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Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report

Proposed development of the Khoisan Bay Residential Development on Portion 2 of Farm Strandfontein No. 712, Gansbaai

Prepared for: LORNAY ENVIRONMENTAL CONSULTING

October 2024

Prepared by: Jan A Venter & Rudi Swart

Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report - Proposed development of the Khoisan Bay Residential Development on Portion 2 of Farm Strandfontein No. 712, Gansbaai

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Recommended citation:
Venter, J.A. & Swart, R., 2024. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report - Proposed development of the Khoisan Bay Residential Development on Portion 2 of Farm Strandfontein No. 712, Gansbaai. Technical Report prepared for Lornay Environmental Consulting, George, Western Cape, ZA.

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Declaration of independence

- We consider ourselves bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP);
- At the time of conducting the study and compiling this report, we did not have any interest, hidden or otherwise, in the proposed development that this study has reference to, except for financial compensation for work done in a professional capacity;
- Work performed for this study was done objectively. Even if this study results in views and findings that are not favourable to the client/applicant, I will not be affected in any manner by the outcome of any environmental process of which this report may form a part, other than being members of the general public;
- We declare that no circumstances may compromise my objectivity in performing this specialist investigation. We do not necessarily object to or endorse any proposed developments but aim to present facts, findings and recommendations based on relevant professional experience and scientific data;
- We do not have any influence over decisions made by the governing authorities;
- We undertake to disclose all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken concerning the application by a competent authority to such a relevant authority and the applicant;
- We have the necessary qualifications and guidance from professional experts in conducting specialist reports relevant to this application, including knowledge of the applicable Act, regulations and any guidelines that have relevance to the proposed activity;
- This document and all information contained herein is and will remain our intellectual property. This document, in its entirety or any portion thereof, may not be altered in any manner or form for any purpose without the specific and written consent of the specialist investigators.
- All the particulars we furnished in this document are true and correct.

_____ 24 October 2024

Signature Date

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Signature Date

Contents

Introduction

This Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report deals with the proposed Khoisan Bay Residential Development on Portion 2 of Farm Strandfontein No. 712, Gansbaai (Figure 1). The Department of Forestry, Fisheries and the Environment (DFFE) screening report (performed in April 2023) identified the site as having a 'High' Animal Species Theme sensitivity (Lornay Environmental Consulting 2024) (Figure 2). A high sensitivity requires a 'Site Sensitivity Verification' and depending on the outcome either a 'Terrestrial Animal Species Compliance Statement' or a 'Terrestrial Animal Species Specialist Assessment Report'. This Statement or Report, as per the protocol set out by the DFFE (2020) reports on a site visit to the area that will be impacted by the development (the study area), during which the presence or possible presence of the Species of Conservation Concern (SCC) identified by the screening tool was determined. Animal species of concern (*n=12*) that was identified by the screening tool are listed in Table 1.

Figure 1: The cadastral boundary of the Portion 2 of Farm Strandfontein No. 712, Gansbaai (outlined in green) intended for the proposed residential development.

This report follows the legislative requirements set out by sections 25(5)(a) and (h) and 44 of the National Environmental Management Act 107 of 1998 and specifically the regulations listed in the Government Gazette Notice No. 1150, Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial animal species, October 2020 as amended in Gazette Notice No. 3717, July 2023.

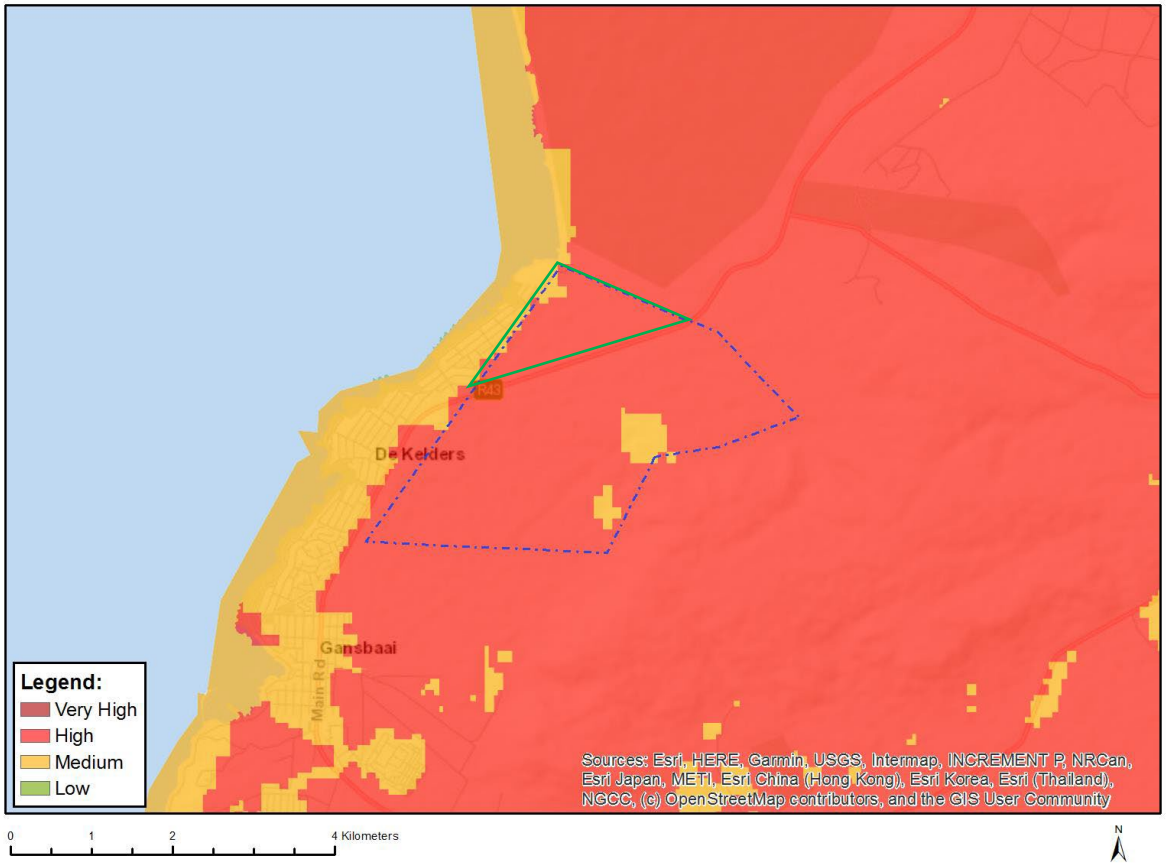

Figure 2: Map of the relative animal species theme sensitivity as per (Lornay Environmental Consulting 2024) indicating 'high' sensitivity for the section of the property (highlighted in green)

Table 1: Animal species of concern identified by the screening report (Lornay Environmental Consulting 2024).

Sensitivity	Species name	Common name	Taxonomic group	Red List Status
High	*Circus maurus*	Black Harrier	Avis	EN
Medium	*Circus ranivorus*	African Marsh Harrier	Avis	EN
Medium	*Aquila verreauxii*	Verreaux's eagle	Avis	EN
Medium	*Afrotis afra*	Southern Black Korhaan	Avis	VU
High	*Neotis denhami*	Denham's Bustard	Avis	VU
Medium	*Sarothrura affinis*	Striped Flufftail	Avis	VU
Medium	*Brinckiella aptera*	Mute Winter Katydid	Invertebrate	VU
Medium	*Aneuryphymus montanus*	Yellow winged agile grasshopper	Invertebrate	VU
Medium	*Aloeides egerides*	Red hill copper	Invertebrate	VU
Medium	Forest invertebrate	--	Invertebrate	--
Medium	*Bitis armata*	Southern Adder	Reptile	VU
Medium	*Sclerophrys pantherina*	Western leopard toad	Amphibian	EN

Study Area

Portion 2 of Farm Strandfontein No. 712 is situated just north-east of the village Gansbaai, Overberg District in the Western Cape Province (E 19°22'42"; S 34°33'08") (Figure 1). The proposed development includes the construction of single residential group housing, town housing, group housing (n=472), a network of roads, public and private open spaces (n=45), a community zone and a business zone (Figure 3 & Appendix 1).

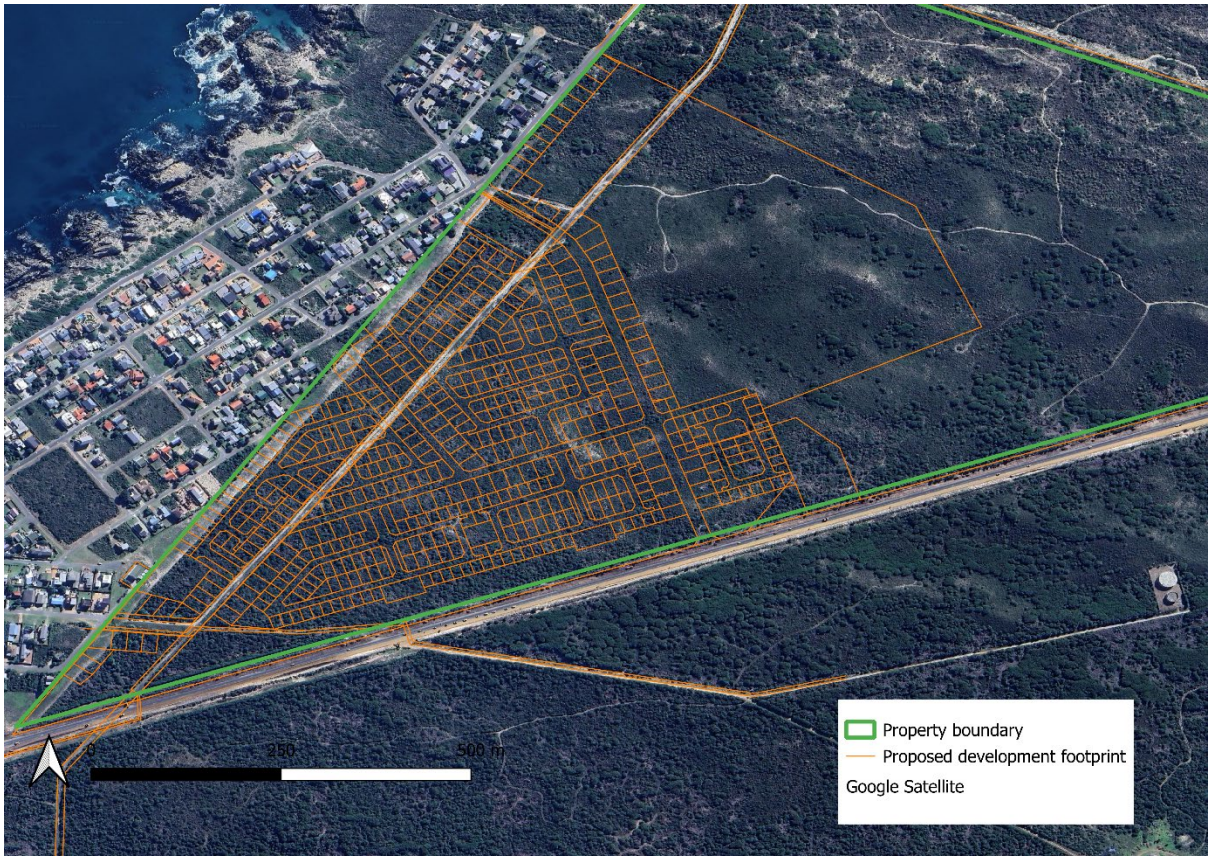

Figure 3: The development footprint includes the construction of single residential group housing, town housing, group housing, a network of roads, public and private open spaces, a community zone and a business zone (see also Appendix 1).

Methods

We followed the prescribed protocol for performing a Terrestrial Animal Site Sensitivity Verification Report according to the Government Gazette Notice 320 (Government Gazette 43110, 20 March 2020), and amended in Government Gazette Notice 3717 (Government Gazette 49028, 28 July 2023). We followed the SANBI (2020) species environmental assessment guidelines during the assessment.

This report's findings are based on:

- A desktop study to determine the presence of animal species of concern (as listed in Table 1) and other species at the study area; and
- 2 x Field site visits.

The desktop study included the use of iNaturalist and Global Biodiversity Information Framework (GBIF) records as well as reports, field guides and scientific literature. These records were used to determine the species recorded in the area and the presence of potential SCC, with particular emphasis on the SCC listed by the screening tool.

During the site survey, species and signs of presence (sounds, tracks, scats etc), observed were recorded. Surveys consisted of meandering visual, acoustic surveys and point surveys performed at and between the various proposed development sites. Although some dense stands of Port Jackson (*Acacia saligna*), Rooikrans (*Acacia cyclops*) and natural vegetation made some areas difficult to access we covered a large proportion of the property on foot (Figure 4 and Table 2). We used territorial call playbacks to determine the presence of striped flufftail. The main purpose of the site visit was to confirm whether:

- any of the listed SCC were present in the proposed development area;
- the proposed site for the development would act as a corridor for any of the SCC highlighted by the screening tool;
- whether the vegetation (indigenous and planted) at the proposed development site likely supports undetected individuals or populations of the SCC highlighted by the screening tool; and
- there are any SCC present at the site that were not highlighted by the initial screening.

To aid in record-keeping of the site and species observed, photographs were taken during the site visits.

Figure 4: A map indicating the areas within the property visited during the site visit. Yellow areas indicate areas of intensive searches.

Table 2: Site coordinates

Site	Coordinates, Decimal Degrees
Khoi1	-34.552416°; 19.374776°
Khoi2	-34.551685°; 19.377659°
Khoi3	-34.556795°; 19.370565°
Khoi4	-34.554445°; 19.373022°
Khoi5	-34.547743°; 19.378752°
Khoi6	-34.548462°; 19.381582°
Khoi7	-34.551328°; 19.383292°
Khoi8	-34.551070°; 19.381088°
Khoi9	-34.550543°; 19.379882°
Khoi10	-34.554226°; 19.376336°

Setting the project area of influence (PAOI)

The property intended for development is fairly small (±110 ha). The PAOI was set considering main SCC we think are present on or close to the development footprint. This was based on recommended buffers for SCC (SANBI 2020) and WCDS expert knowledge.

Evaluation of Site Ecological Importance (SEI)

In order to spatially assess the different areas of importance for a species for the proposed development site we used the SEI approach, see SANBI (2020) for identifying the site-based ecological importance for species, in relation to the proposed PAOI. The SEI is a function of the biodiversity importance (BI) of the receptor (e.g. species of conservation concern, the vegetation/fauna community, habitat type or ecological process present on the site) and its resilience to impacts (receptor resilience [RR]) and is calculated as follows (SANBI 2020):

$$SEI = BI + RR$$

BI in turn is a function of conservation importance (CI) and the functional integrity (FI) of the receptor is calculated as follows:

$$BI = CI + FI$$

Conservation importance (*CI*) is evaluated in accordance with recognised established internationally acceptable principles and criteria for the determination of biodiversity-related value. Conservation importance is defined here as (SANBI 2020)(Tabe 3): *"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 3: Conservation importance (CI) criteria (SANBI 2020)

Conservation importance	Fulfilling criteria
Very High	Confirmed or highly likely occurrence of CR, EN, VU or Extremely Rare23 or Critically Rare24 species that have a global EOO of < 10 km2. Any area of natural habitat25 of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent26) 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 km2. 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.

Functional integrity (*FI*) of the receptor (e.g. the vegetation/fauna community or habitat type) is defined here as 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 (SANBI 2020)(Table 4): *"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 4: Functional Integrity (FI) criteria (SANBI 2020)

Functional integrity	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.

Receptor resilience (RR) is defined here as (SANBI 2020)(Table 5): *"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."* The fulfilling criteria to evaluate RR are based on the estimated recovery time required to restore an appreciable portion of functionality to the receptor.

Table 5: Resilience criteria (SANBI 2020)

Resilience	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.

Evaluation of the SEI in the context of the proposed development activities are then categorised in a final risk category (SANBI 2020)(Table 6).

Table 6: Interpreting SEI in the context of the proposed development activities (SANBI 2020)

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

Conditions, limitations, and assumptions

The findings and recommendations of this report are based on WCDS best scientific and professional knowledge, literature and other data sources. WCDS reserve the right to modify aspects of the report, including the recommendations and conclusions, if additional relevant information becomes available.

The conditions, e.g. weather and otherwise, during the assessment period could have a significant influence determining whether animal species will be found on site or not. An

animal species absence during field assessments does not necessarily mean it is not present at assessment locations. At WCDS we use an evidence-based approach to provide the best possible assessment of species presence and potential impacts.

Results

Field survey conditions

Site visits was performed on the 22nd of August 2024, (between 14h00 and 18h00), and the 23rd August 2024 (between 7h00 and 13h00). A follow-up visit was conducted on the 21st of October (between 10h00 and 13h00). During the time conditions were warm and generally good for faunal surveys.

Project area of influence (PAOI)

The development property is small (±110 ha). The PAOI covers ~60% of the property (Figure 4 and Table 7).

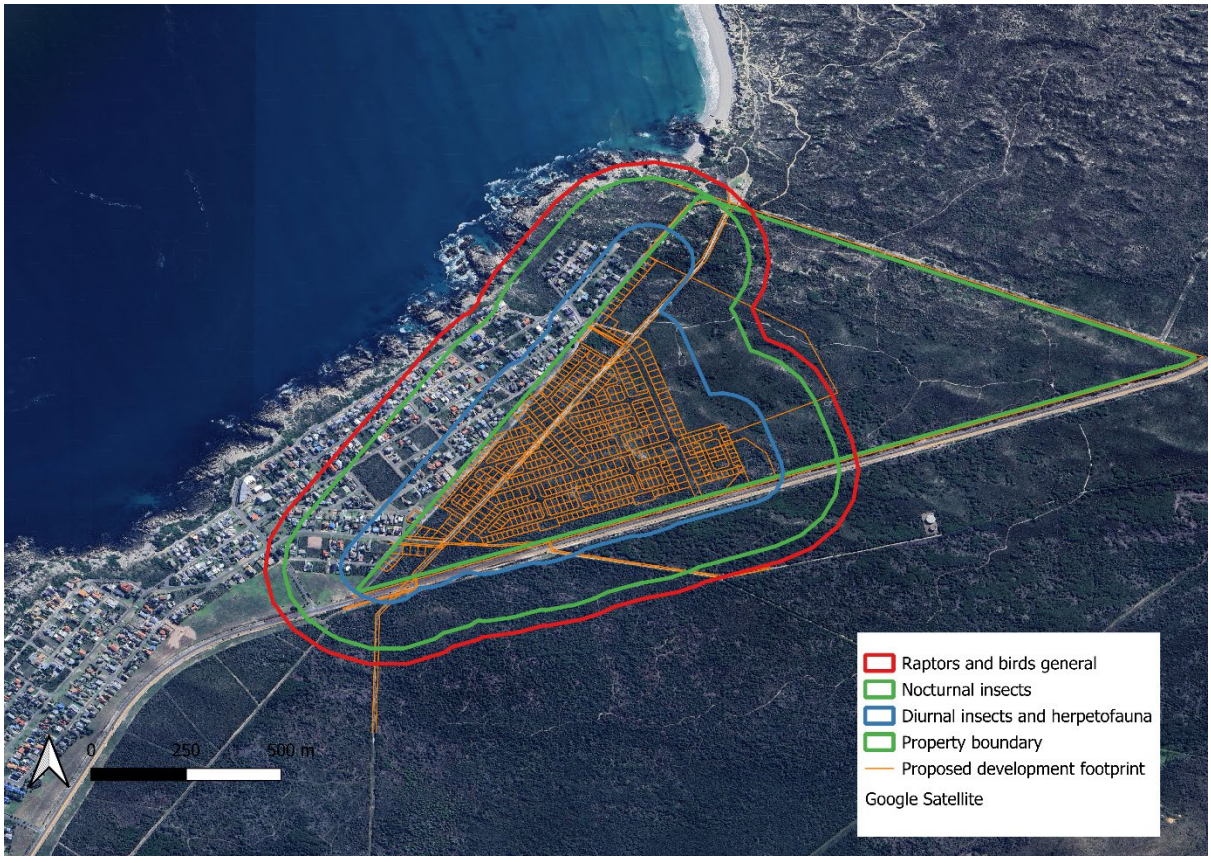

Figure 5: The PAOI was set considering main SCC we think are present on or close to the development footprint (see Table 7 for buffer distances). For the built up areas to the north-west the PAOI is not relevant.

Habitat descriptions.

After screening the development site using Google Earth images and on-site verification, we did intensive searches in the PAOI of the proposed development site and additional sites of interest of specific representative or seemingly important locations (Figure 4) within the development area.

Table 7: The PAOI was set considering main SCC we think are present on or close to the development footprint.

Species/Group	PAOI Buffer size	Notes
Raptors and Birds general	300 m	Foraging and resting areas
Nocturnal insects	250 m	Influence of artificial light
Diurnal insects and herpetofauna	100 m	Foraging and breeding habitat

Khoi 1

Site Khoi 1 is situated at the central western boundary of the property (-34.552416°; 19.374776°). The elevation is low, at 49 m above sea level. The area has a sand road running through it, and both sides of the road were inspected. The vegetation within the area is in a mostly natural state, with scattered clumps of invasive *Acacia cyclops* (Figure 6). Most of the *A. cyclops* shrubs are >2m in height. The indigenous vegetation in parts reaches ca. 1.8m tall. Noteworthy indigenous plant species include, but are not limited to, *Osteospermum moniliferum*, *Searsia laevigata*, *Searsia glauca*, *Maytenus procumbens*, *Babiana nana*, *Metalasia muricata*, *Olea exasperata*, *Hermannia ternifolia*, *Roepera flexuosa* and *Indigofera praetermissa*. The substrate is sandy. The site was visited on a sunny afternoon with a mild breeze, and we observed a number of vertebrates and invertebrates (Table 8).

Khoi 2

Site Khoi 2 is situated at the central interior of the property (-34.551685°; 19.377659°). The elevation is ca. 58 m above sea level. The area, in terms of vegetation, is considered very pristine, with only some scattered individual *A. cyclops* trees (re: not in clumps) (Figure 7). The natural vegetation grew to ca. 0.6m tall, consisted of *Maytenus procumbens*, *Olea exasperata*, *Metalasia muricata* and *Restio calcicola*. A few individuals of *Wachendorfia paniculata* and *Satyrium* sp. were witnessed. The substrate is sandy. The site was visited on a sunny afternoon with a mild breeze, and we observed a number of vertebrate and invertebrate species (Table 9).

Khoi 3

Site Khoi 3 is situated at the western boundary of the property (-34.556795°; 19.370565°). The elevation is ca. 51 m above sea level. The area is densely invaded by *A. cyclops*, with interspersed natural vegetation present, making the area semi-natural (Figure 8). The natural vegetation grew to ca. 2.3m tall, consisted of *Searsia laevigata, Osteospermum moniliferum, Olea exasperata, Babiana nana, Searsia glauca, Hermannia ternifolia* (very abundant), *Muraltia satureioides, Roepera flexuosa* and *Indigofera* sp.. The substrate is sandy with some rockiness interspersed. The site was visited on an early, sunny morning and it was windless. A number of vertebrate and invertebrate species was observed at this site (Table 10).

Table 8: Animal species observed at Khoi 1

Group	Type	Species	Notes	Status
Invertebrates:	Katydid	Tettigoniidae sp. 1	Netted at site	NA
	Pygmy grasshopper	Tetrigidae sp. 1	Netted at site	NA
	Forb hopper	*Thericlesiella meridionalis*	Netted at site	Unknown
	Millipede	*Doratogonus annulipes,* Ringleg Black millipede	Observed	Least concern
	Ant	*Crematogaster peringueyi,* Black Cocktail ant	Observed	Least concern
	Butterfly	*Pseudonympha magus,* Silver-bottom Brown	Observed resting and in flight	Least concern
Vertebrates:	Bird	*Prinia maculosa*, Karoo Prinia	Observed	Least concern
	Bird	*Pycnonotus capensis,* Cape Bulbul	Observed	Least concern
	Bird	*Cossypha caffra*, Cape Robin-Chat	Observed	Least concern
	Bird	*Ploceus capensis*, Cape Weaver	Observed	Least concern
	Bird	*Telophorus zeylonus*, Bokmakierie	Observed	Least concern
	Bird	*Ptyonoprogne fuligula,* Rock Martin	Observed	Least concern
	Bird	*Zosterops virens*, Cape White-eye	Observed	Least concern
	Bird	*Sturnus vulgaris*, Common Starling	Observed	Least concern
	Reptile	T*rachylepis homalocephala*, Red-sided Skink	Observed	Least concern
	Reptile	*Homoroselaps lacteus,* Spotted Harlequin Snake	Observed	Least concern
	Reptile	*Chersina angulata*, Angulate tortoise	Observed	Least concern
	Mammal	*Galerella pulverulenta*, Cape grey mongoose	Tracks	Least concern
	Mammal	*Raphicerus melanotis*, Cape grysbok	Tracks, dung	Least concern
	Mammal	*Bathyergus suillus,* Cape dune molerat	Burrowing activity	Least concern

Figure 6: Site Khoi 1 was in a natural state, with scattered clumps of tall (>2m) A. cyclops individuals as indicated by the arrow.

Figure 7: Site Khoi 2 was in a pristine state, with only a few scattered individuals of tall (>2m) A. cyclops trees as indicated by the arrow.

Table 9: Animal species observed at site Khoi 2

Group	Type	Species	Notes	Status
Invertebrates:	Bladder grasshopper	*Bullacris discolor*	Netted at site	Least concern
	Grasshopper	Lentulinae sp. 1	Netted at site	NA
	Forb hopper	*Thericlesiella meridionalis*	Netted at site	Unknown
Vertebrates:	Bird	*Prinia maculosa*, Karoo Prinia	Observed	Least concern
	Bird	*Cossypha caffra*, Cape Robin-Chat	Observed	Least concern
	Bird	*Euplectes capensis,* Yellow Bishop	Observed	Least concern
	Bird	*Ploceus capensis*, Cape Weaver	Observed	Least concern
	Bird	*Telophorus zeylonus*, Bokmakierie	Observed	Least concern
	Bird	*Pternistis capensis,* Cape Spurfowl	Observed	Least concern
	Bird	*Serinus mozambicus,* Yellow - fronted Canary	Observed	Least concern

Figure 8: Site Khoi 3 was in a semi-natural state, with some areas dominated by tall (>2m) A. cyclops trees (centre of photo), whereas other areas, as seen in the foreground, contained a diversity of indigenous plant species.

Table 10: Animal species observed at site Khoi 3

Group	Type	Species	Notes	Status
Invertebrates:	Stick insect	*Phalces brevis,* Cape Stick insect	Netted at site	Unknown
	Moth	*Bombycomorpha bifascia,* Barred Eggarlet	Observed feeding on *Searsia* spp. during larval stage	Unknown
	Forb hopper	*Thericlesiella meridionalis*	Netted at site	Unknown
	Katydid	*Brinckiella wilsoni*¸Western Winter katydid	Netted at site	Unknown
	Grasshopper	Acrididea sp. 1	Netted at site	NA
Vertebrates:	Bird	*Prinia maculosa*, Karoo Prinia	Observed	Least concern
	Bird	*Pycnonotus capensis,* Cape Bulbul	Observed	Least concern
	Bird	*Cossypha caffra*, Cape Robin-Chat	Observed	Least concern
	Bird	*Telophorus zeylonus*, Bokmakierie	Observed	Least concern
	Bird	*Laniarius ferrugineus,* Southern Boubou	Observed	Least concern
	Bird	*Pternistis capensis,* Cape Spurfowl	Observed	Least concern
	Bird	*Tchagra tchagra*, Southern Tchagara	Observed	Least concern
	Mammal	*Bathyergus suillus,* Cape dune molerat	Burrowing activity	Least concern
	Reptile	*Chersina angulata*, Angulate tortoise	Observed	Least concern

Khoi 4

Site 4 is situated along the western boundary of the property (-34.554445°; 19.373022°). The elevation is ca. 55 m above sea level. The area is moderately invaded by *A. cyclops* of over 2 m tall, mostly along the road that crosses the site, with mostly natural vegetation present beyond the road verge (Figure 9). The natural vegetation grew to ca. 1.8 m tall, consisted amongst others of *Osteospermum moniliferum, Restio calcicola, Maytenus procumbens, Olea exasperata, Metalasia muricata, Tephrosia capensis* and *Indigofera praetermissa.* The substrate is sandy. The site was visited on an early, sunny morning. We observed a number of vertebrate and invertebrate species (Table 11).

Figure 9: Site Khoi 4 has moderate invasion of A. cyclops trees, with natural vegetation in a pristine state beyond the road verge.

Khoi 5

Site 5 is situated at the northern tip of the property (-34.547743°; 19.378752°). The elevation is ca. 50 m above sea level. The area is densely invaded by *A. cyclops* and *A. longifolia* of over 2.5m tall, mostly along the road that crosses the site, but also expanding into the natural vegetation beyond the road verge (Figure 10). The natural vegetation consisted of *Osteospermum moniliferum, Restio calcicola, Searsia laevigata, Searsia glauca, Babiana nana, Metalasia muricata, Hermannia ternifolia* (very abundant) and *Indigofera praetermissa.* The substrate is sandy. The site was visited on a sunny morning, with no wind. We observed a number of vertebrate and invertebrate species (Table 12).

Khoi 6

Site Khoi 6 is situated about 50 m from the northern boundary with Walker Bay Nature Reserve (-34.548462°; 19.381582°). The elevation is ca. 57 m above sea level. The area has low to moderate levels of invasion of *A. cyclops* and *A. longifolia* of over 2.5 m tall. The natural vegetation is very diverse and consisted amongst others of *Searsia laevigata, Searsia glauca, Searsia lucida, Metalasia muricata, Hermannia ternifolia* (very abundant), *Morella cordifolia*, *Passerina paleacea*, *Colpoon compressum*, *Dimorphotheca nudicaulis* and *Indigofera praetermissa,* including different species of *Restio* (Figure 11). The substrate is sandy. Several sandstone rocky outcrops were present at Khoi 6 which potentially harbours unique terrestrial vertebrate diversity including potential habitat for Southern Adder (*Bitis armata*) (Figure 12). The site was visited on a sunny late-morning, with no wind. We observed a number of vertebrate and invertebrate species (Table 13).

Table 11: Animal species observed at site Khoi 4

Group	Type	Species	Notes	Status
Invertebrates:	Forb hopper	*Thericlesiella meridionalis*	Netted at site	Unknown
	Moth	*Bombycomorpha bifascia,* Barred Eggarlet	Observed feeding on *Searsia* spp. during larval stage	Unknown
	Grasshopper	Acrididea sp. 2	Netted at site	NA
	Katydid	*Megalotheca* sp. 1	Netted at site	NA
	Restio grasshopper	*Betiscoides* sp. 1	Netted at site	NA
	Ant	*Crematogaster peringueyi,* Black Cocktail ant	Observed	Least concern
Vertebrates:	Bird	*Prinia maculosa*, Karoo Prinia	Observed	Least concern
	Bird	*Pycnonotus capensis,* Cape Bulbul	Observed	Least concern
	Bird	*Cinnyris chalybeus,* Southern Double-collared Sunbird	Observed	Least concern
	Bird	*Cossypha caffra*, Cape Robin-Chat	Observed	Least concern
	Bird	*Ploceus capensis*, Cape Weaver	Observed	Least concern
	Bird	*Telophorus zeylonus*, Bokmakierie	Observed	Least concern
	Bird	*Apalis thoracica,* Bar-throated Apalis	Observed	Least concern
	Bird	*Sphenoeacus afer,* Cape Grassbird	Observed	Least concern
	Bird	*Euplectes capensis,* Yellow Bishop	Observed	Least concern
	Bird	*Crithagra sulphurate,* Brimstone Canary	Observed	Least concern
	Bird	*Cisticola subruficapilla,* Grey-backed Cisticola	Observed	Least concern
	Bird	*Laniarius ferrugineus,* Southern Boubou	Observed	Least concern
	Mammal	*Galerella pulverulenta*, Cape grey mongoose	Tracks	Least concern

Figure 10: Site Khoi 5 was densely invaded by A. cyclops and A. longifolia, although some indigenous plant species were found interspersed between the invasive plants.

Table 12: Animal species observed at site Khoi 5

Group	Type	Species	Notes	Status
Invertebrates:	Forb hopper	*Thericlesiella meridionalis*	Netted at site	Unknown
	Moth	*Bombycomorpha bifascia,* Barred Eggarlet	Observed feeding on *Searsia* spp. during larval stage	Unknown
	Bladder grasshopper	*Physemacris variolosa,* Silverspotted bladderhopper	Netted at site	Least concern
	Beetle	Hopliini sp. 1	Netted at site	NA
	Grasshopper	*Vitticatantops humeralis*	Netted at site	Unknown
Vertebrates:	Bird	*Prinia maculosa*, Karoo Prinia	Observed	Least concern
	Bird	*Cossypha caffra*, Cape Robin-Chat	Observed	Least concern
	Bird	*Ploceus capensis*, Cape Weaver	Observed	Least concern
	Bird	*Sphenoeacus afer,* Cape Grassbird	Observed	Least concern
	Bird	*Telophorus zeylonus*, Bokmakierie	Observed	Least concern
	Bird	*Laniarius ferrugineus,* Southern Boubou	Observed	Least concern
	Bird	*Zosterops virens*, Cape White-eye	Observed	Least concern
	Bird	*Tchagra tchagra,* Southern Tchagara	Observed	Least concern
	Bird	*Streptopelia capicola,* Ring-necked Dove	Observed	Least concern
	Reptile	*Chersina angulate*, Angulate tortoise	Observed	Least concern
	Mammal	*Galerella pulverulenta*, Cape grey mongoose	Tracks	Least concern

Figure 11: Site Khoi 6 has a high diversity of plant species and low to moderate levels of invasion by A. cyclops and A. longifolia.

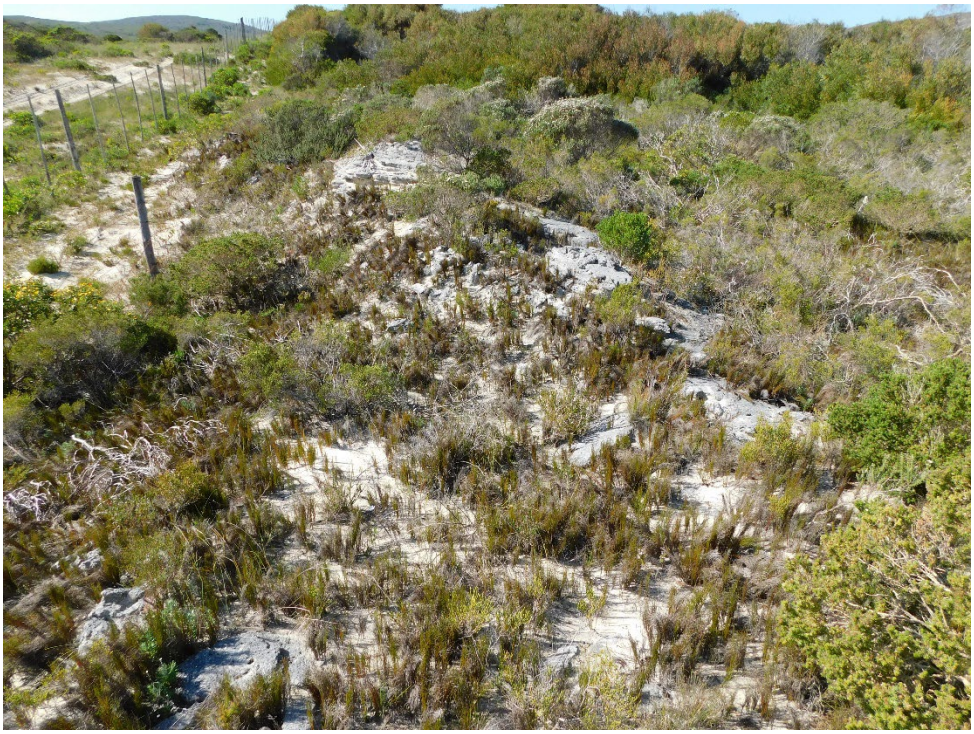

Figure 12: Several sandstone rocky outcrops were present at Khoi 6 which potentially harbours unique terrestrial vertebrate diversity including Southern Adder (Bitis armata)

Table 13: Animal species observed at site Khoi 6

Group	Type	Species	Notes	Status
Invertebrates:	Butterfly	*Pseudonympha magus,* Silver-bottom Brown	Observed resting and in flight	Least concern
	Butterfly	*Pontia helice,* Meadow White	Observed in flight	Least concern
	Moth	*Bombycomorpha bifascia,* Barred Eggarlet	Observed feeding on *Searsia* spp. during larval stage	Unknown
	Moth	*Eutomis minceus*	Observed on *Passerina paleacea*	Unknown
	Forb hopper	*Thericlesiella meridionalis*	Netted at site	Unknown
	Longhorn beetle	*Ceroplesis aethiops,* Pea Longhorn beetle	Observed resting	Unknown
	Grasshopper	Lentulinae sp. 2	Netted at site	NA
	Katydid	Tettigoniidae sp. 1	Netted at site	NA
	Ant	*Crematogaster peringueyi,* Black Cocktail ant	Observed	Least concern
Vertebrates:	Bird	*Prinia maculosa*, Karoo Prinia	Observed	Least concern
	Bird	*Pycnonotus capensis,* Cape Bulbul	Observed	Least concern
	Bird	*Cinnyris chalybeus,* Southern Double-collared Sunbird	Observed	Least concern
	Bird	*Cossypha caffra*, Cape Robin-Chat	Observed	Least concern
	Bird	*Ploceus capensis*, Cape Weaver	Observed	Least concern
	Bird	*Telophorus zeylonus*, Bokmakierie	Observed	Least concern
	Bird	*Sphenoeacus afer,* Cape Grassbird	Observed	Least concern
	Bird	*Laniarius ferrugineus,* Southern Boubou	Observed	Least concern
	Bird	*Zosterops virens,* Cape White-eye	Observed	Least concern
	Bird	*Colius striatus,* Speckled Mousebird	Observed	Least concern
	Reptile	*Psammophylax rhombeatus,* Rhombic skaapsteker	Observed	Least concern
	Mammal	*Raphicerus melanotis*, Cape grysbok	Tracks, dung	Least concern

Khoi 7

Site Khoi 7 is situated in the northern central part of the proposed development (-34.551328°; 19.383292°). The elevation is ca. 72 m above sea level. The area has low levels of invasion of *A. cyclops*, with only a few scattered individuals. The natural vegetation consisted largely of *Searsia laevigata, Searsia glauca, Olea exasperata* (very abundant), *Metalasia muricata, Indigofera praetermissa, Maytenus procumbens, Morella cordifolia*, *Passerina paleacea*, *Colpoon compressum*, *Hermannia ternifolia* and numerous species of *Restio* (Figure 13). The substrate is sandy. The site was visited on a

sunny early afternoon, with no wind. We observed a number of invertebrate and vertebrate species (Table 14).

Figure 13: Site Khoi 7 had low levels of invasion of a few scattered individual trees, with the natural vegetation dominated by Olea exasperata

Khoi 8

Site Khoi 8 is situated in the central part of the proposed development (-34.551070°; 19.381088°). The elevation is ca. 60 m above sea level. The area has low levels of invasion of *A. cyclops*, with only a few scattered individuals. Apart from these individual trees, the vegetation is in a pristine condition, with the vegetation height ca. 1.4 m tall; the dune olive tree (*Olea exasperata*) dominates large parts of the area as a 'stunted tree' (Figure 14). The natural vegetation consisted of *Searsia laevigata, Searsia glauca, Searsia lucida, Olea exasperata* (very abundant), *Metalasia muricata, Pterocelastrus tricuspidatus, Indigofera praetermissa* (very abundant)*, Morella cordifolia*, *Passerina paleacea*, *Maytenus procumbens* and *Colpoon compressum.* The substrate is mostly sandy with some rocky areas interspersed. The site was visited on a sunny early afternoon, with no wind. We observed a number of vertebrate and invertebrate species (Table 15).

Table 14: Animal species observed at site Khoi 7

Group	Type	Species	Notes	Status
Invertebrates:	Forb hopper	*Thericlesiella meridionalis*	Netted at site	Unknown
	Katydid	Tettigoniidae sp. 1	Netted at site	NA
	Moth	*Eutomis minceus*	Observed on unknown shrub	Unknown
	Moth	*Mesocelis monticola,* Mountain White Spot	Observed on Fabaceae sp.	Unknown
	Beetle	*Campulipus limbatus,* Longleg Flower Chafer	Observed	NA
	Grasshopper	*Acrotylus* sp. 1	Netted at site	NA
Vertebrates:	Bird	*Prinia maculosa*, Karoo Prinia	Observed	Least concern
	Bird	*Cossypha caffra*, Cape Robin-Chat	Observed	Least concern
	Bird	*Telophorus zeylonus*, Bokmakierie	Observed	Least concern
	Bird	*Cisticola subruficapilla,* Grey-backed Cisticola	Observed	Least concern
	Bird	*Laniarius ferrugineus,* Southern Boubou	Observed	Least concern
	Bird	*Buteo rufofuscus,* Jackal-Buzzard	Observed	Least concern
	Bird	*Aquila verreauxii,* Verreaux's eagle	Observed flying	Endangered
	Mammal	*Raphicerus melanotis*, Cape grysbok	Tracks, dung	Least concern

Figure 14: Site Khoi 8 was in a mostly pristine condition, dominated by dwarf trees of Olea exasperate

Table 15: Animal species observed at site Khoi 8

Group	Type	Species	Notes	Status
Invertebrates:	Stick insect	*Phalces brevis,* Cape Stick insect	Netted at site	Unknown
	Grasshopper	Acridoidea sp. 1	Netted at site	NA
	Beetle	*Ceroplesis aethiops,* Pea Longhorn beetle	Observed	Unknown
	Beetle	*Campulipus limbatus,* Longleg Flower Chafer	Observed	NA
	Butterfly	*Tarucus thespis,* Vivid Blue	Observed	Least concern
	Butterfly	*Cassionympha detecta,* Cape Brown	Observed	Unknown
	Moth	*Mesocelis monticola,* Mountain White Spot	Observed on Fabaceae sp.	Unknown
	Ant	*Crematogaster peringueyi,* Black Cocktail ant	Observed	Least concern
Vertebrates:	Bird	*Prinia maculosa*, Karoo Prinia	Observed	Least concern
	Bird	*Cossypha caffra*, Cape Robin-Chat	Observed	Least concern
	Bird	*Telophorus zeylonus*, Bokmakierie	Observed	Least concern
	Bird	*Cisticola subruficapilla,* Grey-backed Cisticola	Observed	Least concern
	Bird	*Laniarius ferrugineus,* Southern Boubou	Observed	Least concern
	Bird	*Buteo rufofuscus,* Jackal-Buzzard	Observed	Least concern
	Mammal	*Raphicerus melanotis*, Cape grysbok	Tracks, dung	Least concern

Khoi 9

Site 9 is situated in the central part of the proposed development (-34.550543°; 19.379882°). The elevation is ca. 56 m above sea level. The area has low levels of invasion of *A. cyclops*, with only a few scattered individuals. Apart from these individual trees, the vegetation is in a pristine condition, with the vegetation height ca. 1.4 m tall; the dune olive tree (*Olea exasperata*) dominates large parts of the area as a 'stunted tree' (Figure 15). The natural vegetation consisted amongst others of *Searsia laevigata, Searsia glauca, Searsia lucida, Olea exasperata* (very abundant), *Metalasia muricata, Pterocelastrus tricuspidatus, Indigofera praetermissa* (very abundant)*, Maytenus procumbens, Hermannia ternifolia* and *Colpoon compressum.* The substrate is mostly sandy. The site was visited on a sunny early afternoon, with no wind. We observed a number of invertebrate and vertebrate species (Table 16).

Figure 15: Site Khoi 9 was in a mostly pristine condition, dominated by dwarf trees of Olea exasperata

Table 16: Animal species observed at site Khoi 9

Group	Type	Species	Notes	Status
Invertebrates:	Forb hopper	*Thericlesiella meridionalis*	Netted at site	Unknown
	Butterfly	*Vanessa cardui,* Painted Lady	Observed in flight	Least concern
	Butterfly	*Pseudonympha magus,* Silver-bottom Brown	Observed resting and in flight	Least concern
	Butterfly	*Cerocala vermiculosa,* Vermiculous	Observed	Unknown
Vertebrates:	Bird	*Prinia maculosa*, Karoo Prinia	Observed	Least concern
	Bird	*Cinnyris chalybeus,* Southern Double-collared Sunbird	Observed	Least concern
	Bird	*Cossypha caffra*, Cape Robin-Chat	Observed	Least concern
	Bird	*Euplectes capensis,* Yellow Bishop	Observed	Least concern
	Bird	*Telophorus zeylonus*, Bokmakierie	Observed	Least concern
	Bird	*Tchagra tchagra,* Southern Tchagara	Observed	Least concern
	Mammal	*Raphicerus melanotis*, Cape grysbok	Tracks, dung	Least concern

Khoi 10

Site Khoi 10 is situated in the southern central part of the proposed development (-34.554226°; 19.376336°). The elevation is ca. 60m above sea level. The vegetation is mostly in a pristine condition, with the vegetation height ca. 1.2m tall. The natural vegetation is dominated by low growing shrubs, species of Aizoaceae and various *Restio* species (Figure 16). Some larger shrub species included *Metalasia muricata*, *Olea exasperata* and *Pterocelastrus tricuspidatus*. The substrate is mostly rocky and a small outcrop characterised the area; a potential Khoi midden was observed near the site. The sandstone rocky outcrop present at Khoi 10 would potentially harbour unique terrestrial vertebrate diversity including potential habitat for Southern Adder (*Bitis armata*) The site was visited on a sunny afternoon, with no wind. We observed a number of vertebrate and invertebrate species (Table 17).

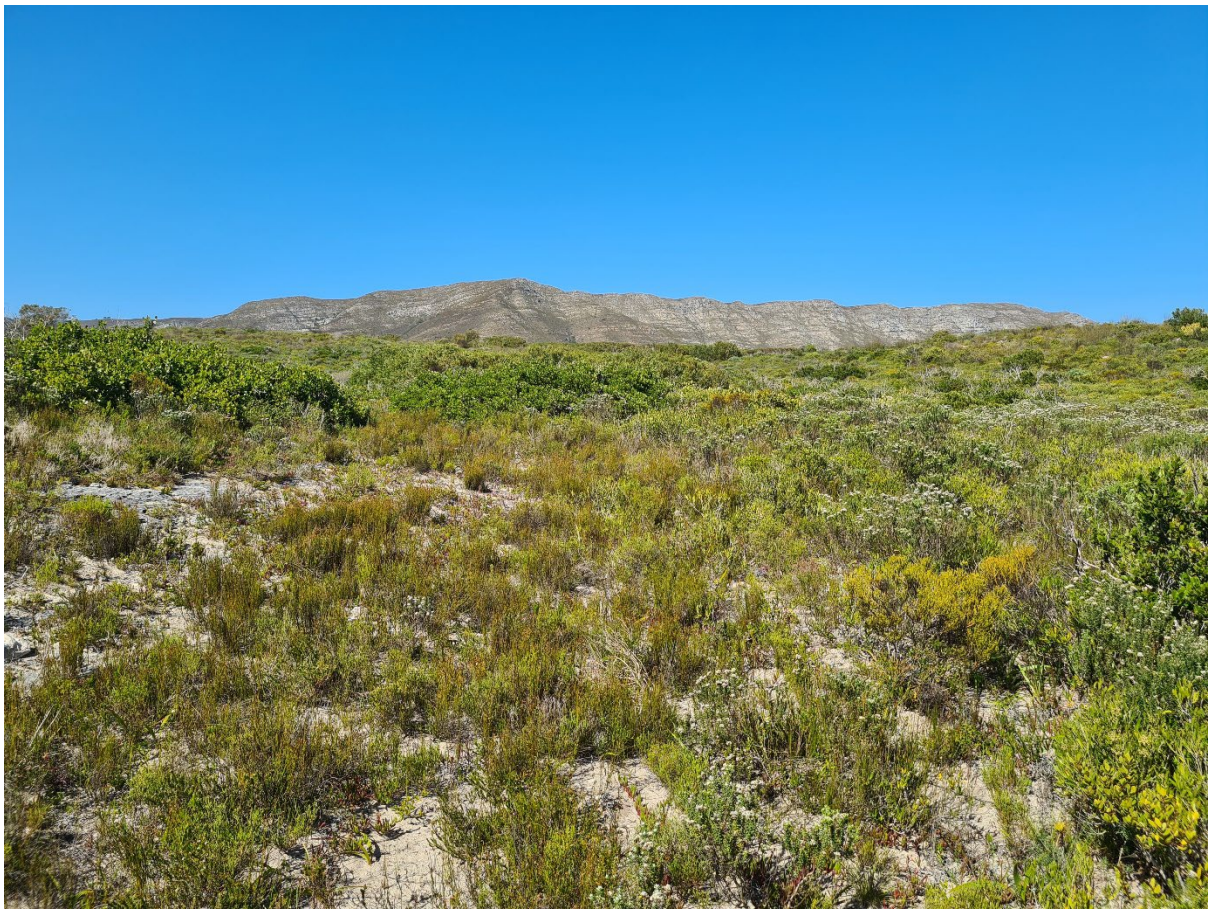

Figure 16: Site Khoi 10 was unique amongst the sites visited in being dominated by a rocky substrate, with a slight rocky outcrop present in the vicinity of where intensive searches and sweep netting were done.

Table 17: Animal species observed at site Khoi 10

Group	Type	Species	Notes	Status
Invertebrates:	Forb hopper	*Thericlesiella meridionalis*	Netted at site	Unknown
	Butterfly	*Pseudonympha magus,* Silver-bottom Brown	Observed resting and in flight	Least concern
	Butterfly	*Tarucus thespis,* Vivid Blue	Observed	Least concern
	Katydid	Phaneropterinae sp. 1	Netted at site	NA
	Grasshopper	*Euloryma* sp. 1	Netted at site	NA
	Grasshopper	*Acanthacris ruficornis,* Garden Locust	Observed at site	Least concern
	Grasshopper	Lentulinae sp. 1	Netted at site	NA
	Grasshopper	Pamphagidae sp. 1	Observed at site	NA
	Moth	*Nudaurelia cytherea,* Pine Emperor Moth	Observed on *Searsia* sp.	NA
	Ant	*Crematogaster peringueyi,* Black Cocktail ant	Nest observed at site	Least concern
	Beetle	*Campulipus limbatus,* Longleg Flower Chafer	Observed	NA
	Beetle	*Mariazofia gibba,*Striped Toktokkie	Observed	Least concern
Vertebrates:	Bird	*Prinia maculosa*, Karoo Prinia	Observed	Least concern
	Bird	*Pycnonotus capensis,* Cape Bulbul	Observed	Least concern
	Bird	*Cinnyris chalybeus,* Southern Double-collared Sunbird	Observed	Least concern
	Bird	*Telophorus zeylonus*, Bokmakierie	Observed	Least concern
	Bird	*Zosterops virens,* Cape White-eye	Observed	Least concern
	Bird	*Pternistis capensis,* Cape Spurfowl	Observed	Least concern
	Bird	*Coturnix coturnix,*Common Quail	Observed	Least concern
	Reptile	*Psammophylax rhombeatus,* Rhombic skaapsteker	Observed	Least concern
	Reptile	*Cordylus cordylus,* Cape Girdled Lizard	Observed	Least concern
	Mammal	*Bathyergus suillus,* Cape dune molerat	Burrowing activity	Least concern

Figure 17: The sandstone rocky outcrop present at Khoi 10 would potentially harbour unique terrestrial vertebrate diversity including potential habitat for Southern Adder (Bitis armata)

Terrestrial biodiversity theme sensitivity

In the screening tool the terrestrial biodiversity theme sensitivity is indicated as 'Very High' (Lornay Environmental Consulting 2024). It lists ESA and CBA areas (this is dealt with in the section 'Connectivity for animal species' below), as well as four important and endangered vegetation types, namely indigenous forest, Agulhas Limestone Fynbos, Overberg Sandstone Fynbos, and Overberg Dune Strandveld (Figure 18). The screening tool however, considered the larger property e.g. both sides of the R43 while the section of concern, in terms of development, is only on the north-western side (seaside) of the R43 which only includes one vegetation type of concern e.g. Overberg Dune Strandveld (Figure 18). The Overberg Dune Strandveld vegetation type is classified as 'endangered' and harbours a number of important animal species. Overberg Dune Strandveld occurs as a narrow, fragmented strip along the coast from Rooiels in the west to the mouth of the Breede River in the east. It is formally classified as 'Endangered' (B1iii) (2021). It is formally protected in De Hoop, Walker Bay and De Mond nature reserves, along with smaller private nature reserves. Urban development and invasive plant species are the major threats to this vegetation type. It harbours at least three endemic plant species, *Berkheya coriacea*, *Lampranthus salteri* and *Gladiolus carmineus*. We do not know of animal species endemic to this vegetation type; although its insect fauna is generally poorly known, especially smaller and more cryptic species. Larger mammals supported by Overberg Dune Strandveld include Bontebok and Cape Grysbok.

Based on the pristine state of much of the property, the potential to act as corridors for species (Figure 19) and its classification as nationally Endangered, we list its site ecological importance (SEI) as 'high'

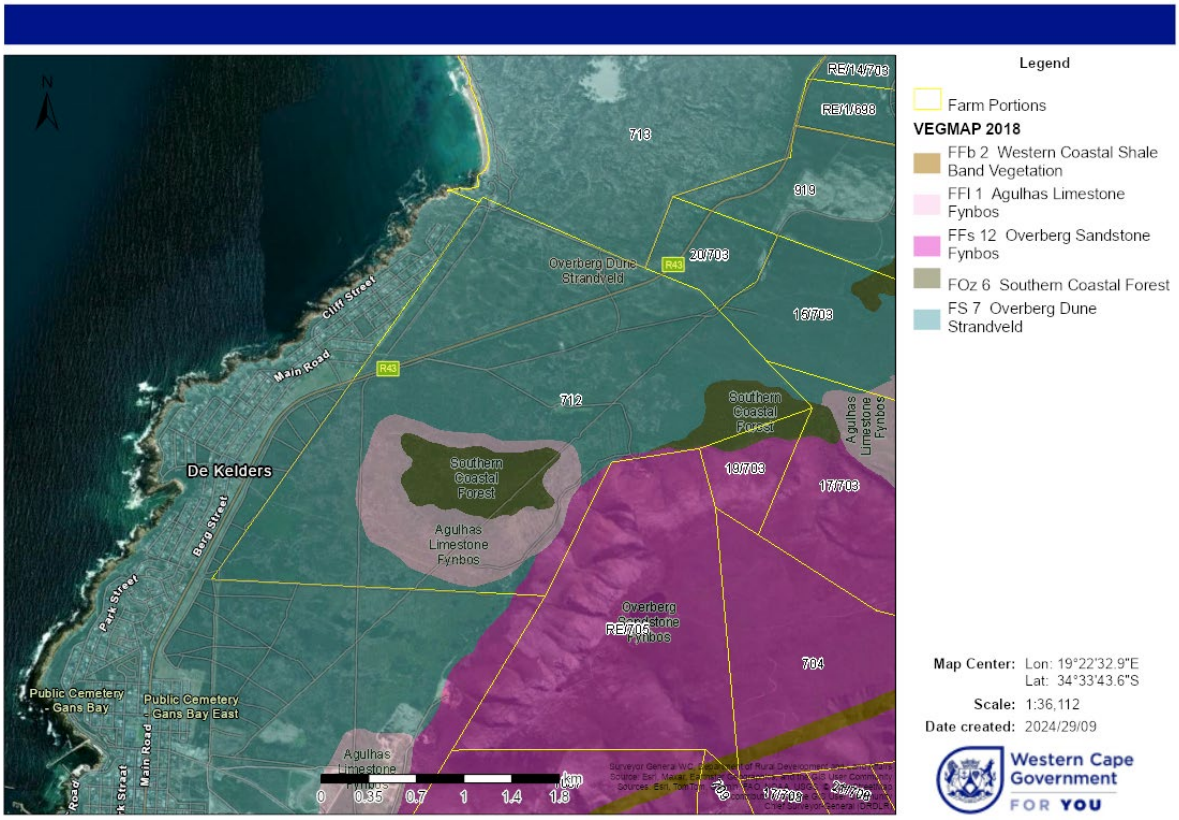

Figure 18: The vegetation types present within the earmarked development area only includes the 'Endangered' Overberg Dune Strandveld type (WCDA 2024).

Table 18: Evaluation of site ecological importance (SEI) in terms of terrestrial biodiversity protection (the receptor) for animal species of conservation concern for the proposed development, see evaluation criteria (SANBI 2020). SEI is classified as 'high.

Biodiversity importance		Conservation importance				
		Very high	High	Medium	Low	Very low
Functional integrity	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

Site ecological importance (SEI)		Biodiversity importance				
		Very high	High	Medium	Low	Very low
Receptor resilience	Very low	Very high	Very high	High	Medium	Low
	Low	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	High	Medium	Medium	Low	Low	Very low
	Very high	Medium	Low	Very low	Very low	Very low

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.

Animal species of concern

A total of 12 animal species of concern was identified by the screening tool (Lornay Environmental Consulting 2024) (Table 2). One additional SCC was identified through the desktop survey (Table 19). The following section deals with the site's potential importance for these species and the probability of them being present in habitats in the development area.

Table 19: Other notable animal species likely to occur at the property identified by the desktop survey.

Group	Species	Notes	Status
Reptiles:	Cape dwarf chameleon, *Bradypodion pumilum*	iNaturalist, GBIF immediate area	**Near threatened**

Connectivity for animal species

The conservation planning map of the Western Cape Biodiversity Plan (Pool-Stanvliet et al. 2017) indicates the presence of a ESA1 and ESA2 (Ecological Support Area) and CBA 1 (Critical Biodiversity Area) (Figure 19). The ESA's and CBA is critically important for animal landscape connectivity perspective for terrestrial species.

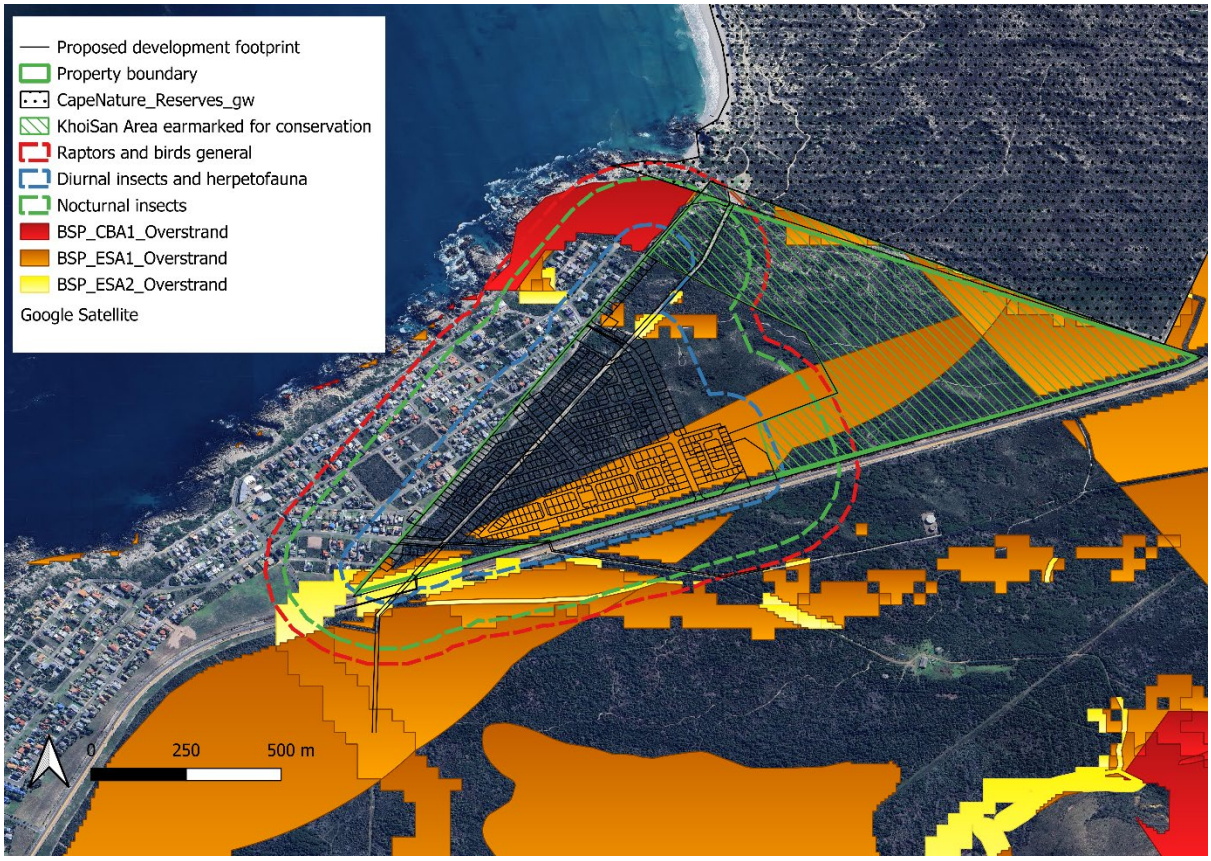

Figure 19: The conservation planning map of the Western Cape Biodiversity Plan (Pool-Stanvliet et al. 2017) indicates the presence of ESA 1, ESA2 (Ecological Support Area) and CBA 1 (Critical Biodiversity Area).

From a faunal connectivity perspective, the presence of an ecological corridor facilitating movement of ground-dwelling species in the coastal zone and between the Walker Bay Nature Reserve, Grootbos Private Nature Reserve and surrounding landscapes is important and essential. The development footprint infringes on the ESA1 and ESA2 areas in the PAOI. It also impacts connectivity between a CBA1 area and the Walker Bay Nature Reserve to the north-west of the development. Both these potential impacts are mitigated significantly if the area within the proposed development property, which are outside of the urban edge (indicated as 'KhoiSan area earmarked for conservation' in Figure 19), attains some kind of formal conservation status.

From a faunal connectivity perspective, we therefore consider the proposed development risk as **'medium'** (Table 19) provided the necessary mitigation measures is in place to facilitate animal movement (see section on mitigation measures).

Table 19: Evaluation of site ecological importance (SEI) in terms of connectivity (the receptor) for animal species of conservation concern for the proposed development, see evaluation criteria (SANBI 2020). SEI is classified as 'medium'.

Biodiversity importance		Conservation importance				
		Very high	High	Medium	Low	Very low
Functional	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

Site ecological importance (SEI)		Biodiversity importance				
		Very high	High	Medium	Low	Very low
Receptor resilience	Very low	Very high	Very high	High	Medium	Low
	Low	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	High	Medium	Medium	Low	Low	Very low
	Very high	Medium	Low	Very low	Very low	Very low

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.

Black harrier *Circus maurus*

Black Harrier *Circus maurus* is a rare endangered, southern African endemic that may have lost more than 50% of its breeding habitat as a result of extensive land transformation by agriculture, invasive alien vegetation and urbanization in the Fynbos biome (Curtis et al. 2004, Taylor 2015a). The species' typical breeding habitat is Fynbos, particularly Strandveld and Mountain Fynbos. In fragmented Renosterveld habitat it is only found in high-quality, larger sized patches (Curtis et al. 2004). Foraging habitat includes montane areas, lower altitude Karoo scrub, semi-desert, floodplains and croplands (Curtis et al. 2004). Small mammals and birds (especially quail) are their main diet preference (Curtis et al. 2004). Both GBIF and iNaturalist data sets indicates sufficient records of this species in the general region of the property. There is therefore a reasonable likelihood that the species would frequent the property for foraging purposes. We did not observe the species during our field visit. The development will result in an irreplaceable loss of forage habitat for this species. The species range widely, and the minor loss of forage habitat could be tolerated. The development site does not significantly influence potential breeding sites. The Black harrier *Circus maurus,* will therefore be negatively affected by loss of forage habitat. The proposed development and potential impact are therefore classified as **'low'** (Table 20).

Table 20: Evaluation of site ecological importance (SEI) in terms of Black harrier Circus maurus forage habitat (the receptor) for animal species of conservation concern for the proposed development, see evaluation criteria (SANBI 2020). SEI is classified as 'low'.

Biodiversity importance		Conservation importance				
		Very high	High	Medium	Low	Very low
Fu nc	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

Site ecological importance (SEI)		Biodiversity importance				
		Very high	High	Medium	Low	Very low
Receptor resilience	Very low	Very high	Very high	High	Medium	Low
	Low	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	High	Medium	Medium	Low	Low	Very low
	Very high	Medium	Low	Very low	Very low	Very low

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.

African marsh harrier *Circus ranivorus*

This species occurs along large water bodies and adjacent open vegetation (Simmons 2005). The species is classified as Endangered in South Africa (Taylor 2015b), with habitat loss and degradation being the most significant threat to the continued survival of this species. There is a paucity of records in the GBIF and iNaturalist data sets for this species. The habitat is marginal and the likelihood that the species would frequent the property low. We did not observe the species during our field visit. The species range widely, and the minor loss of marginal forage habitat could be tolerated. The development site does not contain or influence potential breeding sites. The African marsh harrier *Circus ranivorus,* will therefore not likely be significantly impacted by the proposed development and potential impact are therefore classified as **'very low'**.

Southern black korhaan *Afrotis afra*

Southern Black Korhaan *Afrotis afra* is classified as 'Vulnerable' and is a South African endemic (Evans 2023). The species distribution range is restricted to the western area of the Northern Cape Province and to the area south of the Great Escarpment in the Western Cape, and the western section of the Eastern Cape Province (Evans 2023). Most iNaturalist and GBIF records indicates several records in the open plain Renosterveld areas of the Overberg >60 km east of the property. We did not observe the species during our field visit. The impact of the development on Southern Black Korhaan *Afrotis afra* by the proposed development is therefore considered to be **'very low'**.

Denham's bustard *Neotis denhami*

Denham's bustard occurs in natural vegetation (fynbos and grasslands), pastures and agricultural fields (Allan 2005). The species is classified as 'Vulnerable'(Taylor 2015c), mainly due to powerline collisions (Shaw et al. 2010), habitat conversion to intensive monoculture fields, and overgrazing of grassland habitats. Most iNaturalist and GBIF records indicates several records to the east of the property but more in the open plain areas of the Overberg where they frequent the more open agricultural fields. We did not observe the species during our field visit. The habitat in the development site is not suitable for the species. The impact of the development on Denham's bustard, *Neotis denhami*, by the proposed development is therefore considered to be **'very low'**.

Hottentot Buttonquail *Turnix hottentottus*

The Hottentot Buttonquail *Turnix hottentotus* is an endangered terrestrial turnicid which is endemic to the Fynbos biome (Lee et al. 2018). Inappropriate burning frequencies and rapid urban development and agricultural expansion in lowland areas are the main threats to this species (Peacock 2015). This species avoids older vegetation (age since fire) and dense grass (or other vegetation) cover (Lee et al. 2018). The species preference for sparse drier vegetation has also been recorded by Lee (2013). There are no iNaturalist and GBIF records in the vicinity with the closest being a sighting >16 km towards Stanford in the north-east. We did not observe the species during our field visit. Our surveys included a lot of walking by four observers and only common quail was flushed. The likelihood that this species would occur at the site is therefore considered low. The impact of the development on Hottentot Buttonquail *Turnix hottentotus*, by the proposed development will therefore likely be **'very low'**.

Striped flufftail *Sarothrura affinis*

The South African population of Striped Flufftail *Sarothrura affinis* is suspected to be undergoing a decline as a result of habitat loss (Peacock et al. 2015). More than 10% of the regional population may have been lost because throughout its fragmented range, suitable grassland habitat is under severe threat from unsuitable burning regimes, heavy grazing, agriculture and afforestation (Peacock et al. 2015). In the Western Cape this species is often found in dense *Psoralea-Osmitopsis* Fynbos next to streams or near moist depressions (Graham and Ryan 1984, Kakebeeke 1993). There are a couple of records for this species on both the iNaturalist and GBIF databases with most of these are towards Kleinmond and Grabouw area about 80 km away. Stripe flufftails did not respond to our playbacks at the development site. The habitat e.g. dry duneveld, at the site is not considered suitable for the species. The likelihood that this species would occur at the site is therefore considered low. The potential impact on Stiped flufftail *Sarothrura affinis* is classified as **'very low'**.

Southern Adder *Bitis armata*

The Southern Adder *Bitis armata* is classified as 'Vulnerable' because of its severely fragmented distribution due to the reduction in the extent and quality of its habitat (Maritz and Turner 2023). This species has a small distribution in the southwest coastal margin of the Western Cape with three disjunct subpopulations, one from West Coast National park to just north of Cape Town, the second near Hermanus and the third near De Hoop Nature reserve (Maritz and Turner 2023). The species occurs mainly in coastal lowland Fynbos on sandy and

rocky substrates (Phelps 2010). It is known to shelter under rock slabs between dense shrubs on coastal plains (Phelps 2010). iNaturalist and GBIF records for this species is concentrated between Stanford and Struisbaai with the closest 8 km away to the north-east of this property. We did not observe the species during our field visit. The dry strandveld habitat and presence of rocky patches (see Figures 12, 17 and 20) indicates highly suitable habitat for this species. There is a high likelihood that this species would occur at the site. The impact of the development on Southern Adder *Bitis armata*, by the proposed development will therefore likely be **'high'** (Table 21).

Table 21: Evaluation of site ecological importance (SEI) in terms of Southern Adder Bitis armata habitat (the receptor) for animal species of conservation concern for the proposed development, see evaluation criteria (SANBI 2020). SEI is classified as 'high'.

Biodiversity importance		Conservation importance				
		Very high	High	Medium	Low	Very low
Functional integrity	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

Site ecological importance (SEI)		Biodiversity importance				
		Very high	High	Medium	Low	Very low
Receptor resilience	Very low	Very high	Very high	High	Medium	Low
	Low	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	High	Medium	Medium	Low	Low	Very low
	Very high	Medium	Low	Very low	Very low	Very low

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.

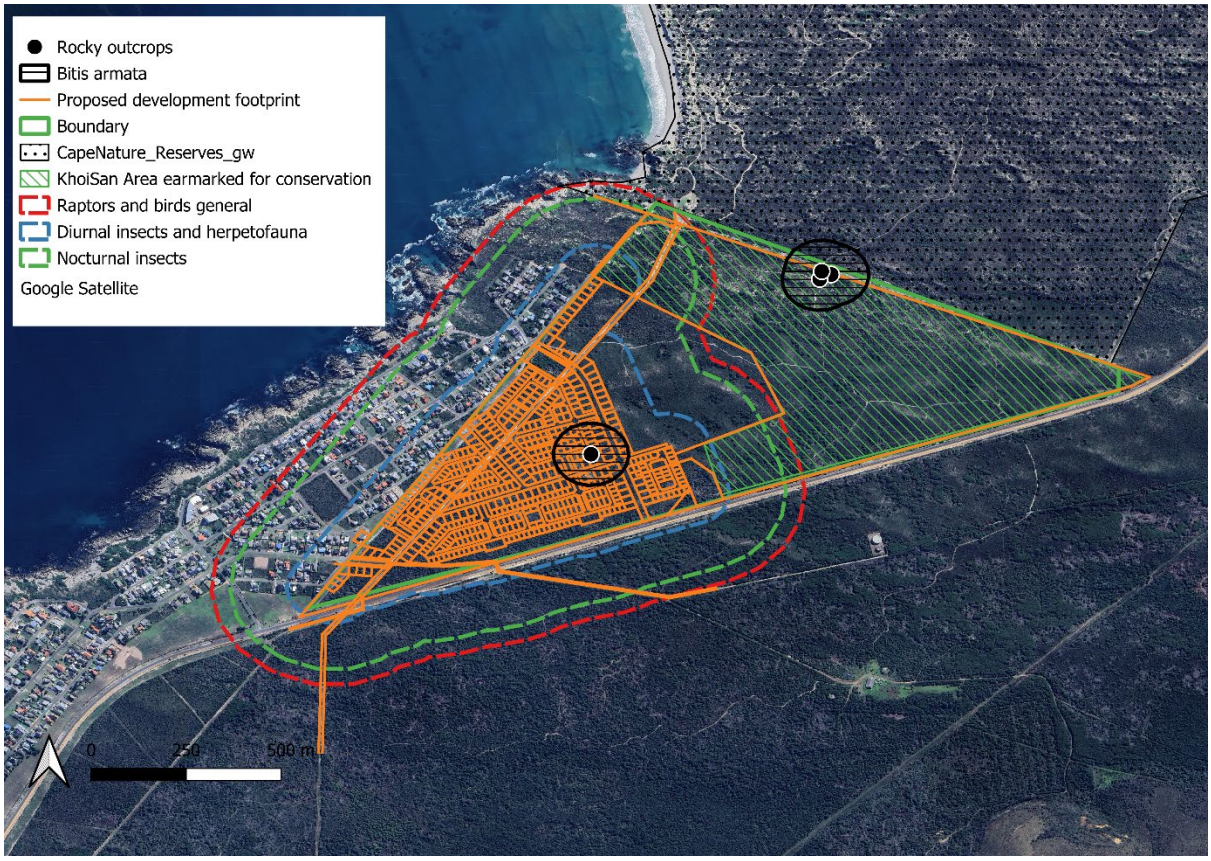

Figure 20: The location and associated PAOI (100 m) of rocky outcrops seen as habitat hotspots for Bitis armata

One of the rocky outcrop habitat hotspots for this species falls well within the development area and the others in the proposed conservation area. *Bitis armata* distribution is very fragmented and limited which allows for little leeway in terms of activities that could result in permanent destruction of their habitat. It is therefore proposed that the areas indicated in Figure 20 are avoided, buffered with at least 100 m, and remain connected to the natural part of the propwerty in order to limit impacts on this species prime habitat e.g. rocky outcrops and surrounds.

Cape dwarf chameleon, *Bradypodion pumilum*

Although the Cape dwarf chameleon, *Bradypodion pumilum* are not listed as an SCC in the screening report we include it here because it is confirmed present in the immediate vicinity of the development site. The Cape dwarf chameleon is listed as 'Near threatened' due to its moderate sized distribution and the continued decline of quality and extent of habitat in their distribution range (Tolley 2023). The subpopulations in urban areas are fragmented and in decline (Tolley 2023). The species distribution range from the south-western pats of Cape Town to the Agulhas plain (Tolley and Burger 2004). The species occurs in a variety of vegetation types including Fynbos, Forested Riparian Vegetation and some exotic and indigenous trees and shows some tolerance to peri-urban gardens and greenbelts (Tolley 2023). Several iNaturalist and GBIF records indicates the presence of the species directly adjacent and therefore likely within the development site. We did not observe the species during our field visit. We do consider the habitat (breeding and foraging) at this site to be

suitable for this species. It is likely that some of their habitat will be lost permanently and the disturbance during construction phase will have a negative impact. The conservation area provisioned in the site and adjacent properties to the north do however provide adequate space for this species to escape and persist. The potential impact on Cape dwarf chameleon, *Bradypodion pumilum* is classified as **'low'** (Table 22).

Table 22: Evaluation of site ecological importance (SEI) in terms of Cape dwarf chameleon, Bradypodion pumilum habitat (the receptor) for animal species of conservation concern for the proposed development, see evaluation criteria (SANBI 2020). SEI is classified as 'low'.

Biodiversity importance		Conservation importance				
		Very high	High	Medium	Low	Very low
Functional integrity	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

Site ecological importance (SEI)		Biodiversity importance				
		Very high	High	Medium	Low	Very low
Receptor resilience	Very low	Very high	Very high	High	Medium	Low
	Low	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	High	Medium	Medium	Low	Low	Very low
	Very high	Medium	Low	Very low	Very low	Very low

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.

Western leopard toad *Sclerophrys pantherine*

The Western leopard toad *Sclerophrys pantherine* is listed as 'Endangered' because of its extent of occurrence of 3,824 km^2, its area of occupancy is 405 km^2 (IUCN SSC Amphibian Specialist Group and South African Frog Re-assessment Group 2016). The population and its habitat is considered to be severely fragmented and in decline due to urbanisation and agricultural expansion throughout its range (IUCN SSC Amphibian Specialist Group and South African Frog Re-assessment Group 2016). Western leopard toads require a standing body of water that which is at least 30-50 cm deep, with large open water areas (Burger 2020). The water should not dry up for the period of late July to well into November and even December, so as to allow sufficient time for the development of different batches of tadpoles (Burger 2020). One of the population breeding strongholds for this species is located at the farm

Uilenkraal approximately 8 km to the east of the property (Doucette-Riise 2012, Casola 2017). There is confirmed from iNaturalist records adjacent to the property. We did not find any suitable water bodies in the property that could be potential breeding sites. It is likely that the site is suitable as terrestrial forage habitat for the species. We did not observe the species during the field visits. It is likely that some of their habitat will be lost permanently and the disturbance during construction phase will have a negative impact. The conservation area provisioned in the site and adjacent properties to the north do however provide adequate space for this species to escape and persist. The potential impact on Western leopard toad *Sclerophrys pantherine* is classified as **'medium'** (Table 23).

Table 23: Evaluation of site ecological importance (SEI) in terms of Western leopard toad Sclerophrys pantherine habitat (the receptor) for animal species of conservation concern for the proposed development, see evaluation criteria (SANBI 2020). SEI is classified as 'medium'.

Biodiversity importance		Conservation importance				
		Very high	High	Medium	Low	Very low
Functional integrity	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

Site ecological importance (SEI)		Biodiversity importance				
		Very high	High	Medium	Low	Very low
Receptor resilience	Very low	Very high	Very high	High	Medium	Low
	Low	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	High	Medium	Medium	Low	Low	Very low
	Very high	Medium	Low	Very low	Very low	Very low

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.

Verreaux's eagle *Aquila verreauxii*

The Verreaux's eagle *Aquila verreauxii* is classified as Vulnerable and is widely distributed throughout South Africa. This eagle prefers rock hyrax but is an opportunistic predator that will also take medium-sized mammals, large birds and carrion (Murgatroyd et al. 2016). Sightings of the species in the general area are common in both the iNaturalist and GBIF. We did observe the species during our site visit at site Khoi 7 only but they likely to use the whole property as hunting area. The development does constitute some permanent loss of the

species foraging habitat. The development do not significantly influence potential breeding sites or their prey species or their prey species. The Verreaux's eagle *Aquila verreauxii,* will therefore not likely be impacted by the proposed development and potential impact are classified as '**low**' (Table 24).

Table 24: Evaluation of site ecological importance (SEI) in terms of Verreaux's eagle Aquila verreauxii habitat (the receptor) for animal species of conservation concern for the proposed development, see evaluation criteria (SANBI 2020). SEI is classified as 'low'.

Biodiversity importance		Conservation importance				
		Very high	High	Medium	Low	Very low
Functional integrity	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

Site ecological importance (SEI)		Biodiversity importance				
		Very high	High	Medium	Low	Very low
Receptor resilience	Very low	Very high	Very high	High	Medium	Low
	Low	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	High	Medium	Medium	Low	Low	Very low
	Very high	Medium	Low	Very low	Very low	Very low

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.

Invertebrates

Yellow-winged Agile Grasshopper *Aneuryphymus montanus*

The Yellow-winged Agile Grasshopper is an endemic grasshopper species occurring on Western and Eastern Cape mountains. It is listed as vulnerable on the IUCN Red List Category. It has been recorded from near Clanwilliam, and from there eastwards towards East London, associated with different fynbos types occurring on south-facing, cool slopes (Brown 1960, Kinvig 2005). Brown (1960) mentions the species being collected "amongst partly burnt stands of evergreen sclerophyll in rocky foothills". Sites where the species have been documented include Graafwater, close to Lambert's Bay, De Rust, Suurbraak, Bot River, Kogelberg and Joubertinia. The species seems to show preference for rocky, mountainous areas. Its estimated extent of occurrence is ca. 170 000 square kilometres. Extensive sweep netting was performed at all ten sites visited, and at least two transects of ca. 20m were conducted per site, targeting a representative sample of the vegetation of the site. No specimens of *A. montanus* were seen during two field visits, neither sampled during sweep netting. The site does

not occur in close proximity to mountains, being of a low-elevation, coastal and sandy nature, with the centre of the site being ca. 800m from the ocean. The substrate was not rocky, except for two locations – where, no specimens of *A. montanus* were sampled or seen.

The proposed developments are classified as **'very low'** impact on *A. montanus*, due to 1) low elevation, 2) an absence of species data from this area, 3) no host plant records being available to link present vegetation to possible insect species occurrence, and 4) no direct evidence of occurrence.

Mute Winter Katydid *Brinckiella aptera*

The Mute Winter Katydid occurs in the fynbos biome of the Western Cape. It is listed as vulnerable on the IUCN Red List Category (Naskrecki & Bazelet 2009). The species is unique in the genus, with the males being apterous. It has been found at four locations only, including Bredasdorp, Pearly Beach and Tulbagh. It can expectantly be found across the Western Cape province in succulent Karoo (re: into southern Namaqualand) and fynbos habitats, although declining due to habitat loss (Naskrecki & Bazelet 2009). The estimated extent of occurrence (EOO) is ca. 12 500 square kilometres (Naskrecki and Bazelet 2009). Its host plant data is absent, but predictably feeds on flowers and leaves of a narrow range of host plants (re: are thus quite host specific), occurring on low-growing, herbaceous shrubs (Naskrecki and Bazelet 2009). They are a nocturnal species, and thus sensitive to light disturbance, such as artificial lights associated with development. Their peak emergence time is from August to October. Although the host plant/s of *B. aptera* is not yet determined, we performed extensive sweep netting of natural vegetation of Overberg Dune Strandveld, targeting a representative species pool of plants. No specimens of *B. aptera* were found; however, a closely related species, *B. wilsoni* (Western Winter Katydid) was sampled from site Khoi 3. It is generally accepted that species that are closely related, i.e., within a genus, could share host plants due to tightly linked co-evolutionary histories. The proposed development lies in close proximity to where *B. aptera* has previously been observed, namely Pearly Beach (ca. 16km away) and Bredasdorp (ca. 60km away). Overberg Dune Strandveld occurs from the proposed development site, towards Pearly Beach and beyond along the coast. Notably, many plant species are shared between Overberg Dune Strandveld and the vegetation types around Bredasdorp (Agulhas Sand Fynbos, Overberg Sandstone Fynbos). Thus, this site could host *B. aptera* despite not being witnessed during our field excursion.

The proposed developments are classified as **low impact** on *B. aptera*, due to 1) no host plant records being available to link present vegetation to possible insect species occurrence, 2) no direct evidence of occurrence after extensive sweep netting and 3) the wide EOO of the species (Table 25).

Table 25: Evaluation of site ecological importance (SEI) in terms of Mute Winter Katydid Brinckiella aptera forage habitat (the receptor) for animal species of conservation concern for the proposed development, see evaluation criteria (SANBI 2020). SEI is classified as 'low'.

Biodiversity importance		Conservation importance				
		Very high	High	Medium	Low	Very low
Functional integrity	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

Site ecological importance (SEI)		Biodiversity importance				
		Very high	High	Medium	Low	Very low
Receptor resilience	Very low	Very high	Very high	High	Medium	Low
	Low	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	High	Medium	Medium	Low	Low	Very low
	Very high	Medium	Low	Very low	Very low	Very low

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.

Red Hill Copper *Aloeides egerides*

The Red Hill Copper is listed as vulnerable on the IUCN Red List Category for South Africa. Its estimated EOO is 9 294 square kilometres. It is an endemic species to the Western Cape province, and has been recorded at six locations only, which includes Simons Town, Worcester (specifically Quaggas Kloof Dam), Struisbaai, Karwyderskraal (close to Hermanus), Agulhas National Park and Mamre. It is found in small and isolated subpopulations. As recently as 2023, it has been spotted ca. 21km to the north of the proposed development at Philipskop Moutain Reserve. According to SANBI, their preferred habitat is flat, sandy and open fynbos habitats. Their host plant data is absent. The genus *Aloeides* is Afrotropical and contains ca. 57 species, and typical host plants include *Aspalathus* spp., *Roepera flexuosa*, and *Hermannia* spp. (Williams 2022). It is generally accepted that species that are closely related, i.e., within a genus, could share host plants due to tightly linked co-evolutionary histories. We have witnessed both *Roepera flexuosa* and *Hermannia ternifolia* on multiple sites; potential host plants for *A. egerides*. It is possible that the site is suitable as terrestrial forage and breeding habitat for the species. We did not observe the species during two different field visits.

The proposed developments are classified as **medium impact** on *B. aptera*, due to 1) host plant records link present vegetation to possible insect species occurrence, and 2) the flat, sandy nature of the habitat to be affected (Table 26).

Table 26: Evaluation of site ecological importance (SEI) in terms of Red Hill Copper Aloeides egerides forage habitat (the receptor) for animal species of conservation concern for the proposed development, see evaluation criteria (SANBI 2020). SEI is classified as 'medium'.

Biodiversity importance		Conservation importance				
		Very high	High	Medium	Low	Very low
Functional integrity	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

Site ecological importance (SEI)		Biodiversity importance				
		Very high	High	Medium	Low	Very low
Receptor resilience	Very low	Very high	Very high	High	Medium	Low
	Low	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	High	Medium	Medium	Low	Low	Very low
	Very high	Medium	Low	Very low	Very low	Very low

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.

Forest invertebrates

The proposed development site does not fall under the forest biome; the area that has forest cover is not included as part of the proposed development. The impact of the development on forest invertebrates is listed as '**very low**'.

Overall SEI for the PAOI

The overall SEI for the PAOI is considered '**High'** (Table 27):

Table 27: Evaluation of SEI of faunal habitats/processes in the PAOI for the proposed development. BI = biodiversity importance, RR = receptor resilience.

Habitat/Process	Conservation Importance	Functional Integrity	Receptor resilience	Site ecological importance
Terrestrial biodiversity (critical biodiversity areas supporting ecosystems, habitats for terrestrial fauna)	**Very high** Endangered vegetation type harbours unique biodiversity	**High** Good habitat connectivity with adjacent Walker Bay NR	**Medium** Permanent loss of a large proportion of the habitats within the property	**High** BI=Very high RR=Medium
Connectivity for animal species (suitable safe habitat allowing free animal movement)	**Medium** ESA 1, ESA2 and CBA1 linking the Walker Bay NR and adjacent natural areas	**Medium** The terrestrial connection is still functional and important	**Medium** Decrease in habitat with potential impact on free animal movement	**Medium** BI=Medium RR=Medium

Black harrier *Circus maurus* forage habitat	**Medium** No breeding habitat present. Foraging habitat suitable	**Low** Small proportion of species larger foraging range.	**Medium** Decrease in forage habitat size but low impact in terms of broader forage range	**Low** BI=Low RR=Medium
African marsh harrier *Circus ranivorus* forage habitat (species not present)	**Very low**	**Very low**	**Very low**	**Very low**
Southern black korhaan *Afrotis afra* (species not present)	**Very low**	**Very low**	**Very low**	**Very low**
Denham's bustard *Neotis denhami* (species not present)	**Very low**	**Very low**	**Very low**	**Very low**
Hottentot Buttonquail *Turnix hottentotus* (species not present)	**Very low**	**Very low**	**Very low**	**Very low**
Striped Flufftail *Sarothrura affinis* (species not present)	**Very low**	**Very low**	**Very low**	**Very low**
Southern Adder *Bitis armata*	**High** Habitat highly suitable. Likelihood of species presence high.	**High** High due to connectivity to adjacent conservation areas.	**Low** Permanent loss of habitat	**High** BI=High RR=Low
Cape dwarf chameleon, *Bradypodion pumilum* habitat	**Medium** Suitable habitat present for breeding and foraging. Species NT	**Low** Small proportion of larger range. Property serves as foraging and breeding habitat	**Medium** Permanent loss but small proportion	**Low** BI=Low RR=Medium
Western leopard toad *Sclerophrys pantherine*	**Medium** Suitable foraging habitat present	**High** High due to connectivity to adjacent conservation areas.	**Low** Permanent loss of habitat of small range	**Medium** BI=Medium RR=Low
Verreaux's eagle *Aquila verreauxii*	**Low** Suitable foraging habitat present	**Low** Small proportion of larger range. Property serves as foraging and breeding habitat	**Medium** Permanent loss but small proportion	**Low** BI=Low RR=Medium
Yellow-winged Agile Grasshopper *Aneuryphymus montanus* (species not present)	**Very low**	**Very low**	**Very low**	**Very low**
Mute Winter Katydid *Brinckiella aptera*	**Low** Potential habitat if site is rehabilitated	**Low** Property could serve as foraging and breeding habitat. Impact fairly minor to turn positive with rehabilitation	**Medium** Potential for reasonable habitat connectivity with potentially functional ecological corridors	**Low** BI=Low RR=Medium
Red Hill Copper *Aloeides egerides*	**Medium** Suitable habitat present for breeding and foraging. Species VU	**Medium** The terrestrial connection is still functional and important	**Medium** Potential for reasonable habitat connectivity with potentially functional ecological corridors	**Medium** BI=Medium RR=Low

Forest invertebrates	**Very low**	**Very low**	**Very low**	**Very low**

Recommended mitigation measures

The following animal impact related mitigation measures are recommended for this development.

a) The proposed development area is in an endangered vegetation type with associated terrestrial faunal diversity. The potential impact will be high and permanent. If development is to go ahead offsets should be considered. In this case the property area to the east of the R43 could do with better protection and should be considered in this regard.
b) The development plan should be adapted to avoid important *Bitis armata* habitats as indicated in Figure 20. Note that connectivity of these habitat hotspots with the onsite conservation area and adjacent nature reserve should remain in-tact.
c) During the construction phase the construction area should be clearly demarcated and blocked off from the 'private open spaces' area to avoid damage and pollution.
d) Search and Rescue of slow-moving animals should take place on building sites. Animals should however not be moved off-site but rather released in the conservation area.
e) Dogs should not be allowed to free-roam the 'conservation' area.
f) Rodent control should make use of environmentally friendly methods such as instillation of owl boxes and raptor perches that attract natural predator control.
g) Lights and insects:
    a. Switch lights off when not needed
    b. Add timers / sensors to lights
    c. Make lights activated by movement
    d. Add shields to lights
    e. Make lights shine downward, or direct only to where needed
    f. Use long wavelength red or amber lights / filtered amber LED, with no blue / minimal green light for outdoor lighted areas
    g. A lighting plan should be developed to ensure that the impact of night lights is kept to an absolute minimum
    h. Clearing of indigenous fynbos vegetation should be kept to an absolute minimum
    i. Avoid trampling of natural fynbos vegetation surrounding developments

Reference list

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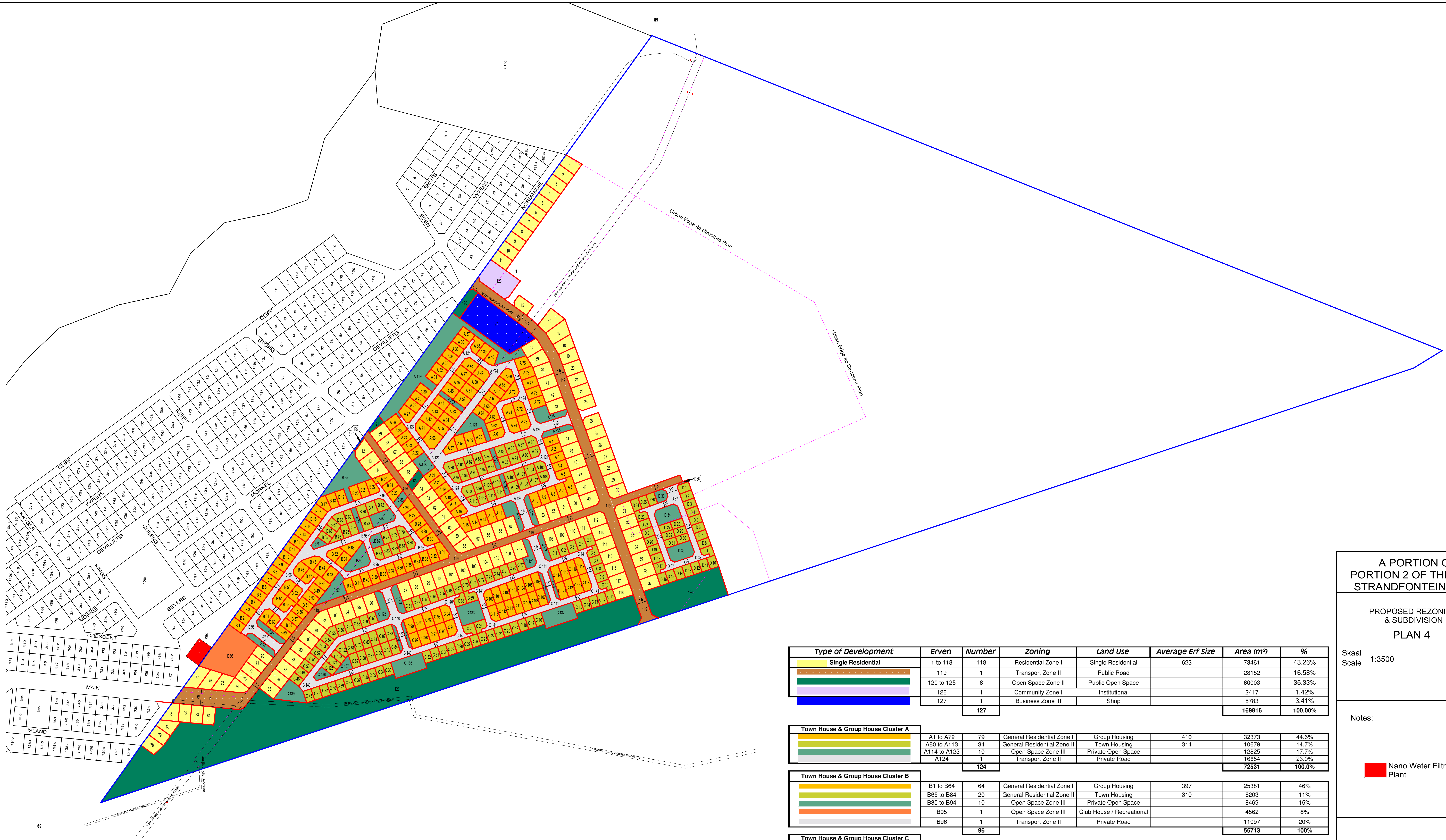
Appendix 1

Detailed development plan



Type of Development	Erven	Number	Zoning	Land Use	Average Erf Size	Area (m²)	%
Single Residential	1 to 118	118	Residential Zone I	Single Residential	623	73461	43.26%
	119	1	Transport Zone II	Public Road		28152	16.58%
	120 to 125	6	Open Space Zone II	Public Open Space		60003	35.33%
	126	1	Community Zone I	Institutional		2417	1.42%
	127	1	Business Zone III	Shop		5783	3.41%
		127				169816	100.00%

Town House & Group House Cluster A	Erven	Number	Zoning	Land Use	Average Erf Size	Area (m²)	%
	A1 to A79	79	General Residential Zone I	Group Housing	410	32373	44.6%
	A80 to A113	34	General Residential Zone II	Town Housing	314	10679	14.7%
	A114 to A123	10	Open Space Zone III	Private Open Space		12825	17.7%
	A124	1	Transport Zone II	Private Road		16654	23.0%
		124				72531	100.0%

Town House & Group House Cluster B	Erven	Number	Zoning	Land Use	Average Erf Size	Area (m²)	%
	B1 to B64	64	General Residential Zone I	Group Housing	397	25381	46%
	B65 to B84	20	General Residential Zone II	Town Housing	310	6203	11%
	B85 to B94	10	Open Space Zone III	Private Open Space		8469	15%
	B95	1	Open Space Zone III	Club House / Recreational		4562	8%
	B96	1	Transport Zone II	Private Road		11097	20%
		96				55713	100%

Town House & Group House Cluster C	Erven	Number	Zoning	Land Use	Average Erf Size	Area (m²)	%
	C1toC89, C122toC125	93	General Residential Zone II	Group Housing	296	27547	42.2%
	C90 to C121	32	General Residential Zone I	Town Housing	401	12829	19.7%
	C126 to C139	14	Open Space Zone III	Private Open Space		10042	15.4%
	C140 to C141	2	Transport Zone II	Private Road		14845	22.7%
		141				65262	100.0%

Town House & Group House Cluster D	Erven	Number	Zoning	Land Use	Average Erf Size	Area (m²)	%
	D1 to D32	32	General Residential Zone II	Group Housing	289	9255	59.2%
	D33 to D36	4	Open Space Zone III	Private Open Space		2579	16.5%
	D37	1	Transport Zone II	Private Road		3795	24.3%
		37				15628	100.0%

SUMMARY OF PROPOSED LAND USES

Type of Development	Erven	Number	Zoning	Land Use	Average Erf Size	Area (m²)	%
Single Residential, Group Housing & Town Housing Oppertunities	1 to 118, A1 to A113, B1 to B84, C1 to C125 & D1 to D32	472	Residential Zone I, General Residential Zone I, General Residential Zone II	Single Residential, Group Housing & Town Housing Units	419	197728	52.2%
Public & Private Open Space	120 to 125, A114 to A123, B82 to B95, C126 to C139 &D33 to D36	45	Open Space Zone II and Open Space Zone III	Public & Private Open Space		98480	26.0%
Public Roads	119, A124, B96, C140, C141 & D37	6	Transport Zone II	Public & Private Roads		74542	19.7%
Institutional	126	1	Community Zone I	Institutional		2417	0.6%
Business	127	1	Business Zone III	Shop		5783	1.5%
TOTAL		524				378951	100.0%

A PORTION OF
PORTION 2 OF THE FARM
STRANDFONTEIN Nr.712

PROPOSED REZONING
& SUBDIVISION

PLAN 4

Skaal
Scale 1:3500

N

Notes:

Nano Water Filtration Plant

PlAn Active
Town and Regional Planners
Stads-en Streeksbeplanners

Notes:
ALL DISTANCES APPROXIMATE
AND SUBJECT TO SURVEY

DRAWN	PLAN NR./NO.
P.A	ksb2f.drw

DATE: 08/09/2015

Appendix 2

CV and SACNASP Certificate of Prof JA Venter

CV and SACNASP Certificate of Dr Rudi Swart

Curriculum Vitae

Jan Adriaan Venter

1. Personal information

Full name:	Jan Adriaan Venter	**Home address:**	8 Steve Landman Crescent, Loeriepark, George, 6529, South Africa
Age:	51		
Gender:	Male		
Nationality:	South African	**E-mail:**	JanVenter@mandela.ac.za
Driver's license:	Code EB	**Cell number:**	+27 (0) 82 41 61096
Language:	Afrikaans (1st), English (2nd)	**Telephone nr:**	+27 (0) 44 801 5042
twitter **@JanBuffel**		**Conservation@Mandela**	**Jan Adriaan Venter**
Web page: Wildlife Ecology Lab			
Scopus Scopus		Google Scholar Google	

2. Tertiary qualifications

Degree	Institution	Research theme or modules	Time period
Doctor of Philosophy: Biology	University of Kwazulu-Natal	Intrinsic and extrinsic influences on African large herbivore assemblages and implications for their conservation.	2009 – 2014
Master of Technology: Nature Conservation	Nelson Mandela Metropolitan University	The feeding ecology of buffalo (*Syncerus caffer*) on Doornkloof Nature Reserve, Northern Cape, South Africa	2002-2006
Baccalaureus of Technology: Nature Conservation	Technikon Port Elizabeth	Plant studies IV; Research methodology; Fresh water management IV; Conservation management I; Principles of management I; Resource management IV	1998-1999
National Diploma: Nature Conservation	Technikon South Africa	Plant studies I, II and III; Animal studies I, II and III; Conservation Ecology I, II and III; Resource Management I, II and III; Conservation Communication I and II	1993-1996

3. Work experience

Institution	Institution details	Job description	Time period
Full time positions:			
NELSON MANDELA UNIVERSITY	Department of Conservation Management, Faculty of Science, Nelson Mandela University, George Campus, Madiba Drive, George, 6530	*Associate Professor* *Head of Department: Conservation Management* *Program Coordinator: Nature Conservation and Game Ranch Management* *Senior Lecturer* *Lecturer*	1 January 2021 – current date 1 January 2021 – 31 December 2023 1 June 2017- 31 December 2020 1 January 2018 – 31 December 2020 1 June 2015- 31 December 2017
ADVENTURE PROVINCE Eastern Cape PARKS & TOURISM AGENCY	Scientific Section, 6 St Marks Street, Southernwood, East London, South Africa, 5201. Tel: 043 7054400	*Specialist Ecologist* *Area of responsibility:* Eastern Cape Provincial Protected areas as well as National Marine Protected Areas *Responsible for:* Research, monitoring and specialist decision support on biodiversity conservation, protected area expansion and wildlife management. Manager of the Marine Scientific Unit (1 x Marine ecologist and 1 x Marine Technician) *Ecologist* *Area of responsibility*: Wild Coast (Mkambati, Silaka, Hluleka & Dwesa-Cwebe, East London Coast Nature Reserves; Pondoland, Hluleka & Dwesa-Cwebe Marine Protected Areas) also Baviaanskloof Mega Reserve *Responsible for*: Facilitating and conducting research, biological monitoring as well as decision support to conservation management	1 November 2011 – 31 May 2015 1st March 2006 – 31 October 2011
UNIVERSITY OF LIMPOPO	School of Agricultural and Environmental Sciences, University of Limpopo, Private Bag X1106, Sovenga, 0727.	*Senior Technician* *Area of responsibility:* Aquaculture Research Unit *Responsible for:* Technical and research support for the research unit	1st May 2004 – 28th February 2006

Department: Environmental Affairs and Nature Conservation	Doornkloof Nature Reserve, PO Box 94, Colesberg, 9795	*Protected Area Manager* *Area of responsibility:* Doornkloof Nature Reserve *Responsible for:* General, conservation and wildlife management of the nature reserve	1st September 1998 – 28th April 2004
	Namakwa District Office, Private Bag X6, Calvinia, 8190	*District Nature Conservation Officer* *Area of responsibility:* Namakwa-Hantam District *Responsible for:* Law enforcement, environmental education, conservation advice and community liaison	6th January 1997 – 30th August 1998
Part-time/Contract positions: University of Pretoria	Centre for Wildlife Management, University of Pretoria, Pretoria, 0002	*Technician* *Area of responsibility:* Centre for Wildlife Management *Responsible for:* Technical and research support for the research unit	19th June 1996 – 31st December 1996
North-West Parks Board	Pilanesberg National Park, PO Box 1201, Mogwase, 0302	*Volunteer* *Area of responsibility:* Pilanesberg National Park *Responsible for:* Assisted field ecologist with data collection and field work	15th May 1996 – 17th June 1996
Cape Nature Conservation	Outeniqua Nature Reserve, Private Bag X6517, George, 6530	*Student Nature Conservator* *Area of responsibility:* Outeniqua Nature Reserve *Responsible for:* Assisted reserve manager with conservation management and field work	15th May 1995 – 6th May 1996

4. Ratings & Impacts

Agency	Rating
South African National Research Foundation	C3 (Rating)
Google Scholar	18 (h-index)
Scopus	12 (h-index)

5. Scientific output

Peer reviewed Journal Publications (shading indicates publications by postgraduate students and post-doctoral researchers under my supervision)
1) BERNARD, A., GUERBOIS, C., MOOLMAN, L., DE MORNEY, M.A., VENTER, J.A., FRITZ, H. 2024. Combining local ecological knowledge with camera traps to assess the link between African mammal life-history traits and their occurrence in anthropogenic landscapes. Journal of Applied Ecology. 2024;00: 1–13. https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2664.14742
2) VISAGIE, M., DAVIS, R., VENTER, J.A., HONNIBALL, T. (2024) Using spatial capture-recapture models to estimate spotted hyaena (*Crocuta crocuta*) population density and assess the influence of sex-specific covariates on space use and detection probability. Conservation Science and Practise. 2024;e13214. https://doi.org/10.1111/csp2.13214
3) HELM, C., CARR, A., CAWTHRA, H., DE VYNCK, J., LOCKLEY, M., DIXON, M., RUST, R., STEAR, W., THESEN, G., VAN BERKEL, F., VENTER, J., 2024. Pleistocene ichnological heritage in national parks on the cape coast: attributes, challenges, and solutions. Koedoe 66(2), a1786. https://doi.org/10.4102/koedoe.v66i2.1786
4) HONIBALL, T., DAVIS, R., NTLOKWANA, L. & VENTER, J.A. (2024) Lion lords and sharing hyaenas: Carnivore guild dynamics around elephant carcasses. Ecology and Evolution 14:e11373. https://doi.org/10.1002/ece3.11373
5) VERMEULEN, M.M., FRITZ, H., STRAUSS, W.M., HETEM, R.S., VENTER, J.A. (2024) Seasonal activity patterns of a Kalahari

	mammal community: trade-offs between environmental heat load and predation pressure. Ecology and Evolution 14:e11304. https://doi.org/10.1002/ece3.11304
6)	BERNARD, A., GUERBOIS, C., VENTER, J.A., FRITZ, H. (2024) Comparing local ecological knowledge with camera trap data to study mammal occurrence in anthropogenic landscapes of the Garden Route Biosphere Reserve. Conservation Science and Practice. https://doi.org/10.1111/csp2.13101
7)	HONIBALL, T.-L. & VENTER, J.A. (2024). A record of thanatological type behaviour in spotted hyaenas, *Crocuta crocuta* (Erxleben, 1777). Tropical Zoology, 37(1-2). https://doi.org/10.4081/tz.2024.136
8)	BERNARD, A., FRITZ, H., DUFOUR, A., VENTER, J.A., GUERBOIS, C. (2024) A local ecological knowledge-based assessment of anthropodependence for large mammals in anthropogenic landscapes. Biological Conservation 290:110450 https://doi.org/10.1016/j.biocon.2024.110450
9)	DAVIS, R., OVERTON, E., PRUGNOLLE, F., ROUGERON, V., HONIBALL, T., SIEVERT, O. & VENTER, J.A. (2024) Baboons (*Papio spp.*) as a potentially underreported source of food loss and kleptoparasitism of cheetah (*Acinonyx jubatus)* kills. Food Webs 38. https://doi.org/10.1016/j.fooweb.2023.e00331
10)	CLEMENTS, H. et al (multiple authors) (2024) The bii4africa dataset of faunal and floral population intactness estimates across Africa's major land uses. Scientific Data 11:191 https://doi.org/10.1038/s41597-023-02832-6
11)	NICVERT, L., DONNET, S., KEITH, M., PEEL, M., SOMERS, M.J., SWANEPOEL, L.H., VENTER, J.A., FRITZ, H., DRAY, S. (2024) Using the multivariate Hawkes process to study interactions between multiple species from camera trap data. Ecology (In press)
12)	DAYA, J., FRITZ, H., VENTER, J.A. (2024) Diet preference of black rhinoceros (*Diceros bicornis*) at Welgevonden Game Reserve across different seasons. African Journal of Range and Forage Science (In press)
13)	HELM, CW, BATEMAN, MD., CARR, AS., CAWTHRA, HC., DE VYNCK, JC., DIXON, MG., LOCKLEY, MG., STEAR, W. & VENTER, JA. (2023) Pleistocene fossil snake traces on South Africa's Cape south coast, Ichnos, 30(2): 98-114. https://doi.org/10.1080/10420940.2023.2250062
14)	STRYDOM, Z., GREMILLET, D., FRITZ, H., VENTER, J.A., COLLET, J., KATO, A., PICHEGRU, L. (2023). Age and sex-specific foraging movements and energetics in an endangered monomorphic seabird. Marine Biology 138 https://link.springer.com/article/10.1007/s00227-023-04288-z
15)	SMITH, K., VENTER, J. A., PEEL, M., KEITH, M., & SOMERS, M. J. (2023). Temporal partitioning and the potential for avoidance behaviour within South African carnivore communities. Ecology and Evolution, 13, e10380. https://doi.org/10.1002/ece3.10380
16)	BROOKE, C.F., MAREAN, C., WREN, S.B., FAHEY, P., VENTER, J.A. (2023) Drivers of large mammal distribution: an overview and modelling approach for palaeoecological reconstructions of extinct ecosystems. Biological Journal of the Linnean Society. https://doi.org/10.1093/biolinnean/blad100
17)	BALL, I.A., MARNEWECK, D.G., ELLIOT, N.B., GOPALASWAMY, A.M., FRITZ, H., VENTER, J.A. (2023) Considerations on effort, precision and accuracy for long term monitoring of African lions (*Panthera leo*), when using Bayesian spatial explicit capture-recapture models, in fenced protected areas. Ecology & Evolution 13, e10291. https://doi.org/10.1002/ece3.10291
18)	MARNEWICK, K., SOMERS, M.J., VENTER, J.A., KERLEY, G.I.H. (2023) Are we sinking African cheetahs in India? S Afr J Sci. 2023;119(7/8), Art. #15617. https://doi.org/10.17159/sajs.2023/15617
19)	BERNARD, A., MOOLMAN, L., DE MORNEY, M.A., GUERBOIS, C., VENTER, J.A., FRITZ, H. (2023) Height related detection biases in camera trap surveys: Insights for combining data from various sources. Koedoe. 65(1), a1734. https://doi.org/10.4102/koedoe.v65i1.1734
20)	HELM, C.W., CARR, S.C., CAWTHRA, H.C., DE VYNCK, J.C., DIXON, M.G., GRĀBE, P., THESEN, H.H. VENTER, J.A. (2023) Tracking the extinct giant Cape Zebra on the south Coast of South Africa. Quaternary Research 1-13. https://doi.org/10.1017/qua.2023.1
21)	REEVES, B., BROOKE, C.F., VENTER, J.A., CONRADIE, W. (2022) The reptiles and amphibians of the Mpofu-Fort Fordyce Nature Reserve complex in the Winterberg Mountains, Eastern Cape Province, South Africa. African Journal of Wildlife Research 52: 134–145 https://doi.org/10.3957/056.052.0134
22)	HELM, C.W., CARR, S.C., CAWTHRA, H.C., DE VYNCK, J.C., DIXON, M.G., LOCKLEY, M.G., STEAR, W., VENTER, J.A. (2022) Large Pleistocene tortoise tracks on the Cape south coast of South Africa. Quaternary Research, 1-18. https://doi.org/10.1017/qua.2022.50
23)	STRYDOM, Z., WALLER, L.J., BROWN, M., FRITZ, H., VENTER, J.A. (2022) The influence of nest location and the effect of predator removal on Cape Gannet egg predation by Kelp Gulls. Ostrich 93(2): 120-128. https://doi.org/10.2989/00306525.2022.2110535
24)	PARDO, L.E., SWANEPOEL, L., CURVEIRA-SANTOS, G., FRITZ, H., VENTER, J.A. (2022) Habitat structure, not the anthropogenic context or large predators, shapes occupancy of a generalist mesopredator across protected areas in South Africa. Mammal Research 67: 265–278. https://doi.org/10.1007/s13364-022-00636-4
25)	STRYDOM, Z., WALLER, L.J., BROWN, M., FRITZ, H., VENTER, J.A. (2022) Factors that influence Cape fur seal predation on

	Cape gannets at Lambert's Bay, South Africa. PeerJ 10:e13416 http://doi.org/10.7717/peerj.13416
26)	JANSEN VAN VUUREN, A., FRITZ, H. & VENTER, J.A. (2022) Five small antelope species diets indicate different levels of anthrodependence in the Overberg Renosterveld, South Africa. African Journal of Ecology (Online) https://doi.org/10.1111/aje.13030
27)	BROOKE, C.F., MAREAN, C.W., WREN, C.D., FRITZ, H., VENTER, J.A. (2022). Using functional groups to predict the spatial distribution of large herbivores on the Paleo-Agulhas Plain, South Africa during the Last Glacial Maximum. Journal of Quaternary Science, 1-13. http://doi.org/10.1002/jqs.3430
28)	KANE, A., MONADJEM, A., BILDSTEIN, K., BOTHA, A., BRACEBRIDGE, C., BUECHLEY, E.R., BUIJ, R., DAVIES, J.P., DIEKMANN, M., DOWNS, C., FARWIG, N., GALLIGAN, T., KALTENECKER, G., KELLY, C., KEMP, R., KOLBERG, H., MACKENZIE, M., MENDELSOHN, J., MGUMBA, M., NATHAN, R., NICHOLAS, A., OGADA, D., PFEIFFER, M.B., PHIPPS, W.L., PRETORIUS, M., RÖSNER, S., SCHABO, D.G., SPIEGEL, O., THOMPSON, L.J., VENTER, J.A., VIRANI, M., WOLTER, K., KENDALL, C. (2022). Continent-wide variation in vulture ranging behavior to assess feasibility of Vulture Safe Zones in Africa: Challenges and possibilities. Biological Conservation 268:109516 https://doi.org/10.1016/j.biocon.2022.109516
29)	EVERS, E.M., PRETORIUS, M.E., VENTER, J.A., HONIBALL, T., KEITH, M., MGQATSA, N., SOMERS, M.J. (2022). Varying degrees of spatio-temporal partitioning between large carnivores in a fenced reserve, South Africa. Wildlife Research https://doi.org/10.1071/WR21045
30)	HELM, C.W., CARR, A.S., CAWTRA, H.C., DE VYNCK, J.C., DIXON, M., STEAR, W., STUART, MC., STUART, M., VENTER, J.A. (2022). Possible Pleistocene Pinniped Ichnofossils on South Africa's Cape South Coast. Journal of Coastal Research 38(4): 735-749 https://doi.org/10.2112/JCOASTRES-D-21-00131.1
31)	LOCKLEY, M.G., HELM, C.W., CAWTRA, H.C., DE VYNCK, J.C., DIXON, M., VENTER, J.A. (2022) Small mammal and arthropod trackways from the Pleistocene of the Cape south coast of South Africa. Quaternary Research, 107: 178–192. https://doi.org/10.1017/qua.2021.77
32)	HONIBALL, T., SOMERS, M.J., FRITZ, H., VENTER, J.A. (2021) Feeding ecology of the large carnivore guild in Madikwe Game Reserve, South Africa. African Journal of Wildlife Research 51: 153-165. https://hdl.handle.net/10520/ejc-wild2-v51-n1-a16
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Book sections/chapters	
1)	VENTER, J.A., VERMEULEN, M. & BROOKE, C. (2019) Feeding ecology of large browsing and grazing herbivores, Eds: Gordon I & Prins HHT, The Ecology of Browsing and Grazing II, Springer Ecological Studies Series.
2)	VENTER J, CHILD MF. 2016. A conservation assessment of *Alcelaphus buselaphus caama*. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa
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5)	GAYLARD A, VENTER J, EHLERS-SMITH Y, CHILD MF. 2016. A conservation assessment of *Dendrohyrax arboreus*. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.
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7)	BURGER, M. & VENTER, J.A. 2013. Reptiles and Amphibians of Mkambati Nature Reserve In: Mkambati and the Wild Coast: South Africa and Pondoland's Unique Heritage, Second edition, by Div De Villiers and John Costello.
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1)	VENTER, J.A. & PEEL, M.J.S. 2024. Limpopo National Park Water Supplementation Policy Review and Recommendations. Mozambique. Unpublished report, Peace Parks Foundation, Maputo, Mozambique.
2)	VENTER, J.A., PEEL, M.J.S., & WOLFAARD, G.C.M. 2023. An ecological assessment of potential sanctuaries for White Rhino (*Ceratotherium simum*) in Limpopo National Park, Mozambique. Unpublished report, Peace Parks Foundation, Maputo, Mozambique.
3)	VENTER, J.A., PEEL, M.J.S., & WOLFAARD, G.C.M. 2023. An ecological assessment of potential sanctuaries for White Rhino

	(*Ceratotherium simum*) in Maputo National Park, Mozambique. Unpublished report, Peace Parks Foundation, Maputo, Mozambique.
4)	VENTER, J.A., FOUCHE, P.S.O, VLOK, W., MOYO, N.A.G., GROBLER, P., THERON, S. 2010. A guide to te development of conservation plans for southern African fish species. WRC Report No. 1677/1/10. Water Research Commission, Pretoria South Africa.
Presentations at conferences and symposia	
1)	VENTER, J.A., PARDO, L, OSNER, N.R., HUEBNER, S., NICVERT, L., SWANEPOEL, L., PEEL, M., SOMERS, M., KEITH, M., FRITZ, H. 2023 Running a large-scale, long-term camera trap monitoring project for conservation in Africa, the SnapshotSafari experience. 13th International Mammalogical Congress, Anchorage, Alaska, USA
2)	HONIBALL, T., VALEIX, M., FRITZ, H., SWANEPOEL, L. & VENTER, J.A. 2023 The Human-Wildlife Landscape: Effects of Fences as a Conservation Management Tool, 13th International Mammalogical Congress, Anchorage, Alaska, USA
3)	VENTER, J.A. & BETTINGS, I. (2022) Using a spatially explicit capture-recapture model to investigate the demography and spatial dynamics of lion prides in Pilanesberg National Park. 2nd North West Provincial Annual Biodiversity Research Symposium, Rustenburg, South Africa.
4)	VENTER, J.A. & SWARTZ, Y. (2019) Insights into past and present behaviour and impacts of a fast-growing elephant population in Madikwe Game Reserve. 1st North West Provincial Annual Biodiversity Research Symposium, Cookes Lake, Mahikeng, South Africa.
5)	VENTER, JA, BROOKE, C., MAREAN, C., FRITZ, H. & HELM, C. 2019. Conceptual reconstruction of Late Pleistocene large mammal assemblages of the Palaeo-Agulhas Plain reveals resilience to climate change but vulnerability to modern humans. 8th European Congress of Mammalogy, Warsaw, Poland.
6)	VENTER, JA, BROOKE, C., MAREAN, C., FRITZ, H. & HELM, C. 2019. Conceptual reconstruction of large mammal assemblages of the Palaeo-Agulhas Plain reveals resilience to climate change but vulnerability to modern humans. 29th International Congress for Conservation Biology (ICCB 2019), Kuala Lumpur, Malaysia.
7)	VENTER, JA, BROOKE, C., MAREAN, C., FRITZ, H. & HELM, C. 2019. Conceptual reconstruction of large mammal communities on the Palaeo-Aghulas Plain. Annual Meeting & Centennial celebration of the American Society of Mammalogists, Hyatt Regency Washington on Capitol Hill, Washington DC.
8)	VENTER, JA., VERMEULEN, MM., PACKER, C., SLOTOW, R., DOWNS, D., SOMERS, MJ., PEEL, M., SWANEPOEL, L., MGQATSA, N.,FRITZ, H., WILLOWS-MUNRO, S., KEITH, M., PARKER, D., LE ROUX, A. 2018. Snapshot Safari – South Africa: Contemporary applications of camera traps to monitor mammal communities in South African protected areas. Joint SANBI Biodiversity Information Management & Foundational Biodiversity Information Programme Forum, Cape St Francis, Eastern Cape, South Africa.
9)	VENTER, J.A., PRINS, H.H.T., MASHANOVA, A., & SLOTOW, R., 2017. Ungulates rely less on visual cues, but more on adapting movement behaviour, when searching for forage, 12th International Mammalogical Congress, Perth, Western Australia.
10)	VENTER, J.A., MARTENS, F.R., PFEIFFER, M.B., DOWNS, C.T. 2017. Cape vultures and wind turbines: Between a rock and a hard place. Southern African Wildlife Management Association Symposium: Wildlife management in the face of global change, Goudini, Western Cape Province, South Africa
11)	VENTER, J.A., PRINS, H.H.T., MASHANOVA, A., DE BOER, W.F., & SLOTOW, R., 2014. Intrinsic and extrinsic factors influencing large African herbivore movements. Southern African Wildlife Management Association Symposium: Reconciling the contradictions of wildlife management in southern Africa. Pine Lodge Resort, Port Elizabeth, Eastern Cape, South Africa.
12)	VENTER, J.A., PRINS, H.H.T., MASHANOVA, A., DE BOER, W.F., & SLOTOW, R., 2014. Intrinsic and extrinsic factors influencing large African herbivore movements. Spatial Ecology & Conservation 2, University of Birmingham, Birmingham, United Kingdom.
13)	VENTER, J.A., PRINS, H.H.T., BALFOUR, D.A., SLOTOW, R. 2013. Reconstructing grazer assemblages for protected area restoration in South Africa. 11th International Mammalogical Congress, Queens University of Belfast, Belfast, Northern–Ireland.
14)	VENTER, J.A., NABE-NIELSEN, J., PRINS, H.H.T., SLOTOW, R. 2012. Fire-patch foraging by red hartebeest and zebra in nutrient limited grassland under variable predation risk. Southern African Wildlife Management Association Symposium: Responsible Biodiversity Research and Wildlife Management, Klein Kariba, Limpopo Province, South Africa.
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16)	HAMER, M., SLOTOW, R. & VENTER, J.A. 2008. Patterns of invertebrate species richness and endemism in a protected area on the Pondoland Coast, South Africa. Southern African Wildlife Management Association Symposium: Wildlife Management – Biodiversity Conservation: The science-management interface. Impekweni Resort, Port Alfred, Eastern Cape, South Africa.
17)	VENTER, J.A., 2005. The feeding ecology of Cape buffalo on Doornkloof Nature Reserve, Northern Cape Province. Southern

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19) VENTER, J.A., 2001. The Karoo habitat of the Blue Crane (*Anthropoides paradiseus*). The 13th South African Crane Working Group Workshop and the Southern African Strategy Meeting, South African Crane Working Group. Howick, Kwazulu-Natal, South Africa.

Poster presentations

1) VENTER, J.A. 2011. The value of science to improve conservation management effectiveness in marine protected areas. World Marine Biodiversity Conference 2011, Aberdeen, Scotland. (Digital object presentation)

2) VENTER, J.A., FOUCHE, P. & VLOK, W. 2010. The current distribution of *Opsaridium peringuyei* in South Africa: Is there reason for concern? 8th Annual Science Networking Meeting, Kruger National Park, Skukuza, Mpumalanga, South Africa.

3) VENTER, J.A., MOYO, N., VLOK, W., FOUCHE, P. & GROBLER, J.P. 2005. The ecology and distribution of the Southern Barred Minnow (*Opsaridium peringueyi*) in some southern African river systems. Southern African Wildlife Management Association Symposium: Wildlife Management – A conservation or economic Incentive, Magoebaskloof, Limpopo, South Africa.

Grant funding

National Research Foundation	Society for Conservation Biology
Bill Branch Memorial Grant	National Geographic Society
Oppenheimer Trust	Forestry CETA
Ernest and Ethel Eriksen Trust	Rufford Foundation
Copenhagen Zoo	Templeton Foundation
Shangani Ranch	Waitt Grants Program
Amarula Elephant Fund	US National Science Foundation
The Elephant Managers Association	South African Water Research Commission
The Palaeontological Scientific Trust	Harry and Anette Swartz Foundation
Fynbos Trust	Lion Recovery Fund
Grootbos Foundation	Tswalu Foundation
Fairfield Fund	Madikwe Wildlife Trust
Dormehl Cunningham Scholarship Funding	Panthera
Cape Leopard Trust	

Review of journal manuscripts

African Journal of Wildlife Research, African Journal of Marine Research, African Zoology, African Ecology, International Journal of Marine Science, Environmental Monitoring and Assessment, Ecological Applications, Acta Theriologica, Ecological Research, International Journal of Biodiversity and Conservation, PeerJ, Ecological Informatics, Mammal Research, Urban Forestry & Urban Greening, Journal of Arid Environments, Biodiversity and Conservation, Journal of Ornithology, Transportation Research Part D: Transport and Environment, Remote Sensing in Ecology and Conservation, Mammalia, Ecological Monographs, Kudu, Global Ecology and Conservation

Research reviews or supervisory panels

National Research Foundation	NRF Researcher Rating Review	2020 (Reviewer)
National Research Foundation	Postdoctoral, Travel, General and International Research Grants Virtual Peer Review Panel	2020 (Review Panel)
National Research Foundation	Postgraduate Bursaries/ Travel Grants Virtual Peer Review Panel	2019 (Review Panel)
National Research Foundation	Physiological plasticity of water-dependent antelope	2019 (Reviewer)
National Research Foundation	Mechanisms of resource selection and space use in a recovering rare antelope population	2018 (Reviewer)
Water Research Commission	WRC Project K5/2337 - Assessing the effect of global climate change on indigenous and alien fish in the Cape Floristic Region	2014-2017 (supervisory panel)
Water Research Commission	WRC Project K5/2039 - To understand the unintended spread and impact of alien and invasive fish species in order to develop mitigation and prevention guidelines.	2012-2014 (supervisory panel)
Water Research Commission	WRC Project K5/2187 – The resilience of South Africa's	2012-2014 (supervisory

	estuaries to future water resource development based on a provisional ecological classification of these systems.		panel)
Water Research Commission	WRC Project K5/2261 - Evaluating fish and macro-invertebrate recovery rates in the Rondegat river, Western Cape, after river rehabilitation by alien fish removal using rotenone.		2013-2016 (supervisory panel)
Student supervision			
BSc Hon/BTech			
1) M. Mbiko	Honours degree (Zoology), Walter Sisulu University, Co-supervisor	The study of dietary niche separation for ungulates in Mkambati Nature Reserve, using the stable carbon isotopes	Completed (2014)
2) E. Jones	BTech (Nature Conservation), NMU, Supervisor	Amphibians and Vegetation as indicators of Conservation Value of Wetlands in an Anthropogenically Impacted Landscape	Completed (2016) *Cum Laude*
3) K. Green	BTech (Nature Conservation), NMU, Supervisor	Variables affecting mammal species rate of capture as evaluated by camera traps on Tswalu Kalahari Reserve	Completed (2016)
4) B White	BTech (Nature Conservation), NMU, Supervisor	Water Bird Counts Along the Klein Brak River: A Study on the Precision of Citizen Science Counts	Completed (2016)
5) P Rossouw	BTech (Nature Conservation), NMU, Supervisor	Herpetological biodiversity in areas adjacent to the Wilderness section of the Garden Route National Park	Completed (2016)
6) S. Schimmel	BTech (Nature Conservation), NMU, Supervisor	Mammal diversity and density in transformed and natural landscapes of a conservation corridor adjacent to the Garden Route National Park, Western Cape	Completed (2016)
7) S. Atkinson	BTech (Nature Conservation), NMU, Supervisor	The precision of waterfowl numbers through Co-ordinated Waterbird Counts on the Great Brak Estuary	Completed (2016)
8) A. Robinson	BTech (Nature Conservation), NMU, Supervisor	Does distance from water influence herbivore assemblages in Kruger National Park?	Completed (2017)
9) D. van Aswegen	BTech (Nature Conservation), NMU, Supervisor	The effect of forest fragmentation on forest bird diversity and movement in a plantation dominated landscape	Completed (2017)
10) KL Midlane	BTech (Nature Conservation), NMU, Supervisor	Amphibian and reptile biodiversity patterns in commercial plantations of the Southern Cape	Completed (2017)
11) M. Gouws	BTech (Nature Conservation), NMU, Supervisor	Do different herbivores influence soil nitrogen levels in Satara, Kruger National Park?	Completed (2017)
12) O. Rynders	BTech (Nature Conservation), NMU, Supervisor	Forest fragmentation and its effects on invertebrate diversity and abundance	Completed (2017) *Cum Laude*
13) Z. Schoeman	BTech (Nature Conservation), NMU, Supervisor	The effect of anthropogenic disturbance on marine shorebird population size and habitat use in the Garden Route	Completed (2017)
14) D. de Villiers	BTech (Nature Conservation), NMU, Supervisor	The herpetological diversity in the Karoo National Park in South Africa	Completed (2018)
15) C. Esmeraldo	BTech (Nature Conservation), NMU, Supervisor	The influence of vegetation and water on ungulate distribution in the Karoo National Park	Completed (2018)
16) A. Laas	BTech (Nature Conservation), NMU, Supervisor	The activity patterns of herbivores exposed to predators in the Karoo National Park, South Africa	Completed (2018)

17) J. Dicker	BTech (Nature Conservation), NMU, Supervisor	The activity patterns of species exposed to large predators in the Mountain Zebra National Park	Completed (2018)
18) S. Truter	BSc Hons (Wildlife Management), UP, Co-Supervisor	Effects of medium to large carnivores on small carnivores in space and time in the Telperion Nature Reserve	Completed (2018)
19) N. Nkosi	BTech (Nature Conservation), NMU, Supervisor	Ungulates response to old agricultural fields in Gondwana Game reserve	Completed (2019)
20) I. Bettings	BTech (Nature Conservation), NMU, Supervisor	Habitat variations influencing the frequency of bird strikes in high air traffic areas within the George Airport	Completed (2019)
21) D. Ball	BTech (Nature Conservation), NMU, Supervisor	Large tree utilisation of the African Elephant (*Loxodonta africana*) in the Savanna biome	Completed (2019)
22) G. Reynolds	BTech (Nature Conservation), NMU, Supervisor	Assessing impacts of African elephant (*Loxodonta africana*) on the vegetation of Gondwana Private Game Reserve	Completed (2019)
23) K. Smith	BSc Hons (Wildlife Management), UP, Co-Supervisor	Testing the spatial and temporal avoidance hypothesis in a semi-arid landscape: Do subordinate carnivores of the Karoo change behaviour in response to dominant predators?	Completed (2019) *Cum Laude*
24) G. Sambula	BSc Hons (Zoology), UNIVEN, Co-Supervisor	Carnivore Richness In Private And State Protected Areas	Completed (2019)
25) T. Baird	BSc Hons (Wildlife Management), UP, Co-Supervisor	Spatial and temporal avoidance between large and meso-carnivores	Completed (2020)
26) A. Gervais	BSc Hons (Wildlife Management), UP, Co-Supervisor	Investigating the impact of large carnivores on mesocarnivores' temporal dynamics	Completed (2020)
27) Miss E.E.M. Evers	BSc Hons (Wildlife Management), UP, Co-Supervisor	Spatial and temporal organization of leopards (*Panthera pardus*) and spotted hyaena (*Crocuta crocuta*) on Madikwe Game Reserve	Completed (2020)
28) Mr R. Pienaar	BSc Hons (Animal, Plant & Environmental Science), WITS, Co-Supervisor	Do lions with long, dark manes behaviourally compensate for potentially high heat loads?	Completed (2020)
29) Mr I Kayiza	BSc Hons (Wildlife Management), UP, Co-Supervisor	Edge effect and its impacts on the abundance of mammal species in selected protected areas in South Africa	Completed (2020)
30) Mr N.K. Shah	BSc Hons (Wildlife Management), UP, Co-Supervisor	Do herbivores change their behaviour in the absence of lions in arid areas of SA?	Completed (2021) *Cum Laude*
31) Miss M. Thomson	BSc Hons (Wildlife Management), UP, Co-Supervisor	Herbivore space use in Atherstone Nature Reserve, Limpopo Province, South Africa.	Completed (2021) *Cum Laude*
32) Miss T. Tiribeni	BSc Hons (Wildlife Management), UP, Co-Supervisor	The effect of lion pride structure on home ranges	Completed (2022)
33) Miss K. Mieny	BSc Hons (Wildlife Management), UP, Co-Supervisor	A Preliminary Assessment of the Seasonal Difference and Influence of Megaherbivores on the Diets of Large Herbivores in Sanbona Wildlife Reserve	Completed (2022)
34) Mr A. van Niekerk	BSc Hons (Wildlife Management), UP, Co-Supervisor	Leopard tortoise occupancy in arid reserves in South Africa: assessment using camera traps.	Completed (2022)

35) Miss H. Basson	BSc Hons (Natural Resource Management), NMU, Co-supervisor	Factors influencing Chondrichthyan egg case hatching success in Mossel Bay, South Africa	Completed (2023) *Cum Laude*
36) Miss Y. Markides	BSc Hons (Natural Resource Management), NMU, Supervisor	The Development of a Condition Scoring System for White Rhinoceros (*Ceratotherium simum*), using expert knowledge	Completed (2023)
37) Mrs Rebecka Ryan	BSc Hons (Natural Resource Management), NMU, Supervisor	Opportunistic utilisation of resource pulses by a mesopredator in Welgevonden Game Reserve, South Africa	Completed (2023) *Cum Laude*
38) Mr D Stols	BSc Hons (Natural Resource Management), NMU, Co-supervisor	Elephants reduce vegetation diversity and affect tree structure in Madikwe Game Reserve	Completed (2023) *Cum Laude*
39) Mr T. Fifford	BSc Hons (Natural Resource Management), NMU, Supervisor	An assessment of a decade of surf-zone linefish monitoring in the Goukamma Marine Protected Area: Is the current resource use zonation effective?	Completed (2023) *Cum Laude*
40) Mr D.J.S. Samarasinghe	BSc Hons (Natural Resource Management), NMU, Supervisor	On the population ecology of an island leopard from a protected landscape	Completed (2023)
41) Miss S Rich	BSc Hons (Wildlife Management), UP, Co-Supervisor	The effect of vehicles on black-backed jackal (*Lupulella mesomelas*) and leopard (*Panthera pardus*) activity	Completed (2023)
42) Miss M. Venter	BSc Hons (Wildlife Management), UP, Co-Supervisor	Drivers of free-roaming African wild dog land use in the Waterberg, South Africa	Completed (2023)
Masters			
1) Mr E. Mmonoa	MSc (Zoology), University of Limpopo, Co-supervisor	Breeding habitat of Blue crane (*Anthropoides paradiseus*) in Mpumalanga	Completed (2010)
2) Miss M. Pfeiffer	Msc (Zoology), University of Kwazulu-Natal, Co-supervisor	Understanding the association between Cape Vultures (*Gyps coprotheres*) and communal farmland.	Upgraded to PhD (2013)
3) Mrs M. Vermeulen	MSc (Nature Conservation), NMU, Co-supervisor	Exploring feeding ecology and population growth rate responses of ungulates in southern African arid biomes	Completed (2016-2017)
4) Mr C. Brooke	MSc (Nature Conservation), NMU, Supervisor	Energy maximisation strategies of different African herbivores in a fire dominated and nutrient poor grassland ecosystem	Completed (2016-2017) *Cum Laude*
5) Miss F. Martens	MSc (Nature Conservation), NMU, Supervisor	The spatial ecology and roost site selection of fledging Cape Vultures (*Gyps coprotheres*) in the Eastern Cape, South Africa.	Completed (2016-2017) *Cum Laude*
6) Mrs T. Meintjes	MSc (Nature Conservation – Part time), NMU, Supervisor	Using citizen science data to evaluate waterbird populations in the Garden Route	Deregistered (2016-2020) Not completed
7) Miss D. Winterton	MSc (Nature Conservation), NMU, Supervisor	Land use and ecosystem regulation: Exploring the influence of management practise on mesopredator and herbivore interactions	Completed (2017-2018)
8) Mr J. Vogel	MSc (Nature Conservation), NMU, Supervisor	Predicting reintroduction outcomes: Assessing the feasibility of reintroducing African wild dog to a small protected area.	Completed (2017-2018) *Cum Laude*
9) Miss C. Young	MSc (Nature	Examining the influence of extrinsic factors	Completed (2017-2018)

	Conservation), NMU, Supervisor	on herbivore assemblage composition and resultant nutrient feedbacks in Kruger National Park	
10) Miss A. Robinson	MSc (Nature Conservation), NMU, Supervisor	The influence of water dependency on the spatial ecology of large mammalian herbivores on the paleo-Agulhus plain	Deregistered (2018-2022) Not completed
11) Miss Z. Schoeman	MSc (Nature Conservation), NMU, Supervisor	The spatiotemporal aspects of predation on the Cape gannet *Morus capensis* population at Bird Island, Lambert's Bay, Western Cape, South Africa	Completed (2018-2019)
12) Mr P. Faure	MSc (Nature Conservation), NMU, Supervisor	The influence of anthropogenic and environmental covariates on the habitat use and density of sympatric carnivores, Limpopo Province, South Africa	Completed (2018-2019)
13) Miss YRP. Swartz	MSc (Nature Conservation), NMU, Supervisor	Elephants in Madikwe Game Reserve: Measuring past and future impacts	Deregistered (2018-2021) Not completed
14) Miss C. Burt	MSc (Nature Conservation), NMU, Supervisor	An assessment of different methods for measuring mammal diversity in two Southern African arid ecosystems	Completed (2018-2020)
15) Miss A. Jansen-van Vuuren	MSc (Nature Conservation), NMU, Supervisor	The feeding ecology and habitat selection of small antelopes in the Overberg Renosterveld, Western Cape	Completed (2019-2020)
16) Mr H. Swanepoel	MSc (Nature Conservation), NMU, Supervisor	The implications of landscape scale habitat fragmentation and ecological corridors on the spatial ecology of five specialist browser species in a lowland Fynbos and Renosterveld ecosystem.	Completed (2019-2020)
17) Miss T. Honiball	MSc (Nature Conservation), NMU, Supervisor	Estimating the population size of three large carnivore species and the diet of six large carnivore species, in Madikwe Game Reserve	Completed (2019-2020)
18) Miss N. Tsie	MSc (Wildlife Management), UP, Co-supervisor	The interaction between burrowing mammal occurrence and large carnivore presence in South Africa	Deregistered, Not completed (2019-2022)
19) Mrs C. Shutte	MSc (Nature Conservation), NMU, Supervisor	Understanding what factors determine the birth-sex ratio of Chacma baboons (*Papio ursinus*) on the Cape Peninsula	Deregistered, Not completed (2020-2023)
20) Miss I. Bettings	MSc (Nature Conservation), NMU, Supervisor	Using spatial explicit capture-recapture model to investigate the demography and spatial dynamics of lion prides in Pilanesberg National Park	Completed (2020-2021)
21) Mr Kyle Smith	MSc (Wildlife Management), UP, Co-supervisor	Testing the spatial and temporal avoidance hypotheses: Do subordinate carnivores change behaviour in response to dominant carnivores?	Completed (2020-2022)
22) Mr D. Ball	MSc (Nature Conservation), NMU, Supervisor	Do African elephants (*Loxodonta africana*) use artificial water points as central forage stations in the Madikwe Game Reserve?	Deregistered (2020-2021) Not completed
23) Miss J. Daya	MSc (Nature Conservation), NMU, Supervisor	Feeding ecology and habitat preference of black rhino (*Diceros bicornis*) in Welgevonden Game Reserve, Limpopo Province.	Completed (2020-2021)
24) Mr TD Baird	MSc (Wildlife Management), UP, Co-supervisor	Implications of camera trap survey design and analytical methods for large carnivore estimates	Completed (2021)
25) Miss J. Harris	MSc (Nature Conservation), NMU,	Investigating the effects of pulse-driven resource availability on mammal	Completed (2021-2022)

	Supervisor	communities in the Kalahari, South Africa	
26) Mr Markus Woesner	MSc (Conservation and Management of Fish and Wildlife), Swedish University of Agricultural Science, Co-supervisor	Does the response to hot temperatures differ among species in a large herbivore community in the southern Kalahari? A landscape of risk versus heat	Completed (2022-2023)
27) Mr Samuel Ralph Davidson-Phillips	MSc (Nature Conservation), NMU, Supervisor	Estimation of a generalist meso-carnivore (Black-backed Jackal) population from a fenced protected area	Completed (2022-2023) *Cum Laude*
28) Mr Moraswi Masehle	Magister Science Wildlife Health, Ecology and Management, University of Pretoria, Co-supervisor	The Activity Patterns of the Specialized Browsing Species and their Behavioral Adjustments in Response to Predation	In progress (2022)
29) Mr Jaco Geldenhuys	Master of Scientiae (MSc) in Environmental Management, University of Pretoria, Co-supervisor	Occupancy of black-backed jackal (*Canis mesomelas* Schreber, 1775) across South Africa	In progress (2021-2022)
30) Miss Cleo Ferreira	MSc (Nature Conservation), NMU, Supervisor	Evaluating the impact of dehorning on the behavioural ecology of white rhinoceros (*Ceratotherium simum*)	In progress (2023-2024)
Doctoral			
1) Miss M. Pfeiffer	PhD (Zoology), University of Kwazulu-Natal, Co-supervisor	Ecology and conservation of the Cape Vulture in the Eastern Cape, South Africa	Completed 2016
2) Mr W. Matthee	PhD (Nature Conservation – Part time), NMU, Supervisor	Forest birds and habitat fragmentation: evolutionary adaptations to environmental change	Deregistered, Not completed (2016-2022)
3) Mrs MM. Vermeulen	PhD (Nature Conservation), NMU, Supervisor	Variation in abundance and structure of mammal communities and the consequences for species diversity	In progress (2018-2022)
4) Mrs FR. Brooke	PhD (Nature Conservation), NMU, Supervisor	Cape Vultures and their increasing threats: a race to extinction?	Completed (2018-2021)
5) Mr CF. Brooke	PhD (Nature Conservation), NMU, Supervisor	Large mammalian fauna of the Palaeo-Agulhas Plain: Predicting habitat use and range distribution	Completed (2018-2020)
6) Mr P. Mkumba	PhD (Nature Conservation), NMU, Co-Supervisor	Migration patterns of male elephants (*Loxodonta africana*) in the Hwange-Shangani corridor: Consequences on Human Elephant Conflict	In progress (2019-2022)
7) Mr W. Conradie	PhD (Nature Conservation), NMU, Supervisor	Herpetofaunal diversity and affiliations of the Okavango River Basin, with specific focus on the Angolan headwaters.	Completed (2020-2023)
8) Miss A. Bernard	PhD (Zoology) REHABS International Research Laboratory, CNRS-Université Lyon 1-Nelson Mandela University, Co-Supervisor	Trophic guild distortion in anthropogenic landscapes – Testing anthropodependence and reconciliation ecology principles of mammals in the Greater Cape Floristic Kingdom.	Completed (2020-2022)
9) Mr GS. Botha	PhD (Nature Conservation), NMU, Supervisor	The effects of fences and other infrastructure on the mammal community structure and distribution in protected areas across South Africa.	In progress (2020-2022)
10) Dr C. Helm	PhD (Geoscience),	Pleistocene fossil tracks and traces on the	Completed (2020-2022)

	NMU, Co-supervisor	Cape coast of South Africa	
11) Mrs Z. Strydom	PhD (Nature Conservation), NMU, Supervisor	Assessing the effects of fish stock management on endangered seabird populations in South Africa	Completed (2020-2022)
12) Mrs W.L. Zeller Zigaitis	PhD (Geography), Pennsylvania State University	Protected Area Process and Design: Using Geospatial Data to Mitigate Poaching in Protected Areas	Completed (2020-2024)
13) Miss T. Honiball	PhD (Nature Conservation), NMU, Supervisor	Fission fusion dynamics of spotted hyaena (*Crocuta crocuta*) in fenced protected areas: Implications for conservation management of a socially intelligent species	In progress (2021-2024)
14) Miss A. Jansen van Vuuren	PhD (Nature Conservation), NMU, Supervisor	The role of spotted and brown hyaena activity hotspots on interspecific interactions	In progress (2021-2024)
15) Mr H. Swanepoel	PhD (Nature Conservation), NMU, Supervisor	The effects of climate on the phenology of African ungulates in arid and semi-arid regions of South Africa.	In progress (2022-2024)
16) Miss J Daya	PhD (Nature Conservation), NMU, Supervisor	Managing Lions in Pilanesberg National Park: Finding a Balance between Economic and Ecological Realities in Fenced Parks	In progress (2023-2025)
17) Miss J Harris	PhD (Nature Conservation), NMU, Supervisor	A Game of Thrones: Rivals, territories and resources. What are the intrinsic costs to African lions contained in small, fenced parks?	Deregistered (2023-2023) Not completed.
18) Miss E Overton	PhD (Nature Conservation), NMU, Supervisor	The ecological role of cheetah (*Acinonyx jubatus)* and their impact on prey populations on Tswalu Kalahari Reserve	In progress (2023-2026)
Post-Doctoral Researchers & Research fellows			
1) Dr L. Pardo-Vargas	Snapshot Safari South Africa – A country wide assessment of mammal biodiversity		FBIP-NRF Post-Doctoral Researcher (2019-2020) NRF Innovation Postdoctoral Fellowship (2021-2022)
2) Dr C. Guerbois	Social-Ecological Systems		NMU Research Fellow (2019-2023)
3) Dr D. Marneweck	Snapshot Safari South Africa – A country wide assessment of mammal biodiversity		NMU Post-Doctoral Research Fellow (2020-2021)
4) Dr C. Brooke	Late Pleistocene herbivore use on the Palaeo-Agulhas Plain: the facilitation role of megaherbivores and the implications for the modern rewilding of landscapes		NRF Innovation Postdoctoral Fellowship (2021-2022)
5) Dr R. Davies	Assessing the density, distribution and spatiotemporal dynamics of small carnivores across African conservation landscapes		NMU Post-Doctoral Research Fellow (2022-2023)
6) Dr Chad Keates	Genetic study on herpetological samples from Angola in association with Werner Conradie, PE Museum.		NMU Post-Doctoral Research Fellow (2022)
7) Dr L Thel	A Game of Thrones: Rivals, territories and resources. What are the intrinsic costs to African lions contained in small, fenced parks?		FBIP-NRF Post-Doctoral Researcher (2023-2024)

6. Experience in Teaching & Learning

Teaching experience		
Time period	Institution	Module or Course Information
2015-current	Nelson Mandela University	I teach Animal Studies I/Game Health I & Animal Studies III/Game Science III to undergraduates (Diploma in Nature Conservation and Diploma in Game Ranch Management), Conservation Management and Plant Studies IV (BTech Nature Conservation), Game Science IV/Animal Studies IV (Advanced Diploma in Game Ranch Management & Advanced Diploma Nature Conservation), Conservation Management (BSc Hons Natural

		Resource Management).	
2022 (April-May)	Swedish University of Agricultural Sciences	Visiting lecturer at the Department Wildlife, Fish and Environmental Studies, Umea. Course work Masters degree, International Wildlife Management Module. Sweden-South Africa Erasmus ICM exchange program on wildlife ecology and management	
2010-2018	Pennsylvania State University/University of Cape Town	Assisted in setting up and hosting a study abroad program called People and Parks South Africa (http://aeseda.psu.edu/programs/parks-and-people-south-africa/). The students spend 10 weeks in South Africa (January-March) on an annual basis. I was one of the South African field lecturers for the program and presented practical biodiversity surveys (where we physically conducted biodiversity inventory surveys on various protected areas) and since 2013 an introductory course to conservation in South Africa. This course (2 weeks) introduced students to South African ecological and biodiversity features as well as various protected area management models while traveling from Cape Town to their base (Wild Coast, Eastern Cape).	
2005	University of Limpopo	Taught GIS to 1st and 2nd year students for one semester as substitute lecturer at the Department of Geography	
Curriculum Development & Review			
2019	Nelson Mandela University	Development of the new Advanced Diploma: Nature Conservation	Team leader of course development team
2018-2019	Nelson Mandela University	Development of the new BSc Honours: Natural Resource Management	Team member of the course development team
2020	University of South Africa	Review of the Postgraduate Diploma: Nature Conservation	Chairman of the external review committee
2020	Southern African Wildlife College	Review of a new Diploma: Applied Natural Resource Management	External reviewer

7. Professional membership and service

Association	Details	Time period
South African Wildlife Management Association	Ordinary member (Council member 2008-2010; 2018-2023)	1998-Current date
Zoological Society of Southern Africa	Ordinary member	2009-2023
IUCN Crocodile Specialist Group	Ordinary member	2013-Current date
Mammal Research Institute, University of Pretoria	Research Associate	2013-Current date
Centre for Coastal Palaeo Science, NMU	Honorary Researcher	2016-Current date
South African Council for Natural Scientific Professions	Professional Natural Scientist – Ecological Sciences: Registration Number. 400111/14	2014-Current date
Associated Private Nature Reserves Ecological Advisory Committee	Committee member	2022 – Current date
Welgevonden Game Reserve Scientific Advisory Committee	Committee member	2018-Current date
BirdLife South Africa and Endangered Wildlife Trust - Birds and Renewable Energy Specialist Group	Specialist advisor	2019-2021
REHABS International Research Laboratory, CNRS-Université Lyon 1-Nelson Mandela University, George Campus	Research Associate	2019-Current date
Society for Conservation Biology	Professional Member	2020-Current date
Centre for African Conservation Ecology, Nelson Mandela University	Member	2022-Current date

8. Other courses and qualifications

List of qualifications obtained	List of courses completed
Professional Hunter;	Statistical Techniques in Ecology, Snake ID & Snakebite

Category C Skippers License; Marine VHF Radio Operator; NAUI Open Water 1 SCUBA Diver	Treatment; Advanced Snake Handling; Conservation Planning; Practical Remote Sensing for Conservation Biologists; Ecological Niche Modelling; Landscape genetic approaches for Conservation Biologists; Resource evaluation and game ranch management for sustainable game production and conservation; Disease Risk Assessment; Game counting techniques; Wildlife handling and welfare; Maintenance of outboard motors and handling of boats on inland waters; Various ArcView, ArcGIS courses; Quantum GIS Various Windows Software courses; Financial management systems; Peace officer; Problem animal control.

9. Referees

Prof. Herbert Prins
Full Professor & Former Chairman of the Graduate School Production Ecology
Resource Ecology Group, Wageningen University
Herbert.Prins@wur.nl
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Prof. Rob Slotow
School of Life Sciences
University of Kwazulu-Natal
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Prof. Michael Somers
Professor
Mammal Research Institute, University of Pretoria
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SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Jan Adriaan Venter

Registration Number: 400111/14

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Ecological Science (Professional Natural Scientist)

Effective **12 March 2014** Expires **31 March 2025**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

RUDI CRISPIN SWART (PhD)

Postdoctoral Research Fellow, Nelson Mandela University
(+27) 84 945 2085 swartrudolph90@gmail.com

Surname	Swart
Full names	Rudi Crispin
Gender	Male
Date of birth	12/02/1991
Nationality	South African
Driver's license	Yes
Criminal Record	No
Current Location (City)	George
Willing to Relocate	Yes

X: @crispinrudi	ResearchGate: Rudi Crispin Swart	Linkedin: Rudi Crispin Swart

EDUCATION

- **Stellenbosch University** — Completed 2020
  PhD in Conservation Ecology: **Interactions between indigenous southern Afrotemperate forest trees and arthropod diversity**
- **Stellenbosch University** — Completed 2016
  MSc (cum laude) in Conservation Ecology: **The effect of commercial forestry plantations and roads on southern Afrotemperate forest arthropod diversity**
- **Stellenbosch University** — Completed 2013
  BSc Conservation Ecology & Entomology

EXPERIENCE

Postdoctoral Research Fellow — April 2021 – present
Department of Natural Resource Management, Faculty of Science, Nelson Mandela University
Research focus: Afromontane forest tree pollination; pollinator diversity conservation and insect seed predation

- Research
- Academic writing and publication
- Grant acquisition
- Organising and conducting fieldwork / laboratory work
- Managing research funds

- Student supervision – 1 honours (2024); 2 masters students (2024).
- Part-time lecturing – first year Animal Studies, honours indigenous forest electives
- Student training in entomology, curation, taxonomy and field work and ethics

Lecturer Jan 2022 – Dec 2022; Jan 2024 - present
Department of Natural Resource Management, Nelson Mandela University

- Animals studies I (invertebrate ecology) and II (vertebrate ecology)

Educator, Cambridge Curriculum Jan 2021 – April 2021
McKinlay Reid International School, George

- Teaching position in Biology (AS-level) and Environmental Management (IG-level)

Consolidoc Feb 2020 – Nov 2020
Department of Conservation Ecology and Entomology, Stellenbosch University

- Full-time researcher
- Published 3 scientific articles

Rehabilitation Ecologist – flexitime during PhD Jan 2016 – Dec 2018
Oude Bethlehem Farm, Banhoek Valley

- Developed a rehabilitation strategy and implemented a plan for degraded fynbos and Afromontane forests on a large, >300 ha farm
- Engaged with multiple stakeholders

FUNDING APPLICATIONS

Isaac Greenberg - Prospective first-year students with an exceptionally high level of scholastic achievement (2010-2012).

National Research Foundation – Scarce skills Masters Scholarship (2014). Reference number: SFH150723130214. *R 70 000.*

National Research Foundation – Innovation Masters Scholarship (2015). Reference number: SFH13090332614. *R80 000.*

National Research Foundation – Scarce skills Doctorate Scholarship (2016-2018). Reference number: SFH150723130214. *R360 000.*

Stellenbosch University Merit Bursary – awarded after receiving a Master of Science *cum laude*. (2016-2017). *R20 000.*

Stellenbosch University Research Consolidoc – awarded after PhD to assist high-research output scholars to write scientific papers full-time (2020). *R60 000.*

Nelson Mandela University Postdoctoral Award – awarded after submitting a research proposal (2021-2023). *R204 000.*

Rufford Small Grants – awarded after applying for funding for postdoc research costs (2021-2023). *R120 000.*

National Research Foundation – Innovation Postdoctoral Scholarship (2023-2025). Reference number: PSTD220324610. *R255 000.*

PUBLICATIONS

Accepted

Swart, R. C., Bradley, S., & Staude, H. A first ecological description of the lichen-clad larva of *Eublemmistis chlorozonea* Hampson, 1902 (Lepidoptera: Erebidae) from a southern Afrotemperate forest. *Metamorphosis.*

Published

Swart, R. C., New, T. R., Kotze, J., & Samways, M. J. (2024) (*book chapter*). Insect conservation in boreal and temperate forests. *Routledge Handbook of Insect Conservation.* https://doi.org/10.4324/9781003285793

Swart, R. C., Geerts, S., Pryke, J. P., & Coetzee, A. (2024) Generalist southern African temperate forest canopy tree species have distinct pollinator communities partially predicted by floral traits. *Austral Ecology.* https://doi.org/10.1111/aec.13523

Swart, R. C., Geerts, S., Geldenhuys, C. J., Pauw, J. & Coetzee, A. (2023). Weak latitudinal trends in reproductive traits of Afromontane forest trees. *Annals of Botany, mcad080.*

Swart, R. C., Samways, M. J., & Roets, F. (2022). Interspecific green leaf-litter selection by ground detritivore arthropods indicates generalist over specialist detritivore communities. *Applied Soil Ecology, 174.*

Swart, R. C., Samways, M. J., & Roets, F. (2021). Latitude, paleo-history and forest size matter for Afromontane canopy beetle diversity in a world context. *Biodiversity and Conservation, 30, 659-672.*

Swart, R. C., Samways, M. J., & Roets, F. (2020). Tree canopy arthropods have idiosyncratic responses to plant ecophysiological traits in a warm, temperate forest complex. *Scientific Reports, 10, 19905.*

Swart, R. C., Samways, M. J., Pryke, J. S., & Roets, F. (2020). Overhead tree canopy species has limited effect on leaf litter decomposition and decomposer communities in a floristically diverse, southern temperate rainforest. *Applied Soil Ecology, 156.*

Swart, R. C., Samways, M. J., Pryke, J. S., & Roets, F. (2020). Individual tree context and contrast dictate tree physiological features and arthropod biodiversity patterns across multiple trophic levels. *Ecological Entomology,* 45, 333-344.

Swart, R. C., Pryke, J. S., & Roets, F. (2019). The intermediate disturbance hypothesis explains arthropod beta-diversity responses to roads that cut through natural forests. *Biological Conservation*, *236*, 243-251.

Steed, A., **Swart, R. C.**, Pauw, M. J., & Roets, F. (2018). Response of arthropod communities to

plant-community rehabilitation efforts after strip mining on the semi-arid west coast of South Africa. *African Journal of Range & Forage Science*, *35*, 375-385.

Swart, R. C., Pryke, J. S., & Roets, F. (2018). Arthropod assemblages deep in natural forests show different responses to surrounding land use. *Biodiversity and Conservation, 27,* 583-606.

Swart, R. C., Pryke, J. S., & Roets, F. (2017). Optimising the sampling of foliage arthropods from scrubland vegetation for biodiversity studies. *African Entomology*, *25*, 164-174.

LECTURES AND TALKS

Entomological Society of Southern Africa – presented the talk "The effects of commercial forestry plantations and roads on southern Afrotemperate forest arthropod diversity" at Rhodes University. July 2015.

Oude Bethlehem Farm, Banhoek Valley - biodiversity information session presented to farm workers concerning environmental education and –rehabilitation techniques. October 2017.

Kirstenbosch Career Day – represented the Department of Conservation Ecology and Entomology, Stellenbosch University, by presenting my research to school pupils. February 2018.

Brackenfell Nature Reserve – presented a talk "Planting indigenous trees helps conserve local insect diversity" to the friends of Brackenfell Nature Reserve, using my research to show the value of planting indigenous trees to conserve local insect diversity. May 2018.

Biogeography and Landscape Ecology Research Group – presented the talk "Driving factors behind tree-arthropod interactions" at the Department of Geography, Hamburg University. July 2018.

Institute for Plant Science and Microbiology – presented the talk "A glimpse into southern Afrotemperate forest canopies" at the Department of Biology, Hamburg University. July 2018.

Oude Bethlehem Farm, Banhoek Valley - biodiversity information session presented to farm workers and owners giving feedback and progress on rehabilitation efforts. December 2018.

Scientific Services, SANParks – presented the talk "Southern Afrotemperate forest canopies: a new frontier" at the Garden Route Scientific Services, Knysna. January 2019.

Conservation Ecology Research Day – presented the talk "Southern Afrotemperate forest canopies: a new frontier" at Stellenbosch University. May 2019. Won best presentation award.

Fynbos Forum - presented the talk "Southern Afrotemperate forest canopies: a new frontier" at the 41st annual Fynbos Forum, Baardskeerdersbos. August 2019.

School of Natural Resource Management – presented a self-written lecture titled "Indigenous Forest Ecology" at Nelson Mandela University, George Campus for 4th year nature conservation students. May 2021.

Postgraduate Research Day – presented the talk "Novel frontiers in southern Afrotemperate forest canopies" online hosted by the Nelson Mandela University, George Campus. May 2021.

School of Natural Resource Management – presented a lecture titled "Insect Diversity Conservation" as an online lecture for 4th year Nelson Mandela nature conservation students. June 2021.

Fynbos Forum – presented the talk "Beetle diversity in southern Afrotemperate forest canopies – a global perspective" at the 43rd annual Fynbos Forum, held online. August 2021.

Conservation and Marine Sciences – presented a self-written module "Afrotemperate forest ecology and management" for 4th year resource management students, Cape Peninsula University of Technology, including designing and marking an assignment on forest and fynbos rehabilitation. January 2022.

Dendrological Society of South Africa – presented a talk "Southern Afrotemperate Forest Tree Pollination" at the George Botanical Gardens. July 2022.

Touw River Conservancy – presented a talk "Creating pollinator corridors across the southern Cape through multiple stakeholder input" at Fairy Knowe Hotel, Wilderness. September 2022.

Garden Route Interface and Networking Meeting (GRIN) – presented a talk "Pollinator corridors across the southern Cape" at Lake Pine Marina, Sedgefield. October 2022.

Postgraduate Student Meeting – presented a talk "Day and night-time visitors to Afrotemperate forest trees and why it is important" at Gourikwa Nature Reserve. January 2023.

Constantia Kloof Conservancy – presented a talk "Pollinator corridors across the southern Cape" at St Aidan's Chapel, Wilderness. March 2023.

Wildlife and Environment Society of South Africa – presented a talk "Pollinator diversity in Knysna Forest tree canopies" at the George Botanical Gardens. April 2023.

Outeniqua Naturalist Club – presented a talk "Pollinator diversity in Knysna Forest tree canopies" at Belvidere Manor. July 2023.

Entomological Society of Southern Africa – presented the talk "Generalist forest canopy tree species have distinct pollinator communities partially predicted by floral traits" at Stellenbosch University. July 2023.

Twelfth International Pollination Symposium – presented the talk "Generalist forest canopy tree species have distinct pollinator communities partially predicted by floral traits" at Kirstenbosch Botanical Gardens. October 2023. Won best presentation award.

Seminar Series for Biological Sciences – presented the talk "Generalist forest canopy tree species have distinct pollinator communities partially predicted by floral traits" during a seminar series at University of Cape Town. October 2023.

Conservation and Marine Sciences – presented a self-written module "Afrotemperate forest ecology and management" for 4th year resource management students, Cape Peninsula University of Technology, including designing and marking an assignment on forest and fynbos rehabilitation. January 2024.

SCIENTIFIC PAPER REVIEWS

- For the journal Biodiversity, Taylor & Francis. August 2019.
- For the journal Biodiversity, Taylor & Francis. November 2019.
- For Biodiversitas Journal of Biological Diversity, January 2020.

- For the journal Biodiversity, Taylor & Francis, May 2020.
- For the journal Agricultural and Forest Entomology, Wiley Online, January 2021.
- For the journal Agricultural and Forest Entomology, Wiley Online, May 2021.
- For the journal Scientific Reports, Nature, December 2021.
- For the journal Scientific Reports, Nature, January 2022.
- For the journal Biodiversity, Taylor & Francis, April 2022.
- For the South African Journal of Botany, Elsevier, July 2022.
- For the journal Acta Oecologia, Elsevier, October 2023.
- For the journal Biodiversity, Taylor & Francis, January 2024.
- For the Journal of Biogeography, Wiley Online, January 2024.
- For African Entomology, Entomological Society of Southern Africa, April 2024.

SOCIETIES AND MEMBERSHIPS

- Registered Ecological Scientist with the South African Council for Natural Scientific Professions (SACNASP 137513)
- Member of the Dendrological Society of South Africa (Outeniqua branch)
- Member of George Municipality Tree Planting Advisory Committee
- Member of the British Ecological Society
- Director of Forests for Schools (NPO)

COMPUTER SKILLS

- R (Advanced – LMs, GLMs, GLMMs, Bipartite, Boral, model selection, multivariate analyses)
- Excel (Advanced)
- PRIMER
- QGIS

REPORTS / MODULES WRITTEN

Edge effects in the Knysna Forest. Short description of my research on edge effects written for the South African National Survey of Arachnida newsletter. October 2015.

Veld Rehabilitation Plan for Oude Bethlehem farm. Detailed report written for farm owners including information about vegetation history of farm, current state of invasion and alien management strategies to be implemented for Afromontane forest and fynbos rehabilitation. January 2017.

Oude Bethlehem Rehabilitation Implementation Plan. Detailed implementation strategy with dates, costs and man hours to eradicate alien invasive species on farm including regular monitoring strategies. March 2017.

Eland Ecology and Management. Report written for farm owners of Oude Bethlehem to give advice and management strategies for dealing with unchecked eland numbers. May 2018.

Forest Ecology and Entomology. Module written for honours course at Nelson Mandela University. July 2021.

Portland Rehabilitation Strategy. Detailed implementation strategy to rehabilitate 600 hectares of alien invaded farmland back to fynbos and forest, including the design and costs of an indigenous nursery, the benefit of indigenous vegetation on macadamia seed set and the novel design of an indigenous windbreak for macadamia orchards. August 2022.

Implementation plan to rehabilitate the edge on Idille Farm (Erf 387). Detailed implementation strategy to restore a transformed indigenous forest edge back to a natural state on a farm along the seven passes road, Wilderness. April 2023.

REFERENCES

- Prof. F Roets – Professor in Ecology – University of Stellenbosch — fr@sun.ac.za
- Prof. MJ Samways – Distinguished Professor in Entomology and Ecology - University of Stellenbosch — samways@sun.ac.za
- Dr. A Coetzee – Lecturer – Nelson Mandela University — anina.coetzee@mandela.ac.za
- Dr. CJ Geldenhuys – Extraordinary Professor in Plant Science - University of Pretoria — cgelden@mweb.co.za

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Rudi Crispin Swart

Registration Number: 137513

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Ecological Science (Candidate Natural Scientist)

Effective **5 May 2021** Expires **31 March 2025**

Chairperson

Chief Executive Officer

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