TERRESTRIAL FAUNAL AND AVIFAUNAL SPECIES COMPLIANCE STATEMENT REPORT FOR FARM 153 VISSERSHOK (C1038: UPGRADING OF TR11/1), CITY OF CAPE TOWN MUNICIPALITY

January 2025

Prepared for:

Sharples Environmental Services cc (SES)

Prepared by:

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Qualifications

- PhD (Zoology), University of Johannesburg (2015 - 2017)
- MSc (Zoology), Stellenbosch University (2011 - 2013)
- BSc Honours (Zoology) cum laude, Stellenbosch University (2010)
- BSc (Biodiversity and Ecology) cum laude, Stellenbosch University (2007 - 2009)

Expertise

- 27 years of in-the-field naturalist experience involving all faunal groups
- Zoologist with 16 years of professional experience
- 14 Peer-reviewed publications in high impact national and international scientific journals on the patterns and processes which drive and maintain faunal biodiversity, as well as on aspects of faunal biology and ecology

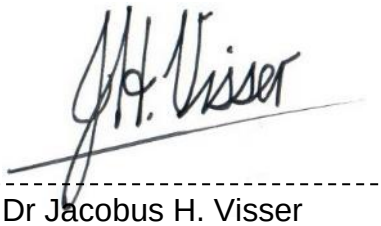
- 2 years of consultation experience as a Fauna Specialist (trading as Blue Skies Research)
- Five IUCN Red List assessments
- Involved in the Southern African Bird Atlas Project 2 (SABAP2)
- Contributor on the National Biodiversity Assessment 2018: The status of South Africa's ecosystems and biodiversity. Synthesis Report. South African National Biodiversity Institute, an entity of the Department of Environment, Forestry and Fisheries, Pretoria.

Declaration of independence by the independent person who compiled a specialist report or undertook a specialist process

I, Dr Jacobus Hendrik Visser, as the appointed independent specialist hereby declare that I:

• act/ed as the independent specialist in this application;
• regard the information contained in this report as it relates to my specialist input/study to be true and correct, and
• do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations and any specific environmental management Act;
• have no and will not have any vested interest in the proposed activity proceeding;
• have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations and any specific environmental management Act;
• am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
• have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
• have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;

• have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process;
• have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
• am aware that a false declaration is an offence.



29 January 2025

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1. Introduction

The City of Cape Town (CoCT) Municipality is proposing construction of a new N7 Vissershok Weighbridge on a portion of Farm 153 Vissershok (C1038: Upgrading of TR11/1), City of Cape Town Municipality, Western Cape (hereafter referred to as the “study area” or “site”). At present, there is an established and operational weighbridge approximately 500m south of the proposed new weighbridge site. The proposed new weighbridge will replace the established weighbridge, which will be demolished and the site rehabilitated.

Blue Skies Research was appointed by Sharples Environmental Services cc (SES) on behalf of the City of Cape Town (CoCT) Municipality to perform the required terrestrial faunal and avifaunal assessment of the study area (see Sections 2 and 3). The current report represents a terrestrial faunal and avifaunal species compliance statement for the proposed development in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment (EIA) Regulations 2014 (Government Notice (GN) 984), as amended.

Throughout this report, the original provided development layout is considered (Sections 3 to 10), however three alternative development layouts were proposed following recommendations by the botanical specialist. The viability of these

alternative layouts from a faunal and avifaunal sensitivity perspective is assessed in Section 11.

2. Terms of Reference

2.1. General legislature pertaining to this report

This terrestrial faunal and avifaunal assessment report is compiled in accordance with the following guidelines:

- *Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for Involving Biodiversity Specialists in the EIA Process* (Brownlie, 2005).
- *Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes, Government Notice No. 320* (Gazetted 20 March 2020).
- *Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species*, *Government Notice No. 1150* (Gazetted 30 October 2020).
- South African National Biodiversity Institute (SANBI). 2020. *Species Environmental Assessment Guideline. Guidelines for the implementation of the terrestrial fauna and terrestrial flora species protocols for environmental impact assessments in South Africa*. South African National Biodiversity Institute, Pretoria. Version 2.1 2021.

2.2 Other sources consulted

Other sources pertaining to this report are as follows:

- IUCN. 2021. The IUCN Red List of Threatened Species. Version 2021-3. https://www.iucnlist.org. Accessed on 26 May 2023.

- *National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004): Publication of lists of critically endangered, endangered, vulnerable and protected species, Government Notice No. 2007* (Gazetted 14 December 2007).

3. Reporting protocol

The study area has been identified as being of an overall “High Sensitivity” under the “Relative Animal Species Sensitivity Theme” in the Department of Forestry Fisheries and the Environment (DFFE) Screening Tool (https://screening.environment.gov.za/screeningtool/) (Figure 1). This follows from the projected and possible occurrence of four avifaunal and two invertebrate Species of Conservation Concern (SCC) (see Table 1). The current report therefore assesses the presence or likely presence of these SCC (as well as other possible SCC, see Section 9) within the study area in accordance with the protocols outlined in the Species Environmental Assessment Guideline (SANBI, 2020).

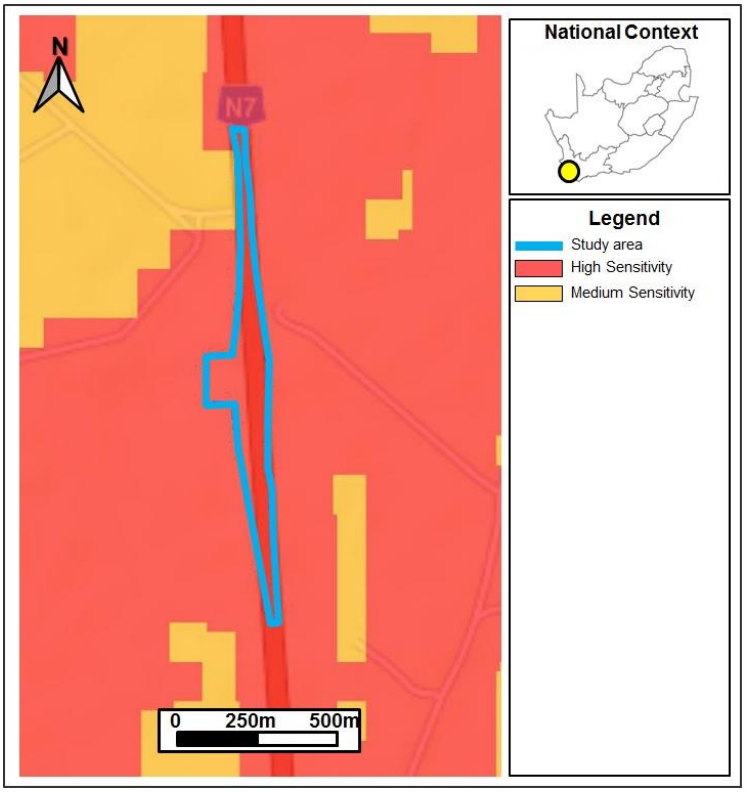


Figure 1 Relative Animal Species Sensitivity Map retrieved for the study area by the DFFE Screening Tool (https://screening.environment.gov.za/screeningtool/).

Table 1 List of Species of Conservation Concern (SCC) identified in the DFFE Screening Tool Report. For each, the listed sensitivity (possibility of occurrence within the study area), species' scientific name and common name is shown, along with its current classification under the IUCN Red List of Threatened Species (IUCN, 2021).

Sensitivity	Species	Common name	IUCN status
High	*Circus ranivorus*	African Marsh-harrier	Least Concern
High	*Circus maurus*	Black Harrier	Endangered
High	*Polemaetus bellicosus*	Martial Eagle	Endangered
Medium	*Afrotis afra*	Southern Black Bustard	Vulnerable
Medium	*Pachysoma aesculapius*	West Coast Flightless Dungbeetle	Vulnerable
Medium	*Bullacris obliqua*	Bladder Grasshopper	Vulnerable

4. Overview of the study area

4.1 Geographic location

The study area is approximately 9.5 hectares in size (of which around 5.6 hectares includes modifications to the N7 Road to allow access to the new weighbridge as well as normal traffic flow on the N7) and is located just south of the turn-off to the Mamre Road, south-east of the Morning Star AH Sub Place and adjacent to and west of the Koeberg Flight Park (Figures 2 and 3).

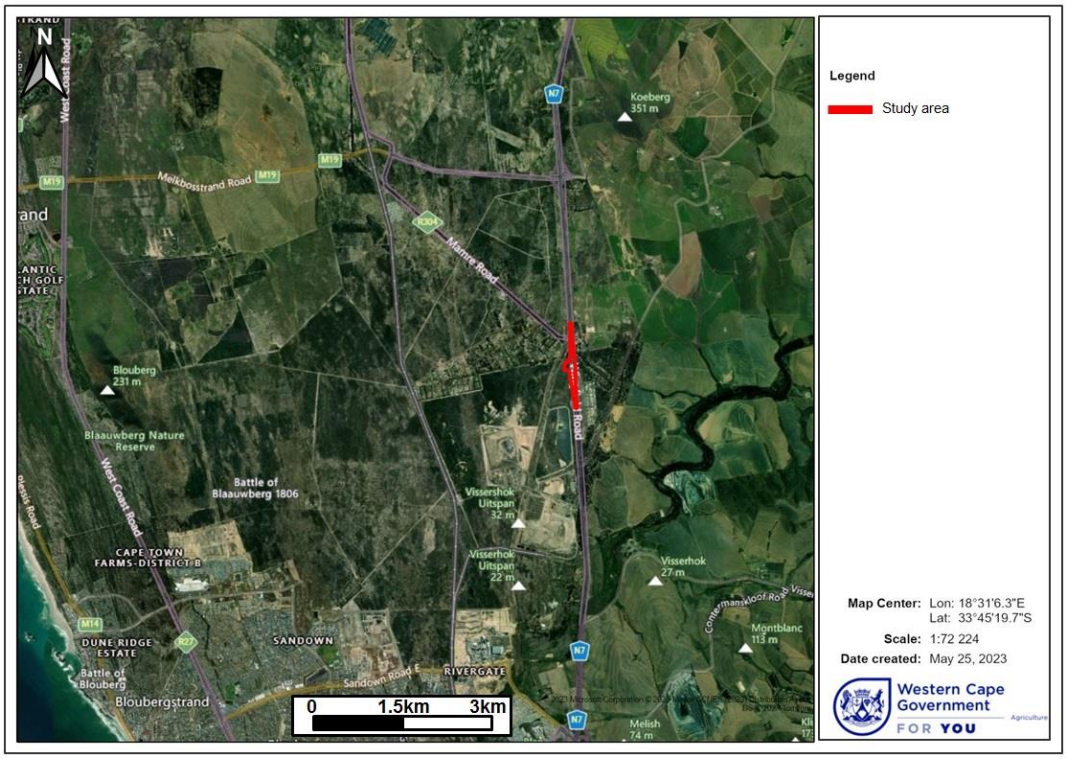


Figure 2 Spatial location of the study area relative to surrounding settlements and main roads (map generated in Cape Farm Mapper version 2.6.10, Western Cape Department of Agriculture).

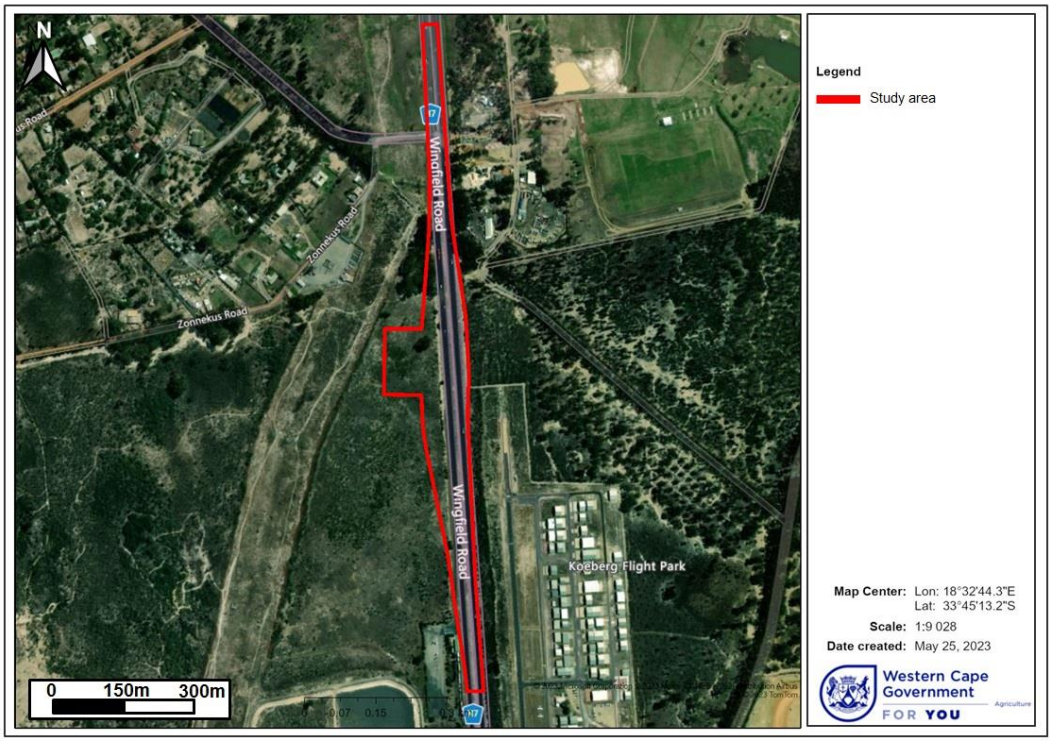


Figure 3 Spatial location of the study area relative to surrounding main roads and industrial areas (map generated in Cape Farm Mapper version 2.6.10, Western Cape Department of Agriculture).

4.2 Topography, geology and vegetation

The topography of the study area is mostly flat with very little incline (Figure 4). Vegetation in the study area landscape is listed as Cape Flats Sand Fynbos (VegMap, 2018; Figure 5; but see Section 7) which is classified as “Critically Endangered” by *The National List of Ecosystems that are Threatened and Need of Protection* (Government Gazette, 2011).

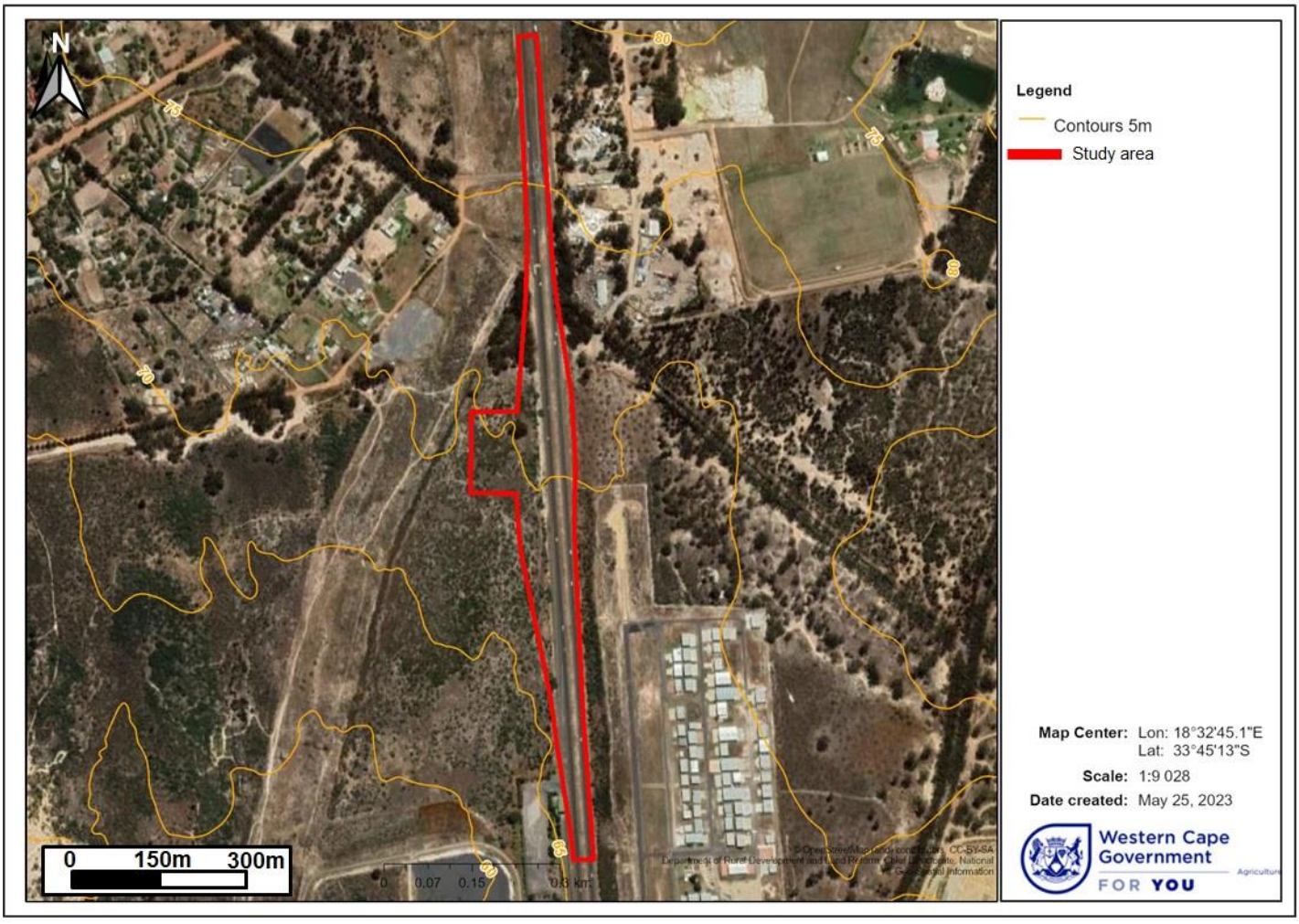


Figure 4 Topology of the study area showing 5 meter contour lines (map generated in Cape Farm Mapper version 2.6.10, Western Cape Department of Agriculture).

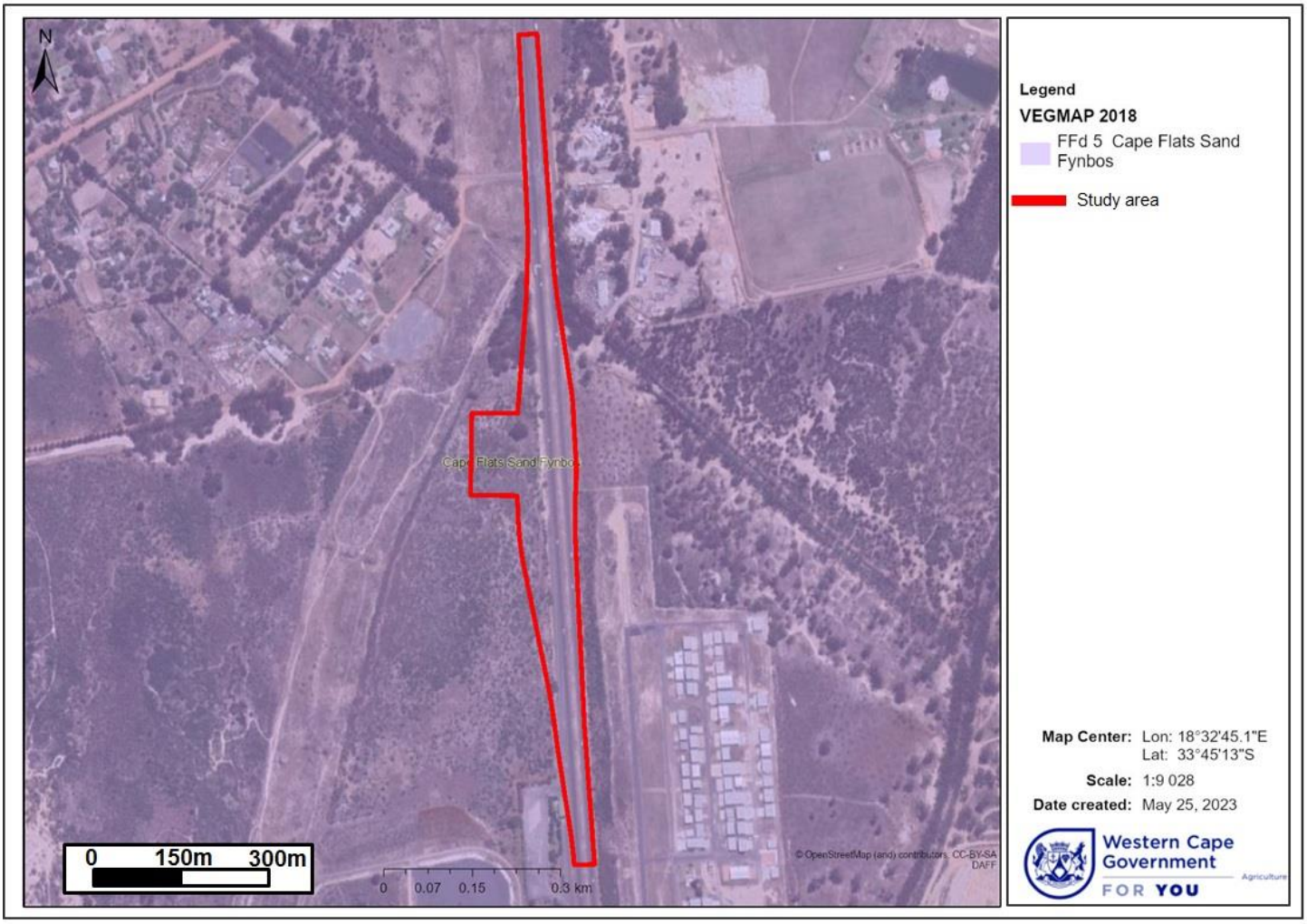


Figure 5 Vegetation type within the study area (VEGMAP, SANBI 2018; map generated in Cape Farm Mapper version 2.6.10, Western Cape Department of Agriculture).

4.3 Land cover

Classification of land cover within the study area (Land Cover 73-class, Department of Environmental Affairs, 2020) indicates the presence low shrubland (fynbos) (Figure 6). In contrast to this designation, it was established during the field survey that land cover on the site in fact constitutes a highly degraded habitat structure with the predominant presence of alien and invasive vegetation (see Section 7).

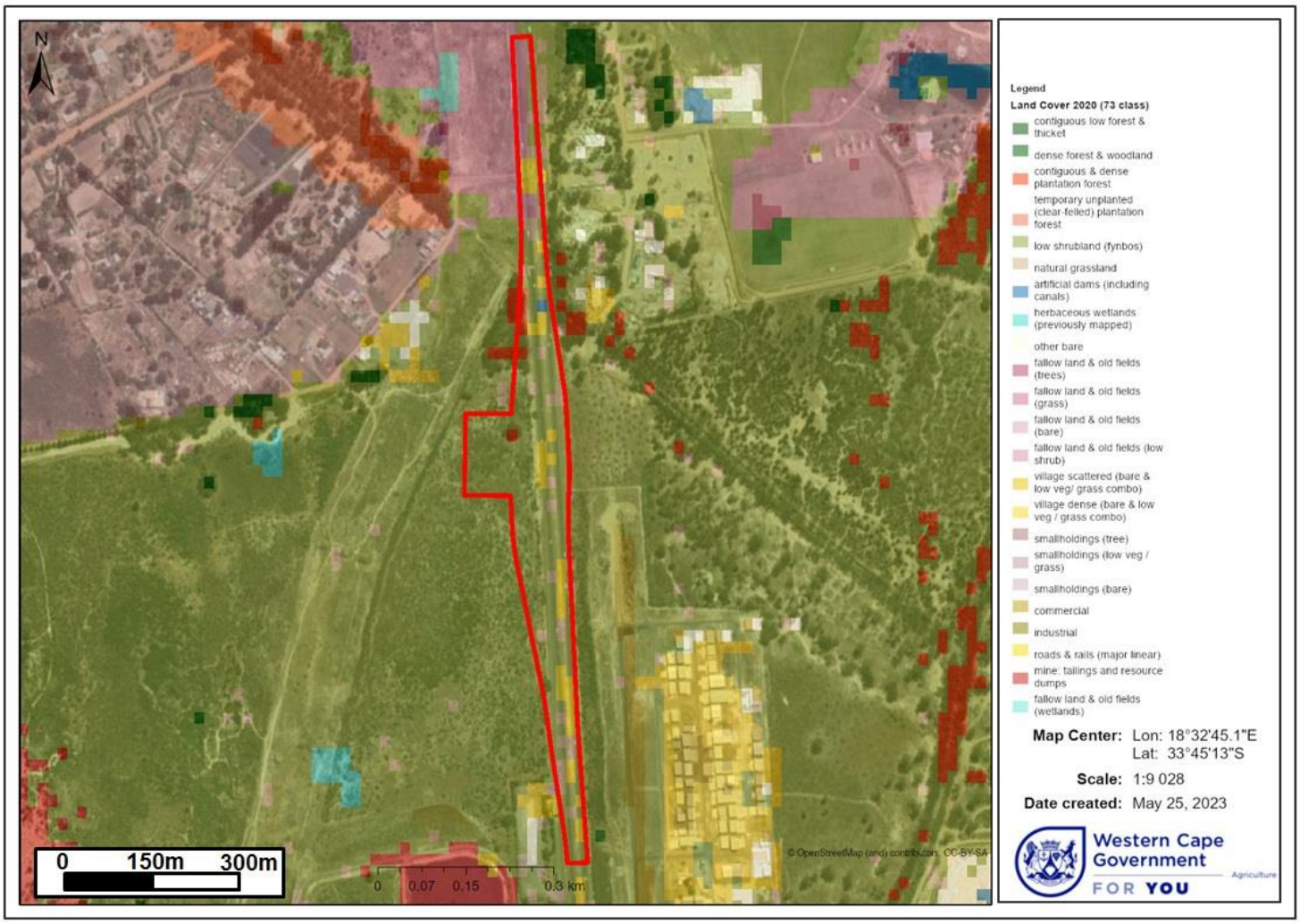


Figure 6 Land cover (Land Cover 73-class, Department of Environmental Affairs, 2020) within the study area (information sourced from Cape Farm Mapper version 2.6.10, Western Cape Department of Agriculture).

4.4 Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs)

Critical Biodiversity Areas (CBAs) are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan (Purves and Holmes, 2015). Ecological Support Areas (ESAs) are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of CBAs and/or in delivering ecosystem services.

A small portion in of the proposed project footprint (coinciding with the placement of the new weighbridge under the Original Layout; see Section 11) overlaps with a terrestrial Critical Biodiversity Area (CBA) (Figure 7; Table 2). The remainder of the

site, excluding the N7 Road, overlaps with a degraded terrestrial Critical Biodiversity Area (CBA2). No Ecological Support Areas (ESAs) are present on the site. The presence and integrity of the CBA which overlap the study areas are discussed in Section 12.

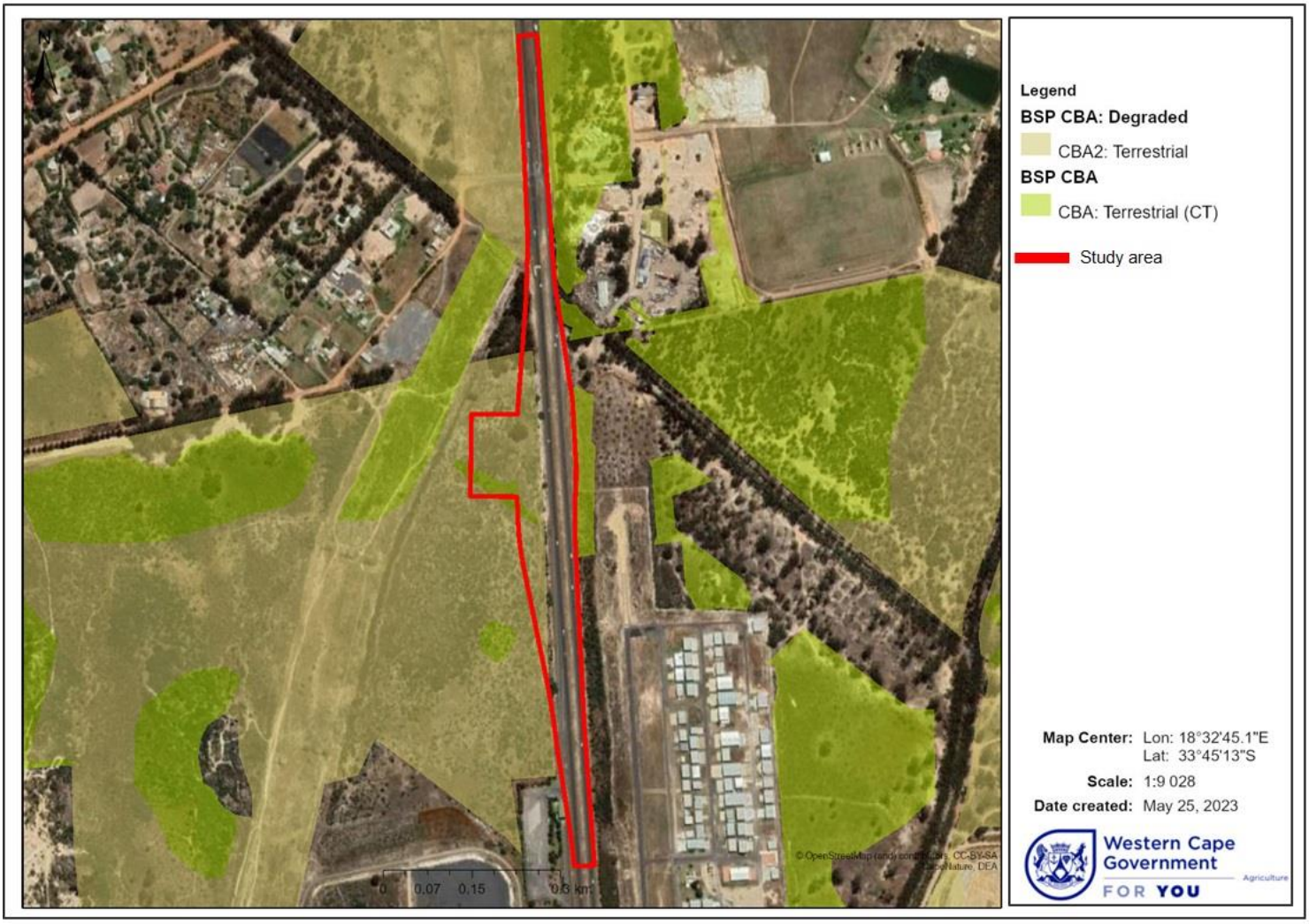


Figure 7 Spatial locations of Critical Biodiversity Areas (CBA) overlapping with the study area (information sourced from Cape Farm Mapper version 2.6.10, Western Cape Department of Agriculture).

Table 2 A brief description of the Critical Biodiversity Area (CBA) categories which intersect with the study area (information sourced from Cape Farm Mapper version 2.6.10, Western Cape Department of Agriculture).

Category 1	Category 2	Definition	Objective
CBA: Terrestrial	CBA: Terrestrial	Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.	Maintain in a natural or near-natural state, with no further loss of natural habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses are appropriate.
CBA2: Terrestrial	CBA2: Terrestrial	Areas in a degraded or secondary condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.	Maintain in a natural or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land-uses are appropriate.

5. Study methodology

5.1 Study aims

This study represents an assessment of the terrestrial faunal and avifaunal diversity and abundances, -habitat composition, ecosystem dynamics and potential occurrence of avifaunal and invertebrate (and other) SCC within the study area. As such, the aims of this investigation were to:

1.) Assess, define and create a spatial rendering of available faunal and avifaunal habitats across the study area based on information gathered during the field survey as well as through a desktop assessment using the latest satellite imagery,

2.) compile a complete faunal desktop species list (including avifauna and dungbeetles) for the study area based on a thorough desktop assessment so as to assess the presence of any of the listed SCC (Table 1) as well as any additional SCC,

3.) compile a faunal species list (including mammals, reptiles, avifauna, dungbeetles and grasshoppers) within the study area through field surveying so as to assess the possibility of occurrence of the SCC retrieved in the desktop assessment (based on

appropriate sampling methods, as well as the presence of suitable habitat for these species), or any additional SCC which are present on the site, and

4.) generate spatial occurrence maps for the recovered faunal species within the study area to assess the spatial extent of areas supporting higher levels of diversity.

5.2 Desktop assessment

To assess the possible occurrence of the SCC listed in the Screening Tool Report (as well as any additional SCC within these faunal groups), a desktop assessment was performed to create representative desktop species lists for avifauna and dungbeetles (given the low number of records for grasshopper species, the potential presence or absence of the Bladder Grasshopper was confirmed during the field survey).

5.2.1 Avifauna

The desktop avifaunal species list for the study area was generated by referring to the species records of the South African Bird Atlas Project 2 (SABAP2, https://sabap2.birdmap.africa/) (Appendix A). The study area overlaps with one pentad (see below) which is well-represented in the atlassing cards:

Pentad: 3345_1830

Full protocol cards: 77
Ad-hoc protocol cards: 78
Total cards: 155

To create the desktop avifaunal species list for the study area, all species observed in this pentad were included, noting the total number of observations (including both full and ad-hoc protocols), and the latest date that the species was recorded.

5.2.2 Dungbeetles

The desktop species list for dungbeetle species was constructed with reference to the observational records available for the DungBeetleMAP (https://vmus.adu.org.za/) and iNaturalist (www.iNaturalist.org) platforms (QDGS: 3318DB).

5.3 Field survey

Given the limited spatial extent of the study area, one day of surveying was sufficient to determine the biodiversity and ecological patterns and processes on the site. The study area and adjacent areas was surveyed on foot over a single day on the 23rd of May 2023, during the Autumn season. Weather conditions during the surveying period were characterised by relatively warm daily temperatures, low cloud cover and low wind (Figure 8).

Surveying included unconstrained point sampling through search meanders. All tracks surveyed were recorded by GPS (Garmin eTrex® 10, Garmin International Inc, USA) and are represented in Figure 9. Because a relatively large part of the proposed project footprint includes the N7 Road and road verges (i.e., transformed habitats), surveying was restricted to the vegetated parts on the site where potential faunal habitats still exist.

Terrestrial faunal species (mammals) were identified by direct visual observation, or by their tracks, burrows, remains or scat. Reptile species will be identified by direct visual observation, supplemented by manual searches under rocks, vegetation and debris. Avifaunal species were identified by visual observation, using a 180x zoom lens, or by auditory means. Finally, the potential presence of the West Coast Flightless Dungbeetle and Bladder Grasshopper was assessed based on the presence of suitable habitat for these species (the presence of firm deep sand of coastal hummocks, river banks and vegetated dunes in the case of the West Coast Flightless Dungbeetle, and the presence of the host plant Kapokbos, *Eriocephalus africanus* in the case of the Bladder Grasshopper). All observations were recorded by GPS and the species or evidence of species' presence or activity were

photographed using a digital camera (Canon PowerShot SX430 IS, Canon Inc, USA). A species list for all fauna recorded within the study area is given in Appendix B.

Given the warmer daily temperatures, faunal and avifaunal species' activity was observed to be high over the surveying period, thereby resulting in 70 recorded observations across the study area (Figure 10, Appendix B). During surveying, faunal habitats were broadly identified in the field, and thereafter delineated through a desktop assessment of the study area using satellite imagery (CapeFarmMapper Version 2.6.4, Western Cape Department of Agriculture).

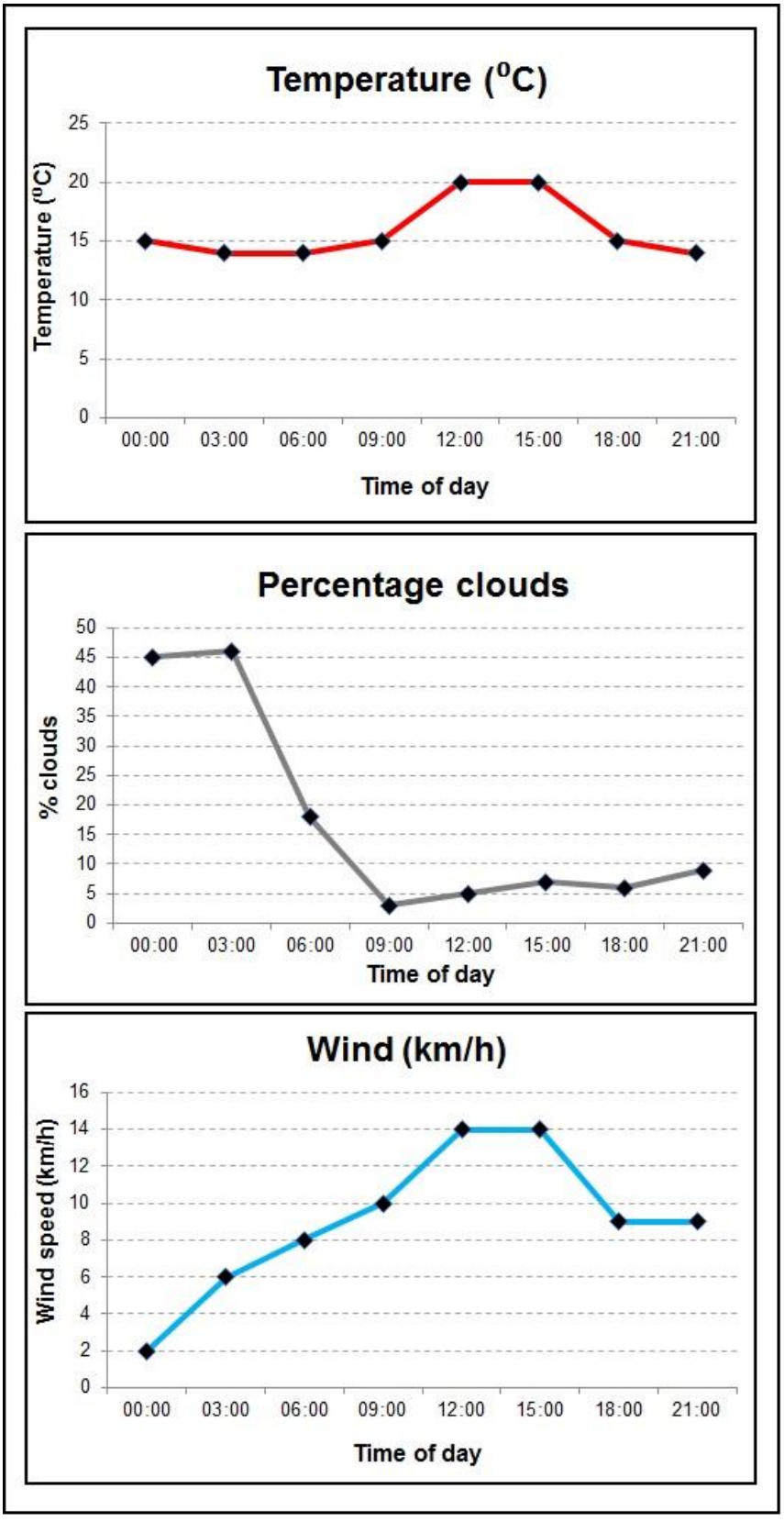


Figure 8 Weather conditions in the study area over the surveying period (23 May 2023). The time of day is indicated, along with the temperature (in °C), percentage cloud cover and wind speed (in km/h) (weather data sourced from https://www.worldweatheronline.com).

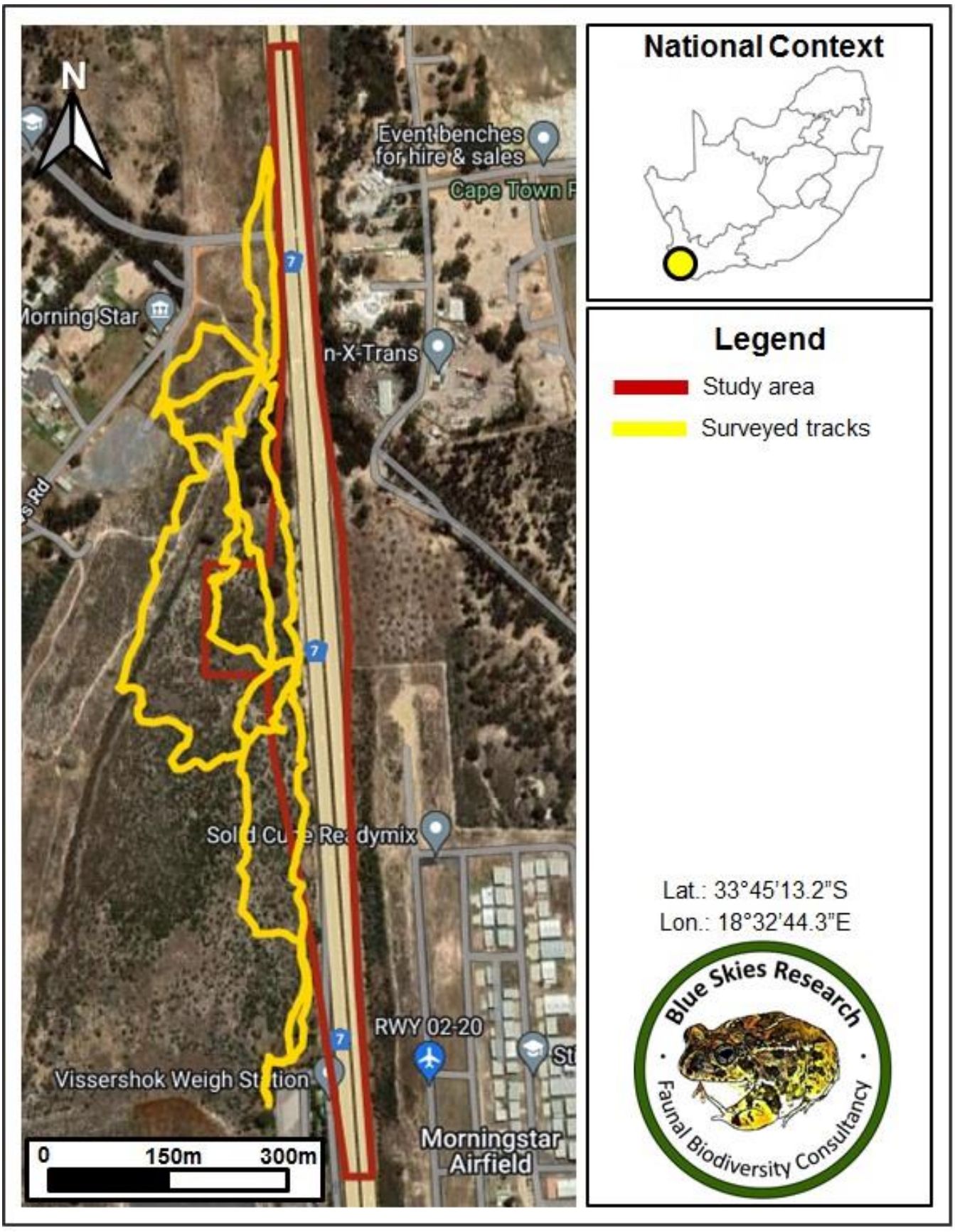


Figure 9 Spatial tracks recorded by GPS for all the search meanders across the study area over the surveying period.

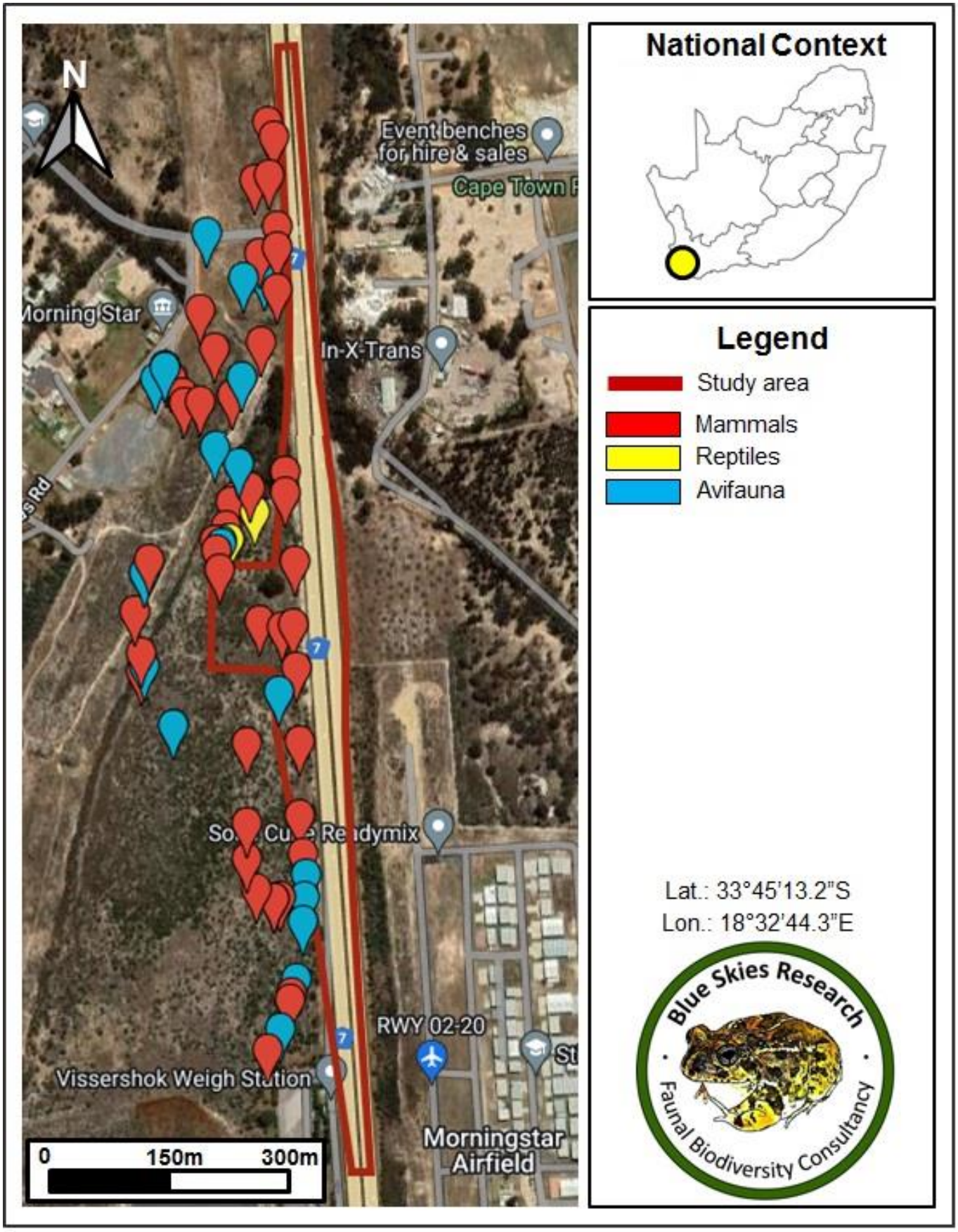


Figure 10 Spatial locations of all the faunal and avifaunal observations across the study area over the surveying period.

6. Assumptions and limitations

The desktop avifaunal species lists for the study area (Appendix A) utilized the most up-to-date and representative distributional data available, and therefore it is likely that all avifaunal SCC which have distributions overlapping the study area were considered in this report. Considering the field survey, optimal weather conditions coupled to the degraded nature of the site resulted in the recovery of a representative proportion of resident fauna. Even so, it is possible that the surveying period did not correspond to the activity period or activity season of some species. Additionally not all cryptic species (especially fossorial reptiles) could be observed. Taken together therefore, the current rendering of the terrestrial faunal composition within the study area only partly reflects the true faunal species richness of, and faunal abundances on the site. Ecosystem integrity on the site is therefore deduced based on habitat conditions and observed faunal biodiversity patterns.

7. Faunal habitat types within the study area

The study area is comprised of five broadly identified habitat types (Figure 11, Table 3). The larger eastern portion of the site corresponds to the N7 Road and transformed road verges, with little in the way of faunal habitats. The western portion of the site, along with adjacent western parts outside of the proposed project footprint, displays heavy infestations of alien and invasive vegetation (Port Jackson and Bluegum trees) with little remaining natural habitats. The most intact area (which intersects Alternative Layout 1, the Original Layout) corresponds to remnant Cape Flats Sand Fynbos vegetation in the central portion. Finally, a large area of Restio vegetation is located to the west of the site, but falls outside of the planned development footprint.

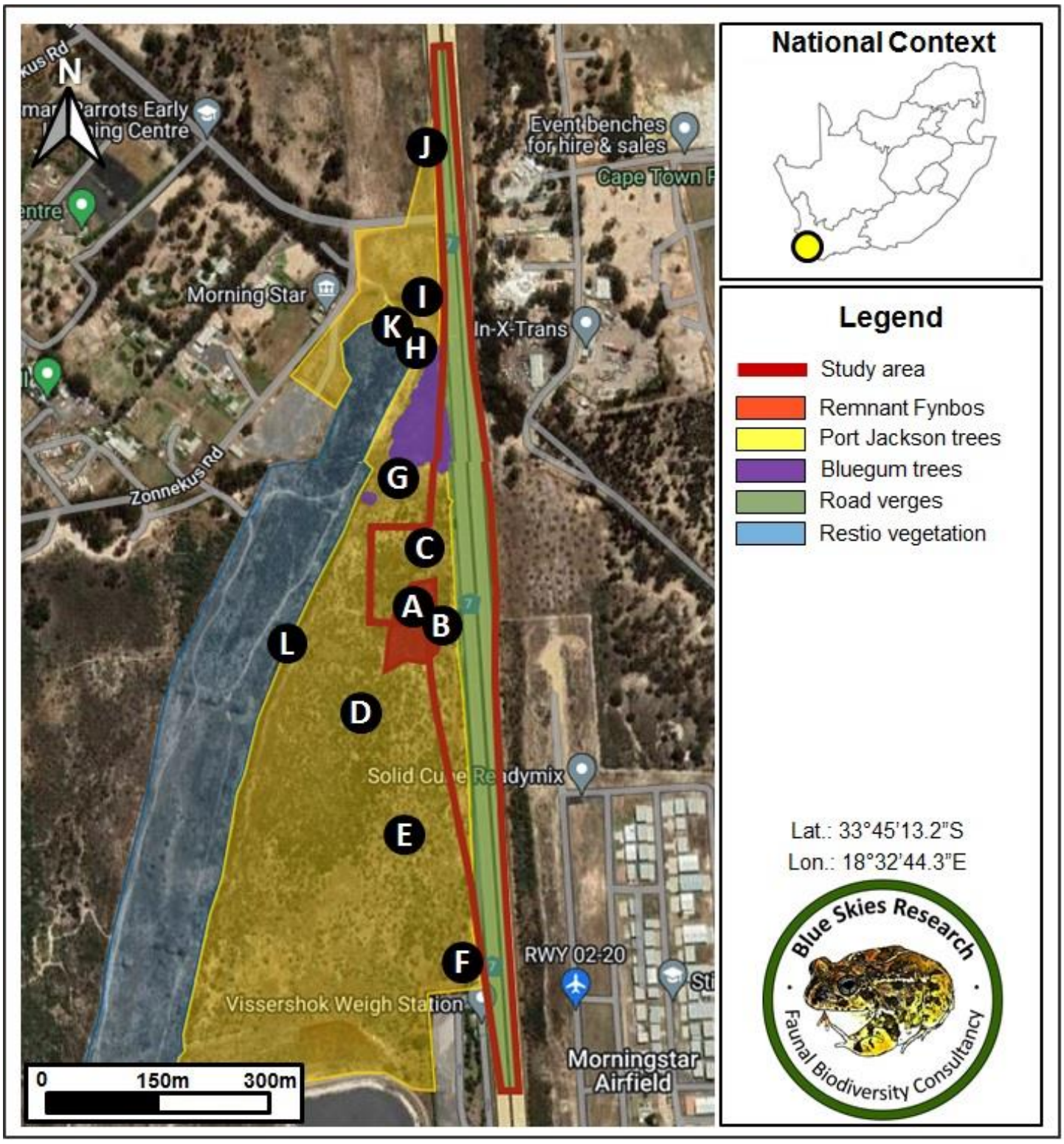


Figure 11 A broad indication of the spatial extent of habitat types within the study area. Photo localities (A to L) correspond to the habitat photos in Table 3.

Table 3 Habitat locations, habitat descriptions and visual representations of the different habitat types within the study area. Location designations (A to L) correspond to the photo locations in Figure 11.

Location	Habitat description	Photo 1	Photo 2
A 33°44'13.896"S 18^{0}32'44.844"E **B** 33°45'14.364"S 18^{0}32'45.744"E	**Remnant Fynbos** Consists of remnant stands of Cape Flats Sand Fynbos among alien and invasive Port Jackson trees.		

C
33°45'11.412"S
18^{0}32'45.348"E

D
33°45'18.324"S
18^{0}32'42.144"E

E
33°45'23.544"S
18^{0}32'44.304"E

F
33°45'29.016"S
18^{0}32'47.220"E

Port Jackson trees

Consists of dense and medium-dense stands of alien and invasive Port Jackson trees with little to no remaining natural vegetation.

G 33°45'08.244"S 18^{0}32'44.088"E **H** 33°45'02.520"S 18^{0}32'44.844"E	**Bluegum trees** Consists of stands of alien and invasive Bluegum trees with no remaining natural vegetation.		
I 33°45'00.504"S 18^{0}32'45.060"E **J** 33°44'53.844"S 18^{0}32'45.520"E	**Road verges** Consists of the N7 Road and transformed road verges with no remaining natural vegetation.		

K 33°45'02.520"S 18^{0}32'44.844"E **L** 33°45'15.336"S 18^{0}32'38.256"E	**Restio vegetation** Although located outside of the proposed project footprint, this habitat consists of dense and intact stands of Restio vegetation.		

8. Terrestrial faunal and avifaunal composition within the study area

8.1 Mammals

Six mammal species were recovered within the study area (Figures 12 and 13), all of which are currently classified as “Least concern” by the IUCN (Appendix B). The site exhibits high abundances of burrowing species such as the Cape Golden Mole (*Chrysochloris asiatica*), Cape Dune Mole-rat (*Bathyergus suillus*) and Cape Gerbil (*Gerbilliscus afra*) given the deep sandy soils which characterise the study area. In addition to these species, common rodents such as the African Mole-rat (*Cryptomys hottentotus*) and Four-striped Grass Mouse (*Rhabdomys pumilio*) were also noted on the site, with individuals of the Common Duiker (*Sylvicapra grimmia*) also utilizing the site as a foraging area. Importantly, no mammalian predators or evidence of such species were recovered on the site.

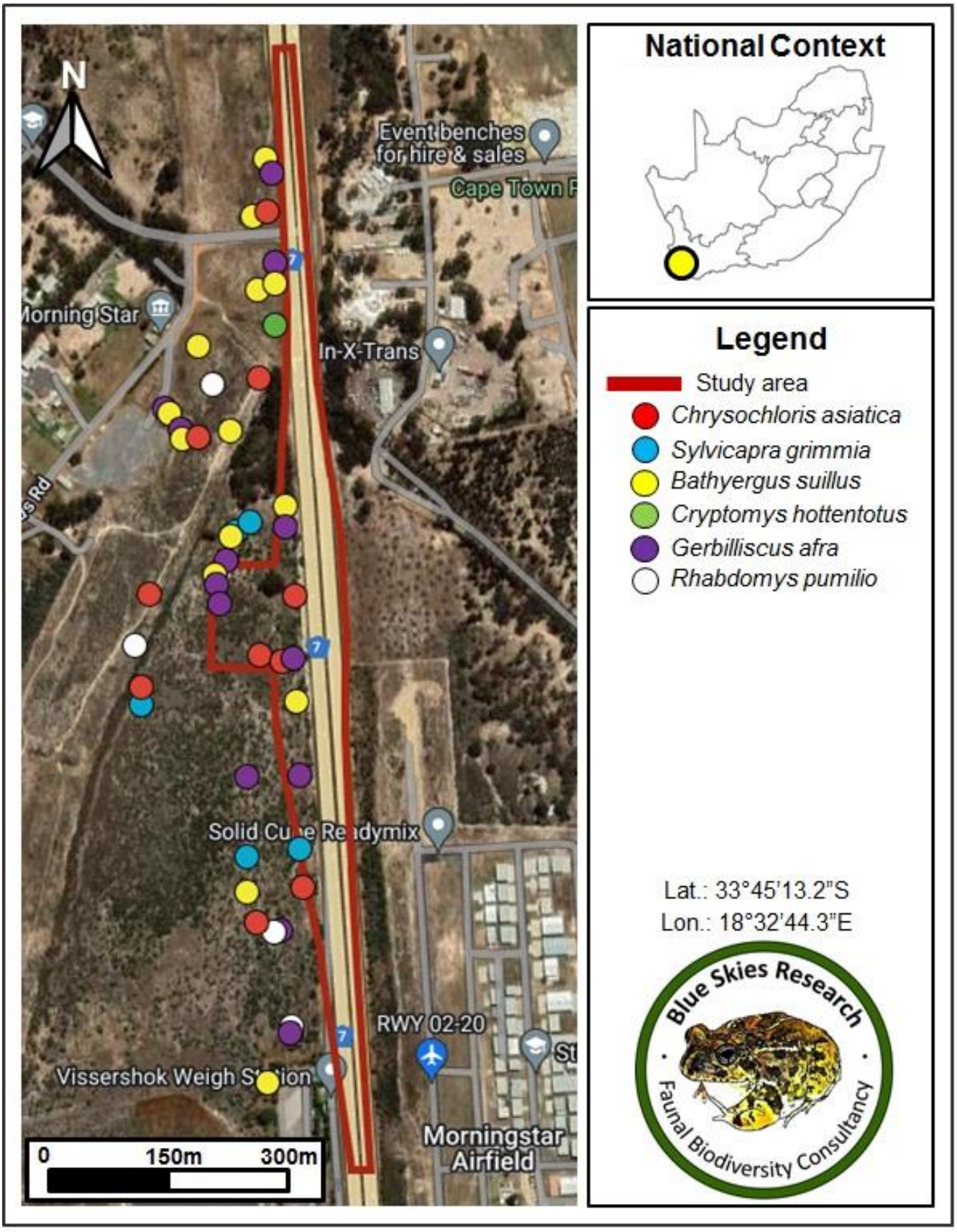


Figure 12 Spatial locations of the different mammal species recorded within the study area.

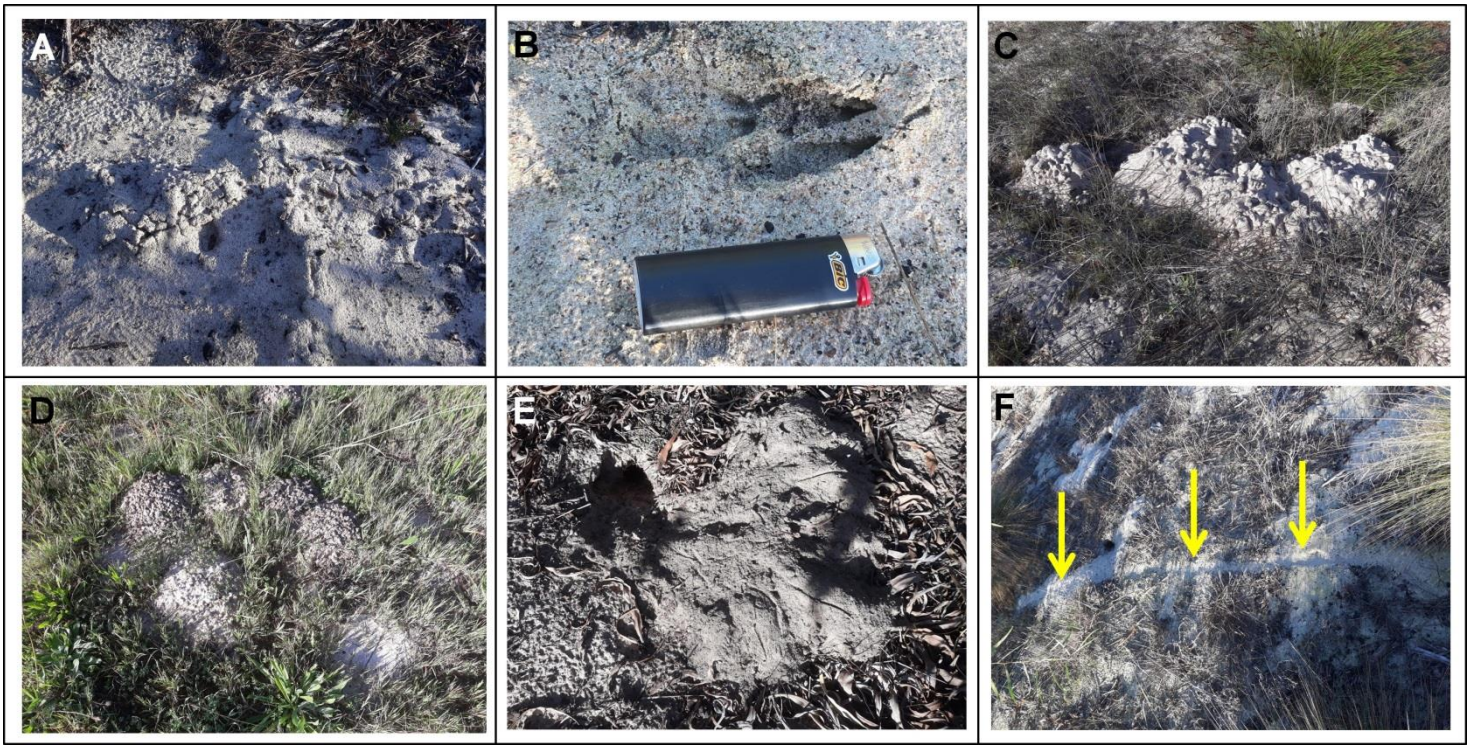


Figure 13 Photographic evidence of the different mammal species recorded in the study area. A) Tunnel system of the Cape Golden Mole (*Chrysochloris asiatica*). B) Tracks of the Common Duiker (*Sylvicapra grimmia*). C) Mounds of the Cape Dune Mole-rat (*Bathyergus suillus*). D) Mounds of the African Mole-rat (*Cryptomys hottentotus*). E) Burrow of a Cape Gerbil (*Gerbilliscus afra*). F) Run (arrowed) of the Four-striped Grass Mouse (*Rhabdomys pumilio*).

8.2 Reptiles

Only two reptile species were recovered within the study area (Figures 14 and 15), both of which are currently classified as “Least concern” by the IUCN (Appendix B). Both represent common reptile species in the study area landscape, including the Angulate Tortoise (*Chersina angulata*) and Cape Skink (*Trachylepis capensis*).

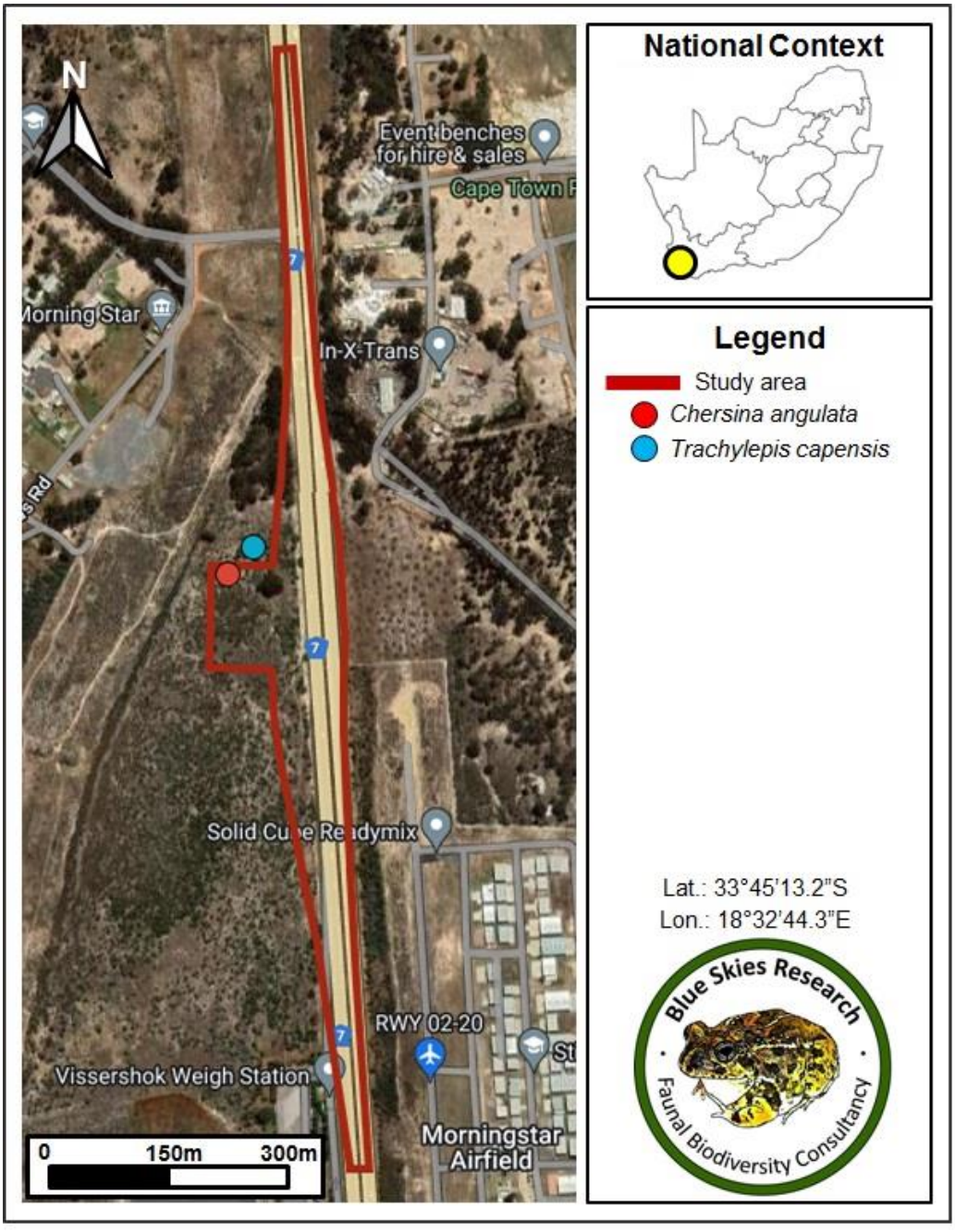


Figure 14 Spatial locations of the different reptile species recorded within the study area.

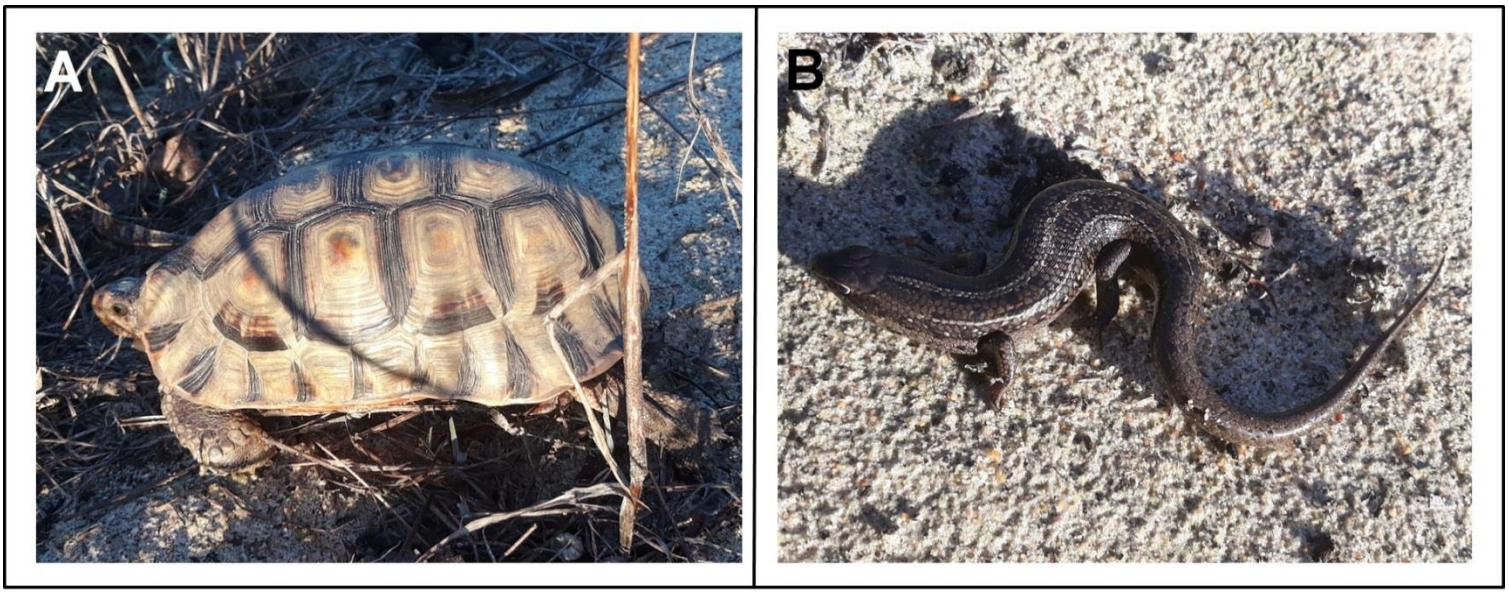


Figure 15 Photographic evidence of the different reptile species recorded in the study area. A) Angulate Tortoise (*Chersina angulata*). B) Cape Skink (*Trachylepis capensis*).

8.3 Avifauna

8.3.1 Desktop assessment

According to the SABAP2 records, 187 bird species have been recorded from the pentad overlapping the study area with 182 species classified as “Least Concern” by the IUCN, and five species which constitute avifaunal SCC (Appendix A). These avifaunal SCC includes the:

1. Black Harrier (*Circus maurus*) classified as “Endangered”,
2. African Marsh Harrier (*Circus ranivorus*) classified as “Least Concern”,
3. Martial Eagle (*Polemaetus bellicosus*) classified as “Endangered”,
4. Blue Crane (*Anthropoides paradiseus*) classified as “Vulnerable”, and
5. Cape Cormorant (*Phalacrocorax capensis*) classified as “Endangered” by the IUCN.

8.3.2 Field survey

In total, 14 bird species were recorded within the study area, all of which are currently classified as “Least concern” by the IUCN (Figures 18 and 19, Appendix B). All of the avifauna on the site constitute common species, and avifaunal diversity appears generally depauperate. Most notable is the complete lack of raptor species in the study area, most likely given the lack of terrestrial prey items (see Subsections 8.1 and 8.2).

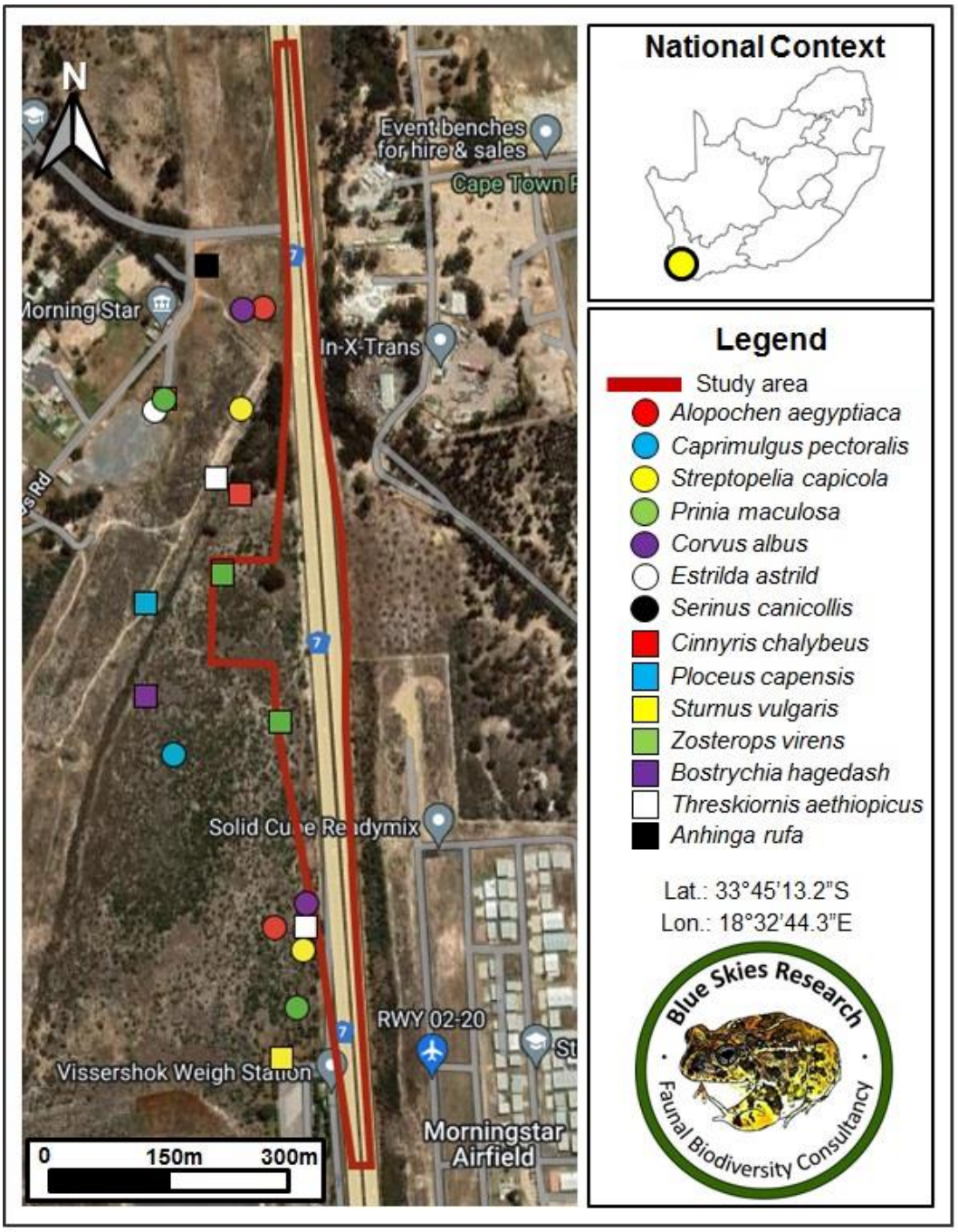


Figure 15 Spatial locations of the different avifaunal species recorded within the study area.

Figure 16 Photographic evidence of different avifaunal species recorded in the study area. A) Egyptian Goose (*Alopochen aegyptiaca*). B) Cape Turtle Dove (*Streptopelia capicola*). C) Karoo Prinia (*Prinia maculosa*). D) Pied Crow (*Corvus albus*). E) Cape Canary (*Serinus canicollis*). F) Cape Weaver (*Ploceus capensis*). G) Common Starling (*Sturnus vulgaris*). H) Cape White-eye (*Zosterops virens*). I) African Sacred Ibis (*Threskiornis aethiopicus*). J) African Darter (*Anhinga rufa*).

8.4 Dungbeetles

8.4.1 Desktop assessment

No dungbeetle species records exist within the specific quarter degree grid square (QDGS: 3318DB) for the study area on either the DungBeetleMAP (https://vmus.adu.org.za/) or on the iNaturalist (www.iNaturalist.org) platforms.

8.4.2 Field survey

No dungbeetle species were recovered within the study area during the field survey. The lack of these species may likely be attributed to the lack of access to dung in the study area landscape, as this area is devoid of any larger mammal species (with exception of low numbers of Grey Duiker, Subsection 8.1).

8.5 Grasshoppers

No individuals of the Bladder Grasshopper were detected within the study area, and the site and immediate surrounding landscape is devoid of the presence of host plant for this species, Kapokbos (*Eriocephalus africanus*).

8.6 Faunal and avifaunal diversity and distributions within the study area

Faunal habitats in the study area exist in a degraded state (Section 7) and therefore supports a highly impaired faunal and avifaunal diversity with only relatively common species of “Least Concern” (IUCN, 2021) being present. Importantly, no mammalian or avifaunal predatory species were recorded, indicating altered predator-prey dynamics and therefore altered ecosystem dynamics. Taken together, the site has a lower sensitivity from a faunal biodiversity perspective - a factor which is further discussed in Sections 10 to 12.

9. Species of Conservation Concern

Along with the six (four avifaunal and two invertebrate) SCC listed in the DFFE Screening Tool (Table 1), the potential occurrence of two other avifaunal SCC within the study area was assessed (see Subsection 8.3.1; Table 4). The probability of occurrence of the specific SCC within the study area was assessed based on the following criteria:

Confirmed - The species was confirmed as present within the study area during the field survey.

High - The species was not confirmed as present within the study area during the field survey but has been recorded in the overlapped pentad / QDGS recently (less than 2 years ago) and in high number (>10 times) and is therefore likely to also occur on the site, given suitable habitat characteristics.

Medium - The species was not confirmed as present within the study area during the field survey, but has been recorded a number of times (>2 but <10 times) in the overlapped pentad / QDGS recently (less than 2 years ago). Suitable habitat for the species is also present on the site.

Low - No suitable habitat for the species is present on the site, or the species has been recorded a low number of times (only once) or more than five years ago in the overlapped pentad / QDGS.

Table 4 Probability of occurrence of specific SCC in the study area. For each species, the taxonomic Order, Family, scientific name and common name is shown, along with its current classification under the IUCN Red List of Threatened Species (IUCN, 2021). In addition, the species' preferred habitat and the probability that the species occurs within the study area is given, along with a justification for listing this probability.

Order	Family	Species	Common name	IUCN status	Habitat	Probability of occurrence	Justification of probability
Accipitriformes	Accipitridae	*Circus ranivorus*	African Marsh Harrier	Least Concern	The species breeds in wetlands, foraging primarily over reeds and lake margins (Harrison *et al*. 1997). Its diet consists largely of small mammals, particularly striped mouse *Rhabdomys pumilio* (Kemp and Dean, 1988).	Low	The presence of this species was not confirmed during the field survey, however it has been recorded a high number of times (14 times) in the study area landscape, with the latest record in February 2021 (Appendix A). Furthermore, the site does support a limited subpopulation of the species' preferred prey item, *Rhabdomys pumilio*. Even so, it is highly unlikely that *C. ranivorus* will forage or nest on the site given a distinct lack of wetland habitats and the high incidence of alien and invasive vegetation.
Accipitriformes	Accipitridae	*Circus maurus*	Black Harrier	Endangered	The species occurs in coastal and montane Fynbos, highland grasslands, Karoo subdesert scrub, open plains with low shrubs and croplands (Curtis *et al*. 2004). In the Western Cape of South Africa it is most abundant in coastal and montane fynbos (Curtis *et al*. 2004), and loose colonies may aggregate around wetland areas. The Black Harrier prefers open ground with low vegetation for hunting, where it feeds mainly on small mammals, especially *Otomys* and *Rhabdomys* species, although its diet may also include birds and reptiles (Garcia-Heras *et al*. 2017). The main diet of the Black Harrier however constitutes the Four-striped Grass Mouse, *Rhabdomys pumilio* (Garcia-Heras *et al*. 2017). The species breeds close to coastal and upland marshes (damp sites, near vleis, marshes or streams are preferred for breeding), but may also nest in montane habitats, preferring south-facing slopes (Brown *et al*. 1982; Curtis *et al*. 2004). Nests are built on the ground in tall vegetation such as shrubs or reeds (Brown *et al*. 1982, Curtis *et al*. 2004). The species does not breed in transformed and cultivated lands, although it may forage in these environments (Curtis *et al*. 2004).	Low	The presence of this species was not confirmed during the field survey, but it has been recorded twice in the study area landscape, with the latest record in March 2020 (Appendix A). Furthermore, the site does support a limited subpopulation of the species' preferred prey item *Rhabdomys pumilio*. Even so, it is highly unlikely that this species will forage over the site given the prominent presence of alien and invasive vegetation (this species does not hunt in this type of habitat), coupled to daily noise and vibration from the N7 Road and adjacent airfield. It is even less likely that this species will breed here, given a distinct lack of wetland habitats on the site.

Accipitriformes	Accipitridae	*Polemaetus bellicosus*	Martial Eagle	Endangered	The species inhabits open woodland, wooded savanna, bushy grassland, thornbush and, in southern Africa, more open country and even subdesert, from sea level to 3,000 m but mainly below 1,500 m (Ferguson-Lees and Christie, 2001). The main prey is sizeable mammals, birds and reptiles (Ferguson-Lees and Christie, 2001).	Low	The presence of this species was not confirmed during the field survey, and it has been recorded only once in the study area landscape in April 2016 (Appendix A). It is therefore highly unlikely that this species will occur on the site - a factor which is further supported by a complete lack of the species' preferred habitat or preferred prey items.
Otidiformes	Otididae	*Afrotis afra*	Southern Black Korhaan	Vulnerable	The species is restricted to the non-grassy, winter rainfall or mixed winter-summer rainfall fynbos and succulent Karoo biomes, and the extreme south of the Nama-Karoo biome, in a narrow strip along the southern and western coastlines of South Africa (Hofmeyr, 2012). It also occurs in semi-arid scrub and dunes with succulent vegetation, and extends into renosterveld scrub and semi-arid karoo (del Hoyo *et al*. 1996, Hockey *et al*. 2005). It occurs occasionally in cultivated fields with nearby cover (Hockey *et al*. 2005). The diet consists of insects, small reptiles and plant material, including seeds and green shoots (Hockey *et al*. 2005).	Low	The presence of this species was not confirmed during the field survey, and it has never been recorded in the study area landscape (Appendix A). It is therefore highly unlikely that this species will occur on the site - a factor which is further supported by a complete lack of the species' preferred natural habitats on the site.
Galliformes	Gruidae	*Anthropoides paradiseus*	Blue Crane	Vulnerable	This species breeds in natural grass- and sedge-dominated habitats, preferring secluded grasslands at high elevations where the vegetation is thick and short (Barnes, 2000). Occasionally it will breed in or near wetland areas (Barnes, 2000), in pans or on islands in dams (Hockey *et al*. 2005). Particularly in the Western Cape of South Africa, it also uses lowland agricultural areas, particularly pasture, fallow fields and cereal crop fields as stubble becomes available after harvest (Barnes, 2000, Hockey *et al*. 2005). During the non-breeding season the species inhabits short, dry, natural grasslands, as well as the Karoo and fynbos biomes (Barnes, 2000). In fynbos it occurs almost exclusively in cultivated habitats, largely avoiding the natural vegetation (Barnes, 2000), although this habitat may provide important cover for juveniles (Bidwell *et al*. 2006). The agricultural habitats that it uses include pastures; croplands, particularly where cereal crops are grown (Barnes, 2000), and fallow fields. It is intolerant of intensively grazed and burnt grassland (Hockey *et al*. 2005). It roosts in shallow wetlands (Barnes, 2000, Hockey *et al*. 2005). This species feeds primarily on plant material including the seeds of sedges and grasses, roots, tubers and small bulbs (del Hoyo *et al*. 1996, Hockey *et al*. 2005). It also takes a variety of animals including insects such as locusts and their eggs, grasshoppers, termites and caterpillars, worms, crabs, fish, frogs, reptiles and small mammals (del Hoyo *et al*. 1996, Hockey *et al*. 2005). In agricultural areas it feeds on cereal grains such as wheat and maize, and also eats invertebrate crop pests (del Hoyo *et al*. 1996, Hockey *et al*. 2005).	Low	The presence of this species was not confirmed during the field survey, but it has been recorded a high number of times (26 times) in the study area landscape with the latest observation in January 2023 (Appendix A). Even so, it is highly unlikely that this species will forage over the site given the high incidence of alien and invasive vegetation (i.e., a lack of open foraging habitat preferred by the species), coupled to daily noise and vibration from the N7 Road and adjacent airfield. It is even less likely that this species will breed here, given a distinct lack of wetland habitats on the site.

Suliformes	Phalacrocoracidae	*Phalacrocorax capensis*	Cape Cormorant	Endangered	This species is usually found in the Benguela Current less than 10 km from the coast (del Hoyo *et al*. 1992), although it does occasionally range as far as 70km offshore. During both the breeding and the non-breeding seasons it inhabits cliffs and ledges on the mainland and on offshore islands (Nelson, 2005). It is occasionally found in the brackish waters of coastal lagoons, estuaries and harbours (del Hoyo *et al*. 1992), but does not use these habitats for breeding. It occurs in highest densities in areas of suitable habitat near the recruitment grounds for pilchards (Clupeidae) and anchovies (Engraulidae) (Crawford and Shelton, 1978).	Low	The presence of this species was not confirmed during the field survey, and it has been recorded only once in the study area landscape in January 2018 (Appendix A). It is therefore highly unlikely that this species will occur on the site - a factor which is further supported by a complete lack of the species' preferred aquatic, estuarine or marine habitats on the site.
Coleoptera	Scarabaeidae	Westcoast Flightless Dungbeetle	*Pachysoma aesculapius*	Vulnerable	This large, day-active, flightless species is restricted to the firm deep sand of coastal hummocks, river banks and vegetated dunes (Davis, 2013). It has been trapped in small numbers using cattle dung baits in open shrubland on sand flats. During mid-summer the species was observed to actively forage for a short periods only in the morning (07h00-19h00) and late afternoon (16h00-18h00) when radiant heat was lower that at midday.	Low	The study area is characterised by deep sand, but does not contain any dune systems, and harbours a degraded habitat structure with a high incidence of alien and invasive vegetation. Furthermore, there is an almost complete lack of larger mammal species on the site - the dung of which is required for the presence of this species. It is therefore highly unlikely that the species will be present on the site.
Orthoptera	Pneumoridae	Bladder Grasshopper	*Bullacris obliqua*	Vulnerable	The species inhabits the Fynbos biome, with *Eriocephalus africanus* currently listed as its only confirmed host plant (Couldridge and Bazelet, 2018).	Low	The site does not contain any of the host plant (*Eriocephalus africanus)* of this species, and furthermore and harbours a degraded habitat structure with a high incidence of alien and invasive vegetation. It is therefore highly unlikely that the species will be present on the site.

9.1 Absence of SCC in the study area

Conditions in the study area currently point to altered ecosystem dynamics, highly impaired faunal and avifaunal diversity and a degraded habitat structure. To this end, the site does not constitute suitable habitat for any of the SCC considered in the current assessment, and it is highly unlikely that these species will occur here.

10. Evaluation of Site Ecological Importance (SEI)

10.1 Evaluating SEI for habitats in the study area

Given the low probability of occurrence of any of the assessed SCC, the combined evaluation of the Site Ecological Importance (SEI) was performed for both avifauna and invertebrates, and follows the methods and criteria outlined in the Species Environmental Assessment Guideline (SANBI, 2020). In short, SEI is a function of the Biodiversity Importance (BI) of the receptor (e.g., SCC, the vegetation/faunal community or habitat type present on the site) and its resilience to impacts (Receptor Resilience, RR) as follows: SEI = BI + RR. Biodiversity Importance (BI) is in turn a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor as follows: BI = CI + FI.

Following these methods, SEI for the study area was evaluated based on the suitable habitat for each SCC (Section 9), as well as the spatial distribution of habitats within the study area (Section 7). To calculate the Conservation Importance (CI) and Functional Integrity (FI) of each habitat within the study area, the criteria outlined in Table 5 and Table 6 were respectively used.

According to the Species Environmental Assessment Guideline, Conservation Importance (CI) may defined as follows:

Conservation Importance (CI): "*The importance of a site for supporting biodiversity features of conservation concern present, e.g. populations of IUCN threatened and Near Threatened species (CR, EN, VU and NT), Rare species, range-restricted*

species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes."

Table 5 Conservation importance (CI) criteria (table adapted from the Species Environmental Assessment Guideline, SANBI, 2020).

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

According to the guideline, Functional Integrity (FI) is defined as:

Functional integrity (FI): "*The receptors' current ability to maintain the structure and functions that define it, compared to its known or predicted state under ideal*

conditions. Simply stated, FI is: 'A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts."

Table 6 Functional integrity (FI) criteria (table adapted from the Species Environmental Assessment Guideline, SANBI, 2020).

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

Based on assessments of CI and FI for habitats within the study area, the Biodiversity Importance (BI) of each habitat was calculated using the matrix in Table 7 (based on the formula: BI = CI + FI). As Biodiversity Importance (BI) is a function of

Conservation Importance (CI) and the Functional Integrity (FI) of a receptor, BI can be derived from a simple matrix of CI and FI as follows:

Table 7 Matrix for calculating Biodiversity Importance (BI) (table adapted from the Species Environmental Assessment Guideline, SANBI, 2020).

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

Finally, the Receptor Resilience for each habitat was evaluated following the criteria listed in Table 8. According to the Species Assessment Guidelines, Receptor resilience (RR) may defined as follows:

Receptor resilience (RR): "*The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.*"

Table 8 Receptor Resilience (RR) criteria (table adapted from the Species Environmental Assessment Guideline, SANBI, 2020).

Receptor Resilience (RR)	**Fulfilling Criteria**
Very high	Habitat that can recover rapidly (~ less than 5 years) to restore > 75%28 of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a very high likelihood of returning to a site once the disturbance or impact has been removed.
High	Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed.
Medium	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.

Low	Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a low likelihood of returning to a site once the disturbance or impact has been removed.
Very low	Habitat that is unable to recover from major impacts, or species that are unlikely to remain at a site even when a disturbance or impact is occurring, or species that are unlikely to return to a site once the disturbance or impact has been removed.

Taken together, the Site Ecological Importance (SEI) was calculated for each habitat within the study area using the formula: SEI = BI + RR, and following the matrix outlined in Table 9. The interpretation of the development actions allowed for each SEI category are outlined in Table 10.

Table 9 Matrix for calculating Site Ecological Importance (SEI) (table adapted from the Species Environmental Assessment Guideline, SANBI, 2020).

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

Table 10 Guidelines for interpreting SEI in the context of the proposed development activities (table adapted from the Species Environmental Assessment Guideline, SANBI, 2020).

Site Ecological Importance (SEI)	**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.

10.2 SEI of habitats in the study area

The SEI results for habitats within the study area are given in Table 11 with the spatial representation for each habitat and its concomitant SEI category portrayed in Figure 17. None habitats on the site currently harbour any populations of faunal SCC, and furthermore exist in a degraded state. As such, the entire site is retrieved as having a “Very low” SEI where minimisation mitigation is acceptable, and allowing for development activities of medium to high impact without restoration activities being required (Table 10).

The Restio habitat which is located outside of and to the west of the project footprint, however exists in a natural and intact state, and this habitat is retrieved as having a “High” SEI where avoidance mitigation is advocated (Table 10).

Table 11 Evaluation of SEI for habitats within the study area. BI = Biodiversity Importance, RR = Receptor Resilience.

Habitat type	Conservation Importance	Functional Integrity	Receptor Resilience	Site Ecological Importance
Remnant Fynbos	**Very low** - No confirmed and a highly unlikely presence of populations of terrestrial faunal and avifaunal SCC.	**Very low** - Very small area (>1ha) of "Critically Endangered" Cape Flats Sand Fynbos vegetation.	**Low** - Because this habitat consists of remnants of "Critically Endangered" Cape Flats Sand Fynbos vegetation, it is unlikely to recover from any major impacts. Even so, this remnant patch currently exhibits significant infestations of alien and invasive Port Jackson trees, en exists in a somewhat degraded state.	Very low - BI = Very low; RR = Low
Port Jackson trees	**Very low** - No confirmed and a highly unlikely presence of populations of terrestrial faunal and avifaunal SCC.	**Very low** - Several major current negative ecological impacts (alien and invasive Port Jackson trees).	**Very high** - This habitat consists of alien and invasive trees with little remaining natural vegetation.	Very low - BI = Very low; RR = Very high
Bluegum trees	**Very low** - No confirmed and a highly unlikely presence of populations of terrestrial faunal and avifaunal SCC.	**Very low** - Several major current negative ecological impacts (alien and invasive Bluegum trees).	**Very high** - This habitat consists of alien and invasive trees with little remaining natural vegetation.	Very low - BI = Very low; RR = Very high
Road verges	**Very low** - No confirmed and a highly unlikely presence of populations of terrestrial faunal and avifaunal SCC.	**Very low** - Several major current negative ecological impacts (consists of the N7 road and existing road verges).	**Very high** - This habitat consists of the road and accompanying road verges.	Very low - BI = Very low; RR = Very high
Restio vegetation	**Medium** - Although not confirmed, it is possible that this habitat may harbour subpopulations of terrestrial faunal and avifaunal SCC, given its intact nature.	**High** - Good habitat connectivity to natural areas further west and south with potentially functional ecological corridors. Only minor current negative ecological impacts with no signs of major pas disturbance and good rehabilitation potential.	**Low** - This habitat will recover slowly (>15 years) from any major impacts.	High - BI = Medium; RR = Low

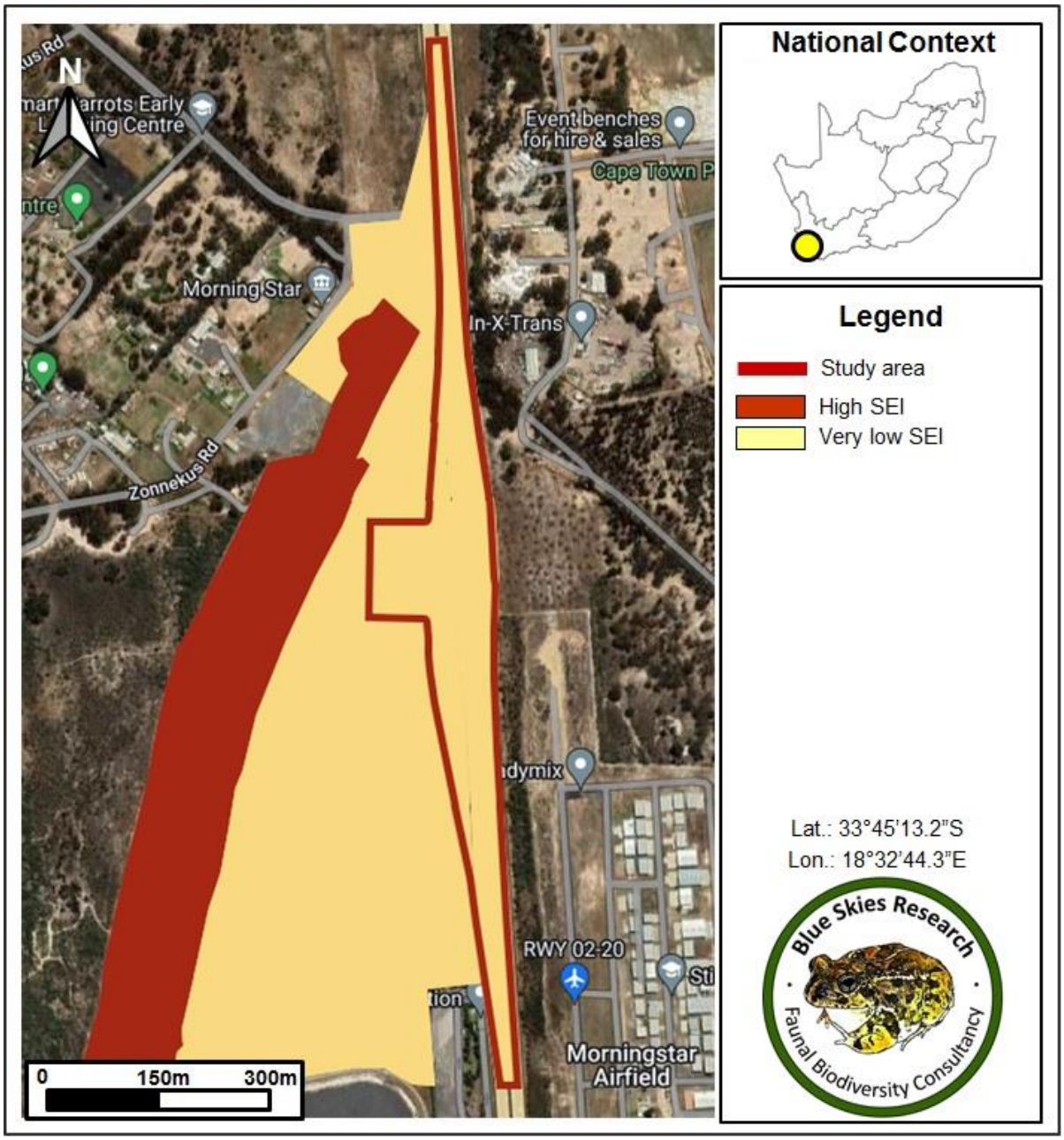


Figure 17 Spatial representation of the SEI of habitat types within the study area in relation to Alternative Layout 1 (Original Option).

11. Current impacts, project impacts, mitigation measures and alternative layout options

11.1 Current impacts

The most prominent current impact on the site constitutes significant infestations of alien and invasive Port Jackson and Bluegum trees (see Section 7) which relates to a degraded habitat structure and altered ecosystem dynamics. Furthermore, the site is bordered by the N7 Road to the east and the Zonnekus and Reygersdal Roads to the north from (which services the Morning Star AH Sub Place) from where there is significant and constant noise and vibration from vehicle traffic. Furthermore, the Koeberg Flight Park is also located to the west of the site, where there is further additional noise and vibration from air traffic. Collectively, these encompass the current impacts on the site.

11.2 Anticipated project impacts

Planned development activities will include clearing of the vegetation, soil preparation, and construction of the access roads and weighbridge infrastructure. Impacts during the construction phase of the project will therefore include the destruction of habitat, direct mortality of fauna, vibration and noise, and possible pollution of the surrounding area. During the operational phase of the project, further noise and vibration is expected from vehicles routed to the weighbridge. Pollution of the area directly adjacent to the weighbridge and access roads is also possible, but should likely be restricted to a 30m buffer around these areas.

11.3 Impact management actions

The destruction of habitats across the proposed project footprint, along with vibration and noise through machinery and people, and possible pollution are unavoidable during the construction phase and therefore no impact management actions are advocated. To avoid and minimise the direct mortality of fauna during the construction phase however, every effort should be made to save and relocate any

mammal, reptile, amphibian, bird, or invertebrate that cannot flee of its own accord, encountered during site preparation. These animals should be relocated to the undeveloped area to the west of the site, but under no circumstances any further away.

During the operational phase of the project, noise, vibration and pollution of the area directly adjacent to the weighbridge and access roads is further unavoidable, but should not have highly significant impacts under the proposed development layout alternatives (see below).

11.4 Consideration of alternative layouts for the proposed development

Throughout this report, the original provided layout was considered. Following the site sensitivity verification by the botanical specialist, an area of “Critically Endangered” Cape Flats Sand Fynbos was noted in the central portion of the site, corresponding to the “Remnant Fynbos habitat” in the current study (see Section 7). Given the conservation importance of this vegetation type, it was proposed that this area be excluded from development planning. To this end, three additional development alternative layouts (Options 5a, 5b and 5c) were proposed, the viability of which from a terrestrial faunal and avifaunal sensitivity perspective are assessed below.

11.4.1 Alternative Layout 1 (Original Layout)

This corresponds to the originally proposed development layout. Under this alternative, the project footprint will be restricted to areas of “Very low” SEI (see Subsection 10.2, Figure 17), but will lead to the destruction of the central patch of “Critically Endangered” Cape Flats Sand Fynbos in the area of the proposed weighbridge. As such, this development layout will have a less favourable outcome from a botanical sensitivity perspective.

11.4.2 Alternative Layout 2 (Option 5A)

This development layout considers that the weighbridge footprint be placed further west, with the access roads surrounding the central patch of “Critically Endangered” Cape Flats Sand Fynbos, but excluding it from development footprint. From a terrestrial faunal and avifaunal perspective, the development footprint will still be restricted to areas of “Very low” SEI (Figure 18), but the weighbridge footprint will be located directly adjacent to the “High SEI” habitat which traverses the western part outside of the site. Because noise, vibration and pollution may impact on this adjacent habitat, this layout is slightly less favourable from a terrestrial faunal and avifaunal perspective.

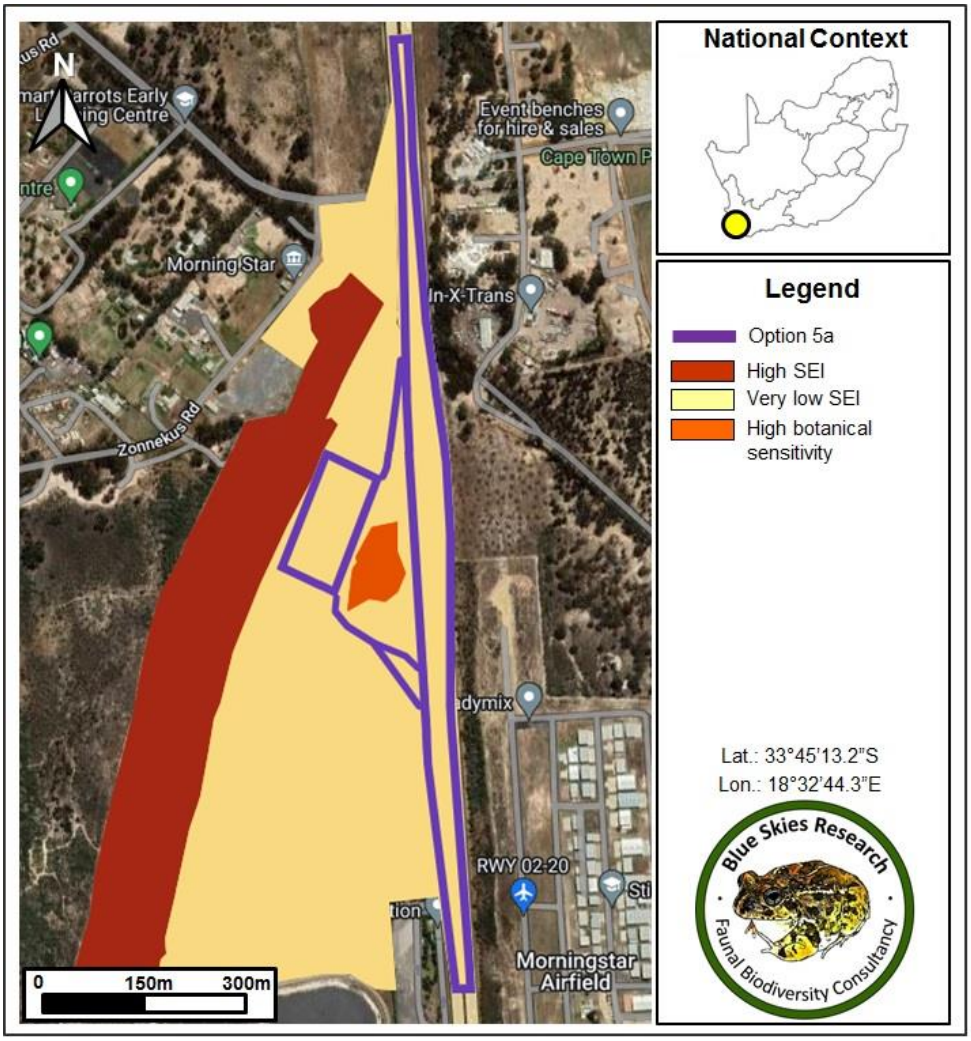


Figure 18 Spatial representation of the SEI of habitat types within the study area, as well as the area of high botanical sensitivity identified by the botanical specialist, in relation to Alternative Layout 2 (Option 5a).

11.4.3 Alternative Layout 3 (Option 5B)

This development layout proposes that the weighbridge footprint be placed further south, excluding the central patch of “Critically Endangered” Cape Flats Sand Fynbos. From a terrestrial faunal and avifaunal perspective, the development footprint will still be restricted to areas of “Very low” SEI (Figure 19), and the weighbridge footprint will be located a significant distance away from the “High SEI” habitat traversing the western part outside of the site. As such, this layout is likely to have a more favourable outcome from a terrestrial faunal and avifaunal sensitivity perspective (given less impacts from noise, vibration and pollution on the surrounding intact habitats).

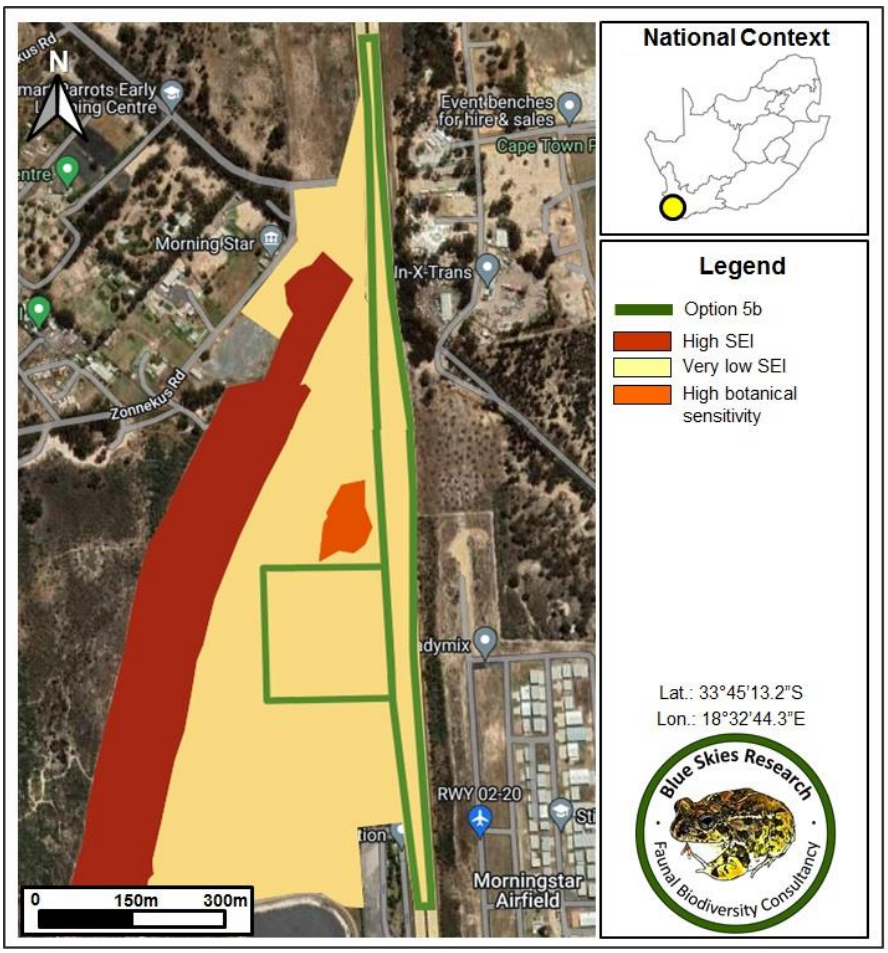


Figure 19 Spatial representation of the SEI of habitat types within the study area, as well as the area of high botanical sensitivity identified by the botanical specialist, in relation to Alternative Layout 3 (Option 5b).

11.4.4 Alternative Layout 4 (Option 5C)

This development layout proposes that the weighbridge footprint be placed further north, excluding the central patch of “Critically Endangered” Cape Flats Sand Fynbos. From a terrestrial faunal and avifaunal perspective, the development footprint will still be restricted to areas of “Very low” SEI (Figure 20), but the weighbridge footprint will be located directly adjacent to the “High SEI” habitat which traverses the western part outside of the site. Because noise, vibration and pollution may impact on this adjacent habitat, this layout is slightly less favourable from a terrestrial faunal and avifaunal perspective.

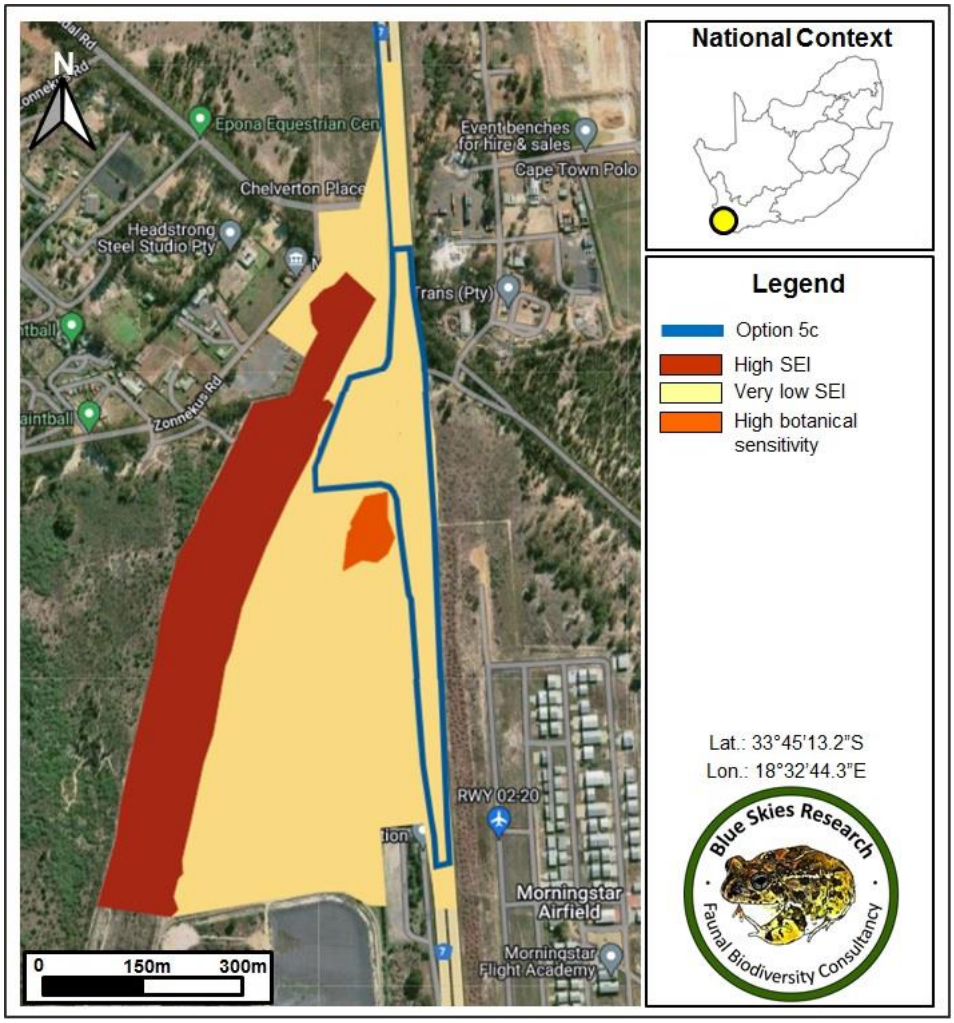


Figure 20 Spatial representation of the SEI of habitat types within the study area, as well as the area of high botanical sensitivity identified by the botanical specialist, in relation to Alternative Layout 4 (Option 5c).

12. Conclusion

This report provides a representative faunal and avifaunal assessment of the study area considering facets of:

- Terrestrial faunal and avifaunal habitat composition (Section 7),
- terrestrial faunal and avifaunal components (Section 8),
- the presence or likely presence of the SCC listed in the DFFE Screening Tool Report (Table 1) as well as additional SCC (Section 9),
- the SEI of habitats within the study area, with associated acceptable development activities (Section 10),
- impacts and impact management actions to be considered during the construction and operational phases of the project (Section 11), and
- the consideration of three alternative layouts for the proposed project footprint, along with an assessment of the more optimal layout from a terrestrial faunal and avifaunal sensitivity perspective.

12.1 Listed sensitivity in the DFFE Screening Tool Report

The study area has been identified as being of a “High Sensitivity” under the “Relative Animal Species Sensitivity Theme” DFFE Screening Tool Report (Section 3), however considering the results from the current report, the site may be considered as of “Low Sensitivity”. This follows from the degraded habitat structure on the site which harbours a highly impaired faunal diversity, and does not constitute suitable habitat for any of the SCC considered.

12.2 Overlap with a Critical Biodiversity Areas

The part of the site overlapping with the terrestrial CBA was indeed retrieved as corresponding to the patch of “Critically Endangered” Cape Flats Sand Fynbos. Although not in a pristine condition, management objectives for this part of the site are as follows: “*Maintain in a natural or near-natural state, with no further loss of natural habitat. Degraded areas should be rehabilitated. Only low-impact,*

biodiversity-sensitive land uses are appropriate." To this end, the three alternative project layouts which are proposed (Alternative Layout 5a, 5b and 5c) exclude this sensitive vegetation patch. Irrespective of the development layout finally selected, it is however recommended that the alien and invasive vegetation in the area surrounding this Cape Flats Sand Fynbos patch be removed, so as to allow for the rehabilitation of this area.

The remainder of the site overlaps with degraded Critical Biodiversity Areas (CBA2), which is defined as "*Areas in a degraded or secondary condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure*". While this part of the site does exist in a degraded state, it is unlikely that it will be crucial to meet biodiversity targets for several reasons:

- Faunal habitats on the site exist in a degraded state with significant infestations of alien and invasive Port Jackson and Bluegum trees.
- The site supports a relatively impaired faunal and avifaunal diversity with only relatively common species of "Least Concern" (IUCN, 2021) being present.
- The site supports few intact predator-prey dynamics and therefore harbours altered ecosystem dynamics.
- The site does not contain populations of, or suitable habitat for any terrestrial faunal or avifaunal SCC.
- The site is retrieved as having a "Very low" SEI.

Like with the Cape Flats Sand Fynbos patch however, it is recommended that the alien and invasive vegetation in the study area landscape be removed to improve habitat quality for terrestrial faunal and avifaunal species.

12.3 Conclusion

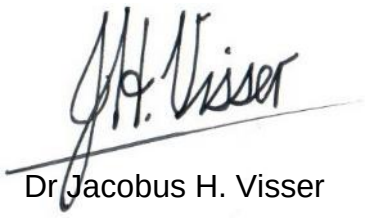
Taken together, habitats and faunal components on the site do not constitute a significant link in the biodiversity and ecological patterns and processes within the study area landscape, and loss of habitats and species here should no adversely impinge on local, regional or national biodiversity targets. From a faunal biodiversity

perspective therefore, there is no reason why the proposed development should not proceed under any of the proposed development alternatives.

13. Conditions to which this statement is subjected

The content of this report is based on the author's best scientific and professional knowledge as well as available information. Since environmental impact studies deal with dynamic natural systems, additional information may come to light at a later stage which is not listed in this report. As such, the conclusions and recommendations made in this report are done in good faith based on information gathered at the time of the investigation.

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of the report, which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.



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Appendix A

Appendix A Desktop species list of the avifaunal species which have been recorded in the pentad (3415_1910) which overlaps the study area (South African Bird Atlas Project 2, https://sabap2.birdmap.africa/), noting the total number of observations, and also the latest date the species was recorded. Furthermore, for each species, the taxonomic Order, Family, species binomial name and common name is shown, along with the current IUCN Red List classification of the species. Species in bold represent avifaunal species of conservation concern (SCC).

Order	Family	Species	Common name	IUCN status	Number of observations	Latest record
Accipitriformes	Accipitridae	*Accipiter melanoleucus*	Black Sparrowhawk	Least Concern	18	2021/11/27
		Accipiter rufiventris	Rufous-breasted Sparrowhawk	Least Concern	1	2019/09/09
		Accipiter tachiro	African Goshawk	Least Concern	3	2021/05/01
		Buteo buteo	Common Buzzard	Least Concern	25	2023/01/13
		Buteo rufofuscus	Jackal Buzzard	Least Concern	64	2022/08/20
		Circus maurus	**Black Harrier**	**Endangered**	**2**	**2020/03/27**
		Circus ranivorus	**African Marsh Harrier**	**Least Concern**	**14**	**2021/02/02**
		Elanus caeruleus	Black-winged Kite	Least Concern	54	2023/02/01
		Haliaeetus vocifer	African Fish Eagle	Least Concern	20	2022/02/06
		Hieraaetus pennatus	Booted Eagle	Least Concern	13	2021/01/30
		Milvus aegyptius	Yellow-billed Kite	Least Concern	46	2023/01/18
		Milvus migrans	Black Kite	Least Concern	1	2020/04/16
		Polemaetus bellicosus	**Martial Eagle**	**Endangered**	**1**	**2016/04/24**
		Polyboroides typus	African Harrier-Hawk	Least Concern	6	2021/02/02
Anseriformes	Anatidae	*Alopochen aegyptiaca*	Egyptian Goose	Least Concern	93	2023/01/18
		Anas capensis	Cape Teal	Least Concern	14	2023/01/13
		Anas erythrorhyncha	Red-billed Teal	Least Concern	44	2021/08/15
		Anas platyrhynchos	Mallard	Least Concern	4	2012/08/26
		Anas sparsa	African Black Duck	Least Concern	2	2015/01/04

		Anas undulata	Yellow-billed Duck	Least Concern	64	2023/01/18
		Dendrocygna viduata	White-faced Whistling Duck	Least Concern	1	2021/05/01
		Netta erythrophthalma	Southern Pochard	Least Concern	2	2020/05/01
		Plectropterus gambensis	Spur-winged Goose	Least Concern	71	2023/01/18
		Spatula smithii	Cape Shoveler	Least Concern	49	2022/08/20
		Tadorna cana	South African Shelduck	Least Concern	1	2008/03/23
		Thalassornis leuconotus	White-backed Duck	Least Concern	4	2015/07/18
Bucerotiformes	Upupidae	*Upupa africana*	African Hoopoe	Least Concern	13	2022/02/06
Caprimulgiformes	Apodidae	*Apus affinis*	Little Swift	Least Concern	46	2022/02/06
		Apus apus	Common Swift	Least Concern	1	2020/04/01
		Apus barbatus	African Black Swift	Least Concern	33	2021/11/27
		Apus caffer	White-rumped Swift	Least Concern	23	2022/02/06
		Cypsiurus parvus	African Palm Swift	Least Concern	4	2020/04/21
		Tachymarptis melba	Alpine Swift	Least Concern	25	2022/08/07
	Caprimulgidae	*Caprimulgus pectoralis*	Fiery-necked Nightjar	Least Concern	3	2021/11/26
Charadriiformes	Burhinidae	*Burhinus capensis*	Spotted Thick-knee	Least Concern	43	2022/08/20
		Burhinus vermiculatus	Water Thick-knee	Least Concern	1	2020/05/01
	Charadriidae	*Charadrius hiaticula*	Common Ringed Plover	Least Concern	1	2009/11/21
		Charadrius pecuarius	Kittlitz's Plover	Least Concern	4	2022/02/06
		Charadrius tricollaris	Three-banded Plover	Least Concern	29	2022/02/06
		Vanellus armatus	Blacksmith Lapwing	Least Concern	81	2023/01/18
		Vanellus coronatus	Crowned Lapwing	Least Concern	20	2023/04/01
	Laridae	*Chlidonias hybrida*	Whiskered Tern	Least Concern	1	2014/10/26
		Chlidonias leucopterus	White-winged Tern	Least Concern	1	2008/03/23
		Hydroprogne caspia	Caspian Tern	Least Concern	2	2014/10/26
		Larus cirrocephalus	Grey-headed Gull	Least Concern	19	2021/08/29
		Larus dominicanus	Kelp Gull	Least Concern	92	2022/08/20
		Larus hartlaubii	Hartlaub's Gull	Least Concern	85	2022/10/05
	Recurvirostridae	*Himantopus himantopus*	Black-winged Stilt	Least Concern	24	2021/08/29

		Recurvirostra avosetta	Pied Avocet	Least Concern	1	2022/08/07
	Scolopacidae	*Calidris minuta*	Little Stint	Least Concern	2	2020/03/22
		Gallinago nigripennis	African Snipe	Least Concern	7	2021/01/17
		Tringa glareola	Wood Sandpiper	Least Concern	1	2015/04/13
		Tringa nebularia	Common Greenshank	Least Concern	2	2020/05/01
Ciconiiformes	Ciconiidae	*Ciconia ciconia*	White Stork	Least Concern	33	2023/01/28
		Leptoptilos crumenifer	Marabou Stork	Least Concern	1	2009/01/24
Coliiformes	Coliidae	*Colius colius*	White-backed Mousebird	Least Concern	31	2022/08/07
		Colius striatus	Speckled Mousebird	Least Concern	1	2007/11/07
		Urocolius indicus	Red-faced Mousebird	Least Concern	42	2022/08/07
Columbiformes	Columbidae	*Columba guinea*	Speckled Pigeon	Least Concern	81	2023/01/13
		Columba livia	Rock Dove	Least Concern	64	2023/01/13
		Oena capensis	Namaqua Dove	Least Concern	5	2009/12/05
		Spilopelia senegalensis	Laughing Dove	Least Concern	73	2023/01/13
		Streptopelia capicola	Cape Turtle Dove	Least Concern	50	2022/08/07
		Streptopelia semitorquata	Red-eyed Dove	Least Concern	85	2023/01/18
Coraciiformes	Alcedinidae	*Ceryle rudis*	Pied Kingfisher	Least Concern	8	2021/05/01
		Corythornis cristatus	Malachite Kingfisher	Least Concern	6	2022/02/06
		Megaceryle maxima	Giant Kingfisher	Least Concern	5	2017/09/16
	Meropidae	*Merops apiaster*	European Bee-eater	Least Concern	11	2021/01/30
Cuculiformes	Cuculidae	*Centropus burchellii*	Burchell's Coucal	Least Concern	1	2020/05/06
		Chrysococcyx caprius	Diederik Cuckoo	Least Concern	3	2019/10/26
		Chrysococcyx klaas	Klaas's Cuckoo	Least Concern	7	2021/08/29
Falconiformes	Falconidae	*Falco biarmicus*	Lanner Falcon	Least Concern	13	2021/01/30
		Falco naumanni	Lesser Kestrel	Least Concern	1	2018/02/09
		Falco peregrinus	Peregrine Falcon	Least Concern	28	2021/08/15
		Falco rupicolus	Rock Kestrel	Least Concern	68	2023/01/13
Galliformes	Gruidae	***Anthropoides paradiseus***	**Blue Crane**	**Vulnerable**	**26**	**2023/01/18**
	Numididae	*Numida meleagris*	Helmeted Guineafowl	Least Concern	71	2023/01/18

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	Phasianidae	*Coturnix coturnix*	Common Quail	Least Concern	1	2009/10/06
		Pternistis capensis	Cape Spurfowl	Least Concern	47	2023/01/13
		Scleroptila afra	Grey-winged Francolin	Least Concern	1	2020/05/21
Gruiformes	Rallidae	*Fulica cristata*	Red-knobbed Coot	Least Concern	72	2023/01/13
		Gallinula chloropus	Common Moorhen	Least Concern	52	2023/01/13
		Porphyrio madagascariensis	African Swamphen	Least Concern	13	2021/05/01
		Rallus caerulescens	African Rail	Least Concern	7	2021/01/17
		Sarothrura rufa	Red-chested Flufftail	Least Concern	1	2020/05/06
		Zapornia flavirostra	Black Crake	Least Concern	5	2021/05/01
		Zapornia pusilla	Baillon's Crake	Least Concern	1	2020/05/21
Passeriformes	Acrocephalidae	*Acrocephalus baeticatus*	African Reed Warbler	Least Concern	10	2021/01/30
		Acrocephalus gracilirostris	Lesser Swamp Warbler	Least Concern	51	2022/08/20
	Alaudidae	*Calandrella cinerea*	Red-capped Lark	Least Concern	30	2022/02/06
		Galerida magnirostris	Large-billed Lark	Least Concern	10	2020/03/22
	Cisticolidae	*Apalis thoracica*	Bar-throated Apalis	Least Concern	6	2022/02/06
		Cisticola fulvicapilla	Neddicky	Least Concern	1	2010/05/23
		Cisticola juncidis	Zitting Cisticola	Least Concern	20	2023/01/18
		Cisticola subruficapilla	Grey-backed Cisticola	Least Concern	24	2023/01/18
		Cisticola textrix	Cloud Cisticola	Least Concern	3	2020/05/01
		Cisticola tinniens	Levaillant's Cisticola	Least Concern	65	2022/08/20
		Prinia maculosa	Karoo Prinia	Least Concern	64	2023/01/13
	Corvidae	*Corvus albicollis*	White-necked Raven	Least Concern	28	2023/01/18
		Corvus albus	Pied Crow	Least Concern	101	2023/01/18
		Corvus splendens	House Crow	Least Concern	10	2009/12/28
	Dicruridae	*Dicrurus adsimilis*	Fork-tailed Drongo	Least Concern	24	2022/08/07
	Emberizidae	*Emberiza impetuani*	Lark-like Bunting	Least Concern	1	2009/11/21
	Estrildidae	*Coccopygia melanotis*	Swee Waxbill	Least Concern	1	2014/11/23
		Estrilda astrild	Common Waxbill	Least Concern	52	2023/01/18
	Fringillidae	*Crithagra albogularis*	White-throated Canary	Least Concern	3	2020/05/16

	Crithagra flaviventris	Yellow Canary	Least Concern	11	2021/01/17
	Crithagra gularis	Streaky-headed Seedeater	Least Concern	2	2020/05/06
	Crithagra sulphurata	Brimstone Canary	Least Concern	10	2020/05/16
	Serinus canicollis	Cape Canary	Least Concern	78	2022/08/20
Hirundinidae	*Cecropis cucullata*	Greater Striped Swallow	Least Concern	48	2023/01/13
	Hirundo albigularis	White-throated Swallow	Least Concern	36	2023/01/13
	Hirundo dimidiata	Pearl-breasted Swallow	Least Concern	16	2022/02/06
	Hirundo rustica	Barn Swallow	Least Concern	33	2023/01/13
	Psalidoprocne pristoptera	Black Saw-wing	Least Concern	1	2019/10/26
	Ptyonoprogne fuligula	Rock Martin	Least Concern	12	2020/05/16
	Riparia cincta	Banded Martin	Least Concern	3	2009/12/05
	Riparia paludicola	Brown-throated Martin	Least Concern	54	2022/08/20
Laniidae	*Lanius collaris*	Southern Fiscal	Least Concern	77	2023/02/01
Locustellidae	*Bradypterus baboecala*	Little Rush Warbler	Least Concern	45	2022/08/20
Macrosphenidae	*Sylvietta rufescens*	Long-billed Crombec	Least Concern	13	2022/02/06
Malaconotidae	*Laniarius ferrugineus*	Southern Boubou	Least Concern	3	2021/01/30
	Telophorus zeylonus	Bokmakierie	Least Concern	41	2022/08/20
Monarchidae	*Terpsiphone viridis*	African Paradise Flycatcher	Least Concern	2	2021/01/30
Motacillidae	*Anthus cinnamomeus*	African Pipit	Least Concern	36	2022/08/07
	Anthus leucophrys	Plain-backed Pipit	Least Concern	1	2017/04/16
	Anthus nicholsoni	Nicholson's Pipit	Least Concern	1	2016/04/24
	Macronyx capensis	Cape Longclaw	Least Concern	21	2022/08/20
	Motacilla capensis	Cape Wagtail	Least Concern	83	2023/01/18
Muscicapidae	*Cossypha caffra*	Cape Robin-Chat	Least Concern	66	2022/08/20
	Melaenornis silens	Fiscal Flycatcher	Least Concern	47	2022/08/07
	Muscicapa adusta	African Dusky Flycatcher	Least Concern	3	2022/08/07
	Muscicapa striata	Spotted Flycatcher	Least Concern	1	2022/02/06
	Myrmecocichla monticola	Mountain Wheatear	Least Concern	1	2016/03/05
	Oenanthe familiaris	Familiar Chat	Least Concern	26	2023/01/13

		Oenanthe pileata	Capped Wheatear	Least Concern	20	2019/10/26
		Saxicola torquatus	African Stonechat	Least Concern	55	2023/01/08
		Turdus olivaceus	Olive Thrush	Least Concern	24	2022/02/06
		Tychaedon coryphoeus	Karoo Scrub Robin	Least Concern	22	2022/08/20
	Nectariniidae	*Cinnyris chalybeus*	Southern Double-collared Sunbird	Least Concern	59	2022/08/07
		Nectarinia famosa	Malachite Sunbird	Least Concern	42	2022/08/07
	Passeridae	*Passer diffusus*	Southern Grey-headed Sparrow	Least Concern	28	2022/08/20
		Passer domesticus	House Sparrow	Least Concern	71	2022/08/07
		Passer melanurus	Cape Sparrow	Least Concern	80	2022/08/20
	Platysteiridae	*Batis capensis*	Cape Batis	Least Concern	14	2021/08/29
	Ploceidae	*Euplectes capensis*	Yellow Bishop	Least Concern	46	2022/08/20
		Euplectes orix	Southern Red Bishop	Least Concern	83	2023/01/18
		Ploceus capensis	Cape Weaver	Least Concern	75	2022/08/20
		Ploceus velatus	Southern Masked Weaver	Least Concern	68	2023/01/18
	Promeropidae	*Promerops cafer*	Cape Sugarbird	Least Concern	1	2017/04/28
	Pycnonotidae	*Pycnonotus capensis*	Cape Bulbul	Least Concern	56	2022/08/07
	Sturnidae	*Lamprotornis bicolor*	Pied Starling	Least Concern	3	2009/01/24
		Onychognathus morio	Red-winged Starling	Least Concern	28	2022/08/20
		Sturnus vulgaris	Common Starling	Least Concern	87	2023/01/13
	Stenostiridae	*Stenostira scita*	Fairy Flycatcher	Least Concern	1	2017/08/22
	Sylviidae	*Curruca subcoerulea*	Chestnut-vented Warbler	Least Concern	3	2021/01/17
	Viduidae	*Vidua macroura*	Pin-tailed Whydah	Least Concern	45	2023/01/18
	Zosteropidae	*Zosterops virens*	Cape White-eye	Least Concern	73	2022/08/20
Pelecaniformes	Ardeidae	*Ardea cinerea*	Grey Heron	Least Concern	49	2022/08/07
		Ardea intermedia	Intermediate Egret	Least Concern	8	2020/05/11
		Ardea melanocephala	Black-headed Heron	Least Concern	70	2023/01/13
		Ardea purpurea	Purple Heron	Least Concern	18	2022/08/07
		Bubulcus ibis	Western Cattle Egret	Least Concern	81	2023/01/13
		Egretta garzetta	Little Egret	Least Concern	30	2021/08/29

		Ixobrychus minutus	Little Bittern	Least Concern	3	2020/05/21
		Nycticorax nycticorax	Black-crowned Night Heron	Least Concern	6	2020/05/01
	Pelecanidae	*Pelecanus onocrotalus*	Great White Pelican	Least Concern	82	2022/08/07
	Scopidae	*Scopus umbretta*	Hamerkop	Least Concern	10	2021/08/29
	Threskiornithidae	*Bostrychia hagedash*	Hadada Ibis	Least Concern	87	2023/01/13
		Platalea alba	African Spoonbill	Least Concern	27	2023/01/13
		Plegadis falcinellus	Glossy Ibis	Least Concern	19	2022/08/07
		Threskiornis aethiopicus	African Sacred Ibis	Least Concern	99	2023/01/18
Phoenicopteriformes	Phoenicopteridae	*Phoenicopterus roseus*	Greater Flamingo	Least Concern	3	2021/01/17
Piciformes	Indicatoridae	*Indicator indicator*	Greater Honeyguide	Least Concern	11	2021/08/15
		Indicator minor	Lesser Honeyguide	Least Concern	2	2020/05/21
		Prodotiscus regulus	Brown-backed Honeybird	Least Concern	2	2020/05/01
	Lybiidae	*Tricholaema leucomelas*	Acacia Pied Barbet	Least Concern	33	2022/02/06
	Picidae	*Dendropicos fuscescens*	Cardinal Woodpecker	Least Concern	8	2022/08/07
Podicipediformes	Podicipedidae	*Podiceps cristatus*	Great Crested Grebe	Least Concern	1	2010/05/23
		Tachybaptus ruficollis	Little Grebe	Least Concern	47	2023/01/18
Strigiformes	Strigidae	*Bubo africanus*	Spotted Eagle-Owl	Least Concern	4	2021/11/26
	Tytonidae	*Tyto alba*	Western Barn Owl	Least Concern	4	2021/11/27
Struthioniformes	Struthionidae	*Struthio camelus*	Common Ostrich	Least Concern	1	2015/01/04
Suliformes	Anhingidae	*Anhinga rufa*	African Darter	Least Concern	49	2022/08/20
	Phalacrocoracidae	*Microcarbo africanus*	Reed Cormorant	Least Concern	70	2023/01/13
		Phalacrocorax capensis	**Cape Cormorant**	**Endangered**	**1**	**2018/01/04**
		Phalacrocorax lucidus	White-breasted Cormorant	Least Concern	44	2022/08/20

Appendix B

Appendix B Species list of the faunal species recovered within the study area during the field survey. For each, the taxonomic Order, Family, species binomial name and species common name are shown, along with the current IUCN Red List classification of the species, and the number of records of the species during the surveying period.

Mammals					
Order	**Family**	**Species**	**Common name**	**IUCN status**	**Number of observations**
Afrosoricida	Chrysochloridae	*Chrysochloris asiatica*	Cape Golden Mole	Least Concern	10
Cetartiodactyla	Bovidae	*Sylvicapra grimmia*	Common Duiker	Least Concern	5
Rodentia	Bathyergidae	*Bathyergus suillus*	Cape Dune Mole-rat	Least Concern	14
		Cryptomys hottentotus	African Mole-rat	Least Concern	1
	Muridae	*Gerbilliscus afra*	Cape Gerbil	Least Concern	13
		Rhabdomys pumilio	Four-striped Grass Mouse	Least Concern	4
Reptiles					
Order	**Family**	**Species**	**Common name**	**Status**	**Number of observations**
Testudines	Testudinidae	*Chersina angulata*	Angulate Tortoise	Least Concern	1
Squamata	Scincidae	*Trachylepis capensis*	Cape Skink	Least Concern	1
Avifauna					
Order	**Family**	**Species**	**Common name**	**Status**	**Number of observations**
Anseriformes	Anatidae	*Alopochen aegyptiaca*	Egyptian Goose	Least Concern	2
Caprimulgiformes	Caprimulgidae	*Caprimulgus pectoralis*	Fiery-necked Nightjar	Least Concern	1
Columbiformes	Columbidae	*Streptopelia capicola*	Cape Turtle Dove	Least Concern	2
Passeriformes	Cisticolidae	*Prinia maculosa*	Karoo Prinia	Least Concern	2
	Corvidae	*Corvus albus*	Pied Crow	Least Concern	2
	Estrildidae	*Estrilda astrild*	Common Waxbill	Least Concern	1
	Fringillidae	*Serinus canicollis*	Cape Canary	Least Concern	1

	Nectariniidae	*Cinnyris chalybeus*	Southern Double-collared Sunbird	Least Concern	2
	Ploceidae	*Ploceus capensis*	Cape Weaver	Least Concern	1
	Sturnidae	*Sturnus vulgaris*	Common Starling	Least Concern	1
	Zosteropidae	*Zosterops virens*	Cape White-eye	Least Concern	2
	Threskiornithidae	*Bostrychia hagedash*	Hadada Ibis	Least Concern	1
		Threskiornis aethiopicus	African Sacred Ibis	Least Concern	2
Suliformes	Anhingidae	*Anhinga rufa*	African Darter	Least Concern	1

Appendix D

Curriculum Vitae of Jacobus Hendrik Visser

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Qualifications

- PhD (Zoology), University of Johannesburg (2015 - 2017)
- MSc (Zoology), Stellenbosch University (2011 - 2013)
- BSc Honours (Zoology) cum laude, Stellenbosch University (2010)
- BSc (Biodiversity and Ecology) cum laude, Stellenbosch University (2007 - 2009)

Expertise

- 28 years of in-the-field naturalist experience involving all faunal groups
- Zoologist with 16 years of professional experience
- 14 Peer-reviewed publications in high impact national and international scientific journals
- 5 IUCN Red List assessments
- 2 years of consultation experience as a Fauna Specialist (trading as Blue Skies Research)

Accreditation

- Registered Professional Natural Scientist (Zoological Science) with the South African Council for Natural Scientific Practitioners (SACNASP). Registration number: 128018

Scientific publications

- **Visser J.H.** (2013). Gene-flow in the rock hyrax (*Procavia capensis*) at different spatial scales. MSc thesis, Stellenbosch University, Stellenbosch, South Africa. https://core.ac.uk/download/pdf/37420485.pdf
- **Visser J.H.** (2017). Evolution of the South African Bathyergidae: patterns and processes. PhD dissertation, University of Johannesburg, Johannesburg, South Africa.
- **Visser J.H.**, Bennett N.C., Jansen van Vuuren B. (2014). Local and regional scale genetic variation in the Cape dune mole-rat, *Bathyergus suillus*. PLos ONE 9(9):e107226. https://doi.org/10.1371/journal.pone.0107226
- **Visser J.H.**, Bennett N.C., Jansen van Vuuren B. (2017). Distributional range, ecology and mating system of the Cape mole-rat, *Georychus capensis* family Bathyergidae. Canadian Journal of Zoology 95 (10): 713-726. https://doi.org/10.1139/cjz-2017-0016
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- **Visser J.H.**, Robinson T.J., Jansen van Vuuren B. (2020). Spatial genetic structure in the rock hyrax (*Procavia capensis*) across the Namaqualand and western Fynbos areas of South Africa - a mitochondrial and microsatellite perspective. Canadian Journal of Zoology 98 (8): 557-571. https://doi.org/10.1139/cjz-2019-0154
- Uhrová M., Mikula O., Bennett N.C., Van Daele P., Piálek L., Bryja J., **Visser J.H.**, Jansen van Vuuren B., Šumbera R. (2022). Species limits and phylogeographic structure in two genera of solitary African mole-rats *Georychus* and *Heliophobius*. Molecular Phylogenetics and Evolution 167 (2022) 107337

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- Bennett N.C, Jarvis J.U.M., **Visser J.H.**, Maree, S. (2016). A conservation assessment of *Georychus capensis*. In: Child M.F., Roxburgh L., Do Linh San E., Raimondo D., Davies-Mostert H.T. (Eds). The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa. https://www.ewt.org.za/wp-content/uploads/2019/02/16.-Cape-Mole-rat-Georychus-capensis_LC.pdf
- Bennett N.C., **Visser J.H.**, Maree S., Jarvis J.U.M. (2016). A conservation assessment of *Bathyergus suillus*. In: Child M.F., Roxburgh L., Do Linh San E., Raimondo D., Davies-Mostert H.T. (Eds). The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa. https://www.ewt.org.za/wp-content/uploads/2019/02/6.-Cape-Dune-Mole-rat-Bathyergus-suillus__LC.pdf
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Conferences

- Presenter at the 2017 conference of the South African Wildlife Management Association (Presentation title: The influence of commercial game farming on maintaining genetic diversity in the sable antelope (*Hippotragus niger*) and roan antelope (*Hippotragus equinus*)
- Presenter at the 2017 conference of the Zoological Society of Southern Africa (Presentation title: Evolution of the South African Bathyergidae: Patterns and processes)
- Presenter at the 2010 conference of the Zoological Society of Southern Africa (Presentation title: Local and regional scale genetic variation in the Cape dune mole-rat, *Bathyergus suillus*)

List of fauna reports

- **Visser, J.H.** Terrestrial Animal Species Compliance Statement Report For A Portion of Remainder of Farm 630, Rawsonville, Breede Valley Municipality. November 2021. Prepared for inClover Environmental Consulting.
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Compliance Statement Report for a Portion of Brazil 329, Nama Khoi Municipality, Namakwa District. April 2022. Prepared for WNel Environmental Consulting Services.
- **Visser, J.H.** Terrestrial Faunal And Avifaunal Species Scoping Report for the Proposed Waste Management Facility at Portions 1 and 6 of Farm 32 Brakkefontein, City of Cape Town. April 2022. Prepared for SLR Consulting.
- **Visser, J.H.** Terrestrial Faunal And Avifaunal Species Impact Assessment Report for a Portion of Riet Valleij (Somerset Vale, Farm Portion RE/150), Estelm Boerdery, Swellendam Municipality, Overberg District. June 2022. Prepared for PHS Consulting.
- **Visser, J.H.** Site Sensitivity Verification Report for Remainder of Farm De Draay No 563, Overstrand Municipality. August 2022. Prepared for PHS Consulting.
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Impact Assessment Report for Remainder of Farm Rooilandia No. 472, Breede Valley Municipality. October 2022. Prepared for McGregor Environmental Services.

- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Impact Assessment Report for Portion 3 of Farm 781, Theewaterskloof Local Municipality. December 2022. Prepared for PHS Consulting.
- **Visser, J.H.** Terrestrial Faunal Species Compliance Statement Report for Farm Portion 49, Hansmoeskraal Farm 202, George Local Municipality. April 2023. Prepared for Sharples Environmental Services cc (SES).
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Impact Assessment Report for Farm Witteklip 69/123, Vredenburg, Saldanha Bay Municipality. May 2023. Prepared for inClover Environmental Consulting.

Other projects

- Southern African Bird Atlas Project 2 (SABAP2)
- Endemism, genetic variance and conservation priorities in the highlands of south-western Africa.
- Biodiversity and ecology of scorpions in the Cape Floristic Region.
- National Biodiversity Assessment 2018: The status of South Africa's ecosystems and biodiversity. Synthesis Report. South African National Biodiversity Institute, an entity of the Department of Environment, Forestry and Fisheries, Pretoria.