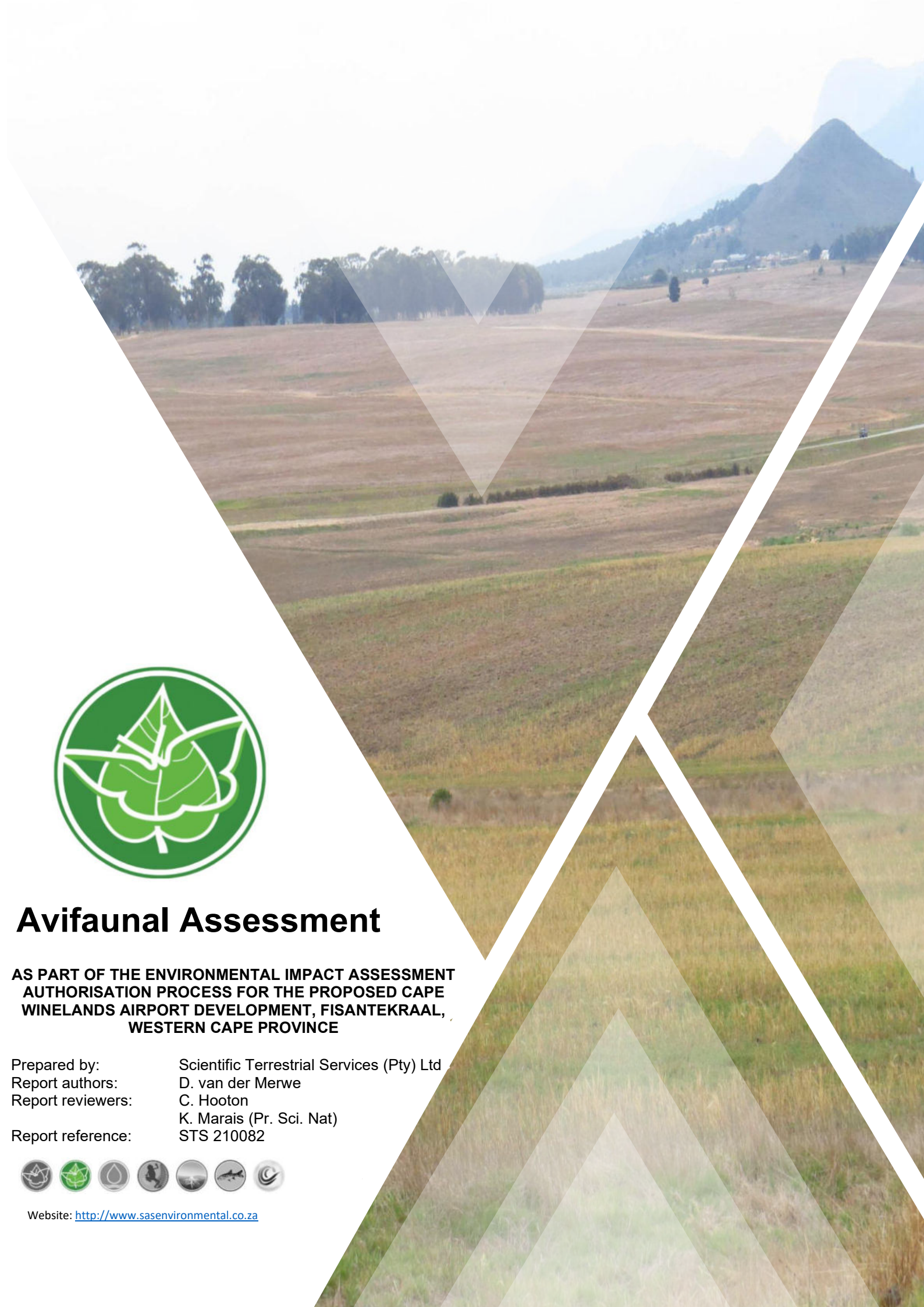
APPENDIX 10

AVIFAUNAL ASSESSMENT



Avifaunal Assessment

AS PART OF THE ENVIRONMENTAL IMPACT ASSESSMENT AUTHORISATION PROCESS FOR THE PROPOSED CAPE WINELANDS AIRPORT DEVELOPMENT, FISANTEKRAAL, WESTERN CAPE PROVINCE

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GLOSSARY OF TERMS

Most definitions are based on terms and concepts elaborated by Richardson et al. (2011), Hui and Richardson (2017) and Wilson et al. (2017), with consideration to their applicability in the South African context, especially South African legislation [notably the National Environmental Management: Biodiversity Act, 2004 (Act no. 10 of 2004(NEMBA)), and the associated Alien and Invasive Species (A&IS) Regulations, 2014].

Biological diversity or Biodiversity (as per the definition in NEMBA)	The variability among living organisms from all sources including, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part and includes diversity within species, between species, and of ecosystems.
Biome - as per Mucina and Rutherford (2006); after Low and Rebelo (1998).	A broad ecological spatial unit representing major life zones of large natural areas – defined mainly by vegetation structure, climate, and major large-scale disturbance factors (such as fires).
Bioregion (as per the definition in NEMBA)	A geographic region which has in terms of section 40(1) been determined as a bioregion for the purposes of this Act;
Corridor	A dispersal route or a physical connection of suitable habitats linking previously unconnected regions.
Critical Biodiversity Area (CBA)	A CBA is an area considered important for the survival of threatened species and includes valuable ecosystems such as wetlands, untransformed vegetation, and ridges.
Disturbance	A temporal change, either regular or irregular (uncertain), in the environmental conditions that can trigger population fluctuations and secondary succession. Disturbance is an important driver of biological invasions.
Ecological Support Area (ESA)	An ESA provides connectivity and important ecological processes between CBAs and is therefore important in terms of habitat conservation.
Endangered	Organisms in danger of extinction if causal factors continue to operate.
Endemic species	Species that are only found within a pre-defined area. There can therefore be sub-continental (e.g. southern Africa), national (South Africa), provincial, regional, or even within a particular mountain range.
Habitat (as per the definition in NEMBA)	A place where a species or ecological community naturally occurs.
Important Bird and Biodiversity Area (IBA)	The IBA Programme identifies and works to conserve a network of sites critical for the long-term survival of bird species that: are globally threatened, have a restricted range, are restricted to specific biomes/vegetation types or sites that have significant populations.
Integrity (ecological)	The integrity of an ecosystem refers to its functional completeness, including its components (species) its patterns (distribution) and its processes.
Invasive species	Alien species that sustain self-replacing populations over several life cycles, produce reproductive offspring, often in very large numbers at considerable distances from the parent and/or site of introduction, and have the potential to spread over long distances.
Least Threatened	Least threatened ecosystems are still largely intact.
Red Data Listed (RDL) species	According to the Red List of South African plants (http://redlist.sanbi.org/) and the International Union for Conservation of Nature (IUCN), organisms that fall into the Extinct in the Wild (EW), critically endangered (CR), Endangered (EN), Vulnerable (VU) categories of ecological status.
Species of Conservation Concern (SCC)	The term SCC in the context of this report refers to all RDL (Red Data), The 2015 Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland and the IUCN (International Union for the Conservation of Nature) listed threatened species as well as protected species of relevance to the project. Refer to **Appendix B and F** for further details.
Special Interest	Species with <5% of their global range falling within South Africa, many of which were recorded in previous assessments. The small regional populations of these species render them susceptible to regional extinction. However, they are not considered conservation priorities

LIST OF ACRONYMS

AIP	Alien Invasive Plant
BGIS	Biodiversity Geographic Information Systems
CARA	Conservation of Agricultural Resource Act
CBA	Critical Biodiversity Area
CR	Critically Endangered
DFFE	Department of Forestry Fisheries and Environment
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EN	Endangered
ESA	Ecological Support Area
GIS	Geographic Information System
GPS	Global Positioning System
Ha	Hectares
IBA	Important Bird Area
IEM	Integrated Environmental Management
IUCN	International Union for the Conservation of Nature
MAP	Mean Annual Precipitation
MAPE	Mean Annual Potential for Evaporation
MASMS	Mean Annual Soil Moisture Stress
MAT	Mean Annual Temperature
MFD	Mean Frost Days
NBA	National Biodiversity Assessment (2011)
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NPAES	National Protected Areas Expansion Strategy
NT	Near Threatened
OHPL	Overhead powerline
PES	Present Ecological State
POC	Probability of Occurrence
PV	Photovoltaic
QDS	Quarter Degree Square (1:50,000 topographical mapping references)
RDL	Red Data List
SABAP 2	Southern African Bird Atlas 2
SACAD	South Africa Conservation Areas Database
SANBI	South African National Biodiversity Institute
SAPAD	South Africa Protected Area Database
SCC	Species of Conservation Concern
SI	Special Interest
STS	Scientific Terrestrial Services (Pty) Ltd
TOPS	Threatened or Protected Species
TSP	Threatened Species Programme
VU	Vulnerable

1. INTRODUCTION

.1.1 Background

Scientific Terrestrial Services (Pty) Ltd (STS) was appointed to conduct an Avifaunal Assessment for a proposed Cape Winelands Airport on Portions 3, 4 and RE of Farm 474, Joostenbergs Kloof, Portions 23, 10 and the RE of the Farm 724 Joostenbergs Vlakte, and Portion 7 of Farm 942, Kliprug, to determine if any constraints from an avifaunal perspective may hinder possible future development. This report discusses the findings in relation to portions of the above listed farm portions which henceforth referred to as the "study area". The study area is located approximately 13 km northeast of the suburb of Durbanville, City of Cape Town District Municipality near Fisantekraal, Western Cape Province. More specifically, the study area is situated north of the R312, to the east of R302 and to the west of R304 (Figure 1 and 2).

The study area is approximately 470 hectares (ha) and is located in a predominantly agricultural setting with an existing Airport in the south. Small portions in the south of the study area is occupied with stables while a portion in the west has been slightly infringed upon by quarrying activities. (Figures 1 and 2). A few small, highly fragmented pockets of natural vegetation are all that remain within the study area.

This report, after consideration and the description of the ecological integrity of the study area, must guide the Environmental Assessment Practitioner (EAP), regulatory authorities and developing proponent, by means of the presentation of results and recommendations, as to the ecological viability of the proposed development activities.

1.2 Project Scope

Specific outcomes in terms of this report are outlined below:

- To provide a desktop study with all relevant information as presented by South African National Biodiversity Institute's (SANBI's) Biodiversity Geographic Information Systems (BGIS) website (http://bgis.sanbi.org), including the National Threatened Ecosystem Database (2011), the City of Cape Town Biodiversity Network Database (2019); The National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004) (NEMBA) Threatened or Protected Species (TOPS) list (NEMBA, Notice 389 of 2013), The International Union for Conservation of Nature (IUCN) Red List of Threatened Species; and The 2015 Eskom Red Data Book of Birds of South Africa,

Lesotho and Swaziland, to gain background information on the physical habitat and potential floral and faunal ecology associated with the study area;

- To identify and consider all sensitive landscapes and possible habitat for such species; and
- To determine the environmental impacts that the proposed development may have on the ecology associated with the study area, with emphasis on avifauna SCC (Species of Conservation Concern) only and to develop mitigation and management measures in terms of avifaunal SCC for all phases of the development.

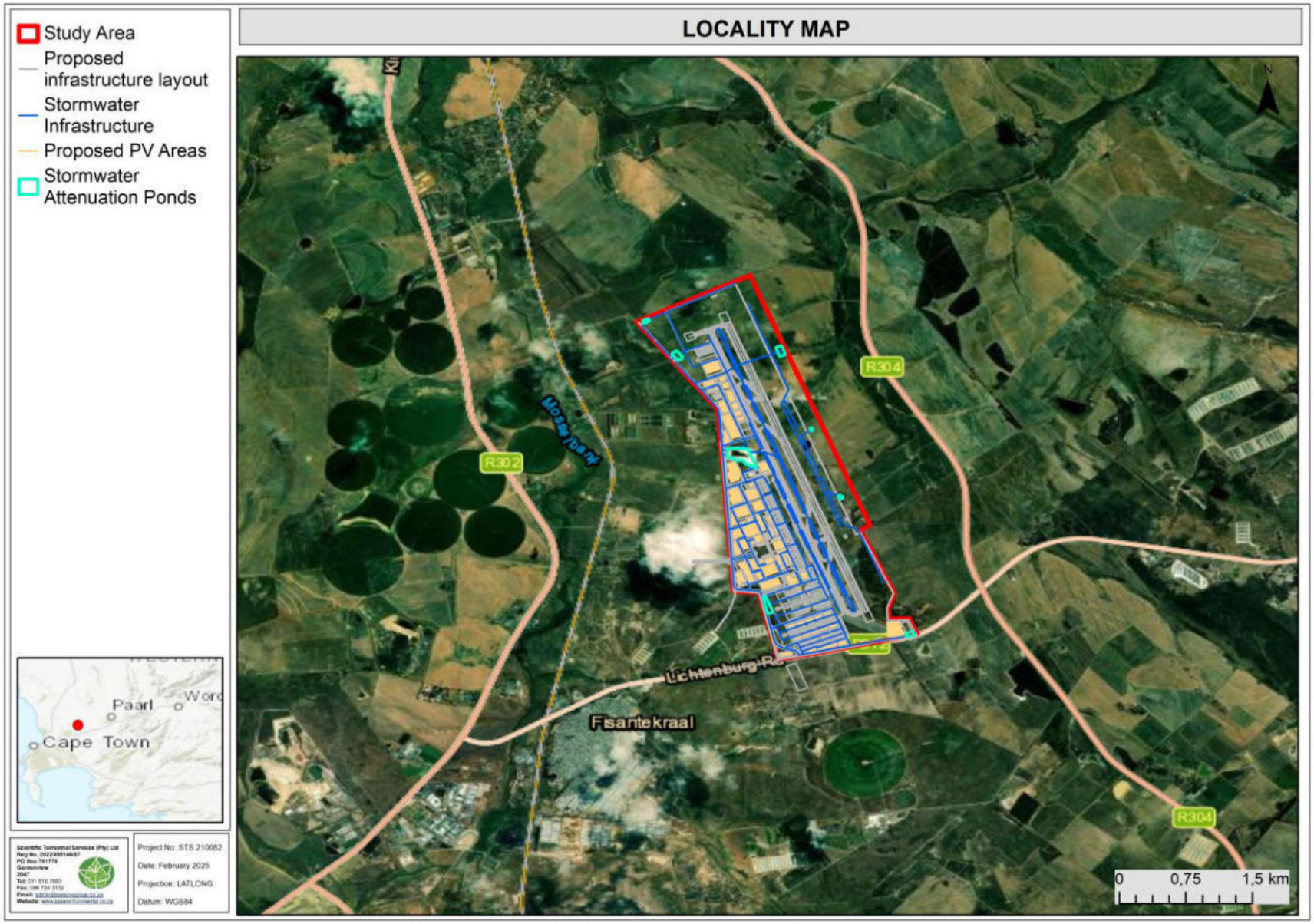


Figure 1: Digital satellite image depicting the study area in relation to surrounding areas.

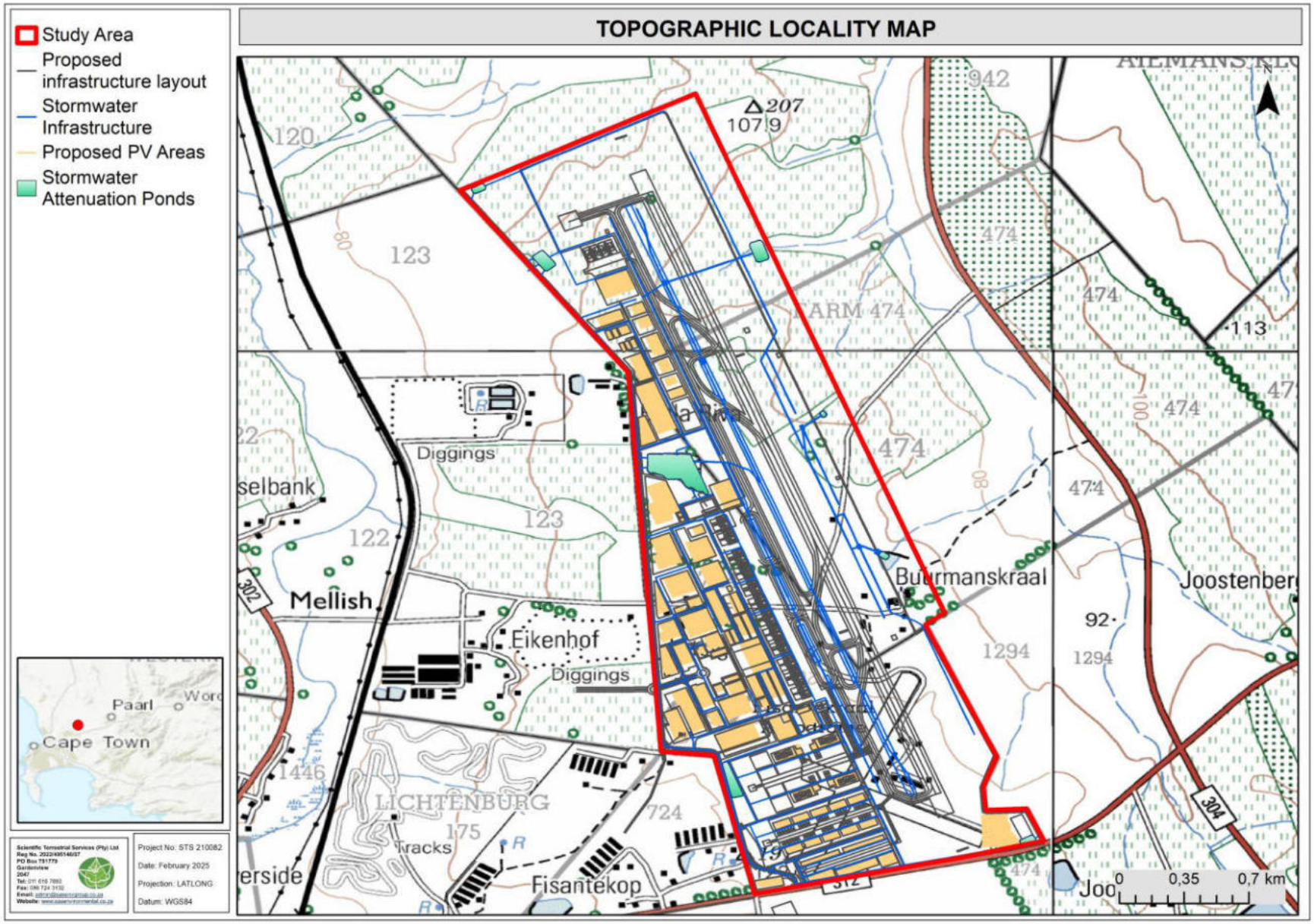


Figure 2: The study area depicted on a 1:50 000 topographical map in relation to the surrounding area.

1.3 Assumptions and Limitations

The following assumptions and limitations are applicable to this report:

- The Avifaunal Verification is confined to the study area and does not include the neighboring and adjacent properties. During the investigation particular attention was paid to the areas where future developments are being considered. However, the entire study area was considered for this assessment. The immediate surroundings were also included in the desktop analysis of which the results are presented in **Part A: Section 3**;
- The site investigation was restricted to the proposed study area. No buffers around the proposed study area were investigated on foot but avian habitat adjacent the proposed infrastructure was considered due to avian movement habits;
- With ecology being dynamic and complex, some aspects (some of which may be important) may have been overlooked. It is, however, expected that most avifaunal communities have been accurately assessed and considered;
- Due to the nature and habits of most avifaunal species and their often wide ranging habits or migration patterns, it is unlikely that all species would have been observed during a site assessment of limited duration. Therefore, site observations were compared with literature studies where necessary; and
- The data presented in this report are based on field assessments, undertaken during summer (14th to the 16th of February 2022) and winter (16th and 17 of August 2022). However, on-site data were significantly augmented with all available desktop data, and the findings of this assessment are considered to be an accurate reflection of the ecological characteristics of the study area.

2. ASSESSMENT APPROACH

2.1 General Approach

The field assessments were undertaken during summer (14th to the 16th of February 2022) and winter (16th and 17 of August 2022) seasons, to determine the potential presence of SCC and general habitat characteristics within the study area and for temporal variation. A reconnaissance ‘walkabout’ was initially undertaken to determine the general habitat types found throughout the study area, following this, specific study sites that were selected which were considered to be representative of the habitats found within the area, with special emphasis being placed on areas that may potentially support breeding and foraging habitat for SCC. These areas were then walked on foot and all observed avifauna were recorded.

A detailed explanation of the method of assessment is provided in **Appendix A** of this report.

2.2 Sensitivity Mapping

All the ecological features of the study area were considered, and sensitive areas were assessed. A Geographic Information System (GIS) was used to project these features onto aerial photographs and topographic maps. The sensitivity will be utilised to guide the design and layout of future proposed developments. Please refer to Section 4 and 5 of this report for further details.

2.3 Important Bird and Biodiversity Areas (IBA)

According to Birdlife South Africa (BLSA), the study area does not fall within any Important Bird and Biodiversity Areas (IBA). The closest IBA to the study area is the Rietvlei Wetland: Table Bay Nature Reserve IBA (located 20 km to the west).

2.4 Results of Desktop Avifaunal SCC Assessment

The following table of avifaunal SCC include species whose distribution ranges at some time have overlayed the study area. Records from SABAP 2 were obtained to determine if these species were recorded in SABAP 2 in the pentads 3340_1840, 3340_1845, 3345_1840 and 3345_1845 including their relative reporting rate. The table below provides a brief summary of the data.

Table 1: A summary of historic and current data obtained from SABAP2 (3345_1840 pentad).

Common Name	Scientific Name	Regional Status (Taylor *et al*, 2015)	SABAP2 Reporting Rate (%)				POC
			3340_1840 (85 FP cards)	3340_1845 (20 FP cards)	3345_1840 (77 FP cards)	3345_1845 (39 FP cards)	
Blue crane	*Grus paradiseus*	NT	85	85	60	53	C
Greater Flamingo	*Phoenicopterus roseus*	NT	11	0	1	26	M
Lesser Flamingo	*Phoenicopterus minor*	NT	6	0	0	8	M
African Marsh Harrier	*Circus ranivorus*	EN	1	0	0	0(ad hoc obs)	M
Black harrier	*Circus maurus*	EN	4	0	1	0	M
Lanner Falcon	*Falco biarmicus*	VU	14	0	22	11	M
Secretarybird	*Sagittarius serpentarius*	VU	4	5	1	3	M
Verreaux's Eagle	*Aquila verreauxii*	VU	0	5	0	3	M
Great White Pelican	*Pelecanus onocrotalus*	VU	34	5	14	37	M
Maccoa Duck	*Oxyura maccoa*	NT	8	0	0	26	M

FP= Full Protocol, NT= Near Threatened, VU= Vulnerable, EN= Endangered, C = Confirmed and Grey blocks are of nearby pentads adjacent the eastern side of the study area.

3. AVIFAUNAL ASSESSMENT RESULTS

Three habitat units were identified during the site assessment of the study area, they are briefly discussed below. The habitat units are depicted in Figure 3 below. For birds vegetation structure, as opposed to actual floral species richness, is widely acknowledged as the primary determinant of bird communities (Skowno & Bond 2003; Wichmann *et al.* 2009; Burgess *et al.* 2011; Smith *et al*. 2017).

Based on the results of the field investigations, three habitat units were distinguished for the study area:

- **Modified Habitat Unit** (habitat that has experienced impacts from agriculture, historic airport development and Alien Invasive Plant (AIP) proliferation). Most of this habitat comprises agricultural fields which undergo cyclic disturbances through the cultivation of crops. These areas are severely invaded by AIP and present homogenous stands of vegetation. Portions of these locations had grassland characteristics with its homogenous and swards of grasses (1 m). Several tall (25 m) AIP stands do provide valuable roosting and perching locations for various avifauna. Granivorous avifauna will prefer this unit, however, resource provisioning is anticipated to be ephemeral in nature as a result of the low floral diversity. Limited fruiting trees or shrubs existed within this habitat limiting forage availability for frugivores;
- **Renosterveld Habitat Unit** (this unit is comprises dense to open stands of shrubs and in some cases trees with an intermediate to well developed herbaceous cover). Greater floral diversity and structural characteristics provide more opportunities in terms of forage, shelter and breeding opportunities. However, these units are severely fragmented limiting the availability of habitat and unique resources increasing resource competition within the unit. In some instances, rocky piles have been made in these units which offer perches for smaller more terrestrial avifauna; and
- **The Freshwater Habitat** includes wetlands identified on site as per the wetland specialist report. Various avifaunal assemblages were noted in and around this habitat unit, though in limited numbers and often transitionary as species move between areas foraging. The wetland offers unique habitat in terms of the saturated nature but has been heavily modified due to agricultural activities.
- **Artificial impoundments and Agricultural Drains**

  These artificial features within the study area are/were used to store/convey water primarily for agricultural purposes. These are not considered to be natural features, though the artificial impoundments may provide seasonal surface water localities for

avifauna, notably waterfowl. The agricultural drains do not contain permanent water and are not considered important from an avifaunal perspective.

Section 3.1 summarises the field observations that were made during the site visit with regards to overall avifaunal diversity, food availability, habitat integrity, habitat availability, general comments and business case and conclusion.

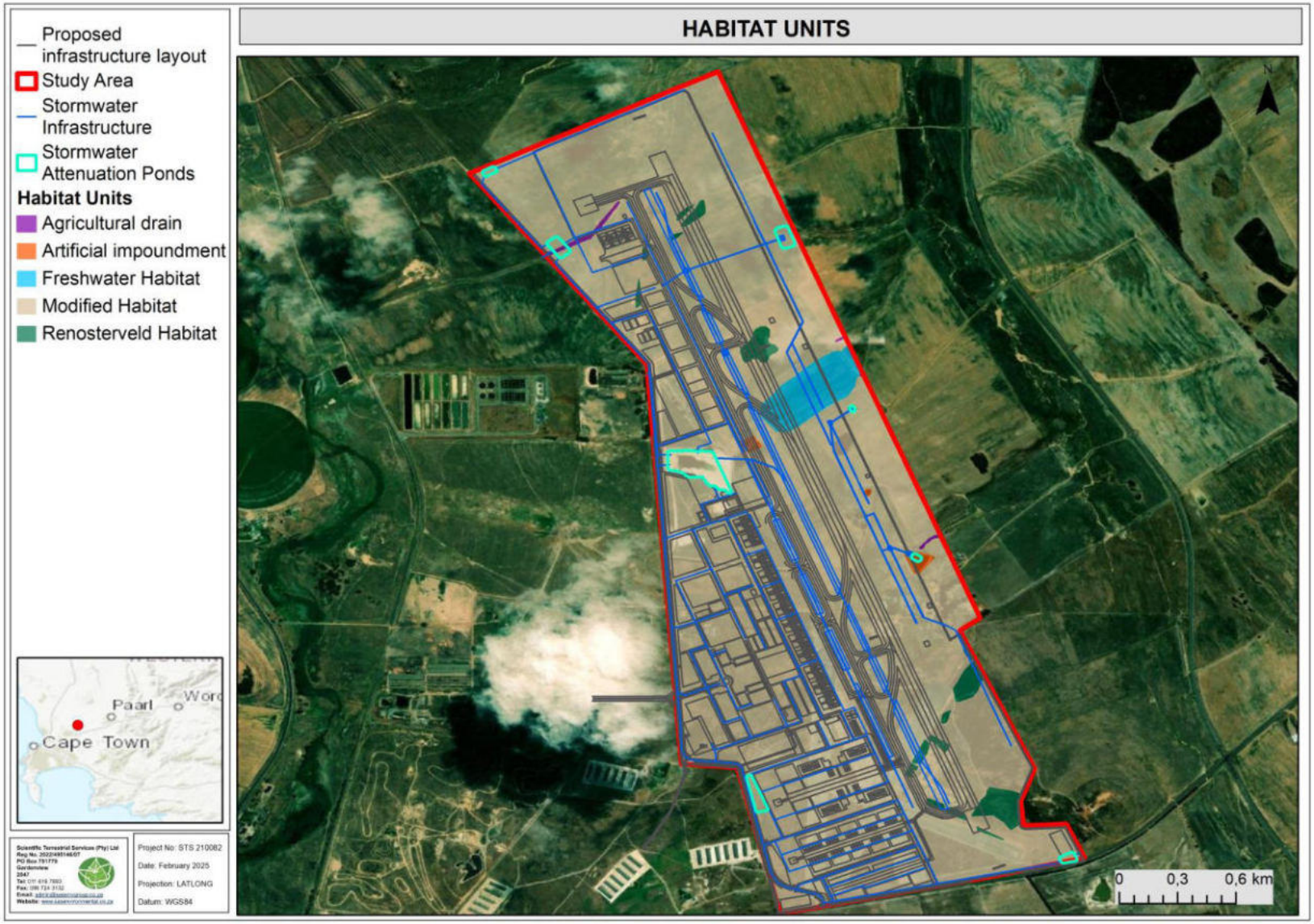


Figure 3: Habitat units encountered within the study and study area.

3.1 Summary of results for avifaunal species

Faunal Class: Avifaunal	Habitat Sensitivity:	Intermediate

Notes on photographs:
Top: Left to right - *Grus paradiseus* (Blue crane) were observed on several occasions within the study area, particularly favouring the cultivated fields, *Columba guinea* (Speckled Pigeon) were the most abundant species within the study area and *Anthus cinnamomeus* (African Pipit). Middle: Left to right – *Oenanthe pileate* (Capped Wheatear) observed within the cultivated fields, *Alopochen aegyptiaca* (Egyption Goose) noted within the Freshwater Habitat, a nest and a *Serinus canicollis* (Cape Canary) observed in the Renosterveld habitat. Bottom: Large stands of Gum tree provided valuable perches for raptors.

Avifaunal SCC/Endemics/TOPS:

During the field assessment a pair of *Grus paradiseus* (Blue crane, NT) were encountered within the cultivated fields within the study area and within the surrounding farmlands. *Grus paradiseus* (Blue crane) *Phoenicopterus roseus* (Greater Flamingo, NT), *Phoenicopterus minor* (Lesser Flamingo, NT), *Circus ranivorus* (African Marsh Harrier, EN), *Circus maurus* (Black harrier, EN), *Falco biarmicus* (Lanner Falcon, VU), *Sagittarius serpentarius* (Secretarybird, VU), *Aquila verreauxii* (Verreaux's Eagle, VU), *Pelecanus onocrotalus* (Great White Pelican, VU) and *Oxyura maccoa* (Maccoa Duck, NT) have been recorded within the pentads within which the study area is located.

The 2015 Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland indicates that several more SCC have distribution ranges which encompass the study area, these include: *Iturnix hottentottus* (Hottentot Buttonquail, EN), *Afrotis afra* (Southern Black Korhaan, VU), *Ciconia nigra* (Balck Stork, VU), *Sterna caspia* (Caspian Tern, VU), *Rostratula benghalensis* (Greater Painted Snipe, NT), *Charadrius pallidus* (Chestnut-banded Plover, NT), *Coracias garrulus* (European Roller, NT) and *Crithagra leucoptera* (Protea Seedeater, NT). These species would likely utilise the site for foraging should the oppurtunity present itself.

Of the above listed SCC, *Grus paradiseus* (Blue crane) is known to breed just west of the study area. The National Screening tool indicates that the study area has a high sensitivity for *Circus ranivorus* (African Marsh Harrier), *Circus maurus* (Black harrier) and *Sagittarius serpentarius* (Secretarybird). These species may forage within the study area however, as noted with the frequency in their reporting rate (based on available desktop databases) it is highly unlikely that these species will breed here.

Photograph:

Avifaunal Diversity	The avifaunal diversity associated with the study area was considered **moderately low**, mainly consisting of common avifaunal species, with few rare and reclusive birds observed. Since habitat structure is often considered the primary determinant of bird assemblages it is anticipated that the largely homogenous structure of the study area, comprising agricultural fields will be mirrored by a relatively narrow assemblage of birds. Species within the study area include: *Streptopelia capicola* (Cape turtledove), *Fulica cristata* (Red-knobbed Coot), *Pycnonotus capensis* (Cape Bulbul), *Serinus canicollis* (Cape Canary), *Sylvietta rufescens* (Long-billed Crombec), *Euplectes capensis* (Yellow Bishop), *Onychognathus morio* (Red-winged Startling), *Saxicola torquatus* (African Stonechat), *Bostrychia hagedash* (Hadeda Ibis), *Numida Meleagris* (Helmeted Guineafowl), *Sphenoeacus afer* (Cape Grassbird), *Cossypha caffra* (Cape Robin Chat), *Pycnonotus capensis* (Cape Bulbul) and *Lanius collaris* (Common Fiscal). Please refer to Appendix B for the full list of species identified on site.
Food Availability	The study area is considered to have a **moderately low** abundance of forage for avian species as a result of the historic and current agricultural activities and as a result of severe AIP proliferation within the study area. The graminoid layer was homogenous while the shrub and tree layer was largely secluded to small pockets within the human modified habitat, greatly reducing the potential forage breadth for avifauna. The largely transformed habitat offers poor resources for most avifauna with little niche habitat or sufficient food for the avian assemblages within the study area. Forage for granivores was noted within the Modified habitat yet this is anticipated to be suitable for short periods during the year as a result of the agricultural activities and homogenous vegetation.

	Birds that feed on invertebrates and vegetation would find suitable forage outside of the Modified Habitat. Insect abundances were moderately low, limiting provisioning of a rich source of food for most passerines and fruiting vegetation appeared to occur in limited supply. Forage for large perch hunting raptors was noted in intermediate abundances, these species often have wide ranging habits and will cover large areas, and as such it is considered unlikely food will be a limiting factor for them.
Habitat Integrity	The study area is largely transformed with small sections of natural vegetation interspersed in small pockets of the study area. The large degree of transformation largely through agricultural activities reduces the integrity of the study area as most of the habitat no longer represents the reference vegetation. The study area is bordered by agricultural activities with limited patches of native vegetation, drastically reducing the overall integrity of the study area. The absence of fire due to the surrounding activities does subtract an important ecological function which is valuable to many bird species as they create disturbances (natural), promote floral heterogeneity, and cause structural changes to herbaceous vegetation. As such the habitat integrity can be considered **moderately low.**
Habitat Availability	Habitat availability is considered to be patchy and ranges from **intermediate to moderately low** within the study area. Portions of the Modified Habitat and Renosterveld Habitat provide intermediate habitat for avifauna where more complex structure exists. The general grass dominated characteristics of the Modified habitat and the Freshwater habitat offers limited opportunities for most species within the study area and is thus considered not preferred in comparison to the Renosterveld unit. A lower diversity of avifauna was noted within the Modified habitat, where habitat characteristics were homogenous and offered very little shelter, forage, or nesting opportunities for avifauna. The lack of dense sheltered areas and trees within the Modified habitat reduces the habitat available and shelter for many avifaunal species who require these features for nesting and foraging.
Conclusion:	The avifaunal habitat sensitivity for the study area is considered to range from **intermediate to moderately low**. Although a large contingent of SCC are considered likely to utilise the study area only *Grus paradiseus* (Blue crane) breed within the cultivated fields (Modified Habitat) and adjacent Freshwater Habitat. It is not anticipated that the remaining SCC will permanently occur within the study area but will rather utilise the these locations when favourable conditions present themselves. Most SCC which may inhabit the study area have wide ranges and often respond to favourable environmental conditions (grazing, fire, rainfall, or invertebrate outbreaks) and as such may find suitable habitat within the study area intermittently. The National Screening tool indicates that the southern portions of the study area are considered of High sensitivity from an avian perspective. Please refer to Section 4 for the proposed sensitivity ratings for the study area. Any proposed activities within the study area will likely result in *Grus paradiseus* (Blue crane) vacating the study area, whilst this species may also vacate adjacent farmlands as well given the increased noise disturbance from larger planes. Thus, a loss of breeding productivity is likely within the region. Potential impacts arising from the proposed activities are likely to impact on SCC diversity or abundance, such as an increase in human traffic and direct destruction of habitat.

3.2 Avifaunal SCC Assessment

During field assessments, it is not always feasible to identify or observe all species within an area, largely due to the secretive nature of many avifaunal species, possible low population numbers or varying habits of species or seasonality. As such, and to specifically assess an area for avifaunal SCC, a Probability of Occurrence (POC) matrix is used, utilising a number of factors to determine the probability of avifaunal SCC occurrence within the study area. Species listed in Appendix C or other regional listings, whose known distribution ranges and habitat preferences include the study area were taken into consideration. Only species who are anticipated to have a medium or high probability of occurring within the study area are listed below.

Several SCC listed in Appendix C have distribution ranges which encompass the study area and habitat preferences for the characters exhibited on site. These species include: *Grus paradiseus* (Blue crane), *Phoenicopterus roseus* (Greater Flamingo), *Phoenicopterus minor* (Lesser Flamingo), *Circus ranivorus* (African Marsh Harrier), *Circus maurus* (Black harrier), *Falco biarmicus* (Lanner Falcon), *Sagittarius serpentarius* (Secretarybird), *Aquila verreauxii* (Verreaux's Eagle), *Pelecanus onocrotalus* (Great White Pelican) and *Oxyura maccoa* (Maccoa Duck). Of these SCC, *Grus paradiseus* (Blue crane) in known to forage and breed within the cultivated fields and adjacent freshwater habitat. None of the other abovementioned SCC are anticipated to utilize the study area on a permanent basis.

Due to the habitat units associated with the study area, the likelihood for avifaunal SCCs occurring within the study area is deemed high for a single species, namely *Grus paradiseus* (Blue crane), while having only a medium potential for hosting several more due to the high degree of agricultural development within the study area. Should the nests of any avifaunal SCC as listed above and in Appendix C of this report, be encountered during planning an avifaunal specialist must be consulted in order to advise on the best way forward.

Table 2: Avifaunal SCC that have a medium to high probability of occurring within the study area due to suitable habitat.

SCIENTIFIC AND COMMON NAME	HABITAT DESCRIPTION	REGIONAL STATUS	POC (%)
Grus paradiseus (Blue crane)	**Range**: South Africa and Namibia (Etosha Pan). **Major habitats**: Eastern grasslands, Karoo and the Western Cape within the region. **Description**: The cranes are dry grassland birds, found in open grasslands and ecotones between the Nama Karoo and Grassland Biomes. Commonly found in agricultural landscapes in the Western Cape. **Food:** Omnivorous. Feeds primarily on plant material (seeds, sedges, grasses, roots, tubers and small bulbs). Also feeds on insects, worms, crabs, small reptiles, fish, frogs, bird eggs, mammals and a variety of plant matter. **Available habitat with the Subject Property:** Entire study area.	NT	Confirmed
Phoenicopterus roseus (Greater Flamingo)	**Range**: Occurs mostly along coastal regions throughout Africa and the Mediterranean Sea, Arab peninsula and India. Non-breeding migrants may venture to Kazakhstan. **Major habitats**: Wetlands and marine (Neritic) habitats. **Description**: Forms large flocks that feed in shallow aquatic environments sifting brine shrimps, brine flies, molluscs and diatoms while wading. Mostly moving at night. **Food:** Brine shrimps, brine flies, molluscs and diatoms. **Available habitat with the Subject Property:** Freshwater habitat, within artificial impoundments.	NT	M
Phoenicopterus minor (Lesser Flamingo)	**Range**: Southern and eastern Africa, the extreme western portions of Africa, southern portions of the Arabian peninsula and India. Breeds in pockets of habitat throughout this region. **Major habitats**: Wetlands (inland), Marine (Neritic, Intertidal, Coastal/Supratidal, Artificial/Aquatic & Marine Shrubland, grassland, inland wetlands and desert. **Description**: Forms large flocks that feed in shallow aquatic environments sifting cyanobacteria and diatoms while wading. Mostly moving at night. **Food:** Brine shrimps, brine flies, molluscs and diatoms. **Available habitat with the Subject Property:** Freshwater habitat, within artificial impoundments.	NT	M
Aquila verreauxii (Verreaux's Eagle)	**Range**: These species occurs in mountainous regions along the eastern and southern reaches of Africa. Populations within the Arabian peninsula also exist. **Major habitats**: Savanna, shrubland, grassland, particularly in rocky areas. **Description**: Preferring a prominent point from which it can see prey while remaining stationary or soars over territory. **Food:** *Procavia capensis* (Rock Hyrax) are particularly important for the species however it is opportunistic and will prey on other medium sized mammals. **Available habitat with the study area:** Entire study area, however, only for opportunistic foraging.	VU	L
Pelecanus onocrotalus (Great white Pelican)	**Range**: Non-breeding and breeding populations occur throughout large portions of Africa and Asia and at a few locations in Europe. **Major habitats**: Inland water and marine environments. **Description**: Utilising marine and freshwater habitats they forage for fish and occasionally other seabirds. They require dry land roosts in open areas. **Food:** Feeds primarily on fish. **Available habitat with the study area:** Artificial impoundments within the Freshwater habitat.	VU	M
Oxyura maccoa (Maccoa duck)	**Range**: Namibia, South Africa, Botswana, Zimbabwe, Kenya, Tanzania and Ethiopia. **Major habitats**: Prefers small inland freshwater lakes that are shallow and nutrient rich. Also utilizes farm dams and sewage works. **Description**: Feeds on algae and invertebrates which it strains through its bill. **Food:** Feeds primarily on invertebrates. **Available habitat with the study area:** Artificial impoundments within the Freshwater habitat.	NT	M

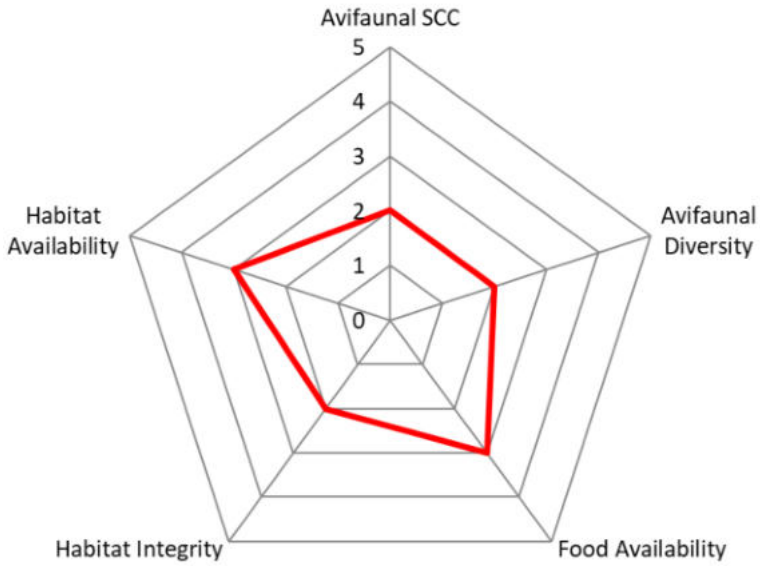
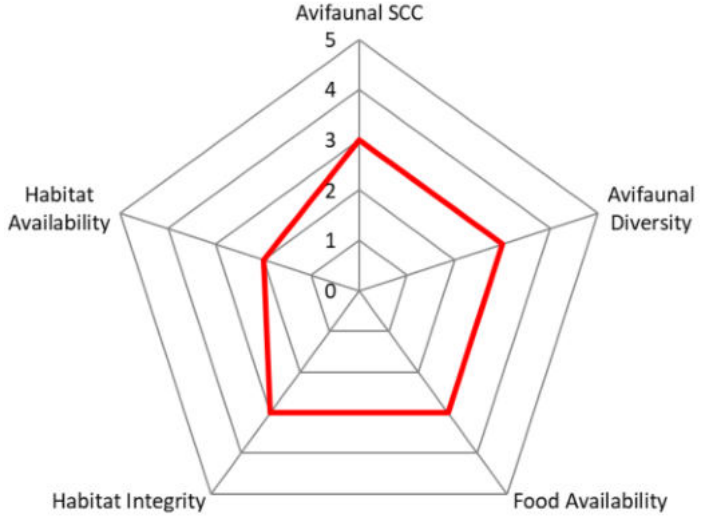
SCIENTIFIC AND COMMON NAME	HABITAT DESCRIPTION	REGIONAL STATUS	POC (%)
Sagittarius serpentarius (Secretarybird)	**Range**: Sub-Saharan Africa where it avoids densely wooded or forested areas. **Major habitats**: Savanna, Shrubland and grassland. **Description**: The species is prefers open grassland and scrub with a height lower than 50cm where it stalks its prey on foot. It requires sufficient scattered trees in which to nest. Birds are normally found singly or in pairs. **Food:** Has a cosmopolitan diet but appears to prey mostly on snakes. Other prey includes invertebrates, small mammals, birds and their eggs. **Available habitat with the Subject Property:** Entire study area.	**V**	**M**
Falco biarmicus (Lanner Falcon)	**Range**: Southern Europe and the Arabian Peninsula with most of its range within Africa. **Major habitats**: Forest, Savanna, shrubland, Grassland, Rocky areas (inland cliffs and mountains) and desert. Favours open grassland or woodland near cliffs. **Description**: Inhabits a wide variety of habitats and may illustrate crepuscular behaviour. Mostly resident with some birds migrating to west Africa. **Food:** Birds, small mammals, insects and reptiles. **Available habitat with the study area:** Entire study area.	**VU**	**M**
Circus maurus (Black Harrier)	**Range**: Restricted to southern Africa, Namibia and South Africa only. **Major habitats**: Fynbos, renosterveld, strandveld, karoo shrublands, dry grasslands and croplands. **Description**: Near endemic species with its core range in the fynbos biome. The harriers undergo seasonal migrations during summer travelling eastwards to Free State and Lesotho and marginally Mpumalanga before returning during winter. **Food:** Small mammals and birds, also reptiles, insects and frogs to a lesser extent. **Available habitat within the Subject Property:** Entire study area.	EN	**M**
Circus ranivorus (African Marsh-Harrier)	**Range**: The species is sparsely distributed across wetlands throughout central and east Africa, and southwards towards southern Africa. **Major habitats**: Dependant on permanent wetlands for both breeding and feeding. Avoids large areas of the drier Northern Cape and inland areas of the Western Cape especially areas with <300mm rain. **Description**: Hunts over permanent wetlands, drier floodplains, grassland, croplands and fynbos where it mainly preys on rodents. **Food:** Mostly small rodents, birds, frogs and fish. **Available habitat within the Subject Property:** Entire Study area.	EN	**M**

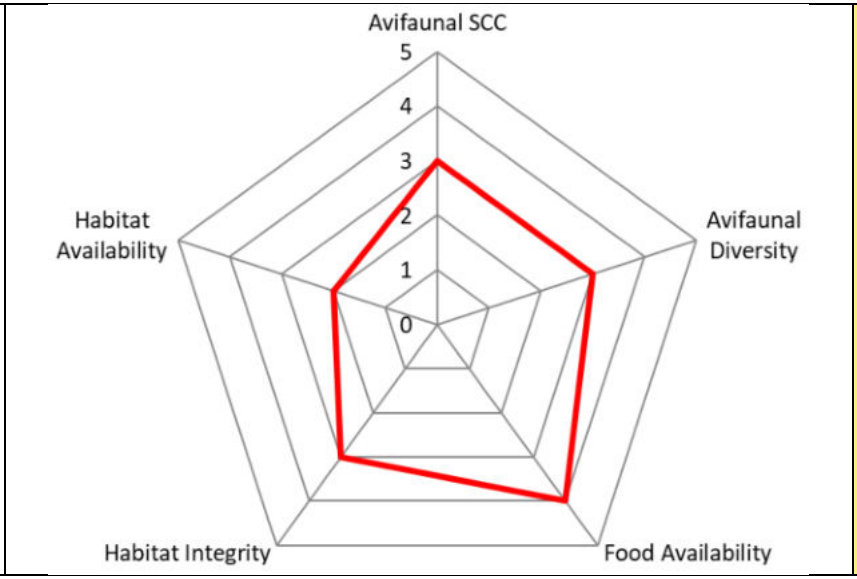
EN= Endangered; CR= Critically Endangered; VU= Vulnerable; NT=Near Threatened; LC=Least concern; SI=Special Interest.

4. SENSITIVITY MAPPING

The figure below conceptually illustrates the areas considered to be of increased ecological sensitivity. The areas are depicted according to their sensitivity in terms of the presence or potential for avifaunal SCC, habitat integrity and levels of disturbance, threat status of the habitat type, the presence of unique landscapes and overall levels of diversity. The table below presents the sensitivity of each identified habitat unit along with an associated conservation objective and implications for development.

Table 3: Summary of sensitivity of each habitat unit and implications for development.

Habitat Unit	Habitat Sensitivity Graph	Sensitivity	Development Implications
Modified Habitat **Agricultural Drains**		**Moderately Low Sensitivity** Conservation Objective for areas of Low Sensitivity: Optimise development potential while improving biodiversity integrity of surrounding natural habitat and managing edge effects.	This habitat has been previously transformed and is deemed to be of moderately low sensitivity for avifauna due to altered state and lack of heterogeneity. Development within this habitat is unlikely to lead to high impacts to avifaunal habitat loss but species diversity may be reduced. *Grus paradiseus* (Blue crane) is known to utilize this habitat for foraging and breeding and may emigrate from the study area should a large degree of transformation occur within the study area or within the study area.
Freshwater Habitat **Artificial Impoundment**		**Intermediate Sensitivity** Conservation Objective: Preserve and enhance the biodiversity of the habitat unit and the surrounds while optimising development potential.	These units comprise of small portions of the study area and study area and in most cases are severely fragmented and thus have been exposed to a high degree of edge effects. Areas of intermediate sensitivity do provide more valuable resources in terms of forage and breeding opportunities for avifauna. However, from an avifaunal perspective it is likely that mostly common species who have broad habitat requirement are likely to utilise these units for breeding and some SCC may forage in these habitats should the opportunity present itself. Development within these areas are less likely to have medium impacts on avifaunal communities within the study area as these remain important from an ecological functioning perspective and as valuable movement corridors for avifauna. Edge effect impacts on areas outside of the direct footprint must be strictly managed to minimise further

Renosterveld Habitat			impacts to the ecological functionality of the surrounding habitats. *Grus paradiseus* (Blue crane) is known to utilize the Freshwater habitat within the study area and impacts to this unit may reduce the suitability of the study area for this species.

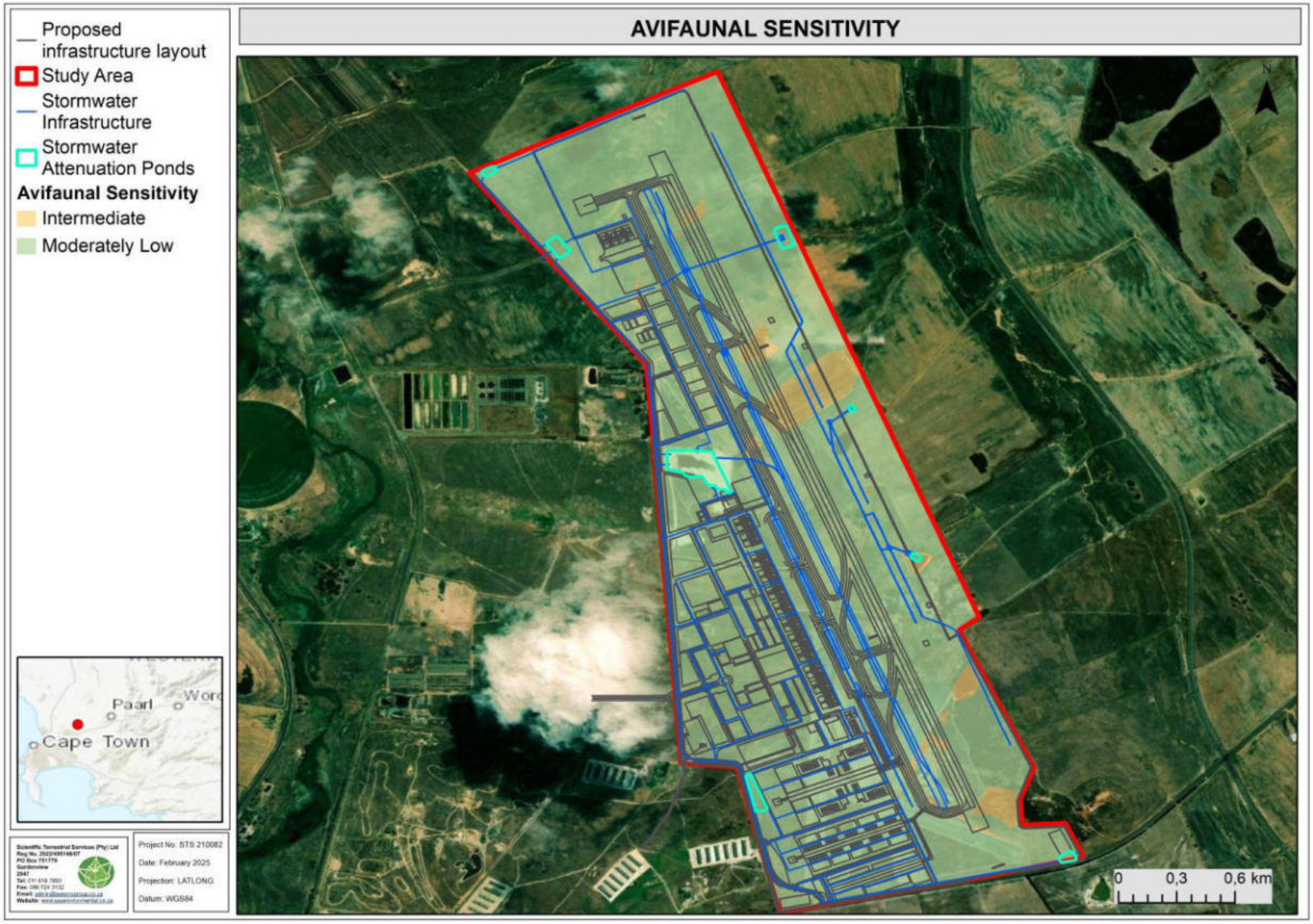


Figure 4: Avifaunal sensitivity map of the study area.

5. IMPACT ASSESSMENT

The sections below provide the significance of perceived impacts arising from the proposed activities within the study area. The impact assessment is based on the layout provided by the proponent as illustrated in Figure 1 of this report, as well as Part A: Figures 3 and 4.

An impact discussion and assessment of all potential i) construction phase and ii) operational phase impacts are provided in Section 5.1 and 5.2 below. All mitigatory measures required to minimise the perceived impacts are presented in Section 5.1, within each impact table.

As indicated in Part A: Section 2, four layout alternatives were considered. The proposed 'no-go' alternative will not result in any additional impacts to faunal species and habitat identified within the study area, and as such, have not been included in the impact assessment. Due to the similarity in the layout of Alternative 2, Alternative 3 and the preferred Alternative 4, and considering that the layout alternatives will remain within the footprint of the study area, the anticipated impact of Alternative 2, 3 and 4 on faunal species and their respective habitats are considered similar. As such, the Impact Assessment which has been undertaken is considered representative of impacts associated with all the proposed Alternatives and draws suitable conclusions in terms of impacts regardless of which alternative is selected.

5.1 Avifaunal Impact Assessment Results

There are several key ecological impacts on avifaunal assemblages within the study area that may potentially occur in relation to the proposed project components, specifically:

- Direct loss of avifaunal habitat;
- Decreased avifaunal abundances and species richness;
- Increased anthropogenic movement;
- Potential for bird strikes;
- Altered avifaunal movement patterns;
- Loss of avifaunal SCC habitat and possible SCC occurrence both within the study area and in the surrounding habitats;
- Altered biotic integrity and disturbance to ecosystem function; and
- Altered water quality.

The tables below provide the findings of the impact assessment undertaken with reference to the perceived impacts prior to the implementation of mitigation measures and following the implementation of mitigation measures. The mitigated results of the impact assessment have

been calculated on the premise that all mitigation measures as stipulated in this report are adhered to and implemented. Should such actions not be adhered to, post-mitigation impact scores will likely increase.

The impact assessment has been divided between impacts on **1)** avifaunal habitat and diversity (both direct and indirect impacts considered), and **2)** avifaunal SCC and their associated habitat.

Table 4. Construction Phase impacts on avifaunal habitat, diversity, and SCC from the proposed development. Required mitigation measures are presented at the bottom of each table section.

Habitat Unit / Aspect	UNMITIGATED							MITIGATED					
	Impact Negative (-) / Positive (+)	Extent	Magnitude	Duration	Probability	Confidence	Significance	Extent	Magnitude	Duration	Probability	Confidence	Significance
IMPACT ON AVIFAUNAL HABITAT AND DIVERSITY													
Renosterveld Habitat	-	Local	Medium	Short Term	Definite	Certain	**Medium**	Site Specific	Medium	Short Term	Definite	Certain	**Low**
Freshwater Habitat	-	Local	Medium	Short Term	Definite	Certain	**Medium**	Site Specific	Medium	Short Term	Definite	Certain	**Low**
Modified Habitat	-	Local	Medium	Short Term	Definite	Certain	**Medium**	Site Specific	Medium	Short Term	Definite	Certain	**Low**
Artificial Impoundments	-	Local	Medium	Short Term	Definite	Certain	**Medium**	Site Specific	Medium	Short Term	Definite	Certain	**Low**
Agricultural Drains	-	Site Specific	Low	Short Term	Definite	Certain	**Very Low**	Site Specific	Low	Short Term	Definite	Certain	**Very Low**
IMPACT ON AVIFAUNAL SCC AND THEIR HABITAT													
Renosterveld Habitat	-	Local	Medium	Short Term	Definite	Certain	**Medium**	Site Specific	Low	Short Term	Definite	Certain	**Very Low**
Freshwater Habitat	-	Local	Medium	Short Term	Definite	Certain	**Medium**	Site Specific	Low	Short Term	Definite	Certain	**Very Low**
Modified Habitat	-	Regional	Medium	Short Term	Definite	Certain	**Medium**	Local	Medium	Short Term	Definite	Certain	**Medium**
Artificial Impoundments	-	Local	Medium	Short Term	Definite	Certain	**Medium**	Site Specific	Low	Short Term	Definite	Certain	**Very Low**
Agricultural Drains	-	Site Specific	Low	Short Term	Definite	Certain	**Very Low**	Site Specific	Low	Short Term	Definite	Certain	**Very Low**
Mitigation Measures for Impacts on Avifaunal Species													
- The development footprint should be demarcated, and it should be ensured that no development related activities take place outside of the demarcated footprint; - Avifaunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways; - Site clearance activities should take place in a phase manner, starting from the south moving northwards, or centrally moving outwards, so that avifaunal species can flee ahead of clearance activities into adjacent habitat and not get trapped in centralised, remnant patches; - Sound environmental management practices should be adhered to at all times; - Alien plant species should be suitably managed and no further spread of alien plants should be allowed; - No illicit fires must be allowed during the construction phase; - Stormwater/attenuation pond surfaces should be closed off to prevent avifauna from congregating to these areas, notably waterfowl and larger bird species which pose a risk to aircraft;												

Habitat Unit / Aspect	UNMITIGATED						Significance	MITIGATED					Significance
	Impact Negative (-) / Positive (+)	Extent	Magnitude	Duration	Probability	Confidence		Extent	Magnitude	Duration	Probability	Confidence	
- As far as possible, vegetation clearance should take place during the winter months, outside of the breeding/nesting periods of avifaunal species; - Noise must be kept to acceptable levels as per the environmental norms and standards for noise mitigation as stipulated within the noise specialist report; and - No hunting, trapping or collecting of avifaunal species is to be allowed. Setting of snares by personnel for ground dwelling birds is to be prohibited.													

Table 5. Operational Phase impacts on avifaunal habitat, diversity, and SCC from the proposed development. Required mitigation measures are presented at the bottom of each table section.

Habitat Unit / Aspect	UNMITIGATED						Significance	MITIGATED					Significance
	Impact Negative (-) / Positive (+)	Extent	Magnitude	Duration	Probability	Confidence		Extent	Magnitude	Duration	Probability	Confidence	
IMPACT ON AVIFAUNAL HABITAT AND DIVERSITY													
Renosterveld Habitat	-	Site Specific	Low	Long Term	Definite	Certain	**Low**	Site Specific	Very Low	Long Term	Definite	Certain	**Very Low**
Freshwater Habitat	-	Local	Medium	Long Term	Definite	Certain	**Medium**	Local	Low	Long Term	Definite	Certain	**Low**
Modified Habitat	-	Local	Medium	Long Term	Definite	Certain	**Medium**	Local	Low	Long Term	Definite	Certain	**Low**
Artificial Impoundments	-	Site Specific	Low	Long Term	Definite	Certain	**Low**	Site Specific	Very Low	Long Term	Definite	Certain	**Very Low**
Agricultural Drains	-	Site Specific	Low	Long Term	Definite	Certain	**Low**	Site Specific	Very Low	Long Term	Definite	Certain	**Very Low**
Noise Impacts	-	Local	Medium	Long Term	Definite	Certain	**Medium**	Local	Medium	Long Term	Definite	Certain	**Medium**
IMPACT ON FAUNAL SCC AND THEIR HABITAT													
Renosterveld Habitat	-	Site Specific	Low	Long Term	Definite	Certain	**Low**	Site Specific	Very Low	Long Term	Definite	Certain	**Very Low**
Freshwater Habitat	-	Local	Medium	Long Term	Definite	Certain	**Medium**	Local	Low	Long Term	Definite	Certain	**Low**

Habitat Unit / Aspect	UNMITIGATED						Significance	MITIGATED					Significance
	Impact Negative (-) / Positive (+)	Extent	Magnitude	Duration	Probability	Confidence		Extent	Magnitude	Duration	Probability	Confidence	
Modified Habitat	-	Regional	Medium	Long Term	Definite	Certain	**High**	Local	Medium	Long Term	Definite	Certain	**Medium**
Artificial Impoundments	-	Site Specific	Low	Long Term	Definite	Certain	**Low**	Site Specific	Very Low	Long Term	Definite	Certain	**Very Low**
Agricultural Drains	-	Site Specific	Low	Long Term	Definite	Certain	**Low**	Site Specific	Very Low	Long Term	Definite	Certain	**Very Low**
Noise Impacts	-	Local	Medium	Long Term	Definite	Certain	**Medium**	Local	Medium	Long Term	Definite	Certain	**Medium**
IMPACT ON FAUNAL SCC AND THEIR HABITAT													
- No further development related activities are to take place outside of the demarcated footprint unless duly authorised by the competent authority; - Avifaunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways and as per the Bird and Wildlife Hazard Management Plan for the airport; - Sound environmental management practices should be adhered to at all times; - Stormwater /attenuation ponds must be monitored and covers/screens of these features repaired if damaged. If leaks appear or ponding at the outlets is evident, this must be rectified to avoid attracting waterfowl or larger avifauna such as herons etc which pose a risk to aircraft; - Noise levels must be suitably managed in line with the norms and standards for airports operations. It is however acknowledged that the larger aircraft will generate noise levels beyond the recommended health and safety guidelines, and that these unfortunately cannot, at this point in time, be reduced due to the nature of turbine jet engines; - Reactive control measures should be investigated and where needed implemented to manage birds and other wildlife at the airport. Such includes dispersal measures(sirens, lasers, pyrotechnics, and Border Collies) and removal measures (live capture, nest removal etc) as and where feasible/needed; and - Buildings, structures and landscaped gardens may provide artificial nesting/habitat for avifaunal species and increases their potential activity around the airport. Methods to reduce available shelter include: 1) Exclusion measures such as spikes, netting, panelling on ledges and holes around buildings to assist in prevention of birds taking residence, 2) Nest removal and 3) Cutting / mowing of vegetation where needed (this may however attract a different assemblage of avifauna which selects for such areas). As such, vegetation clearance should be done in line with he recommendations as per the Bird and Wildlife Hazard Management Plan for the airport.												

5.2 Impact Discussion

The sections below provide the significance of perceived impacts arising from the proposed development. The below sections break down the various impacts anticipated for the different aspects of the proposed development.

It is important to note that due to the presence of an existing aerodrome which is utilised by small planes there is a certain level of noise and disturbance which forms part of the baseline environment, and to which birds inhabiting the study area will be accustomed. The expansion of the airport and the increased intensity of noise and disturbance impacts must be viewed in this context. However, the use of the new airport by larger commercial aeroplanes will result in a notable increase in the intensity of noise-related and disturbance impacts on avifauna.

5.2.1 Impacts on Avifaunal Habitat and Diversity

The study area is predominantly defined by modified habitat which comprises of habitat which has been degraded/altered as a result of the extensive alien plant proliferation in areas as well as crop cultivation. This has resulted in an already significant degree of habitat loss for avifaunal species, and consequently impacted on avifaunal species diversity and abundance.

The proposed activities will lead to a reduction in habitat which may increase resource competition in adjacent habitats due to species displacement. Moreover, the proposed airport will cover a large extent within the study area increasing the scale of edge effects that may be experienced causing further degradation to the surrounding habitat if not managed. Furthermore, the increase in both air and road traffic may increase the possibility of collisions with avifauna. Managing stormwater will also be important as any surface water features will attract birds and may increase the potential for collisions with planes. The development of stormwater attenuation facilities could increase the risk of bird strikes and collisions, as the potential creation of open water bodies/features would potentially attract certain types of waterfowl and herons etc to the site, creating new avifaunal flight paths to and from the airport. The risk of such an impact is dependent on the location of such infrastructure and importantly is dependent on the design of the stormwater attenuation ponds (e.g. covering of any open water bodies would lessen their attractiveness to waterfowl). The Renosterveld Habitat represents valuable habitat for avifaunal utilisation because of the increased structural variation in the context of the primarily altered agricultural habitats within the study area and the increased availability of food sources for many species with it being the natural vegetation type in the area. However, this habitat unit is highly fragmented and cannot function in

isolation. Thus, impacts on this habitat are not considered to be detrimental to the local avifaunal composition in the local area.

5.2.2 Impacts on Avifaunal SCC

Current habitat degradation both within and outside of the study area has already resulted in loss of suitable habitat which may support avifaunal SCC. However, *Grus paradiseus* (Blue crane) which utilises the Modified habitat will be impacted upon as a result of the loss of foraging grounds, whilst flight paths for this species over the study area will also be impacted upon. It is however noted that the modified habitat is not unique to the region this species will likely find breeding and foraging habitat in other human modified areas in the broader locality. It is important however that disruptive measures are utilised to deter this species where possible from the runways as this larger bodied bird poses not only a risk to aircraft, but collisions would result in unnecessary increased mortalities of an already threatened species.

5.2.3 Probable Residual Impacts

Even with extensive mitigation, residual impacts on the receiving environment are likely. The following points highlight the key residual impacts that have been identified. It should be noted, however, that some of these impacts are, to a degree, already present as a result of the current farming and airport activities.

- Continued degradation of natural habitat adjacent to the airport structures as a result of edge effects and operational requirements;
- Altered avifaunal species habitat, diversity, movement patterns and breeding opportunities;
- Disturbed areas are highly unlikely to be rehabilitated to baseline levels of ecological functioning and loss of avifaunal habitat and species diversity may be long term; and
- Loss of potential habitat for avifaunal SCC in the study area.

5.2.4 Cumulative Impacts

The study area is located within a region which has already been subjected to extensive land transformation and habitat degradation, stemming from agricultural activities, urban/peri-urban development as well as extensive alien plant proliferation. Such activities have already resulted in a notable cumulative loss of habitat within the region. The proposed development will further add to this long term cumulative habitat loss, as once developed, rehabilitation/restoration of habitats (should the airport ever close down|) is unlikely. The increased traffic, notably air traffic will further add to the cumulative noise impacts for the region, and may result in further displacement of noise sensitive species.

6. CONCLUSION

Based on the findings of the avifaunal assessment it is the opinion of the ecologists that from an avifaunal ecological perspective, the impacts anticipated from the proposed airport development may result in impacts for a single SCC, *Grus paradiseus* (Blue crane). This species does forage within the study area and is known to breed within a kilometre of the study area, thus the local populations productivity may decrease. As significant levels of agriculture have occurred within the study area much of the natural habitat has been transformed and provides suboptimal habitat for most species. Only a few small pockets of indigenous vegetation, which in some cases have been severely invaded by AIP (with specific mention of *Acacia saligna* (Port Jackson), occur within the study area, limiting resource availability and habitat for most avifauna.

The perceived impact significance to the avifaunal assemblages of the study area can be suitably managed provided mitigation measures are followed. With mitigation, impacts can be reduced to medium to very low significance levels. Based on the results of the site assessment and the overall impact significance scores, it is the opinion of the specialist that this project may be approved, provided that all management and mitigation measures as stipulated in this report are adhered to, and that a regular avifaunal monitoring of the airport and surrounding natural areas is undertaken so as to best manage impacts and edge effects.

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APPENDIX A: Avifaunal Method of Assessment

Avifaunal Assessment Methodology

A reconnaissance 'walk through' on foot was undertaken to determine the general habitat types found throughout the study area. Special emphasis was placed on areas that may potentially support avifaunal SCC. Sites representative of habitat units or unique niche habitats were then marked and point counts were undertaken in order to identify the occurrence of the avifaunal communities, species and habitat diversities. The presence of any avifaunal inhabitants of the study area was assessed through direct visual observation or identifying such species through calls, nests and potentially pellets.

It is important to note that avifaunal species have varied breeding patterns and are subject to seasonal fluctuations. As such, it is unlikely that all avifaunal species will have been recorded during the site assessment. However, even though some avifaunal species may not have been identified during the sight assessment, the habitat units and degree of transformation can be used to establish an accurate understanding of avifaunal species most likely associated with the study area.

Avifaunal Species of Conservational Concern Assessment

Throughout the fauna assessment, special attention was paid to the identification of any of these SCC as well as the identification of suitable habitat that could potentially support these species. The **Probability of Occurrence (POC)** for each avifaunal SCC is described as:

- "**Confirmed'**: if observed during the survey.
- "**High**": if within the species' known distribution range and preferable habitat for foraging, roosting or breeding is available.
- "**Medium**": if either within the known distribution range of the species with marginal habitat that does not occur within the core of the species range or within an important foraging, roosting or breeding area; or
- "**Low**": if the habitat is not suitable and falls outside the distribution range of the species.

The accuracy of the POC is based on the available knowledge about the species in question, with many of the species lacking in-depth habitat research.

Avifaunal Habitat Sensitivity

The sensitivity of the study area for avifauna species was determined by calculating the mean of five different parameters which influence avifaunal species and provide an indication of the overall avifaunal ecological integrity, importance and sensitivity of the study area for each class. Each of the following parameters are subjectively rated on a scale of 1 to 5 (1 = lowest and 5 = highest):

- **Avifaunal SCC:** The confirmed presence or potential for avifaunal SCC or any other significant species, such as endemics, to occur within the habitat unit;
- **Habitat Availability:** The presence of suitable habitat for avifaunal species;
- **Food Availability:** The availability of food within the study area for avifaunal species;
- **Avifaunal Diversity:** The recorded avifaunal diversity compared to a suitable reference condition such as surrounding natural areas or available avifaunal databases; and
- **Habitat Integrity:** The degree to which the habitat is transformed based on observed disturbances which may affect habitat integrity.

Each of these values contribute equally to the mean score, which determines the suitability and sensitivity of the study area for avifaunal species. A conservation and land-use objective is also assigned to each sensitivity class which aims to guide the responsible and sustainable utilization of the study area in relation to avifaunal species. The different classes and land-use objectives are presented in the table below:

Table A1: Avifaunal habitat sensitivity rankings and associated land-use objectives.

SCORE	RATING SIGNIFICANCE	CONSERVATION OBJECTIVE
1> and <2	Low	Optimise development potential.
2> and <3	Moderately low	Optimise development potential while improving biodiversity integrity of surrounding natural habitat and managing edge effects.
3> and <4	Intermediate	Preserve and enhance biodiversity of the habitat unit and surrounds while optimising development potential.
4> and <5	Moderately high	Preserve and enhance the biodiversity of the habitat unit, limit development and disturbance.
5	High	Preserve and enhance the biodiversity of the habitat unit, no-go alternative must be considered.

APPENDIX B: Species Observation List

Table B1: Avifaunal species not already listed which were observed during site visits.

Scientific name	Common name	IUCN Red List Status
Streptopelia capicola	Cape turtledove	LC
Sylvietta rufescens	Long-billed crombec	LC
Columba livia	Rock Pigeon	LC
Bostrychia hagedash	Hadeda	LC
Columba guinea	Speckled pigeon	LC
Threskiornis aethiopicus	Sacred Ibis	LC
Ardea melanocephala	Black-headed Heron	LC
Cisticola aridulus	Desert Cisticola	LC
Ardea cinerea	Grey Heron	LC
Larus dominicanus	Kelp Gull	LC
Urocolies indicus	Red-faced Mousebird	LC
Colies colies	White-backed Mousebird	LC
Ploceus velatus	Southern masked weaver	LC
Cercotrichas coryphoeus	Karoo Scrub Robin	LC
Lanius collaris	Common Fiscal	LC
Upupa africana	African Hoopoe	LC
Buteo rufofuscus	Jackal Buzzard	LC
Corvus albus	Pied Crow	LC
Spilopelia senegalensis	Laughing Dove	LC
Hirundo rostrica	Barn Swallow	LC
Milvus aegyptius	Yellow-billed Kite	LC
Elanus caeruleus	Black-shouldered Kite	LC
Prinia masulosa	Karoo Prinia	LC
Tyto alba	Barn Owl	LC
Pycnonotus capensis	Cape Bulbul	LC
Serinus flaviventris	Yellow Canary	LC
Motacilla capensis	Cape Wagtail	LC
Lanius collaris	Southern Fiscal	LC
Apus caffer	White-rumped Swift	LC
Passer melanurus	Cape Sparrow	LC
Serinus canicollis	Cape Canary	LC
Cossypha caffra	Cape Robin-chat	LC
Melaenornis silens	Fiscal Flycatcher	LC
Streptopelia semitorquata	Red-eyed Dove	LC
Numida meleagris	Helmeted Guineafowl	LC
Grus paradisea	Blue Crane	NT
Alopochen aegyptiaca	Egyptian Goose	LC
Euplectes orix	Southern-Red Bishop	LC
Burhinus capensis	Spotted-thick Knee	LC
Fulica cristata	Red-knobbed Coot	LC
Plectropterus gambensis	Spurwing Goose	LC
Vanellus armatus	Blacksmith Plover	LC
Onychognathus nabouroup	Pale Winged Starling	LC

Scientific name	Common name	IUCN Red List Status
Saxicola torquata	African Stonechat	LC
Anthus cinnamomeus	African Pipit	LC
Hirunda albigularis	White-throated Swallow	LC
Erythropygia paena	Kalahari scrub Robin	LC

LC = Least concerned. NT = Near Threatened, NYBA = Not yet been assessed by the IUCN.

APPENDIX C: Avifaunal SCC

Avifaunal Species of Conservation Concern for the Western Cape Province

Table C1: List of conservation priority bird species for the Western Cape (CapeNature, 2017)

Table 2: List of species classified as Endangered at a regional scale. Corresponding statuses as at 2007 and 2012 SOB report as well as the global statuses are including for comparison.

Common Name	Scientific Name	Regional Status			Global Status		
		2007	2012	2017	2007	2012	2017
Roseate Tern	*Sterna dougallii*	EN	EN	EN	LC	LC	LC
African Marsh-Harrier	*Circus ranivorus*	V	V	EN	LC	LC	LC
African Penguin	*Spheniscus demersus*	V	V	EN	V	EN	EN
Bank Cormorant	*Phalacrocorax neglectus*	V	V	EN	EN	EN	EN
Cape Vulture	*Gyps coprotheres*	V	V	EN	V	V	EN
Ludwig's Bustard	*Neotis ludwigii*	V	V	EN	LC	EN	EN
Martial Eagle	*Polemaetus bellicosus*	V	V	EN	LC	NT	V
Black Harrier	*Circus maurus*	NT	NT	EN	V	V	V
Cape Cormorant	*Phalacrocorax capensis*	NT	NT	EN	NT	NT	EN
Antarctic Tern	*Sterna vittata*	LC	LC	EN	LC	LC	LC
Hottentot Buttonquail	*Turnix hottentottus*	NE	NE	EN	LC	LC	EN

Table 3: List of species classified as Vulnerable at a regional scale. Corresponding statuses as at 2007 and 2012 as well as the global statuses are including for comparison.

Common Name	Scientific Name	Regional Status			Global Status		
		2007	2012	2017	2007	2012	2017
African Finfoot	*Podica senegalensis*	V	V	V	LC	LC	LC
African Grass-Owl	*Tyto capensis*	V	V	V	LC	LC	LC
Cape Gannet	*Morus capensis*	V	V	V	V	V	V
Denham's Bustard	*Neotis denhami*	V	V	V	NT	NT	NT
Knysna Warbler	*Bradypterus sylvaticus*	V	V	V	V	V	V
Striped Flufftail	*Sarothrura affinis*	V	V	V	LC	LC	LC
African Crowned Eagle	*Stephanoaetus coronatus*	NT	NT	V	NT	LC	LC
Black Stork	*Ciconia nigra*	NT	NT	V	LC	LC	LC
Caspian Tern	*Sterna caspia*	NT	NT	V	LC	LC	LC
Great White Pelican	*Pelecanus onocrotalus*	NT	NT	V	LC	LC	LC
Lanner Falcon	*Falco biarmicus*	NT	NT	V	LC	LC	LC
Secretarybird	*Sagittarius serpentarius*	NT	NT	V	LC	V	V
Burchell's Courser	*Cursorius rufus*	LC	LC	V	LC	LC	LC
Verreaux's Eagle	*Aquila verreauxii*	LC	LC	V	LC	LC	LC
Southern Black Korhaan	Afrotis afra	NE	NE	V	NE	NE	V

Table 4: List of species classified as Near Threatened at a regional scale. Corresponding statuses as at 2007 and 2012 as well as the global statuses are including for comparison.

Common Name	Scientific Name	Regional Status			Global Status		
		2007	2012	2017	2007	2012	2017
Blue Crane	*Anthropoides paradiseus*	V	V	NT	V	V	V
Kori Bustard	*Ardeotis kori*	V	V	NT	LC	LC	NT
Agulhas Long-billed Lark	*Certhilauda brevirostris*	NT	NT	NT	NR	NR	NE
Black-winged Lapwing	*Vanellus melanopterus*	NT	NT	NT	LC	LC	LC
Chestnut-banded Plover	*Charadrius pallidus*	NT	NT	NT	NT	NT	NT
Crowned Cormorant	*Phalacrocorax coronatus*	NT	NT	NT	NT	NT	NT
Greater Flamingo	*Phoenicopterus roseus*	NT	NT	NT	LC	LC	LC
Greater Painted-snipe	*Rostratula benghalensis*	NT	NT	NT	LC	LC	NR
Half-collared Kingfisher	*Alcedo semitorquata*	NT	NT	NT	LC	LC	LC
Knysna Woodpecker	*Campethera notate*	NT	NT	NT	NT	NT	NT
Lesser Flamingo	*Phoeniconaias minor*	NT	NT	NT	LC	LC	NT
Peregrine Falcon	*Falco peregrinus*	NT	NT	NT	LC	LC	LC
Sclater's Lark	*Spizocorys sclateri*	NT	NT	NT	NT	NT	NT
African Rock Pipit	*Anthus crenatus*	LC	LC	NT	LC	LC	LC
Cape Rock-jumper	*Chaetops frenatus*	LC	LC	NT	LC	LC	LC
Eurasian Curlew	*Numenius arquata*	LC	LC	NT	LC	NT	NT
European Roller	*Coracias garrulous*	LC	LC	NT	NT	NT	LC
Karoo Korhaan	*Eupodotis vigorsii*	LC	LC	NT	LC	LC	LC
Maccoa Duck	*Oxyura maccoa*	LC	LC	NT	NT	NT	NT

NYBA = Not yet been assessed, VU = Vulnerable, NT = Near Threatened, LC = Least Concern, EN = Endangered, Ad mon = Additional Monitoring, End and N-end = Endemic and Near endemic

South African Bird Atlas Project 2 list for quadrant 3318DC

Avifaunal Species for the pentad 3345_1840 within the QDS 3318DC
http://sabap2.adu.org.za/coverage/pentad/3345_1840.