TERRESTRIAL FAUNAL SPECIES COMPLIANCE STATEMENT REPORT FOR THE PROPOSED COMMERCIAL AND RESIDENTIAL DEVELOPMENT ON PORTION 50 OF FARM HANSMOESKRAAL 202, GEORGE LOCAL MUNICIPALITY

September 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

- 28 years of in-the-field naturalist experience involving all faunal groups
- Zoologist with 17 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
- 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.

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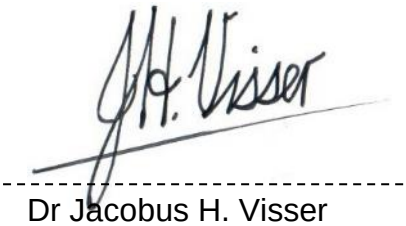
Declaration of independence by the independent person who compiled a specialist report or undertook a specialist process

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.



23 September 2025

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1. Introduction

The applicant is proposing a commercial and residential development on Portion 50 of Hansmoeskraal Farm 202, George Local Municipality, Western Cape (hereafter referred to as the "study area" or "site"). The project footprint is estimated to be around 3.4 hectares in extent, and is proposed to include the following:

- Construction of a gated estate with group housing units.
- Private streets
- Private open space
- A gate house and refuse area
- A commercial precinct

Blue Skies Research was appointed by Sharples Environmental Services cc (SES) on behalf of the applicant to perform the required terrestrial faunal assessment of the study area (see Sections 2 and 3). The current report represents a terrestrial faunal 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.

2. Terms of Reference

2.1. General legislature pertaining to this report

This terrestrial faunal 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 07 August 2024.
- *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 a “Medium” 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 one mammal, one amphibian and one 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).

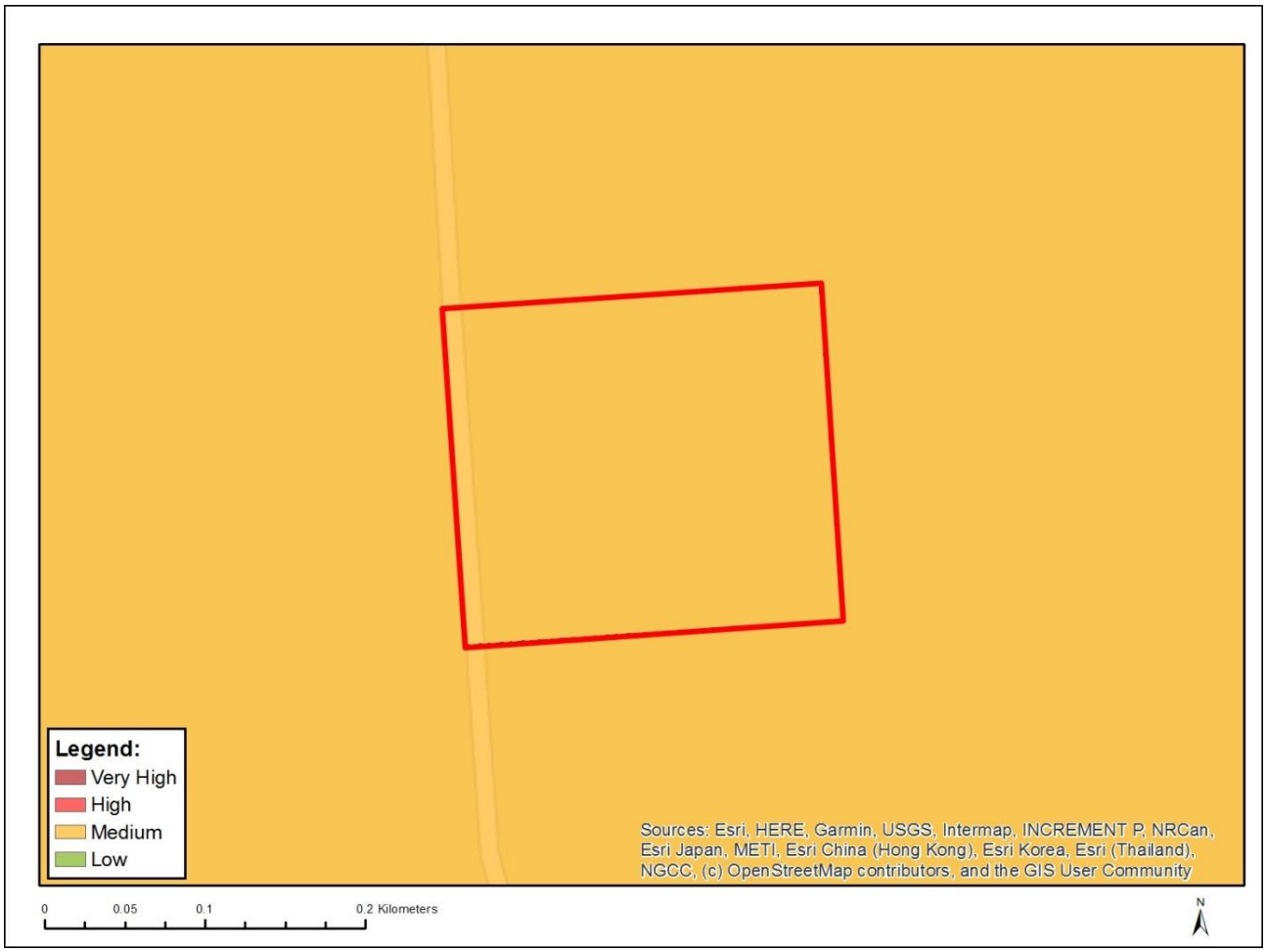


Figure 1 Relative Animal Species Sensitivity Map retrieved for the study area by the DFFE Screening Tool (https://screening.environment.gov.za/screeningtool/).

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). The name of "Sensitive species 8" has been purposefully omitted, given the sensitivity of the species.

Sensitivity	Species	Common name	IUCN status
Medium	*Afrixalus knysnae*	Knysna Leaf-folding Frog	Endangered
Medium	*Sensitive Species 8*	Sensitive Species 8	Least Concern
Medium	*Aneuryphymus montanus*	Yellow-winged Agile Grasshopper	Vulnerable

4. Overview of the study area

4.1 Geographic location

The study area is approximately 3.4 hectares in size and is located to the south of Harmony Park in the Pacaltsdorp area of George (Figures 2 and 3). The site is bordered by Beach Road to the west, an access road to the north which services a residential complex to the east and an undeveloped open farm portion to the south. In a broader context, the site is surrounded by residential areas to the north and open farmland to the west, south and east.

Figure 2 Spatial location of the study area on a broad scale (Red polygon= Study area; map generated in Cape Farm Mapper version 3.0, Western Cape Department of Agriculture).

Figure 3 Spatial extent of the study area at a finer scale (Red polygon = Study area; map generated in Cape Farm Mapper version 3.0, Western Cape Department of Agriculture).

4.2 Topology

The topography of the study area is mostly flat, with a gentle slope towards the south-east (Figure 4). Although not shown, there is a slight depression in the south-western part of the site which comprises a small artificial wetland / wet depression area.

Figure 4 Topology of the study area showing 5 meter contour lines (Red polygon = Study area; map generated in Cape Farm Mapper version 3.0, Western Cape Department of Agriculture).

4.3 Vegetation

Vegetation across the study area is mapped as Garden Route Granite Fynbos (VegMap, 2018; Figure 5) which is currently classified as a “Critically Endangered“ ecosystem type according to *The Revised National List of Ecosystems that are Threatened and in Need of Protection* (Government Notice No. 2747 of 18 November 2022; Figure 6). Even so, very only remnants of the original vegetation profile remains in place over the site, with the area exhibiting significant signs of alien and invasive trees a the growth of pioneer plant species (see Section 7).

Figure 5 Vegetation type across the study area (VEGMAP, SANBI 2018; Red polygon = Study area; map generated in Cape Farm Mapper version 3.0, Western Cape Department of Agriculture).

Figure 6 Spatial location of the ecosystem and its threat status according overlapping with the study area (Red polygon = Study area; information sourced from Cape Farm Mapper version 3.0, Western Cape Department of Agriculture).

4.4 Land cover

Classification of land cover within the study area (Land Cover 73-class, Department of Environmental Affairs, 2020) indicates the presence of fallow land and old fields (low shrub) over the majority of the site, with small sections of fallow land and old fields (trees) and fallow land and old fields (bush) in the north-eastern corner and southern parts respectively (Figure 7). The western margin of the site harbours roads and rails (major linear) corresponding to Beach Road. These designations of land cover appear to accurately reflect habitat conditions on the site (see Section 7).

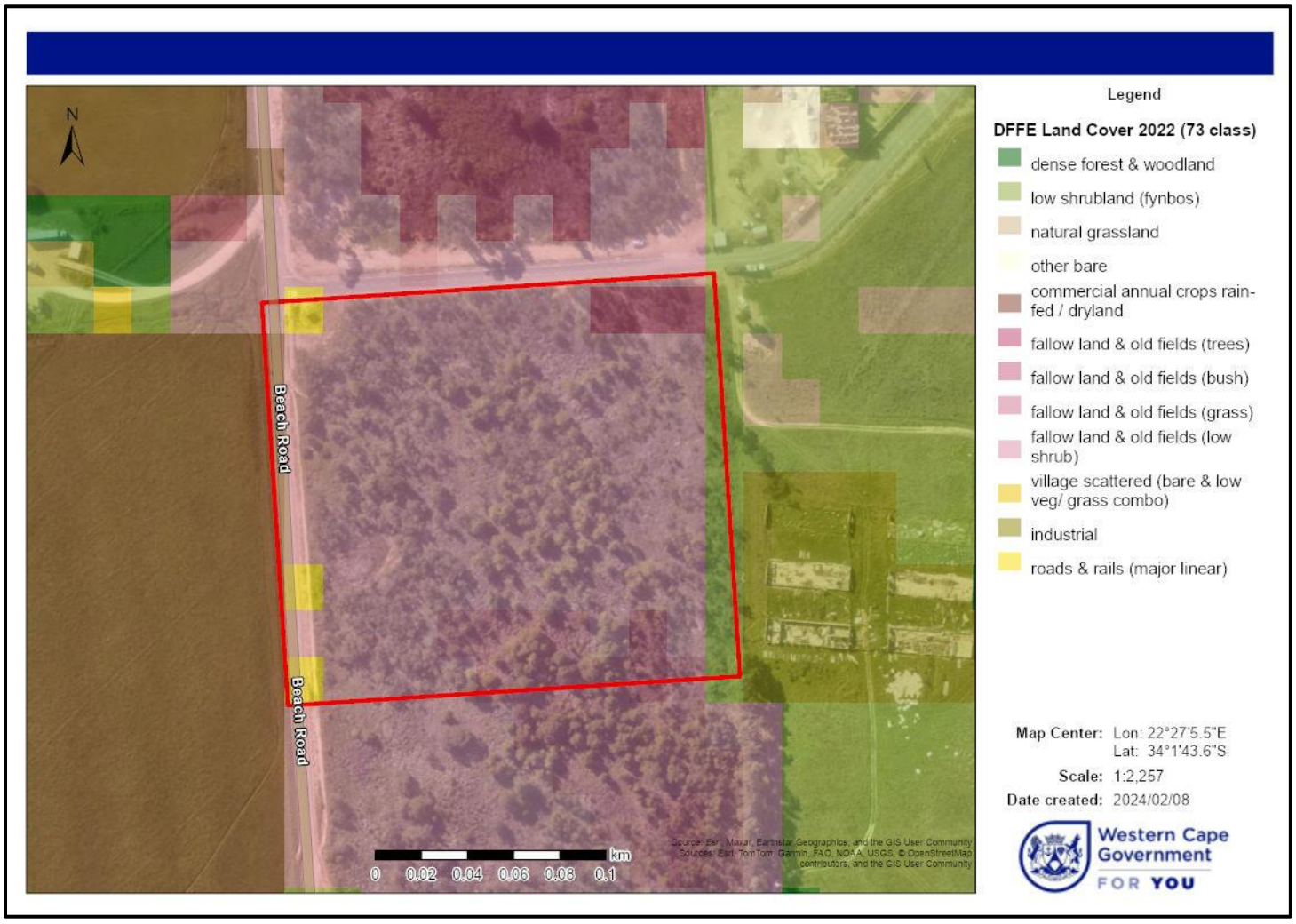


Figure 7 Land cover (Land Cover 73-class, Department of Environmental Affairs, 2020) within the study area (Red polygon = Study area; information sourced from Cape Farm Mapper version 3.0, Western Cape Department of Agriculture).

4.5 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.

Because the site exists in a relatively degraded state (see Section 7), the entire area is retrieved as a degraded terrestrial Critical Biodiversity Area 2 (CBA2), with no Ecological Support Areas (ESAs) being present (Figure 8). The overlap with this CBA2 is discussed in Section 12.

Figure 8 Spatial locations of degraded Critical Biodiversity Area (CBA2) overlapping with the study area (Red polygon = Study area; information sourced from Cape Farm Mapper version 3.0, Western Cape Department of Agriculture).

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 mammal, amphibian 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 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 mammals and amphibians) for the study area landscape 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 within these faunal groups,

3.) compile a faunal species list (including mammals, amphibians, avifauna and butterflies) 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, and possible SCC subpopulations and habitats which may be of conservation concern.

5.2 Desktop assessment

To assess the possible occurrence of the listed (Table 1) as well as any additional mammal and amphibian SCC, a desktop assessment was performed to create a

representative desktop species list for these faunal groups. Because distributional data on grasshopper species is scarce, the presence of the Yellow-winged Agile Grasshopper could only be assessed during the field survey.

5.2.1 Mammals

The desktop species list for mammals (Appendix A) was constructed with reference to the distributional data available in Skinner and Chimimba (2005), as well as observational records available for the study area landscape (Quarter Degree Grid Square, QDGS: 3422AB) on the MammalMAP (https://vmus.adu.org.za/) and iNaturalist (www.iNaturalist.org) platforms.

5.2.2 Amphibians

The desktop species list for amphibians (Appendix B) was constructed with reference to the distributional data available in Du Preez and Carruthers (2009), as well as observational records available for the study area landscape (QDGS: 3422AB) on the FrogMAP (https://vmus.adu.org.za/) and iNaturalist (www.iNaturalist.org) platforms.

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 was therefore surveyed on foot over a single day on the 31st of July 2024, during the Winter season. Weather conditions during the surveying period were characterised by relatively warm daily temperatures, no cloud cover and low wind conditions (Figure 9).

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 10. Terrestrial faunal species (mammals) were identified by direct visual observation, or by their tracks, burrows, remains or scat. Amphibian species were further identified by auditory means, supplemented by

diurnal sound recordings. Avifaunal species were identified by visual observation, using a 180x zoom lens, or by auditory means. Finally, butterfly species were identified and photographed from less than one meter away. 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 C.

Given the warmer daily temperatures, faunal and avifaunal species' activity was observed to be high over the surveying period, thereby resulting in 32 recorded observations across the study area (Figure 11, Appendix C), relating to one observation per every 0.1 hectares of study area (the total study area is 3.4 hectares in extent). 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 3.0, Western Cape Department of Agriculture).

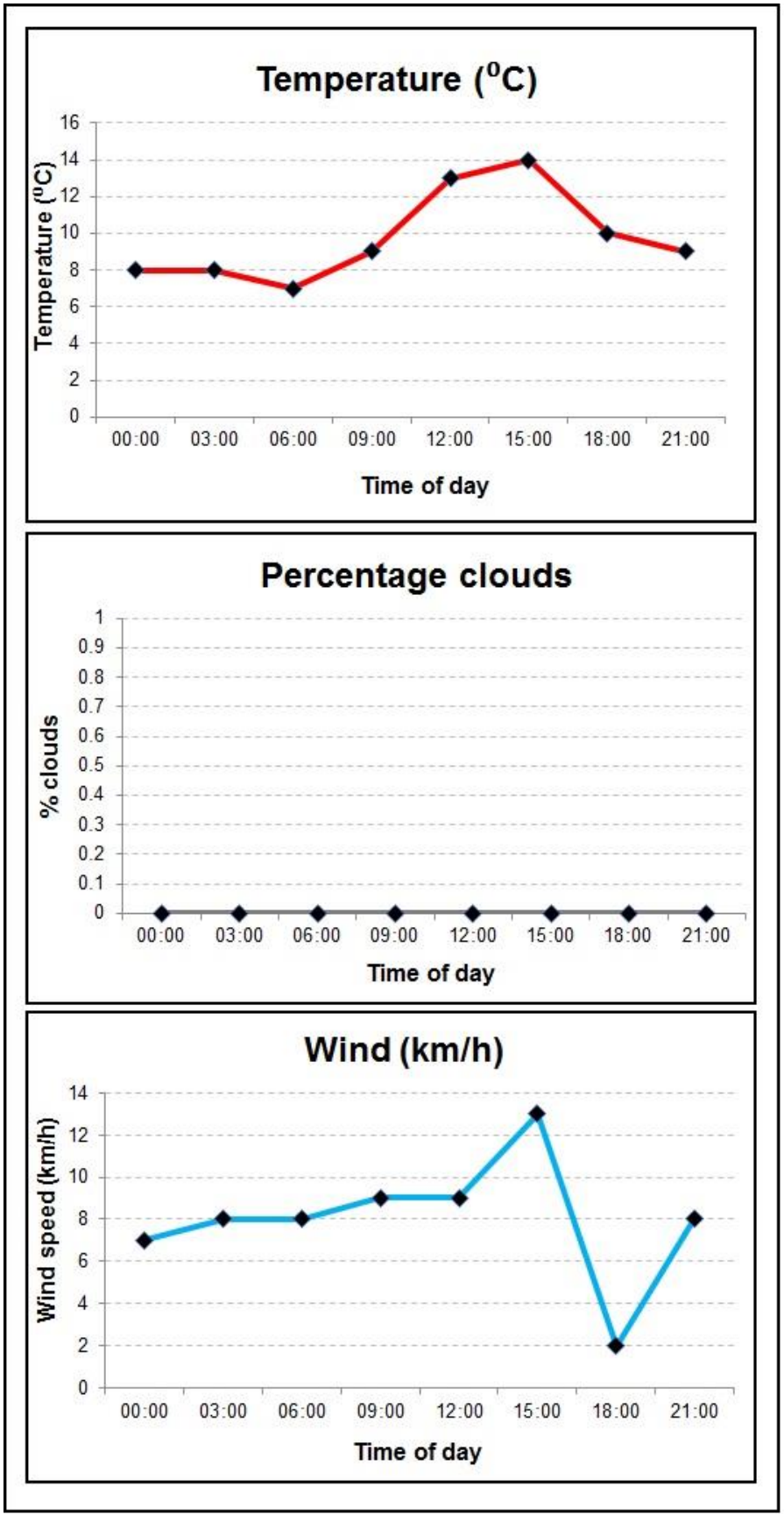


Figure 9 Weather conditions in the study area over the surveying period (31 July 2024). The time of day is indicated, along with the temperature (in °C), percentage cloud cover and wind speed (in km/h) (weather data sourced from https://www.worldweatheronline.com).

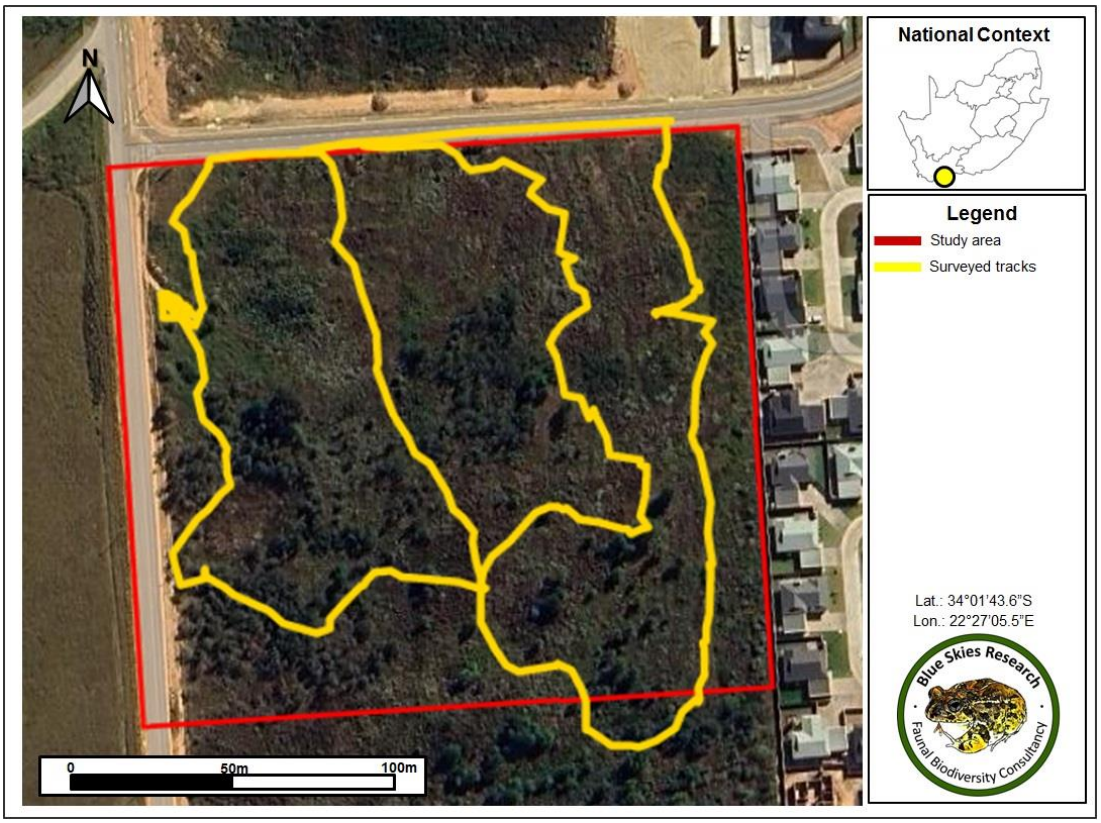


Figure 10 Spatial tracks recorded by GPS for all the search meanders across the study area over the surveying period.

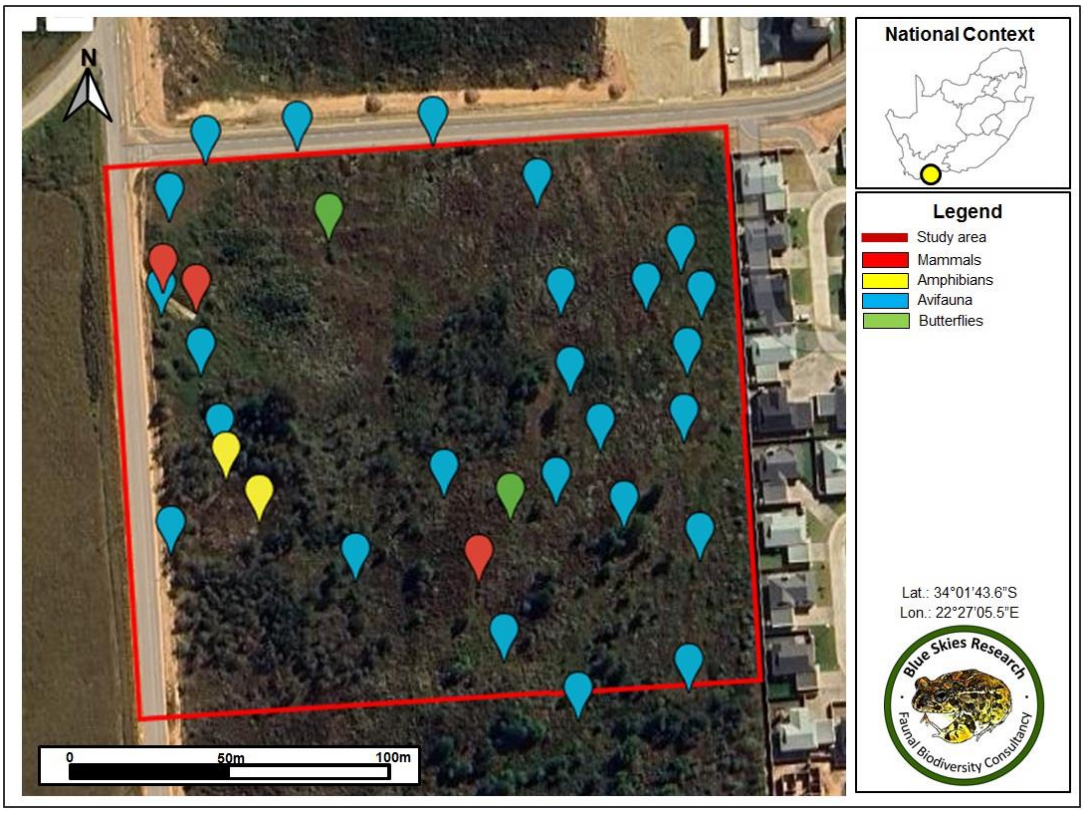


Figure 11 Spatial locations of all the faunal observations across the study area over the surveying period.

6. Assumptions and limitations

Considering the field survey, it is possible that the surveying period did not correspond to the activity period or activity season of some species. Coupled to this, the thick and tangled nature of the remaining Fynbos habitats affected sampling efforts as not all areas on the site could be surveyed, and not all cryptic species (especially small mammals) could be observed. Taken together therefore, the current rendering of the faunal composition within the study area only partly reflects the true faunal species richness of, and faunal abundances on the site. Even so, the desktop species lists for the study area (Appendices A and B) utilized the most up-to-date and representative distributional data available, and therefore all SCC within these faunal groups which have distributions overlapping the study area were considered in this report. Furthermore, ecosystem integrity on the site is deduced based on its spatial location, habitat conditions and observed faunal biodiversity patterns.

7. Faunal habitat types within the study area

The study area is comprised of three broadly identified habitat types (Figure 12, Table 2). The majority of the site harbours shrubland comprising remnant Fynbos heathland vegetation with instances of alien and invasive trees along with pioneer *Helichrysum* shrubs and Brambles. Evidence of the extensive clearing of this alien and invasive vegetation is also apparent. A small artificial wetland / wet depression area is located in the south-western part of the site. Finally, the site is bordered by Beach Road to the west where significant noise, vibration and dust emanates from on a daily basis. Collectively, habitats on the site appear to be relatively degraded while furthermore being subjected to daily disturbances.

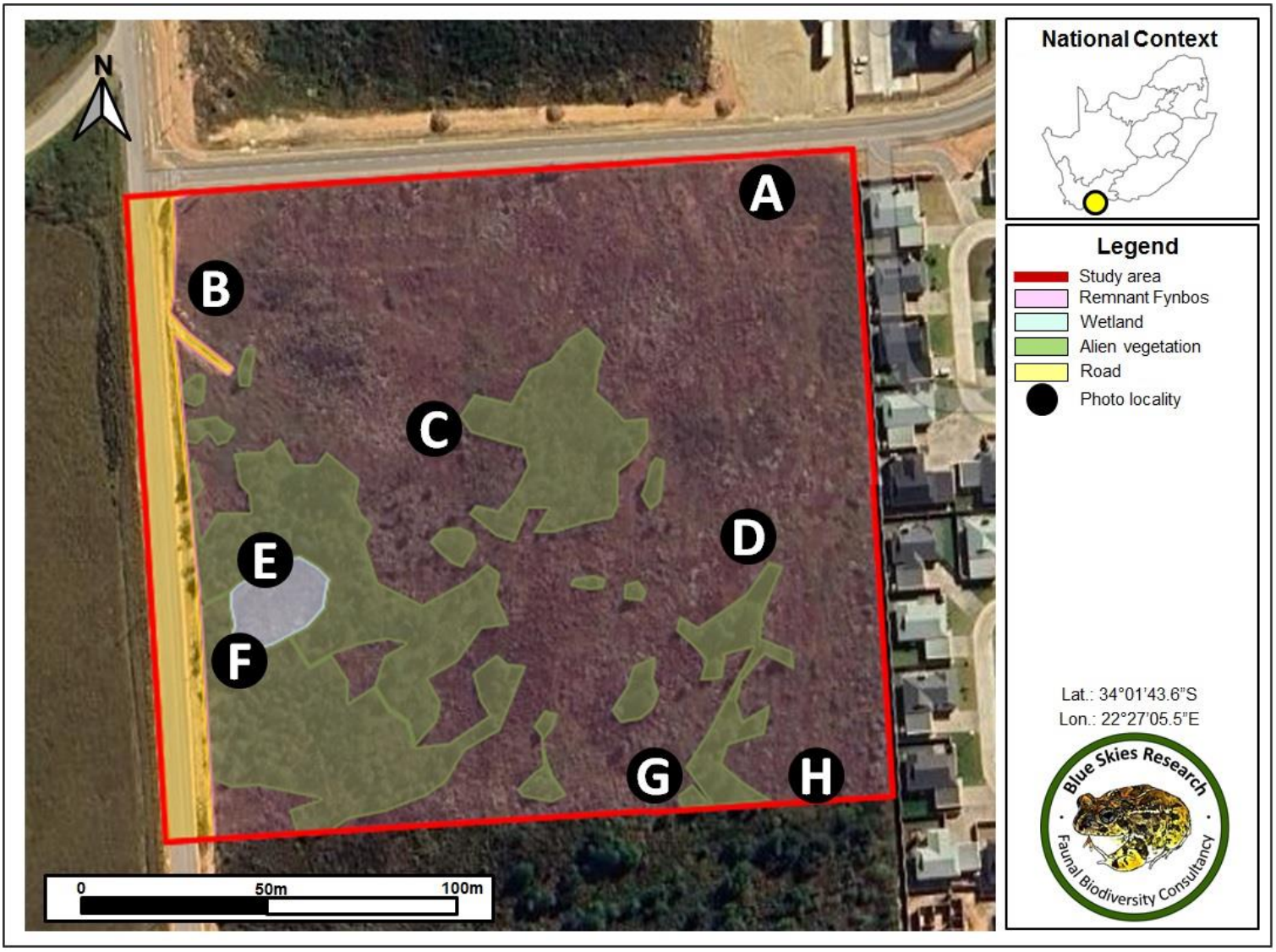
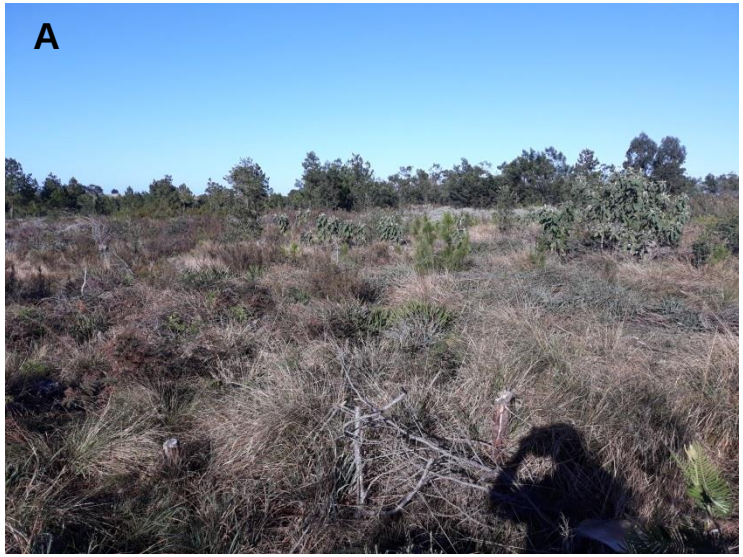


Figure 12 A broad indication of the spatial extent of habitat types within the study area. Photo localities (A to H) correspond to the habitat photos in Table 2.

Table 2 Habitat locations, habitat descriptions and visual representations of the different habitat types within the study area. Location designations (A to H) correspond to the photo locations in Figure 12.

Location	Habitat description	Photo 1	Photo 2
A -34.02805, 22.45228 **B** -34.02829, 22.45068	**Remnant Fynbos** The majority of the site harbours remnant Fynbos heathland vegetation with instances of alien and invasive trees, along with pioneer *Helichrysum* shrubs and Brambles		

C -34.02862, 22.45131 **D** -34.02889, 22.45222		 
E -34.02895, 22.45082 **F** -34.02918, 22.45074	**Wetland / wet depression** This habitat constitutes a small artificial wetland / wet depression area is located in the south-western part of the site.	 

G -34.02945, 22.45195 **H** -34.02947, 22.45241	**Alien vegetation** This habitat comprises instances of alien and invasive trees such as Pine over parts of the site. Evidence of the extensive clearing of this alien and invasive vegetation is also apparent		

8. Faunal and avifaunal composition within the study area

8.1 Mammals

8.1.1 Desktop assessment

The distribution of 64 mammal species overlap with the study area, 57 of which are currently classified as “Least concern” by the IUCN Red List of Threatened Species (IUCN, 2021; Appendix A). The seven remaining species represent mammal SCC, and include the following:

- The Duthie's Golden Mole (*Chlorotalpa duthieae*) classified as “Vulnerable”,
- Fynbos Golden Mole (*Amblysomus corriae*) classified as “Near-Threatened”,
- Leopard (*Panthera pardus*) classified as “Vulnerable”,
- African Clawless Otter (*Aonyx capensis*) classified as “Near-Threatened”,
- Grey Rhebok (*Pelea capreolus*) classified as “Near-Threatened”,
- Long-tailed Forest Shrew (*Myosorex longicaudatus*)classified as “Endangered”, and
- White-tailed Rat (*Mystromys albicaudatus*) classified as “Vulnerable” by the IUCN Red List of Threatened Species.

Within the study area landscape, observational records for only eight mammal species currently exist (Appendix A), with one of these species (the African Clawless Otter) representing a mammal SCC.

8.1.2 Field survey

Only three mammal species were recovered within the study area (Figures 13 and 14), all of which are currently classified as “Least concern” by the IUCN (Appendix C). The site harbours single signs of the presence of two small antelope species, the Cape Grysbok (*Raphicerus melanotis*) and Common Duiker (*Sylvicapra grimmia*) which appear to ephemerally traverse the area, likely given suitable cover to lay up in during the day. The presence of one small mammal predator, the Marsh

Mongoose (*Atilax paludinosus*) was also noted, and may similarly follow suitable cover along with the presence of a likely small vertebrate and invertebrate prey base. Overall, mammal diversity on the site appears impaired and may be linked to its small spatial extent, isolated nature, per-urban setting and relatively degraded habitat structure.

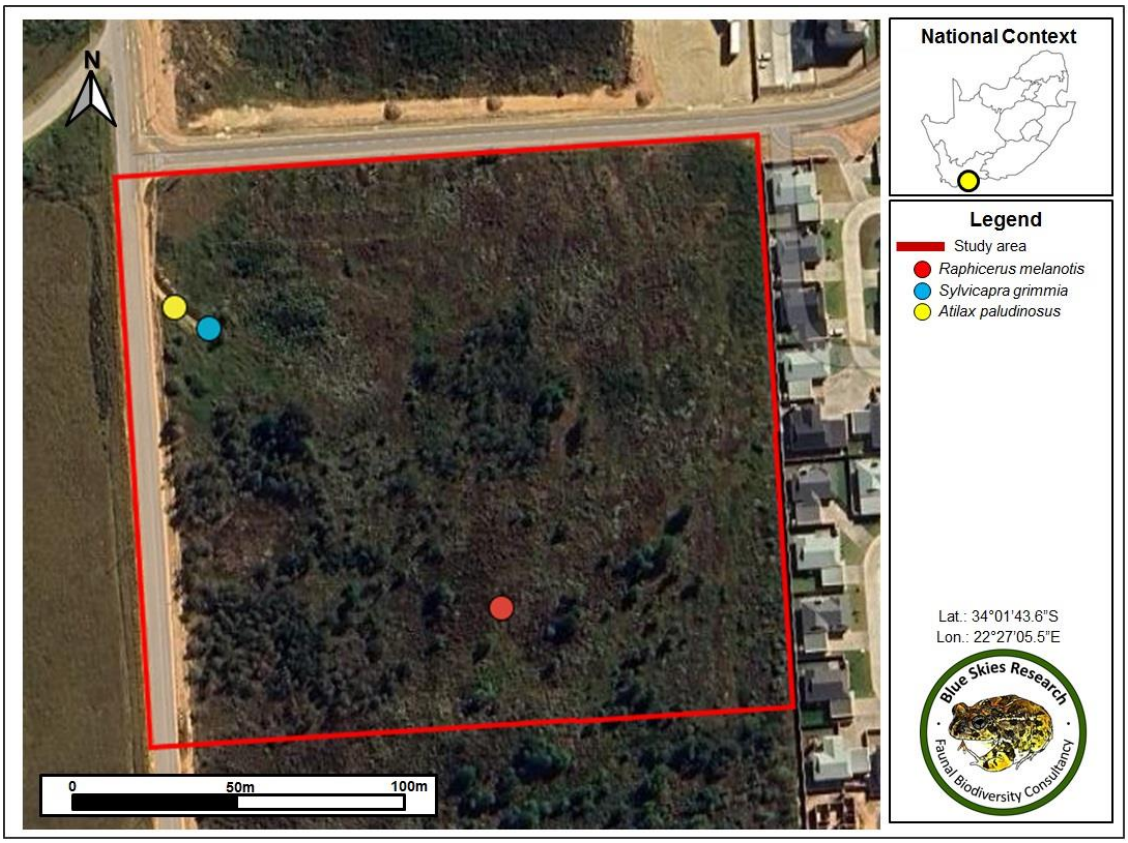


Figure 13 Spatial locations of the different mammal species recorded within the study area.

Figure 14 Photographic evidence of the different mammal species recorded in the study area. A) Track of the Cape Grysbok (*Raphicerus melanotis*). B) Track of the Common Duiker (*Sylvicapra grimmia*). C) Tracks of the Marsh Mongoose (*Atilax paludinosus*).

8.2 Amphibians

8.2.1 Desktop assessment

The distribution of 14 amphibian species overlap with the study area, 13 of which are currently classified as “Least concern” and one, the Knysna Leaf-folding Frog (*Afrixalus knysnae*), classified as “Endangered” by the IUCN (Appendix B). Within the study area landscape, observational records for six amphibian species currently exist, all of which are classified as “Least concern” by the IUCN.

8.2.2 Field survey

Only a single species, the Painted Reed Frog (*Hyperolius marmoratus*) which is currently classified as “Least concern” by the IUCN (Appendix C), was detected at the small artificial wetland / wet depression in the south-west of the site. This mesic area harbours standing water along with emergent reed vegetation, thereby offering a suitable breeding area for this common species (Figure 15).

Figure 15 Spatial location of the one frog species recorded in the study area.

8.3 Avifauna

In total, 24 bird species were recorded within the study area, all of which are currently classified as “Least concern” by the IUCN (Figures 16 and 17; Appendix C). These all represent relatively common species associated with Fynbos environments and are likely present due to a suitable remnant Fynbos structure on the site. Although the site is of an isolated nature in the landscape, it appears to offer a stepping stone for these flying species through providing suitable perching opportunities. It is also likely that the area provides a suitable prey base for insectivorous species, with some plants also providing nectar for nectar-feeding avifauna. To this end, the site supports a moderate avifaunal diversity.

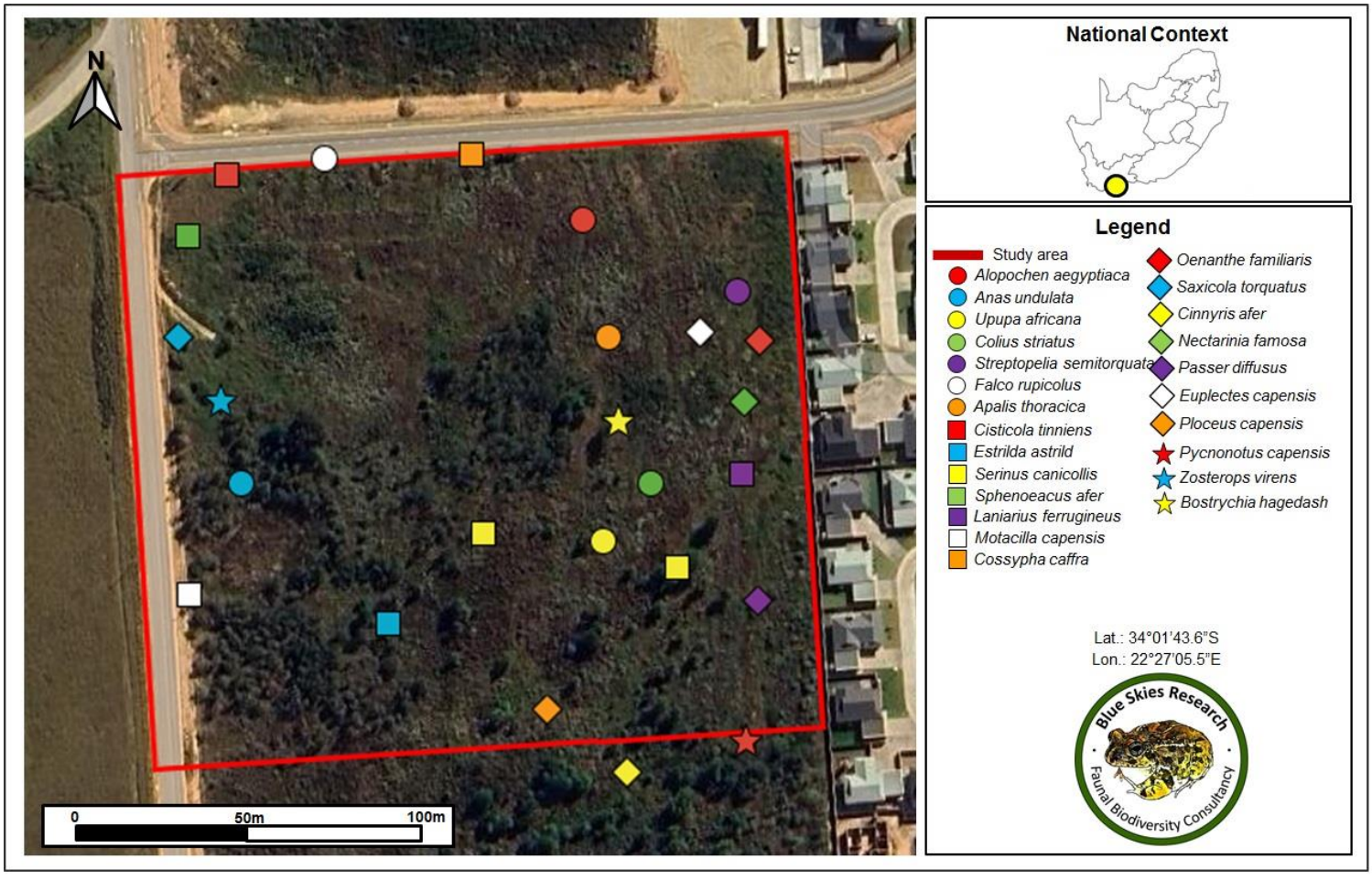


Figure 16 Spatial locations of the different avifaunal species recorded within the study area.

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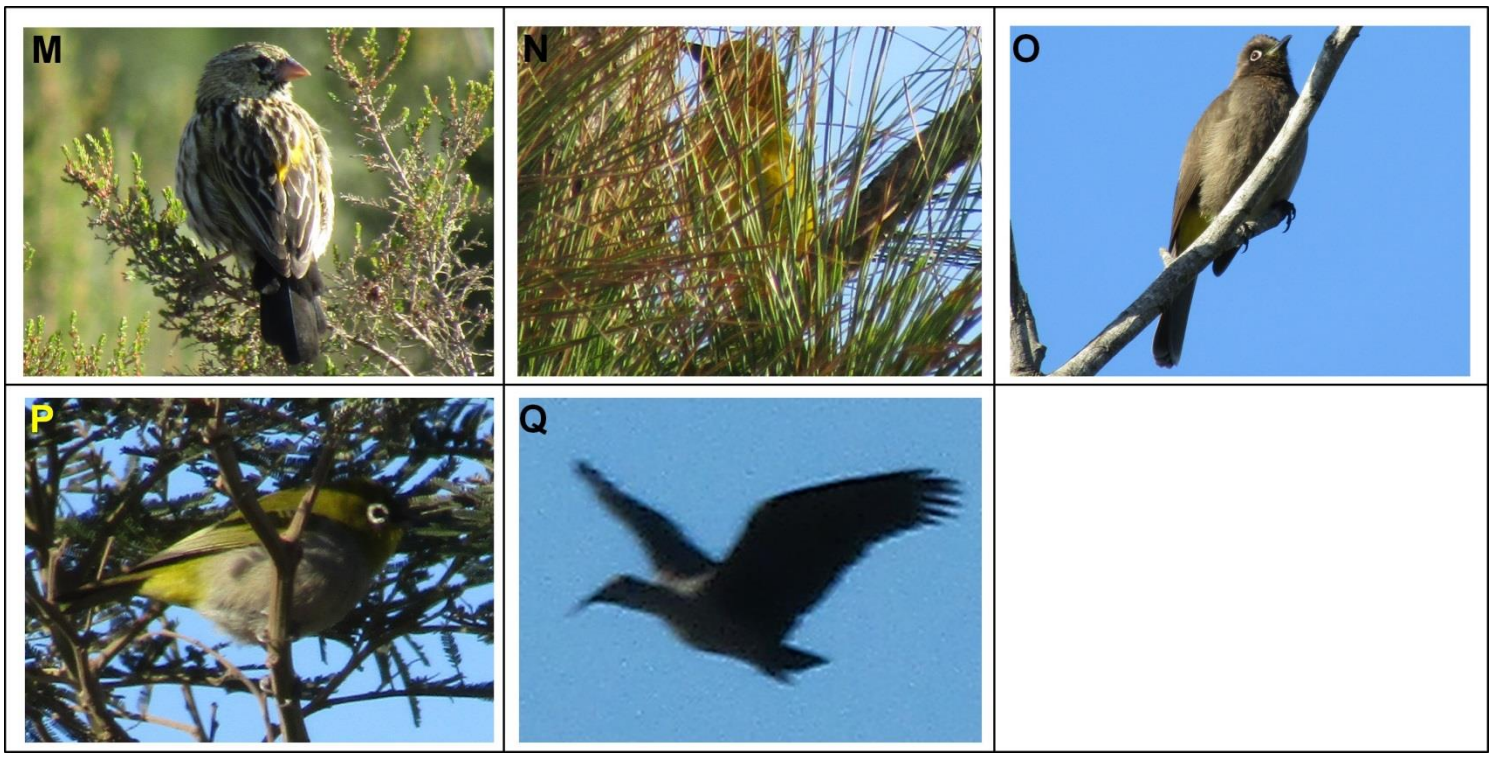


Figure 17 Photographic evidence of different avifaunal species recorded in the study area. A) Egyptian Goose (*Alopochen aegyptiaca*). B) Speckled Mousebird (*Colius striatus*). C) Red-eyed Dove (*Streptopelia semitorquata*). D) Rock Kestrel (*Falco rupicolus*). E) Levaillant's Cisticola (*Cisticola tinniens*). F) Cape Canary (*Serinus canicollis*). G) Cape Grassbird (*Sphenoeacus afer*). H) Cape Wagtail (*Motacilla capensis*). I) African Stonechat (*Saxicola torquatus*). J) Greater Double-collared Sunbird (*Cinnyris afer*). K) Malachite Sunbird (*Nectarinia famosa*). L) Southern Grey-headed Sparrow (*Passer diffusus*).

M) Yellow Bishop (*Euplectes capensis*). N) Cape Weaver (*Ploceus capensis*). O) Cape Bulbul (*Pycnonotus capensis*). P) Cape White-eye (*Zosterops virens*). Q) Hadada Ibis (*Bostrychia hagedash*).

8.4 Butterflies

Only a single butterfly species, the Rainforest Brown (*Cassionympha cassius*), was located in the study area, which is currently classified as “Least concern” by the IUCN (Figures 18 and 19; Appendix C). This lack of butterfly diversity may be attributed to a lack of flowering plants along with the colder Winter conditions, but may also be due to the remnant and degraded nature of the Fynbos habitats on the site.

Figure 18 Spatial locations of the one butterfly species recorded within the study area.

Figure 19 Photographic evidence of the one butterfly species recorded in the study area. A) Rainforest Brown (*Cassionympha cassius*).

8.5 Faunal and avifaunal diversity and distributions within the study area

The study area is limited in spatial extent (only 3.4 hectares) and is relatively isolated from natural habitats in the surrounding landscape (due to surrounding settlements and agricultural land uses) while further representing a peri-urban setting with significant signs of daily disturbances. Furthermore, habitats on the site do not exist in a pristine condition, with the most prominent feature pertaining to remnant Fynbos heathland, albeit with notable instances of alien and invasive vegetation and pioneer shrubs (Section 7).

As a result, the study area supports a relatively impaired terrestrial faunal diversity and a moderate avifaunal diversity with only relatively common species of “Least Concern” (IUCN, 2021) being present. Although some predator-prey dynamics appear intact (given the presence of one small mammal predator and a number of insectivorous birds), the intactness of the ecosystem here is relatively compromised given considerations of isolation and current impacts. In conclusion therefore, 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 three (one mammal, one amphibian and one invertebrate) SCC listed in the DFFE Screening Tool (Table 1), the potential occurrence of seven other mammal SCC within the study area was assessed (Table 3) based on their recovery in the desktop assessment. 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 study area landscape. The species is furthermore likely to also occur on the site, given the presence of suitable habitat.

Medium - The species was not confirmed as present within the study area during the field survey, and has not been recorded in the study area landscape. Suitable habitat for the species is however present on the site.

Low - The species was not confirmed as present within the study area during the field survey and has not been recorded in the study area landscape. No suitable habitat for the species is present on the site.

Among the faunal SCC considered, all were recovered as having a “Low” or “Medium” likelihood of occurring on the site. This is because conditions on the site currently point to altered ecosystem dynamics, given a remnant habitat structure, the site’s relatively small and isolated nature in the landscape and its location in a peri-urban setting with significant daily signs of disturbances. To this end, the site is unlikely to support any significant or permanent subpopulations of faunal SCC.

Table 3 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 in the study area	Justification of probability
Sensitive Species 8	Sensitive Species 8	*Sensitive Species 8*	Sensitive Species 8	-	The species thrives in a wide range of forested and wooded habitats, including primary and secondary forests, gallery forests, dry forest patches, coastal scrub farmland and regenerating forest from sea level up to 3 000 m above sea level. They can persist in small patches of modified or degraded forest and thicket, even on the edge of urban centres.	Low	The species was not confirmed as present on the site during the field survey, and has not been documented within the study area landscape. Although the site does harbour some dense Fynbos vegetation (albeit of a remnant and degraded nature), it is relatively small and isolated in the landscape and is further located in a peri-urban setting with significant daily signs of disturbances. It is therefore unlikely that the species will be present on the site.
Afrosoricida	Chrysochloridae	*Chlorotalpa duthieae*	Duthie's Golden Mole	Vulnerable	The species occurs on alluvial sands and sandy loams in Southern Cape Afrotemperate forests (especially coastal platform and scarp forest patches) in the Fynbos and Moist Savanna biomes (Bronner, 2015). The species also thrives in cultivated areas and gardens.	Low	The species was not confirmed as present on the site during the field survey, and has not been documented within the study area landscape. The site furthermore does not harbour the alluvial sands and sandy loams in Southern Cape Afrotemperate forests which the species prefers. It is therefore unlikely that the species will be present on the site.
Afrosoricida	Chrysochloridae	*Amblysomus corriae*	Fynbos Golden Mole	Near-Threatened	The species prefers sandy soils and soft loams in Mountain Fynbos, Grassy Fynbos and Renosterveld of South West Cape (Bronner and Mynhardt, 2015). Also in Afromontane forest and southern African moist savanna along the southern Cape coast. The species furthermore thrives in gardens, cultivated lands, golf courses and livestock paddocks, and is also present in exotic plantations, but apparently at lower densities (Bronner, 2013).	Low	The species was not confirmed as present on the site during the field survey, and has not been documented within the study area landscape. The site furthermore does not harbour the sandy soils and soft loams with Mountain Fynbos, Grassy Fynbos and Renosterveld, or Afromontane forest and southern African moist savanna, which the species prefers. It is therefore unlikely that the species will be present on the site.

Carnivora	Felidae	*Panthera pardus*	Leopard	Vulnerable	The species occurs in the widest range of habitats among any of the Old World Cats, including the larger part of Africa and Asia (Nowell and Jackson 1996). Generally, Leopards prefer medium-sized ungulate prey (10- 40 kgs) where available (Hayward et al. 2006). They have a highly varied diet, however, feeding on insects, reptiles, birds and small mammals up to large ungulates.	Low	The species was not confirmed as present on the site during the field survey, and has not been documented within the study area landscape. The site also is relatively small and isolated in the landscape and is further located in a peri-urban setting with significant daily signs of disturbances. It is therefore unlikely that the species will be present on the site.
Carnivora	Mustelidae	*Aonyx capensis*	African Clawless Otter	Near-Threatened	The species occupies aquatic freshwater areas and is seldom found far from water. It may occur in many seasonal or episodic rivers provided suitable-sized pools persist (Nel and Somers, 2007, Somers and Nel, 2013).	Low	The species was not confirmed as present on the site during the field survey, but has been documented within the study area landscape. Although a small wetland / wet depression area is present on the site, it lacks suitable prey items (such as fish and crabs) and is of a relatively shallow nature, and not suitable for the presence of this species. It is therefore unlikely that the species will be present on the site.
Cetartiodactyla	Bovidae	*Pelea capreolus*	Grey Rhebok	Near-Threatened	The species is associated with the rocky hills of mountain fynbos. They are predominantly browsers, often feeding on ground-hugging forbs, and largely water independent, obtaining most of their water requirements from their food (Avenant, 2013). Forbs constitute the majority of their diet, especially the flowers and leaves of the plants (Esser, 1973, Rowe-Rowe, 1983, Beukes, 1988). They require good grass cover within their home ranges for shelter and to hide from predators, but often use steep open areas with little cover when feeding. In the Western Cape, they are often observed on agricultural lands (Radloff, 2008).	Low	The species was not confirmed as present on the site during the field survey, and has not been documented within the study area landscape. The site furthermore does not harbour the rocky hills of mountain fynbos or high grass cover which the species prefers. It is therefore unlikely that the species will be present on the site.
Eulipotyphla	Soricidae	*Myosorex longicaudatus*	Long-tailed Forest Shrew	Endangered	The species is found in forests, forests edges, fynbos and boggy grassland, and depends on moist microhabitats (typically above the 800 mm isohyet). It is restricted to pristine primary habitat that has not been degraded (Baxter et al. 2020).	Low	The species was not confirmed as present on the site during the field survey, and has not been documented within the study area landscape. The site also harbours relatively degraded vegetation, and does not exist in the pristine condition required by the species. It is therefore unlikely that the species will be present on the site.

Rodentia	Nesomyidae	*Mystromys albicaudatus*	White-tailed Rat	Vulnerable	The species' habitat requirements are not well known, but it appears associated with calcrete soils within grasslands. The species can occur in disturbed areas (heavily grazed, D. MacFadyen pers. obs.) and in sparse grasslands (Kuyler, 2000; Kaiser, 2006; Avenant and Cavallini, 2007; Avenant and Schulze, 2012; Morwe 2013), but does not occur in transformed habitat (croplands, fallow fields, or old fields). In the Blaauwberg Conservation Area (BCA), Western Cape Province it may occur in Dune Thicket on sloped clay soils.	Low	The species was not confirmed as present on the site during the field survey, and has not been documented within the study area landscape. Furthermore, the site does not harbour the calcrete soils within grasslands required by the species, and furthermore exists in a relatively degraded state. It is therefore unlikely that the species will be present on the site.
Anura	Hyperoliidae	*Afrixalus knysnae*	Knysna Leaf-folding Frog	Endangered	The species occurs in a coastal mosaic of vegetation types, including mountain fynbos heathland and forest. It breeds in small dams and shallow semi-permanent water with much emergent vegetation, and even in well vegetated ornamental garden ponds. It is suspected that this species requires high water quality for breeding.	Medium	The species was not confirmed as present on the site during the field survey, and has not been documented within the study area landscape. A small wetland / wet depression area is present on the site, and it is possible that the species may ephemerally breed here. Even so, water quality in this area appears relatively poor with only a single frog species detected here. To this end, it is unlikely that this wetland / wet depression area will harbour a significant or permanent subpopulation of the species.
Orthoptera	Acrididae	*Aneuryphymus montanus*	Yellow-winged Agile Grasshopper	Vulnerable	The species is associated with fynbos vegetation, where it has been collected "amongst partly burnt stands of evergreen Sclerophyll in rocky foothills" (Brown, 1960). It prefers south-facing cool slopes (Kinvig, 2005).	Low	The species was not confirmed as present on the site during the field survey, and has not been documented within the study area landscape. The site is furthermore devoid of any of the partly burnt stands of evergreen Sclerophyll in rocky foothills, or south-facing cool slopes preferred by the species. It is therefore unlikely that the species will be present on the site.

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 faunal SCC, the evaluation of the Site Ecological Importance (SEI) was performed for a combination of all three assessed faunal groups (i.e., mammals, amphibians 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 4 and Table 5 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 4 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 5 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 6 (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 6 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 7. 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 7 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 8. The interpretation of the development actions allowed for each SEI category are outlined in Table 9.

Table 8 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 9 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 10 with the spatial representation for each habitat and its concomitant SEI category portrayed in Figure 20. None of the on-site habitats currently harbour any notable or significant subpopulations of faunal SCC with the site being of a limited in spatial extent and isolated nature in a peri-urban setting, and with significant daily signs of disturbances and of a relatively degraded nature. 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 9). To this end, this renders the entire site as developable from a faunal sensitivity perspective.

Table 10 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 SCC.	**Low** - Small area (>1ha but <5ha) with several minor and major current negative ecological impact (alien and invasive plants, a degraded structure and daily disturbances).	**Very high** - Because this habitat is relatively small and of a peri-urban and relatively degraded nature, it will be able to recover its original faunal species diversity relatively quickly (less than 5 years).	Very low - BI = Very low; RR = Very high
Wetland / wet depression	**Low** - No confirmed or highly unlikely presence of populations of terrestrial faunal SCC.	**Very low** - Very small area (<1ha) of an apparent artificial nature.	**Very high** - Because this habitat appears of an artificial nature, it may be replicated to produce similar habitat characteristics relatively quickly (less than 5 years).	Very low - BI = Very low; RR = Very high
Alien vegetation	**Very low** - No confirmed and a highly unlikely presence of populations of terrestrial faunal SCC.	**Very low** - Very small area (<1ha) with several major current negative ecological impacts (alien and invasive vegetation).	**Very high** - Because this habitat comprises alien and invasive vegetation, it can recover to this degraded state relatively quickly (less than 5 years).	Very low - BI = Very low; RR = Very high

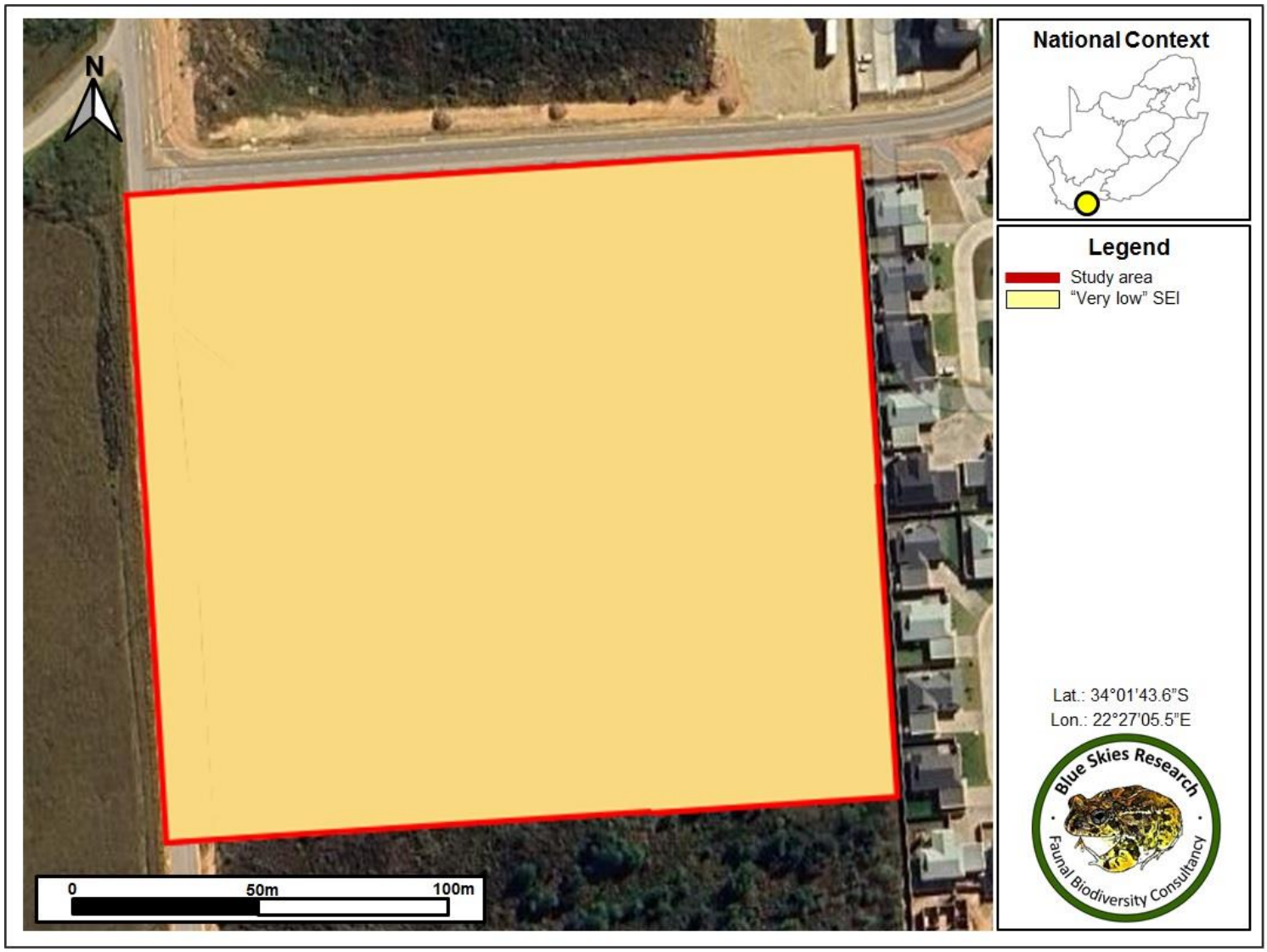


Figure 20 Spatial representation of the SEI of habitat types within the study area.

11. Current impacts, project impacts and mitigation measures

11.1 Current impacts

Current impacts within the study area include the following:

- The site exhibits moderate infestations of alien and invasive trees along with pioneer *Helichrysum* shrubs and Brambles, with only remnant stands of Fynbos heathland remaining.
- The site is bordered by Beach Road to the west and an access road to the north which services a residential complex to the east. There is constant daily noise and vibration from vehicle traffic and pedestrians from these adjacent roads.
- There are some evidence of pollution (illegal waste dumping) along the road margins bordering the site.
- In a broader context, the site is surrounded by residential areas to the north and open farmland to the west, south and east, thereby rendering it of an isolated nature in the surrounding landscape.
- The site harbours a relatively impaired terrestrial faunal and avifaunal diversity with only relatively common species of “Least Concern” being present.

Collectively, these current impacts are moderately severe to the point where the site does not form an important ecological link within the surrounding landscape, and does not provide vital ecosystem services. This renders the area of a lower sensitivity from a faunal perspective.

11.2 Anticipated project impacts

The proposed project footprint is estimated to be around 3.4 hectares in extent, with two development alternatives identified. Both development alternatives A and B will similar in the placement of construction footprints and will include the following infrastructure (Figures 21 and 22) but with alternative A (the preferred alternative) also including a stormwater swale to protect against flood damage (Figure 23):

- Construction of a gated estate with group housing units.
- Private streets
- Private open space
- A gate house and refuse area
- A commercial precinct

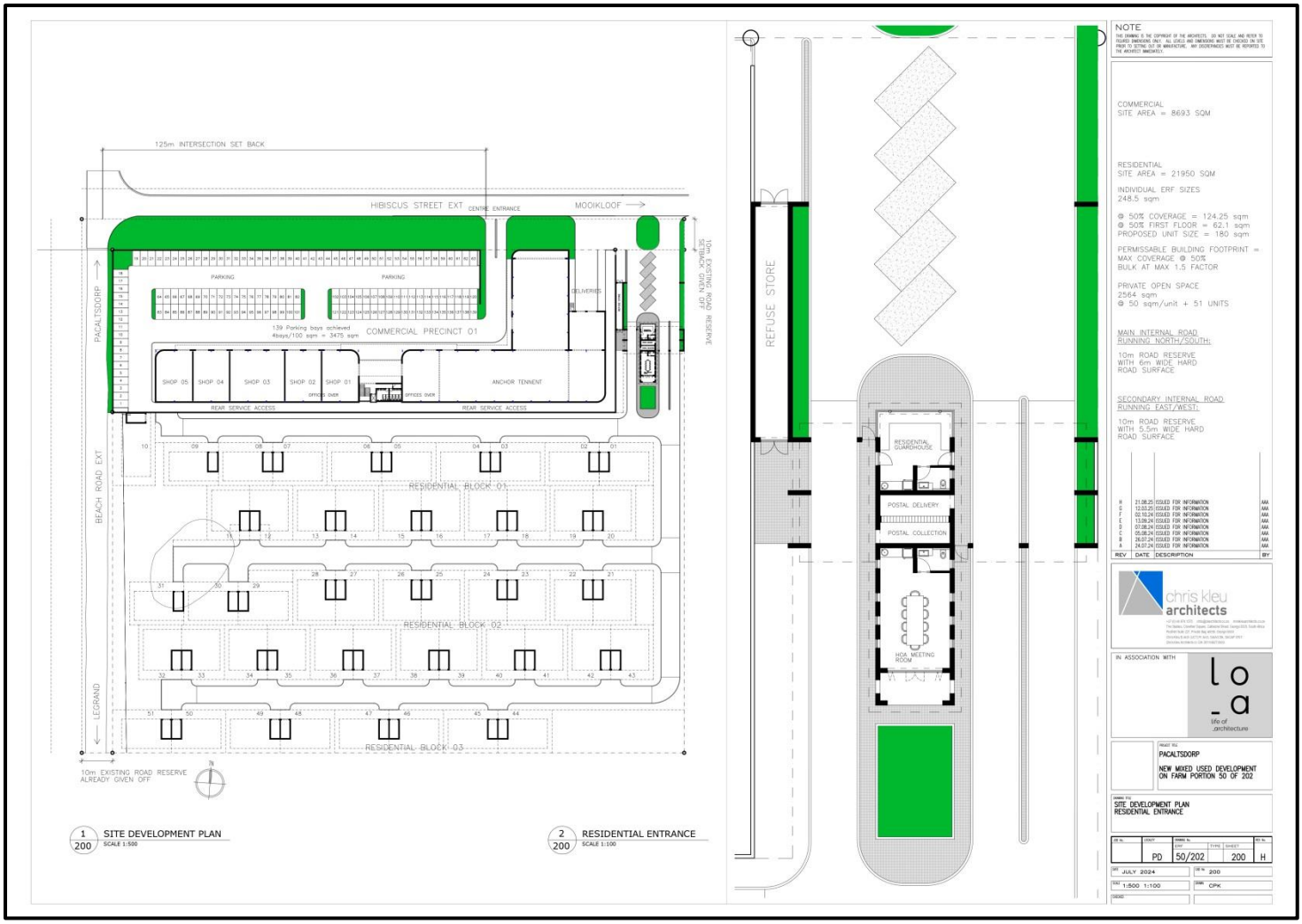


Figure 21 Site development plan (SDP) for the proposed development under alternative A (the preferred alternative).

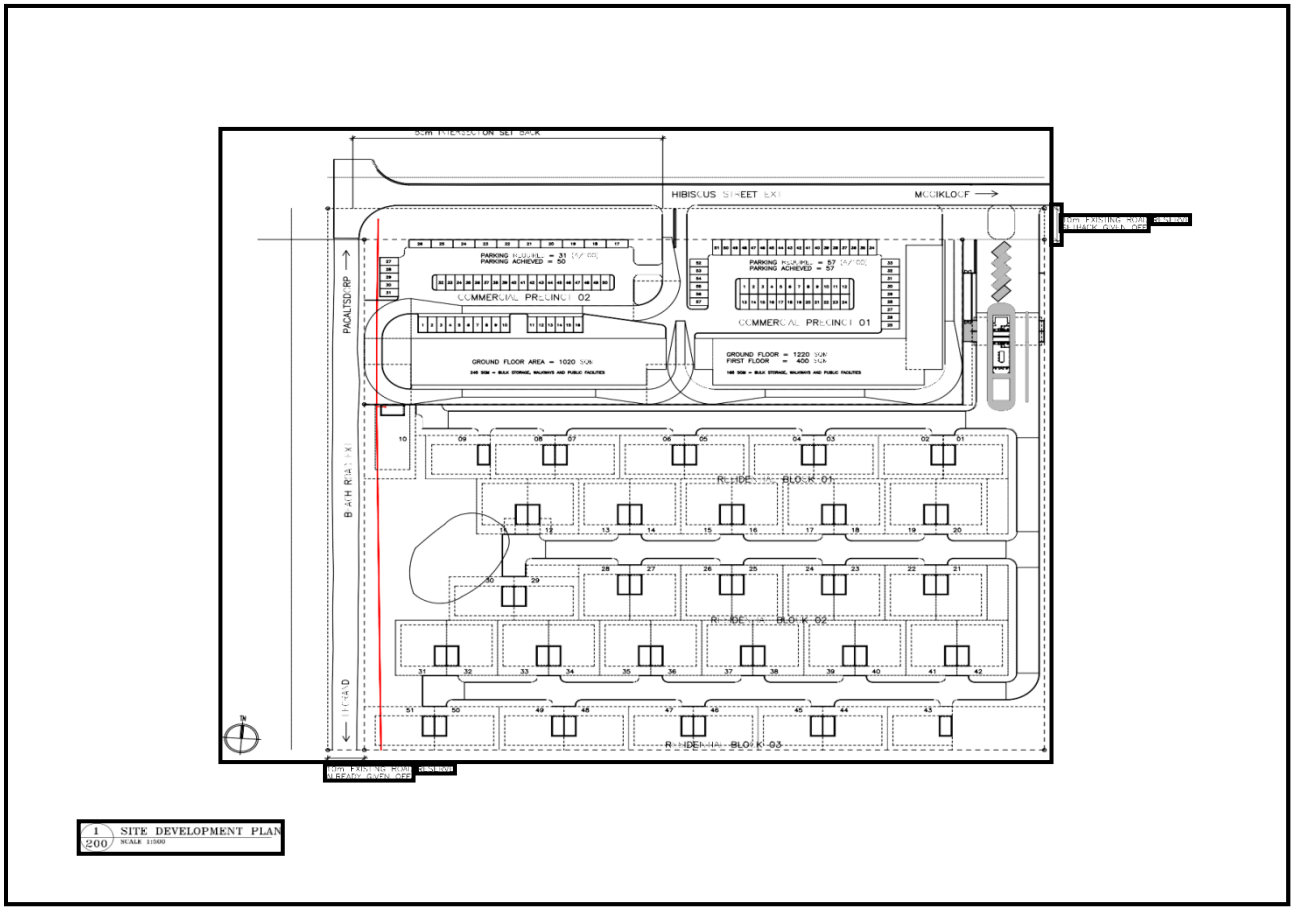


Figure 22 Site development plan (SDP) for the proposed development under alternative B.

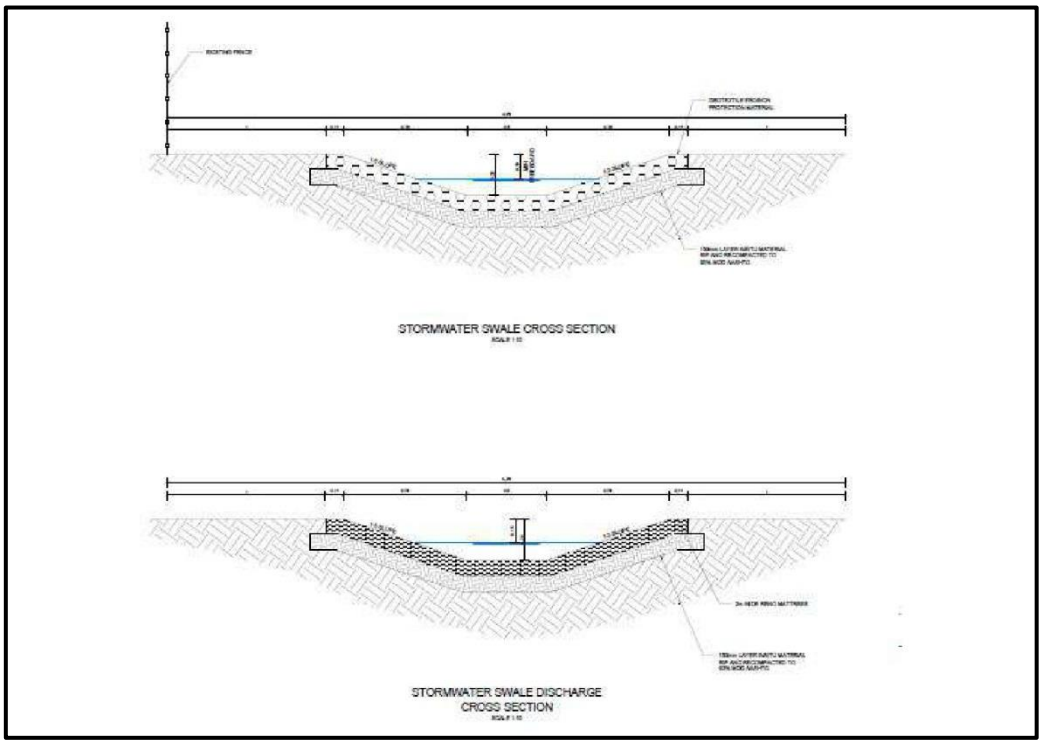


Figure 23 Cross section of the proposed stormwater swale.

Planned development activities for the study area will include:

- Clearing of the vegetation and soil preparation,
- establishment of contractor laydown areas and stockpiles for construction materials,
- installation of roads and services, and
- construction of the commercial and residential units.

Direct impacts from these activities during the construction phase will include:

- Destruction of habitat,
- direct mortality or displacement of fauna,
- vibration and noise (through machinery and people), and
- contamination of ground water through chemical spills (e.g., fuel, oil and hazardous materials).

During the operational phase, the proposed commercial and residential units will be established and none of the habitat on the site will remain. This newly developed area may result in several indirect impacts to areas surrounding the development footprint, including:

- Increase vehicle and foot traffic to the area,
- increased collision of fauna with vehicles, and
- increased pollution of the surrounding environment.

Considering the placement of this development in an already peri-urban setting outside of natural areas along with its placement along already busy used road networks, these indirect impacts are not expected to severely compromise ecological patterns in the broader landscape. To this end, no impact management actions are suggested to reduce these impacts.

11.3 Impact management actions and mitigation measures

Currently, all habitats on the site exist in a remnant, artificial or degraded and secondary state with an impaired faunal profile and low ecosystem integrity, with the site also retrieved as having a “Very low” SEI. The site is therefore of a lower faunal sensitivity and the loss of the constituent habitats is highly unlikely to impinge on biodiversity or ecological patterns and processes at local, regional or national scales. To this end, the entire site is developable from a faunal perspective and only minor impact management actions are suggested over the construction phase which includes the following:

- The project footprint should be kept at an absolute minimum (i.e. minimisation mitigation) so as not to degrade or compromise any habitats outside of the receiving environment. Site clearing activities (including for contractor laydown areas) are to remain within the authorised footprint.
- Storage of fuel, chemicals and other hazardous substances should be done in suitable secure weatherproof containers with impermeable and bunded floors to limit pilferage or spillage into the environment.
- Clean-up of any spillages (e.g. oil, fuel) should proceed immediately and the contaminated soil should be removed and disposed of appropriately.
- 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 (i.e., to avoid and minimise the direct mortality of faunal species). These animals should be relocated to an area immediately outside of the project footprint, but under no circumstances any further away.

12. Conclusion

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

- Terrestrial faunal 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),
- impact management actions to be considered during the construction phases of the project (Section 11).

12.1 Listed sensitivity in the DFFE Screening Tool Report

The study area has been identified as being of a “Medium 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 relatively degraded habitat structure on the site which harbours an impaired faunal diversity, and does not constitute suitable habitat for any of the SCC considered. Furthermore, the site does not form an important ecological link in the surrounding landscape given its small size and isolated nature.

12.2 Overlap with a degraded Critical Biodiversity Area (CBA2)

The site currently overlaps with a degraded Critical Biodiversity Area (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 the site does exist in a relatively 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 relatively degraded state with only remnant stands of Fynbos and infestations of alien and invasive and pioneer *Helichrysum* shrubs and Brambles.
- The site displays poor connectivity to natural areas in the surrounding landscape due to surrounding settlements and agricultural land uses.
- The site supports a relatively impaired faunal and avifaunal diversity with only relatively common species of “Least Concern” (IUCN, 2021) being present.
- The site does not contain any notable or significant subpopulations of any terrestrial faunal SCC.
- The site is retrieved as having a “Very low” SEI.

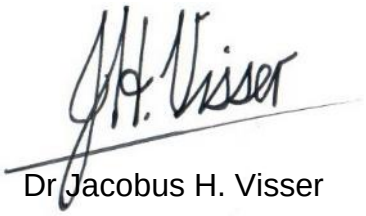
Taken together, habitats and faunal components on the site do not constitute a significant link in the biodiversity and ecological patterns and processes within the study area landscape, and loss of habitats and species here should no adversely impinge on local, regional or national biodiversity targets. From a faunal biodiversity perspective therefore, there is no reason why development of the entire study area should not proceed under either alternatives A or B.

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 mammal species which have a distribution overlapping with the study area (constructed with reference to Skinner and Chimimba, 2005). Species in bold have been previously recorded within the study area landscape (QDGS: 3422AB, MammalMAP, https://vmus.adu.org.za/; iNaturalist, www.iNaturalist.org). 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.

Mammals Desktop Species List				
Order	**Family**	**Species**	**Common name**	**Status**
Afrosoricida	Chrysochloridae	*Chlorotalpa duthieae*	Duthie's Golden Mole	Vulnerable
		Chrysochloris asiatica	**Cape Golden Mole**	**Least Concern**
		Amblysomus corriae	Fynbos Golden Mole	Near-Threatened
Artiodactyla	Bovidae	*Oreotragus oreotragus*	Klipspringer	Least Concern
		Pelea capreolus	Grey Rhebok	Near-Threatened
		Philantomba monticola	Blue Duiker	Least Concern
		Raphicerus campestris	Steenbok	Least Concern
		Raphicerus melanotis	Cape Grysbok	Least Concern
		Sylvicapra grimmia	Common Duiker	Least Concern
		Tragelaphus scriptus	**Southern Bushbuck**	**Least Concern**
Carnivora	Canidae	*Canis mesomelas*	Black-backed Jackal	Least Concern
		Otocyon megalotis	Bat-eared Fox	Least Concern
		Vulpes chama	Cape Fox	Least Concern
	Felidae	*Caracal caracal*	Caracal	Least Concern
		Felis silvestris	African Wild Cat	Least Concern
		Panthera pardus	Leopard	Vulnerable
	Hyaenidae	*Proteles cristata*	Aardwolf	Least Concern
	Herpestidae	*Atilax paludinosus*	Marsh Mongoose	Least Concern

		Cynictis penicillata	Yellow Mongoose	Least Concern
		Herpestes ichneumon	Egyptian Mongoose	Least Concern
		Herpestes pulverulentus	Cape grey Mongoose	Least Concern
	Mustelidae	***Aonyx capensis***	**African Clawless Otter**	**Near-Threatened**
		Ictonyx striatus	Zorilla	Least Concern
		Mellivora capensis	Honey Badger	Least Concern
		Poecilogale albinucha	African Striped Weasel	Least Concern
	Viverridae	*Genetta genetta*	Common Genet	Least Concern
		Genetta tigrina	**Cape Genet**	**Least Concern**
Chiroptera	Molossidae	*Tadarida aegyptiaca*	Egyptian Free-tailed Bat	Least Concern
	Nycteridae	*Nycteris thebaica*	Cape Long-eared Bat	Least Concern
	Pteropodidae	*Rousettus aegyptiacus*	Egyptian Fruit Bat	Least Concern
	Rhinolophidae	*Rhinolophus capensis*	Cape Horseshoe Bat	Least Concern
		Rhinolophus clivosus	Geoffroy's Horseshoe Bat	Least Concern
	Vespertilionidae	*Myotis tricolor*	Temminck's Hairy Bat	Least Concern
		Neoromicia capensis	Cape Bat	Least Concern
Eulipotyphla	Soricidae	*Crocidura cyanea*	Reddish-grey Musk Shrew	Least Concern
		Crocidura flavescens	Greater Red Musk Shrew	Least Concern
		Myosorex longicaudatus	Long-tailed Forest Shrew	Endangered
		Myosorex varius	Forest Shrew	Least Concern
		Suncus varilla	**Lesser Dwarf Shrew**	**Least Concern**
Hyracoidea	Procaviidae	***Procavia capensis***	**Rock Hyrax**	**Least Concern**
Lagomorpha	Leporidae	*Lepus capensis*	Cape Hare	Least Concern
		Lepus saxatilis	Cape Scrub Hare	Least Concern
		Pronolagus saundersiae	Hewitt's Red Rock Hare	Least Concern
Primates	Cercopithecidae	*Chlorocebus pygerythrus*	Vervet Monkey	Least Concern
		Papio ursinus	Chacma Baboon	Least Concern
Rodentia	Bathyergidae	*Bathyergus suillus*	Cape Dune Mole-rat	Least Concern
		Cryptomys hottentotus	African Mole-rat	Least Concern

		Georychus capensis	Cape Mole-rat	Least Concern
	Gliridae	*Graphiurus murinus*	Woodland Dormouse	Least Concern
	Hystricidae	***Hystrix africaeaustralis***	**Cape Porcupine**	**Least Concern**
	Muridae	*Acomys subspinosus*	Cape Spiny Mouse	Least Concern
		Gerbilliscus afra	Cape Gerbil	Least Concern
		Gerbillurus paeba	Hairy-footed Gerbil	Least Concern
		Micaelamys namaquensis	Namaqua Rock Rat	Least Concern
		Mus minutoides	**Pygmy Mouse**	**Least Concern**
		Myomyscus verreauxii	Verreaux's Mouse	Least Concern
		Otomys irroratus	Southern African Vlei Rat	Least Concern
		Rhabdomys pumilio	Four-striped Grass Mouse	Least Concern
	Nesomyidae	*Dendromus melanotis*	Grey Climbing Mouse	Least Concern
		Dendromus mesomelas	Brant's Climbing Mouse	Least Concern
		Mystromys albicaudatus	White-tailed Rat	Vulnerable
		Saccostomus campestris	Pouched Mouse	Least Concern
		Steatomys krebsii	Krebs' Fat Mouse	Least Concern
Tubulidentata	Orycteropodidae	*Orycteropus afer*	Aardvark	Least Concern

Appendix B

Appendix B Desktop species list of the amphibian species which have a distribution overlapping with the study area (constructed with reference to Preez and Carruthers, 2009). Species in bold have been previously recorded within the study area landscape (QDGS: 3422AB, FrogMAP, https://vmus.adu.org.za/; iNaturalist, www.iNaturalist.org). 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.

Amphibians Desktop Species List				
Order	**Family**	**Species**	**Common name**	**Status**
Anura	Brevicipitidae	*Breviceps fuscus*	Plain Rain Frog	Least Concern
	Bufonidae	***Sclerophrys capensis***	**Raucous Toad**	**Least Concern**
		Vandijkophrynus angusticeps	Cape Sand Toad	Least Concern
	Hyperoliidae	*Afrixalus knysnae*	Knysna Leaf-folding Frog	Endangered
		Hyperolius horstockii	Horstock's Reed Frog	Least Concern
		Hyperolius marmoratus	**Painted Reed Frog**	**Least Concern**
		Semnodactylus wealii	Rattling Frog	Least Concern
	Pipidae	***Xenopus laevis***	**African Clawed Frog**	**Least Concern**
	Pyxicephalidae	*Amietia fuscigula*	Dark-throated River Frog	Least Concern
		Cacosternum boettgeri	**Boettger's Dainty Frog**	**Least Concern**
		Cacosternum nanum	**Bronze Caco**	**Least Concern**
		Strongylopus fasciatus	**Striped Stream Frog**	**Least Concern**
		Strongylopus grayii	Clicking Stream Frog	Least Concern
		Tomopterna delalandii	Cape Sand Frog	Least Concern

Appendix C

Appendix C 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**	**Status**	**# Observations**
Artiodactyla	Bovidae	*Raphicerus melanotis*	Cape Grysbok	Least Concern	1
		Sylvicapra grimmia	Common Duiker	Least Concern	1
Carnivora	Herpestidae	*Atilax paludinosus*	Marsh Mongoose	Least Concern	1
Amphibians					
Order	**Family**	**Species**	**Common name**	**Status**	**# Observations**
Anura	Hyperoliidae	*Hyperolius marmoratus*	Painted Reed Frog	Least Concern	2
Avifauna					
Order	**Family**	**Species**	**Common name**	**Status**	**# Observations**
Anseriformes	Anatidae	*Alopochen aegyptiaca*	Egyptian Goose	Least Concern	1
		Anas undulata	Yellow-billed Duck	Least Concern	1
Bucerotiformes	Upupidae	*Upupa africana*	African Hoopoe	Least Concern	1
Coliiformes	Coliidae	*Colius striatus*	Speckled Mousebird	Least Concern	1
Columbiformes	Columbidae	*Streptopelia semitorquata*	Red-eyed Dove	Least Concern	1
Falconiformes	Falconidae	*Falco rupicolus*	Rock Kestrel	Least Concern	1
Passeriformes	Cisticolidae	*Apalis thoracica*	Bar-throated Apalis	Least Concern	1
		Cisticola tinniens	Levaillant's Cisticola	Least Concern	1
	Estrildidae	*Estrilda astrild*	Common Waxbill	Least Concern	1
	Fringillidae	*Serinus canicollis*	Cape Canary	Least Concern	2

	Macrosphenidae	*Sphenoeacus afer*	Cape Grassbird	Least Concern	1
	Malaconotidae	*Laniarius ferrugineus*	Southern Boubou	Least Concern	1
	Motacillidae	*Motacilla capensis*	Cape Wagtail	Least Concern	1
	Muscicapidae	*Cossypha caffra*	Cape Robin-Chat	Least Concern	1
		Oenanthe familiaris	Familiar Chat	Least Concern	1
		Saxicola torquatus	African Stonechat	Least Concern	1
	Nectariniidae	*Cinnyris afer*	Greater Double-collared Sunbird	Least Concern	1
		Nectarinia famosa	Malachite Sunbird	Least Concern	1
	Passeridae	*Passer diffusus*	Southern Grey-headed Sparrow	Least Concern	1
	Ploceidae	*Euplectes capensis*	Yellow Bishop	Least Concern	1
		Ploceus capensis	Cape Weaver	Least Concern	1
	Pycnonotidae	*Pycnonotus capensis*	Cape Bulbul	Least Concern	1
	Zosteropidae	*Zosterops virens*	Cape White-eye	Least Concern	1
Pelecaniformes	Threskiornithidae	*Bostrychia hagedash*	Hadada Ibis	Least Concern	1
Butterflies					
Order	**Family**	**Species**	**Common name**	**IUCN status**	**# Observations**
Lepidoptera	Nymphalidae	*Cassionympha cassius*	Rainforest Brown	Least Concern	2

Appendix D

Curriculum Vitae of Jacobus Hendrik Visser

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- 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)

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
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- **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.
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- **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.
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- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Compliance Statement Report for the Proposed Sandmine on Portion 109 of the Farm Zwarte Jongers Fontein No. 489, Hessequa Municipality. August 2023. Prepared for Pro-Earth Consulting.
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Impact Assessment Report for the Upgrading of Herold's Bay Sewer Pump Station and Associated Rising Main on Remainder of Farm Brakfontein 236, Portion 10 of Farm Brakfontein 236 and Erven RE/95 and 116, Herholds Bay, George Municipality. September 2023. Prepared for Sharples Environmental Services cc (SES).
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Impact Assessment Report for the Proposed Flood Damage Repairs, Rehabilitation and Other Mitigation Measures in Van Riebeeck Gardens and Camphersdrift, George, George Municipality. September 2023. Prepared for Sharples Environmental Services cc (SES).

- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Compliance Statement Report for the Proposed Hartenbos Waste Water Treatment Works PV Solar Plant on Remainder of Portion 101 of the Farm Hartenbosch 217, Mossel Bay, Mossel Bay Municipality. September 2023. Prepared for Sharples Environmental Services cc (SES).
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Site Sensitivity Verification Report for the Proposed Construction of Tourist Accommodation on Portions 10, 11 and 13 of the Farm Arieskraal A 456, Elgin. September 2023. Prepared for PHS Consulting.
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Impact Assessment Report for the Proposed Multifunctional Agricultural Development on Remainder of Farm De Draay No 563, Overstrand Municipality. November 2023. Prepared for PHS Consulting.
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- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Compliance Statement Report for the Proposed Construction of Two Hard Water Reservoirs and Associated Infrastructure at the Koeberg Nuclear Power Station Located on the Farm Duynefontyn No. 1552, City of Cape Town Metropolitan Municipality. November 2023. Prepared for Sharples Environmental Services cc (SES).
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Site Sensitivity Verification Report for Portion 7 of The Farm Hans Moes Kraal No. 202, George Local Municipality. December 2023. Prepared for Sharples Environmental Services cc (SES).
- **Visser, J.H.,** Colville, J.F., McDonald, D., Proposed Low Cost Housing Development on Farm Witteklip 69/123, Vredenburg, Saldanha Bay Municipality - Biodiversity Offset Report. December 2023. Prepared for Ecosense Environmental Consultants.
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Compliance Statement Report for the Proposed Construction of a Photovoltaic Solar Plant and Battery Energy Storage System on Remainder of Erf 2018, Riversdale, Hessequa

Municipality. February 2024. Prepared for Sharples Environmental Services cc (SES).

- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Compliance Statement Report for the Proposed Development on Erf 998, Tergniet and Portion 5 of the Farm Zandhoogte No. 139, Mossel Bay Local Municipality. February 2024. Prepared for Sharples Environmental Services cc (SES).
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Compliance Statement Report for the proposed PV Solar Plant at the Groot-Brakrivier Waste Water Treatment Works (WWTW) on portion 23 of the Farm Wolvedans No. 129, Mossel Bay Local Municipality. February 2024. Prepared for Sharples Environmental Services cc (SES).
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species-, Aquatic Biodiversity- and Terrestrial Biodiversity Compliance Statement Report for the Mining Permit or Mining Right Application for the Existing Stone Crushing Operation on Portion 3 of the Farm Klipfontein No. 275, Still Bay, Hessequa Municipality. March 2024. Prepared for Pro-Earth Consulting.
- **Visser, J.H.** Terrestrial Faunal Assessment for a Potential Faunal Search and Rescue Operation Around the Gamma Substation on Farm Schiekuil No. 3, Murraysburg Region, Western Cape. March 2024. Prepared for CSV Construction (Pty) Ltd.
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Compliance Statement Report for the Proposed Mining Permit on Farm Schiekuil No. 3, Murraysburg Region, Western Cape. April 2024. Prepared for WNel Environmental Consulting Services.
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Impact Assessment Report for the Proposed Expansion of a Mining Right for Argent Minerals on Farm 120, Caledon, Western Cape. April 2024. Prepared for WNel Environmental Consulting Services.
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Site Sensitivity Verification Report for the Proposed Expansion of Cultivation Areas on Farm No. 757 and 758, Scherpenheuwel Valley, Breede Valley Municipality. May 2024. Prepared for inClover Environmental Consulting.

- Labuschagne, A., **Visser, J.H.** Animal Species Specialist Report: Proposed Agricultural Development of Erf 385, Hoekwil, Garden Route Municipality, Western Cape Province. May 2024. Prepared for Eco Route Environmental Consultants.
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Impact Assessment Report for the Proposed Development of a Shopping Center and Associated Infrastructure on a Portion of Remainder Erf 666 Hout Bay, City of Cape Town, Western Cape. May 2024. Prepared for MSEC Environmental Consultants.
- **Visser, J.H.** Terrestrial Faunal and Avifaunal Species Impact Assessment Report for the Proposed Agricutural Expansion by Anglo American on Their Farms Demaneng and Lyleveld, Kathu Region, Gamagara Local Municipality, Northern Cape. June 2024. Prepared for Victoria Read Environmental Consulting.
- **Visser, J.H.,** Berry, M. Proposed Greenvalley Mixed-use Development on Portion 28, 31 and 32 of the Farm Wittedrift No. 306, Plettenberg Bay, Bitou Municipality - Biodiversity Offset Report. July 2024. Prepared for Sharples Environmental Services cc (SES).

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.

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*