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Avifauna EIA Report for the proposed Bonsmara Solar Photovoltaic (PV) Facility near Kroonstad, Free State Province, South Africa

March 2023

APPLICANT:

Bonsmara Solar PV (RF) (Pty) Ltd

EAP:

SiVEST Environmental

SPECIALIST: Enviro-Insight CC

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Specialist Declaration

I, Sam Laurence *Pr. Sci. Nat.,* declare that the work presented in this report is our own and has not been influenced in any way by the developer or the EAP. At no point has the developer asked us as specialists to manipulate the results in order to make it more favourable for the proposed development. We consider ourselves bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP) and the EIA Regulations (2014, as amended). We have the necessary qualifications and expertise (*Pr. Sci. Nat. Zoological Science)* in conducting this specialist report.

Sam Laurence Pr. Sci. Nat

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GLOSSARY

Critical Biodiversity Area (CBA)	An area that must be maintained in a good ecological condition (natural or semi-natural state) in order to meet biodiversity targets. CBAs collectively meet biodiversity targets for all ecosystem types, as well as for species and ecological processes that depend on natural or semi-natural habitat that have not already been met in the protected area network. CBAs are identified through a systematic biodiversity planning process in a configuration that is complementary, efficient and avoids conflict with other land uses where possible.
Cumulative impact	Impacts on a species, ecosystem or resource as a result of the sum of actions in the past, present and foreseeable future, from multiple renewable energy projects or a renewable energy project in combination with other developments.
Ecological Support Area (ESA)	The ESA are supporting zones or areas which must be safeguarded as they are needed to prevent degradation of Critical Biodiversity Areas and formal Protected Areas.
Endemic	A species that is naturally restricted to a particular, well-defined region. This is not the same as the medical definition, which is 'occurring naturally in a region.
Environmental Impact Assessment (EIA)	The process of identifying environmental impacts due to activities and assessing and reporting these impacts
IBA	Important Bird and Biodiversity Area. Part of a global network of sites that are critical for the long-term viability of bird populations. Now known as Important Bird and Biodiversity Areas.
IUCN Red Listed Categories and Criteria	International Union for Conservation of Nature.
Preconstruction Phase	The period prior to the construction of a solar energy facility
Priority species	Threatened or rare birds (in particular those unique to the region and especially those which are possibly susceptible to solar energy impacts), which occur in the given development area at relatively high densities or have high levels of activity in the area. These species should be the primary (but not the sole) focus of all subsequent monitoring and assessment.
SABAP	The Southern African Bird Atlas Project. A project in which data on bird distribution and relative abundance are collected by volunteers. There have been two SABAP projects; i.e. SABAP1 (completed

	in 1991) and SABAP2 (started in 2007 and on-going). See http://sabap2.adu.org.za for more information.
SACNASP	South African Council for Natural Scientific Professions
SANBI	South African National Biodiversity Institute

1 INTRODUCTION AND PROJECT BACKGROUND

Bonsmara Solar PV (RF) (Pty) Ltd ('the Applicant') is proposing to develop the 100 MW Bonsmara Photovoltaic (PV) Solar Energy Facility (SEF), BESS and grid connection infrastructure on a site approximately 12km south-east from the town of Kroonstad in the Free State Province.

Enviro-Insight CC was appointed to undertake the requisite avifauna assessment associated with the proposed Bonsmara SEF. The aim of this report is to undertake the final EIA Report which includes the results from the first season/reconnaissance study.

1.1 STUDY AREA

The study area of approximately 980 ha is located on Portion 0 and Portion 1 of Farm Scheveningen 636 located in the Moqhaka Local Municipality, in the Fezile Dabi District Municipality. The ORIGINAL Site Layout (and regional location) which informed the field study during the Season 1/reconnaissance survey is shown as Figure 1. The site layout has since been refined and subsequently informs the final site sensitivity and EIA analysis.

1.2 PROJECT DESCRIPTION

The facility will comprise of several arrays of PV panels and associated infrastructure that includes BESS and will have a contracted capacity of 100MW. The Solar PV facility will connect to the grid via a 2km 132kv powerline from the on-site substation to the Kroonstad Switching Station or alternatively, Loop-in Loop-out of the Eden Rural - Kroonstad Switching Station 1 132kV powerline that traverses the site.

Preliminary technical details of the respective Solar Farm are included below:

- PV modules and mounting structures (monofacial or bifacial) with fixed, single or double axis tracking mounting structures;
- Associated stormwater management infrastructure;
- Battery Energy Storage System (BESS);
- Site and internal access roads (up to 6 m wide);
- Auxiliary buildings (offices, parking, etc.);
- Ablution facilities and associated infrastructure;
- Temporary laydown area during the construction phase for the construction camp and laydown area (which will be a permanent laydown area for the BESS during the operational phase);
- Infrastructure including offices, operational control centre, operation and maintenance area, ablution facilities, etc.;
- On-site 33 kV/132kV substation (facility substation);
- Grid connection infrastructure including medium-voltage cabling between the project components and the facility substation (underground cabling will be used where practical (up to 33kV);
- Perimeter fencing; and,
- Rainwater and/or groundwater storage tanks and associated water transfer infrastructure.

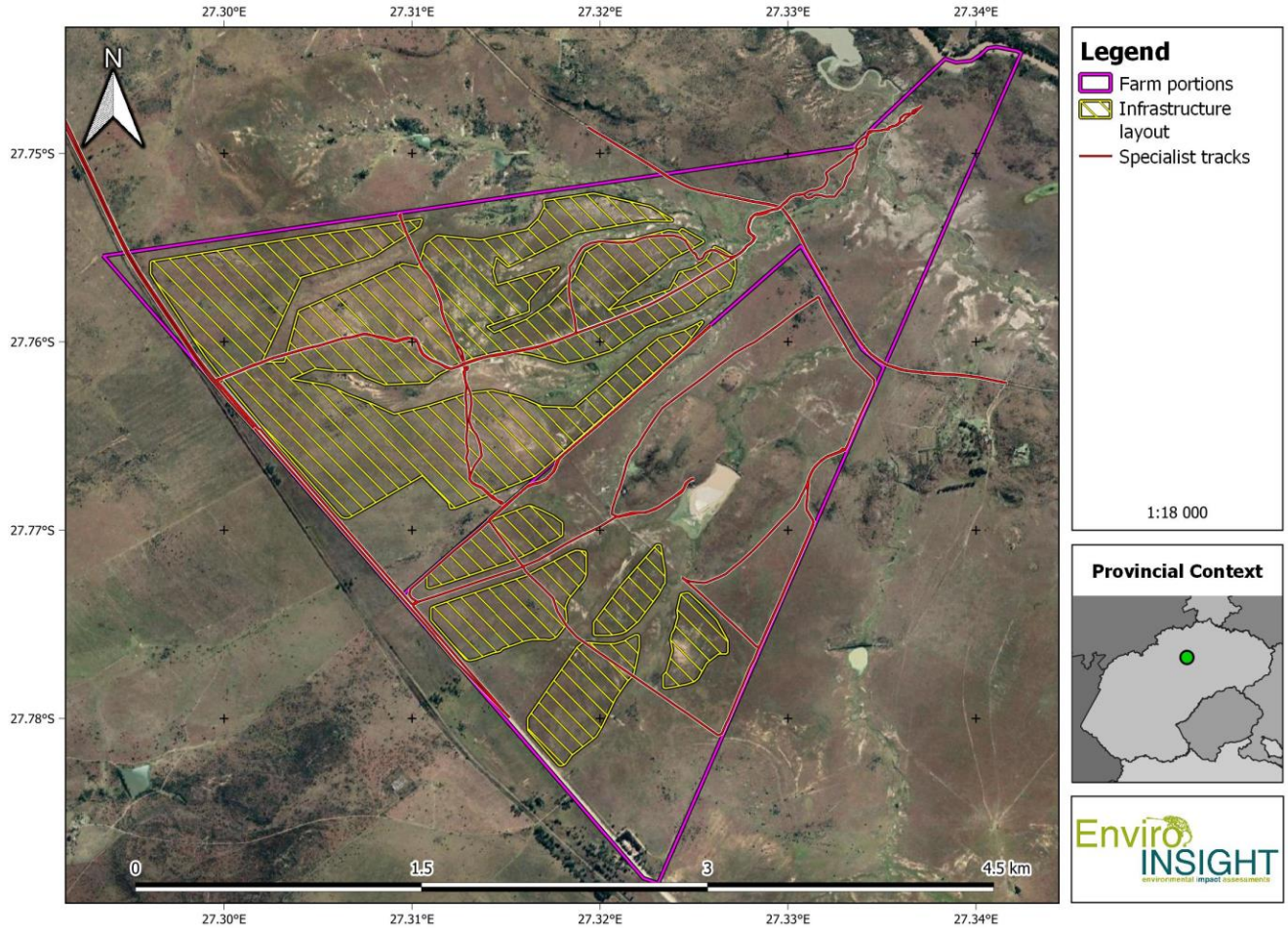

Figure 1: Locality map of the proposed study area comprising the ORIGINAL layout assessed during the reconnaissance phase (site visit 1).

1.3 OBJECTIVES

The principal aim of the avifaunal assessment will be to determine how this development (and its separate elements) will impact on the terrestrial ecological integrity of the area (as it pertains to avifauna) and if necessary, demarcate appropriate ecological buffers around sensitive communities or receptors. Draft monitoring plans will be included if necessary.

The main objectives are as follows:

- Provide quantitative information on the abundance, distribution, and risk to key avifaunal species or groups of species, and serve to inform and improve mitigation measures.
- Determine how this development (and its separate elements) will impact on avifauna, particularly relating to habitat loss/fragmentation, alteration of habitat quality, species assemblage changes, microclimate disturbance and reduced connectivity between populations in some species.
- Include a corridor analysis for the migration of avifauna across the landscape, taking the cumulative impact of the

Project with other proposed and/or existing regional facilities (phases) into account.

- Identify actual and potential species of conservation concern/importance (protected – NEMBA, endemic, threatened or identified as Priority classified as per the recommendations from Jenkins *et al,*. 2017)). GPS the position of all sensitive receptors (protected, endemic and/or Red Data species) - the co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection. Alternatively, exact timed records of all species observed within the prescribed transects (Driving, Walking and Random) will suffice in order to model required densities.
- Demarcate appropriate ecological buffers around sensitive communities or receptors.
- Compile a search and rescue plan for relevant species to be adopted prior to construction (if required).
- Identify and quantify the perceived impacts and propose mitigations to be included in the Environmental Management Programme (EMPr). The potential impacts and recommended mitigations must be identified for the planning and design, pre-construction, construction, and post-construction (e.g., monitoring rehabilitation of the construction site) only.
- The impacts must be assessed and evaluated according to the EIA Regulations, 2014 as amended (https://cer.org.za/wp-content/uploads/1999/01/EIA-Regulations.pdf) or the Impact Assessment Criteria and Matrix to be supplied by the client.
- Undertake a cumulative impact assessment for the Project. Then, in addition to the development site, also take into consideration other similar or proposed facilities within a 30 km radius of the proposed development site. Information on the location of renewable energy developments can be accessed from https://egis.environment.gov.za/renewable_energy.
- Draft the basic elements of a Monitoring Programme.

1.4 AVIFAUNA SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS

- Perform the Avifaunal Specialist Assessment according to the criteria provided by the Terrestrial Animal Species protocol published on 30 October 2020 in Government Gazette No. 43855.
- Write up the findings of the specialist assessment in an Avifaunal Specialist Assessment Report that contains the minimum report content requirements prescribed in the same protocol, and the applicable guidelines for solar developments (Jenkins *et al.,* 2017).
- According to Regulation 13(1)(b) and 13(1)(e) read together with Regulation 18 of the amended EIA Regulations, 2014, Specialists must have knowledge of any guidelines that have relevance to the proposed activity and have regard to the need for and desirability of the undertaking of the proposed activity. BirdLife SA's Best Practice Guidelines on Birds and Solar Energy (Jenkins *et al*., 2017) was consulted when compiling the Plan of Study.
- Ensure that the avifauna assessment and reporting meet all the requirements of the relevant protocol.

1.5 STUDY LIMITATIONS

- It is assumed that all third-party information acquired is correct (e.g. GIS data and scope of work); and
- Owing to extremely dry, early spring conditions occurring during the reconnaissance site visit in September 2022, bird activity was at its lowest and results reflected as such. The wet season yielded significantly higher quality data.
- There is an error with the screening report which is manifested within the PV tool which always shows "low" sensitivity. The animal theme report however stipulates the triggers accordingly.

2 LEGISLATIVE FRAMEWORK

2.1 NATIONAL ENVIRONMENTAL SCREENING TOOL AND ENVIRONMENTAL THEME PROTOCOLS

2.1.1 Screening Report

The Minister of Environment, Forestry and Fisheries, gave notice that the submission of a report generated from the national web-based environmental screening tool[1], as contemplated in Regulation 16(1)(b)(v) of the Environmental Impact Assessment Regulations, 2014, published under Government Notice No. R982 in Government Gazette No. 38282 of 4 December 2014, as amended, will be compulsory from 4 October 2019 when submitting an application for environmental authorisation in terms of Regulation 19 and Regulation 21 of the Environmental Impact Assessment Regulations, 2014.

In addition, a set of protocols that an applicant needs to adhere to in the Environmental Authorisation (EA) process were developed and on 20 March 2020 the Minister of Forestry, Fisheries and the Environment gazetted the Protocols for national implementation purposes. The gazette '*Procedures to be followed for the Assessment and Minimum Criteria for Reporting of Identified Environmental Themes in terms of Section 24(5)(a) and (h) of the National Environmental Management Act (1998) when Applying for Environmental Authorisation*', has protocols that have been developed for environmental themes which include agriculture, avifauna, biodiversity (Terrestrial and Aquatic Biodiversity), noise, defence and civil aviation.

The protocols set requirements for the assessment and reporting of environmental impacts of activities requiring EA. The higher the sensitivity rating of the features on the proposed site as identified by the screening tool report, the more rigorous the assessment and reporting requirements.

Based on the generated screening report, the relative animal species theme was mixed between medium and low sensitivity. For the project footprint and supporting infrastructure, the avifauna theme was indicated as "low" (see above limitations) sensitivity, due to no probability of Red Listed species occurring and therefore, the animal theme was used (Figure 2, **Error! Reference source not found.** and Figure 4).

[1] https://screening.environment.gov.za/screeningtool/#/pages/welcome

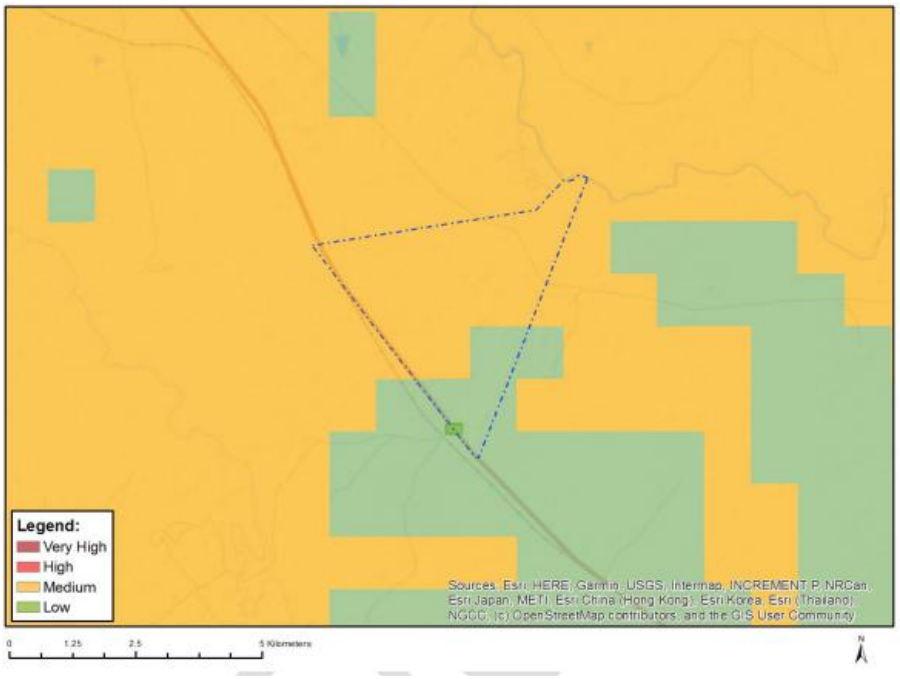

Figure 2: Screening Tool map of relative animal species theme sensitivity for the Project Footprint.

Figure 3: Screening Tool map of relative animal species theme sensitivity for the connecting powerline.

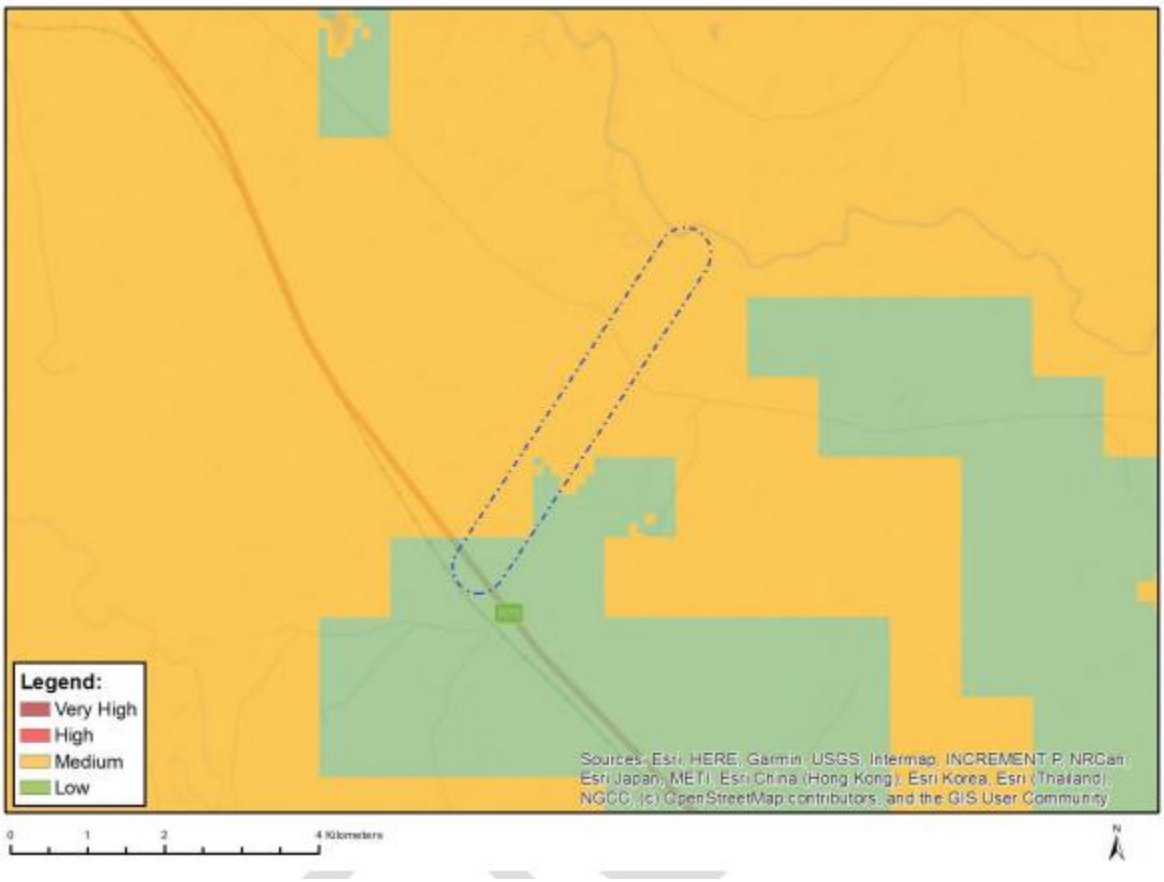

Figure 4: Screening Tool map of relative animal species theme sensitivity for the alternative connecting powerline.

2.2 RENEWABLE ENERGY DEVELOPMENT ZONE

On 17 February 2016, Cabinet approved the Renewable Energy Development Zones (REDZs) for large scale wind and solar photovoltaic development and associated Strategic Transmission Corridors (STC) which support areas where long term electricity grids will be developed.

The procedure to be followed in applying for EA for a large-scale project in a REDZ or in a Power Corridor was formally gazetted on 16 February 2018 in GN113 and GN114. On 17 July 2020, Minister Barbara Dallas Creecy published Government Gazette 43528, Notice 786 for consultation with the intention to identify three additional Renewable Energy Development Zones to the eight Renewable Energy Development Zones published under Government Notice No. 114 in Government Gazette No. 41445 of 16 February 2018. REDZs are also aligned with the powerline corridors that were identified in the Electricity Grid Infrastructure SEA completed in 2016 and gazetted as powerline corridors in February 2018. In this way, the combination of the REDZs and power corridors provides strategic guidance to Eskom on where to prioritise investment in grid infrastructure.

New renewable energy projects located within one of the 11 REDZ areas, and new electricity grid expansion within the 5 Strategic Transmission Corridors are subject to a Basic Assessment and not a full EIA process, as well as a shortened timeframe

of 147 days (90-day BA process and 57 decision-making process).

The proposed Bonsmara SEF is not located in a REDZ which ensures that the study must fulfil a Scoping & EIA process.

2.3 BIRDS AND SOLAR ENERGY BEST-PRACTICE GUIDELINES (2017)

The "*Best-Practice Guidelines for assessing and monitoring the impact of solar energy facilities on birds in southern Africa*" (Jenkins *et al*., 2017) are followed in order to fulfil the outlined requirements.

As per Appendix 2 in the minimum requirements - *Minimum requirements for avifaunal impact assessment*, an avifaunal impact assessment for a SEF should follow a two-tier process (of which this report services the Tier 1 component):

Tier 1

1. **Scoping report** – process to identify issues that are likely to be important in the impact assessment process and to define the scope of work required in the assessment (e.g. timing, spatial extent and data collection methodologies). Largely based on desktop analysis of available data, but preferably also informed by a brief site visit.
2. **Preliminary assessment** – This is part of the planning for the EIA application, giving an overview on the biological context, likely impacts and potential red flags to the development, identifying alternatives and determining the appropriate assessment regime.

Tier 2

3. **In-depth Study** – Could including structured and repeated data collection on which to base the impact assessment report and provide a baseline against which post-construction monitoring can be compared.
4. **Impact assessment** – Informed by the data collected during the preliminary assessment.

3 METHODS

3.1 GIS

Existing data layers were incorporated into a GIS to establish how the proposed SEF layout and associated activities interact with important terrestrial entities. Emphasis was placed on the following spatial datasets:

- Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2018);
- Important Bird and Protected Areas (Marnewick *et al*., 2015);
- South African Protected Areas Database (SAPAD); and
- GIS layers of proposed layout provided by the client.

All mapping was performed using open-source GIS software (QGIS[2]).

[2] http://qgis.osgeo.org/en/site/

3.2 DESKTOP AND LITERATURE SURVEY

A desktop survey is conducted to consider the best information available in order to provide a better evaluation of all conditions present within the study area. An initial literature review was undertaken to assess which bird species could potentially occur in the vicinity of the Bonsmara SEF using data from the second South African Bird Atlas Project (SABAP 2[3]; [SABAP2, 2020]). SABAP 2 records were developed based on records per pentad (i.e., 5' X 5'). A list of species potentially occurring was developed from SABAP 2 data for the pentads within which the study area falls (2735_2710, 2735_2715 2735_2720, 2735_2725, 2740_2710, 2740_2715 2740_2720, 2740_2725, 2745_2710, 2745_2715, 2745_2720, 2745_2725, 2750_2710, 2750_2715 2750_2720 and 2750_2725 (Figure 5). The expected species list is therefore based on an area much larger than the actual study area and was therefore subsequently refined. This approach was adopted to ensure that all species potentially occurring within the study area, whether resident, nomadic, or migratory, were identified.

Species were considered sensitive based on their abundance, flight characteristics, ecological role, population trend and conservation status.

The following main literature sources have been consulted for the avifauna study:

- The existing avifaunal impact assessments for the area (Simon Todd Consulting, 2017);
- Information relating to avifauna species of conservation concern (SCC) was obtained from Taylor *et al.* (2015) and the IUCN Red List of threatened species (IUCN, 2022);
- del Hoyo *et al.* (1992) and Hockey *et al.* (2005) were consulted for general information on the life history attributes of relevant bird species;
- Distributional data was sourced from the Southern Africa Bird Atlas Project (SABAP 2, 2021), del Hoyo *et al.* (1992) and Sinclair & Ryan (2010);
- INaturalist and Virtual Museum (ADU) was used to source the distribution bird data in the area; and
- Nomenclature and taxonomy followed the IOC World Bird Names unless otherwise specified (see www.worldbirdnames.org; Gill & Donsker, 2012).

[3] http://sabap2.birdmap.africa/

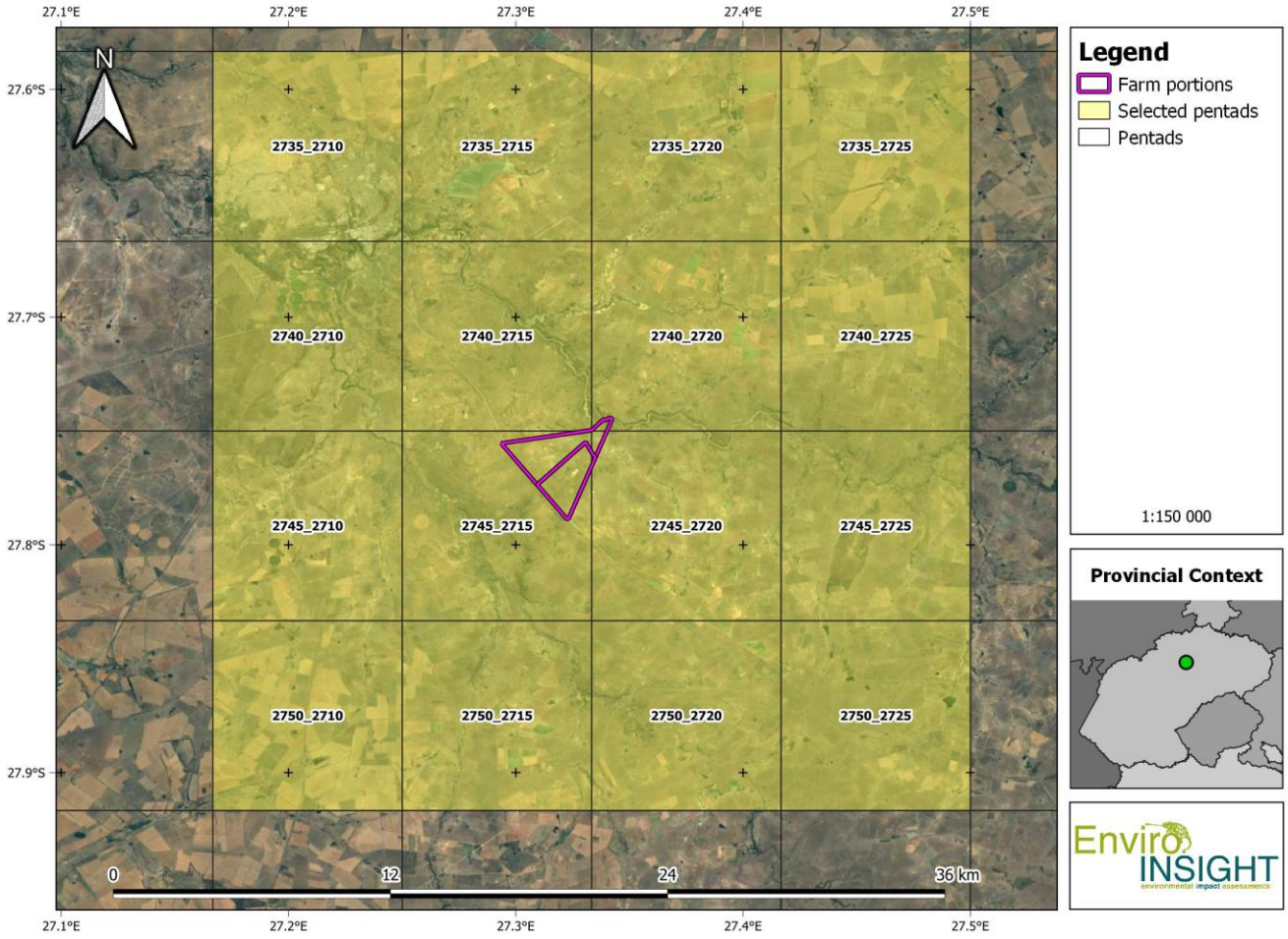

Figure 5: The proposed Bonsmara SEF in relation to the SABAP2 pentads.

3.3 PRECONSTRUCTION BIRD MONITORING SURVEY DESIGN

The proposed study area is classified as a Regime 2 based on the size of the study area (>150 ha), (medium avifaunal sensitivity (based upon the animal theme screening report) and type of technology that will be used for the proposed project. The avifaunal sensitivity was determined based on the number of priority species occurring, or potentially present, within or around the study area, the regional or global threat status of these species, avifaunal habitat found in the area, population of priority species, bird movement corridor and Important Bird and Biodiversity Area.

The duration, in terms of data collection, for this study was a minimum of 2 surveys (of which one must be in the peak season) of 3 days. This complies with the requirements of the Best Practice Guidelines available at the time (Jenkins *et al*., 2017).

The first site visit included the site verification as well as the first survey, which was the dry-season survey conducted to identify site characteristics found within the study area such as habitats, important bird species and site sensitivities including sensitive habitats with their associated sensitive bird species and observation of nests of sensitive bird species. The site visit was

conducted in September 2022, during sub-optimal conditions where the area receives the least rainfall. During the site visit, sampling was done by means of walking and driving transects in and around the study area. Walking transects (WT) and driving transects (DT) were determined after the first day of the first site visit (Table 1). Waterbodies in- and outside the study area were identified and observed whilst powerlines and pylons were scanned for any possible nests from sensitive bird species.

The site visits that were conducted during the wet season took place under optimal conditions in January 2023 and formed part of the data sampling methods used as per the Best Practice Guidelines (Jenkins et al., 2017). Additional methods that commenced during the first site visit includes nesting sites and Coordinated Waterbird Counts, (CWAC).

Table 1: Avifauna monitoring sampling period for Bonsmara SEF and Control Site.

Date	Season	Methodology applied*
September 2022 (late dry season) – site verification and first survey	Early Spring	WT, DT, NE, WB
January 2023 (second survey)	Summer	WT, DT, NE, WB

*** WT – Walked transects; DT – Drive transects; NE – Nest searches, inspection, and monitoring; WB – Water body inspections.**

3.3.1 Walking Transects and Fixed-Point Counts

These methods are utilised to monitor small bird species within the major habitat types within a study area. Based on the variety of habitat types, transects and sample points were positioned at varying distances away from the proposed solar farm in order to maximize the comparative value of the data which were compared with the surveys from the post-construction phase results (when applicable).

Linear transects are determined based upon habitat characteristics and are approximately 500 m each, conducted to characterize the passerine and small bird communities and end with a fixed sample point. These transects were representative of the biotopes present within the study area. The survey locations were selected based on the representation of the different habitats covering the proposed study area, in proportion to their availability. All of them were positioned at varying distances from the central development area (Jenkins *et al*., 2017). Each linear transect was conducted by one expert bird observer at a time (more than one observer for all transects were used), who records all bird contacts (both seen and heard) by walking slowly along the predetermined transect. Observations are made on both the left and right side of the predetermined transect and 360 degrees at the final fixed sample point. As a guideline birds were only recorded (seen or heard) within an estimated fixed maximum width of 200 m on either side of the transect line. The same transects are to be repeated each season. Surveys commence mostly after sunrise and are performed throughout the day to account for temporal variation in activity. As a general rule, transects were not to be walked in adverse conditions, such as heavy rain, strong winds or thick mist.

3.3.2 Driven Transects

Large terrestrial birds (e.g. cranes, bustards, storks, and most raptors) cannot be adequately surveyed using walked transects. Populations of such birds should be estimated on each visit to the project area by means of road counts (vehicle-based sampling; best applied for relatively large proposed SEFs, especially those with good networks of roads and tracks).

Road counts of large terrestrial birds and raptors require that one or a few driven transects be executed (depending on site size, terrain and infrastructure), comprising one or a number of set routes, limited by the existing roadways but as far as possible directed to include a representative cross section of habitats within the project area of influence.

These transects were driven at a constant and slow speed (± 20km/h), and all sightings of large terrestrial birds and raptors are recorded in terms of the same data-capture protocols used for walked transects (above), and in general compliance with the road-count protocols described for large terrestrial species (Young et al., 2003) and raptors (Malan, 2009).

One observer travels slowly in a vehicle recording all species on both sides of the drive transect. The observer stops at regular intervals (every 300 m) to scan the environment with binoculars. The number, distance and locations of each driving transects were determined during the first site visit in early Spring. The driving and walking transects are shown as Figure 6.

3.3.3 Nesting Sites

Any habitats within the broader impact zone of the proposed SEF, or an equivalent area around the site, deemed likely to support nest sites of key raptor and other species of conservation concern, including power lines, stands of large trees, marshes and drainage lines, were searched for and surveyed. All potential breeding sites, once identified fully, were mapped and checked during each survey to confirm occupancy, and all evidence of breeding and the outcomes of such activity, where possible, were recorded.

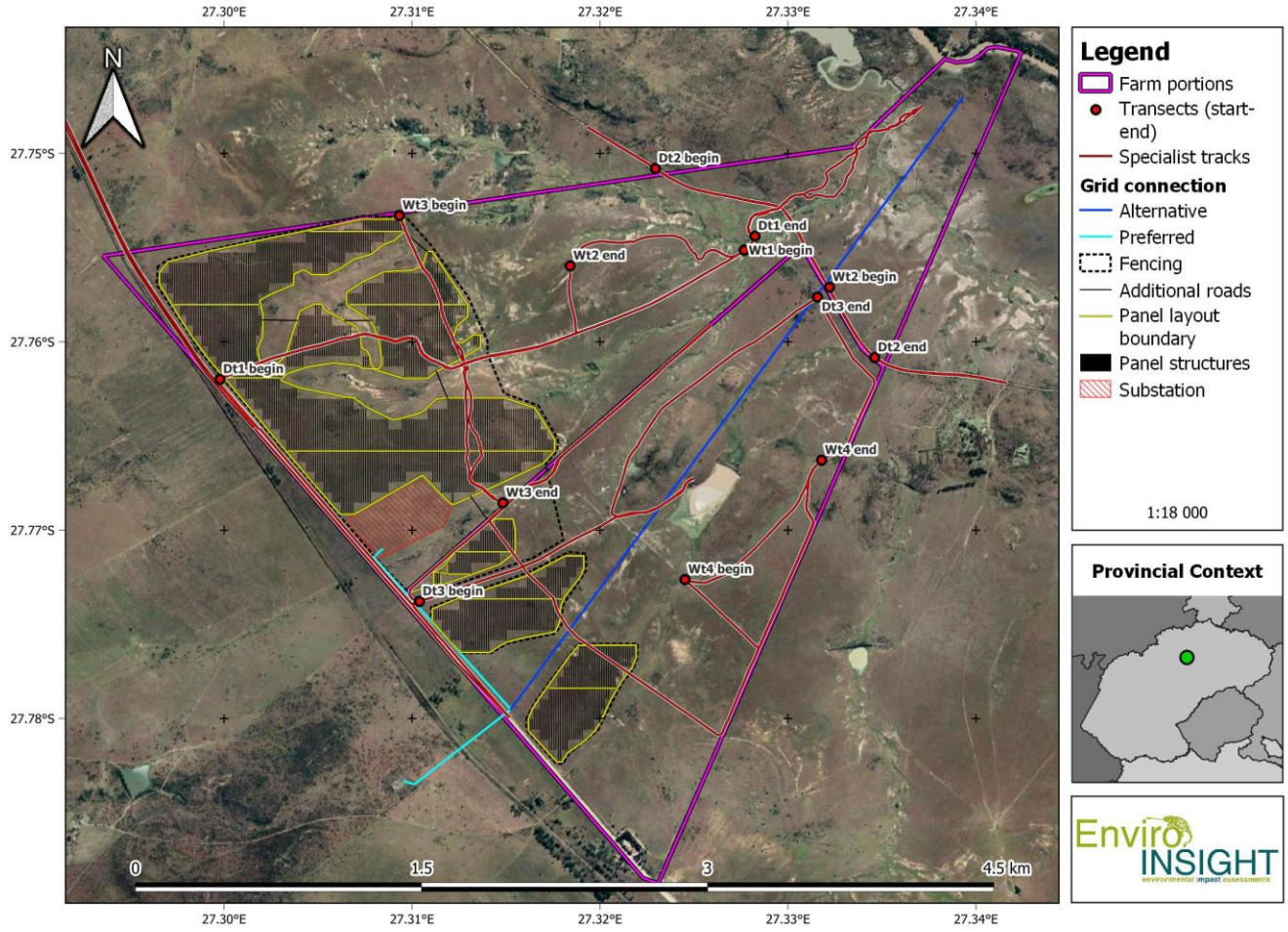

Figure 6: The Driving and Walking Transects (DT and WT) identified for the project footprint

3.3.4 Waterbodies

Prior to the initiation of the preconstruction monitoring campaign, the main water bodies (including wetlands) present within the study area were identified during the site visit in September 2022 and were mapped on a Geographical Information System (GIS) by using 1:50 000 topographic maps and aerial photos. All identified water bodies must continue to be surveyed to determine their level of utilisation by water birds. The summer survey will supplement the early Spring water body bird count.

Water birds, including potential roosting sites, are recorded by the observers during all the surveys. The observers were aided by a pair of binoculars and a spotting scope.

3.3.5 Incidental Observations

All other sightings of priority species (and particularly those suggestive of breeding or important feeding or roosting sites or flight paths) on the SEF and control site as well as within the broader study area were recorded, along with additional relevant information such as habitat type, abundance, activity, and weather data. These observations were used as complementary data

to characterise the bird community and its utilisation of the site, as recommended by the Best Practice Guidelines (Jenkins *et al*., 2017).

3.4 SPECIES OF CONSERVATION CONCERN

The Red List of threatened species generated by the IUCN (http://www.iucnredlist.org/) provided the global conservation status of avifauna. However, Taylor *et al*. (2015) produced a regional conservation status assessment following the IUCN criteria which was used for this assessment. The first three categories i.e. Critically Endangered, Endangered and Vulnerable, are collectively called 'threatened' species.

The conservation status categories defined by the IUCN, which are considered here to represent species of conservation concern (SCC), are defined as follows:

- **Critically Endangered (CR)** - Critically Endangered refers to species facing immediate threat of extinction in the wild.
- **Endangered (EN)** - Endangered species are those facing a very high risk of extinction in the wild within the foreseeable future.
- **Vulnerable (VU)** - Vulnerable species are those facing a high risk of extinction in the wild in the medium-term.
- **Near Threatened (NT)** - any indigenous species which does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. NEMBA also deals with endangered, threatened and otherwise controlled species, under the Threatened or Protected Species Regulations (ToPS). A ToPS permit is required for any activities involving the removal or destruction of any ToPS-listed species.

Protected species: any species which is of such high conservation value or national importance that it requires national protection. Species listed in this category include, among others, species listed in terms of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Priority species: any species which is qualified as high risk to impacts from solar facilities as suggested by Jenkins *et al.*

3.5 IMPACT ASSESSMENT

The Environmental Impact Assessment (EIA) Methodology assists in evaluating the overall effect of a proposed activity on the environment. Determining of the significance of an environmental impact on an environmental parameter is determined through a systematic analysis.

Determination of Significance of Impacts

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

overall probability of occurrence). Significance is calculated as shown in Table 1.

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

Impact Rating System

The impact assessment must take account of the nature, scale and duration of effects on the environment and whether such effects are positive (beneficial) or negative (detrimental). Each issue/impact is also assessed according to the various project stages, as follows:

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

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance has also been included.

Rating System Used to Classify Impacts

The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the possible mitigation of the impact. Impacts have been consolidated into one (1) rating. In assessing the significance of each issue, the following criteria (including an allocated point system) is used.

ENVIRONMENTAL PARAMETER		
A brief description of the environmental aspect likely to be affected by the proposed activity (e.g. Surface Water).		
ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity (e.g. oil spill in surface water).		
EXTENT (E)		
This is defined as the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the determined.		
1	Site	The impact will only affect the site
2	Local/district	Will affect the local area or district
3	Province/region	Will affect the entire province or region
4	International and National	Will affect the entire country
PROBABILITY (P)		
This describes the chance of occurrence of an impact		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
REVERSIBILITY (R)		
This describes the degree to which an impact on an environmental parameter can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES (L)		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource.	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
DURATION (D)		
This describes the duration of the impacts on the environmental parameter. Duration indicates the lifetime of the impact as a result of the proposed activity.		

1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase (0 – 1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 50 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).
INTENSITY / MAGNITUDE (I / M)		
Describes the severity of an impact (i.e. whether the impact has the ability to alter the functionality or quality of a system permanently or temporarily).		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapse). Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
SIGNIFICANCE (S)		
Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. This describes the significance of the impact on the environmental parameter. The calculation of the significance of an impact uses the following formula: **Significance = (Extent + probability + reversibility + irreplaceability + duration) x magnitude/intensity.**		

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

Points	Impact Significance Rating	Description
5 to 23	Negative Low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
5 to 23	Positive Low impact	The anticipated impact will have minor positive effects.
24 to 42	Negative Medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
24 to 42	Positive Medium impact	The anticipated impact will have moderate positive effects.
43 to 61	Negative High impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
43 to 61	Positive High impact	The anticipated impact will have significant positive effects.
62 to 80	Negative Very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
62 to 80	Positive Very high impact	The anticipated impact will have highly significant positive effects.

4 RESULTS

4.1 SITE COVERAGE

The specialist coverage in relation to the Drive Transects, Walking Transects and the overall project area is shown as Figure 7.

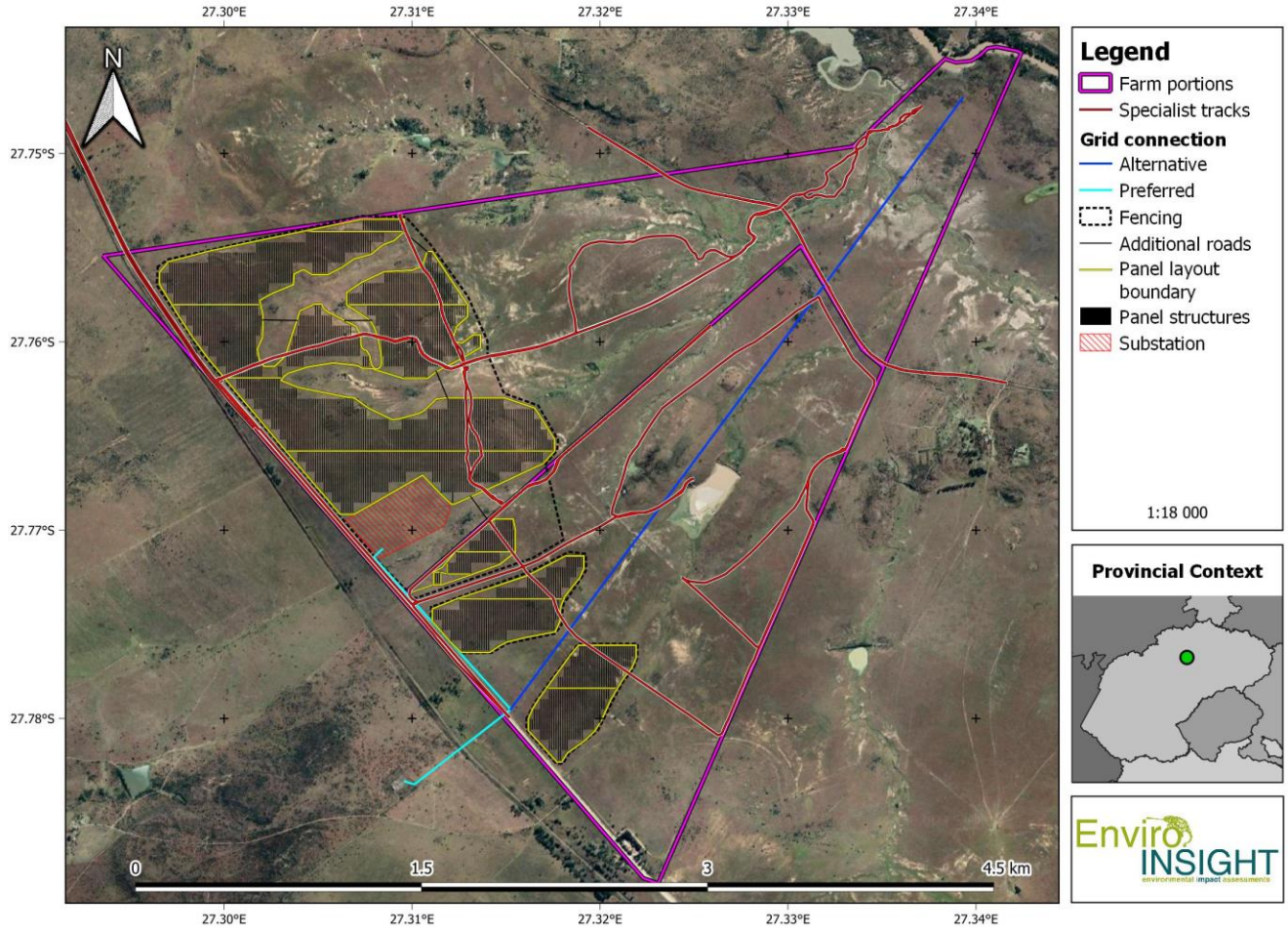

Figure 7: The specialist tracks in relation to the Walking Transects and Driving Transects

4.2 REGIONAL CONTEXT

The study area is located in the Grassland Biome and falls within the Central Free State Grassland vegetation type (Mucina & Rutherford, 2006 – as amended), listed as Vulnerable (Table 2; Figure 8).

Table 2: Attributes of the Central Free State Grassland vegetation type (Mucina & Rutherford, 2006, as amended).

Name of vegetation type	Central Free State Grassland
Code as used in the Book	GH6
Conservation Target (percent of area) from NSBA	24%
Protected (percent of area) from NSBA	0.8%
Remaining (percent of area) from NSBA	76.5%
Description of conservation status from NSBA	Vulnerable
Description of the Protection Status from NSBA	Hardly protected
Area (km^2) of the full extent of the Vegetation Type	15982.26
Name of the Biome	Grassland
Name of Bioregion	Dry Highveld Grassland Bioregion

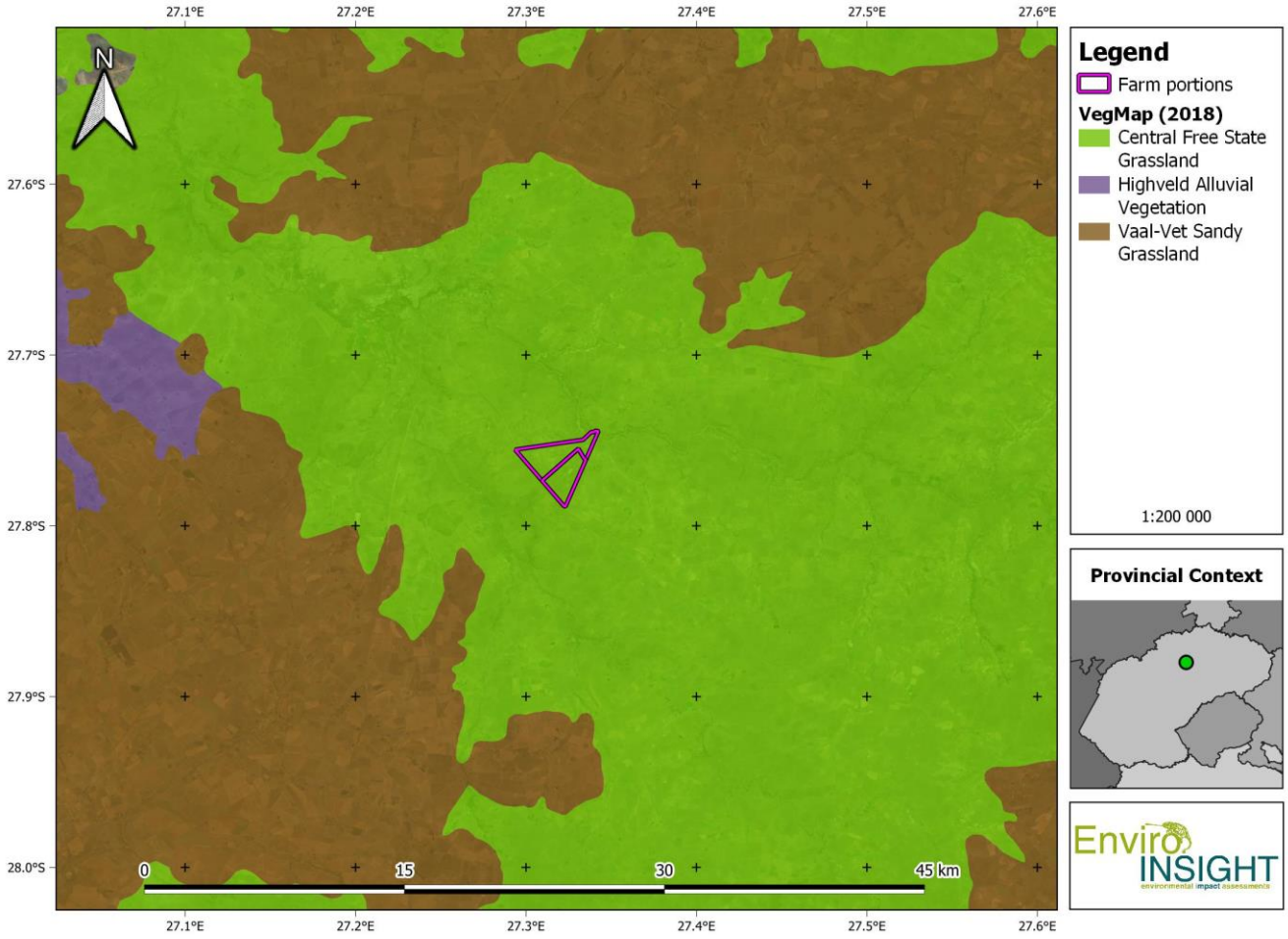

Figure 8: The proposed Bonsmara SEF in relation to regional vegetation types.

4.3 EXISTING IMPACTS

The following existing impacts to avifauna were observed during the surveys:

- Burning regimes – Fires, controlled or otherwise, may influence the habitat ecology including bird nesting habitat (ground dwelling species).
- Livestock grazing – The overall survey area is primarily comprised of cattle grazing areas with some areas showing signs of overgrazing and trampling. Fenced habitats ultimately showed ecologically manipulated ecology which may be beneficial or detrimental to local avifaunal populations, species dependent.
- Existing pylons and powerlines – A large existing pylon servitude exists adjacent to the project footprint.
- Linear infrastructure - The project area is fragmented by a multitude of linear structures which present restrictive and hazard barriers to avifauna. These include sand roads, tar roads and large game fences.

4.4 DESCRIPTION OF THE MAJOR BIRD HABITATS

The overall habitat delineation as expressed in **Error! Reference source not found.** is more complex than the habitats described below in Figure 9. However, for the purposes of avifaunal monitoring, the monitoring can be confined to the described habitat types which will encompass all delineated habitats below.

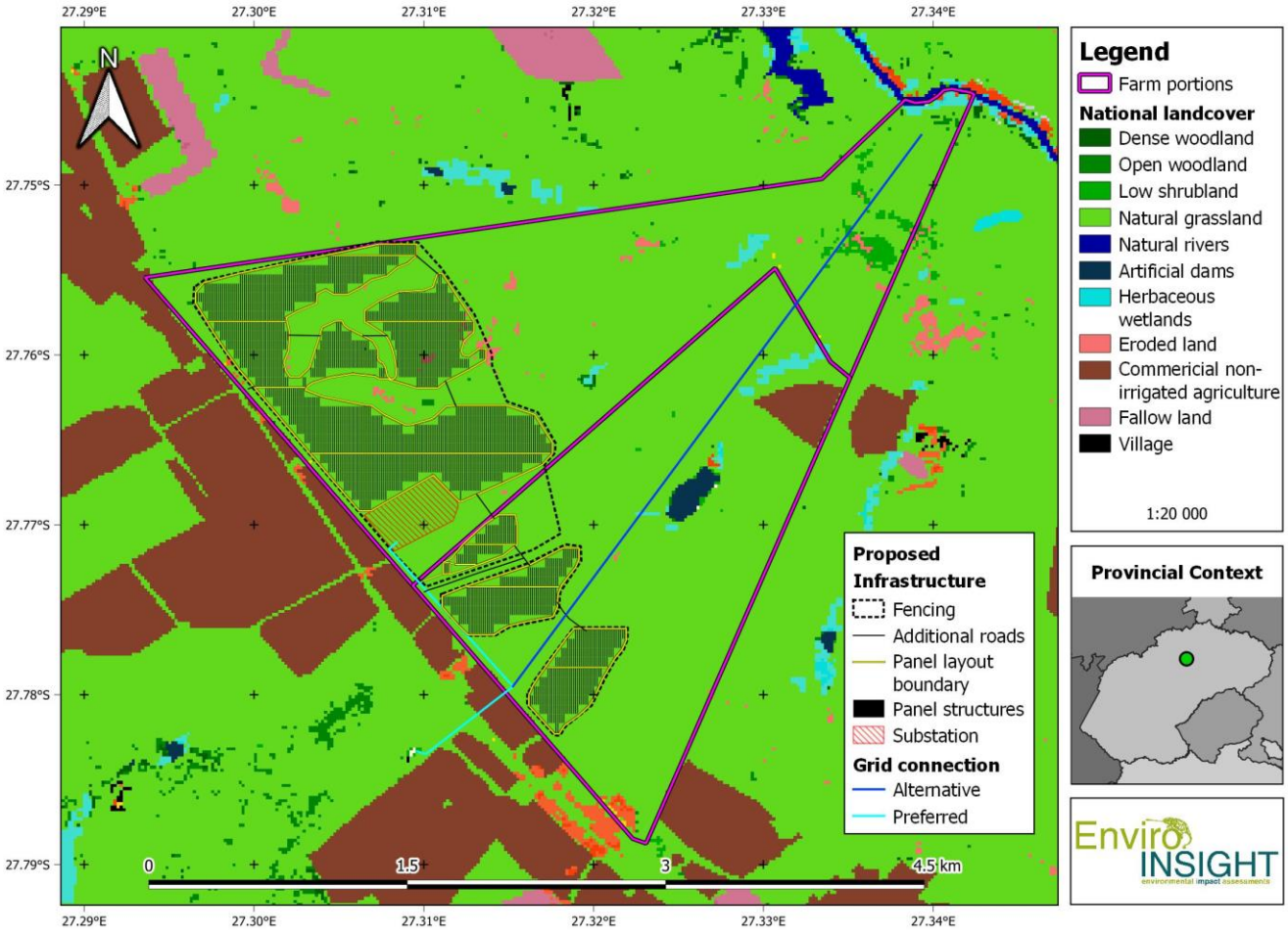

Figure 9: Habitat Delineation of the Project Footprint

4.4.1 Open Grassland interspersed with Woodland

The open grassland supports a mix of grassland, wetland and drought-tolerant grass species such as *Themeda triandra, Sporobolus sp., Setaria sp., Cynodon sp., Aristida sp*., *Eragrostis sp*., *Digitaria sp*., and *Heteropogon sp*. with various trees such as *Grewia sp., Ziziphus sp., Searsia sp., Grewia sp.,* and *Senegalia sp.* interspersing the grassland habitats in low densities. The vegetation type is the most dominant type for the proposed project. Due to the vegetation type being the only habitat for the proposed study area, it is of medium sensitivity. This type of vegetation also supports many priority avifauna species expected within the study area such as large terrestrial bird species (Northern Black Korhaan), raptor species such as Black-winged Kite,

Pale Chanting Goshawk and Black-chested Snake Eagle, as well as the highest likelihood for Secretarybird.

Figure 10: Open Grassland.

4.4.2 Isolated Small Rocky Ridges "Koppies"

The small rocky ridges found in and around the study area differs in size and height, but do not form extensive ridge systems and often form near isolated small "koppies" as is typical of the habitat type (Mucina & Rutherford, 2006). There are some relatively higher undulations to the south of the proposed project footprint. Although, no nests were found within the "koppies", this vegetation type is of high sensitivity as it supports great habitat for different fauna and flora species found within the study area. These areas also support scattered large thorn bushes which could be ideal nesting habitat for raptor species such as Secretarybird. Although no nests where found, it is important to protect these areas.

Figure 11: Rocky ridges "koppies"

4.4.3 Waterbodies

All the waterbodies found within the study area are man-made and mostly fill up after heavy rains. The main artificial waterbody impoundment situated within the study area is relatively large and has wisely been buffered from the infrastructure footprint. The smaller dams and water holes observed within the study area did not support any waterbirds although large densities of small birds such as swifts congregated around some habitats still containing water from the excellent rains in 2022. Congregations around these habitats were primarily due to nesting habitat and a lack of standing water throughout the region during the survey period (providing a localised attractant). All waterbodies were observed during the wet season as well, so that the bird activity can be compared to the initial survey.

Figure 12: Artificial Waterbodies.

4.4.4 Drainage Lines

The drainage lines throughout the Project Area of Influence (PAOI) were primarily herbaceous and dry with some structural differences to the surrounding Open Grasslands. As expected, these habitats provided significantly different survey results during the wet season, with greater potential for the presence of priority species. Occasionally and in some localised locations, standing water still persisted within these habitats during the drier season.

Figure 13: Drainage lines with standing water

Figure 14: Herbaceous Drainage lines

4.5 CRITICAL BIODIVERSITY AREAS (CBA'S) OF THE FREE STATE

Critical biodiversity areas (CBA's) are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services. The primary purpose of CBA's is to inform land-use planning in order to promote sustainable development and protection of important natural habitat and landscapes. Biodiversity priority areas are described as follows:

- Critical biodiversity areas (CBA's) are areas of the landscape that need to be maintained in a natural or near- natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses. For CBA's the impact on biodiversity of a change in land-use that results in a change from the desired ecological state is most significant locally at the point of impact through the direct loss of a biodiversity feature (e.g., loss of a population or habitat). All FEPA prioritised wetlands and rivers have minimum category of CBA 1, while all FEPA prioritised wetland clusters have minimum category of CBA 2.
- Ecological support areas (ESA's) are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or delivery ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree of restriction on land use and resources use in this specific ESA is most significant elsewhere in the landscape through the indirect loss of biodiversity due to a breakdown, interruption or loss of an ecological process pathway (e.g. removing a corridor results in a population going extinct elsewhere or a new plantation locally results in a reduction in stream flow at the exit to the catchment which affects downstream biodiversity). All natural non-FEPA wetlands and larger rivers have minimum category of ESA.

A map of the study in relation to the 2016 Free State CBA's is presented in Figure 15, indicating that the study area is located mainly in ESA1 with a small portion in Other natural areas. This was supported by the field verification although this does not discount the habitats of higher sensitivity such as the Drainage Lines and Waterbodies.

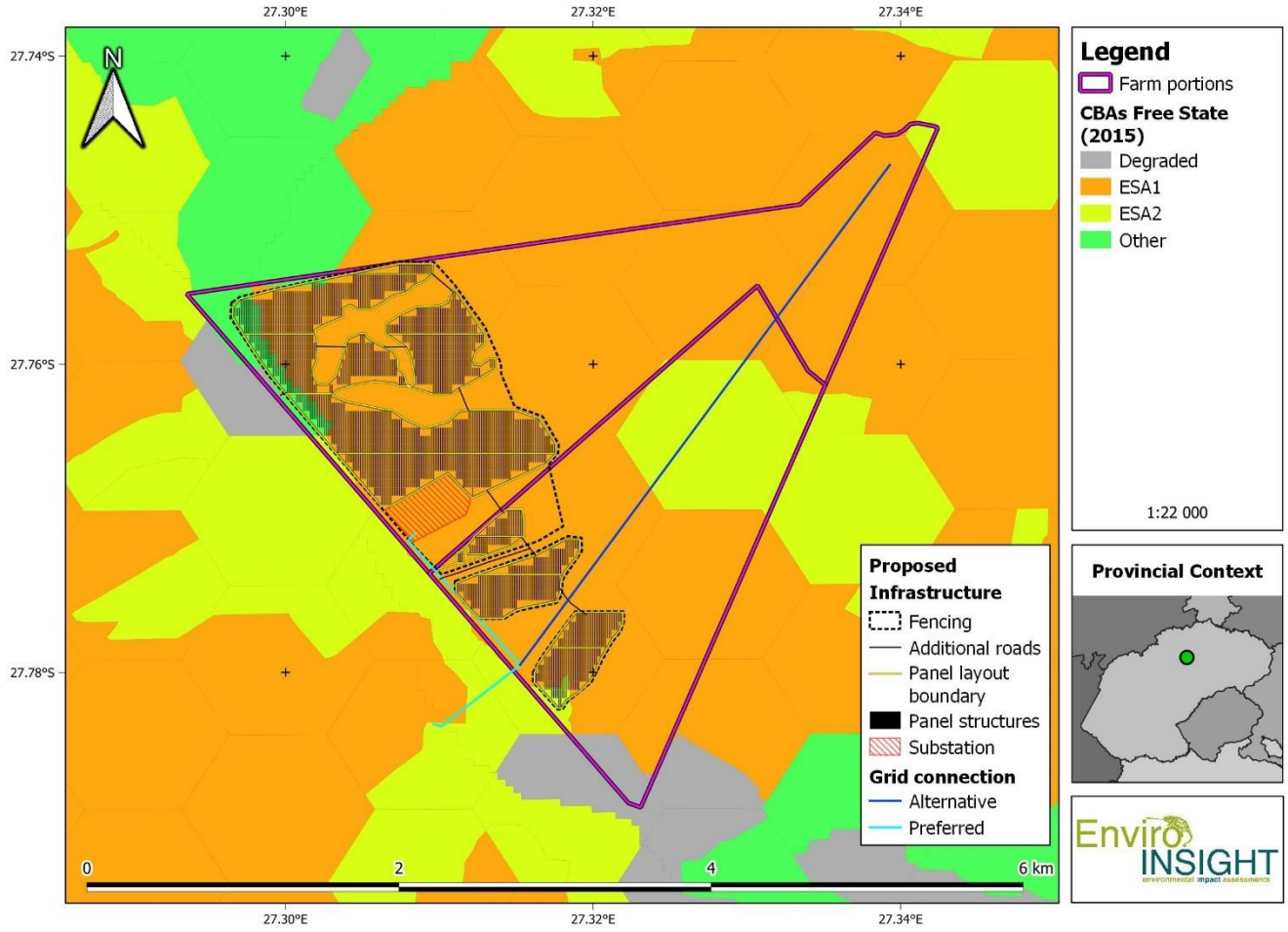

Figure 15: Study Area's CBA's Map.

4.6 PROTECTED AREAS AND IMPORTANT BIRD AND BIODIVERSITY AREAS

The proposed solar farm does not occur within an area of influence of any Important Bird and Biodiversity Area (IBA) with both the Willem Pretorius and Rooiberge Riemland reserves being situated more than 50 km and 75 km away respectively (Figure 16).

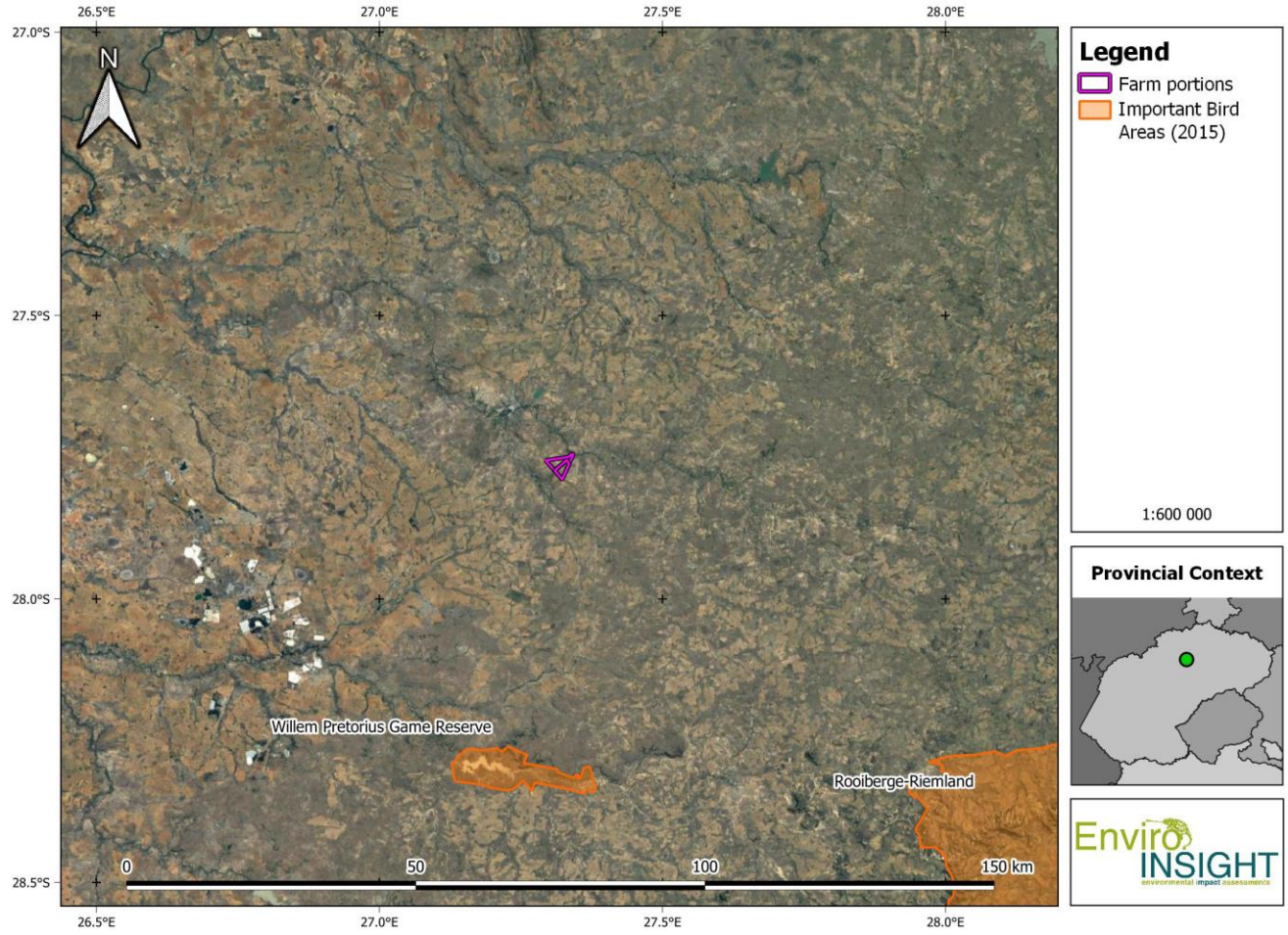

Figure 16: Important Bird Areas in the region.

4.7 EXPECTED AND OBSERVED AVIFAUNA

4.7.1 Total species composition and abundance

A relatively high diversity of 161 bird species for the area have been recorded within the 16 SABAP pentads in which the study area is situated as shown in **Error! Reference source not found.**. During the September 2022 site visit, a total of 79 species were recorded with an additional 37 species recorded during the January optimal wet season, totalling a total of 116.

The observed avian species richness is considered moderate for an area of this size in the South African context. However, the wet season results were highly significant given the highly significant abundance increase in observed avifauna which was representative of an abundance of food and breeding resources. However, even in optimal conditions, the number of priority species and SCC was low.

Many of the birds observed are generally considered to be common, widespread and adaptable species which were observed

within their expected habitats. No nests, but multiple raptor species were recorded within the project footprint. The Combined Project Area was confirmed to support few residents and/or breeding populations of SCC as per the results. Generally, small passerine flight activity was high to moderate and flight paths mainly low, short and local with very few higher-flying commuting individuals observed. However, observations of medium to larger species, including large flocks of commuting waterfowl, were observed, especially towards the northern river system and the drainage line habitats, as were ground congregations of species such as Northern Black Korhaan. Abundances of powerline collision-prone species such as Ludwig's Bustard and Kori Bustard were low.

During the walked transects, the total number of individual birds (per species) were recorded regardless of if they are listed as priority or not. Notable Priority Species recorded during walked transects included numerous Northern Black Korhaans and Double-banded Coursers. The main focus of drive transects was the recording of large birds and raptors. Raptors and Korhaans were the most frequently recorded priority species. Larger raptors persisted throughout the survey area but were often congregated near perching habitat (pylons). These are discussed in more detail below.

- **Focal Sites**

The drainage line system throughout the project study area contained a relatively high density (and higher diversity) of passerines, korhaans and other priority species. The existing power lines were also surveyed, with notable high densities of smaller raptor species including Black-winged Kites and Amur Falcons (wet season) activity.

- **Nest Survey**

Nest sites were searched for during the surveys which included windmills, trees, pylons, bridges and masts, representing most potential roost and nesting sites for raptors. Water bodies were potential roost and nesting sites for multiple species. No significant breeding habitat was recorded during the surveys. Secretarybirds are considered a predicted resident and to be breeding on or near site, although no nests were located.

4.7.2 Sensitive Avifauna Species List

A list of expected priority species in the project area is provided in Table 3. A total of 56 priority species are expected to occur within and surrounding the study area, of which ten (10) species are listed as regionally/globally threatened and near-threatened species, notes in context with the development shown in Table 4.

The priority species list in Table 3 includes the following data:

- Threatened and Near-Threatened species recorded as per the SABAP pentad data (10); and
- Priority species with a medium or higher probability of occurrence (56).
- Priority species (12) recorded during the surveys.

Consequently, every effort was taken to capture all aspects of priority species observed within the field survey to allow for careful evaluation of potential impacts and application of suitable mitigation measures to reduce these impacts where possible.

Table 3: Priority avifauna species list expected and observed in the study area.

Common Name	Scientific Name	Red Data Reg/Global	Priority Species
Abdim's Stork	*Ciconia abdimii*	LC	x
*African Darter	*Anhinga rufa*	LC	x
*African Fish Eagle	*Haliaeetus vocifer*	LC	x
African Harrier-Hawk	*Polyboroides typus*	LC	x
*African Marsh Harrier	*Circus ranivorus*	EN	x
African Snipe	*Gallinago nigripennis*	LC	x
African Spoonbill	*Platalea alba*	LC	x
*Amur Falcon	*Falco amurensis*	LC	x
Black Sparrowhawk	*Accipiter melanoleucus*	LC	x
*Black-winged Kite	*Elanus caeruleus*	LC	x
Black-winged Stilt	*Himantopus himantopus*	LC	x
Blue Korhaan	*Eupodotis caerulescens*	LC / NT	x
Burchell's Coucal	*Centropus burchellii*	LC	x
Cape Shoveler	*Spatula smithii*	LC	x
Caspian Tern	*Hydroprogne caspia*	NT / LC	x
Common Buzzard	*Buteo buteo*	LC	x
Common Greenshank	*Tringa nebularia*	LC	x
*Double-banded Courser	*Rhinoptilus africanus*	NT	x
*Egyptian Goose	*Alopochen aegyptiaca*	LC	x
European Honey-buzzard	*Pernis apivorus*	LC	x
Fulvous Whistling Duck	*Dendrocygna bicolor*	LC	x
Gabar Goshawk	*Micronisus gabar*	LC	x
Glossy Ibis	*Plegadis falcinellus*	LC	x
Goliath Heron	*Ardea goliath*	LC	x
Great Crested Grebe	*Podiceps cristatus*	LC	x
Greater Flamingo	*Phoenicopterus roseus*	NT / LC	x
*Greater Kestrel	*Falco rupicoloides*	LC	x
Lanner Falcon	*Falco biarmicus*	VU / LC	x
Lesser Flamingo	*Phoeniconaias minor*	NT / NT	x
Little Grebe	*Tachybaptus ruficollis*	LC	x
Maccoa Duck	*Oxyura maccoa*	LC	x
Marsh Owl	*Asio capensis*	LC	x
Marsh Sandpiper	*Tringa stagnatilis*	LC	x
Martial Eagle	*Polemaetus bellicosus*	EN / EN	x
*Northern Black Korhaan	*Afrotis afraoides*	LC	x
Pale Chanting Goshawk	*Melierax canorus*	LC	x
Pied Avocet	*Recurvirostra avosetta*	LC	x
Red-billed Teal	*Anas erythrorhyncha*	LC	x

Red-footed Falcon	*Falco vespertinus*	LC	x
*Reed Cormorant	*Microcarbo africanus*	LC	x
Ruff	*Calidris pugnax*	LC	x
Secretarybird	*Sagittarius serpentarius*	VU / EN	x
*South African Shelduck	*Tadorna cana*	LC	x
Southern Pochard	*Netta erythrophthalma*	LC	x
*Spur-winged Goose	*Plectropterus gambensis*	LC	x
Squacco Heron	*Ardeola ralloides*	LC	x
Western Barn Owl	*Tyto alba*	LC	x
*Western Cattle Egret	*Bubulcus ibis*	LC	x
Whiskered Tern	*Chlidonias hybrida*	LC	x
White Stork	*Ciconia ciconia*	LC	x
White-backed Duck	*Thalassornis leuconotus*	LC	x
White-breasted Cormorant	*Phalacrocorax lucidus*	LC	x
White-faced Whistling Duck	*Dendrocygna viduata*	LC	x
White-winged Tern	*Chlidonias leucopterus*	LC	x
Wood Sandpiper	*Tringa glareola*	LC	x
*Yellow-billed Duck	*Anas undulata*	LC	x
		10	56

* These species were observed and recorded to date during both surveys and are expected from SABAP1 or SABAP2.

Table 4:SCC avifauna species list expected and observed in the study area.

	Scientific Name	Common Name	Conservation Status		Risk to SEF	Specific habitats of concern	Recommendation
			Regional	IUCN			
Predicted	*Polemaetus bellicosus*	Martial Eagle	EN	EN	Nesting site buffers	Tall trees but also man-made structures (electricity pylons)	Survey for suitable breeding habitat, map and buffer accordingly
Predicted	*Falco biarmicus*	Lanner Falcon	VU	LC	None	None	None
Predicted	*Phoenicopterus minor*	Lesser Flamingo	NT	LC	Foraging site buffers	Shallow water bodies	Survey for suitable breeding habitat, map and buffer accordingly
Predicted	*Sagittarius serpentarius*	Secretarybird	VU	EN	Nesting site buffers	Tall trees with flat crowns	Survey for suitable breeding habitat, map and buffer accordingly
Recorded	*Circus ranivorus*	African Marsh Harrier	EN	LC	Nesting site buffers	Open grasslands adjacent to wetlands	Survey for suitable breeding habitat, map and buffer accordingly
Predicted	*Ciconia nigra*	Black Stork	VU	LC	Roosting and nesting site buffers	Unpredictable, usually tall isolated trees	Unlikely to require specific action
Recorded	*Rhinoptilus africanus*	Double-banded Courser	NT	LC	None	Unpredictable, usually under tall isolated trees	Unlikely to require specific action

Figure 17: Double-banded Courser (NT)

Figure 18: Northern Black Korhaan (Priority)

4.8 SITE ECOLOGICAL IMPORTANCE (SEI)

As described in the species protocol guidelines (SANBI 2020), Site Ecological Importance (SEI) is a "standardised metric for identifying site-based ecological importance for species, in relation to a proposed project with a specific footprint and suite of anticipated activities". SEI allows for rapid spatial inspection and evaluation of impacts of a proposed development within the context of on-site habitats and SCC, and also facilitates integration of inputs from different specialist studies. SEI depends on the careful spatial delineation of habitat types and an understanding of their utilisation by species of conservation concern. The evaluation of SEI is presented in Table 5 with the guidelines for interpreting SEI shown as Figure 19. All habitats present in the Combined Project Area are classified as Medium and minimisation and restoration mitigation will be required for the Medium SEI habitats.

Table 5: Evaluation of Site Ecological Importance (SEI) of avifauna habitats in the study area. BI = Biodiversity Importance.

Habitat	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Open Grassland	**Medium** – Multiple confirmed or highly likely populations of SCC albeit relatively generic and where SCC of IUCN Vulnerable or Endangered are dependent on the habitat.	**Medium** – Despite large area, this habitat has a sustained high level of current negative ecological impacts.	**Medium** – Habitat that can recover rapidly, because it is already in a transformed state.	**MEDIUM** **(BI = Medium)**
Isolated Rocky Ridges	**Medium** – Multiple confirmed or highly likely populations of SCC and where SCC of IUCN Vulnerable or Endangered are relatively dependent on the habitat for foraging and possibly breeding.	**Medium** – Cumulatively small (>100 ha) intact area for any conservation status of SCC although ecosystem type is Least Concern. Habitat type crucial for SCC foraging, roosting and breeding with currently only minimal current negative ecological impacts.	**Medium** – Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality.	**MEDIUM** **(BI = Medium)**

Wetland and Drainage line Habitat	**High** – Multiple confirmed or highly likely populations of SCC and where SCC of IUCN Near Threatened, Vulnerable or Endangered are relatively dependent on the habitat for migration. foraging and possibly breeding.	**High** – Cumulatively large(>100 ha) intact area for any conservation status of SCC. Habitat type crucial for SCC foraging, roosting and breeding with currently only minimal current negative ecological impacts.	**Medium** – Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality.	**MEDIUM** **(BI = Medium)**
Waterbody Habitat	**Medium** – Multiple confirmed or highly likely populations of SCC and where SCC of IUCN Near Threatened, Vulnerable or Endangered are relatively dependent on the habitat for migration. foraging and possibly breeding. SCC. Limited potential to support SCC.	**Medium** – Largely disjunct and modified with fragmentation mitigated by connection to drainage line wetland habitat linkage, moderate level of current negative ecological impacts.	**Medium** – Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality.	**MEDIUM** **(BI = Medium)**

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

Figure 19: Guidelines for interpreting SEI in the context of the proposed development activities, reproduced from SANBI (2020).

4.8.1 SEI Discussion

Avifaunal importance relates to species diversity, endemism and the presence of topographical features or primary habitat units with the intrinsic ability to sustain avifaunal assemblages, their food supply as well as SCC. It is clear that throughout the study area most of the habitats are generic in their ability to support a high diversity of general avifaunal species, Red-Listed species and SCC. Few unique geographical or topographical features exist which would cause the areas targeted for development to be classified as a "No-Go" area in regard to avifauna. Due to the low diversity and density of the above mentioned Red-Listed species recorded during the surveys, (including regionally and globally listed Endangered and Vulnerable birds), the region as a whole is considered to be an area of Medium avifaunal importance which does warrant that activities should be managed in a holistic manner at a policy level, prioritising avoidance and minimisation, as well as monitoring of avifaunal species of conservation concern.

- The seasonal drainage lines and accompanying vegetation are linear dispersal corridors for terrestrial and wetland associated bird species. Much higher species diversity (as well as a unique composition) was observed in this habitat and therefore, these systems are earmarked with high avifaunal importance. The drainage lines act as important flight corridors for passerines and raptors between foraging and roosting sites.
- The surface water habitats (artificial dams) are vital in the landscape, primarily due to the very arid conditions prevailing within the region. Avifaunal species depend on an interconnected system of water features (artificial or otherwise) based on seasonality and prevailing climatic conditions. It is anticipated that these systems experience a frequent turnover of species over time (seasonally and long term). They often provide essential breeding habitat, foraging habitat and water resources for avifaunal species including large bodied species of conservation concern such as cranes, storks and bustards.
- The rocky ridges, specifically the steeper koppies, act as prominent landmarks and foraging habitat for diurnal birds of prey.

- The Open Grassland provides suitable foraging habitat for Northern Black Korhaan and Double-banded Courser but are highly generic in the landscape and are not a specific attractant for SCC.
- Note: African Marsh Harrier was recorded at the end of WT 1 which during the recon phase, was thought to be associated with the design footprint. Subsequent changes in design layout remove this single observation from the SEI analysis.

In summary, the following key findings include:

- A low richness of Red-Listed and species of conservation concern occur within the study areas;

5 IMPACT ASSESSMENT

5.1 BACKGROUND TO INTERACTIONS BETWEEN SOLAR ENERGY FACILITIES, POWER LINES AND BIRDS

The effects of a solar farm on birds are highly variable and depend on a wide range of factors including the design and specification of the development, the topography of the surrounding land, the habitats affected, and the number and species of birds present.

Typical potential impacts include (but are not necessarily limited to):

- Habitat loss (including foraging and breeding) and fragmentation due to displacement (avoidance of disturbance). Habitat loss has the tendency to not only destroy existing habitat but also displace bird species from large areas of natural habitat. This specifically has a greater impact on bird species restricted to a specific habitat and its requirements.
- Collision and electrocution with above-ground power transmission lines (to be assessed in separate application). In some cases, collision can be associated with combustion (streamers) from polarised light pollution and waterbird species mistaking large PV panels areas as wetlands or other waterbodies, a case known as the “lake effect” (as per Jenkins *et al*. 2017). The mitigation of these impacts are addressed in this final EIA report with operational phase monitoring designed in the EMPr.
- Disturbance due to noise, such as machinery movements and maintenance operations during the construction and operational phase of the proposed PV solar farm.
- The attraction of some novel bird species due to the development of a solar farm with associated infrastructure, such as perches, nest and shade opportunities
- Chemical pollution: Chemicals being used to keep the PV panels clean from dust (suppressants), etc.

New mitigation measures range from simple (e.g., buffering of habitats) to complex (retrofitting of panels to avoid Lake Effect Impacts). However, by far, the best mitigation option remains the first step of the mitigation hierarchy which is “avoidance”. Consequently, all attempts must be made to avoid potential impacts arising from the proposed development through the application of necessary buffers for sensitive areas, where placement of panel infrastructure may not occur. Additional remaining impacts must be minimised through the application of known and previously tested mitigation measures.

Potential mitigation measures:

- Impacts associated with the loss of bird foraging habitat due to construction activity cannot be mitigated in relation to the majority of the habitats but can be mitigated by avoiding avifauna-specific highly sensitive areas and their associated buffers;
- Impact can be mitigated by timing construction in order to avoid breeding periods of species;
- Set-back areas or buffer zones are allocated to sensitive or important habitat features to alleviate the effect of foraging and nesting/ roosting habitat in particular;
- Impacts due to bird mortalities during the operational phase are practically unavoidable for any large facility, but with the appropriate mitigation measures these impacts can be minimised. It is likely that most of the avifaunal populations will be largely displaced from the majority of the project infrastructure, although significant risks are associated with the likelihood of project vehicles flushing birds into fencing infrastructure as well as collisions of large bodied species with powerlines;
- All powerline infrastructure must be fitted with approved bird diverters in order to provide visibility for large-bodied birds while all fences must be set back from every service road in order to allow for vulnerable species such as cranes and korhaans to obtain adequate height after being flushed by vehicle traffic;
- Migratory pathways of birds cannot be changed and the resulting impacts are unavoidable. However, severity of the impacts can be reduced with appropriate mitigation measures;
- All habitat attractants should be eliminated so that avifaunal populations will not embed themselves within the infrastructure over time. This includes bird diverters, perch deterrents and the application of Non-polarising white tape can be used around and/or across panels to minimise reflection which can attract aquatic birds and insects (food) as panels mimic reflective surfaces of waterbodies;
- The application of strict chemical control protocols which are not detrimental to avifauna.

Table 6: Impacts Associated with the SEF

Bonsmara SEF																				
ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Construction Phase																				

Habitat destruction	Significant habitat loss (including foraging and breeding) and fragmentation due to displacement (avoidance of disturbance) because of infrastructure installation (panels, powerlines, roads, fences and sub surface cables) and associated dust effects. Habitat loss has the tendency to not only destroy existing habitat but also displace bird species from large areas of natural habitat. This specifically has a greater impact on bird species restricted to a specific habitat and its requirements.	2	4	3	2	4	3	45	-	High	Impacts associated with the loss of bird foraging habitat due to construction activity cannot be mitigated in relation to the majority of the habitats but can be mitigated by avoiding avifaunal specific highly sensitive areas and their associated buffers, such as the local drainage lines, impoundments, smaller watercourses, pans and rocky koppies. The overall severity of the impact can be reduced to being insignificant if avoidance mitigation is applied related to the positioning of the panels and supporting infrastructure and minimisation mitigation is applied. Finally and for all panel infrastructure, commencement of construction should be restricted to the months of February, March, April, May, June, July, August, September, October, November (latest) to minimise dust effects and subsequent destruction of the avifaunal habitats.	2	2	2	2	3	2	22	-	Low

Disturbance of bird roosts	The destruction or disturbance of bird roosts during the construction phase	2	4	3	2	2	3	39	-	Medium	As with other impacts, this impact can be mitigated by timing of any panel construction to not commence in November, December and January in order to avoid breeding periods of species within the sensitive drainage lines, wetlands and the general region.	2	3	2	2	2	2	22	-	Low
Disturbance due to noise such as, machinery movements and maintenance operations	Disturbance (including of nesting SCC) due to noise such as, machinery movements and maintenance operations during the construction phase the proposed PV solar farm causing loss of offspring for a generation.	3	3	1	2	4	3	39	-	Medium	As with other impacts, this impact can be mitigated by timing of any panel construction to not commence in November, December and January in order to avoid breeding periods of species within the sensitive drainage lines, wetlands and the general region.	3	2	1	2	3	2	22	-	Low
Operational Phase																				
Disturbance due to noise such as, machinery movements and	Disturbance (including of nesting SCC) due to noise such as, machinery movements and maintenance	3	3	1	2	1	2	20	-	Low	No Mitigation Required	3	3	1	2	1	2	20	-	Low

maintenance operations	operations during the construction phase the proposed PV solar farm causing loss of offspring for a generation.																			
Bird mortalities	Bird mortalities during the operational phase due to vehicle collisions, collisions with infrastructure and/or combustion.	3	3	2	2	2	3	36	-	Medium	Impacts due to bird mortalities during the operational phase are practically unavoidable for any large facility, but with the appropriate mitigation measures these impacts can be minimised. It is likely that most of the avifaunal populations will be largely displaced from the majority of the project infrastructure, although significant risks are associated with the likelihood of project vehicles flushing birds into fencing infrastructure as well as collisions of large bodied species with powerlines. Although the current overall bird activity qualifies the proposed solar development boundary as a high-density area, there are certain times of the year (and day) when it appears that large flocks of birds (such as cranes bustards and large birds of prey) are far more prevalent. All powerline infrastructure must be fitted with	3	2	2	2	2	2	22	-	Low

											approved bird diverters in order to provide visibility for large-bodied birds. In all areas where service road intersects with semi natural or natural habitat, all fences that are constructed (if any) must be set back at least (strictly) 75 metres from the edge of every service road in order to allow for vulnerable species such as coursers, cranes and korhaans to obtain adequate height after being flushed by vehicle traffic. An Alternative mitigation measure and where a 75 metre buffer is not possible, new fences must be set back no more than 2 metres (directly adjacent) from the edge of service roads. Through the essential elimination of habitat, this will limit any chance of vulnerable species foraging on verge side vegetation and causing subsequent fence collisions. Finally, reflective diverters should be attached to new fencing alongside regular maintenance roads every 50 metres.									

Loss of Bird Foraging Habitat	Loss of Bird Foraging Habitat	3	3	2	2	2	3	36	-	Medium	Impacts associated with the loss of bird foraging habitat due to operations can be mitigated by avoiding avifaunal specific sensitive areas and their associated buffers, such as the local drainage lines, impoundments, smaller watercourses, pans and koppies. A green buffer should be maintained around all habitats with a SEI designated as High or above.	3	2	2	2	2	2	22	-	Low
Disruption of bird migratory pathways	Disruption of bird migratory pathways during the operational phase	3	3	2	2	4	2	28	-	Medium	Migratory pathways of birds cannot be changed and the resulting impacts are unavoidable. However, severity of the impacts can be reduced with appropriate mitigation measures. Some significant discernible migratory flight pathways were able to be established which could be explained by large areas of generic habitats punctuated by some distinguishing geographic features in the landscape, such as large ridges, large impoundments, wetlands and drainage lines. The linear Drainage line habitats must be buffered by a minimum of 50 metres from the edge of the demarcated wetland.	3	2	2	2	2	2	22	-	Low

The attraction of some novel bird species due to the development of a solar farm with associated infrastructure such as lake effect, perches, nest and shade opportunities	The attraction of some novel bird species due to the development of a solar farm with associated infrastructure such as lake effect perches, nest and shade opportunities may cause both damage to the infrastructure through acidic defecation by certain species but also draw birds closer to infrastructure and cause significant direct mortality risks.	3	2	2	2	3	2	24	-	Medium	Essentially, all habitat attractants should be eliminated so that avifaunal populations will not embedded themselves within the infrastructure over time. This includes bird diverters, perch deterrents and the application of non-polarising white tape can be used around and/or across panels to minimise reflection which can attract aquatic birds and insects (food) as panels mimic reflective surfaces of waterbodies.	3	2	1	1	3	2	20	-	Low
Chemical pollution spills	Chemicals being used to keep the PV panels clean from dust (suppressants) etc.	3	3	2	2	4	3	42	-	Medium	Application of strict chemical control procedures as per the EMPr. Zero spills should be targeted and full clean up kits available in the event of any chemical spill. Soil testing subject to EMPr.	1	2	2	2	3	2	20	-	Low

Decommissioning Phase																				
Disruption of bird migratory pathways	Disruption of bird migratory pathways during the decommissioning phase	3	3	2	2	4	2	28	-	Medium	Decommissioning of panels must not commence during the peak wet season months on November, December and January.	3	2	2	2	2	2	22		Low
Cumulative: There are a number of existing renewable energy projects (currently only solar Energy Facilities (WEFs)) that already have quantified negative impacts on the avifauna community in the region. Therefore, any impacts anticipated from the proposed solar facility will add to these existing impacts and require assessment under a Cumulative Impacts assessment. Results obtained during this preconstruction survey and from the subsequent impact analysis should be considered in conjunction with the impacts created by the proposed development. The current developments within the region raise the possibility of significant cumulative impacts, especially concerning collision risk, habitat loss and fragmentation and loss of suitable habitat for threatened species.																				
Habitat loss	Regional Saturation of SEF facilities causing habitat loss	2	4	3	2	4	3	45	-	High	Not able to be mitigated quantitatively									
Collison mortality (vehicle)	Increased roadkill due to higher traffic volumes	3	3	2	2	4	2	28		Medium	Enforcement of speed limits in the PAOI as well saturation of fence infrastructure with reflective diverters.	3	2	1	1	2	2	18		Low

Table 7: Impacts related to the Grid Connection

Bonsmara Grid Connection																				
ENVIRONMENTAL PARAMETER	**ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE**	**ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION**									**RECOMMENDED MITIGATION MEASURES**	**ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION**								
		E	**P**	**R**	**L**	**D**	**I / M**	**TOTAL**	**STATUS (+ OR -)**	**S**		**E**	**P**	**R**	**L**	**D**	**I / M**	**TOTAL**	**STATUS (+ OR -)**	**S**
Construction Phase																				
Habitat destruction	Habitat loss (including foraging and breeding) and fragmentation due to displacement (avoidance of disturbance) as a result of infrastructure installation (Grid related infrastructure such	2	4	3	2	2	3	39	-	Medium	Impacts associated with the loss of bird foraging habitat due to construction activity cannot be mitigated in relation to the majority of the habitats but can be mitigated by avoiding avifaunal specific highly sensitive areas and their associated buffers, such as the local drainage lines, impoundments, smaller	2	2	2	1	3	2	20	-	Low

	as powerlines and pylons) and associated dust effects. Habitat loss has the tendency to not only destroy existing habitat but also displace bird species from natural habitat. This specifically has a greater impact on bird species restricted to a specific habitat and its requirements.										watercourses, pans and rocky koppies. The overall severity of the impact can be reduced to being insignificant if avoidance mitigation is applied related to the positioning of the Grid Connection Infrastructure and powerlines.									
Disturbance of bird roosts	The destruction or disturbance of bird roosts during the construction phase	2	3	2	2	2	2	22	-	Low	No mitigation intervention required.	2	3	2	2	2	2	22	-	Low
Disturbance due to noise such as, machinery movements.	Disturbance (including of roosting and nesting SCC) due to noise such as, machinery movements and	2	3	2	2	2	2	22	-	Low	No mitigation intervention required.	2	3	2	2	2	2	22	-	Low

	maintenance operations during the construction phase the proposed Grid Connection Infrastructure causing loss of offspring for a generation.																			
Operational Phase																				
Bird mortalities	Bird mortalities during the operational phase due to, collisions with infrastructure.	3	3	2	2	2	3	36	-	Medium	Impacts due to bird mortalities during the operational phase are practically unavoidable for any large facility, but with the appropriate mitigation measures these impacts can be minimised. All powerline infrastructure must be fitted with approved bird diverters in order to provide visibility for large-bodied birds.	3	2	1	1	2	2	18		Low

Disruption of bird migratory pathways	Disruption of bird migratory pathways during the operational phase	2	3	2	2	2	3	33	-	Medium	Migratory pathways of birds cannot be changed, and the resulting impacts are unavoidable. However, severity of the impacts can be reduced with appropriate mitigation measures. Some significant discernible migratory flight pathways were able to be established which could be explained by large areas of generic habitats punctuated by some distinguishing geographic features in the landscape, such as large ridges, large impoundments, wetlands and drainage lines. The use of **Grid Alternative 1** is imperative to mitigate this impact.	2	2	1	1	2	2	16	-	Low

The attraction of some novel bird species due to the development of associated infrastructure such as pylons.	The attraction of some novel bird species due to the development of a solar farm with associated infrastructure such as perches, nest and shade opportunities may cause both damage to the infrastructure through acidic defecation by certain species but also draw birds closer to infrastructure and cause significant direct mortality risks.	2	3	2	2	2	2	22	-	Low	Essentially, all habitat attractants should be eliminated so that avifaunal populations will not embedded themselves within the infrastructure over time. This includes bird diverters, perch deterrents. All line associated fences should show regular reflective diverters.	3	2	1	1	2	2	18	-	Low
Decommissioning Phase																				
Disruption of bird migratory pathways	Disruption of bird migratory pathways during the decommissioning phase of the grid.	3	3	2	2	4	2	28	-	Medium	If the grid is to be decommissioned, decommissioning of powerlines must <u>not</u> commence during the peak wet season migration months on November, December and January.	3	2	2	2	2	2	22		Low

Cumulative: Powerlines are ubiquitous throughout the South African rural landscape and ever increasing connectivity combined with current developments within the region raise the possibility of significant cumulative impacts, especially concerning collision risk.																				
Collison mortality (powerlines)	Increased collision related mortalities due to increased powerlines	3	4	3	2	2	4	56		High	Saturation of powerline infrastructure with approved bird diverters	3	2	1	1	2	3	27		Medium

5.1.1.1 Post Construction Rehabilitation

- A rehabilitation plan must be commissioned before construction commences.
- All topsoil harvesting must take place in the dry season (late dry season).
- Returning the wetlands to their original grade must take place as minor differences in the final surface elevation can produce significant impacts on the type of vegetation that re-establishes itself (alien invasive species).
- When topsoil is salvaged and returned, it is anticipated without reseeding that dense vegetative communities of native species can regenerate within two growing seasons.
- As emergent wetlands will recover more quickly than others, artificial seeding is not advised as it creates competition for reestablishment of native facultative and obligate wetland vegetation.

5.1.2 General Mitigation of Impacts

Due to the global demand for renewable energy, a strong research emphasis has been placed on describing and defining mitigation measures to negate or minimise the negative impacts associated with such facilities. In particular, much research is focused on bird impacts prevention/minimisation at solar facilities (see TBC 2021). New mitigation measures range from simple (e.g. buffering of habitats) to complex (retrofitting of panels to avoid Lake Effect Impacts). However, by far the best mitigation option remains the first step of the mitigation hierarchy which is “avoidance”. Consequently, all attempts will be made to avoid potential impacts arising from the proposed development through the application of necessary buffers for sensitive areas, where placement of panel infrastructure may not occur. Additional remaining impacts will be minimised through the application of known and previously tested mitigation measures.

Alternative additional mitigation measures may include change of the current land use to minimise attraction for priority species. Since development and construction go hand in hand with high ambient and stochastic noise levels (machinery) and habitat loss, it is possible for bird species and bird individuals to be displaced from the surrounding environment. It is essentially true for large species that require extensive home ranges, and those species that are inherently shy or unobtrusive by nature (e.g., raptors). Displacement will be the response of raptors to the disturbance activity, for example when a bird changes its behaviour or takes flight by aborting its activity prior to the disturbance or being unsuccessful in completing its current activity (Ruddock & Whitfield 2007). Reactions are likely to differ between species and between individuals of the same species (Rogers & Smith 1995; Rogers & Schwikert 2002). Reactions are also positively correlated to the magnitude and frequency of a particular disturbance event. For the proposed solar facilities as well as the cumulative impacts, it cannot be predicted to a 100% confidence to what degree these activities will affect the Priority Species, but it must be stated that many bird species will become accustomed, or have the ability to learn and adapt, to constant occurring disturbance events of low magnitude (e.g. vehicle noise) unless they are directly affected (e.g. their physical habitat is affected). Collision with powerlines is the most significant impact for the species in the region.

Set-back areas or buffer zones are allocated to sensitive or important habitat features to alleviate the potential effect of foraging and nesting/ roosting habitat in particular and these are built in to the sensitivity mapping. The choice of an appropriate set-back distance is complex since different species and even different taxon groups demand different habitat types or home ranges to

maintain a viable population in the long term. Given that the study area has not been confirmed as a foraging site and breeding site for Secretary Birds and indeed most other raptor species, the mitigation recommendations that are proposed in order to preserve the basic existing medium sensitivity ecological function of the raptor habitats, minimising collisions and to maintain foraging corridors for large SCC raptor species in the form of a set-back area of natural vegetation are considered non-negotiable.

5.1.3 Summary of Proposed Mitigation Measures

It is deemed possible, through the application of appropriate mitigation measures, to restrict the impact of on the local and regional avifaunal population to a low level of significance. The following mitigation summary is provided:

Habitat destruction: Where possible, apply necessary buffers for roost sites and other sensitive bird habitat features, avoiding the construction of panels and access roads in these areas. Roads must utilise or upgrade existing farm roads as far as possible. All underground cables bisecting sensitive habitats must be placed below the subsurface flow of the ephemeral wetlands with the linear construction pits subjected to full rehabilitation in order to maintain normal subsurface slow. All roads and crossings must be engineered not to impede surface or subsurface flow in any way.

Bird mortality: Avoid placement of panels near sensitive bird breeding and roosting habitats. The application of adaptive mitigation measures (e.g., retrofitting non-polarising white tape can be used around and/or across panels to minimise reflection), according to post-construction monitoring results (counted collisions of threatened species) must be informed by environmental correlates of avifaunal activity and/or collisions (EMPr).In addition, the addition of grazing sheep to the footprint may attract raptor SCC who may scavenge on dead lambs/ adult sheep or prey upon livestock. Strict carcass retrieval must be incorporated into the EMP where carcasses are removed and correctly disposed of within the same day of death. This will require constant monitoring of all sheep herds in the footprint.

Bird collisions with panels and powerlines: Use of parabolic (curved) mirrors is preferred instead of flat heliostats to reduce the likelihood of skyward reflection to minimise potential bird collisions. However the use of flat panels does not represent a fatal flaw. All powerlines must be flapped with appropriate diverters and no elevated powerlines are to cross drainage line habitats.

Avoidance: It is recommended that limited development takes place in High sensitivity areas. Minimise impacts to natural and artificial wetlands and water bodies by implementing the appropriate buffer areas where no development may take place. This includes a 50 m proposed no-go buffer proposed around small artificial water points as they serve as focal points for bird activity and 50 metres around drainage lines/ wetlands. All large impoundments require a buffer from any infrastructure activity. The buffering is displayed on the sensitivity mapping although significant infrastructure is far more than the required minimum buffering.

General Mitigation Measures

- Formal post construction monitoring must be applied once the development have been activated, as per the most recent edition of the best practice guidelines (Jenkins et al. 2017). The exact scope and nature of the post-construction monitoring will be informed on an ongoing basis by the result of the monitoring through a process of an establishment of available new technology and adaptive management. The purpose of this would be to establish if and to what extent

displacement of priority species has occurred through the altering of breeding and foraging behaviour post-construction, and to search for and identify carcasses near panels and newly erected powerlines (mortality).

- Post-construction monitoring should be undertaken as per the EMPr and Section 6 of this report. The exact scope, nature and frequency of the post-construction monitoring will be informed on an ongoing basis by the results of the monitoring through a process of adaptive management.

5.1.4 Species Specific Risk Analysis and Recommended Mitigations

According to SABAP2 and Taylor *et al.* (2015), and as mentioned above, seventeen (17) SCC are known to occur in the region with eight (8) species designated as highly likely or confirmed during the respective surveys, representing a very moderate success rate, even given the short study period. Of the confirmed species and according to Taylor *et al.* (2015), three of the species are Endangered, four of the species are Vulnerable species and three are Near-Threatened. Given that even long-term studies conducted over multiple periods, these species warrant increased contextual discussion in regard to predicted impacts and mitigation measures.

However, the areas showing large associations with ridges and/ drainage lines are characterised by some significantly unique (in the landscape) habitat attributes and are thus likely to provide refuge and foraging habitat for large terrestrial bird species (e.g. cranes, bustards, secretary bird and storks) and/ or wetland associates/ foraging migratory raptors, therefore, elevating the sensitivity. Regarding the current study, it was deemed unnecessary that all species should be discussed in detail. Species such as Lanner Falcon and migratory raptors incur pressures outside of the borders of South Africa and do not warrant intensive discussion. Therefore, the selected relevant species that are possibly susceptible to the proposed development have been discussed in detail below. Photographic evidence of Red-Listed species observed during the current study are provided below.

5.2 ANTICIPATED CUMULATIVE IMPACTS

REEA (Quarter 4, 2022[4]) was used to assess the potential cumulative impacts. The proposed PV development represents the only such development for a radius of ~9 km and there are two approved SEFs within a 30 km radius, 100 MW Vrede to the west and 100 MW Rondavel to the northwest, and one SEF application in process for the 5MW Steynrus to the southeast (Figure 20). No other renewable energy developments existing with the 30 km radius.

Assuming that the total areas represented by the SEF's developments shown in Figure 20 will contain solar infrastructure, Table 8 shows that the maximum transformed area from the SEF development boundaries within a 30 km radius of the proposed development is expected to amount to 1.9% (6 014 ha) of the total land area. The proposed Bonsmara SEF itself only represents 0.1% of the 30 km radius area, indicating a small proportion of transformation in the regional context. The combined transformed area for the WEF (including the proposed Bonsmara SEF) is expected to represent 2.0% of the 30 km radius area.

No other renewable energy technologies are planned within a 30 km radius of the proposed development.

[4] https://egis.environment.gov.za/data_egis/data_download/current

Table 8: Cumulative impact from approved WEFs in the region.

Elements	Area (ha)	Proportion of total area
Total area of 30 km buffer surrounding (and including) the proposed PV cluster.	313996	100.0%
Total area of approved renewable energy projects within the 30 km buffer	6014	1.9%
Solar CSP[5]	0	0.0%
Solar PV[5]	6014	1.9%
Wind	0	0.0%

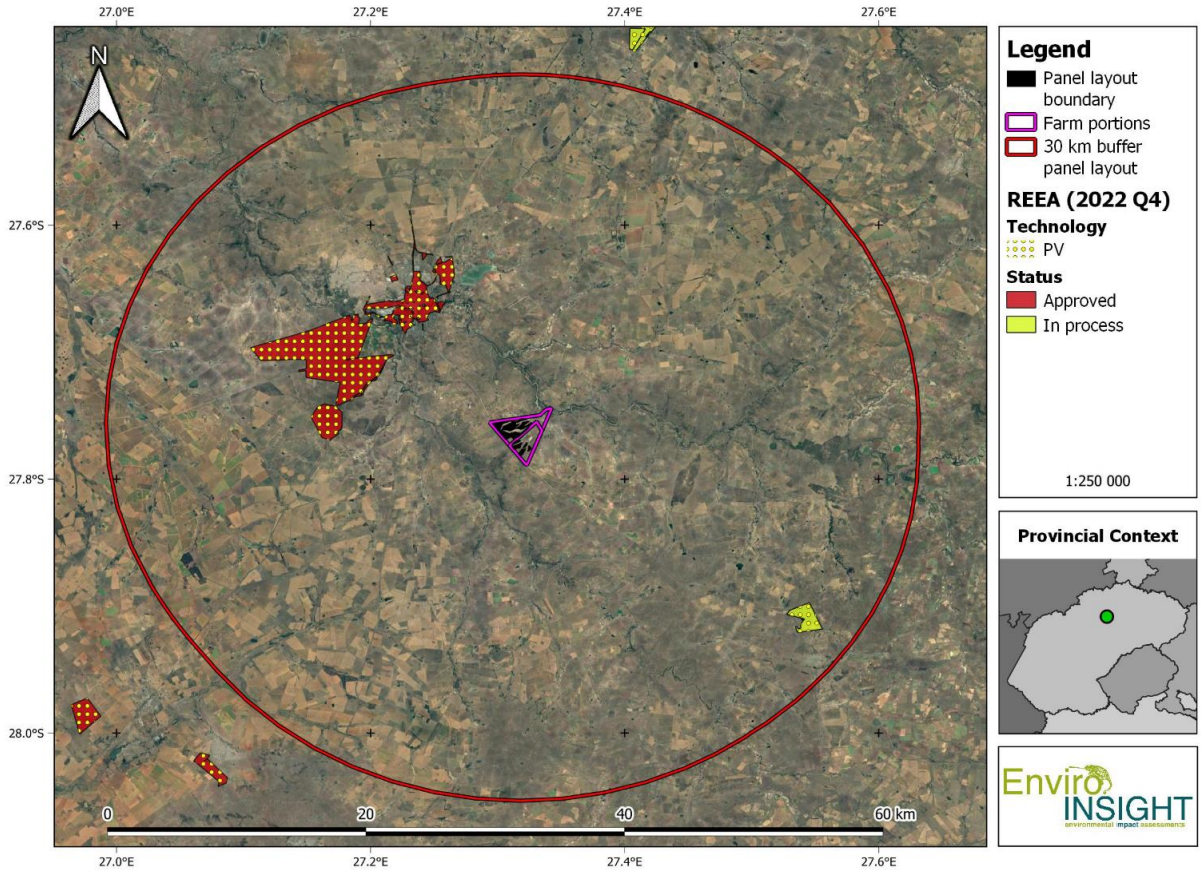

Figure 20. Location of known regional renewable energy projects (REEA Quarter 4, 2022[6]) in relation to the Project Area.

[5] Combined solar PV and wind areas calculated separately per technology
[6] https://egis.environment.gov.za/data_egis/data_download/current

6 MONITORING REQUIREMENTS

Post-construction monitoring as per the relevant guidelines at the time must be implemented in the event of regular foraging and or breeding colonisation by any of the aforementioned SCC.

The following outlines a general monitoring plan (EMPr) structure.

	Title: SCC community monitoring
Stressor	Project Activities, Micro Climatic Changes
Receptor(s)	Avifauna SCC diversity and densities in each habitat type
Variables	Presence/absence of bird species of conservation concern, including observed breeding behaviour, proportion of SCC species present per sample site, species richness and densities.
Sampling Method	• Drive Transects (species lists) – all species seen to be recorded along set transects to be driven during dawn till pre 10 am; and • Walked Transects (species lists) – all species heard and seen to be recorded along set transects to be walked at dawn chorus
Sampling Frequency	• Annual wet and dry season surveys; and • Continuous observations by ECO.
Sampling Site(s)	As provided in EMPr with focus on drainage lines, koppies, nesting sites and 500 m buffer around the project footprint.
Change and Action Thresholds	Loss/decrease in any SCC parameter, unnatural decline (cannot be explained by stochastic weather changes) in species densities and/or richness. Similarly, positive changes (e,g, unusual presence in high densities of nomadic species such as Ludwig's Bustard or establishment of SCC breeding population such as Blue Cranes, Large SCC Raptors and Secretary Bird) in species densities and/or richness that indicate disturbance. Rapid surveys of greater surrounding area should be conducted to attempt to determine cause of change detected.
Data Analysis	All variables acquired should be statistically and graphically compared to the available data and the original targeted baseline data. Photographs should be taken of as many SCC observed in the field.
Reporting requirements	Annual reporting presenting data analysis results and mapping indicating locations of change. Specific reporting on negative change detection not directly attributable to Project activities (Solar Facility Operation) and their cause. All reporting to be accompanied by GIS shapefiles and any original photographs.

	TITLE: Mortality monitoring

Stressor(s)	Avifauna-Panel and powerline collisions (incidents)
Receptor(s)	Avifauna community composition, density and distribution
Variables	Species, geographical location and date of every avifaunal mortality
Sampling Method	• For powerlines: Weekly surveys before dawn (prior to scavenger activity) by driving slowly along the servitudes and documenting each collision kill location and species (a georeferenced photograph as evidence is required). • For panel location sites: weekly inspection on foot of cleared areas for birds killed during the operation process. Location and species must be recorded (a georeferenced photograph as evidence is also required).
Sampling Frequency	Weekly for powerlines, weekly for panels
Sampling Site(s)	Along the entire powerline network on the PAOI. All operational panels.
Collision Action Thresholds	Collision frequency and intensity (#kills per species per unit time) will need to be assessed per species by specialist. However, any non-specific collision concentrations (> 10 kills per month clustering in a stretch of powerline or a specific turbine) must initiate investigation and corrective measures (including retrofitting of mitigation measures).
Data Analysis	Geospatial analysis of density and dispersion of avifaunal mortalities highlighting the core areas of mortalities so that corrective measures can be implemented. Time-series and trend analysis to accompany evaluation to inform on temporal fluctuations (e.g. seasonality) and steer adaptive management. Cumulative species-specific summary statistics to be calculated.
Reporting requirements	• Bi-annual reporting of faunal avifaunal mortalities associated with collision data highlighting locations where corrective measures are to be taken (if necessary).

7 FINAL SITE SENSITIVITY

The study area mostly consists of Open Grassland with some drainage line habitats found in parts of the proposed project footprint. The Grassland (including woodland permeations) and Koppie vegetation provides potential nesting habitat for bird species such as small Raptors, Larks, Pipits, Cisticola's and Korhaan and possibly including hunting/foraging habitat for species such as Lanner Falcon, Secretary bird and other larger raptors. The woodland and ridge areas found within the PAOI consist of succulents and some large thorn bushes which might provide possible nesting and foraging habitat for species such as Chats and Prinia's, including sensitivity species such as the Secretarybird.

The site visit in September 2022 took place during the late dry season, which means the habitat conditions were at their least optimal. When conditions are sub-optimal, avifaunal assemblages will carry out small scale migrations to more ecologically productive habitats (such as permanent water courses) and return after the post rain green flush. Even the large artificial impoundment showed almost no significant bird activity, with expected species such as ducks, geese, stilts, stints, and plovers all but absent. However, the January 2023 Summer wet-season showed that within the drainage lines and impoundment areas, as well as the general grassland habitats, migratory patterns during summer and higher rainfall provided optimal foraging habitat for sensitive species with a possibility to occur on site such as Bustards, Storks, Waders, and a plethora of other priority species

not observed during the two surveys. Accordingly, all watercourses are mapped as sensitive and buffered at 50 metres with side of the edge of the habitat delineation (Figure 21).

There is an existing substation running along the southern border of the southern section of the study area. The associated powerline did not have any signs of priority bird species nests but could lead to possible nesting in the future for species such as Martial Eagle. The species abundance would be at its highest during and after the rainy season, as food resources increase more birds will fly in, including water associated bird species which will mostly be found at the larger dam north of the powerline study area.

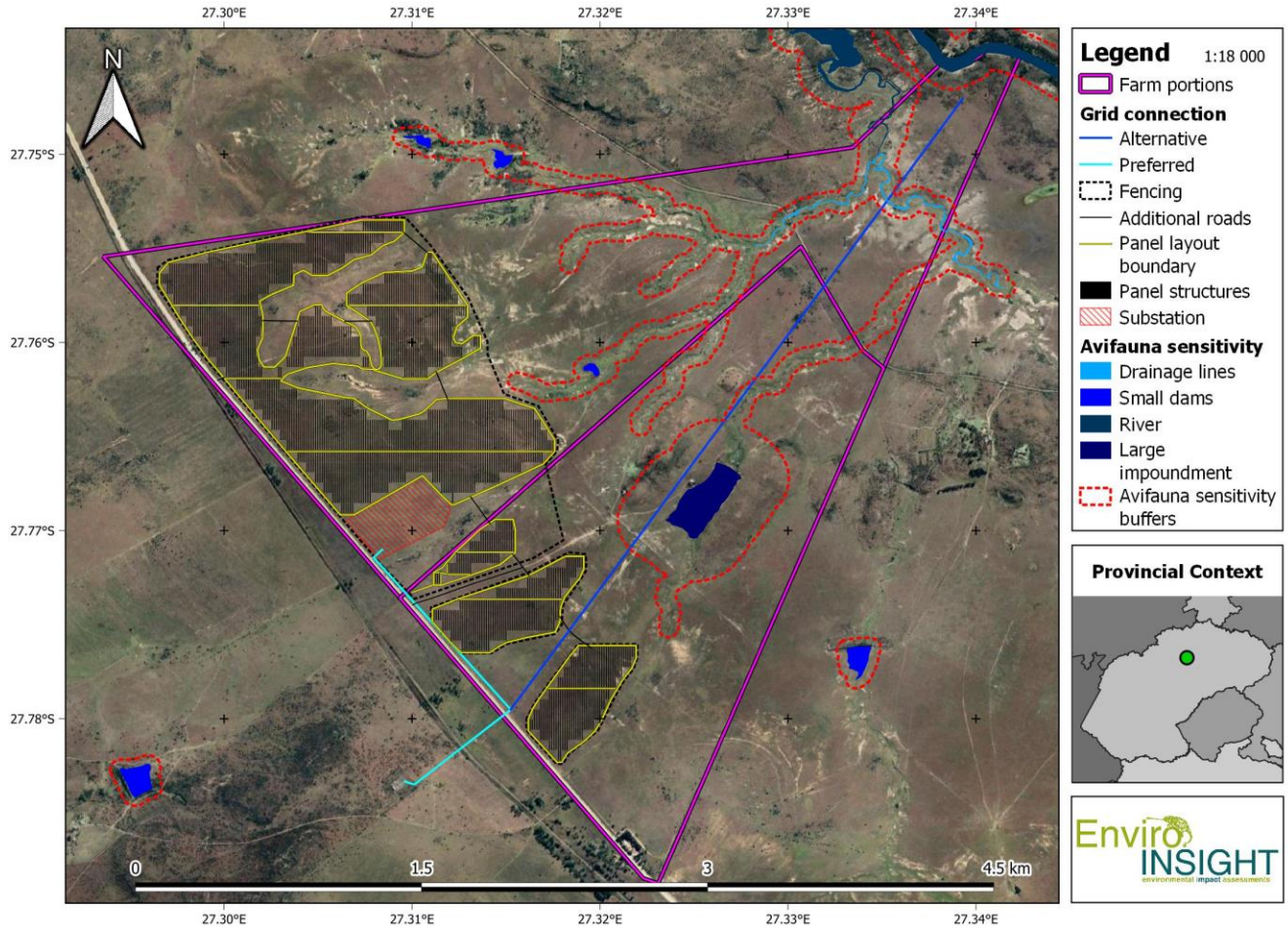

Figure 21: Final avifauna sensitivity map.

8 COMPARATIVE ASSESSMENT OF ALTERNATIVES

The respective alternatives being considered as part of the EIA process for the proposed development must be comparatively assessed as per the table provided by SiVEST.

Table 9: Comparative Assessment

Key

PREFERRED	The alternative will result in a low impact / reduce the impact / result in a positive impact
FAVOURABLE	The impact will be relatively insignificant
LEAST PREFERRED	The alternative will result in a high impact / increase the impact
NO PREFERENCE	The alternative will result in equal impacts

Alternative	Preference	Reasons (incl. potential issues)
GRID LINES ALTERNATIVES		
Grid Line Alternative 1	Preferred	Since this proposed option is located adjacent to existing infrastructure (such as main roads) where edge effects are already high and sensitivity for avifauna habitat is low, this is preferred.
Grid Line Alternative 2	Least Favourable	This alternative transects the site and crosses/ lies adjacent to sensitive habitats. It is significantly more sensitive than Alternative 1.

Table 10: EMPR

Bonsmara SEF					
Impact/Aspect	**Mitigation/Management Actions**	**Responsibility**	**Methodology**	**Mitigation/Management Objectives and Outcomes**	**Frequency**
Design					
Construction					
Disturbance of bird roosts	• As with other impacts, this impact can be mitigated by timing of any panel construction to not commence in November, December and January in order to avoid breeding periods of species within the sensitive drainage lines, wetlands and the general region.	• Client Appointed ECO.	• Drive Transects (species lists) – all species seen to be recorded along set transects to be driven during dawn till pre 10 am; and • Walked Transects (species lists) – all species heard and seen to be recorded along set transects to be walked at dawn chorus. • All variables acquired should be statistically and graphically compared to the available data and	• Loss/ decrease in any SCC parameter, unnatural decline (cannot be explained by stochastic weather changes) in species densities and/or richness. Similarly, positive changes (e,g, unusual presence in high densities of nomadic species such as Bustards or establishment of SCC breeding population such as Blue Cranes (not yet sighted), Large SCC Raptors and Secretary Bird) in species densities and/or richness that indicate disturbance. Rapid surveys of	• Twice weekly during construction.

			the original targeted baseline data. Photographs should be taken of as many SCC observed in the field. • Quarterly reporting presenting data analysis results and mapping indicating locations of change. Specific reporting on negative change detection not directly attributable to Project activities (Solar Facility Operation) and their cause. All reporting to be accompanied by GIS shapefiles and any original photographs.	greater surrounding area should be conducted to attempt to determine cause of change detected.	
Disturbance due to noise such as, machinery movements and maintenance operations	As with "Disturbance of bird roosts"	As with "Disturbance of bird roosts"	As with "Disturbance of bird roosts"	As with "Disturbance of bird roosts"	As with "Disturbance of bird roosts"

Operation					
	•	•	•	•	•
Bird mortalities	• Impacts due to bird mortalities during the operational phase are practically unavoidable for any large facility, but with the appropriate mitigation measures these impacts can be minimised. It is likely that most of the avifaunal populations will be largely displaced from the majority of the project infrastructure, although significant risks are associated with the likelihood of project vehicles flushing birds into fencing infrastructure as well as collisions of large bodied species with powerlines. Although the current overall bird activity qualifies the proposed solar development boundary as a high-density area, there are certain times of the year (and day) when it appears that large flocks of birds (such as cranes, bustards and large birds of prey) are far more prevalent. All powerline infrastructure	• Company Appointed ECO, trained by SACNASP registered Zoologist.	• For panel location sites: weekly inspection on foot of cleared areas for birds killed during the operation process. Location and species must be recorded (a georeferenced photograph as evidence is also required). • Monthly reporting presenting data analysis results and mapping indicating locations of change. Specific reporting on negative change detection not directly attributable to Project activities (Solar Facility Operation) and their cause. All reporting to be accompanied by GIS shapefiles and any original photographs.	• Collision frequency and intensity (# kills per species per unit time) will need to be assessed per species by specialist. However, any non-specific collision concentrations (> 10 kills per month clustering in a stretch of powerline) must initiate investigation and corrective measures (including retrofitting of mitigation measures).	• Weekly for panels between November and March.

	must be fitted with approved bird diverters in order to provide visibility for large-bodied birds. In all areas where service road intersects with semi natural or natural habitat, all fences must be set back at least (strictly) 75 metres from the edge of every service road in order to allow for vulnerable species such as cranes and korhaans to obtain adequate height after being flushed by vehicle traffic. An Alternative mitigation measure and where a 75-metre buffer is not possible, new fences must be set back no more than 2 metres (directly adjacent) from the edge of service roads. Through the essential elimination of habitat, this will limit any chance of vulnerable species foraging on verge side vegetation and causing subsequent fence collisions.				
• ***Disruption of bird migratory pathways*** • ***The attraction of some novel bird species due to the***	• Migratory pathways of birds cannot be changed, and the resulting impacts are unavoidable. However, severity of the impacts can be reduced with appropriate mitigation	• Company Appointed ECO, trained by a SACNASP registered	• For panel location sites: Monthly inspection using Drive and Walking Transects. • CWAC counts	• Species inventories and passage rate data collection.	• Monthly SCC and species inventories during November, December, January and February

development of a solar farm with associated infrastructure such as lake effect, perches, nest and shade opportunities. • ***Disturbance due to noise such as, machinery movements and maintenance operations.***	measures. Some significant discernible migratory flight pathways were able to be established which could be explained by large areas of generic habitats punctuated by some distinguishing geographic features in the landscape, such as large ridges, large impoundments, wetlands and drainage lines. The linear Drainage line habitats must be buffered in accordance with the EIA sensitivity mapping. • Essentially, all habitat attractants should be eliminated so that avifaunal populations will not embedded themselves within the infrastructure over time. This includes bird diverters, perch deterrents and the application of Non-polarising white tape can be used around and/or across panels to minimise reflection which can attract aquatic birds and insects (food) as panels mimic reflective surfaces of waterbodies.	Zoologist.			
Chemical pollution	• The application of strict	• Company appointed	• For panel location sites: weekly	• Spill Records • Yearly chemical	• Weekly spill detection for

	chemical control protocols as per the EMPr.	ECO.	inspection on foot • Yearly soil analysis sent to accredited lab	analysis results matched to prescribed thresholds	panels

Bonsmara Grid					
Impact/Aspect	**Mitigation/Management Actions**	**Responsibility**	**Methodology**	**Mitigation/Management Objectives and Outcomes**	**Frequency**
Design					
Construction					
N/A	N/A	N/A	N/A	N/A	N/A
Operation					
Bird mortalities	• Bird Diverters • Perch disrupters	• Company appointed ECO or SACNASP Registered Zoologist	• For Grid Connection Infrastructure such as powerlines: Weekly surveys before dawn (prior to scavenger activity) by driving slowly along the servitudes and documenting each collision kill location and species (a georeferenced photograph as	• Collision frequency and intensity (# kills per species per unit time) will need to be assessed per species by specialist. However, any non-specific collision concentrations (> 10 kills per month clustering in a stretch of powerline) must initiate investigation and corrective measures (including retrofitting of mitigation measures).	• Weekly for powerlines between November and March.

			evidence is required). • Monthly reporting presenting data analysis results and mapping indicating locations of change. Specific reporting on negative change detection not directly attributable to Project activities (Solar Facility Operation) and their cause. All reporting to be accompanied by GIS shapefiles and any original photographs.		

9 CONCLUSIONS

The study area is situated within the Central Free State Grassland vegetation type. The study area is not anticipated to support breeding populations of several large terrestrial bird species such as cranes, bustards and Red-Listed korhaans and large raptor species in sufficiently large densities or within breeding habitat that may be considered highly significant. However, given the size of the area, the proximity to a very large wetland impoundment and the large amount of herbaceous drainage line habitat within the project footprint, final conclusions were subjected to a wet season verification under a Regime 2 survey. Thus, in order to confirm that the study area is of low sensitivity in terms of conservation of these type of bird species, a January 2023 survey was conducted as per the aforementioned methods.

The CBAs of the Free State designated that majority of the site falls within an ESA1. Avoidance mitigation could be applied wherever possible to project infrastructure design and limit the amount of habitat impacted.

The study area is classified as a Regime 2 assessment (Jenkins *et al.* 2017). Even though it is not within a REDZ and required a full S&EIA, the methods followed the appropriate sampling method, which consists of 2-3 surveys of 3-5 days each over a 6-month period. Samling methods to be used will include walking and driving transects, bird species abundance at waterbodies and monitoring of new and previously observed nests on existing and constructed pylons.

The wet season results were highly significant given the highly significant density increase in observed avifauna which was representative of an abundance of food and breeding resources. However, even in optimal conditions, the diversity of priority species was low and the abundance number of priority species and SCC was moderate.

A total of 56 priority species priority species has the possibility of occurring within and around the study area, although only ten (10) Red Listed species have been identified as present or highly likely and most are of moderate likelihood to occur within the project footprint and most will be irregular foraging visitors and not resident. Two red listed species were recorded, namely Double-banded Courser and African Marsh Harrier (EN).

The proposed solar project and supporting Grid infrastructure has the potential to be of low to medium sensitivity from an avifaunal point of view. Some of the priority bird species are not habitat bound to the area for nesting and/or foraging purposes and is therefore important to focus on the some of the most significant cumulative impacts for the proposed solar project. Possible primary impacts of the proposed study area on avifauna include:

1. Potential habitat loss through the establishment of solar panel infrastructure.
2. The inclusion of crops as part of a Agrivoltaic system might attract more avifauna species to the area.
3. Collision with solar panel infrastructure is possible albeit less likely than secondary collision risk.
4. Secondary collision risks are represented by supporting powerline and Grid infrastructure which are connected to solar panel infrastructure.

The study area is not surrounded with existing renewable energy developments, both wind and solar developments, although a number are proposed which could have the possibility of cumulative impacts at the proposed site. Sensitive bird species found

within the study area included Northern Black Korhaan, Amur Falcon, African Marsh Harrier (recorded far outside the buffer area), Double Banded Courser and Secretarybird (expected but not observed). No nests of sensitive species were observed or identified within the project footprint.

Every effort was taken to capture all aspects of priority species observed within the field survey to allow for careful evaluation of potential impacts and application of suitable mitigation measures to reduce these impacts where possible.

Although previous impact assessments and monitoring programs for existing local solar developments indicated that not all impacts can be mitigated to acceptable levels, the overall low significance post-mitigation should be interpreted that the project risks are within acceptable levels. It must however be related that this report must be considered in context with the greater EIA process. In addition, while striving to maintain the highest standards of mitigation and monitoring as well as the consideration of the Cumulative Impact Assessment. The EMPr must be implemented in a manner that will adhere to the recommendations.

Overall, the author sees no reason why an Environmental Authorisation (EA) should not be granted on the following conditions;

- All recommended buffering be strictly adhered to.
- All recommended mitigation measures be applied preconstruction, post construction and operations.
- The Prescribed engineering mitigation measures (for wetland related impacts) must be supported by a pre-construction and Construction Phase rehabilitation plan to be commissioned prior to commencement of construction activities.
- An EMPr for the Construction Phase must be created and be subsequently updated every three years (during Operation) in order to revaluate the effectiveness of the mitigations. All mortalities must be recorded.

10 REFERENCES

Del Hoyo, J., Elliott, A. AND Sargatal, J. 1992. Handbook of the birds of the world. 1992 – 2011 editions, Lynx Editions, Barcelona.

Gill, F. & Donsker, D. (Eds). 2019. IOC World Bird List (v9.2). doi: 10.14344/IOC.ML.9.2.

Harrison, J.A., Allan, D.G., Underhill, L.G., Herremans, M., Tree, A.J., Parker, V., & Brown, C.J. (eds). (1997) *The Atlas of Southern African Birds*. BirdLife South Africa, Johannesburg.

Hockey P., Dean, W., Ryan, P., Maree S. & Brickman, B. (2005). *Roberts - Birds of Southern Africa* 7th ed. Trustees of the John Voelcker Bird Book Fun/ Africa Geographic Books. 1296 p.

IUCN. (2021) The IUCN Red List of Threatened Species. http://www.iucnredlist.org.

Jenkins, A.R., Ralston-Paton, S. and Smit-Robinson, H.A. (2017). Birds & Solar Energy. Best Practice Guidelines: Guidelines for assessing and monitoring the impact of solar power generating facilities on birds in southern Africa.

Malan, G. (2009) *Raptor Survey and Monitoring – a Field Guide for African Birds of Prey*. Briza Publications, Pretoria, South Africa.

Marnewick, M., Retief, E., Theron, N., Wright, D., & Anderson, T. (2015). Important Bird and Biodiversity Areas of South Africa. BirdLife South Africa. Johannesburg.

Mucina, L. & Rutherford, M.C. (eds). (2006, as amended). *The Vegetation of South Africa, Lesotho and Swaziland*. South African National Biodiversity Institute, Pretoria.

SABAP2 (South African Bird Atlas Project). Visited February 2022. http://vmus.adu.org.za/

South African National Biodiversity Institute. (2018) Beta Vegetation Map of South Africa, Lesotho and Swaziland (File Geodatabase) [File geodatabase] 2018. Available from the Biodiversity GIS website (http://bgis.sanbi.org/SpatialDataset/Detail/670).

Taylor, M.R., Peacock, F. & Wanless, R.M. (eds). (2015). *The 2015 Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland*. BirdLife South Africa, Johannesburg, South Africa.

APPENDIX

EXPECTED & OBSERVED AVIFAUNA SPECIES LIST

Avifauna recorded by SABAP1 and SABAP2 for the sixteen pentads, which includes the study area and surrounding area, is situated (see Figure 5).

Table 11: Avifauna species expected (medium probability and higher) in the study area.

Common Name	Scientific Name	Recorded
Abdim's Stork	*Ciconia abdimii*	
Acacia Pied Barbet	*Tricholaema leucomelas*	x
African Black Swift	*Apus barbatus*	
African Darter	*Anhinga rufa*	x
African Fish Eagle	*Haliaeetus vocifer*	x
African Harrier-Hawk	*Polyboroides typus*	
African Hoopoe	*Upupa africana*	x
African Marsh Harrier	*Circus ravivorus*	
African Openbill	*Anastomus lamelligerus*	x
African Palm Swift	*Cypsiurus parvus*	x
African Paradise Flycatcher	*Terpsiphone viridis*	
African Pipit	*Anthus cinnamomeus*	x
African Red-eyed Bulbul	*Pycnonotus nigricans*	x
African Reed Warbler	*Acrocephalus baeticatus*	x
African Sacred Ibis	*Threskiornis aethiopicus*	x
African Snipe	*Gallinago nigripennis*	
African Spoonbill	*Platalea alba*	
African Stonechat	*Saxicola torquatus*	x
African Wattled Lapwing	*Vanellus senegallus*	x
Amethyst Sunbird	*Chalcomitra amethystina*	x
Amur Falcon	*Falco amurensis*	
Ant-eating Chat	*Myrmecocichla formicivora*	x
Ashy Tit	*Melaniparus cinerascens*	
Barn Swallow	*Hirundo rustica*	x
Black Sparrowhawk	*Accipiter melanoleucus*	
Black-chested Prinia	*Prinia flavicans*	x
Black-collared Barbet	*Lybius torquatus*	x
Black-crowned Night Heron	*Nycticorax nycticorax*	

Black-faced Waxbill	*Brunhilda erythronotos*	x
Black-headed Heron	*Ardea melanocephala*	X
Blacksmith Lapwing	*Vanellus armatus*	x
Black-throated Canary	*Crithagra atrogularis*	X
Black-winged Kite	*Elanus caeruleus*	x
Black-winged Stilt	*Himantopus himantopus*	
Blue Korhaan	*Eupodotis caerulescens*	x
Blue Waxbill	*Uraeginthus angolensis*	x
Bokmakierie	*Telophorus zeylonus*	X
Brown-crowned Tchagra	*Tchagra australis*	
Brown-hooded Kingfisher	*Halcyon albiventris*	
Brown-throated Martin	*Riparia paludicola*	X
Buffy Pipit	*Anthus vaalensis*	X
Burchell's Coucal	*Centropus burchellii*	x
Cape Bunting	*Emberiza capensis*	x
Cape Longclaw	*Macronyx capensis*	X
Cape Penduline Tit	*Anthoscopus minutus*	
Cape Robin-Chat	*Cossypha caffra*	
Cape Shoveler	*Spatula smithii*	x
Cape Sparrow	*Passer melanurus*	x
Cape Starling	*Lamprotornis nitens*	x
Cape Turtle Dove	*Streptopelia capicola*	x
Cape Wagtail	*Motacilla capensis*	x
Cape Weaver	*Ploceus capensis*	
Cape White-eye	*Zosterops virens*	
Capped Wheatear	*Oenanthe pileata*	
Cardinal Woodpecker	*Dendropicos fuscescens*	
Caspian Tern	*Hydroprogne caspia*	x
Chestnut-backed Sparrow-Lark	*Eremopterix leucotis*	
Chestnut-vented Warbler	*Curruca subcoerulea*	
Cinnamon-breasted Bunting	*Emberiza tahapisi*	x
Cloud Cisticola	*Cisticola textrix*	X
Common Buttonquail	*Turnix sylvaticus*	
Common Buzzard	*Buteo buteo*	
Common Greenshank	*Tringa nebularia*	
Common House Martin	*Delichon urbicum*	

Common Moorhen	*Gallinula chloropus*	
Common Myna	*Acridotheres tristis*	x
Common Ostrich	*Struthio camelus*	
Common Quail	*Coturnix coturnix*	X
Common Ringed Plover	*Charadrius hiaticula*	
Common Sandpiper	*Actitis hypoleucos*	
Common Scimitarbill	*Rhinopomastus cyanomelas*	
Common Starling	*Sturnus vulgaris*	
Common Swift	*Apus apus*	x
Common Waxbill	*Estrilda astrild*	X
Crested Barbet	*Trachyphonus vaillantii*	x
Crimson-breasted Shrike	*Laniarius atrococcineus*	
Crowned Lapwing	*Vanellus coronatus*	x
Desert Cisticola	*Cisticola aridulus*	X
Diederik Cuckoo	*Chrysococcyx caprius*	X
Double-banded Courser	*Rhinoptilus africanus*	x
Eastern Clapper Lark	*Mirafra fasciolata*	X
Egyptian Goose	*Alopochen aegyptiaca*	x
European Bee-eater	*Merops apiaster*	X
European Honey-buzzard	*Pernis apivorus*	
Fairy Flycatcher	*Stenostira scita*	
Familiar Chat	*Oenanthe familiaris*	x
Fiscal Flycatcher	*Melaenornis silens*	
Fulvous Whistling Duck	*Dendrocygna bicolor*	x
Gabar Goshawk	*Micronisus gabar*	
Giant Kingfisher	*Megaceryle maxima*	
Glossy Ibis	*Plegadis falcinellus*	
Goliath Heron	*Ardea goliath*	
Great Crested Grebe	*Podiceps cristatus*	
Greater Flamingo	*Phoenicopterus roseus*	x
Greater Honeyguide	*Indicator indicator*	
Greater Kestrel	*Falco rupicoloides*	X
Greater Striped Swallow	*Cecropis cucullata*	X
Green Wood Hoopoe	*Phoeniculus purpureus*	
Green-winged Pytilia	*Pytilia melba*	
Grey Heron	*Ardea cinerea*	x

Hadada Ibis	*Bostrychia hagedash*	
Hamerkop	*Scopus umbretta*	x
Helmeted Guineafowl	*Numida meleagris*	x
Horus Swift	*Apus horus*	
House Sparrow	*Passer domesticus*	x
Icterine Warbler	*Hippolais icterina*	
Jameson's Firefinch	*Lagonosticta rhodopareia*	
Kalahari Scrub Robin	*Cercotrichas paena*	x
Karoo Scrub Robin	*Cercotrichas coryphoeus*	
Karoo Thrush	*Turdus smithi*	
Kittlitz's Plover	*Charadrius pecuarius*	x
Lanner Falcon	*Falco biarmicus*	x
Laughing Dove	*Spilopelia senegalensis*	
Lesser Flamingo	*Phoeniconaias minor*	x
Lesser Grey Shrike	*Lanius minor*	
Lesser Honeyguide	*Indicator minor*	
Lesser Kestrel	*Falco naumanni*	X
Lesser Swamp Warbler	*Acrocephalus gracilirostris*	
Levaillant's Cisticola	*Cisticola tinniens*	x
Little Bee-eater	*Merops pusillus*	x
Little Egret	*Egretta garzetta*	
Little Grebe	*Tachybaptus ruficollis*	x
Little Swift	*Apus affinis*	
Long-billed Crombec	*Sylvietta rufescens*	
Long-tailed Paradise Whydah	*Vidua paradisaea*	
Long-tailed Widowbird	*Euplectes progne*	X
Maccoa Duck	*Oxyura maccoa*	x
Malachite Kingfisher	*Corythornis cristatus*	
Marsh Owl	*Asio capensis*	
Marsh Sandpiper	*Tringa stagnatilis*	
Martial Eagle	*Polemaetus bellicosus*	x
Melodious Lark	*Mirafra cheniana*	x
Mountain Wheatear	*Myrmecocichla monticola*	
Namaqua Dove	*Oena capensis*	x
Namaqua Sandgrouse	*Pterocles namaqua*	
Natal Spurfowl	*Pternistis natalensis*	x

Neddicky	*Cisticola fulvicapilla*	x
Northern Black Korhaan	*Afrotis afraoides*	x
Orange River Francolin	*Scleroptila gutturalis*	
Orange River White-eye	*Zosterops pallidus*	
Pale Chanting Goshawk	*Melierax canorus*	
Pearl-breasted Swallow	*Hirundo dimidiata*	
Pied Avocet	*Recurvirostra avosetta*	
Pied Crow	*Corvus albus*	x
Pied Kingfisher	*Ceryle rudis*	
Pied Starling	*Lamprotornis bicolor*	
Pink-billed Lark	*Spizocorys conirostris*	
Pin-tailed Whydah	*Vidua macroura*	X
Pririt Batis	*Batis pririt*	
Purple Heron	*Ardea purpurea*	
Quailfinch	*Ortygospiza atricollis*	X
Red-backed Shrike	*Lanius collurio*	x
Red-billed Firefinch	*Lagonosticta senegala*	
Red-billed Quelea	*Quelea quelea*	X
Red-billed Teal	*Anas erythrorhyncha*	x
Red-breasted Swallow	*Cecropis semirufa*	
Red-capped Lark	*Calandrella cinerea*	X
Red-chested Cuckoo	*Cuculus solitarius*	
Red-eyed Dove	*Streptopelia semitorquata*	x
Red-faced Mousebird	*Urocolius indicus*	x
Red-footed Falcon	*Falco vespertinus*	x
Red-headed Finch	*Amadina erythrocephala*	
Red-knobbed Coot	*Fulica cristata*	
Red-throated Wryneck	*Jynx ruficollis*	
Red-winged Francolin	*Scleroptila levailantii*	
Red-winged Starling	*Onychognathus morio*	
Reed Cormorant	*Microcarbo africanus*	x
Rock Dove	*Columba livia*	x
Rock Martin	*Ptyonoprogne fuligula*	
Ruff	*Calidris pugnax*	
Rufous-naped Lark	*Mirafra africana*	x
Sabota Lark	*Calendulauda sabota*	x

Scaly-feathered Weaver	*Sporopipes squamifrons*	X
Secretarybird	*Sagittarius serpentarius*	
Shaft-tailed Whydah	*Vidua regia*	X
South African Cliff Swallow	*Petrochelidon spilodera*	X
South African Shelduck	*Tadorna cana*	X
Southern Fiscal	*Lanius collaris*	x
Southern Grey-headed Sparrow	*Passer diffusus*	
Southern Masked Weaver	*Ploceus velatus*	x
Southern Pochard	*Netta erythrophthalma*	x
Southern Red Bishop	*Euplectes orix*	x
Speckled Mousebird	*Colius striatus*	x
Speckled Pigeon	*Columba guinea*	x
Spike-heeled Lark	*Chersomanes albofasciata*	X
Spotted Eagle-Owl	*Bubo africanus*	
Spotted Flycatcher	*Muscicapa striata*	
Spotted Thick-knee	*Burhinus capensis*	x
Spur-winged Goose	*Plectropterus gambensis*	x
Squacco Heron	*Ardeola ralloides*	
Swainson's Spurfowl	*Pternistis swainsonii*	x
Swallow-tailed Bee-eater	*Merops hirundineus*	
Tawny-flanked Prinia	*Prinia subflava*	
Three-banded Plover	*Charadrius tricollaris*	x
Village Indigobird	*Vidua chalybeata*	
Violet-eared Waxbill	*Granatina granatina*	x
Wattled Starling	*Creatophora cinerea*	X
Western Barn Owl	*Tyto alba*	
Western Cattle Egret	*Bubulcus ibis*	x
Whiskered Tern	*Chlidonias hybrida*	
White Stork	*Ciconia ciconia*	
White-backed Duck	*Thalassornis leuconotus*	
White-backed Mousebird	*Colius colius*	X
White-bellied Sunbird	*Cinnyris talatala*	
White-breasted Cormorant	*Phalacrocorax lucidus*	x
White-browed Sparrow-Weaver	*Plocepasser mahali*	X
White-faced Whistling Duck	*Dendrocygna viduata*	
White-fronted Bee-eater	*Merops bullockoides*	

White-rumped Swift	*Apus caffer*	x
White-throated Swallow	*Hirundo albigularis*	X
White-winged Tern	*Chlidonias leucopterus*	
White-winged Widowbird	*Euplectes albonotatus*	
Willow Warbler	*Phylloscopus trochilus*	
Wing-snapping Cisticola	*Cisticola ayresii*	X
Wood Sandpiper	*Tringa glareola*	
Yellow Canary	*Crithagra flaviventris*	
Yellow-bellied Eremomela	*Eremomela icteropygialis*	
Yellow-billed Duck	*Anas undulata*	x
Yellow-crowned Bishop	*Euplectes afer*	X
Zitting Cisticola	*Cisticola juncidis*	x
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Table 12: Avifauna species expected (medium probability and higher) in the study area.

English IOC Name	Scientific Name	Date	Sample Type	Transect Number	Season	Season 2
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Walking	1	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Walking	1	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Walking	1	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Walking	1	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	1	January 2023	Summer
Common Waxbill	Estrilda astrild	2023/01/26	Walking	1	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	1	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Walking	1	January 2023	Summer
Brown-throated Martin	Riparia paludicola	2023/01/26	Walking	1	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Walking	1	January 2023	Summer
Reed Cormorant	Microcarbo africanus	2023/01/26	Walking	1	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/26	Walking	1	January 2023	Summer
Levaillant's Cisticola	Cisticola tinniens	2023/01/26	Walking	1	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Walking	1	January 2023	Summer
African Stonechat	Saxicola torquatus	2023/01/26	Walking	1	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Walking	1	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Walking	1	January 2023	Summer
Southern Masked Weaver	Ploceus velatus	2023/01/26	Walking	1	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/26	Walking	1	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Walking	1	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	1	January 2023	Summer
Levaillant's Cisticola	Cisticola tinniens	2023/01/26	Walking	1	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Walking	1	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/26	Walking	1	January 2023	Summer

White-backed Mousebird	Colius colius	2023/01/26	Walking	1	January 2023	Summer
Neddicky	Cisticola fulvicapilla	2023/01/26	Walking	1	January 2023	Summer
Southern Masked Weaver	Ploceus velatus	2023/01/26	Walking	1	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Walking	1	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	1	January 2023	Summer
Southern Red Bishop	Euplectes orix	2023/01/26	Walking	1	January 2023	Summer
Levaillant's Cisticola	Cisticola tinniens	2023/01/26	Walking	1	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	1	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/26	Walking	1	January 2023	Summer
Red-faced Mousebird	Urocolius indicus	2023/01/26	Walking	1	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Walking	1	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	1	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Walking	1	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/26	Walking	1	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Walking	1	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	1	January 2023	Summer
Southern Red Bishop	Euplectes orix	2023/01/26	Walking	1	January 2023	Summer
Shaft-tailed Whydah	Vidua regia	2023/01/26	Walking	1	January 2023	Summer
Levaillant's Cisticola	Cisticola tinniens	2023/01/26	Walking	1	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/26	Walking	1	January 2023	Summer
Southern Fiscal	Lanius collaris	2023/01/26	Walking	1	January 2023	Summer
Black-chested Prinia	Prinia flavicans	2023/01/26	Walking	1	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Walking	1	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	1	January 2023	Summer
Southern Red Bishop	Euplectes orix	2023/01/26	Walking	1	January 2023	Summer
Southern Masked Weaver	Ploceus velatus	2023/01/26	Walking	1	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/26	Walking	1	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/26	Walking	1	January 2023	Summer

Red-billed Quelea	Quelea quelea	2023/01/26	Walking	1	January 2023	Summer
Cape Wagtail	Motacilla capensis	2023/01/26	Walking	1	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Walking	1	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	1	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Walking	1	January 2023	Summer
Neddicky	Cisticola fulvicapilla	2023/01/26	Walking	1	January 2023	Summer
Neddicky	Cisticola fulvicapilla	2023/01/26	Walking	1	January 2023	Summer
Southern Fiscal	Lanius collaris	2023/01/26	Walking	1	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Walking	1	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	1	January 2023	Summer
Little Swift	Apus affinis	2023/01/25	Incidental		January 2023	Summer
African Stonechat	Saxicola torquatus	2023/01/25	Incidental		January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/25	Incidental		January 2023	Summer
White-browed Sparrow-Weaver	Plocepasser mahali	2023/01/25	Incidental		January 2023	Summer
Red-faced Mousebird	Urocolius indicus	2023/01/25	Incidental		January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Incidental		January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Incidental		January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Incidental		January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Incidental		January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/25	Incidental		January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Incidental		January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/25	Incidental		January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Incidental		January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Incidental		January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/25	Incidental		January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Incidental		January 2023	Summer
Common Quail	Coturnix coturnix	2023/01/25	Incidental		January 2023	Summer

African Pipit	Anthus cinnamomeus	2023/01/25	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/25	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Incidental	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/25	Incidental	January 2023	Summer
Crowned Lapwing	Vanellus coronatus	2023/01/25	Incidental	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/25	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Incidental	January 2023	Summer
Common Quail	Coturnix coturnix	2023/01/25	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/25	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/25	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/25	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/25	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/25	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Incidental	January 2023	Summer
White-browed Sparrow-Weaver	Plocepasser mahali	2023/01/25	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Incidental	January 2023	Summer
Amur Falcon	Falco amurensis	2023/01/25	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/25	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/25	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/25	Incidental	January 2023	Summer
Crowned Lapwing	Vanellus coronatus	2023/01/25	Incidental	January 2023	Summer
Southern Fiscal	Lanius collaris	2023/01/25	Incidental	January 2023	Summer
Yellow-crowned Bishop	Euplectes afer	2023/01/25	Incidental	January 2023	Summer

Western Cattle Egret	Bubulcus ibis	2023/01/25	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Incidental	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/25	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Incidental	January 2023	Summer
Crowned Lapwing	Vanellus coronatus	2023/01/25	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/25	Incidental	January 2023	Summer
Cape Sparrow	Passer melanurus	2023/01/25	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/25	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/25	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/25	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/25	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/25	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/25	Incidental	January 2023	Summer
Black-winged Kite	Elanus caeruleus	2023/01/25	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/25	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/25	Incidental	January 2023	Summer
Red-eyed Dove	Streptopelia semitorquata	2023/01/26	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/26	Incidental	January 2023	Summer
Glossy Ibis	Plegadis falcinellus	2023/01/26	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Sabota Lark	Calendulauda sabota	2023/01/26	Incidental	January 2023	Summer

Ring-necked Dove	Streptopelia capicola	2023/01/26	Incidental	January 2023	Summer
Black-chested Prinia	Prinia flavicans	2023/01/26	Incidental	January 2023	Summer
Southern Masked Weaver	Ploceus velatus	2023/01/26	Incidental	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Southern Fiscal	Lanius collaris	2023/01/26	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Incidental	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/26	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/26	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Incidental	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/26	Incidental	January 2023	Summer
Helmeted Guineafowl	Numida meleagris	2023/01/26	Incidental	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/26	Incidental	January 2023	Summer
Southern Fiscal	Lanius collaris	2023/01/26	Incidental	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/26	Incidental	January 2023	Summer

Eastern Clapper Lark	Mirafra fasciolata	2023/01/26	Incidental		January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental		January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/26	Incidental		January 2023	Summer
Red-winged Francolin	Scleroptila levaillantii	2023/01/26	Incidental		January 2023	Summer
Common Quail	Coturnix coturnix	2023/01/26	Incidental		January 2023	Summer
African Hoopoe	Upupa africana	2023/01/26	Incidental		January 2023	Summer
Southern Fiscal	Lanius collaris	2023/01/26	Incidental		January 2023	Summer
Common Waxbill	Estrilda astrild	2023/01/26	Incidental		January 2023	Summer
Chestnut-vented Warbler	Curruca subcoerulea	2023/01/26	Incidental		January 2023	Summer
Black-chested Prinia	Prinia flavicans	2023/01/26	Incidental		January 2023	Summer
Pied Crow	Corvus albus	2023/01/26	Incidental		January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental		January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Incidental		January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Incidental		January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Incidental		January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental		January 2023	Summer
Common Quail	Coturnix coturnix	2023/01/26	Incidental		January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental		January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Incidental		January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Incidental		January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental		January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Incidental		January 2023	Summer
Red-eyed Dove	Streptopelia semitorquata	2023/01/26	Incidental		January 2023	Summer
Red-backed Shrike	Lanius collurio	2023/01/27	Incidental		January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Walking	Substation	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	Substation	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Walking	Substation	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/26	Walking	Substation	January 2023	Summer

Barn Swallow	Hirundo rustica	2023/01/26	Walking	Substation	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	Substation	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Walking	Substation	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Walking	Substation	January 2023	Summer
White-browed Sparrow-Weaver	Plocepasser mahali	2023/01/26	Walking	Substation	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	Substation	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Walking	Substation	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/26	Walking	Substation	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Walking	Substation	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/26	Walking	Substation	January 2023	Summer
Kalahari Scrub Robin	Cercotrichas paena	2023/01/26	Walking	Substation	January 2023	Summer
Chestnut-vented Warbler	Curruca subcoerulea	2023/01/26	Walking	Substation	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Walking	Substation	January 2023	Summer
Egyptian Goose	Alopochen aegyptiaca	2023/01/25	Focal Site	Dam	January 2023	Summer
Blacksmith Lapwing	Vanellus armatus	2023/01/25	Focal Site	Dam	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Focal Site	Dam	January 2023	Summer
African Red-eyed Bulbul	Pycnonotus nigricans	2023/01/25	Focal Site	Dam	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Focal Site	Dam	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Focal Site	Dam	January 2023	Summer
Cape Wagtail	Motacilla capensis	2023/01/25	Focal Site	Dam	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/25	Focal Site	Dam	January 2023	Summer
Black-chested Prinia	Prinia flavicans	2023/01/25	Focal Site	Dam	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Focal Site	Dam	January 2023	Summer
Black-headed Heron	Ardea melanocephala	2023/01/25	Focal Site	Dam	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/25	Focal Site	Dam	January 2023	Summer
Blacksmith Lapwing	Vanellus armatus	2023/01/25	Focal Site	Dam	January 2023	Summer
Southern Masked Weaver	Ploceus velatus	2023/01/25	Focal Site	Dam	January 2023	Summer

Three-banded Plover	Charadrius tricollaris	2023/01/25	Focal Site	Dam	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/25	Focal Site	Dam	January 2023	Summer
Pin-tailed Whydah	Vidua macroura	2023/01/25	Focal Site	Dam	January 2023	Summer
Wing-snapping Cisticola	Cisticola ayresii	2023/01/25	Focal Site	Dam	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/25	Focal Site	Dam	January 2023	Summer
White-rumped Swift	Apus caffer	2023/01/25	Focal Site	Dam	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Focal Site	Dam	January 2023	Summer
Levaillant's Cisticola	Cisticola tinniens	2023/01/25	Focal Site	Dam	January 2023	Summer
Red-headed Quelea	Quelea erythrops	2023/01/25	Focal Site	Dam	January 2023	Summer
Greater Striped Swallow	Cecropis cucullata	2023/01/25	Focal Site	Dam	January 2023	Summer
South African Shelduck	Tadorna cana	2023/01/25	Focal Site	Dam	January 2023	Summer
Familiar Chat	Oenanthe familiaris	2023/01/25	Focal Site	Dam	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/26	Walking	2	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	2	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Walking	2	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Walking	2	January 2023	Summer
Swainson's Spurfowl	Pternistis swainsonii	2023/01/26	Walking	2	January 2023	Summer
Red-winged Francolin	Scleroptila levaillantii	2023/01/26	Walking	2	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/26	Walking	2	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/26	Walking	2	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Walking	2	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Walking	2	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	2	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	2	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/26	Walking	2	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/26	Walking	2	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Walking	2	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	2	January 2023	Summer

Eastern Clapper Lark	Mirafra fasciolata	2023/01/26	Walking	2	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Walking	2	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Walking	2	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Walking	2	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/26	Walking	2	January 2023	Summer
Southern Red Bishop	Euplectes orix	2023/01/26	Walking	2	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	2	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Walking	2	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/26	Walking	2	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/26	Walking	2	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Walking	2	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/26	Walking	2	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	2	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Walking	2	January 2023	Summer
Hadada Ibis	Bostrychia hagedash	2023/01/26	Walking	2	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Walking	2	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/26	Walking	2	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/26	Walking	2	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	2	January 2023	Summer
Black-chested Prinia	Prinia flavicans	2023/01/26	Walking	2	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/26	Walking	2	January 2023	Summer
Sabota Lark	Calendulauda sabota	2023/01/26	Walking	2	January 2023	Summer
Common Waxbill	Estrilda astrild	2023/01/26	Walking	2	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	2	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Walking	2	January 2023	Summer
Levaillant's Cisticola	Cisticola tinniens	2023/01/26	Walking	2	January 2023	Summer
Reed Cormorant	Microcarbo africanus	2023/01/26	Walking	2	January 2023	Summer
Red-eyed Dove	Streptopelia semitorquata	2023/01/26	Walking	2	January 2023	Summer

Cape Wagtail	Motacilla capensis	2023/01/26	Walking	2	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/26	Walking	2	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/26	Walking	2	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Walking	2	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	2	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/26	Walking	2	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Walking	2	January 2023	Summer
Wattled Starling	Creatophora cinerea	2023/01/26	Walking	2	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/26	Walking	2	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	2	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	2	January 2023	Summer
Southern Red Bishop	Euplectes orix	2023/01/26	Walking	2	January 2023	Summer
Yellow-crowned Bishop	Euplectes afer	2023/01/26	Walking	2	January 2023	Summer
Southern Masked Weaver	Ploceus velatus	2023/01/26	Walking	2	January 2023	Summer
Cape Sparrow	Passer melanurus	2023/01/26	Walking	2	January 2023	Summer
Laughing Dove	Spilopelia senegalensis	2023/01/26	Walking	2	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	2	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Walking	2	January 2023	Summer
Spur-winged Goose	Plectropterus gambensis	2023/01/26	Walking	2	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	2	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Walking	2	January 2023	Summer
Neddicky	Cisticola fulvicapilla	2023/01/26	Walking	2	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Walking	2	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	2	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	2	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Driving	3	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/25	Driving	3	January 2023	Summer
Little Swift	Apus affinis	2023/01/25	Driving	3	January 2023	Summer

Barn Swallow	Hirundo rustica	2023/01/25	Driving	3	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/25	Driving	3	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/25	Driving	3	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/25	Driving	3	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/25	Driving	3	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/25	Driving	3	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Driving	3	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/25	Driving	3	January 2023	Summer
Greater Kestrel	Falco rupicoloides	2023/01/25	Driving	3	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/25	Driving	3	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Driving	3	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Driving	3	January 2023	Summer
Neddicky	Cisticola fulvicapilla	2023/01/25	Driving	3	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/25	Driving	3	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Driving	3	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Driving	3	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Driving	3	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Driving	3	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Driving	3	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/25	Driving	3	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/25	Driving	3	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Driving	3	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Driving	3	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Driving	3	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Driving	3	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/25	Driving	3	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/25	Driving	3	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Driving	3	January 2023	Summer

Northern Black Korhaan	Afrotis afraoides	2023/01/25	Driving	3	January 2023	Summer
Scaly-feathered Weaver	Sporopipes squamifrons	2023/01/25	Driving	3	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/25	Driving	3	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Driving	3	January 2023	Summer
Rock Kestrel	Falco rupicolus	2023/01/25	Driving	3	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Driving	3	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/25	Driving	3	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/25	Driving	3	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Driving	3	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/25	Driving	3	January 2023	Summer
Black-headed Heron	Ardea melanocephala	2023/01/25	Driving	3	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/25	Driving	3	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/25	Driving	3	January 2023	Summer
Little Swift	Apus affinis	2023/01/25	Driving	3	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Driving	3	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Driving	3	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	Powerline	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	Powerline	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Walking	Powerline	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	Powerline	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Walking	Powerline	January 2023	Summer
Helmeted Guineafowl	Numida meleagris	2023/01/26	Walking	Powerline	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/26	Walking	Powerline	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	Powerline	January 2023	Summer
Black-throated Canary	Crithagra atrogularis	2023/01/26	Walking	Powerline	January 2023	Summer
Common Waxbill	Estrilda astrild	2023/01/26	Walking	Powerline	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	Powerline	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Walking	Powerline	January 2023	Summer

Bokmakierie	Telophorus zeylonus	2023/01/26	Walking	Powerline	January 2023	Summer
Tawny-flanked Prinia	Prinia subflava	2023/01/26	Walking	Powerline	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	Powerline	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	Powerline	January 2023	Summer
Levaillant's Cisticola	Cisticola tinniens	2023/01/26	Walking	Powerline	January 2023	Summer
Swainson's Spurfowl	Pternistis swainsonii	2023/01/26	Walking	Powerline	January 2023	Summer
Violet-eared Waxbill	Uraeginthus granatinus	2023/01/26	Walking	Powerline	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Walking	Powerline	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	Powerline	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Walking	4	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/25	Walking	4	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/25	Walking	4	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/25	Walking	4	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/25	Walking	4	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Walking	4	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Walking	4	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Walking	4	January 2023	Summer
Neddicky	Cisticola fulvicapilla	2023/01/25	Walking	4	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/25	Walking	4	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Walking	4	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Walking	4	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/25	Walking	4	January 2023	Summer
Wing-snapping Cisticola	Cisticola ayresii	2023/01/25	Walking	4	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/25	Walking	4	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Walking	4	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Walking	4	January 2023	Summer
Wing-snapping Cisticola	Cisticola ayresii	2023/01/25	Walking	4	January 2023	Summer
Scaly-feathered Weaver	Sporopipes squamifrons	2023/01/25	Walking	4	January 2023	Summer

Long-tailed Widowbird	Euplectes progne	2023/01/25	Walking	4	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Walking	4	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Walking	4	January 2023	Summer
Wing-snapping Cisticola	Cisticola ayresii	2023/01/25	Walking	4	January 2023	Summer
Southern Fiscal	Lanius collaris	2023/01/25	Incidental		January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/25	Incidental		January 2023	Summer
Little Swift	Apus affinis	2023/01/25	Incidental		January 2023	Summer
Little Swift	Apus affinis	2023/01/25	Incidental		January 2023	Summer
House Sparrow	Passer domesticus	2023/01/25	Incidental		January 2023	Summer
Laughing Dove	Spilopelia senegalensis	2023/01/25	Incidental		January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Incidental		January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Incidental		January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/26	Incidental		January 2023	Summer
Amur Falcon	Falco amurensis	2023/01/27	Incidental		January 2023	Summer
Amur Falcon	Falco amurensis	2023/01/27	Incidental		January 2023	Summer
Neddicky	Cisticola fulvicapilla	2023/01/25	Driving	1	January 2023	Summer
Amur Falcon	Falco amurensis	2023/01/25	Driving	1	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Driving	1	January 2023	Summer
Southern Red Bishop	Euplectes orix	2023/01/25	Driving	1	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/25	Driving	1	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/25	Driving	1	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/25	Driving	1	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/25	Driving	1	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/25	Driving	1	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/25	Driving	1	January 2023	Summer
Little Swift	Apus affinis	2023/01/25	Driving	1	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/25	Driving	1	January 2023	Summer
Lesser Kestrel	Falco naumanni	2023/01/25	Driving	1	January 2023	Summer

Double-banded Courser	Rhinoptilus africanus	2023/01/25	Driving	1	January 2023	Summer
Common Quail	Coturnix coturnix	2023/01/25	Driving	1	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Driving	1	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/25	Driving	1	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Driving	1	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/25	Driving	1	January 2023	Summer
Buffy Pipit	Anthus vaalensis	2023/01/25	Driving	1	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/25	Driving	1	January 2023	Summer
Helmeted Guineafowl	Numida meleagris	2023/01/25	Driving	1	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Driving	1	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/25	Driving	1	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/25	Driving	1	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/25	Driving	1	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/25	Driving	1	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/25	Driving	1	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/25	Driving	1	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/25	Driving	1	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/25	Driving	1	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Driving	1	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/25	Driving	1	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/25	Driving	1	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/25	Driving	1	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/25	Driving	1	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/25	Driving	1	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/25	Driving	1	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/25	Driving	1	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/25	Driving	1	January 2023	Summer
Southern Red Bishop	Euplectes orix	2023/01/25	Driving	1	January 2023	Summer

South African Cliff Swallow	Petrochelidon spilodera	2023/01/25	Driving	1	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/25	Driving	1	January 2023	Summer
Black-headed Heron	Ardea melanocephala	2023/01/25	Driving	1	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/25	Driving	1	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/25	Driving	1	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/25	Driving	1	January 2023	Summer
White-backed Mousebird	Colius colius	2023/01/25	Driving	1	January 2023	Summer
Southern Fiscal	Lanius collaris	2023/01/26	Walking	Powerline	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	Powerline	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	Powerline	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/26	Walking	Powerline	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Walking	Powerline	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Walking	Powerline	January 2023	Summer
Acacia Pied Barbet	Tricholaema leucomelas	2023/01/26	Walking	Powerline	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Walking	Powerline	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Walking	Powerline	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	Powerline	January 2023	Summer
Common Buzzard	Buteo buteo	2023/01/26	Walking	Powerline	January 2023	Summer
Malachite Kingfisher	Corythornis cristatus	2023/01/26	Walking	Powerline	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	Powerline	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	Powerline	January 2023	Summer
Black-chested Prinia	Prinia flavicans	2023/01/26	Walking	Powerline	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	Powerline	January 2023	Summer
Red-faced Mousebird	Urocolius indicus	2023/01/26	Walking	Powerline	January 2023	Summer
Southern Masked Weaver	Ploceus velatus	2023/01/26	Driving	2	January 2023	Summer
Black-chested Prinia	Prinia flavicans	2023/01/26	Driving	2	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Driving	2	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Driving	2	January 2023	Summer

Cloud Cisticola	Cisticola textrix	2023/01/26	Driving	2	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Driving	2	January 2023	Summer
Glossy Ibis	Plegadis falcinellus	2023/01/26	Driving	2	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Driving	2	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Driving	2	January 2023	Summer
African Red-eyed Bulbul	Pycnonotus nigricans	2023/01/26	Driving	2	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Driving	2	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Driving	2	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Driving	2	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Driving	2	January 2023	Summer
Southern Masked Weaver	Ploceus velatus	2023/01/26	Driving	2	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/26	Driving	2	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Driving	2	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Driving	2	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Driving	2	January 2023	Summer
Black-chested Prinia	Prinia flavicans	2023/01/26	Driving	2	January 2023	Summer
Southern Masked Weaver	Ploceus velatus	2023/01/26	Driving	2	January 2023	Summer
Red-faced Mousebird	Urocolius indicus	2023/01/26	Driving	2	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Walking	3	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	3	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Walking	3	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	3	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Walking	3	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/26	Walking	3	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/26	Walking	3	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/26	Walking	3	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/26	Walking	3	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Walking	3	January 2023	Summer

Ring-necked Dove	Streptopelia capicola	2023/01/26	Walking	3	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/26	Walking	3	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/26	Walking	3	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	3	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Walking	3	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Walking	3	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/26	Walking	3	January 2023	Summer
Namaqua Dove	Oena capensis	2023/01/26	Walking	3	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Walking	3	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Walking	3	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/26	Walking	3	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Walking	3	January 2023	Summer
Southern Masked Weaver	Ploceus velatus	2023/01/26	Walking	3	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Walking	3	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Walking	3	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Walking	3	January 2023	Summer
Common Quail	Coturnix coturnix	2023/01/26	Walking	3	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/26	Walking	3	January 2023	Summer
Southern Fiscal	Lanius collaris	2023/01/26	Walking	3	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Walking	3	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/26	Walking	3	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Walking	3	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/26	Walking	3	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Walking	3	January 2023	Summer
Common Quail	Coturnix coturnix	2023/01/25	Incidental		January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/25	Incidental		January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/25	Incidental		January 2023	Summer
Yellow-crowned Bishop	Euplectes afer	2023/01/26	Incidental		January 2023	Summer

Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/26	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/26	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Incidental	January 2023	Summer
Common Quail	Coturnix coturnix	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/26	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/26	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/26	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/26	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/26	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Incidental	January 2023	Summer

Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Southern Red Bishop	Euplectes orix	2023/01/26	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Scaly-feathered Weaver	Sporopipes squamifrons	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/26	Incidental	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/26	Incidental	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/26	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/26	Incidental	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/26	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer

Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Incidental	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Pied Crow	Corvus albus	2023/01/26	Incidental	January 2023	Summer
Common Swift	Apus apus	2023/01/26	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Incidental	January 2023	Summer
White-browed Sparrow-Weaver	Plocepasser mahali	2023/01/26	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Greater Kestrel	Falco rupicoloides	2023/01/26	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Incidental	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/26	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/26	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/26	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Incidental	January 2023	Summer

Northern Black Korhaan	Afrotis afraoides	2023/01/26	Incidental	January 2023	Summer
Speckled Pigeon	Columba guinea	2023/01/26	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/26	Incidental	January 2023	Summer
Common Quail	Coturnix coturnix	2023/01/26	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/26	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Incidental	January 2023	Summer
Southern Fiscal	Lanius collaris	2023/01/26	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/26	Incidental	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/26	Incidental	January 2023	Summer
Common Quail	Coturnix coturnix	2023/01/26	Incidental	January 2023	Summer
White-browed Sparrow-Weaver	Plocepasser mahali	2023/01/26	Incidental	January 2023	Summer
Crowned Lapwing	Vanellus coronatus	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/26	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Incidental	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/26	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Incidental	January 2023	Summer

Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/26	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Incidental	January 2023	Summer
Red-billed Quelea	Quelea quelea	2023/01/26	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/26	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/26	Incidental	January 2023	Summer
Cape Sparrow	Passer melanurus	2023/01/26	Incidental	January 2023	Summer
Rock Kestrel	Falco rupicolus	2023/01/26	Incidental	January 2023	Summer
Greater Kestrel	Falco rupicoloides	2023/01/26	Incidental	January 2023	Summer
White-browed Sparrow-Weaver	Plocepasser mahali	2023/01/26	Incidental	January 2023	Summer
Pied Crow	Corvus albus	2023/01/26	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/27	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/27	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/27	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
White-browed Sparrow-Weaver	Plocepasser mahali	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer

Southern Masked Weaver	Ploceus velatus	2023/01/27	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/27	Incidental	January 2023	Summer
Southern Masked Weaver	Ploceus velatus	2023/01/27	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/27	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/27	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/27	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/27	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/27	Incidental	January 2023	Summer
White-throated Swallow	Hirundo albigularis	2023/01/27	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/27	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/27	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/27	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/27	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/27	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/27	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/27	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/27	Incidental	January 2023	Summer

Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/27	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/27	Incidental	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/27	Incidental	January 2023	Summer
Red-eyed Dove	Streptopelia semitorquata	2023/01/27	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/27	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/27	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/27	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/27	Incidental	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/27	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/27	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/27	Incidental	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/27	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/27	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/27	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/27	Incidental	January 2023	Summer
Quailfinch	Ortygospiza atricollis	2023/01/27	Incidental	January 2023	Summer

Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/27	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/27	Incidental	January 2023	Summer
Black-winged Kite	Elanus caeruleus	2023/01/27	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/27	Incidental	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/27	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/27	Incidental	January 2023	Summer
White-rumped Swift	Apus caffer	2023/01/27	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/27	Incidental	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/27	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/27	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/27	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/27	Incidental	January 2023	Summer
Grey Heron	Ardea cinerea	2023/01/27	Incidental	January 2023	Summer
Southern Red Bishop	Euplectes orix	2023/01/27	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/27	Incidental	January 2023	Summer
Reed Cormorant	Microcarbo africanus	2023/01/27	Incidental	January 2023	Summer
Spur-winged Goose	Plectropterus gambensis	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/27	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Swainson's Spurfowl	Pternistis swainsonii	2023/01/27	Incidental	January 2023	Summer
Wattled Starling	Creatophora cinerea	2023/01/27	Incidental	January 2023	Summer
Red-faced Mousebird	Urocolius indicus	2023/01/27	Incidental	January 2023	Summer

Wattled Starling	Creatophora cinerea	2023/01/27	Incidental	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/27	Incidental	January 2023	Summer
Southern Fiscal	Lanius collaris	2023/01/27	Incidental	January 2023	Summer
Red-backed Shrike	Lanius collurio	2023/01/27	Incidental	January 2023	Summer
White-throated Swallow	Hirundo albigularis	2023/01/27	Incidental	January 2023	Summer
White-rumped Swift	Apus caffer	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/27	Incidental	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/27	Incidental	January 2023	Summer
Swainson's Spurfowl	Pternistis swainsonii	2023/01/27	Incidental	January 2023	Summer
Yellow-billed Duck	Anas undulata	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/27	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/27	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/27	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/27	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/27	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/27	Incidental	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/27	Incidental	January 2023	Summer
Western Cattle Egret	Bubulcus ibis	2023/01/27	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/27	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/27	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/27	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/27	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/27	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/27	Incidental	January 2023	Summer

Eastern Clapper Lark	Mirafra fasciolata	2023/01/27	Incidental	January 2023	Summer
White-browed Sparrow-Weaver	Plocepasser mahali	2023/01/27	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/27	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
White-browed Sparrow-Weaver	Plocepasser mahali	2023/01/27	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/27	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
Red-eyed Dove	Streptopelia semitorquata	2023/01/27	Incidental	January 2023	Summer
European Bee-eater	Merops apiaster	2023/01/27	Incidental	January 2023	Summer
Bokmakierie	Telophorus zeylonus	2023/01/27	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/27	Incidental	January 2023	Summer
Cape Sparrow	Passer melanurus	2023/01/27	Incidental	January 2023	Summer
Buffy Pipit	Anthus vaalensis	2023/01/27	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/27	Incidental	January 2023	Summer
White-browed Sparrow-Weaver	Plocepasser mahali	2023/01/27	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/27	Incidental	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/27	Incidental	January 2023	Summer

Desert Cisticola	Cisticola aridulus	2023/01/27	Incidental	January 2023	Summer
Diederik Cuckoo	Chrysococcyx caprius	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/27	Incidental	January 2023	Summer
Eastern Clapper Lark	Mirafra fasciolata	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/27	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/27	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/27	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/27	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/27	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/27	Incidental	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/27	Incidental	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/27	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/27	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/27	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/27	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/27	Incidental	January 2023	Summer
Black-chested Prinia	Prinia flavicans	2023/01/27	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Buffy Pipit	Anthus vaalensis	2023/01/27	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/27	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/27	Incidental	January 2023	Summer
Swainson's Spurfowl	Pternistis swainsonii	2023/01/27	Incidental	January 2023	Summer

Eastern Clapper Lark	Mirafra fasciolata	2023/01/27	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/27	Incidental	January 2023	Summer
Pied Crow	Corvus albus	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/27	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/27	Incidental	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/27	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental	January 2023	Summer
Southern Red Bishop	Euplectes orix	2023/01/27	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/27	Incidental	January 2023	Summer
Ring-necked Dove	Streptopelia capicola	2023/01/27	Incidental	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/27	Incidental	January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/27	Incidental	January 2023	Summer
Desert Cisticola	Cisticola aridulus	2023/01/27	Incidental	January 2023	Summer
Melodious Lark	Mirafra cheniana	2023/01/27	Incidental	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/27	Incidental	January 2023	Summer
African Pipit	Anthus cinnamomeus	2023/01/27	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/27	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/27	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/27	Incidental	January 2023	Summer
Zitting Cisticola	Cisticola juncidis	2023/01/27	Incidental	January 2023	Summer
Cape Longclaw	Macronyx capensis	2023/01/27	Incidental	January 2023	Summer
Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental	January 2023	Summer
Greater Striped Swallow	Cecropis cucullata	2023/01/27	Incidental	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/27	Incidental	January 2023	Summer
Ant-eating Chat	Myrmecocichla formicivora	2023/01/27	Incidental	January 2023	Summer

Long-tailed Widowbird	Euplectes progne	2023/01/27	Incidental		January 2023	Summer
Southern Red Bishop	Euplectes orix	2023/01/27	Incidental		January 2023	Summer
Spike-heeled Lark	Chersomanes albofasciata	2023/01/27	Incidental		January 2023	Summer
Greater Kestrel	Falco rupicoloides	2023/01/27	Incidental		January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2023/01/27	Incidental		January 2023	Summer
Laughing Dove	Spilopelia senegalensis	2023/01/27	Incidental		January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Focal Site	Dam	January 2023	Summer
Blacksmith Lapwing	Vanellus armatus	2023/01/26	Focal Site	Dam	January 2023	Summer
Egyptian Goose	Alopochen aegyptiaca	2023/01/26	Focal Site	Dam	January 2023	Summer
Barn Swallow	Hirundo rustica	2023/01/26	Focal Site	Dam	January 2023	Summer
Cape Robin-Chat	Cossypha caffra	2023/01/26	Focal Site	Dam	January 2023	Summer
African Red-eyed Bulbul	Pycnonotus nigricans	2023/01/26	Focal Site	Dam	January 2023	Summer
White-throated Swallow	Hirundo albigularis	2023/01/26	Focal Site	Dam	January 2023	Summer
Familiar Chat	Oenanthe familiaris	2023/01/26	Focal Site	Dam	January 2023	Summer
Rufous-naped Lark	Mirafra africana	2023/01/26	Focal Site	Dam	January 2023	Summer
Pin-tailed Whydah	Vidua macroura	2023/01/26	Focal Site	Dam	January 2023	Summer
Cape Wagtail	Motacilla capensis	2023/01/26	Focal Site	Dam	January 2023	Summer
Cloud Cisticola	Cisticola textrix	2023/01/26	Focal Site	Dam	January 2023	Summer
South African Cliff Swallow	Petrochelidon spilodera	2023/01/26	Focal Site	Dam	January 2023	Summer
Red-capped Lark	Calandrella cinerea	2023/01/26	Focal Site	Dam	January 2023	Summer
Double-banded Courser	Rhinoptilus africanus	2023/01/26	Focal Site	Dam	January 2023	Summer
Northern Black Korhaan	Afrotis afraoides	2022/09/09	Walking	1	September 2022	Spring
Helmeted Guineafowl	Numida meleagris	2022/09/09	Walking	1	September 2022	Spring
Ring-necked Dove	Streptopelia capicola	2022/09/09	Walking	1	September 2022	Spring
Hadada Ibis	Bostrychia hagedash	2022/09/09	Walking	1	September 2022	Spring

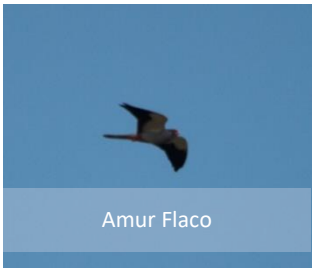
Reed Cormorant	Microcarbo africanus	2022/09/09	Walking	1	September 2022	Spring
Yellow-billed Duck	Anas undulata	2022/09/09	Walking	1	September 2022	Spring
African Marsh Harrier	Circus ranivorus	2022/09/09	Walking	1	September 2022	Spring
Cape Longclaw	Macronyx capensis	2022/09/08	Walking	3	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Walking	3	September 2022	Spring
Black-winged Kite	Elanus caeruleus	2022/09/08	Walking	3	September 2022	Spring
African Stonechat	Saxicola torquatus	2022/09/08	Walking	3	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Walking	3	September 2022	Spring
Ant-eating Chat	Myrmecocichla formicivora	2022/09/08	Walking	3	September 2022	Spring
Speckled Pigeon	Columba guinea	2022/09/08	Walking	3	September 2022	Spring
Crowned Lapwing	Vanellus coronatus	2022/09/08	Walking	3	September 2022	Spring
Cape Longclaw	Macronyx capensis	2022/09/08	Walking	3	September 2022	Spring
Crowned Lapwing	Vanellus coronatus	2022/09/08	Walking	3	September 2022	Spring
Sabota Lark	Calendulauda sabota	2022/09/08	Walking	3	September 2022	Spring
Crowned Lapwing	Vanellus coronatus	2022/09/08	Walking	3	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Walking	3	September 2022	Spring

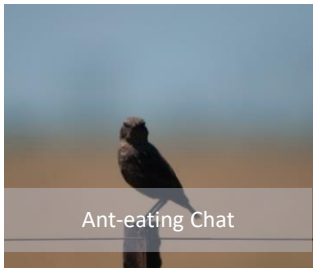
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Walking	3	September 2022	Spring
Tawny-flanked Prinia	Prinia subflava	2022/09/08	Walking	3	September 2022	Spring
Blacksmith Lapwing	Vanellus armatus	2022/09/08	Walking	3	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/09	Walking	2	September 2022	Spring
Ant-eating Chat	Myrmecocichla formicivora	2022/09/09	Walking	2	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Walking	4	September 2022	Spring
Yellow-throated Longclaw	Macronyx croceus	2022/09/08	Walking	4	September 2022	Spring
Ant-eating Chat	Myrmecocichla formicivora	2022/09/08	Walking	4	September 2022	Spring
Double-banded Courser	Rhinoptilus africanus	2022/09/08	Walking	4	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Walking	4	September 2022	Spring
Ant-eating Chat	Myrmecocichla formicivora	2022/09/08	Driving	1	September 2022	Spring
Cape Longclaw	Macronyx capensis	2022/09/08	Driving	1	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Driving	1	September 2022	Spring
Black-winged Kite	Elanus caeruleus	2022/09/08	Driving	1	September 2022	Spring
Ant-eating Chat	Myrmecocichla formicivora	2022/09/08	Driving	1	September 2022	Spring
Ant-eating Chat	Myrmecocichla formicivora	2022/09/08	Driving	1	September 2022	Spring

Northern Black Korhaan	Afrotis afraoides	2022/09/08	Driving	1	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Driving	1	September 2022	Spring
Red-collared Widowbird	Euplectes ardens	2022/09/08	Driving	1	September 2022	Spring
Crowned Lapwing	Vanellus coronatus	2022/09/08	Driving	1	September 2022	Spring
Laughing Dove	Spilopelia senegalensis	2022/09/08	Driving	1	September 2022	Spring
Common Swift	Apus apus	2022/09/08	Driving	1	September 2022	Spring
Crowned Lapwing	Vanellus coronatus	2022/09/08	Driving	1	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Driving	1	September 2022	Spring
African Stonechat	Saxicola torquatus	2022/09/08	Driving	1	September 2022	Spring
Long-tailed Widowbird	Euplectes progne	2022/09/08	Driving	1	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Driving	2	September 2022	Spring
Tawny-flanked Prinia	Prinia subflava	2022/09/08	Driving	2	September 2022	Spring
Little Swift	Apus affinis	2022/09/08	Driving	2	September 2022	Spring
Ant-eating Chat	Myrmecocichla formicivora	2022/09/08	Driving	2	September 2022	Spring
Little Swift	Apus affinis	2022/09/08	Driving	2	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Driving	3	September 2022	Spring

Ant-eating Chat	Myrmecocichla formicivora	2022/09/08	Driving	3	September 2022	Spring
Cape Longclaw	Macronyx capensis	2022/09/08	Driving	3	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Driving	3	September 2022	Spring
Pied Crow	Corvus albus	2022/09/08	Driving	3	September 2022	Spring
Crowned Lapwing	Vanellus coronatus	2022/09/08	Driving	3	September 2022	Spring
Egyptian Goose	Alopochen aegyptiaca	2022/09/08	Driving	3	September 2022	Spring
Pied Starling	Lamprotornis bicolor	2022/09/08	Driving	3	September 2022	Spring
Ant-eating Chat	Myrmecocichla formicivora	2022/09/08	Driving	3	September 2022	Spring
Black-winged Kite	Elanus caeruleus	2022/09/08	Driving	3	September 2022	Spring
Crowned Lapwing	Vanellus coronatus	2022/09/08	Driving	3	September 2022	Spring
Northern Black Korhaan	Afrotis afraoides	2022/09/08	Driving	3	September 2022	Spring

Table 13: Photographic Evidence of Avifauna Recorded within the project footprint.


Amur Flaco

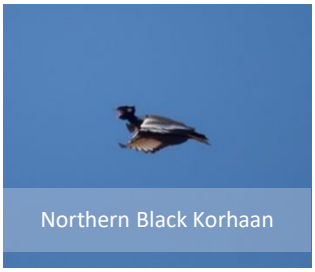

Ant-eating Chat


Cape Longclaw

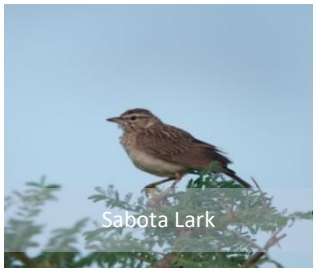

Double-banded Courser


Long-tailed Widowbird


Melodious Lark


Northern Black Korhaan


South African Cliff Swallows


Sabota Lark


Southern Red Bishop


Spike-heeled Lark