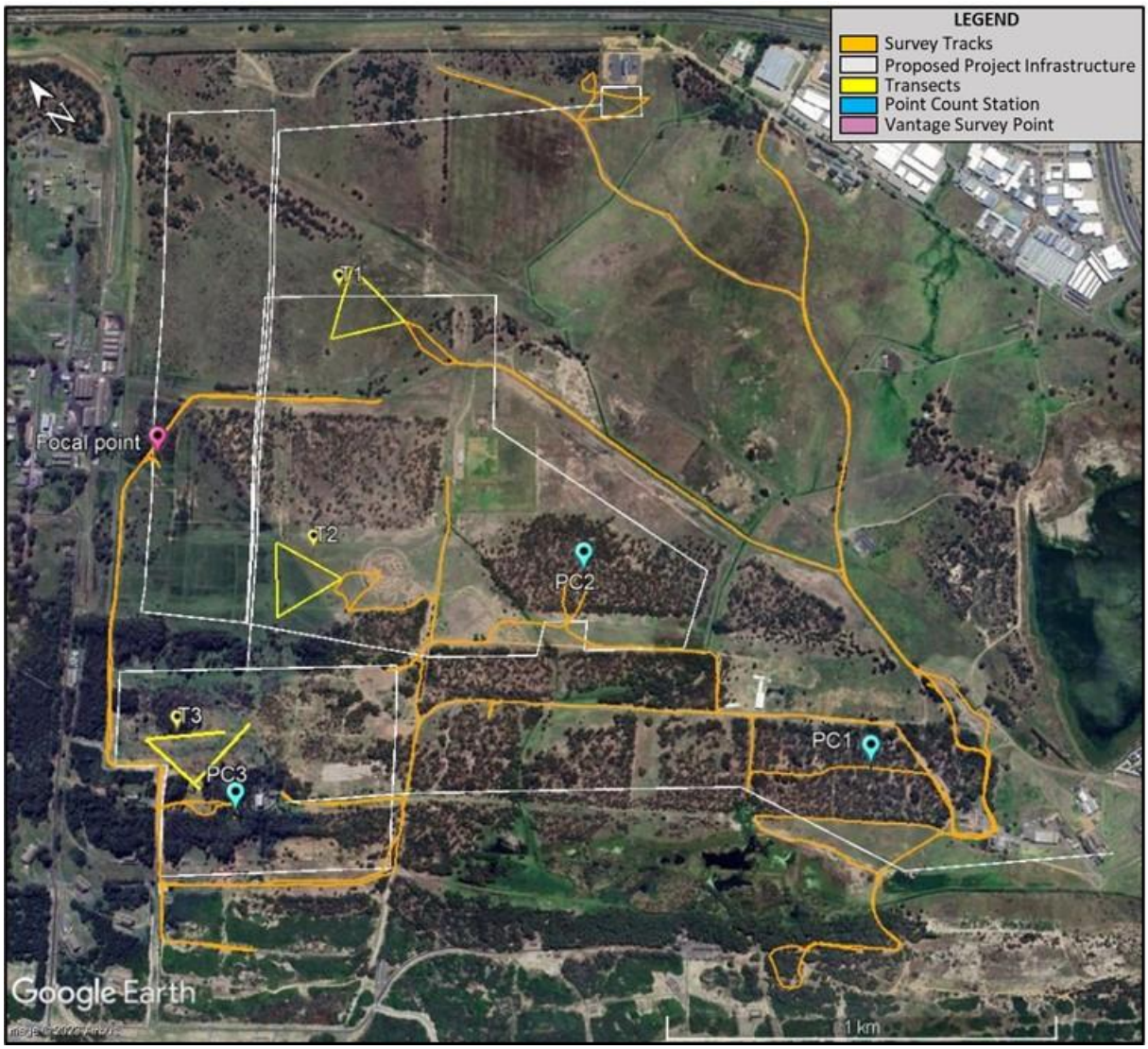

Figure 2.1: Sampling survey map illustrating sampling effort (tracks, Point counts, transects and focal site) for the avifaunal assessment of the proposed project area.

2.4. Site Sensitivity Assessment

The Species Environmental Assessment Guideline (SANBI, 2020) was applied to assess the Site Ecological Importance (SEI) of the project area. The habitats and the SCC in the Project Area of Influence (PAOI) were assessed based on their conservation importance, functional integrity, and receptor resilience (Table 2.3). The combination of these resulted in a rating of SEI and interpretation of mitigation requirements based on the ratings.

The sensitivity map was developed using available spatial planning tools as well as by applying the SEI sensitivity based on the field survey.

Table 2.3: Criteria for establishing Site Ecological Importance and description of criteria.

Criteria	Description
Conservation Importance (CI)	*The importance of a site for supporting biodiversity features of conservation concern present e.g. populations of Threatened and Near-Threatened species (CR, EN, VU & NT), Rare, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes.*

Functional Integrity (FI)	*A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.*
Biodiversity Importance (BI) is a function of Conservation Importance (CI) and the Functional Integrity (FI) of a receptor.	
Receptor Resilience (RR)	*The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.*
Site Ecological Importance (SEI) is a function of Biodiversity Importance (BI) and Receptor Resilience (RR)	

2.5. Impact Assessment

To ensure a balanced and objective approach to assessing the significance of potential impacts, a rating scale developed by CES has been developed in accordance with the requirements outlined in Appendix 1 of the EIA Regulations (2014 and subsequent 2017 & 2021 amendments).

Impact significance pre-mitigation

This rating scale adopts six key factors to determine the overall significance of the impact prior to mitigation:

1. **Nature of impact:** Defines whether the impact has a negative or positive effect on the receiving environment.
2. **Type of impact:** Defines whether the impact has a direct, indirect or cumulative effect on the environment.
3. **Duration:** Defines the relationship of the impact to temporal scales. The temporal scale defines the significance of the impact at various time scales as an indication of the duration of the impact. This may extend from the short-term (less than 5 years, equivalent to the construction phase) to permanent. Generally, the longer the impact occurs the greater the significance of any given impact.
4. **Extent:** Describes the relationship of the impact to spatial scales i.e. the physical extent of the impact. This may extend from the local area to an impact that crosses international boundaries. The wider the spatial scale the impact extends, the more significant the impact is considered to be.
5. **Probability:** Refers to the likelihood (risk or chance) of the impact occurring. While many impacts generally do occur, there is considerable uncertainty in terms of others. The scale varies from unlikely to definite, with the overall impact significance increasing as the likelihood increases.
6. **Severity or benefits:** The severity/beneficial scale is used in order to scientifically evaluate how severe negative impacts would be, or how beneficial positive impacts would be on the receiving environment. The severity of an impact can be evaluated prior and post mitigation to demonstrate the seriousness of the impact if it is not mitigated, as well as the effectiveness of the mitigation measures. The word 'mitigation' does not only refer to 'compensation', but also includes concepts of containment and remedy. For beneficial impacts, optimization refers to any measure that can enhance the benefits. Mitigation or optimisation should be practical, technically feasible and economically viable.

For each impact, the duration, extent and probability are ranked and assigned a score. These scores are combined and used to determine the overall impact significance prior to mitigation. They must then be considered against the severity rating to determine the overall significance of an activity. This is because the severity of the impact is far more important than the other three criteria. The overall significance is either negative or positive (Criterion 1) and direct, indirect or cumulative (Criterion 2).

Table 2.4: Evaluation Criteria.

Duration (Temporal Scale)		
Short term	*Less than 5 years*	
Medium term	*Between 5-20 years*	
Long term	*Between 20 and 40 years (a generation) and from a human perspective also permanent*	
Permanent	*Over 40 years and resulting in a permanent and lasting change that will always be there*	
Extent (Spatial Scale)		
Localised	*At localised scale and a few hectares in extent*	
Study Area	*The proposed site and its immediate environs*	
Regional	*District and Provincial level*	
National	*Country*	
International	*Internationally*	
Probability (Likelihood)		
Unlikely	*The likelihood of these impacts occurring is slight*	
May Occur	*The likelihood of these impacts occurring is possible*	
Probable	*The likelihood of these impacts occurring is probable*	
Definite	*The likelihood is that this impact will definitely occur*	
Severity Scale	*Severity*	*Benefit*
Very Severe/ Beneficial	An irreversible and permanent change to the affected system(s) or party(ies) which cannot be mitigated.	A permanent and very substantial benefit to the affected system(s) or party(ies), with no real alternative to achieving this benefit.
Severe/ Beneficial	Long term impacts on the affected system(s) or party(ies) that could be mitigated. However, this mitigation would be difficult, expensive or time consuming, or some combination of these.	A long-term impact and substantial benefit to the affected system(s) or party(ies). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these.
Moderately severe/Beneficial	Medium to long term impacts on the affected system(s) or party (ies), which could be mitigated.	A medium to long term impact of real benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are equally difficult, expensive and time consuming (or some combination of these), as achieving them in this way.
Slight	Medium- or short-term impacts on the affected system(s) or party(ies). Mitigation is very easy, cheap, less time consuming or not necessary.	A short to medium term impact and negligible benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these.
No effect/don't or can't know	The system(s) or party(ies) is not affected by the proposed development.	In certain cases, it may not be possible to determine the severity of an impact.

** In certain cases, it may not be possible to determine the severity of an impact thus it may be determined: Don't know/Can't know.*

Table 2.5: Description of Overall Significance Rating

Significance Rate		*Description*
Don't Know		*In certain cases, it may not be possible to determine the significance of an impact. For example, the primary or secondary impacts on the social or natural environment given the available information.*
NO SIGNIFICANCE		*There are no primary or secondary effects at all that are important to scientists or the public.*
LOW NEGATIVE	***LOW POSITIVE***	*Impacts of low significance are typically acceptable impacts for which mitigation is desirable but not essential. The impact by itself is insufficient, even in combination with other low impacts, to prevent the development being approved. These impacts will result in negative medium to short term effects on the natural environment or on social systems.*
MODERATE NEGATIVE	**MODERATE POSITIVE**	*Impacts of moderate significance are impacts that require mitigation. The impact is insufficient by itself to prevent the implementation of the project but in conjunction with other impacts may prevent its implementation. These impacts will usually result in a negative medium to long-term effect on the natural environment or on social systems.*
HIGH NEGATIVE	***HIGH POSITIVE***	*Impacts that are rated as being high are serious impacts and may prevent the implementation of the project if no mitigation measures are implemented, or the impact is very difficult to mitigate. These impacts would be considered by society as constituting a major and usually long-term change to the environment or social systems and result in severe effects.*
VERY HIGH NEGATIVE	***VERY HIGH POSITIVE***	*Impacts that are rated as very high are very serious impact which may be sufficient by itself to prevent the implementation of the project. The impact may result in permanent change. Very often these impacts are unmitigable and usually result in very severe effects or very beneficial effects.*

Impact significance post-mitigation

Once mitigation measures are proposed, the following three factors are then considered to determine the overall significance of the impact after mitigation.

1. **Reversibility Scale**: This scale defines the degree to which an environment can be returned to its original/partially original state.
2. **Irreplaceable loss Scale:** This scale defines the degree of loss which an impact may cause.
3. **Mitigation potential Scale:** This scale defines the degree of difficulty of reversing and/or mitigating the various impacts ranges from very difficult to easily achievable. Both the practical feasibility of the measure, the potential cost and the potential effectiveness is taken into consideration when determining the appropriate degree of difficulty.

Table 2.6: Post-mitigation Evaluation Criteria

Reversibility	
Reversible	*The activity will lead to an impact that can be reversed provided appropriate mitigation measures are implemented.*
Irreversible	*The activity will lead to an impact that is permanent regardless of the implementation of mitigation measures.*
Irreplaceable loss	
Resource will not be lost	*The resource will not be lost/destroyed provided mitigation measures are implemented.*
Resource will be partly lost	*The resource will be partially destroyed even though mitigation measures are implemented.*
Resource will be lost	*The resource will be lost despite the implementation of mitigation measures.*
Mitigation potential	
Easily achievable	*The impact can be easily, effectively and cost effectively mitigated/reversed.*
Achievable	*The impact can be effectively mitigated/reversed without much difficulty or cost.*
Difficult	*The impact could be mitigated/reversed but there will be some difficultly in ensuring effectiveness and/or implementation, and significant costs.*
Very Difficult	*The impact could be mitigated/reversed but it would be very difficult to ensure effectiveness, technically very challenging and financially very costly.*

The following assumptions and limitations are inherent in the rating methodology:

- Value Judgements: Although this scale attempts to provide a balance and rigor to assessing the significance of impacts, the evaluation relies heavily on the values of the person making the judgment.
- Seasonality: Certain impacts will vary in significance based on seasonal change. Thus, it is difficult to provide a static assessment. Seasonality will need to be implicit in the temporal scale, with management measures being imposed accordingly (e.g. dust suppression measures being implemented during the dry season).

3. DESCRIPTION OF THE PROJECT AREA

3.1. Overview

The project area is a mosaic of grassland interspersed with alien tree (*Eucalyptus*) woodlots and a number of wetland areas. It has a good dirt road network with occasional building structures present, most notably the Waste Water Treatment Works building and the De Beers Sports Stadium. The grassland (lawn) area is relatively uniform and an areas in the southwest of the site appear to be undergoing alien invasive clearing (Port Jackson). Of interest, is the very southwestern portion of the project area, which has recovered to natural vegetation and is currently representative of Cape Flats Dune Strandveld. The Cape Flats Dune Strandveld outside of the proposed PV footprint is in considered secondary and intact and the Cape Flats Dune Strandveld within the PV layout footprint, is also secondary but degraded due to the presence of alien tree (*Eucalyptus*) woodlots. The project area is relatively flat, sloping downhill from north to south, sloping from 27m asl in the north to a low point of 9m asl and then back up to 18m asl in the south and undulating from west to east with a high point of 16m asl and the lowest point 7m asl i.e., a change of approximately 9m of elevation over 800m (Figure 3.1).

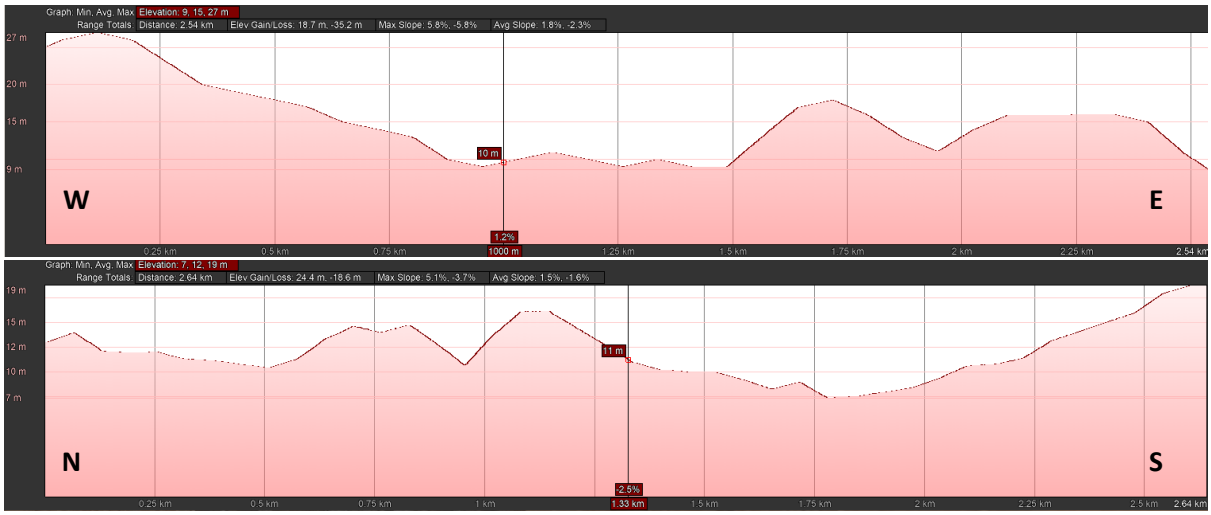

Figure 3.1: Project area gradient from west to east.

3.2. Habitats

The avifauna habitat types identified within the project area include (Figure 3.2, Figure 3.3):

1. Grassland (weedy lawn)
2. Plantation (alien)
3. Aquatic (Wetlands & drainage lines)
4. Secondary Cape Flats Dune Strandveld (intact and degraded)
5. Manmade Structures (building, roads, powerlines)

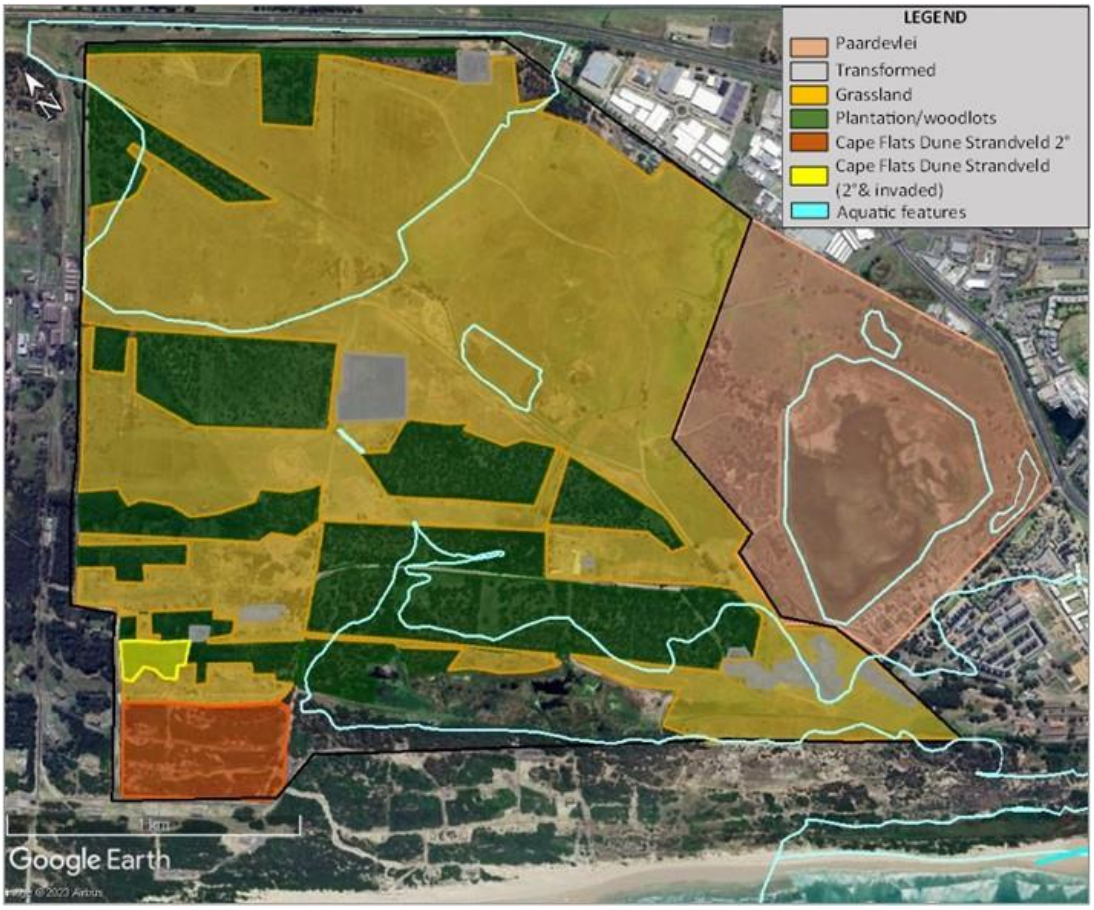

Figure 3.2: Habitats available to avifaunal species within and surrounding the project area.

Grassland habitat (Weedy Lawn)

The grassland habitat occurs on flat areas and is comprised of a mosaic of lawn grass interspersed with ruderal (weedy) grass species. This area is currently grazed by cattle. Birds were observed foraging in and flying over this habitat.

Plantation (alien woodlots)

The woodlots are comprised primarily *Eucalyptus* species and occur in rectangular blocks across the project area. The trees are sparsely distributed with an open canopy and an understory of predominantly grass species. Birds that prefer a denser cover than what is available in the more open grassland and Cape Flats Dune Strandveld, will occur in this habitat type.

Aquatic features

The are a number of wetland or seasonally inundated depressions within the grassland habitat that offer foraging habitat to bird species. However, very few offer appropriate nesting habitat due to the lack of wetland/fringe vegetation. There are a few streams and canals running through the site that offer better aquatic avifaunal nesting habitat (refer to the aquatic and/or wetland specialist report).

Cape Flats Dune Strandveld

The dunes to the south of the project area are secondary in nature but offer thick shrub habitat (recovered Cape Flats Dune Strandveld) that likely attracts specialist bird species.

SANBI (2020) states that natural habitat excludes areas of transformed habitat even if these areas are partially restored as they will not have the species composition representative of the original natural

habitat and therefore cannot be considered 'natural habitat' and the vegetation is therefore considered 'secondary' in nature. Despite having been previously transformed, partially restored areas/secondary vegetation can still provide some ecological function such as ecological corridors, nutrient cycling, carbon sequestration, erosion prevention, habitat for fauna, etc.

Manmade Structures

Buildings and powerline pylons offer manmade habitat to opportunistic bird species (generalists) that may nest in crevices provided by the roof eaves or on the lattice structure of the pylons.

3.3. Current and historical land use

Currently the project area is used for wood production, recreational sports at DeBeers Club, cattle grazing and occasionally for film sets. The project area has existing buildings, powerlines and roads.

Historically the project area was owned and operated by AECI and used to produce and test dynamite (1898), as a fertiliser factory (1914) and paints, vinyl cloth, film and sheet factory (1949) (Verster, 2018). Analysis of historical aerial imagery dating from 1953 to 1999 (Figure 3.4) indicates that the majority of the habitat available onsite is no longer representative of natural indigenous vegetation due to the long history of disturbance (RLE: Remnants, SANBI, 2021).

Figure 3.3: Habitats available within the project area.

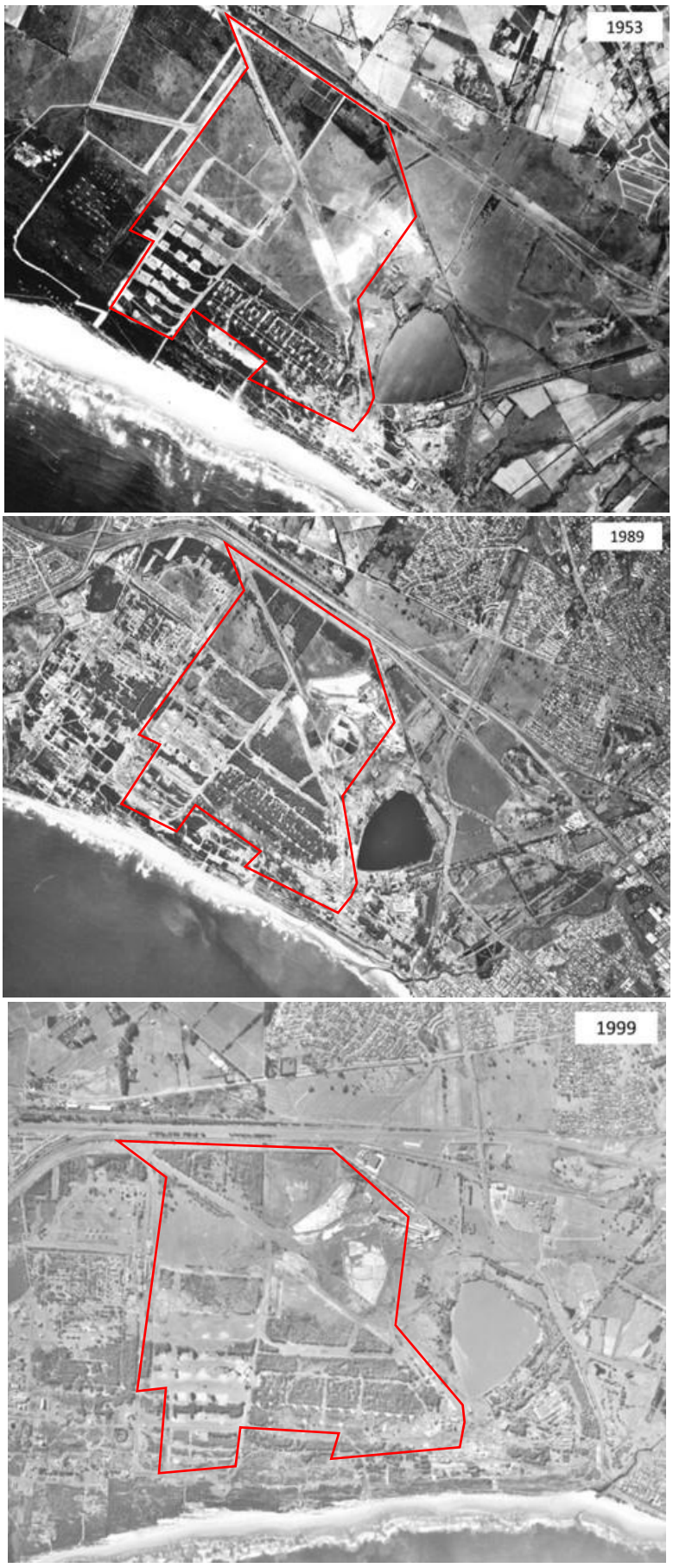

Figure 3.4: Historical imagery of the project area.

3.4. Protected Areas in relation to project area

The project area does not fall within a protected area or conservation area, the nearest protected area is the Helderberg Marine Protected Area to the south and the Lourens River Protected Natural Environment to the east and the Cape Winelands Biosphere reserve to the north (Figure 3.5).

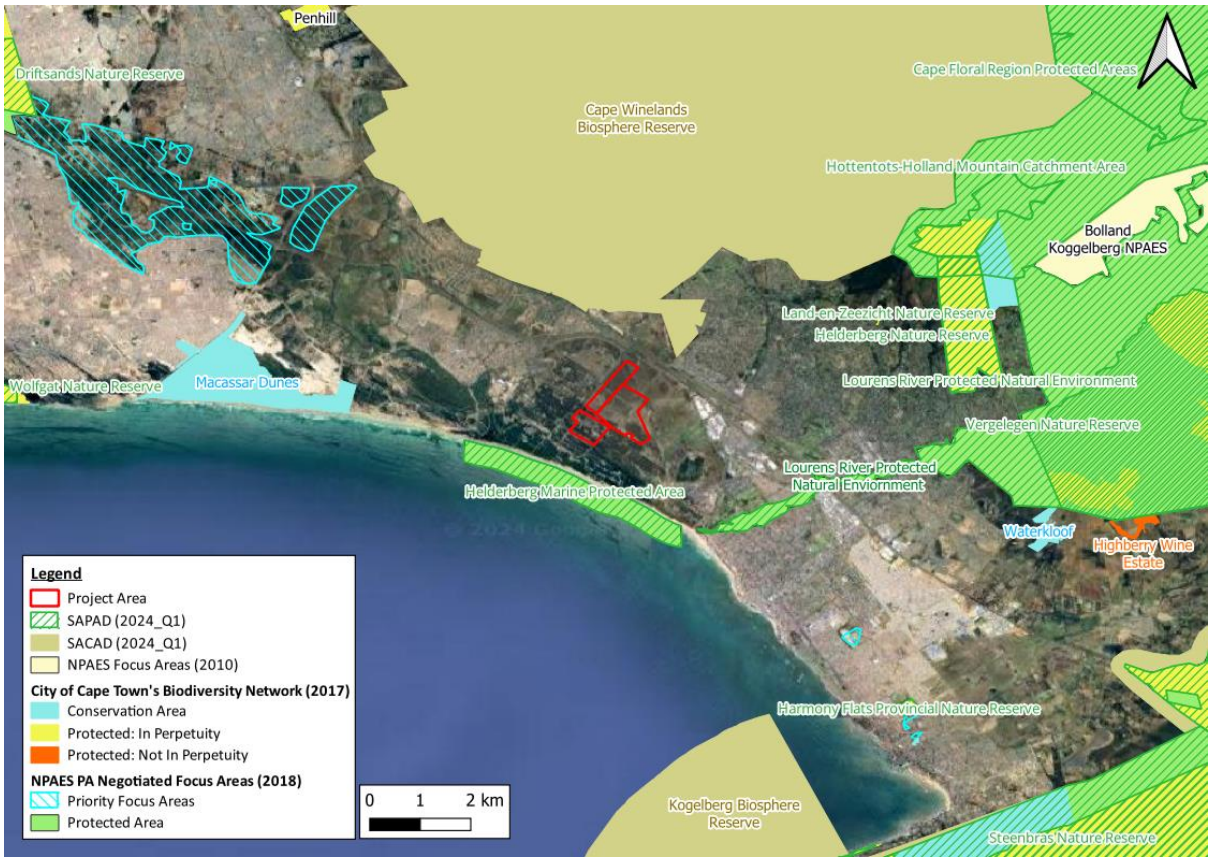

Figure 3.5: Protect areas in relation to the project area

4. AVIFAUNA

4.1. South African Bird Atlas Project data

The Southern African Bird Atlas Project (SABAP2) recorded a combined total of 263 bird species in the broader study area (Pentad 3405_1845, 3400_1845) within which the project area located (Figure 4.1). Refer to Appendix 2 for a list of these species. These are the species which could occur in the project area if suitable habitat and conditions are present.

Figure 4.1: The project area (red) in relation to the SABAP2 data for pentad 3405_1845 and 3400_1845.

4.2. Priority species

Priority species includes species of conservation concern (SCC) which are listed as threatened (Critically Endangered, Endangered and Vulnerable), near-threatened and/or endemic and includes species susceptible to solar energy impacts.

Fifteen (ten endangered and five vulnerable) of the 263 species recorded in the broader study area are

considered nationally threatened. A further ten species are listed as near-threatened.

The likelihood of these species occurring on the project area, and the likely importance of the project area for each species was assessed (Table 4.1).

The results of the assessment indicate that the majority of these species are unlikely to occur in the proposed project area but may occur along the coast and at the Paardevlei. However, two SCC were recorded during the field survey, the Lanner Falcon (VU) and a pair of Blue Cranes (NT).

All bird species, except a select few, are considered protected under the Western Cape Nature Conservation Laws Amendment Act No 3 of 2000 and the Martial Eagle and the Blue Crane are protected under TOPS Schedule A (NEM:BA 10 of 2004). A permit to relocate these species would be required from CapeNature if nesting within the project area footprint will be disturbed by project activities.

4.3. Important Bird Area

No IBA'S exist within or near the proposed project area (Marnewick *et al*, 2015).

4.4. Coordinated Avifaunal Roadcount (CAR) project

The Coordinated Avifaunal Roadcount (CAR) project is a vehicle-based census conducted twice a year (winter and summer) by volunteer birdwatchers to provide population data primarily on large terrestrial species. No CAR routes are located within or near the project area.

4.5. Coordinated Waterbird Count (CWAC) project

The proposed project is located on the adjacent property to Paardevlei, which is one of 400 wetlands in South Africa that undergoes a mid-summer and midwinter census. The census is part of the Coordinated Waterbird Counts (CWAC) programme that recorded 65 bird species at Paardevlei (Appendix 3). Of these 65 bird species, six bird SCC were recorded, including the Cape Cormorant (*Phalacrocorax capensis*) (EN), Striped Flufftail (*Sarothrura affinis*) (VU), Great White Pelican (*Pelecanus onocrotalus*) (VU), Maccoa Duck (*Oxyura maccoa*) (NT), Greater Flamingo (*Phoenicopterus roseus*) (NT) and Lesser Flamingo (*Phoeniconaias minor*) (NT).

Of the SCC recorded, two may use the Paardevlei for breeding (i.e. the Striped Flufftail (VU) and Maccoa Duck (NT)). Given the general level of disturbance the vlei experiences from the surrounding urban environment, the development is unlikely to affect these species.

The proposed project is not expected to directly impact on the Paardevlei.

4.6. Surrounding Bird Habitat

There are a few sites surrounding the project area that offer important habitat to birds including the Paardevlei, Macassar Waste Water Treatment Works, Helderberg MPA, Strand Golf Course and Dick Kent Bird Sanctuary. The Dick Kent Bird Sanctuary was recently declared a Locally Important Bird Area (LIBA) by The Western Cape Birding Forum (Cape Bird Club, 2024), no bird species of conservation concern are expected to occur at the sanctuary. The proposed project is not expected to directly impact on any of these areas.

Table 4.1: Likelihood of occurrence of avifaunal SCC recorded on SABAP2 (2001 on-going), ranked by probability of occurrence.

°High refers to species that are probably present, Medium refers to species that are possibly present and Low refers to species that are unlikely to be present.

Common name		Species	Threat Status* (Taylor *et al*, 2015)	Preferred habitat	Probability of occurrence in project area°	Importance of project area to species
Falcon	Lanner	*Falco biarmicus*	VU	Wide variety of habitats, from lowland deserts to forested mountain, open grassland, woodland, and agricultural areas. Nesting primarily on cliffs but will utilise, large trees, electricity pylons and buildings (BirdLife Int., 2021).	Confirmed	Low
Crane	Blue	*Grus paradisea*	NT	This species is a territorial, solitary breeder and roosts at night, often communally. During the breeding season (Aug-April, dry season in WC) it inhabits natural grass and sedge dominated habitats, preferring secluded grasslands at high elevations where the vegetation is thick and short, occasionally breeding in or near wetland areas in pans or on islands in dams. In the WC, it uses lowland agricultural areas such as pasture, fallow fields and cereal crop fields after harvest, a few pairs also breed in the coastal dunes. During the non-breeding season it inhabits short, dry, natural grasslands, as well as the Karoo (>300mm MAR) and agricultural habitats in fynbos biomes largely avoiding the natural vegetation (BirdLife Int., 2021).	Confirmed	Low
Eagle	Martial	*Polemaetus bellicosus*	EN	Woodland, savanna, thornbush, open farmland with clumps of trees and subdesert. Nests on power lines despite vulnerability to power line related fatalities (BirdLife Int., 2020).	Moderate	Low
Tern	Caspian	*Hydroprogne caspia*	VU	Inhabits sheltered coasts, estuaries, inlets, bays, harbours, coastal lagoons, saltmarshes and saltpans. Also occurs inland on fresh or saline wetlands including large lakes, inland seas, large rivers, creeks, floodlands, reservoirs and sewage ponds. Breeds on sandy, shell-strewn or shingle beaches, sand-dunes, flat rock-surfaces, sheltered reefs or islands with sparse vegetation and flat or gently sloping margins surrounded by clear, shallow undisturbed waters (BirdLife Int., 2019).	Moderate	Low
	Secretarybird	*Sagittarius serpentarius*	VU	Inhabits open plains, grasslands, lightly wooded savanna, agricultural areas, sub-desert, transformed environments in the Fynbos biome. Roosts in crown of trees (mostly Acacia spp.) and Breeds throughout the year (BirdLife Int., 2020).	Moderate	Low
Cormorant	Crowned	*Microcarbo coronatus*	NT	Cliffs in open coasts and offshore islands (BirdLife Int., 2021).	Moderate	Low

Curlew	Eurasian	*Numenius arquata*	NT	Inhabits upland moors, peat bogs, swampy and dry heathlands, fens, open grassy or boggy areas in forests, damp grasslands, meadows, non-intensive farmland in river valleys, dune valleys and coastal marshlands during breeding season. Nests are a shallow depression on the ground or on a mound in the open or in the cover of grass or sedge. During non-breeding season inhabits muddy coasts, bays and estuaries with tidal mudflats and sandflats, rocky and sandy beaches, mangroves, saltmarshes, coastal meadows and pasture and muddy shores of coastal lagoons, inland lakes and rivers (BirdLife Int., 2017).	Moderate	Low
Duck	Maccoa	*Oxyura maccoa*	NT	Permanent wetlands in open grassland. Breeding habitats comprise of dense stands of emergent vegetation especially reeds, rushes and tall sedges (BirdLife Int., 2021).	Moderate *Confirmed at Paardevlei	Low
Tern	Roseate	*Sterna dougallii*	EN	Marine, nesting in tidal bays and sheltered inshore waters on sand-dunes, sand-spits, shingle beaches, reefs, saltmarshes and rocky, sandy or coral islands. May rest and forages in sheltered estuaries, creeks, inshore waters and up to several kilometres offshore (BirdLife Int., 2018).	Low	Low
Gannet	Cape	*Morus capensis*	VU	Marine breeding on offshore islands and forages within 120 km of the shore (BirdLife Int., 2018).	Low	None
Pelican	Great White	*Pelecanus onocrotalus*	VU	Large, warm, shallow fresh, brackish, alkaline or saline lakes, lagoons, marshes, broad rivers, deltas, estuaries and coasts of landlocked seas. Flies long distances from breeding or roosting colonies to feed (piscivorous). Nests on the ground in extensive reedbeds, wet swamps, mudflats, sandbanks or gravel and rocky substrates in secure areas (BirdLife Int., 2021).	Low	Low
Canary	Protea	*Crithagra leucoptera*	NT	Primarily inhabits mature Fynbos but will also inhabit tall shrubs, semi-arid scrub and woodland patches. Visits recently burnt areas with Protea species (BirdLife Int., 2021).	Low	Low
Flamingo	Greater	*Phoenicopterus roseus*	NT	Inhabits shallow (1m) eutrophic waterbodies saltpans, large dams and coastal mudflats sewage treatment pans. Nests in large dense colonies at large waterbodies on mudflats or islands, occasionally also on bare rocky islands (BirdLife Int., 2019).	Low	Low
Flamingo	Lesser	*Phoeniconaias minor*	NT	Eutrophic shallow wetlands and saltpans (BirdLife Int., 2018).	Low	Low
Painted-snipe	Greater	*Rostratula benghalensis*	NT	Flooded areas in shallow lowland freshwater temporary or permanent wetlands, swamps and marshes, reedbeds, overgrown rice-fields, inundated or waterlogged grassland and saltmarsh, the muddy margins of pools, freshwater lakes with	Low	Low

				grassy islets, sewage pools, reservoirs, mudflats overgrown with marsh grass and mangroves, and thickly vegetated banks of slow-flowing rivers. Nomadic between feeding and breeding habitats, requiring emergent vegetation in shallow water for nesting and occasionally forages on open grassland adjacent to wetlands (BirdLife Int., 2016).		
Plover	Chestnut-banded	*Charadrius pallidus*	NT	Inhabits saline and alkaline wetlands including inland salt pans, lagoons, estuarine, salt marshes and intertidal mud-flats. During breeding season (March-May and/or Sept-Jan) prefers areas that are devoid of vegetation and re,ains within 50m from the water's edge and dring non-breeding remains within 1km of the water's edge (BirdLife Int., 2021).	Low	Low
Stork	Marabou	*Leptoptilos crumenifer*	NT	Inhabits open dry savannas, grasslands, swamps, riverbanks, lake shores and receding pools. Nesting in trees, on cliffs or on buildings 10-30 m above the ground (BirdLife Int., 2016).	Low	Low

*CR - Critically Endangered; EN – Endangered; VU – Vulnerable; NT – Near-threatened; LC - Least Concern

4.7. Site assessment and Pre-construction Bird Monitoring Data

The field survey (see section 2.3) recorded 50 bird species within the project area through all sampling methods (Appendix 1). At the time of the field survey, bird species diversity and abundance were moderate to low across the entire project area

Grassland and Wetland habitat (Transects and Vantage Point Survey)
A total of 35 bird species were recorded by walked transects during the site visit period (Table 4.2). The most abundant species was the African Sacred Ibis (*Threskiornis aethiopicus*) followed by the Western Cattle Egret (*Bubulcus ibis)*, Common Starling (*Sturnus vulgaris)* and Egyptian Goose (*Alopochen aegyptiaca)*. The bird species diversity is considered low reflecting the transformed and uniform nature of the habitat on site.

Table 4.2. Bird species recorded in Grassland and Wetland Habitat during walked transects and vantage point surveys.

#	Common name	Scientific name	# Birds	# Records
1	African Sacred Ibis	*Threskiornis aethiopicus*	89	4
2	Western Cattle Egret	*Bubulcus ibis*	76	5
3	Common Starling	*Sturnus vulgaris*	20	1
4	Egyptian Goose	*Alopochen aegyptiaca*	18	8
5	Plain-backed Pipit	*Anthus leucophrys*	13	8
6	Cape Canary	*Serinus canicollis*	11	4
7	Cape Crow	*Corvus capensis*	8	2
8	Greater Striped Swallow	*Cecropis cucullata*	8	1
9	Hadada Ibis	*Bostrychia hagedash*	8	4
10	White-throated Swallow	*Hirundo albigularis*	8	7
11	Cape Spurfowl	*Pternistis capensis*	5	2
12	Fiscal Flycatcher	*Melaenornis silens*	5	4
13	Pearl-breasted Swallow	Hirundo dimidiata	5	1
14	Black Heron	*Egretta ardesiaca*	4	1
15	Blue Crane	*Grus paradisea*	4	1
16	Common House Martin	*Delichon urbicum*	4	1
17	Glossy Ibis	*Plegadis falcinellus*	4	1
18	Jackal Buzzard	*Buteo rufofuscus*	4	3
19	Red-eyed Dove	*Streptopelia semitorquata*	4	3
20	White-breasted Cormorant	*Phalacrocorax lucidus*	4	3
21	Fork-tailed Drongo	*Dicrurus adsimilis*	3	1
22	Karoo Prinia	*Prinia maculosa*	3	3
23	Mourning Collared Dove	*Streptopelia decipiens*	3	4
24	African Hoopoe	*Upupa africana*	2	2
25	African Pygmy Goose	*Nettapus auritus*	2	1
26	Cape Wagtail	*Motacilla capensis*	2	1
27	Kelp Gull	*Larus dominicanus*	2	1
28	Lanner Falcon	*Falco biarmicus*	2	2
29	Ring-necked Dove	*Streptopelia capicola*	2	1
30	Speckled Mousebird	*Colius striatus*	2	1

31	Black-headed Heron	*Ardea melanocephala*	1	1
32	Brown-throated Martin	*Riparia paludicola*	1	1
33	Klaas's Cuckoo	*Chrysococcyx klaas*	1	1
34	Rufous-naped Lark	*Mirafra africana*	1	1
35	Spur-winged Goose	*Plectropterus gambensis*	1	1

Plantation Habitat

A total of 13 bird species were recorded by the point count survey in the plantation/woodlot habitat. Four species were recorded in all plantations surveyed, the Cape Canary (*Serinus canicollis)*, Yellow Canary (*Crithagra flaviventris)*, Fiscal Flycatcher (*Melaenornis silens)* and Cape White-eye (*Zosterops virens)*. The plantation block to the southwest of the project area recorded all 13 species listed in table 4.3 below. The greater diversity of species in this patch is likely due to the presence of Secondary Cape Flats Dune Strandveld (degraded) as an understory. Of note is the presence of two raptor species the Jackal Buzzard (*Buteo rufofuscus)* and the Lanner Falcon (*Falco biarmicus)*.

Table 4.3. Bird species recorded within plantation habitat.

#	Common name	Scientific name	# Birds	# PC stations
1	Cape Canary	*Serinus canicollis*	4	2
2	Fork-tailed Drongo	*Dicrurus adsimilis*	3	1
3	Cape Robin-Chat	*Cossypha caffra*	2	1
4	Karoo Prinia	*Prinia maculosa*	2	1
5	Cape Bulbul	*Pycnonotus capensis*	2	1
6	Jackal Buzzard	*Buteo rufofuscus*	1	1
7	Klaas's Cuckoo	*Chrysococcyx klaas*	1	1
8	Yellow Canary	*Crithagra flaviventris*	1	2
9	Lanner Falcon	*Falco biarmicus*	1	1
10	Fiscal Flycatcher	*Melaenornis silens*	1	3
11	Cape Sparrow	*Passer melanurus*	1	1
12	Ring-necked Dove	*Streptopelia capicola*	1	1
13	Cape White-eye	*Zosterops virens*	1	2

5. SITE SENSITIVITY ASSESSMENT

The Site Ecological Importance (SEI) of each habitat type to avifaunal species has been assessed in Table 5.1 below and presented briefly here:

- The Grassland habitat and Wetland habitat was found to have a low SEI to avifaunal species, this habitat is relatively transformed and primarily hosts a low species diversity.
- The Plantation habitat was found to have a medium SEI to raptor species as it provides ample roosting sites.
- Secondary Cape Flats Dune Strandveld was found to have a medium SEI to avifaunal species as this habitat likely hosts specialist species.
- Paardevlei was included in the assessment as it forms part of the Project Area of Influence. The Paardevlei was found to have a high SEI to avifaunal species that utilise the habitat.

The Species Environmental Guideline Document states that:

- For areas of high sensitivity, avoidance mitigation wherever possible and project infrastructure must be minimised to limit the amount of habitat impacted on and impacts rated as low are considered acceptable. Offset mitigation may be required for impacts rated as high.
- For areas of medium sensitivity, project activities of medium impact are acceptable provided they are followed by appropriate restoration activities.
- For areas of low sensitivity, project activities of medium to high impact are acceptable followed by appropriate restoration activities.

Based on the assessment, a SEI map of habitats available in the project area has been created (Figure 5.1).

5.1. DFFE Screener relevance to the project area

Based on the habitat available to the sensitive bird species there is a low likelihood of the Marsh Harrier (*Circus ranivorus*), Black Harrier (*Circus maurus*), Fynbos Buttonquail (*Turnix hottentottus*), Southern Black Korhaan (*Afrotis afra*) and the Striped Flufftail (*Sarothrura affinis*) occurring within the project area due to lack of habitat. The sensitivity of the DFFE Screening Tool animal species theme should be rated as low rather than high/medium for these species.

The Martial Eagle (*Polemaetus bellicosus*) has a moderate likelihood of occurrence in the project area and may use the stands of alien plantations for roosting. The project footprint is considered to be of low importance to this species. The sensitivity of the DFFE Screening Tool animal species theme should be rated as medium for this species rather than high.

Other priority species recorded in the project area includes the Lanner Falcon (VU) and a pair of Blue Cranes (NT), the project area is considered of low importance to these species. The Blue Crane could be at risk of collision with the overhead power line and this risk will need to be mitigated.

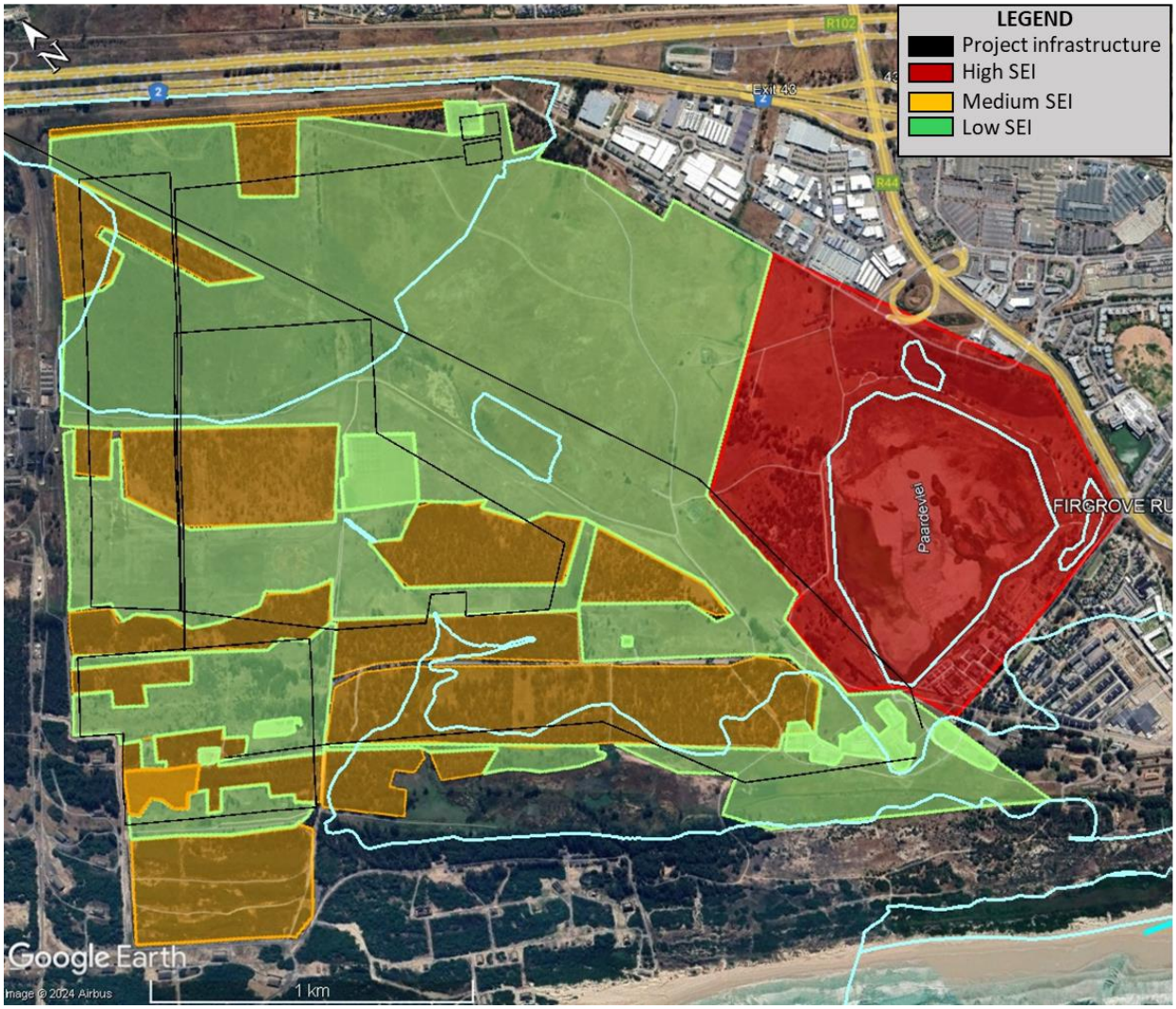

Figure 5.1: SEI of the project area to avifaunal species.

Table 5.1: Assessment of the Site Ecological Importance (SEI) of each habitat type to avifaunal SCC.

Habitat / Species	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	SEI
Grassland habitat	Medium High likelihood of one NT species occurring within this habitat type. E.G., Blue Crane (NT)	Low Almost no habitat connectivity but migrations still possible across modified or degraded natural habitat and a very busy road network surrounds the area.	Low	Medium This species has a moderate likelihood of remaining on site even when a disturbance or impact is occurring and a high likelihood of returning to site once the disturbance or impact has been removed.	**Low**
Wetland Habitat	Low No confirmed or highly likely populations of SCC.	Low Almost no habitat connectivity but migrations still possible across e modified or degraded natural habitat and a very busy road network surrounds the area.	Low	Medium Species that use the wetlands within the project area have a moderate likelihood of remaining on site even when a disturbance or impact is occurring and a high likelihood of returning to site once the disturbance or impact has been removed.	**Low**
Plantation Habitat	Low No confirmed or highly likely populations of SCC.	Low Almost no habitat connectivity but migrations still possible across e modified or degraded natural habitat and a very busy road network surrounds the area.	Low	Medium Species that use the wetlands within the project area have a moderate likelihood of remaining on site even when a disturbance or impact is occurring and a high likelihood of returning to site once the disturbance or impact has been removed.	**Low**
Plantation Habitat/ Secondary Cape Flats Dune Strandveld	High High likelihood of one VU species occurring within this habitat type. E.G., Lanner Falcon (VU)	Low Almost no habitat connectivity but migrations still possible across modified or degraded natural habitat and a very busy road network surrounds the area.	Medium	Medium This species has a moderate likelihood of remaining on site even when a disturbance or impact is occurring and a high likelihood of returning to site once the disturbance or impact has been removed.	**Medium**
Secondary Cape Flats Dune Strandveld	High High likelihood of specialist species and low likelihood of the Black Harrier (EN) species occurring within this habitat type.	Medium Narrow corridors of good habitat connectivity and a busy road network between intact patches.	Medium	Medium This species has a moderate likelihood of remaining on site even when a disturbance or impact is occurring and a moderate likelihood of returning to site once the disturbance or impact has been removed.	**Medium**

Habitat / Species	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	SEI
Paardevlei	High	High	High	Medium	**High**
	High likelihood of priority species occurring within this habitat type. Including the Striped Flufftail (VU) and Maccoa Duck (NT).	A large (>20ha but <100ha) intact habitat with almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy road network surrounds the area.		This species has a high likelihood of remaining on site even when a disturbance or impact is occurring and a moderate likelihood of returning to site once the disturbance or impact has been removed.	

6. IMPACT ASSESSMENT

The proposed project could result in the following impacts:

- Loss of avifaunal habitat,
- Disturbance to avifaunal species due to project related activities,
- Bird mortality at PV Facility,
- Disturbance of priority avifaunal species,
- Altered runoff patterns and chemical pollution from cleaning products and
- Use of infrastructure as habitat by avifauna.

6.1. Loss of avifaunal habitat

The clearing of habitat (e.g., removal of vegetation by earthworks and heavy machinery) for the footprint of the PV facility, BESS, OHL and associated infrastructure will result in the permanent loss of avifaunal habitat. The avifaunal species that may utilise the habitat within the project footprint for foraging, nesting and/or breeding will no longer have access to these habitats for the life of the project. Considering the transformed nature of the habitat available in the project area, the loss will have an overall impact of low significance. This impact is difficult to mitigate as the loss of habitat is definite and permanent and as such the impact will remain of low significance even after mitigation measures have been implemented.

Project components	Impact Criteria		Significance and Ranking	
			Pre-Mitigation	Post-Mitigation
PV facility, BESS, OHL and associated infrastructure	Status	*Negative*	**Low**	**Low**
	Spatial Extent	*Localised*		
	Duration	*Long Term*		
	Consequence	*Slight*		
	Probability	*Definite*		
	Reversibility	*Reversible*		
	Irreplaceability	*Partly lost*		
	Mitigation potential	*Difficult*		

Mitigation Measures

- All construction and construction related activities (including parking of vehicles and machinery) must remain within the approved project footprint and must not encroach into areas outside the project footprint. To facilitate this, the boundaries of the development footprint areas must be clearly demarcated.
- The Secondary Cape Flats Dune Strandveld to the southwestern portion of the project area, outside of the proposed footprint, must be declared a No-Go area as it could offer habitat for threatened species such as the Black Harrier.
- All project related activities, including access roads, must avoid the Paardevlei.
- Lay down areas must be located within previously disturbed areas i.e. areas with a low or very low SEI.

- If laydown areas will not be used for the construction of infrastructure, these must be rehabilitated to avoid erosion of these areas. Only indigenous species must be used.
- Employees must be prohibited from disturbing birds, their young, nests and/or eggs.
- Only existing access roads must be used and upgraded where necessary.
- Speed restrictions must be implemented on all vehicles within the development footprint (40km/h is recommended) to reduced faunal mortalities on the project roads.
- No night driving should be permitted, if unavoidable, this must be restricted, and a speed limit of 30km/h must be adhered to.

6.2. Disturbance to avifaunal species

Construction activities that creates noise, dust and vibrations, or that requires night lighting, are likely to impact avifauna livelihood activities such as breeding and foraging for the duration of the construction phase. Operational maintenance is expected to cause some disturbance but significantly less than construction. These activities may cause individuals to move away from the immediate area into surrounding areas, increasing competition for food and shelter in those areas, and may even disrupt their current breeding cycle causing them to skip a season. However, mitigation of this impact is achievable, and as such, the impact will be of low significance after mitigation.

Project components	**Impact Criteria**		**Significance and Ranking**	
			Pre-Mitigation	**Post-Mitigation**
PV facility, BESS, OHL and associated infrastructure	Status	*Negative*	**Low**	**Low**
	Spatial Extent	*Localised*		
	Duration	*Short term*		
	Consequence	*Slight*		
	Probability	*Probable*		
	Reversibility	*Reversible*		
	Irreplaceability	*Partly lost*		
	Mitigation potential	*Achievable*		

Mitigation Measures

- Dust suppression measures such as watering dirt roads must be implemented in the dry and/or windy months. In addition, it is recommended that the management of vegetation under solar panels comprise of brush cutting rather than clearing of vegetation and areas that are no longer required during the operational phase be rehabilitated to reduce dust.
- All machinery, vehicles and earth moving equipment must be maintained, and the noise these create, must meet industry minimum standards. e.g. the sound generated by a machine must be below a certain decibel as prescribed in the relevant noise control regulations.
- Noisy machinery must not be operated before sunrise and after sunset.
- Construction night lighting must be avoided. If this is not feasible, lighting in open space areas within development must be minimised. Furthermore, any external lights must be down lights placed as low to the ground as possible and must be low UV emitting lights, such as most LEDs.

6.3. Bird fatalities at PV Facility

Bird fatalities could occur due to collision with solar PV panels, entanglement in perimeter fencing, and collision with (or electrocution on) overhead powerlines (OHL). The bird species diversity in the project area is considered low and habitat on site is of low importance for birds. However, the birds that utilise Paardevlei must also be considered and mitigated for. Unmitigated impacts are likely to be low for the risk of collision with solar panels and of moderate negative significance for risk of collision with the OHL and mitigated impacts of low negative significance.

Project components	Impact Criteria		Significance and Ranking	
			Pre-Mitigation	Post-Mitigation
Collision				
Solar panels and fencing	Status	*Negative*	**Low**	**Low**
	Spatial Extent	*Regional*		
	Duration	*Long term*		
	Severity	*Slight*		
	Probability	*May occur*		
	Reversibility	*Reversable*		
	Irreplaceability	*Partly lost*		
	Mitigation potential	*Achievable*		
Collision and/or electrocution				
Overhead powerline	Status	*Negative*	**Moderate**	**Low**
	Spatial Extent	*Regional*		
	Duration	*Long term*		
	Severity	*Moderate*		
	Probability	*May occur*		
	Reversibility	*Reversable*		
	Irreplaceability	*Not lost*		
	Mitigation potential	*Achievable*		
Underground powerline	Status	*Positive*	**Low**	**Low**
	Spatial Extent	*Local*		
	Duration	*Long term*		
	Severity	*Slight*		
	Probability	*Unlikely*		
	Reversibility	*Reversable*		
	Irreplaceability	*Not lost*		
	Mitigation potential	*Achievable*		
	Status	*Positive*		

Mitigation Measures

- The underground cabling is preferred over overhead cabling given underground there is no risk of collision or electrocution to birds. Alternative 1 is the most preferred route given it is along the N2 highway which already experiences significant disturbance and Alternative 3 is preferred over Alternative 4 given it is shorter in distance minimising disturbance and

Alternative 2 is the least preferred given the overhead powerline exposes birds to the risk of collision or electrocution, however, this alternative is still considered acceptable provided the following two mitigations are implemented.

- Power line pylons must use a bird-friendly design (i.e., sufficient clearance between phase-phase and phase-earth).
- Any overhead power line cables must have line marking devices to reduce the risk of collision (e.g., flapping devices, thickened wire spirals, 'aviation' balls, etc.).
- It is strongly recommended that rodenticides not be used at any the newly established buildings or around auxiliary infrastructure on the project area. While pest control of this nature may be effective, even so-called "environmentally friendly" rodenticides are toxic and pose significant secondary poisoning risk to predatory avifauna, especially owls.
- Induction awareness training must be offered to all staff and contractors to inform them not to enter the No-Go area and not to harm, collect or hunt owls (often persecuted) and/or ground-dwelling bird species (e.g., bustards, korhaans, thick-knees and coursers).
- No night driving should be allowed, if unavoidable, all project related vehicles must adhere to speed limits to avoid collisions with nocturnal and crepuscular species (e.g., nightjars, thickknees and owls) which sometimes forage or rest along roads.
- All incidents of collision with project panels should be recorded (e.g., species, date, location, suspected cause of death) and uploaded onto BirdLasser and reported to DEADP with the ECO audit.
- Holes or trenches required for construction must have a 30-degree slope to allow young flightless birds to exit should they fall in. If left open for an extended period of time, these must be covered.

6.4. Disturbance of priority avifaunal species

Two faunal SCC were recorded within the project area, the Lanner Falcon (VU) and Blue Crane (NT). Construction and operation of the proposed PV, BESS and OHL could impact these species. For example, the disturbance from construction activities could cause the species to leave the project area. However, it is likely these species will return to the project area once construction activities have ceased.

Project components	Impact Criteria		Significance and Ranking	
			Pre-Mitigation	Post-Mitigation
PV facility, BESS, OHL and associated infrastructure	Status	Negative	**Moderate**	**Low**
	Spatial Extent	Regional		
	Duration	Long term		
	Consequence	Severe		
	Probability	Probable		
	Reversibility	Reversible		
	Irreplaceability	Partly lost		

Mitigation Measures

- See mitigations for impact above (section 6.3).
- A clause must be included in contracts for ALL construction personnel (i.e. including contractors) working on the project stating that: "no wild animals will be hunted, killed,

poisoned or captured. No wild animals will be imported into, exported from or transported in or through the province. No wild animals will be sold, bought, donated and no person associated with the development will be in possession of any live wild animal, carcass or anything manufactured from the carcass." A clause relating to fines, possible dismissal and legal prosecution must be included should any of the above transgressions occur for SCC.

- The ECO must create a list with accompanying photographs of possible avifaunal SCC that could occur in the project area prior to construction. This photo guide must be used to determine if avifaunal SCC are encountered.
- Should an active breeding raptor nests (eggs, nestlings, fledglings) be discovered in or near construction areas prior to or during the construction phase:
    - These must be reported to ECO.
    - Where deemed necessary an appropriate buffer should be placed around the nest. If uncertain on the size of such a buffer, the ECO may contact an avifaunal specialist for advice.
    - No construction activity should occur within the buffer and the nest must be monitored.
    - Once birds have finished nesting and the fledglings left the nest construction can recommence within the buffer zone.

6.5. Altered runoff patterns and potential chemical pollution

An increase in hard surfaces associated with the development is likely to increase runoff in the area and could cause soil erosion and siltation of downstream water features e.g., Paardevlei. This facility intends to only use water when washing the panels, it is therefore assumed that no cleaning products will be used. This has been rated as low negative after implementation of mitigation measures.

Project components	Impact Criteria		Significance and Ranking	
			Pre-Mitigation	Post-Mitigation
All infrastructure	Status	*Positive*	**Low**	**Low**
	Spatial Extent	*Localised*		
	Duration	*Long term*		
	Consequence	*Slight*		
	Probability	*Probable*		
	Reversibility	*Reversible*		
	Irreplaceability	*Not lost*		
	Mitigation potential	*Achievable*		

Mitigation Measures

- A surface water/drainage Management Plan must be drafted and implemented to prevent runoff (stormwater and maintenance) entering aquatic systems and causing siltation of the project area of influence habitats. Alternatively, if this management plan exists, it must be updated to include this recommendation. The construction of hard surfaces should be avoided, as far as possible, to allow surface water to enter the soil and therefore the ground water.

6.6. Use of infrastructure as habitat by avifauna

Some avifaunal species may utilise the facility infrastructure for nesting, perching and roosting. This creation of habitat is considered a positive impact of the project for birds and has been rated as low positive significance.

Project components	Impact Criteria		Significance and Ranking	
			Pre-Mitigation	Post-Mitigation
All infrastructure	Status	*Positive*	**Low +**	**Low +**
	Spatial Extent	*Localised*		
	Duration	*Long term*		
	Consequence	*Slight*		
	Probability	*Probable*		
	Reversibility	*Reversible*		
	Irreplaceability	*Not lost*		
	Mitigation potential	*Achievable*		

Mitigation Measures

- No mitigation required.
- Should birds nesting on the facility cause issues for the operation thereof (risks of fire, electrical shorts, soiling of panels, etc.,) it is recommended that:
    - Nest management be done on a case-by-case basis under the supervision of an avifaunal specialist in conformance with all relevant national and provincial legislation,
    - Birds can be prevented from accessing nesting sites by using mesh or other manner of excluding them,
    - Birds must not be shot, poisoned or harmed as this is not an effective control method and has negative ecological consequences,
    - Birds that already have eggs or nestlings must be allowed to fledge their young before nests are removed, and
    - If there are any persistent problems with avifauna, then an avifaunal specialist should be consulted for advice on further mitigation.

7. CONCLUSION AND RECOMMENDATIONS

7.1. Summary of findings

The project area is characterised by a mosaic of grassland, interspersed with woodlots (alien plantations) and a number of wetland areas with a good dirt road network and the occasional manmade structure. The very southwestern portion of the project area (outside of the proposed solar PV footprint) is currently representative of Cape Flats Dune Strandveld and the area just to the north of this, which is within the solar PV layout footprint, appears to be recovering Secondary Cape Flats Dune Strandveld with invasive plant species present. The Paardevlei is located on the adjacent property to the east of the project area. Five avifaunal habitats were identified within the project area, namely, Grassland, Plantation (alien), Aquatic (Wetlands & drainage lines), Secondary Cape Flats Dune Strandveld and Manmade Structures (building, roads, powerlines).

Analysis of historical aerial imagery dating from 1953 to 1999 indicates that the majority of the habitat available onsite has been previously disturbed. Since 1914, the project area has been used to produce and test dynamite, for a fertiliser factory and paints, vinyl cloth, and sheet factory. The project area is currently used for wood production, recreational sports, grazing of cattle and occasionally for film sets.

The Southern African Bird Atlas Project (SABAP2) recorded a combined total of 263 bird species in the broader study area (Pentad 3405_1845, 3400_1845) within which the project area located. The field survey conducted in October 2023 recorded 50 bird species within the project area and at the time of the field survey, bird species diversity and abundance was considered low to moderate across the entire project area.

- A total of 35 bird species were recorded in Grassland and Wetland habitat, with the most abundant species being the African Sacred Ibis followed by the Western Cattle Egret, Common Starling and Egyptian Goose. The bird species diversity is considered low reflecting the transformed and uniform nature of this habitat. Of note is the presence of a pair of Blue Cranes listed as near -threatened recorded in this habitat.
- A total of 13 bird species were recorded in the Plantation habitat with four species common across all plantation blocks, the Cape Canary, Yellow Canary, Fiscal Flycatcher and Cape White-eye. The plantation block to the southwest of the project area recorded all 13 species. The greater species diversity in this patch is likely due to the presence of Secondary Cape Flats Dune Strandveld habitat as an understory. Of note is the presence of two raptor species the Jackal Buzzard and the Lanner Falcon (VU) recorded within this habitat.

Priority species include species of conservation concern (SCC) which are listed as threatened, near-threatened and/or endemic and includes species susceptible to impacts from solar energy projects. Fifteen of the 263 species recorded in the broader study area are considered nationally threatened, ten are listed as endangered and five as vulnerable, and a further ten species are listed as near-threatened. The majority of these species are unlikely to occur in the proposed project area however two SCC were recorded during the field survey, the Lanner Falcon (VU) and a pair of Blue Cranes (NT).

The Coordinated Waterbird Counts (CWAC) programme recorded 65 bird species at Paardevlei, six of which are bird SCC including the Cape Cormorant (EN), Striped Flufftail (VU), Great White Pelican (VU), Maccoa Duck (NT), Greater Flamingo (NT) and Lesser Flamingo (NT). Of the SCC recorded two may use

the Vlei for breeding, the Striped Flufftail (VU) and Maccoa Duck (NT). The proposed project is not expected to directly impact on the Paardevlei and given the general level of disturbance the vlei experiences from the surrounding urban environment, the development is unlikely to significantly disturb these species.

The Site Ecological Importance (SEI) of each habitat type to avifaunal species was assessed:

- The Grassland habitat and Wetland habitat was found to have a low SEI to avifaunal species, this habitat is relatively transformed and primarily hosts a low species diversity.
- The Plantation habitat was found to have a medium SEI to raptor species as it provides ample roosting sites.
- Secondary Cape Flats Dune Strandveld was found to have a medium SEI to avifaunal species as this habitat likely hosts specialist avifaunal species.
- Paardevlei was included in the assessment as it may form part of the Project Area of Influence. The Paardevlei was found to have a high SEI to avifaunal species that utilise the habitat.

The Species Environmental Guideline Document (SANBI, 2020) states that for areas of medium sensitivity, project activities of medium impact are acceptable provided they are followed by appropriate restoration activities and for areas of low sensitivity, project activities of medium to high impact are acceptable followed by appropriate restoration activities.

Seven impacts were identified for the proposed project (Table 7.1), prior to mitigation two impacts are considered moderate negative, four low negative and one a low positive. Following mitigation six impacts will be of low negative and one of low positive significance.

Table 7.1: Summary of impact assessment and ratings for the proposed project

IMPACT	SIGNIFICANCE	
	PRE-MITIGATION	POST- MITIGATION
Loss of avifaunal habitat	Low negative	Low negative
Disturbance of avifaunal species	Low negative	Low negative
Bird mortality at PV facility – Solar panels and Fencing	Low negative	Low negative
Bird mortality at PV facility – Collision and electrocution	Moderate negative	Low negative
Disturbance of Priority species	Moderate negative	Low negative
Altered runoff patterns and potential chemical pollution	Low negative	Low negative
Use of infrastructure as habitat by avifaunal species	Low positive	Low positive

7.2. Recommendations

The following recommendations have been made for the proposed project:

- It is recommended that the sensitivity of the DFFE Screening Tool animal species theme should be rated as low rather than high/medium for the Marsh Harrier (*Circus ranivorus*), Black Harrier (*Circus maurus*), Fynbos Buttonquail (*Turnix hottentottus*), Southern Black Korhaan (*Afrotis afra*) and the Striped Flufftail (*Sarothrura affinis*) and medium rather than high for the Martial Eagle (*Polemaetus bellicosus*).
- All mitigation measures proposed for impacts must be implemented (see Chapter 6),
    - The Secondary Cape Flats Dune Strandveld to the southwestern portion of the project area outside of the proposed footprint must be declared a No-Go area.
    - All project related activities must avoid the Paardevlei, including access roads.
    - A surface water/drainage Management Plan must be drafted and implemented.

- With regards to powerlines, underground cabling is preferred over overhead cabling given underground there is no risk of collision or electrocution to birds. Alternative 1 is the most preferred route given it is along the N2 highway which already experiences significant disturbance and Alternative 3 is preferred over Alternative 4 given it is shorter in distance minimising disturbance and Alternative 2 is the least preferred given the overhead powerline exposes birds to the risk of collision or electrocution, however, this alternative is still considered acceptable provided the following two mitigations are implemented.
- Based on the findings and results obtained from this assessment there is sufficient information /data to support the DFFE findings that the project area is of low avifaunal sensitivity and therefore no additional surveys are required i.e., the project qualifies for 'Regime 1' which requires one (1) site visit of 1-5 days in peak season (Oct – Feb). This has now been fulfilled.

7.3. Specialist opinion

The proposed project will affect a limited avifaunal community in a more or less transformed and homogenous landscape. The impacts associated with the proposed project are all low following the implementation of mitigation measures. We recommend that the facility be authorised, provided that the recommendations and mitigation contained in this report are implemented.

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APPENDIX 1: PROJECT AREA BIRD SPECIES RECORDS

Common Name		Scientific Name
Bishop	Yellow	*Euplectes capensis*
Bishop	Southern Red	*Euplectes orix*
Bulbul	Cape	*Pycnonotus capensis*
Buzzard	Jackal	*Buteo rufofuscus*
Canary	Yellow	*Crithagra flaviventris*
Canary	Cape	*Serinus canicollis*
Cormorant	Reed	*Microcarbo africanus*
Cormorant	White-breasted	*Phalacrocorax lucidus*
Crane	Blue	*Grus paradisea*
Crow	Cape	*Corvus capensis*
Cuckoo	Klaas's	*Chrysococcyx klaas*
Dove	Laughing	*Spilopelia senegalensis*
Dove	Ring-necked	*Streptopelia capicola*
Dove	Mourning Collared	*Streptopelia decipiens*
Dove	Red-eyed	*Streptopelia semitorquata*
Drongo	Fork-tailed	*Dicrurus adsimilis*
Duck	Hybrid Red/Yellow-billed	*Anas erythroryncha/undulata*
Egret	Western Cattle	*Bubulcus ibis*
Falcon	Lanner	*Falco biarmicus*
Flycatcher	Fiscal	*Melaenornis silens*
Goose	Egyptian	*Alopochen aegyptiaca*
Goose	African Pygmy	*Nettapus auritus*
Goose	Spur-winged	*Plectropterus gambensis*
Guineafowl	Helmeted	*Numida meleagris*
Gull	Kelp	*Larus dominicanus*
Heron	Grey	*Ardea cinerea*
Heron	Black-headed	*Ardea melanocephala*
Heron	Black	*Egretta ardesiaca*
Hoopoe	African	*Upupa africana*
Ibis	Hadada	*Bostrychia hagedash*
Ibis	Glossy	*Plegadis falcinellus*
Ibis	African Sacred	*Threskiornis aethiopicus*
Lapwing	Blacksmith	*Vanellus armatus*
Lark	Red-capped	*Calandrella cinerea*
Lark	Rufous-naped	*Mirafra africana*
Martin	Common House	*Delichon urbicum*
Martin	Brown-throated	*Riparia paludicola*
Mousebird	Speckled	*Colius striatus*
Pipit	Plain-backed	*Anthus leucophrys*
Prinia	Karoo	*Prinia maculosa*
Robin-Chat	Cape	*Cossypha caffra*

Sparrow	Cape	*Passer melanurus*
Spurfowl	Cape	*Pternistis capensis*
Starling	Common	*Sturnus vulgaris*
Stonechat	African	*Saxicola torquatus*
Swallow	Greater Striped	*Cecropis cucullata*
Swallow	White-throated	*Hirundo albigularis*
Swallow	Pearl-breasted	*Hirundo dimidiata*
Wagtail	Cape	*Motacilla capensis*
White-eye	Cape	*Zosterops virens*

APPENDIX 2: SABAP2 BIRD SPECIES LIST & RECORDS

The header acronyms refer to the SABAP2 sampling protocols (https://sabap2.birdmap.africa/docs/SABAP2_Protocol_2021.pdf):
*FP= Full Protocol
*Adhoc = Adhoc Protocol
*RR% = Reporting Rate refers to the frequency that species have been recorded within the pentad
* n = Number of times the species has been recorded in the pentad since SABAP2 commenced

Common name	Common name	Species	Threat Status	3405_1845						3400_1845					
				FP (RR%)	FP (n)	Latest FP	Adhoc (RR%)	Adhoc (n)	Latest Adhoc	FP (RR%)	FP (n)	Latest FP	Adhoc (RR%)	Adhoc (n)	Latest Adhoc
	Bokmakierie	Telophorus zeylonus		16.8	51	2021/12/11	1	2	2022/09/18	4	10	2019/12/15	0	0	-
	Hamerkop	Scopus umbretta		4.9	15	2022/12/18	2.1	4	2020/04/04	2.8	7	2016/10/03	0.6	1	2015/12/30
	Hybrid Mallard	Anas hybrid		0.7	2	2023/03/05	1	2	2022/09/24	1.6	4	2023/01/02	0	0	-
	Mallard	Anas platyrhynchos		9.2	28	2023/09/23	2.6	5	2023/09/30	15.4	39	2016/12/12	0	0	-
	Neddicky	Cisticola fulvicapilla		7.2	22	2020/10/23	1.5	3	2023/09/05	1.6	4	2021/11/27	0	0	-
	Ruff	Calidris pugnax		4.6	14	2021/12/11	0.5	1	2021/12/11	1.2	3	2022/03/06	0.6	1	2021/03/04
	Sanderling	Calidris alba		4.3	13	2022/12/25	2.6	5	2022/12/20						
	Secretarybird	Sagittarius serpentarius	VU	0.3	1	2010/08/12	0	0	-	0.8	2	2011/05/01	0	0	-
Apalis	Bar-throated	Apalis thoracica		49.7	151	2023/09/23	0.5	1	2022/09/18	5.5	14	2023/03/23	0	0	-
Avocet	Pied	Recurvirostra avosetta		70.7	215	2023/08/26	17	33	2023/06/17	22.9	58	2023/06/07	8	14	2023/05/04
Barbet	Acacia Pied	Tricholaema leucomelas		7.6	23	2023/08/10	2.1	4	2023/01/11	22.9	58	2023/03/29	1.1	2	2023/05/04
Batis	Cape	Batis capensis		8.9	27	2022/04/01	1	2	2023/06/17	2.8	7	2020/02/09	2.9	5	2022/06/08
Bee-eater	European	Merops apiaster		1	3	2022/11/05	0	0	-						
Bishop	Southern Red	Euplectes orix		72	219	2023/09/23	11.9	23	2023/09/30	67.2	170	2023/10/14	31	54	2023/09/28
Bishop	Yellow	Euplectes capensis		51	155	2023/09/23	7.7	15	2023/09/28	42.3	107	2023/10/14	12.1	21	2023/06/17
Bittern	Little	Ixobrychus minutus		4.9	15	2021/05/01	0	0	-	10.3	26	2023/09/07	8	14	2023/09/28
Boubou	Southern	Laniarius ferrugineus		71.4	217	2023/09/23	4.1	8	2023/06/17	9.9	25	2022/03/06	0	0	-
Bulbul	Cape	Pycnonotus capensis		81.3	247	2023/09/23	6.2	12	2023/09/05	49	124	2023/07/12	13.2	23	2023/08/09
Bunting	Cape	Emberiza capensis		0.3	1	2016/12/23	0	0	-	14.2	36	2023/02/24	4	7	2023/02/04
Buzzard	Common	Buteo buteo		24.7	75	2023/02/04	4.6	9	2023/02/19	1.6	4	2014/11/29	0	0	-
Buzzard	Forest	Buteo trizonatus		0.7	2	2016/12/23	0	0	-	43.9	111	2023/10/14	10.9	19	2023/02/18
Buzzard	Jackal	Buteo rufofuscus		48.4	147	2023/04/27	10.8	21	2023/09/28						
Canary	Brimstone	Crithagra sulphurata		19.4	59	2023/09/23	2.6	5	2022/12/17	10.3	26	2022/07/17	1.1	2	2019/12/12
Canary	Cape	Serinus canicollis		71.4	217	2023/09/23	11.3	22	2023/09/30	71.5	181	2023/10/14	12.6	22	2023/06/06
Canary	Protea	Crithagra leucoptera	NT	0.3	1	2015/06/13	0	0	-						
Canary	White-throated	Crithagra albogularis		3	9	2022/12/17	0.5	1	2022/12/17						
Canary	Yellow	Crithagra flaviventris		12.2	37	2023/04/09	3.1	6	2023/02/28	2	5	2022/10/06	0	0	-
Chaffinch	Common	Fringilla coelebs								0.8	2	2015/08/24	0	0	-
Chat	Familiar	Oenanthe familiaris		0.7	2	2019/11/29	0	0	-	4.3	11	2022/05/02	0.6	1	2015/01/03
Cisticola	Cloud	Cisticola textrix		1.3	4	2011/10/09	0	0	-	0.4	1	2019/12/15	0	0	-
Cisticola	Grey-backed	Cisticola subruficapilla		32.2	98	2023/09/23	2.6	5	2023/09/30	2.8	7	2020/10/21	1.1	2	2022/02/11
Cisticola	Levaillant's	Cisticola tinniens		86.5	263	2023/09/23	19.6	38	2023/10/14	84.6	214	2023/10/14	44.3	77	2023/09/28
Cisticola	Zitting	Cisticola juncidis		5.6	17	2020/10/23	0.5	1	2022/09/03	13.4	34	2023/01/04	1.7	3	2021/12/11
Coot	Red-knobbed	Fulica cristata		95.7	291	2023/09/23	29.4	57	2023/10/14	93.3	236	2023/10/14	47.1	82	2023/09/28

Cormorant	Bank	Phalacrocorax neglectus	EN							0.8	2	2023/08/21	0.6	1	2020/03/14
Cormorant	Cape	Phalacrocorax capensis	EN	12.2	37	2023/09/05	4.6	9	2023/09/05	54.2	137	2023/10/14	7.5	13	2023/06/16
Cormorant	Crowned	Microcarbo coronatus	NT	3	9	2023/09/05	3.1	6	2023/09/05	9.1	23	2023/04/08	2.3	4	2022/07/03
Cormorant	Reed	Microcarbo africanus		86.2	262	2023/09/23	19.1	37	2023/09/01	83	210	2023/10/14	43.7	76	2023/09/28
Cormorant	White-breasted	Phalacrocorax lucidus		91.8	279	2023/09/23	26.8	52	2023/10/14	82.6	209	2023/10/14	31	54	2023/08/09
Coucal	Burchell's	Centropus burchellii		5.6	17	2017/10/11	0	0	-						
Crake	Baillon's	Zapornia pusilla								0	0	-	0.6	1	2022/02/07
Crake	Black	Zapornia flavirostra		19.4	59	2023/01/22	2.1	4	2023/01/22	16.6	42	2023/01/04	3.4	6	2022/03/11
Crane	Blue	Grus paradisea	NT	11.8	36	2023/08/26	5.2	10	2023/07/12	18.2	46	2023/10/14	3.4	6	2023/09/22
Crombec	Long-billed	Sylvietta rufescens		3.6	11	2022/01/11	1	2	2023/10/14						
Crow	Cape	Corvus capensis								0.8	2	2022/06/11	0	0	-
Crow	House	Corvus splendens		0.3	1	2010/04/23	0	0	-						
Crow	Pied	Corvus albus		95.4	290	2023/09/23	29.4	57	2023/10/14	92.1	233	2023/10/14	35.1	61	2023/09/28
Cuckoo	Diederik	Chrysococcyx caprius		8.6	26	2022/11/05	2.1	4	2019/12/28	7.5	19	2016/12/26	0.6	1	2019/11/28
Cuckoo	Klaas's	Chrysococcyx klaas		7.6	23	2022/12/25	0.5	1	2019/12/16	9.5	24	2023/08/09	1.1	2	2023/05/04
Cuckoo	Red-chested	Cuculus solitarius		2	6	2020/10/23	0	0	-						
Cuckooshrike	Black	Campephaga flava		0	0	-	0.5	1	2023/06/06						
Curlew	Eurasian	Numenius arquata	NT	0.3	1	2021/12/20	0.5	1	2022/04/14						
Darter	African	Anhinga rufa		60.2	183	2023/09/23	11.3	22	2023/10/14	53.4	135	2023/08/21	15.5	27	2023/03/10
Dove	Cape Turtle	Streptopelia capicola		72.4	220	2023/09/23	6.7	13	2023/05/05	64.4	163	2023/09/07	14.9	26	2023/09/22
Dove	Laughing	Spilopelia senegalensis		43.1	131	2023/07/05	9.8	19	2023/10/14	63.2	160	2023/08/21	11.5	20	2023/05/13
Dove	Lemon	Columba larvata								0.4	1	2012/01/09	0	0	-
Dove	Namaqua	Oena capensis		4.6	14	2023/04/09	1.5	3	2022/10/24	0.8	2	2013/12/12	0	0	-
Dove	Red-eyed	Streptopelia semitorquata		91.4	278	2023/09/05	21.1	41	2023/10/14	90.9	230	2023/10/14	35.1	61	2023/09/22
Dove	Rock	Columba livia		47.4	144	2023/08/26	7.7	15	2023/08/04	40.7	103	2023/08/21	14.9	26	2023/06/16
Dove	Tambourine	Turtur tympanistria		2	6	2020/10/23	0	0	-						
Drongo	Fork-tailed	Dicrurus adsimilis		22	67	2022/11/05	3.6	7	2023/09/28	54.9	139	2023/09/07	2.9	5	2023/07/11
Duck	African Black	Anas sparsa		21.1	64	2023/09/23	1	2	2023/01/28	20.9	53	2023/01/01	2.9	5	2022/08/09
Duck	Domestic	Anas platyrhynchos								0	0	-	2.3	4	2022/02/20
Duck	Fulvous Whistling	Dendrocygna bicolor								4	10	2022/01/20	3.4	6	2022/02/05
Duck	Hybrid	Anas hybrid		0.7	2	2016/02/12	0	0	-						
Duck	Hybrid Red/Yellow-billed	Anas erythroryncha/undulata		0.3	1	2019/05/28	0	0	-	0	0	-	0.6	1	2021/05/16
Duck	Maccoa	Oxyura maccoa	NT	3	9	2022/12/25	0	0	-	31.6	80	2023/10/14	14.4	25	2023/09/28
Duck	Muscovy	Cairina moschata		0	0	-	0.5	1	2022/10/16						
Duck	White-backed	Thalassornis leuconotus		9.2	28	2020/10/23	0.5	1	2015/12/27	12.6	32	2023/10/14	9.8	17	2023/02/04
Duck	White-faced Whistling	Dendrocygna viduata		8.2	25	2022/12/18	1	2	2022/07/17	11.1	28	2023/08/09	1.1	2	2020/07/03
Duck	Yellow-billed	Anas undulata		92.8	282	2023/09/23	23.2	45	2023/10/14	91.7	232	2023/10/14	42.5	74	2023/09/28
Eagle	African Fish	Haliaeetus vocifer		18.4	56	2022/09/11	5.2	10	2023/01/22	14.6	37	2022/06/04	2.9	5	2023/06/06
Eagle	Booted	Hieraaetus pennatus		8.9	27	2022/12/25	3.6	7	2022/12/03	3.6	9	2023/01/02	1.1	2	2020/02/22

Eagle	Martial	Polemaetus bellicosus	EN							1.2	3	2023/05/22	0	0	-
Eagle-Owl	Spotted	Bubo africanus		13.8	42	2023/04/27	2.1	4	2022/09/03	17.8	45	2020/06/04	0.6	1	2021/12/11
Egret	Intermediate	Ardea intermedia		27	82	2022/12/25	0.5	1	2022/01/11	42.7	108	2023/03/23	23.6	41	2023/06/16
Egret	Little	Egretta garzetta		50.7	154	2023/09/23	9.8	19	2023/06/17	53.4	135	2023/08/21	19	33	2023/09/28
Egret	Western Cattle	Bubulcus ibis		84.2	256	2023/09/23	20.6	40	2023/06/17	47.4	120	2023/10/14	16.1	28	2023/06/06
Falcon	Lanner	Falco biarmicus	VU	1.3	4	2018/06/07	0.5	1	2021/12/14	0.8	2	2010/02/08	0.6	1	2021/12/11
Falcon	Peregrine	Falco peregrinus		9.2	28	2023/01/01	1.5	3	2023/06/20	36.4	92	2023/09/07	5.7	10	2023/05/04
Fiscal	Southern	Lanius collaris		75.7	230	2023/07/05	12.9	25	2023/06/20	79.1	200	2023/10/14	28.2	49	2023/08/09
Flamingo	Greater	Phoenicopterus roseus	NT	53.9	164	2023/09/05	11.3	22	2023/09/05	51	129	2023/10/14	24.1	42	2023/06/16
Flamingo	Lesser	Phoeniconaias minor	NT	21.1	64	2023/08/26	12.4	24	2023/06/17	24.5	62	2023/04/08	14.9	26	2023/09/28
Flufftail	Red-chested	Sarothrura rufa		0.3	1	2014/12/27	0	0	-						
Flycatcher	African Dusky	Muscicapa adusta		9.2	28	2023/07/05	0.5	1	2023/06/17	11.9	30	2023/01/23	1.1	2	2022/03/17
Flycatcher	African Paradise	Terpsiphone viridis		8.9	27	2020/10/23	0	0	-	7.9	20	2023/03/04	1.7	3	2023/02/11
Flycatcher	Fiscal	Melaenornis silens		67.8	206	2023/08/26	4.6	9	2023/06/17	63.2	160	2023/07/19	10.3	18	2023/08/09
Flycatcher	Spotted	Muscicapa striata		0	0	-	0.5	1	2023/01/07	4.3	11	2023/03/04	0.6	1	2020/02/09
Francolin	Grey-winged	Scleroptila afra		0.3	1	2015/08/18	0	0	-	0.4	1	2010/12/12	0	0	-
Gallinule	Allen's	Porphyrio alleni		2.6	8	2020/10/27	1	2	2020/10/20						
Gannet	Cape	Morus capensis	VU	3.6	11	2023/03/05	1.5	3	2022/03/06	1.2	3	2023/03/23	0.6	1	2018/04/27
Godwit	Bar-tailed	Limosa lapponica		6.6	20	2020/10/27	1	2	2023/06/17						
Goose	Domestic	Anser anser		1.3	4	2016/06/23	0	0	-	2.8	7	2023/05/27	1.7	3	2022/08/09
Goose	Egyptian	Alopochen aegyptiaca		97.4	296	2023/09/23	35.6	69	2023/10/14	93.3	236	2023/10/14	45.4	79	2023/07/11
Goose	Spur-winged	Plectropterus gambensis		43.4	132	2023/04/27	2.1	4	2020/03/29	57.7	146	2023/09/07	27	47	2023/05/04
Goshawk	African	Accipiter tachiro		9.9	30	2022/12/25	1	2	2020/09/13	4	10	2023/01/08	1.7	3	2023/01/06
Grassbird	Cape	Sphenoeacus afer		14.5	44	2020/02/22	1.5	3	2022/02/27	7.1	18	2022/10/06	0	0	-
Grebe	Black-necked	Podiceps nigricollis		2.6	8	2022/10/04	0.5	1	2021/08/11	19.8	50	2023/10/14	11.5	20	2023/09/28
Grebe	Great Crested	Podiceps cristatus		5.9	18	2022/10/04	2.6	5	2022/10/14	21.3	54	2023/10/14	9.8	17	2023/09/28
Grebe	Little	Tachybaptus ruficollis		77.3	235	2023/04/27	5.2	10	2023/09/30	81.8	207	2023/10/14	40.2	70	2023/09/28
Greenbul	Sombre	Andropadus importunus		2.3	7	2019/02/16	0.5	1	2022/12/03						
Greenshank	Common	Tringa nebularia		33.2	101	2023/01/01	3.6	7	2023/06/17	22.5	57	2023/03/04	4.6	8	2023/02/04
Guineafowl	Helmeted	Numida meleagris		74.3	226	2023/08/26	16.5	32	2023/10/14	88.1	223	2023/10/14	28.7	50	2023/06/17
Gull	Grey-headed	Chroicocephalus cirrocephalus		54.6	166	2023/09/23	6.7	13	2023/10/14	22.1	56	2023/08/21	4	7	2023/02/18
Gull	Hartlaub's	Chroicocephalus hartlaubii		85.2	259	2023/09/23	21.1	41	2023/10/14	69.6	176	2023/10/14	25.9	45	2023/08/09
Gull	Kelp	Larus dominicanus		90.8	276	2023/09/23	24.7	48	2023/10/14	83	210	2023/10/14	25.9	45	2023/06/17
Harrier	African Marsh	Circus ranivorus	EN	1.3	4	2016/10/30	1	2	2019/02/23	0.8	2	2022/06/11	0	0	-
Harrier	Black	Circus maurus	EN	2.6	8	2010/04/23	0.5	1	2021/02/24						
Harrier-Hawk	African	Polyboroides typus		8.2	25	2022/07/20	2.6	5	2023/06/20	22.5	57	2023/05/27	3.4	6	2023/07/11
Heron	Black-crowned Night	Nycticorax nycticorax		12.8	39	2022/05/20	0.5	1	2023/04/10	30.4	77	2023/10/14	10.9	19	2022/12/03
Heron	Black-headed	Ardea melanocephala		60.9	185	2023/09/23	15.5	30	2023/10/14	73.9	187	2023/10/14	28.2	49	2023/06/20
Heron	Goliath	Ardea goliath								0	0	-	0.6	1	2019/06/13
Heron	Grey	Ardea cinerea		57.9	176	2023/04/09	6.7	13	2023/04/10	88.9	225	2023/10/14	42	73	2023/09/28

Heron	Purple	Ardea purpurea		21.7	66	2022/10/04	2.6	5	2023/04/10	27.3	69	2023/10/14	9.8	17	2023/06/16
Heron	Squacco	Ardeola ralloides								1.2	3	2021/03/19	2.9	5	2021/12/18
Hobby	Eurasian	Falco subbuteo		0	0	-	0.5	1	2023/01/29	0.4	1	2022/03/06	0	0	-
Honeybird	Brown-backed	Prodotiscus regulus		0.3	1	2023/01/01	1.5	3	2023/06/06						
Honey-buzzard	European	Pernis apivorus								0.8	2	2023/02/19	0	0	-
Honeyguide	Greater	Indicator indicator		0.3	1	2020/10/23	0	0	-						
Honeyguide	Lesser	Indicator minor		1	3	2020/10/23	0	0	-	2.8	7	2019/02/13	0.6	1	2022/01/05
Hoopoe	African	Upupa africana		6.3	19	2021/09/04	0.5	1	2023/06/20	2.4	6	2023/01/01	0.6	1	2020/01/24
Ibis	African Sacred	Threskiornis aethiopicus		92.4	281	2023/09/23	26.8	52	2023/09/30	88.5	224	2023/10/14	34.5	60	2023/09/28
Ibis	Glossy	Plegadis falcinellus		32.2	98	2023/03/05	8.2	16	2023/02/19	40.3	102	2023/09/07	20.7	36	2023/02/19
Ibis	Hadada	Bostrychia hagedash		95.4	290	2023/08/26	34	66	2023/09/30	86.2	218	2023/10/14	33.9	59	2023/07/11
Jacana	African	Actophilornis africanus		0.7	2	2015/01/18	0	0	-	1.6	4	2023/10/14	0	0	-
Jaeger	Parasitic	Stercorarius parasiticus		2	6	2023/01/01	0.5	1	2023/01/01						
Kestrel	Lesser	Falco naumanni		0.7	2	2015/11/27	0.5	1	2021/12/08	0.4	1	2022/06/04	0	0	-
Kestrel	Rock	Falco rupicolus		32.6	99	2023/09/23	7.2	14	2023/09/05	32.8	83	2023/10/14	10.9	19	2023/02/04
Kingfisher	Giant	Megaceryle maxima		9.2	28	2023/04/27	0.5	1	2023/04/10	17	43	2023/04/08	2.3	4	2023/04/12
Kingfisher	Malachite	Corythornis cristatus		19.7	60	2023/04/09	1	2	2022/02/19	27.7	70	2023/07/19	12.6	22	2022/07/17
Kingfisher	Pied	Ceryle rudis		53.3	162	2023/09/23	13.4	26	2023/09/30	38.7	98	2023/08/21	8	14	2023/06/16
Kite	Black-winged	Elanus caeruleus		49.7	151	2023/09/23	14.9	29	2023/09/05	24.5	62	2023/08/21	5.2	9	2023/05/13
Kite	Yellow-billed	Milvus aegyptius		24.3	74	2023/01/22	8.8	17	2023/10/14	22.5	57	2023/10/14	5.2	9	2022/12/26
Knot	Red	Calidris canutus		1	3	2020/10/27	0	0	-						
Lapwing	Blacksmith	Vanellus armatus		93.4	284	2023/09/23	24.7	48	2023/10/14	96.8	245	2023/10/14	44.8	78	2023/07/11
Lapwing	Crowned	Vanellus coronatus		19.1	58	2023/08/10	1.5	3	2022/09/03	3.2	8	2020/11/14	1.1	2	2021/03/25
Lark	Large-billed	Galerida magnirostris		0.7	2	2013/01/02	0	0	-	1.2	3	2013/08/10	0	0	-
Lark	Red-capped	Calandrella cinerea		18.1	55	2023/09/23	4.6	9	2023/10/14	11.9	30	2023/05/27	0.6	1	2023/02/18
Longclaw	Cape	Macronyx capensis		7.2	22	2022/02/27	1	2	2022/02/27	7.9	20	2023/01/09	0.6	1	2020/07/18
Martin	Banded	Riparia cincta								0.4	1	2011/03/07	0	0	-
Martin	Brown-throated	Riparia paludicola		72.4	220	2023/09/23	13.9	27	2023/10/14	62.5	158	2023/09/07	17.8	31	2023/06/20
Martin	Common House	Delichon urbicum		2.3	7	2022/10/26	0	0	-	0.8	2	2023/06/07	4.6	8	2023/06/20
Martin	Rock	Ptyonoprogne fuligula		21.1	64	2023/09/05	3.1	6	2023/09/30	13.8	35	2023/07/19	9.2	16	2023/06/20
Moorhen	Common	Gallinula chloropus		85.2	259	2023/09/23	19.6	38	2023/09/30	85.4	216	2023/10/14	42	73	2023/07/11
Mousebird	Red-faced	Urocolius indicus		40.8	124	2023/09/23	7.2	14	2023/09/05	57.7	146	2023/10/14	8.6	15	2023/05/13
Mousebird	Speckled	Colius striatus		21.7	66	2023/07/05	1	2	2021/01/07	2	5	2022/05/02	0	0	-
Mousebird	White-backed	Colius colius		26.3	80	2023/04/27	4.6	9	2023/04/10	5.9	15	2023/10/14	1.1	2	2023/09/28
Nightjar	Fiery-necked	Caprimulgus pectoralis		2	6	2021/02/26	1	2	2020/04/30	0.4	1	2020/06/04	0	0	-
Openbill	African	Anastomus lamelligerus		0.3	1	2010/05/22	0	0	-						
Osprey	Western	Pandion haliaetus		0.3	1	2021/12/11	0	0	-						
Ostrich	Common	Struthio camelus		1.6	5	2018/03/22	0	0	-						
Owl	African Wood	Strix woodfordii		2	6	2020/10/23	1.5	3	2022/09/03	0.4	1	2014/06/17	0	0	-
Owl	Western Barn	Tyto alba		9.2	28	2023/04/27	1	2	2021/12/16	0	0	-	1.1	2	2020/05/01
Oystercatcher	African	Haematopus moquini		58.2	177	2023/09/23	13.4	26	2023/09/05	54.5	138	2023/08/21	8	14	2022/07/03
Painted-snipe	Greater	Rostratula benghalensis	NT	0.3	1	2019/05/03	0	0	-	2.4	6	2023/01/23	8.6	15	2023/01/17

Peafowl	Indian	Pavo cristatus		4.6	14	2020/08/27	0	0	-						
Pelican	Great White	Pelecanus onocrotalus	VU	4.6	14	2021/05/01	1	2	2022/08/31	4.3	11	2017/02/02	1.1	2	2021/05/22
Penguin	African	Spheniscus demersus	EN	1	3	2020/10/27	0.5	1	2022/09/18	0.4	1	2016/12/24	0	0	-
Pigeon	African Olive	Columba arquatrix								0.8	2	2007/11/26	0	0	-
Pigeon	Speckled	Columba guinea		87.8	267	2023/09/23	18	35	2023/10/14	88.1	223	2023/10/14	35.6	62	2023/09/22
Pipit	African	Anthus cinnamomeus		38.2	116	2023/09/05	5.2	10	2023/05/27	27.3	69	2023/01/07	2.9	5	2022/03/06
Pipit	Plain-backed	Anthus leucophrys		0.3	1	2020/10/23	0	0	-	6.3	16	2013/08/10	0	0	-
Plover	Chestnut-banded	Charadrius pallidus	NT							0.8	2	2023/04/08	0	0	-
Plover	Common Ringed	Charadrius hiaticula		45.1	137	2023/09/23	21.1	41	2023/10/14	15.8	40	2023/05/27	6.3	11	2023/02/19
Plover	Grey	Pluvialis squatarola		2.3	7	2023/01/01	2.6	5	2023/01/30						
Plover	Kittlitz's	Charadrius pecuarius		53	161	2023/03/05	10.8	21	2023/10/14	23.3	59	2023/04/08	6.3	11	2023/02/19
Plover	Three-banded	Charadrius tricollaris		51.3	156	2023/09/23	13.4	26	2023/09/05	53	134	2023/10/14	21.3	37	2023/06/16
Plover	White-fronted	Charadrius marginatus		14.8	45	2023/03/05	4.1	8	2023/09/05	5.1	13	2023/01/23	1.1	2	2023/01/17
Pochard	Southern	Netta erythrophthalma		20.7	63	2023/01/22	1	2	2021/12/20	21.3	54	2023/10/14	3.4	6	2023/09/28
Prinia	Karoo	Prinia maculosa		88.8	270	2023/09/23	11.3	22	2023/09/30	73.9	187	2023/10/14	25.9	45	2023/09/28
Quail	Common	Coturnix coturnix		1	3	2020/10/23	1	2	2022/09/03	1.6	4	2023/01/01	0	0	-
Quelea	Red-billed	Quelea quelea		0.7	2	2013/09/30	0	0	-	0	0	-	1.1	2	2023/09/22
Rail	African	Rallus caerulescens		1	3	2019/05/03	0	0	-	0.4	1	2016/03/07	1.1	2	2022/02/11
Raven	White-necked	Corvus albicollis		7.6	23	2022/09/11	1.5	3	2023/01/06	6.7	17	2023/01/14	1.7	3	2023/03/10
Robin-Chat	Cape	Cossypha caffra		80.9	246	2023/09/23	8.2	16	2023/09/30	69.6	176	2023/10/14	7.5	13	2023/08/09
Sandpiper	Baird's	Calidris bairdii		2.3	7	2022/01/11	3.6	7	2022/01/21	0	0	-	1.7	3	2022/03/12
Sandpiper	Baird's	Calidris bairdii													
Sandpiper	Common	Actitis hypoleucos		37.2	113	2023/03/02	13.9	27	2023/10/14	4	10	2023/01/04	0.6	1	2020/10/03
Sandpiper	Curlew	Calidris ferruginea		17.4	53	2023/01/22	2.1	4	2023/01/22	4.7	12	2023/04/08	0	0	-
Sandpiper	Marsh	Tringa stagnatilis		2.6	8	2019/09/26	0	0	-	1.6	4	2019/02/13	0	0	-
Sandpiper	Pectoral	Calidris melanotos		0.3	1	2023/03/05	0	0	-	4.3	11	2023/04/08	2.3	4	2023/02/18
Sandpiper	Terek	Xenus cinereus		3.3	10	2022/09/16	0	0	-						
Sandpiper	Wood	Tringa glareola		2	6	2019/11/29	0	0	-	1.6	4	2020/11/28	1.1	2	2020/12/19
Saw-wing	Black	Psalidoprocne pristoptera holomelas		7.6	23	2022/02/27	1	2	2022/02/27	7.5	19	2016/06/12	0	0	-
Scrub Robin	Karoo	Cercotrichas coryphoeus		9.9	30	2023/03/02	1	2	2022/09/24	3.2	8	2019/02/13	0	0	-
Seedeater	Streaky-headed	Crithagra gularis		0.7	2	2015/08/18	0	0	-						
Shelduck	South African	Tadorna cana		3.6	11	2019/11/14	0	0	-	11.5	29	2023/01/02	1.7	3	2022/03/12
Shoveler	Cape	Spatula smithii		78.3	238	2023/09/23	16.5	32	2023/09/30	85	215	2023/10/14	35.1	61	2023/09/28
Siskin	Cape	Crithagra totta								0.8	2	2009/03/09	0	0	-
Skua	Brown	Stercorarius antarcticus	EN	0.3	1	2020/10/23	0	0	-						
Snipe	African	Gallinago nigripennis		4.6	14	2023/03/02	2.6	5	2022/02/27	10.7	27	2023/04/08	14.4	25	2023/06/16
Sparrow	Cape	Passer melanurus		78	237	2023/09/23	11.3	22	2023/09/30	68.4	173	2023/10/14	14.9	26	2023/09/22
Sparrow	House	Passer domesticus		52.3	159	2023/08/26	10.8	21	2023/06/20	71.1	180	2023/10/14	16.1	28	2023/08/09
Sparrow	Southern Grey-headed	Passer diffusus		4.9	15	2023/01/01	1.5	3	2023/01/01	20.6	52	2023/09/07	2.3	4	2023/01/07
Sparrowhawk	Black	Accipiter melanoleucus		12.8	39	2023/04/27	1	2	2022/09/18	10.3	26	2023/07/12	3.4	6	2022/03/17

Sparrowhawk	Rufous-breasted	Accipiter rufiventris		3.6	11	2020/10/23	3.1	6	2023/06/20	2.4	6	2023/03/04	0.6	1	2020/12/29
Spoonbill	African	Platalea alba		32.2	98	2023/03/05	2.1	4	2023/06/17	44.7	113	2023/05/27	17.8	31	2023/06/17
Spurfowl	Cape	Pternistis capensis		78.9	240	2023/09/23	14.4	28	2023/10/14	10.7	27	2020/06/04	2.9	5	2021/02/18
Starling	Common	Sturnus vulgaris		94.1	286	2023/09/23	29.4	57	2023/10/14	94.9	240	2023/10/14	45.4	79	2023/09/22
Starling	Pied	Lamprotornis bicolor		0.3	1	2015/08/18	0	0	-						
Starling	Red-winged	Onychognathus morio		19.4	59	2023/08/10	6.7	13	2023/09/30	59.7	151	2023/10/14	13.8	24	2023/09/22
Stilt	Black-winged	Himantopus himantopus		84.5	257	2023/09/23	23.2	45	2023/09/30	71.5	181	2023/10/14	27	47	2023/09/28
Stint	Little	Calidris minuta		49	149	2023/09/23	17	33	2023/10/14	18.6	47	2023/04/08	8	14	2023/03/10
Stonechat	African	Saxicola torquatus		3.3	10	2020/10/27	0	0	-	3.2	8	2023/07/19	0.6	1	2021/05/22
Stork	Marabou	Leptoptilos crumenifer	NT	0.3	1	2009/03/26	0	0	-						
Stork	White	Ciconia ciconia		0.3	1	2009/09/19	0	0	-						
Stork	Yellow-billed	Mycteria ibis	EN							0.4	1	2022/01/06	0	0	-
Sugarbird	Cape	Promerops cafer		3.3	10	2022/12/25	0.5	1	2023/08/04	2	5	2016/12/24	0	0	-
Sunbird	Amethyst	Chalcomitra amethystina		6.3	19	2022/12/25	0	0	-	11.5	29	2023/10/14	4	7	2023/02/04
Sunbird	Dusky	Cinnyris fuscus								0.8	2	2023/03/04	2.3	4	2023/03/17
Sunbird	Malachite	Nectarinia famosa		24	73	2023/04/27	2.6	5	2023/08/04	15.8	40	2023/03/04	1.7	3	2022/12/26
Sunbird	Orange-breasted	Anthobaphes violacea		0.7	2	2014/04/10	0	0	-	0.4	1	2008/08/26	0	0	-
Sunbird	Southern Double-collared	Cinnyris chalybeus		71.4	217	2023/09/23	8.2	16	2023/09/05	71.9	182	2023/10/14	18.4	32	2023/09/22
Swallow	Barn	Hirundo rustica		50.3	153	2023/04/09	12.9	25	2023/04/07	28.1	71	2023/04/08	13.8	24	2023/06/06
Swallow	Greater Striped	Cecropis cucullata		50.3	153	2023/09/23	9.3	18	2023/09/05	36	91	2023/10/14	9.8	17	2023/06/16
Swallow	Pearl-breasted	Hirundo dimidiata		11.8	36	2022/12/18	0.5	1	2022/09/18	3.2	8	2023/01/01	0	0	-
Swallow	White-throated	Hirundo albigularis		46.1	140	2023/09/23	9.8	19	2023/10/14	58.1	147	2023/10/14	15.5	27	2023/06/20
Swamphen	African	Porphyrio madagascariensis		11.8	36	2023/03/05	0.5	1	2023/05/27	32.8	83	2023/09/07	10.9	19	2023/07/11
Swan	Mute	Cygnus olor		2.3	7	2018/03/22	0	0	-	0.4	1	2017/01/23	0	0	-
Swift	African Black	Apus barbatus		16.8	51	2022/04/01	2.6	5	2022/09/24	19.4	49	2023/09/07	6.3	11	2023/06/20
Swift	African Palm	Cypsiurus parvus								1.2	3	2023/09/07	3.4	6	2023/06/20
Swift	Alpine	Tachymarptis melba		21.7	66	2023/07/05	3.1	6	2023/09/05	25.3	64	2023/07/19	6.3	11	2023/06/20
Swift	Common	Apus apus		1	3	2022/01/22	0	0	-						
Swift	Little	Apus affinis		28.9	88	2023/03/05	2.1	4	2023/04/10	41.5	105	2023/10/14	20.1	35	2023/09/22
Swift	White-rumped	Apus caffer		42.1	128	2023/09/05	6.7	13	2023/10/14	43.5	110	2023/10/14	13.2	23	2023/09/22
Teal	Blue-billed	Spatula hottentota								0.8	2	2023/02/24	4	7	2023/02/18
Teal	Cape	Anas capensis		83.6	254	2023/09/23	23.7	46	2023/10/14	29.2	74	2023/08/09	9.8	17	2023/06/05
Teal	Red-billed	Anas erythrorhyncha		64.8	197	2023/09/23	7.2	14	2023/10/14	58.1	147	2023/10/14	20.7	36	2023/06/16
Tern	Antarctic	Sterna vittata	EN							0.8	2	2009/08/24	0	0	-
Tern	Arctic	Sterna paradisaea		0.3	1	2021/12/19	0	0	-	0.4	1	2016/12/26	0	0	-
Tern	Caspian	Hydroprogne caspia	VU	38.5	117	2023/09/23	13.4	26	2023/10/14	29.2	74	2023/04/08	9.8	17	2023/02/18
Tern	Common	Sterna hirundo		55.9	170	2023/09/23	21.6	42	2023/10/14	34	86	2023/08/21	4	7	2021/04/11
Tern	Elegant	Thalasseus elegans		1.6	5	2020/10/20	1	2	2020/10/20						

Tern	Greater Crested	Thalasseus bergii		78.6	239	2023/09/23	24.7	48	2023/10/14	45.8	116	2023/08/21	4.6	8	2023/06/16
Tern	Lesser Crested	Thalasseus bengalensis		1	3	2022/11/26	0.5	1	2023/01/29						
Tern	Little	Sternula albifrons		2.6	8	2022/01/22	1	2	2022/01/21						
Tern	Roseate	Sterna dougallii	EN	0	0	-	0.5	1	2023/01/29						
Tern	Sandwich	Thalasseus sandvicensis		54.3	165	2023/09/23	18.6	36	2023/10/14	22.5	57	2023/03/04	2.3	4	2021/02/18
Tern	Whiskered	Chlidonias hybrida		5.3	16	2022/10/04	0	0	-	15.4	39	2023/01/23	14.9	26	2023/01/14
Tern	White-winged	Chlidonias leucopterus		3.9	12	2022/03/21	0	0	-	1.6	4	2016/12/26	0	0	-
Thick-knee	Spotted	Burhinus capensis		22.4	68	2023/04/27	2.6	5	2023/01/06	45.5	115	2023/10/14	5.7	10	2023/07/11
Thick-knee	Water	Burhinus vermiculatus		8.6	26	2022/12/25	2.6	5	2023/04/10	24.5	62	2023/05/27	4.6	8	2022/12/03
Thrush	Olive	Turdus olivaceus		30.9	94	2023/08/10	3.1	6	2023/04/10	26.1	66	2023/10/14	2.3	4	2023/02/04
Turnstone	Ruddy	Arenaria interpres		5.3	16	2021/12/18	2.1	4	2023/10/14						
Vulture	White-backed	Gyps africanus	CR							0.4	1	2023/05/27	0	0	-
Wagtail	African Pied	Motacilla aguimp								0.4	1	2021/04/11	0.6	1	2021/04/12
Wagtail	Cape	Motacilla capensis		92.1	280	2023/09/23	24.7	48	2023/10/14	91.3	231	2023/10/14	33.9	59	2023/07/11
Warbler	African Reed	Acrocephalus baeticatus		12.5	38	2023/01/22	0.5	1	2019/12/16						
Warbler	Chestnut-vented	Curruca subcoerulea		1.3	4	2018/07/19	0	0	-	2.4	6	2023/01/14	2.9	5	2021/12/11
Warbler	Common Reed	Acrocephalus scirpaceus		0.3	1	2023/04/27	0	0	-	0.4	1	2023/01/01	0	0	-
Warbler	Lesser Swamp	Acrocephalus gracilirostris		82.9	252	2023/09/23	6.7	13	2023/09/30	60.1	152	2023/10/14	34.5	60	2023/09/28
Warbler	Little Rush	Bradypterus baboecala		57.6	175	2023/09/23	4.1	8	2023/09/30	35.6	90	2023/10/14	13.2	23	2023/09/22
Warbler	Willow	Phylloscopus trochilus								2.8	7	2023/03/04	1.1	2	2023/02/05
Waxbill	Common	Estrilda astrild		39.1	119	2023/09/23	5.2	10	2023/09/05	41.5	105	2023/06/07	14.9	26	2023/09/28
Waxbill	Swee	Coccopygia melanotis		8.2	25	2018/04/17	2.1	4	2022/07/31	1.2	3	2016/10/24	0	0	-
Weaver	Cape	Ploceus capensis		84.2	256	2023/09/23	14.4	28	2023/10/14	81.4	206	2023/10/14	30.5	53	2023/09/28
Weaver	Southern Masked	Ploceus velatus		70.1	213	2023/09/23	8.8	17	2023/09/01	67.2	170	2023/10/14	23.6	41	2023/09/22
Wheatear	Capped	Oenanthe pileata		5.3	16	2017/09/28	0.5	1	2019/05/29	1.6	4	2023/01/08	0	0	-
Whimbrel	Eurasian	Numenius phaeopus		1.3	4	2020/10/31	0.5	1	2022/09/24	6.7	17	2015/10/12	0.6	1	2021/02/18
White-eye	Cape	Zosterops virens		79.3	241	2023/09/23	11.3	22	2023/09/30	83.8	212	2023/10/14	24.7	43	2023/08/09
Whydah	Pin-tailed	Vidua macroura		28	85	2023/09/23	4.1	8	2023/06/17	53.8	136	2023/08/09	16.7	29	2023/01/06
Woodpecker	Cardinal	Dendropicos fuscescens		1.3	4	2020/10/23	0.5	1	2018/06/05	4.7	12	2023/01/02	0.6	1	2020/07/18
Woodpecker	Olive	Dendropicos griseocephalus		7.6	23	2020/10/23	0.5	1	2022/09/03	6.3	16	2023/04/08	0	0	-

APPENDIX 3: CWA

Accessed from https://cwac.birdmap.africa/sites.php?sitecode=34051849

Spp	Common name	Taxonomic name	Min	Avg	Max	IBA	Subregional IBA
72		*Scopus umbretta*	1	1.4	2		
1016		*Anas platyrhynchos*	1	1	1		
269	Avocet, Pied	*Recurvirostra avosetta*	21	42	63		
212	Coot, Red-knobbed	*Fulica cristata*	1	134.3	549		
48	Cormorant, Cape	*Phalacrocorax capensis*	2	2	2		
50	Cormorant, Reed	*Microcarbo africanus*	1	12.39	68		
47	Cormorant, White-breasted	*Phalacrocorax lucidus*	5	73.88	167		
203	Crake, Black	*Zapornia flavirostra*	3	5	8		
216	Crane, Blue	*Grus paradisea*	2	2	2		
52	Darter, African	*Anhinga rufa*	1	27.79	96		
95	Duck, African Black	*Anas sparsa*	1	1.83	2		
101	Duck, Fulvous Whistling	*Dendrocygna bicolor*	5	5	5		
103	Duck, Maccoa	*Oxyura maccoa*	2	6	14		
100	Duck, White-faced Whistling	*Dendrocygna viduata*	8	9	10		
96	Duck, Yellow-billed	*Anas undulata*	2	18.88	143		
149	Eagle, African Fish	*Haliaeetus vocifer*	1	1.25	2		
60	Egret, Intermediate	*Ardea intermedia*	1	2.5	11		
59	Egret, Little	*Egretta garzetta*	1	2.67	4		
61	Egret, Western Cattle	*Bubulcus ibis*	1	8.2	27		
86	Flamingo, Greater	*Phoenicopterus roseus*	1	229	456		
87	Flamingo, Lesser	*Phoeniconaias minor*	35	127.5	220		
207	Flufftail, Striped	*Sarothrura affinis*	1	1	1		
89	Goose, Egyptian	*Alopochen aegyptiaca*	2	275.6	1534		
88	Goose, Spur-winged	*Plectropterus gambensis*	1	6.2	22		
5	Grebe, Black-necked	*Podiceps nigricollis*	4	6.5	9		
4	Grebe, Great Crested	*Podiceps cristatus*	1	1	1		
6	Grebe, Little	*Tachybaptus ruficollis*	1	4.91	11		
263	Greenshank, Common	*Tringa nebularia*	1	2.6	5		
289	Gull, Hartlaub's	*Chroicocephalus hartlaubii*	1	3.67	9		
287	Gull, Kelp	*Larus dominicanus*	1	6.47	25		
69	Heron, Black-crowned Night	*Nycticorax nycticorax*	1	2.5	5		

55	Heron, Black-headed	*Ardea melanocephala*	1	1.8	4		
54	Heron, Grey	*Ardea cinerea*	1	5.36	33		
57	Heron, Purple	*Ardea purpurea*	1	1	1		
81	Ibis, African Sacred	*Threskiornis aethiopicus*	1	13.46	67		
83	Ibis, Glossy	*Plegadis falcinellus*	1	17	30		
84	Ibis, Hadada	*Bostrychia hagedash*	1	5.62	13		
395	Kingfisher, Giant	*Megaceryle maxima*	1	1	1		
397	Kingfisher, Malachite	*Corythornis cristatus*	1	1.25	2		
394	Kingfisher, Pied	*Ceryle rudis*	1	2.55	6		
245	Lapwing, Blacksmith	*Vanellus armatus*	1	20.64	88		
509	Martin, Brown-throated	*Riparia paludicola*	1	1	1		
210	Moorhen, Common	*Gallinula chloropus*	1	2.68	9		
42	Pelican, Great White	*Pelecanus onocrotalus*	10	10	10		
237	Plover, Kittlitz's	*Charadrius pecuarius*	3	3	3		
238	Plover, Three-banded	*Charadrius tricollaris*	1	2.17	5		
102	Pochard, Southern	*Netta erythrophthalma*	7	16.5	26		
258	Sandpiper, Common	*Actitis hypoleucos*	1	1.13	2		
90	Shelduck, South African	*Tadorna cana*	2	9	35		
94	Shoveler, Cape	*Spatula smithii*	1	12.22	71		
85	Spoonbill, African	*Platalea alba*	1	5.7	25		
270	Stilt, Black-winged	*Himantopus himantopus*	2	54.29	140		
10007	Swan, Black	*Cygnus atratus*	2	2	2		
884	Swan, Mute	*Cygnus olor*	1	1	1		
98	Teal, Cape	*Anas capensis*	1	5	12		
97	Teal, Red-billed	*Anas erythrorhyncha*	1	15.67	60		
294	Tern, Arctic	*Sterna paradisaea*	10	10	10		
290	Tern, Caspian	*Hydroprogne caspia*	1	1.2	2		
291	Tern, Common	*Sterna hirundo*	1	1.5	2		
296	Tern, Sandwich	*Thalasseus sandvicensis*	6	6	6		
10009	Tern, Unidentified	*N/A N/A*	4	4	4		
305	Tern, Whiskered	*Chlidonias hybrida*	1	1	1		
304	Tern, White-winged	*Chlidonias leucopterus*	34	34	34		
274	Thick-knee, Water	*Burhinus vermiculatus*	2	2	2		
686	Wagtail, Cape	*Motacilla capensis*	1	2.85	7		

APPENDIX 4: SAMPLING DATA

General bird observations from the project area

Sample	Primary language	Scientific Name	Latitude	Longitude	Accuracy	Seen/Heard	Dead/Alive	Count	Count type	Activity	ISO date
General	Hybrid Red/Yellow-billed Duck	*Anas erythroryncha/undulata*	-34.088926	18.802648	Exact	Seen	Alive	1	Exact	On Water	2023-10-21T17:37:01.903+0200
General	Grey Heron	*Ardea cinerea*	-34.08358	18.80654	Exact	Seen	Alive	1	Exact	On Ground	2023-10-21T17:31:45.607+0200
General	Ring-necked Dove	*Streptopelia capicola*	-34.084224	18.801996	Exact	Seen	Alive	1	Exact	Flying	2023-10-21T07:23:29.839+0200
General	Cape Spurfowl	*Pternistis capensis*	-34.085954	18.800582	Exact	Seen	Alive	2	Exact	On Ground	2023-10-21T07:19:05.872+0200
General	Egyptian Goose	*Alopochen aegyptiaca*	-34.085859	18.80064	Exact	Seen	Alive	2	Exact	On Ground	2023-10-21T07:13:05.027+0200
General	Red-eyed Dove	*Streptopelia semitorquata*	-34.08553	18.801067	Exact	Heard	Alive	1	Exact	Flying	2023-10-21T07:12:14.982+0200
General	Hadada Ibis	*Bostrychia hagedash*	-34.088831	18.805214	Exact	Seen	Alive	1	Exact	Feeding	2023-10-21T06:52:28.138+0200
General	Yellow Canary	*Crithagra flaviventris*	-34.089322	18.804807	Exact	Seen	Alive	4	Exact	Flying	2023-10-21T06:51:21.023+0200
General	Egyptian Goose	*Alopochen aegyptiaca*	-34.089292	18.804816	Exact	Seen	Alive	2	Exact	On Ground	2023-10-21T06:50:25.201+0200
General	Cape Crow	*Corvus capensis*	-34.089292	18.804816	Exact	Heard	Alive	1	Exact	Flying	2023-10-21T06:50:20.269+0200
General	Cape White-eye	*Zosterops virens*	-34.089296	18.804716	Exact	Seen	Alive	2	Exact	Flying	2023-10-21T06:50:09.251+0200
General	Egyptian Goose	*Alopochen aegyptiaca*	-34.088058	18.806785	Exact	Seen	Alive	2	Exact	On Ground	2023-10-21T06:47:30.323+0200
General	African Stonechat	*Saxicola torquatus*	-34.0795	18.804407	Exact	Seen	Alive	2	Exact	Perched	2023-10-21T17:27:10.697+0200
General	Reed Cormorant	*Microcarbo africanus*	-34.078958	18.804078	Exact	Seen	Alive	1	Exact	Feeding	2023-10-21T16:37:58.776+0200
General	Yellow Bishop	*Euplectes capensis*	-34.080309	18.804634	Exact	Seen	Alive	1	Exact	Flying	2023-10-21T16:36:26.998+0200
General	Glossy Ibis	*Plegadis falcinellus*	-34.080236	18.804664	Within 500m	Seen	Alive	2	Exact	On Ground	2023-10-21T16:35:08.852+0200
General	Blacksmith Lapwing	*Vanellus armatus*	-34.080236	18.804664	Within 500m	Seen	Alive	5	Exact	On Ground	2023-10-21T16:34:49.861+0200
General	Southern Red Bishop	*Euplectes orix*	-34.08084	18.80483	Exact	Seen	Alive	1	Exact	Flying	2023-10-21T16:32:58.034+0200
General	Blacksmith Lapwing	*Vanellus armatus*	-34.081197	18.805134	Exact	Seen	Alive	1	Exact	On Ground	2023-10-21T16:30:26.701+0200
General	Cape Wagtail	*Motacilla capensis*	-34.081626	18.80549	Exact	Seen	Alive	1	Exact	On Ground	2023-10-21T16:29:14.559+0200
General	Fork-tailed Drongo	*Dicrurus adsimilis*	-34.070713	18.795117	Exact	Seen	Alive	1	Exact	Perched	2023-10-21T09:23:36.485+0200
General	Western Cattle Egret	*Bubulcus ibis*	-34.0712	18.791156	Exact	Seen	Alive	30	Exact	On Ground	2023-10-21T09:19:19.119+0200
General	Egyptian Goose	*Alopochen aegyptiaca*	-34.072352	18.790123	Exact	Seen	Alive	4	Exact	On Ground	2023-10-21T09:17:57.858+0200
General	Plain-backed Pipit	*Anthus leucophrys*	-34.076406	18.786679	Exact	Seen	Alive	1	Exact	On Ground	2023-10-21T09:12:07.244+0200
General	Laughing Dove	*Spilopelia senegalensis*	-34.076891	18.787574	Exact	Seen	Alive	1	Exact	Perched	2023-10-21T09:10:14.668+0200
General	Kelp Gull	*Larus dominicanus*	-34.078006	18.787171	Within 500m	Seen	Alive	4	Exact	Fly-over	2023-10-21T09:07:15.128+0200
General	Fiscal Flycatcher	*Melaenornis silens*	-34.078447	18.794458	Exact	Seen	Alive	1	Exact	Perched	2023-10-21T08:12:17.415+0200
General	Cape Robin-Chat	*Cossypha caffra*	-34.078458	18.794471	Exact	Seen	Alive	1	Exact	Flying	2023-10-21T08:12:03.810+0200
General	Hadada Ibis	*Bostrychia hagedash*	-34.078446	18.795989	Exact	Seen	Alive	1	Exact	On Ground	2023-10-21T08:09:00.245+0200
General	White-breasted Cormorant	*Phalacrocorax lucidus*	-34.079057	18.796841	Within 500m	Seen	Alive	2	Exact	Fly-over	2023-10-21T08:07:46.903+0200
General	Egyptian Goose	*Alopochen aegyptiaca*	-34.079076	18.796892	Exact	Seen	Alive	1	Exact	On Ground	2023-10-21T08:07:37.031+0200
General	African Sacred Ibis	*Threskiornis aethiopicus*	-34.079144	18.796983	Exact	Seen	Alive	1	Exact	On Ground	2023-10-21T08:07:24.105+0200
General	African Sacred Ibis	*Threskiornis aethiopicus*	-34.08032	18.799397	Exact	Seen	Alive	1	Exact	On Ground	2023-10-21T08:04:00.470+0200
General	Kelp Gull	*Larus dominicanus*	-34.080088	18.799196	Exact	Seen	Alive	1	Exact	Fly-over	2023-10-21T07:54:37.926+0200
General	Egyptian Goose	*Alopochen aegyptiaca*	-34.081909	18.801279	Exact	Seen	Alive	1	Exact	On Ground	2023-10-21T07:29:09.940+0200
General	Egyptian Goose	*Alopochen aegyptiaca*	-34.081909	18.801278	Exact	Seen	Alive	1	Exact	On Ground	2023-10-21T07:28:44.716+0200
General	Egyptian Goose	*Alopochen aegyptiaca*	-34.082142	18.801632	Exact	Seen	Alive	1	Exact	On Ground	2023-10-21T07:28:14.846+0200
General	Helmeted Guineafowl	*Numida meleagris*	-34.082859	18.802169	Exact	Seen	Alive	2	Exact	On Ground	2023-10-21T07:25:09.224+0200
General	Cape Canary	*Serinus canicollis*	-34.076743	18.810466	Exact	Seen	Alive	3	Exact	Flying	2023-10-21T06:36:04.411+0200
General	Common Starling	*Sturnus vulgaris*	-34.076347	18.810855	Exact	Seen	Alive	2	Exact	Feeding	2023-10-21T06:35:17.191+0200

General	Red-capped Lark	*Calandrella cinerea*	-34.07605	18.811298	Exact	Seen	Alive	2	Exact	On Ground	2023-10-21T06:34:26.139+0200
General	Mourning Collared Dove	*Streptopelia decipiens*	-34.075914	18.811371	Exact	Seen	Alive	3	Exact	Flying	2023-10-21T06:26:52.783+0200
General	Egyptian Goose	*Alopochen aegyptiaca*	-34.075393	18.81162	Exact	Seen	Alive	10	Exact	On Ground	2023-10-21T06:25:44.637+0200

Vantage point bird observations

Sample	English IOC	Tertiary language	Latitude	Longitude	Accuracy	Seen/Heard	Dead/Alive	Count	Count type	Activity	ISO date	Habitat
Vantage Point	Black-headed Heron	*Ardea melanocephala*	-34.071106	18.792442	Within 500m	Seen	Alive	1	Exact	On ground	2023-10-21T10:57:01.052+0200	Grassland
Vantage Point	Jackal Buzzard	*Buteo rufofuscus*	-34.071172	18.792406	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-21T10:48:25.263+0200	Grassland
Vantage Point	Greater Striped Swallow	*Cecropis cucullata*	-34.071095	18.792458	Within 500m	Seen	Alive	15	Estimate	Flying	2023-10-21T09:59:19.033+0200	Grassland
Vantage Point	Speckled Mousebird	*Colius striatus*	-34.077487	18.787732	Exact	Seen	Alive	7	Estimate	Flying	2023-10-21T11:10:53.861+0200	Grassland
Vantage Point	Cape Crow	*Corvus capensis*	-34.071108	18.792504	Within 500m	Seen	Alive	2	Exact	Flying	2023-10-21T09:57:50.899+0200	Grassland
Vantage Point	Cape Crow	*Corvus capensis*	-34.071134	18.792405	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-21T09:36:55.828+0200	Grassland
Vantage Point	Blue Crane	*Grus paradisea*	-34.071146	18.792442	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-21T10:34:02.686+0200	Grassland
Vantage Point	Blue Crane	*Grus paradisea*	-34.071178	18.792498	Within 500m	Seen	Alive	2	Estimate	Calling	2023-10-21T09:39:48.991+0200	Grassland
Vantage Point	White-throated Swallow	*Hirundo albigularis*	-34.071149	18.792476	Exact	Seen	Alive	9	Estimate	Flying	2023-10-21T09:33:28.403+0200	Grassland
Vantage Point	Pearl-breasted Swallow	*Hirundo dimidiata*	-34.071092	18.792432	Within 500m	Seen	Alive	9	Estimate	Flying	2023-10-21T09:55:50.514+0200	Grassland
Vantage Point	White-breasted Cormorant	*Phalacrocorax lucidus*	-34.071122	18.792414	Exact	Seen	Alive	1	Exact	Fly-over	2023-10-21T09:38:48.602+0200	Grassland
Vantage Point	Brown-throated Martin	*Riparia paludicola*	-34.071111	18.792523	Within 500m	Seen	Alive	5	Estimate	Flying	2023-10-21T09:45:55.346+0200	Grassland
Vantage Point	Common Starling	*Sturnus vulgaris*	-34.071149	18.792476	Within 500m	Seen	Alive	50	Estimate	Feeding	2023-10-21T09:34:27.852+0200	Grassland

Point Count bird observations

Sample	Primary language	Tertiary language	Count	Latitude	Longitude	Accuracy	Seen/Heard	Dead/Alive	Count type	Activity	ISO date	Distance from observer	Distance from observer (bands)	Angle from observer	Habitat
PC1	Unidentified	*Unidentified*	1	-34.086993	18.804214	Exact	Seen	Alive	Exact	Flying	2023-10-21T06:58:30.540+0200	100	3	180	Plantation
PC1	Cape Canary	*Serinus canicollis*	4	-34.086998	18.804193	Exact	Seen	Alive	Estimate	Flying	2023-10-21T06:59:33.885+0200	50	3	90	Plantation
PC1	Fiscal Flycatcher	*Melaenornis silens*	1	-34.087022	18.804149	Exact	Seen	Alive	Exact	Flying	2023-10-21T07:00:25.009+0200	50	3	90	Plantation
PC1	Yellow Canary	*Crithagra flaviventris*	1	-34.087043	18.804162	Exact	Seen	Alive	Exact	Perching	2023-10-21T07:04:16.895+0200	10	1	270	Plantation
PC2	Unidentified	*Unidentified*	1	-34.079308	18.800712	Exact	Seen	Alive	Exact	Flying	2023-10-21T07:39:15.249+0200	100	3	180	Plantation
PC2	Unidentified	*Unidentified*	1	-34.079344	18.800691	Exact	Seen	Alive	Exact	Flying	2023-10-21T07:39:23.641+0200	50	2	270	Plantation
PC2	Cape Canary	*Serinus canicollis*	3	-34.079344	18.800691	Exact	Seen	Alive	Estimate	Calling	2023-10-21T07:41:07.921+0200	40	2	30	Plantation
PC2	Cape White-eye	*Zosterops virens*	1	-34.079215	18.800601	Exact	Seen	Alive	Exact	Perching	2023-10-21T07:44:36.571+0200	5	1	160	Plantation
PC2	Fiscal Flycatcher	*Melaenornis silens*	1	-34.079336	18.800641	Exact	Seen	Alive	Exact	Calling	2023-10-21T07:46:50.538+0200	50	2	30	Plantation
PC3	Fork-tailed Drongo	*Dicrurus adsimilis*	2	-34.079205	18.788719	Exact	Seen	Alive	Exact	Perching	2023-10-21T08:45:19.071+0200	30	2	45	Plantation
PC3	Cape White-eye	*Zosterops virens*	1	-34.079205	18.788719	Exact	Seen	Alive	Exact	Perching	2023-10-21T08:45:47.135+0200	30	2	90	Plantation
PC3	Unidentified	*Unidentified*	1	-34.079202	18.788656	Exact	Seen	Alive	Exact	Flying	2023-10-21T08:49:02.656+0200	50	2	170	Plantation
PC3	Cape Bulbul	*Pycnonotus capensis*	1	-34.079188	18.788701	Exact	Seen	Alive	Exact	Perching	2023-10-21T08:49:10.359+0200	10	1	0	Plantation
PC3	Klaas's Cuckoo	*Chrysococcyx klaas*	1	-34.079268	18.788806	Exact	Seen	Alive	Exact	Calling	2023-10-21T08:50:46.938+0200	20	2	0	Plantation
PC3	Fiscal Flycatcher	*Melaenornis silens*	1	-34.07926	18.788771	Exact	Seen	Alive	Exact	Perching	2023-10-21T08:51:19.537+0200	10	2	0	Plantation
PC3	Cape Robin-Chat	*Cossypha caffra*	2	-34.07926	18.788771	Exact	Seen	Alive	Exact	Perching	2023-10-21T08:52:09.233+0200	50	2	300	Plantation
PC3	Cape Bulbul	*Pycnonotus capensis*	1	-34.079205	18.788804	Exact	Seen	Alive	Exact	Perching	2023-10-21T08:54:03.987+0200	10	1	0	Plantation
PC3	Yellow Canary	*Crithagra flaviventris*	1	-34.079168	18.788777	Exact	Seen	Alive	Exact	Perching	2023-10-21T08:54:28.775+0200	10	2	20	Plantation
PC3	Fork-tailed Drongo	*Dicrurus adsimilis*	1	-34.079168	18.788777	Exact	Seen	Alive	Exact	Perching	2023-10-21T08:55:04.647+0200	10	1	270	Plantation
PC3	Jackal Buzzard	*Buteo rufofuscus*	1	-34.079209	18.788752	Exact	Seen	Alive	Exact	Flying	2023-10-21T08:56:38.218+0200	50	3	180	Plantation
PC3	Lanner Falcon	*Falco biarmicus*	1	-34.079265	18.788741	Exact	Seen	Alive	Exact	Flying	2023-10-21T08:58:41.630+0200	50	3	270	Plantation
PC3	Karoo Prinia	*Prinia maculosa*	2	-34.079266	18.78873	Exact	Seen	Alive	Exact	Calling	2023-10-21T08:59:40.193+0200	20	2	300	Plantation
PC3	Ring-necked Dove	*Streptopelia capicola*	1	-34.078004	18.787175	Exact	Seen	Alive	Exact	Calling	2023-10-21T09:06:38.664+0200	50	3	60	Plantation
PC3	Cape Sparrow	*Passer melanurus*	1	-34.073085	18.829004	Exact	Seen	Alive	Exact	Perching	2023-10-21T18:18:12.399+0200	10	1	300	Plantation

	Primary language	Tertiary language	Latitude	Longitude	Accuracy	Seen/ Heard	Dead/ Alive	Count	Count type	Activity	ISO date	Distance from observer	Distance from observer (bands)	Angle From observer	Habitat
T A1	Unidentified	*Unidentified*	-34.071834	18.800712	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-21T16:51:54.798+0200	100	4	100	Grassland
T A1	African Hoopoe	*Upupa africana*	-34.073085	18.829004	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-21T18:19:06.486+0200	20	1	70	Grassland
T A1	Egyptian Goose	*Alopochen aegyptiaca*	-34.071834	18.800712	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-21T16:52:03.810+0200	100	4	0	Grassland
T A1	Blue Crane	*Grus paradisea*	-34.071914	18.800718	Within 500m	Seen	Alive	1	Exact	On ground	2023-10-21T16:55:24.523+0200	200	5	90	Grassland
T A1	Cape Crow	*Corvus capensis*	-34.07053	18.800259	Within 500m	Seen	Alive	2	Exact	Fly-over	2023-10-21T17:02:02.477+0200	200	10	0	Grassland
T A1	Plain-backed Pipit	*Anthus leucophrys*	-34.071895	18.800725	Within 500m	Seen	Alive	2	Exact	On Ground	2023-10-21T16:54:56.927+0200	60	3	0	Grassland
T A1	Plain-backed Pipit	*Anthus leucophrys*	-34.070725	18.800243	Within 500m	Seen	Alive	2	Exact	Flying	2023-10-21T17:00:13.793+0200	30	1	10	Grassland
T A1	Red-eyed Dove	*Streptopelia semitorquata*	-34.071315	18.800419	Within 500m	Seen	Alive	2	Exact	Flying	2023-10-21T16:57:36.578+0200	80	3	270	Grassland
T A1	Ring-necked Dove	*Streptopelia capicola*	-34.07053	18.800259	Within 500m	Seen	Alive	2	Exact	Flying	2023-10-21T17:01:41.632+0200	30	2	90	Grassland
T A1	Western Cattle Egret	*Bubulcus ibis*	-34.071834	18.800712	Within 500m	Seen	Alive	10	Estimate	On ground	2023-10-21T16:52:41.976+0200	200	5	45	Grassland
T A1	White-throated Swallow	*Hirundo albigularis*	-34.071883	18.800722	Within 500m	Seen	Alive	2	Exact	Flying	2023-10-21T16:54:37.281+0200	70	3	340	Grassland
T A1	White-throated Swallow	*Hirundo albigularis*	-34.071778	18.800696	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-21T16:55:59.321+0200	30	2	300	Grassland
T A2	Unidentified	*Unidentified*	-34.070182	18.799559	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-21T17:06:20.404+0200	100	4	240	Grassland
T A2	White-throated Swallow	*Hirundo albigularis*	-34.070168	18.799535	Within 500m	Seen	Alive	5	Exact	Flying	2023-10-21T17:06:28.285+0200	30	1	270	Grassland
T A2	Plain-backed Pipit	*Anthus leucophrys*	-34.070344	18.799175	Within 500m	Seen	Alive	2	Exact	Flying	2023-10-21T17:07:35.973+0200	10	1	0	Grassland
T A3	Unidentified	*Unidentified*	-34.070975	18.798423	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-21T17:10:19.121+0200	100	3	290	Grassland
T A3	Cape Crow	*Corvus capensis*	-34.072028	18.799337	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-21T17:16:19.415+0200	100	3	90	Grassland
T A3	Egyptian Goose	*Alopochen aegyptiaca*	-34.071016	18.798544	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-21T17:11:16.156+0200	100	3	90	Grassland
T A3	Plain-backed Pipit	*Anthus leucophrys*	-34.07201	18.79934	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-21T17:15:38.165+0200	20	2	30	Grassland
T A3	Western Cattle Egret	*Bubulcus ibis*	-34.071213	18.798499	Within 500m	Seen	Alive	30	Estimate	On ground	2023-10-21T17:12:43.629+0200	50	3	0	Grassland
T A3	White-throated Swallow	*Hirundo albigularis*	-34.071214	18.798498	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-21T17:12:13.710+0200	20	2	60	Grassland
T A3	White-throated Swallow	*Hirundo albigularis*	-34.07167	18.799001	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-21T17:14:24.541+0200	10	1	60	Grassland
T A3	White-throated Swallow	*Hirundo albigularis*	-34.072163	18.799535	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-21T17:17:20.622+0200	30	1	60	Grassland
TB1	African Sacred Ibis	*Threskiornis aethiopicus*	-34.07805	18.790723	Within 500m	Seen	Alive	10	Exact	Fly-over	2023-10-22T06:37:21.829+0200	200	4	30	Grassland
TB1	African Sacred Ibis	*Threskiornis aethiopicus*	-34.077786	18.790319	Within 500m	Seen	Alive	24	Estimate	Fly-over	2023-10-22T06:44:48.897+0200	0	2	270	Grassland
TB1	Black Heron	*Egretta ardesiaca*	-34.078095	18.790856	Within 500m	Seen	Alive	2	Exact	Fly-over	2023-10-22T06:35:10.315+0200	200	4	90	Grassland
TB1	Cape Canary	*Serinus canicollis*	-34.077537	18.789928	Within 500m	Seen	Alive	5	Estimate	Calling	2023-10-22T06:49:52.812+0200	200	3	90	Grassland
TB1	Cape Spurfowl	*Pternistis capensis*	-34.077755	18.790371	Within 500m	Seen	Alive	2	Exact	Calling	2023-10-22T06:42:18.966+0200	50	3	90	Grassland
TB1	Egyptian Goose	*Alopochen aegyptiaca*	-34.0781	18.790822	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T06:32:59.019+0200	200	4	45	Grassland
TB1	Fiscal Flycatcher	*Melaenornis silens*	-34.078052	18.790722	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T06:37:55.533+0200	50	2	0	Grassland
TB1	Fiscal Flycatcher	*Melaenornis silens*	-34.078052	18.790722	Within 500m	Seen	Alive	1	Exact	Perching	2023-10-22T06:39:03.367+0200	20	2	180	Grassland
TB1	Fiscal Flycatcher	*Melaenornis silens*	-34.077538	18.789929	Within 500m	Seen	Alive	2	Exact	Perching	2023-10-22T06:49:26.147+0200	150	3	40	Grassland
TB1	Hadada Ibis	*Bostrychia hagedash*	-34.078052	18.790722	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T06:38:32.741+0200	100	2	180	Grassland
TB1	Jackal Buzzard	*Buteo rufofuscus*	-34.077523	18.78993	Within 500m	Seen	Alive	1	Exact	Perching	2023-10-22T06:47:36.417+0200	200	4	240	Grassland
TB1	Kelp Gull	*Larus dominicanus*	-34.077537	18.789928	Within 500m	Seen	Alive	2	Exact	Fly-over	2023-10-22T06:48:41.549+0200	200	5	270	Grassland
TB1	Lanner Falcon	*Falco biarmicus*	-34.077788	18.790444	Within 500m	Seen	Alive	1	Exact	Fly-over	2023-10-22T06:43:45.967+0200	200	4	170	Grassland
TB1	Mourning Collared Dove	*Streptopelia decipiens*	-34.078099	18.790822	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T06:32:17.337+0200	100	3	300	Grassland
TB1	Red-eyed Dove	*Streptopelia semitorquata*	-34.078052	18.790721	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T06:39:57.050+0200	100	3	300	Grassland

TB1	Unidentified	*Unidentified*	-34.078099	18.790816	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T06:32:00.049+0200	80	3	300	Grassland
TB1	Unidentified	*Unidentified*	-34.078052	18.790722	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T06:40:27.272+0200	60	2	145	Grassland
TB1	White-breasted Cormorant	*Phalacrocorax lucidus*	-34.07805	18.790722	Within 500m	Seen	Alive	1	Exact	Fly-over	2023-10-22T06:36:44.561+0200	200	4	270	Grassland
TB1	White-breasted Cormorant	*Phalacrocorax lucidus*	-34.07777	18.790359	Within 500m	Seen	Alive	1	Exact	Fly-over	2023-10-22T06:45:32.789+0200	200	3	300	Grassland
TB2	Unidentified	*Unidentified*	-34.076891	18.788961	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T06:53:16.710+0200	100	3	200	Grassland
TB2	African Hoopoe	*Upupa africana*	-34.07697	18.788941	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T06:53:55.244+0200	90	3	90	Grassland
TB2	Cape Canary	*Serinus canicollis*	-34.076962	18.788896	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T06:55:49.358+0200	200	4	0	Grassland
TB2	Cape Canary	*Serinus canicollis*	-34.078209	18.788386	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T07:06:22.112+0200	100	3	0	Grassland
TB2	Cape Spurfowl	*Pternistis capensis*	-34.076962	18.788896	Within 500m	Seen	Alive	3	Estimate	Calling	2023-10-22T06:56:25.916+0200	200	4	270	Grassland
TB2	Common House Martin	*Delichon urbicum*	-34.076986	18.78893	Within 500m	Seen	Alive	4	Exact	Flying	2023-10-22T06:58:08.704+0200	50	2	180	Grassland
TB2	Egyptian Goose	*Alopochen aegyptiaca*	-34.076964	18.788912	Within 500m	Seen	Alive	3	Exact	Fly-over	2023-10-22T06:54:24.931+0200	0	1	0	Grassland
TB2	Egyptian Goose	*Alopochen aegyptiaca*	-34.077164	18.788912	Within 500m	Seen	Alive	1	Exact	Fly-over	2023-10-22T06:58:52.843+0200	0	1	0	Grassland
TB2	Egyptian Goose	*Alopochen aegyptiaca*	-34.077793	18.788746	Within 500m	Seen	Alive	2	Exact	Fly-over	2023-10-22T07:01:27.008+0200	0	1	0	Grassland
TB2	Fork-tailed Drongo	*Dicrurus adsimilis*	-34.078148	18.788319	Within 500m	Seen	Alive	3	Exact	Perching	2023-10-22T07:05:53.819+0200	10	1	120	Grassland
TB2	Hadada Ibis	*Bostrychia hagedash*	-34.078007	18.788583	Within 500m	Seen	Alive	1	Exact	Fly-over	2023-10-22T07:02:51.355+0200	200	4	180	Grassland
TB2	Jackal Buzzard	*Buteo rufofuscus*	-34.077933	18.788597	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T07:03:12.859+0200	100	3	0	Grassland
TB2	Karoo Prinia	*Prinia maculosa*	-34.078286	18.788246	Within 500m	Seen	Alive	1	Exact	Perching	2023-10-22T07:08:09.045+0200	20	2	28	Grassland
TB2	Klaas's Cuckoo	*Chrysococcyx klaas*	-34.076912	18.788964	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T06:53:31.156+0200	200	5	0	Grassland
TB2	Mourning Collared Dove	*Streptopelia decipiens*	-34.076964	18.788907	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T06:54:53.531+0200	150	1	180	Grassland
TB2	Mourning Collared Dove	*Streptopelia decipiens*	-34.077792	18.788746	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T07:01:06.938+0200	50	3	270	Grassland
TB3	Unidentified	*Unidentified*	-34.077932	18.788712	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T07:10:42.164+0200	50	2	70	Grassland
TB3	Mourning Collared Dove	*Streptopelia decipiens*	-34.077914	18.788715	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T07:11:20.152+0200	50	3	90	Grassland
TB3	African Sacred Ibis		-34.077943	18.788679	Within 500m	Seen	Alive	20	Estimate	Fly-over	2023-10-22T07:12:12.505+0200	200	5	270	Grassland
TB3	Fiscal Flycatcher	*Melaenornis silens*	-34.077619	18.789774	Within 500m	Seen	Alive	1	Exact	Perching	2023-10-22T07:15:44.511+0200	80	3	270	Grassland
TB3	Jackal Buzzard	*Buteo rufofuscus*	-34.077621	18.789774	Within 500m	Seen	Alive	1	Exact	Confrontation (other species)	2023-10-22T07:16:13.891+0200	200	4	270	Grassland
TC1	African Sacred Ibis	*Threskiornis aethiopicus*	-34.075789	18.795336	Within 500m	Seen	Alive	15	Estimate	Feeding	2023-10-22T07:44:57.509+0200	100	3	300	Grassland
TC1	Cape Canary	*Serinus canicollis*	-34.077143	18.79595	Within 500m	Seen	Alive	4	Estimate	On ground	2023-10-22T07:35:57.814+0200	40	2	50	Grassland
TC1	Cape Wagtail	*Motacilla capensis*	-34.075874	18.795292	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-22T07:43:41.796+0200	40	2	90	Grassland
TC1	Egyptian Goose	*Alopochen aegyptiaca*	-34.077377	18.796003	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-22T07:31:10.481+0200	100	3	45	Grassland
TC1	Hadada Ibis	*Bostrychia hagedash*	-34.075966	18.795402	Within 500m	Seen	Alive	4	Exact	On ground	2023-10-22T07:42:13.930+0200	50	2	270	Grassland
TC1	Karoo Prinia	*Prinia maculosa*	-34.077142	18.795946	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T07:37:12.007+0200	50	2	270	Grassland
TC1	Karoo Prinia	*Prinia maculosa*	-34.077141	18.795947	Within 500m	Seen	Alive	1	Exact	Calling	2023-10-22T07:37:44.222+0200	50	3	90	Grassland
TC1	Plain-backed Pipit	*Anthus leucophrys*	-34.07737	18.795961	Within 500m	Seen	Alive	1	Exact	On ground	2023-10-22T07:32:09.783+0200	40	2	40	Grassland
TC1	Plain-backed Pipit	*Anthus leucophrys*	-34.077141	18.795947	Within 500m	Seen	Alive	1	Exact	On ground	2023-10-22T07:36:23.973+0200	60	3	0	Grassland
TC1	Spur-winged Goose	*Plectropterus gambensis*	-34.075398	18.795286	Within 500m	Seen	Alive	1	Exact	Fly-over	2023-10-22T07:51:36.666+0200	0	1	0	Grassland
TC1	Unidentified	*Unidentified*	-34.077512	18.79588	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T07:30:03.487+0200	100	3	300	Grassland
TC1	Unidentified	*Unidentified*	-34.075498	18.795313	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-22T07:49:58.827+0200	40	2	300	Grassland
TC1	Western Cattle Egret	*Bubulcus ibis*	-34.07737	18.795961	Within 500m	Seen	Alive	5	Exact	Feeding	2023-10-22T07:32:47.846+0200	200	3	270	Grassland
TC1	Western Cattle Egret	*Bubulcus ibis*	-34.07549	18.795364	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T07:50:29.870+0200	40	2	270	Grassland
TC2	Unidentified	*Unidentified*	-34.075721	18.796211	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T07:57:24.434+0200	70	3	200	Grassland
TC2	Black Heron	*Egretta ardesiaca*	-34.0755	18.795944	Within 500m	Seen	Alive	2	Exact	Fly-over	2023-10-22T08:00:59.868+0200	200	4	90	Grassland

TC2	Egyptian Goose	*Alopochen aegyptiaca*	-34.075721	18.796211	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-22T07:58:15.859+0200	70	3	0	Grassland
TC2	Lanner Falcon	*Falco biarmicus*	-34.075721	18.796211	Within 500m	Seen	Alive	1	Exact	Fly-over	2023-10-22T07:57:29.777+0200	50	3	45	Grassland
TC2	Plain-backed Pipit	*Anthus leucophrys*	-34.075721	18.796211	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-22T07:58:44.642+0200	50	2	90	Grassland
TC2	Western Cattle Egret	*Bubulcus ibis*	-34.075555	18.795959	Within 500m	Seen	Alive	30	Estimate	On ground	2023-10-22T07:59:39.993+0200	150	3	25	Grassland
TC2	White-throated Swallow	*Hirundo albigularis*	-34.075795	18.796526	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T08:01:59.982+0200	50	2	30	Grassland
TC3	Unidentified	*Unidentified*	-34.076154	18.796591	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T08:04:38.423+0200	50	2	60	Grassland
TC3	White-breasted Cormorant	*Phalacrocorax lucidus*	-34.076148	18.796594	Within 500m	Seen	Alive	1	Exact	Fly-over	2023-10-22T08:05:42.977+0200	0	1	0	Grassland
TC3	Rufous-naped Lark	*Mirafra africana*	-34.076198	18.796599	Within 500m	Seen	Alive	1	Exact	On ground	2023-10-22T08:06:56.271+0200	30	2	0	Grassland
TC3	Red-eyed Dove	*Streptopelia semitorquata*	-34.077474	18.79588	Within 500m	Seen	Alive	1	Exact	Flying	2023-10-22T08:11:10.794+0200	50	2	0	Grassland
TC3	Hadada Ibis	*Bostrychia hagedash*	-34.076149	18.796593	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-22T08:04:47.344+0200	180	4	270	Grassland
TC3	Plain-backed Pipit	*Anthus leucophrys*	-34.076403	18.79647	Within 500m	Seen	Alive	2	Exact	On ground	2023-10-22T08:07:55.321+0200	20	2	30	Grassland
TC3	Egyptian Goose	*Alopochen aegyptiaca*	-34.076879	18.796228	Within 500m	Seen	Alive	5	Exact	On ground	2023-10-22T08:09:23.875+0200	70	3	90	Grassland
TC3	African Sacred Ibis	*Threskiornis aethiopicus*	-34.076148	18.796594	Within 500m	Seen	Alive	20	Estimate	Flying	2023-10-22T08:05:12.875+0200	180	4	90	Grassland

APPENDIX 5: SPECIALIST CV

CONTACT DETAILS

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

PROFILE

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

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

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

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

EMPLOYMENT EXPERIENCE	**Director and Faunal Specialist,** Biodiversity Africa *July 2021 - present*

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

Principal Environmental Consultant and Faunal,
Coastal and Environmental Services
September 2011-June 2021

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

COURSES

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

CONSULTING EXPERIENCE

International Projects

- 2018-Crooks Brothers Post EIA Work- Environmental and Social EMPr, Policies, E&S Management Plans and Monitoring Programmes
- 2018-Triton Ancuabe Graphite Mine (ESHIA), Mozambique. IFC Standards.
- 2016-Bankable Feasibility Study of Simandou Infrastructure Project – Port and Railway Summary of critical habitat, biodiversity offset plan and monitoring and evaluation plan.
- 2016-Lurio Green Resources Forestry Projects ESIA project upgrade to Lender standards including IFC, EIB, FSC and AfDB.
- 2014-Green Resources Woodchip and MDF plant (EPDA).
- 2014-Niassa Green Resources Forestry Projects ESIA to Lender standards including IFC, EIB, FSC and AfDB.
- 2020-Kenmare Faunal Biodiversity Management Plan, Mozambique.
- 2020-Kenmare Faunal Monitoring Pogramme (year 1)- Baseline, Mozambique.
- 2019-Kenmare addendum ESIA Faunal Impact Assessment, Mozambique.
- 2019-Kenmare infrastructure corridor ESIA Faunal Impact Assessment, Mozambique.
- 2019/20-Olam Cocoa Plantation Faunal Impact Assessment, Tanzania.
- 2019-JCM Solar Voltaic project Faunal desktop critical habitat assessment, Cameroon.
- 2018-Suni Resources Balama Graphite Mine Project Faunal Impact Assessment, Mozambique.
- 2017/18-Battery Minerals Montepuez Graphite Mine Project Faunal Impact Assessment, Mozambique.
- 2017-Triton Minerals Nicanda Hills Graphite Mine Project Faunal Impact Assessment, Mozambique.
- 2017-Sasol Biodiversity Assessment, Mozambique.
- 2014-Lesotho Highlands Water Project Faunal Impact Assessment, Lesotho.
- 2012-Malawi Monazite mine Projects (ESIA) EMP ecological management contribution
- Liberia Palm bay & Butow (ESIA)
- PGS Seismic Project (ESIA), Mozambique.

South African Projects

- 2018-Port St Johns Second Beach Coastal Infrastructure Project - E&S Risk Assessment
- 2015-Blouberg Development Initiative- E&S Risk Assessment
- 2019-Boulders Powerline BA Faunal desktop impact assessment, WC, SA.
- 2019-Ramotshere housing development BA Faunal desktop impact assessment, NW, SA.
- 2019-Cape Agulhas Municipality Industrial development faunal impact assessment, WC, SA.
- 2019-SANSA Solar PV BA Faunal desktop impact assessment, WC, SA.
- 2019-Wisson Coal to Urea Faunal desktop assessment, Mpumalanga.
- 2019-Assessment Boschendal Estate Faunal Opportunities and Constraints, WC, SA.
- 2019-Ganspan-Pan Wetland Reserve Recreational and Tourist Development Avifaunal Impact Assessment, NC, SA.
- 2018-City of Johannesburg Municipal Reserve Proclamation for Linksfield Ridge and Northcliff Hill Faunal Assessment, South Africa.
- 2017-Augrabies falls hydro-electric project Hydro-SA Faunal Impact Assessment.
- Port St Johns Second Beach Coastal Infrastructure Project (EIA), South Africa.
- Woodbridge Island Revetment checklist.

- Belmont Valley Golf Course and Makana Residential Estate (EIA)
- Belton Farm Eco Estate (BA).
- Ramotshere housing development (BA).
- G7 Brandvalley Wind Energy Project (EIA)
- G7 Rietkloof Wind Energy Project (EIA)
- G7 Brandvalley Powerlines (BA)
- G7 Rietkloof Powerlines (BA)
- Boschendal wine estate Hydro-electric schemes (BA, 24G and WULA)
- Mossel Bay Wind Energy Project (EIA)
- Mossel Bay Powerline (BA) 132kV interconnection
- Inyanda Farm Wind Energy (EIA)
- Middleton Wind Energy (EIA)
- Peddie Wind Energy (EIA)
- Cookhouse Wind Energy Project (EIA)
- Haverfontein Wind Energy Project (EIA)
- Plan 8 Wind Energy Project (EIA)
- Brakkefontein Wind Energy Project (EIA)
- Grassridge Wind Energy Project (EIA) (Coega)
- St Lucia Wind Energy Project (EIA)
- ACSA ECO CT (Lead ECO)
- Enel Paleisheuwel Solar farm (Lead ECO)
- NRA Caledon road upgrade ECO
- Solar Capital DeAar Solar farm annual audits
- Eskom Pinotage substation WUL offset compliance

APPENDIX 6: PROOF OF QUALIFICATIONS

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Amber Leah Jackson

Registration number: 100125/12

is registered as a

Candidate Natural Scientist

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

Environmental Science **15 August 2012**

15 August 2012
Pretoria

President

Executive Director

University of Cape Town • iYunivesithi yaseKapa • Universiteit van Kaapstad

we certify that

Amber Leah Jackson

was admitted to the degree of

Master of Philosophy

in Environmental Management

on 9 June 2011

Vice-Chancellor

Registrar