Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report

Proposed Residential Development on Portion 4 of the Farm 643, Stanford, Version 2.

Prepared for: LORNAY ENVIRONMENTAL CONSULTING

December 2025

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Recommended citation:
Venter, J.A. 2025. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report - Proposed Residential Development on Portion 4 of the Farm 643, Stanford, Version 2. Technical Report prepared for Lornay Environmental Consulting, Hermanus, Western Cape, ZA.

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.

______________________________ 15 December 2025

Signature Date

Executive Summary

This document represents Version 2 of the Faunal Specialist Assessment, prepared following the developer's revision of the proposed layout for Portion 4 of Farm 643, Stanford, adjacent to the upper Kleinrivier estuary. The original assessment (Venter 2025) identified several areas of faunal sensitivity and recommended avoidance-based mitigation. In response, the developer submitted an amended layout, necessitating this updated Version 2 report which incorporates those design refinements directly into the impact assessment and residual significance ratings.

The Department of Forestry, Fisheries and the Environment (DFFE) screening tool identified the site as High sensitivity under the Animal Species Theme, requiring a detailed Terrestrial Animal Species Specialist Assessment. The property covers approximately 12 ha and is dominated by Agulhas Limestone Fynbos, a Critically Endangered vegetation type, with areas of moderate transformation from historic clearing, alien vegetation and informal tracks.

Field surveys were conducted on 16, 25 and 26 August 2025, supported by a comprehensive desktop review (SABAP, iNaturalist, GBIF, SANBI). The Project Area of Influence (PAOI) included a 300 m buffer for birds and larger mammals, and 100 m for smaller taxa. Methods included meandering diurnal and nocturnal surveys, point counts, and species-specific detection protocols.

The initial screening tool indicated 11 potentially occurring faunal Species of Conservation Concern (SCC). Field verification and contextual analysis confirmed or strongly supported the presence of:

- Mute Winter Katydid (VU) – confirmed; 43 individuals recorded; ~1.17/ha density in central habitat.
- Western Leopard Toad (EN) – supported by a research-grade iNaturalist roadkill record adjacent to the property.
- African Marsh Harrier (VU) – observed hunting over estuarine reedbeds.
- Black Harrier (EN), Denham's Bustard (VU), Southern Black Korhaan (VU), Southern Adder (VU), and several priority birds – considered likely or possible within the PAOI.

Additional observations, including Cape Clawless Otter and high avifaunal richness, reflect strong ecological connectivity between the property and the Kleinrivier estuary.

Site Ecological Importance (SEI), assessed using SANBI (2020) guidelines, was rated **Medium**, based on:

- High Conservation Importance (CI) due to confirmed SCC and Critically Endangered vegetation;
- Medium Functional Integrity (FI) with ~70% intact natural cover;
- Low–Medium Receptor Resilience (RR) for SCC such as Mute Winter Katydid and Western Leopard Toad.

Key potential impacts identified in Venter (2025) included direct habitat loss for SCC, reduced ecological connectivity, disturbance to estuarine birds from jetty activity, SCC mortality risks, and long-term edge effects.

In direct response to those findings, the developer implemented two critical design refinements in the revised layout assessed in this Version 2 report:

- Reduction of jetty infrastructure from two to one, decreasing disturbance pressure on estuary-associated fauna; and
- Relocation of the residential building footprint outside the recommended 50 m exclusion buffer around confirmed *Brinckiella aptera* habitat, thereby eliminating direct habitat loss for this SCC.

These refinements constitute avoidance, the highest tier of the SANBI (2020) mitigation hierarchy, and substantially reduce predicted impacts relative to the original layout evaluated in Venter (2025).

Additional recommended mitigation includes Western Leopard Toad measures (lighting management, road-crossing awareness, escape features), alien plant control, strict pet management, prohibition of any future densification beyond the three proposed dwellings, and consideration of biodiversity stewardship for the undeveloped ±70% of the property.

With the revised layout and full implementation of recommended mitigation, residual impacts decrease from Medium (Venter 2025) to Low–Medium in this Version 2 assessment. Remaining risks centre on disturbance to estuarine birds, amphibian mortality, and chronic edge-effect pressures, all of which are reduced but not fully eliminated. The no-development alternative continues to represent the highest biodiversity outcome.

Contents

Introduction

This Species Specialist Assessment Report has been prepared for the proposed residential development on Portion 4 of Farm 643, Stanford Figure 1.

A screening report conducted by the Department of Forestry, Fisheries and the Environment (DFFE) in November 2024 identified the site as having a 'High' sensitivity for the Animal Species Theme (Lornay Environmental Consulting 2025) Figure 2. Areas designated with high sensitivity require a Site Sensitivity Verification, and, depending on the results, either a Terrestrial Animal Species Compliance Statement or a Terrestrial Animal Species Specialist Assessment Report must be submitted. This report has been prepared in accordance with the protocol established by the DFFE (2020) and presents the findings of a site visit conducted within the proposed development area (the study area). The site visit aimed to verify the presence, or potential presence, of Species of Conservation Concern (SCC) as identified by the DFFE screening tool. Eleven animal species of concern were identified through the screening tool and are listed in Table 1.

Figure 1: The location of the property investigated during the site visit.

Table 1: Animal species of concern identified by the screening report (Lornay Environmental Consulting 2025).

Sensitivity	Species name	Common name	Order	Regional Red List Status
High	*Circus maurus*	Black harrier	Avis	EN
High	*Circus ranivorus*	Marsh harrier	Avis	VU
High	*Neotis denhami*	Denhams bustard	Avis	VU
Medium	*Afrotis afra*	Southern black korhaan	Avis	VU
High	*Pelecanus onocrotalus*	Great white pelican	Avis	VU
High	*Polemaetus bellicosus*	Martial eagle	Avis	EN
Medium	*Hydroprogne caspia*	Caspian tern	Avis	VU
Medium	*Sclerophrys pantherina*	Western leopard toad	Amphibian	EN
Medium	*Bitis armata*	Southern adder	Reptile	VU
Medium	*Brinckiella aptera*	Mute winter katydid	Insect	VU
Medium	*Aneuryphymus montanus*	Yellow-winged Agile Grasshopper	Insect	VU

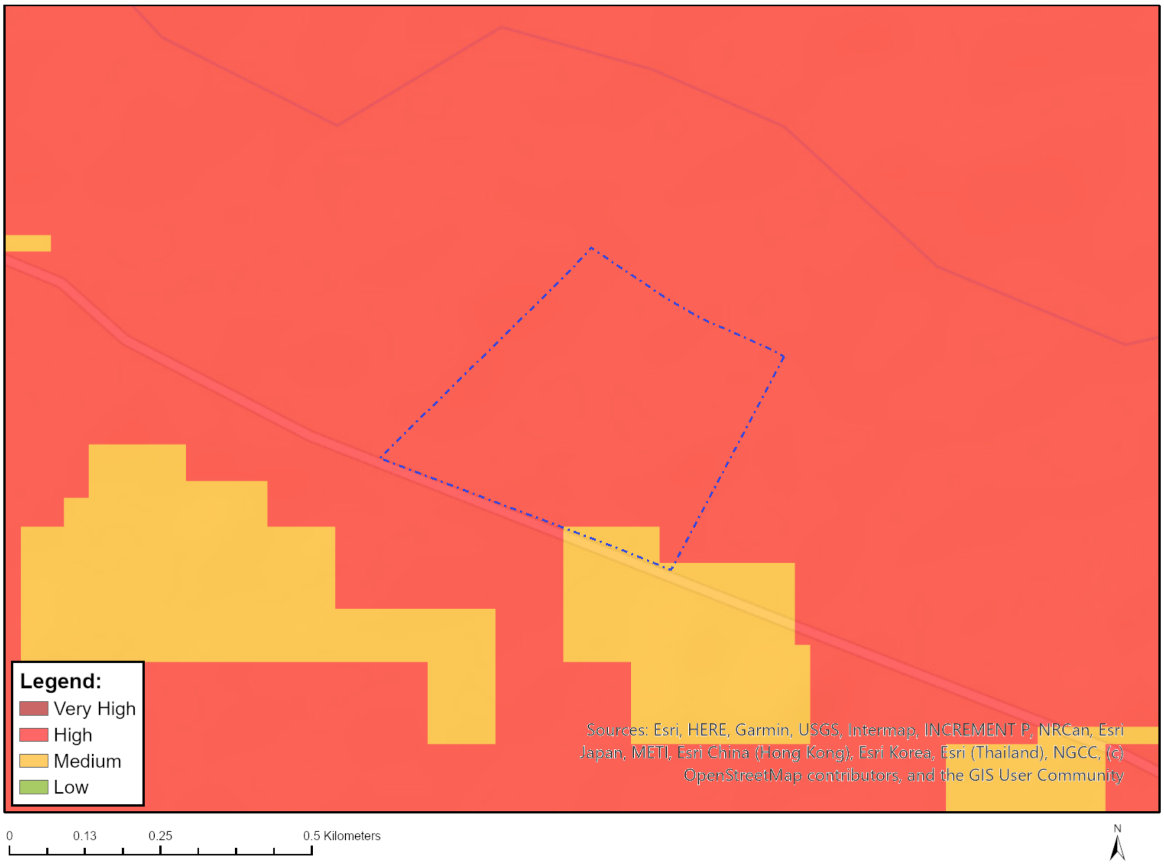

Figure 2: Map of the relative animal species theme sensitivity, indicated as 'High' as per (Lornay Environmental Consulting 2025)

This report follows the legislative requirements set out by 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.

Study Area

Portion 4 of Farm 643, Stanford is situated 1.5 km to the north-west of the town Stanford in the Western Cape Province (E 19°25’57”; S 34°25’59”) and is ~12 ha in size Figure 1. The vegetation at Portion 4 of Farm 643 is ‘Agulhas Limestone Fynbos’, a Critically Endangered vegetation type that occurs on the Agulhas Plain on calcareous soils (Mucina and Rutherford 2006). My overall impression during the site visit was that the property is in a moderately transformed state due to transecting roads, alien plants and some vegetation clearing on the property.

The proposed development at Portion 4 of the Farm 643 comprises the proposed development of 3 homesteads and originally two jetty’s with associated infrastructure covering ~7000 m^2 Figure 3, Figure 4. Three alternatives are proposed: The original preferred alternative (Alternative 2)Figure 3, the non-preferred alternative (Alternative 1)Figure 4, and an adapted, and now new preferred alternative (Alternative 3)Figure 5 based which responded to SCC concerns raised in Venter (2025).

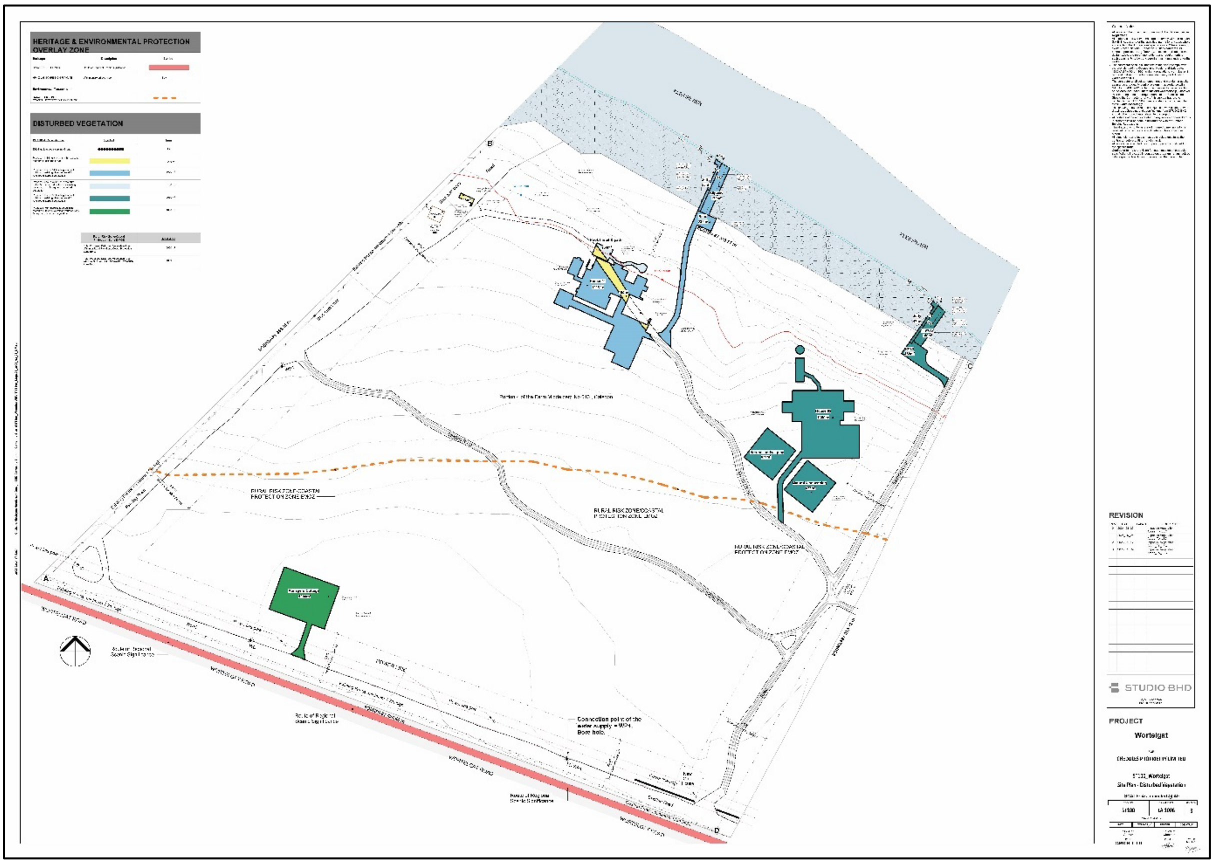

Figure 3: The originally preferred alternative (Alternative 2) of the proposed residential erven in Portion 4 of the Farm 643.

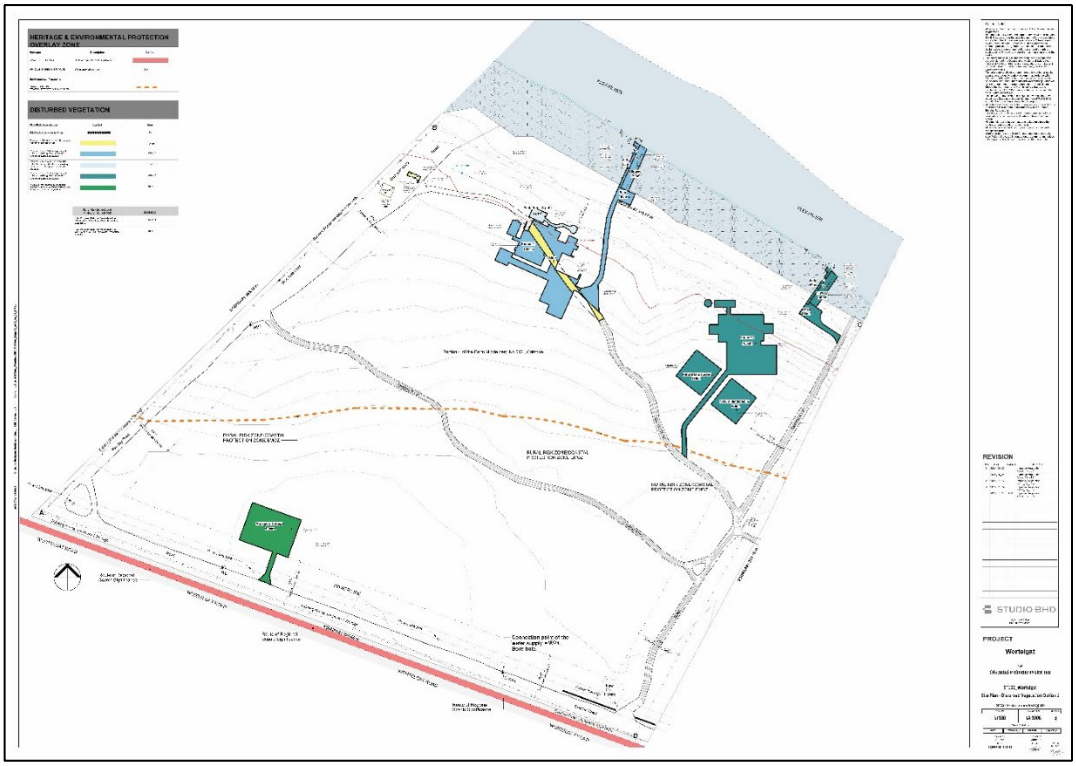

Figure 4: The non-preferred alternative (Alternative 1) of the proposed residential erven in Portion 4 of the Farm 643.

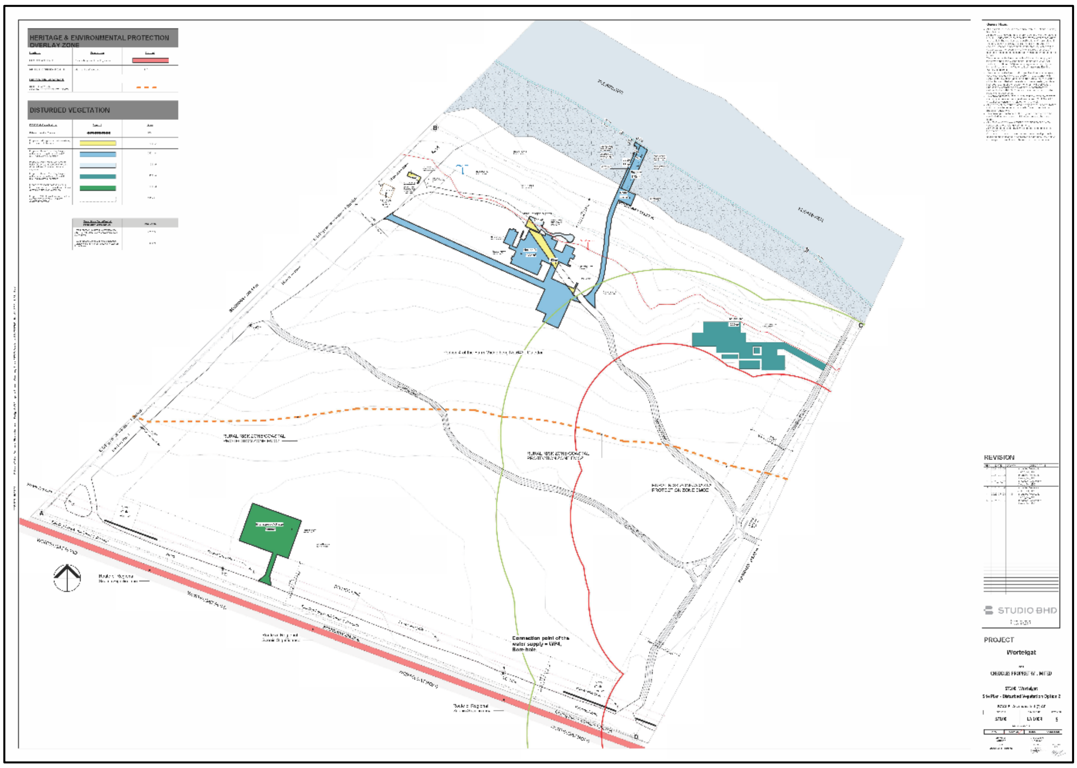

Figure 5: The new preferred alternative (Alternative 3) adapted to address SCC concerns of the proposed residential erven in Portion4 of the farm 643

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). Our approach was guided by the SANBI (2020) species environmental assessment guidelines.

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
- ❖ 3 x Field site visits both diurnal and nocturnal.

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 search effort on foot by 11 skilled observers, combined with point surveys (10 min search effort) performed by two of these observers within the development site and surrounds Figure 6. After we found *Brinckiella aptera* we conducted in species specific search protocols to determine the extent of occurrence of the species on the property (van Wyk 2025). Where good photos or other species evidence was found we posted data on iNaturalist.

The main purpose of the site visits 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 habitats 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 Table 2.

Setting the project area of influence (PAOI)

The property intended for development is ~12 ha in size. 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.

Table 2: Field survey photo site coordinates

Site	Coordinates (DD)
Location 1	-34.432926, 19.434507
Location 2	-34.431881, 19.433605
Location 3	-34.431347, 19.432757
Location 4	-34.431080, 19.432690
Location 5	-34.431429, 19.432323
Location 6	-34.431192, 19.432921
Location 7	-34.432735, 19.433368
Location 8	-34.433370, 19.434406
Location 9	-34.433470, 19.434780
Location 10	-34.434444, 19.433783
Location 11	-34.434483, 19.432187
Location 12	-34.433823, 19.430229
Location 13	-34.433198, 19.429716
Location 14	-34.433159, 19.431966

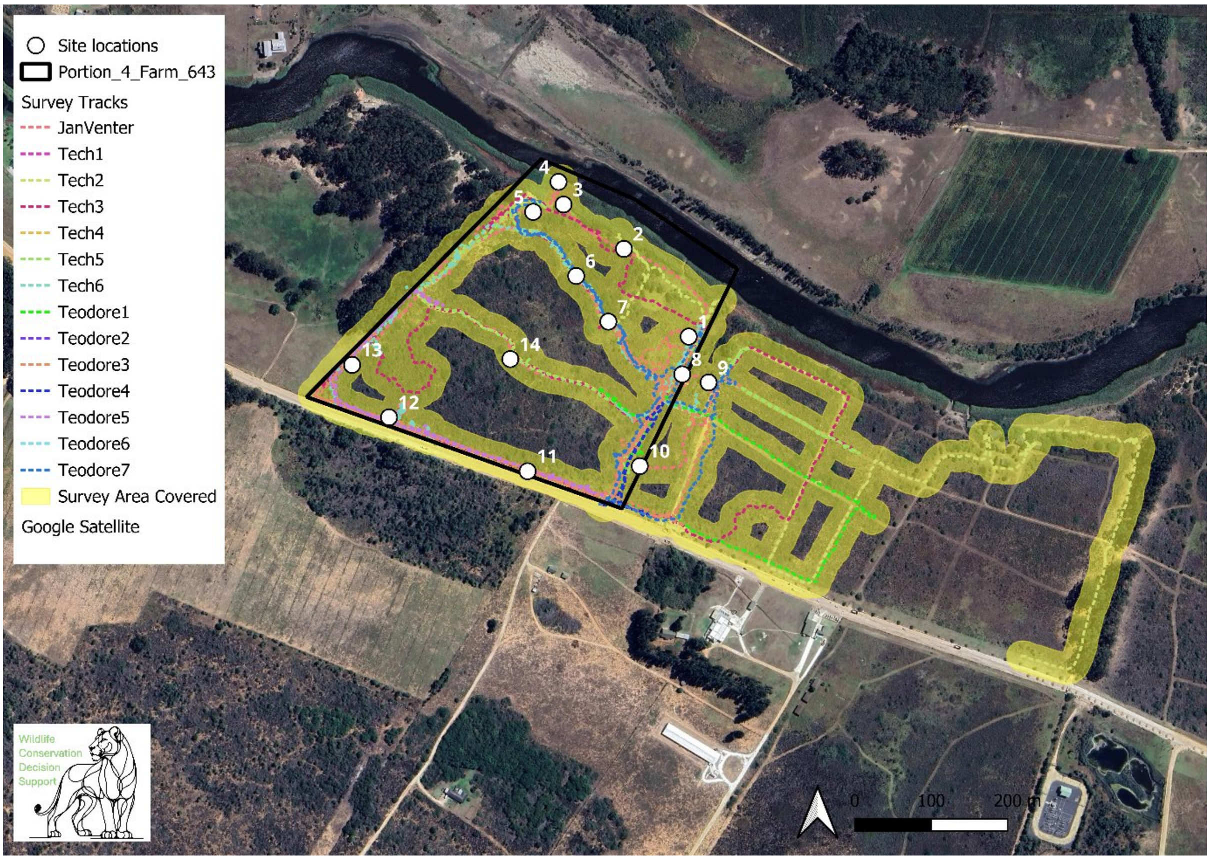

Figure 6: A map indicating the areas within the property investigated during the site visit.

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."*

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 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 habitat of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type. Globally significant populations of congregatory species (> 10% of global population).
High	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 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.

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.

Impact Assessment Methodology for Faunal Receptors

To evaluate the potential faunal impacts of the proposed development, a structured impact assessment framework was applied, consistent with the guidelines provided by SANBI (2020) and the national protocol for specialist assessments under the National Environmental Management Act (NEMA). Potential impacts were identified for each species of conservation concern (SCC) listed in the DFFE screening tool, supplemented by site-specific observations during field surveys. For each identified receptor, impacts were assessed across three alternative scenarios: (1) development without mitigation, (2) development with the full suite of proposed mitigation measures implemented, and (3) no development. Each impact was evaluated in terms of its nature, duration, spatial extent, probability of occurrence, and overall significance, with careful consideration of the receptor's ecological role, conservation status, habitat requirements, and sensitivity to disturbance. This comparative approach allows for a transparent and evidence-based understanding of the ecological trade-offs associated with development and supports sound environmental decision-making.

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 were performed on the 16th of August 2025 and again on 25 and 26 of August when a *B. aptera* specific search protocol was followed. During the visits conditions were mild and good for detecting target SCC's.

Project area of influence (PAOI)

The PAOI covers the whole of the property and beyond Table 7, Figure 7

Table 7: The PAOI was set considering main SCC likely to be present on or close to the development footprint.

Species/Group	PAOI Buffer size	Notes
General birds and large mammals	300 m	Foraging and breeding habitat
Small mammals, herpetofauna and insects	100 m	Foraging and breeding habitat

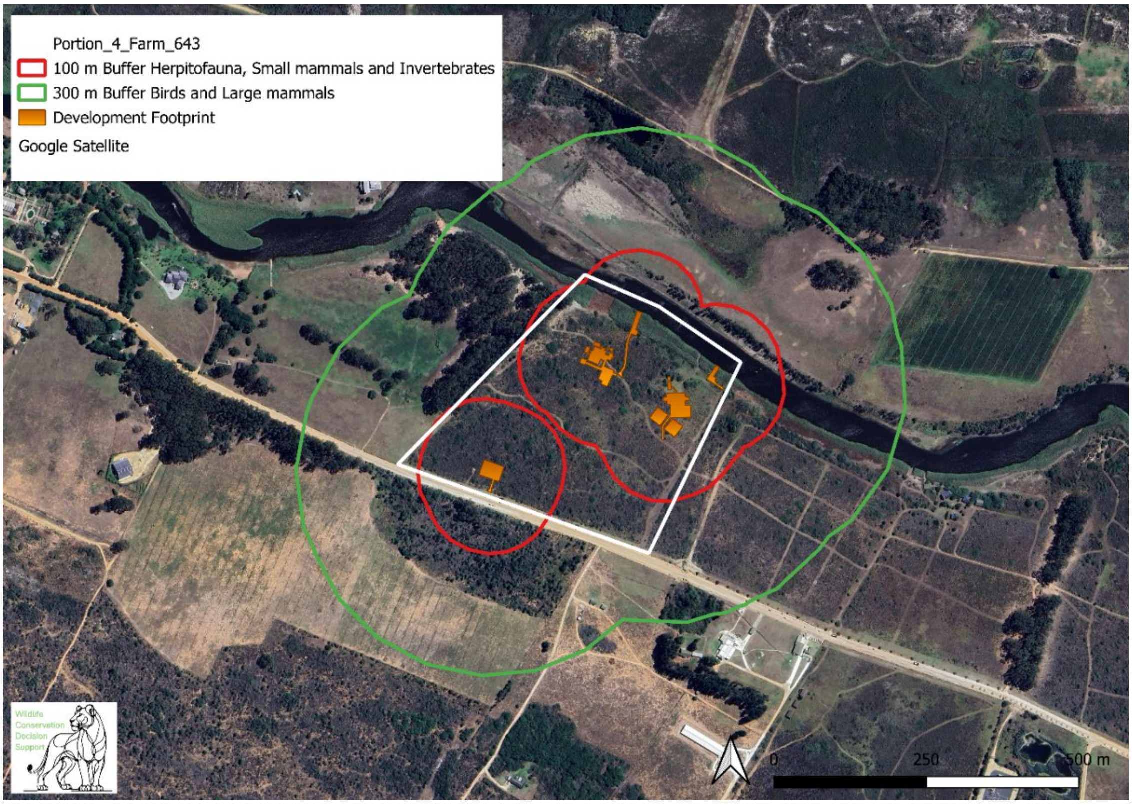

Figure 7: The PAOI for the original preferred alternative (Alternative 2) was set considering main SCC likely to be present on or close to the development footprint (see Table 7 for buffer distances).

Habitat descriptions.

The vegetation at Portion 4 of the Farm 643 is 'Agulhas Limestone Fynbos', a Critically Endangered vegetation type that occurs on the Agulhas Plain on calcareous soils (Mucina and Rutherford 2006).

After screening the development site using Google Earth images and on-site verification, we broadly mapped faunal habitats in the study area into five categories e.g. Open Fynbos scrubland, dense Fynbos scrubland, Phragmites reedbeds, Eucalyptus habitat, Kikyo grass habitat Figure 8.

Open Fynbos Habitat (Locations 1, 7, 8 and 9)

This habitat covers a section of the north-eastern part of the property. Soils are sandy and ground layer is well covered by grass of various types Figure 9,Figure 10,Figure 15,Figure 16.

Dense Fynbos Habitat (Locations 2,5, 6, 7,10, 11, 12, 13 and 14)

This habitat covers most of the property Figure 10,Figure 15,Figure 17,Figure 18. Soils are sandy and ground cover is dense fynbos scrubs (mostly <2.5 m) with less grass cover. Occasional trees are present in this habitat.

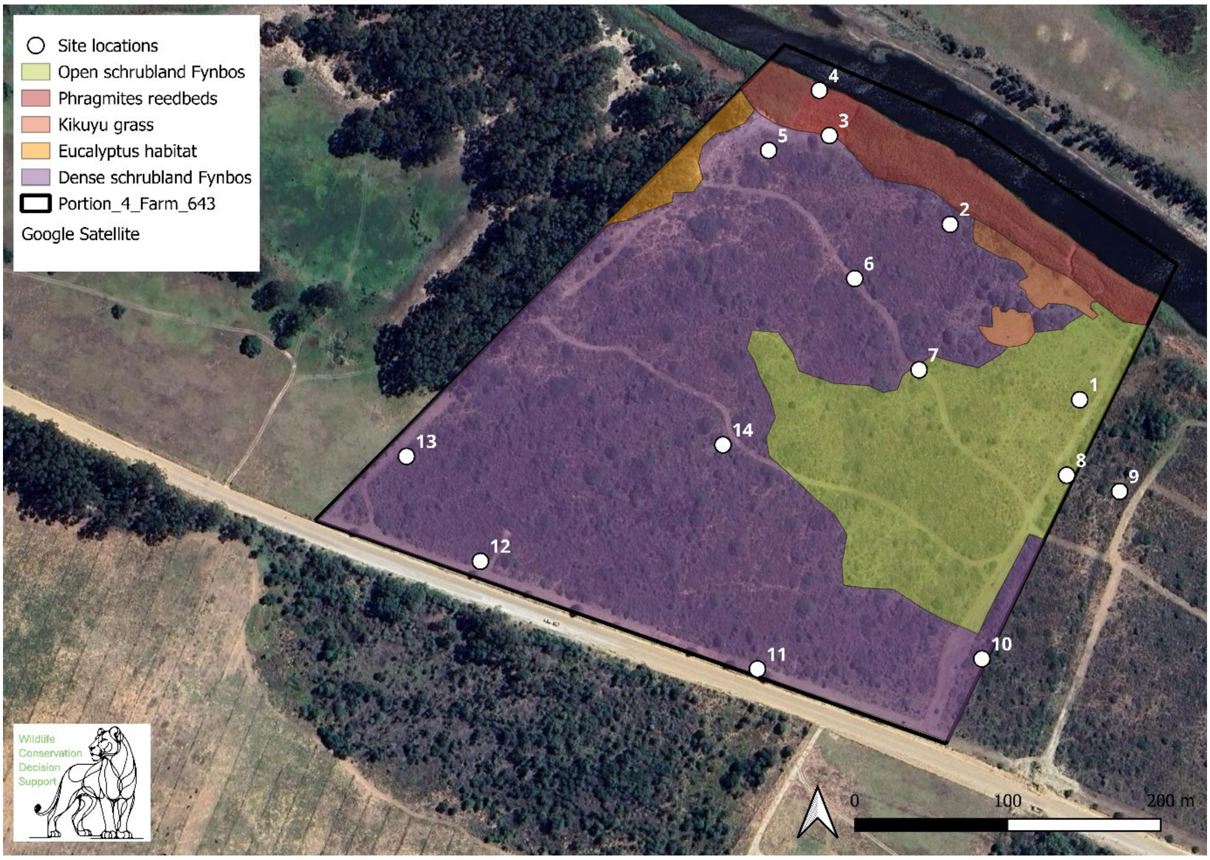

Figure 8: The broad faunal habitats in the study area

Phragmites habitat (Locations 3 and 4)

The Phragmites habitat is dominated by reedbeds in the mudflats of the Kleinrivier estuary in the north-eastern part of the property Figure 9,Figure 10,Figure 11,Figure 12, Figure 12.

Eucalyptus habitat (Location 5)

This habitat is situated on the north-west corner of the property and is covered by tall Eucalyptus trees. Several dead tree stumps are present Figure 13.

Kikuyo grass habitat

This habitat is covered by dense stands of Kikyo grass and Fynbos scrubs of which the majority is <1.5 m tall Figure 9

Faunal species recorded during the site visit

We recorded several animal species during the site visit in the different habitats Table .

Figure 9: Open shrubland fynbos in the foreground (Site 1 and 8), Kikuyo grass to the left and Phragmites on the riverbanks

Figure 10: Dense scrubland fynbos to the left and Phragmites reedbeds in the background (Site 3).

Figure 11: Phragmites reedbeds on estuary front (Site 3 and 4).

Figure 12: Phragmites reedbeds on estuary front (Site 3 and 4).

Figure 13: Eucalyptus habitat (Site 5).

Figure 14: Dense fynbos scrubland habitat (Site 6).

Figure 15: Transition between dense an open fynbos scrubland (Site 7).

Figure 16: Open fynbos scrubland (Site 8 and 9).

Figure 17: Dense fynbos scrubland (Site 10).

Figure 18: Dense fynbos scrubland (Site 11, 12 & 13).

Table 8: Species observed during site visits to the property

Group	Comon name	Species	Open	Dense	Reeds	Eucalypt	Kikuyo
Mammals	**Bontebok**	***Damaliscus pygargus pygargus***	**X**	**X**			**X**
	Cape grysbok	*Raphicerus melanotis*		X			
	Cape Golden Mole	*Chrysochloris asiatica*					
	Cape dune molerat	*Bathyergus suillus*	X	X		X	X
	Cape porcupine	*Hystrix africaeastralis*		X			
Reptiles	Angulate Tortoise	*Chersina angulata*		X			
	Red lipped snake	*Crotaphopeltis hotamboeia*	X				
Amphibians	Clicking stream frog	*Strongylopus grayii*	X				
	Western leopard toad	***Sclerophrys pantherine***		**X**			
Aves	**African darter**	***Anhinga rufa rufa***			**X**		
	African fish eagle	*Icthyophaga vocifer*			X		
	African Hoopoe	*Upupa africana*			X		
	Bar-throated Apalis	*Apalis thoracica*		X			
	Blacksmith Lapwing	*Vanellus armatus*			X		
	Blacksmith plover	*Venellus armatus*			X		
	Bokmakierie	*Telophorus zeylonus*		X			
	Brimstone Canary	*Crithagra sulphurata*		X			
	Cape Batis	*Batis capensis*		X			
	Cape Bulbul	*Pycnonotus capensis*	X	X			
	Cape canary	*Serinus canicollis*		X			
	Cape Crow	*Corvus capensis*		X			
	Cape Grassbird	*Sphenoeacus afer*		X			
	Cape Robin-Chat	*Cossypha caffra*	X	X			
	Cape southern fiscal	*Lanius collaris collaris*			X		
	Cape Spurfowl	*Pternistis capensis*	X	X			
	Cape Wagtail	*Motacilla capensis*		X			
	Cape Weaver	*Ploceus capensis*	X				
	Cape White-eye	*Zosterops virens*	X	X			
	Common Starling	*Sturnus vulgaris*	X	X			
	Eastern southern grey sparrow	*Passer diffuses stygiceps*		X			
	Egyptian Goose	*Alopochen aegyptiaca*			X		
	European bee-eater	*Merops apiaster*			X		
	Fiery-necked Nightjar	*Caprimulgus pectoralis*		X			
	Forest cape batis	*Batis capensis capensis*	X	X			
	Fork-tailed Drongo	*Dicrurus adsimilis*	X	X			
	Hadada Ibis	*Bostrychia hagedash*	X	X			
	Hamerkop	***Scopus umbretta***				**X**	
	Helmeted guineafowl	*Numida meleagris*	X	X			
	Jackal Buzzard	*Buteo rufofuscus*		X			
	Karoo Prinia	*Prinia maculosa*					
	Klaas's Cuckoo	*Chrysococcyx klaas*	X				
	Large Rock Martin	*Ptyonoprogne fuligula*		X			
	Little grebe	*Tachybaptus ruficollis*			X		
	Malachite Sunbird	*Nectarinia famosa*		X			
	Red billed teal	***Anas erythrorhyncha***			**X**		
	Ring-necked Dove	*Streptopelia capicola*				X	
	Southern Boubou	*Laniarius ferrugineus*	X	X			
	Southern Double-collared Sunbird	*Cinnyris chalybeus*		X			
	Southern Fiscal	*Lanius collaris*		X		X	
	Southern malachite kingfisher	*Corythornis cristatus cristatus*			X		
	Southern Masked Weaver	*Ploceus velatus*			X		

	Speckled Mousebird	*Colius striatus*	X	X		
	Spur-winged Goose	*Plectropterus gambensis*			X	
	Western Cattle Egret	*Bubulcus ibis*			X	
	Western grey heron	*Ardea cinerea cinerea*			X	
	African Marsh Harrier	***Circus aeruginosus***			X	
	White-breasted Cormorant	*Phalacrocorax lucidus*			X	
	White-throated Canary	*Crithagra albogularis*		X		
	Yellow Bishop	*Euplectes capensis*		X	X	
	Yellow Canary	*Serinus flaviventris*	X	X		
	Yellow-billed Kite	*Milvus aegyptius*		X		
Invertebrates	Water geranium bronze	*Cacyreus fracta fracta*	X			
	Barred eggarlet	*Bombycomorpha bifascia*		X		
	Striped Lesser Thicktail Scorpion	*Uroplectes lineatus*		X		
	Fynbos burrowing scorpion	*Opistophthalmus macer*				X
	Mute winter katydid	***Brinckiella aptera***	**X**			
	Western winter katydid	*Brinckiella wilsoni*	X	X		
	Anthelephila caerulea	*Anthelephila caerulea*		X		
	Macrocheilus dorsalis	*Macrocheilus dorsalis*		X		

Animal species of concern

A total of eleven animal species of concern was identified by the screening tool (Lornay Environmental Consulting 2023)Table 1. A number of additional animal species of potential concern was identified likely to be present in the area Table 8. 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. While Bontebok is listed as vulnerable and therefore qualify as a SCC it was likely introduced on the property and therefore, we will not deal with the species in this report. The other species listed in

Table 8: Additional SCC identified likely to occur on site

Species name	Common name	Order	Regional Red List Status
Bontebok	*Damaliscus pygargus pygargus*	Mammal	VU
Cape clawless otter	*Aonyx capensis*	Mammal	NT
African darter	*Anhinga rufa rufa*	Avis	NT
Hamerkop	*Scopus umbretta*	Avis	NT
Red billed teal	*Anas erythrorhyncha*	Avis	NT

Potential Impacts on Faunal Landscape Connectivity

The Portion 4 of the Farm 643 property, situated within the Cape Floristic Region. It occupies an ecologically strategic location due to its location next to the estuary Figure 19. The vegetation at Portion 4 of the Farm 643 is Agulhas Limestone Fynbos, a Critically Endangered vegetation type that occurs on the Agulhas Plain on calcareous soils (Mucina and Rutherford 2006) Figure 19. The majority of the property falls within the Coastal Protection Zone and the areas adjacent to the Kleinrivier estuary is critical links between CBA 1 and ESA2 classified areas Figure 19. Maintaining landscape connectivity in this context is particularly important for the persistence of faunal species that use Agulhas Limestone Fynbos and the Kleinrivier estuary as forage and breeding habitat Table 9.

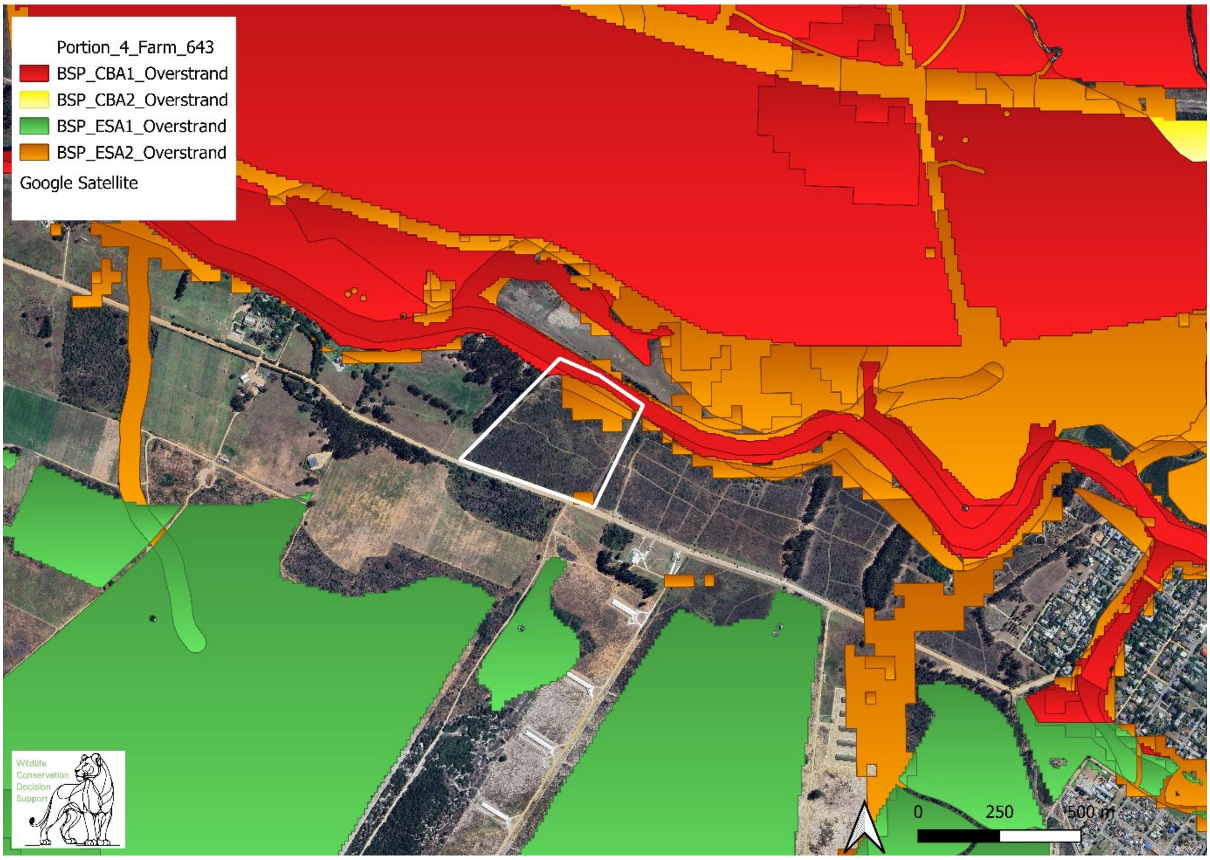

Figure 19: The development footprint in relation to critical biodiversity and ecological support areas.

Table 9: Evaluation of site ecological importance (SEI) in terms of connectivity (the receptor) for faunal landscape connectivity 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.

Black Harrier (Circus maurus)

Conservation Status

The Black Harrier is a southern African endemic raptor and one of the rarest harrier species globally. The global population is estimated at fewer than 1,000 breeding adults, with very low genetic diversity and a fragmented distribution. The species is listed as Endangered in South Africa, Namibia, and Lesotho, and is globally considered Endangered by BirdLife International (Simmons and Curtis-Scott 2025). Historical losses of more than 50% of core breeding habitat in the Fynbos and Renosterveld biomes, primarily due to agriculture, urbanization, and invasive alien vegetation, have contributed significantly to its decline (Curtis et al. 2004).

Habitat and Ecology

Black Harriers are ground-nesting raptors strongly associated with intact natural vegetation. They breed in Fynbos, Renosterveld, Dune Thicket, and occasionally Succulent Karoo, typically selecting knee- to shoulder-high vegetation, often in damp sites near wetlands (Curtis et al. 2004). Breeding occurs mainly from July to November, with peak egg-laying in August–September. Clutch sizes average 3–4 eggs, but breeding success is limited by predation and disturbance (Curtis et al. 2004). Diet studies confirm that the species is a specialist predator of small mammals, particularly the striped field mouse (*Rhabdomys pumilio*), which makes up the majority of prey biomass (Garcia-Heras et al. 2017). Birds and reptiles are taken as secondary prey, especially in inland habitats (Garcia-Heras et al. 2017). Tracking studies reveal that Black Harriers undertake unusual west–east intra-African migrations between breeding and non-breeding areas, travelling 500–1,200 km between the Western Cape breeding grounds and non-breeding settlement areas in the Free State, Lesotho Highlands, and Eastern Cape grasslands (Garcia-Heras et al. 2019). Individuals may skip breeding in some years, and survival during migration is a key limiting factor.

Key Threats

Major threats include:

- **Habitat loss and fragmentation**: Conversion of Fynbos and Renosterveld to cereal agriculture, viticulture, and pastures has eliminated much of the species' preferred lowland habitat (Curtis et al. 2004).
- **Disturbance and nest predation**: Ground nests are vulnerable to predation and disturbance by livestock, agricultural machinery, and human activity.
- **Wind energy development**: Harriers frequently fly at blade-swept height during foraging, display, and migration flights, creating a collision risk. Wind farms in the Overberg and Eastern Cape overlap with important breeding and migratory corridors .
- **Agrochemicals and secondary poisoning**: Exposure to pesticides and rodenticides may further threaten populations.

- **Small population size and genetic bottlenecks**, which make the species particularly vulnerable to stochastic events and environmental change.

Likelihood of Occurrence in Portion 4 of the Farm 643

Portion 4 of the Farm 643 area is situated within the broader Overberg coastal region, which is recognized as an important breeding and post-breeding foraging area for Black Harriers (Simmons et al. 2020). Historical and recent surveys show that the species breeds successfully in the Agulhas Plain, particularly in South Coast Renosterveld and Limestone Fynbos remnants, often near wetlands or damp sites (Curtis et al. 2004). SABAP2 reporting rates confirm regular occurrence in the Agulhas region. Although the area is heavily transformed by agriculture, patches of Limestone Fynbos, Renosterveld fragments, and wetland habitats remain and may provide foraging and potential nesting opportunities. Given its regular use of these areas during both breeding and non-breeding seasons, the likelihood of Black Harrier occurrence in the area is high, particularly during the breeding season (July–November) and post-breeding dispersal period (December–February). Portion 4 of the Farm 643 is suitable as highly suitable forage habitat and suitable as breeding habitat Table 10. We did not observe the species during the site visit. Several recent research-grade iNaturalist records confirm current presence very close to the area.

Table 10: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Black Harrier (Circus maurus) 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.

African Marsh Harrier (Circus ranivorus)

Conservation Status

The African Marsh Harrier is classified as Vulnerable regionally in South Africa (2025), under criteria A2c+3c; C1, based on an estimated 3,500–5,800 mature individuals and a projected 42% decline in area of occupancy over three generations (Shaw 2025a). Globally, it is assessed as Least Concern, due to its wider distribution and larger overall population (Shaw 2025a).

Habitat and Ecology

This species is strongly tied to wetland environments, occurring almost exclusively in coastal and inland marshes, reedbeds, and vleis. It also occasionally forages across adjacent grasslands and croplands (Shaw 2025a). Breeding harrier pairs require approximately 100 ha of intact marshland per territory, comparable to Black Harrier habitat requirements (Shaw 2025a).

The African Marsh Harrier is monogamous, highly territorial, and either nests solitarily or semi-colonially in marsh vegetation, often 0.5–2.5 m above water. Clutch size ranges from 3 to 4 eggs, laid between August and November, with incubation lasting about 30–34 days and fledging at 38–41 days (Shaw 2025a). Their diet is dominated by small mammals (~74%), but also includes passerines, waterbirds (~23%), frogs (2%), and fish (1%). They may predate eggs and chicks in heron, egret, and weaver colonies (Shaw 2025a).

Key Threats

- **Loss and degradation of wetland habitat** via drainage, burning, and over-grazing (Shaw 2025a).
- Conversion of wetlands to residential and agricultural land has led to the loss of nearly **50% of South Africa's wetlands** (Shaw 2025a).
- Encroachment by **alien vegetation** further compromises habitat quality .
- **Contaminants**, including organochlorine residues found in unhatched eggs, may impair reproductive success, although adults remain less affected.

Likelihood of Occurrence in Portion 4 of the Farm 643

The African Marsh Harrier is a wetland-dependent species, requiring extensive marshes, vleis, or reedbeds for both breeding and foraging. As Portion 4 of the Farm 643 support significant wetland habitat as it is next to the Klein River estuary. The species was observed on site foraging up and down the estuary front. The area is suitable as breeding and foraging habitat Table 11.

Table 11: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Marsh Harrier 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.

Martial Eagle (Polemaetus bellicosus)

Conservation Status

The Martial Eagle is listed as Endangered (EN) in South Africa under IUCN criteria A2acde+3cde+4acde, with a national estimate of 950–1,100 mature individuals and a declining trend (Tate 2025). The global status is also Endangered. Atlas reporting shows a ~59% reduction in South Africa between SABAP1 and SABAP2, translating to a 77% decline over three generations (Tate 2025). Populations remain strongest in large protected savanna landscapes such as Kruger and the Kalahari, with patchy persistence elsewhere (van Eeden et al. 2017, Amar and Cloete 2018).

Distribution and Population

The Martial Eagle occurs widely but at low densities across sub-Saharan Africa. In South Africa, the Overberg and broader Western Cape host occasional but regular records, as confirmed by both SABAP2 data and iNaturalist observations around Stanford and Hermanus. These are most likely wide-ranging individuals or floaters using large home ranges rather than settled breeding pairs. Breeding densities elsewhere suggest inter-nest distances of 10–15 km, but no evidence of nesting in the Stanford area exists. Overall, the regional population is sparse and fragmented, though repeated records indicate continued presence in the landscape (Cloete 2013, Amar and Cloete 2018).

Habitat and Ecology

Martial Eagles prefer open savanna, arid shrubland, and lightly wooded areas with tall trees or pylons for nesting and perching. They avoid closed forests and intensively cultivated areas. Territory sizes are extremely large, often >100 km², with adults averaging 108 km² home ranges, while non-territorial floaters roam across thousands of km² (van Eeden et al. 2017). Their diet is broad and opportunistic, including (Boshoff et al. 1990):

- **Mammals:** hares, hyraxes, mongooses, small antelope.
- **Birds:** guineafowl, francolins, bustards, korhaans.
- **Reptiles:** especially monitor lizards and tortoises.
  Breeding is slow and costly, with pairs producing only one chick every two years, contributing to low reproductive potential.

Threats

- **Persecution:** shooting, trapping, and poisoning due to perceived livestock predation.
- **Secondary poisoning:** from rodenticides and poisoned carcasses intended for other predators.
- **Electrocution and collisions:** with powerlines and pylons.
- **Drowning:** in uncovered farm reservoirs with steep sides.
- **Habitat loss:** conversion of natural areas to farmland, forestry, and settlements.
- **Loss of nesting trees:** due to elephant browsing, deforestation, or wood harvesting.
- **Disturbance at nests:** human activity near nest trees leads to abandonment.
- **Low reproductive rate:** one chick per breeding cycle, and not every year, hampers recovery.

Likelihood of Occurrence at Portion 4 of Farm 643, Stanford

Although the site itself is only 12 ha, too small to support resident pairs or provide nesting habitat, the broader Stanford/Klein River area hosts repeated Martial Eagle records (SABAP2 and iNaturalist). This suggests the species occurs regularly in the region at low density, likely as wide-ranging foragers or floaters. Onsite use is most likely occasional overflight or opportunistic foraging, but breeding is highly improbable due to the lack of large trees and insufficient territory size. Thus, the likelihood of occurrence is best assessed as possible–likely (regional presence, occasional onsite use), but the site contributes negligible functional habitat for persistence Table 12.

Table 12: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Martial Eagle 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.

Denham's Bustard (Neotis denhami)

Conservation Status

Denham's Bustard is a large, ground-dwelling bird with a wide but fragmented distribution across Africa. In South Africa, the endemic subspecies *N. d. stanleyi* (locally known as Stanley's Bustard) occurs mainly in the Eastern and Western Cape, KwaZulu-Natal, and the southern Free State. It is listed as Vulnerable at national level, with an estimated South African population of 3,000–6,000 birds, and as Near Threatened globally (Ehlers Smith 2025). Populations are declining primarily due to habitat transformation and anthropogenic threats.

Habitat and Ecology

Denham's Bustards inhabit open grasslands, coastal fynbos, renosterveld, and cultivated pastures. They are often associated with mosaic landscapes where natural vegetation is interspersed with agricultural land. In the southern Cape coastal plain, they favour cultivated pastures in winter, harvested cereal stubble fields in summer, and natural vegetation during the breeding season (Allan 2003). Breeding takes place mainly between August and January, with males displaying conspicuously in September and October. Nests are simple ground scrapes, and clutch sizes are typically 1–2 eggs. During breeding, birds are often solitary, while in winter they form larger groups of up to 20–30 individuals (Allan 2003). As omnivores, they feed on a variety of food including insects, small vertebrates, bulbs, and green plant material, with seasonal variation linked to habitat use.

Key Threats

Major threats include:

- **Habitat loss and fragmentation**: Conversion of coastal fynbos and renosterveld to agriculture has greatly reduced available habitat.

- **Agricultural practices**: Mechanised cropping and ploughing can destroy nests and chicks.
- **Collisions with powerlines**: Denham's Bustards are among the most frequently killed species in the Overberg wheatbelt, with significant mortality recorded in systematic surveys (Shaw et al. 2010).
- **Hunting and persecution**: Although illegal, occasional hunting continues in some areas.
- **Disturbance and predation**: Ground-nesting habits make them vulnerable to predators and human disturbance during breeding.

Likelihood of Occurrence in Portion 4 of the Farm 643

The area falls within the known range of Denham's Bustards. The area is part of the Overberg wheatbelt, which is considered an Important Bird Area due to its populations of large terrestrial birds (Shaw et al. 2010). Road count surveys in the southern Cape have shown that Denham's Bustards are relatively common in this region, particularly in winter when they aggregate in pastures and stubble fields (Allan 2003). Suitable habitat persists around Stanford. Current habitat quality is moderately suitable as foraging habitat. Several records exist for the species in the general area. The species could use the area as foraging habitat but breeding habitat not likely Table 13.

Table 13: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Denham's bustard 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.

Southern Black Korhaan (Afrotis afra)

Conservation Status

The Southern Black Korhaan is a South African endemic restricted to the Western, Northern, and Eastern Cape Provinces. It is currently listed as Vulnerable both regionally (2025) and globally (2024) under IUCN criteria A4bc (Evans 2025). This reflects a population decline of more than 30% over the past three generations, mainly as a result of extensive habitat loss and fragmentation (Evans 2023). Atlas data comparisons between SABAP1 and SABAP2 indicate a significant reduction in reporting rates, particularly in the Overberg and Swartland wheatbelt where large tracts of renosterveld and fynbos have been converted to agriculture (Evans 2023). The total extent of suitable habitat is estimated to have contracted from over 30,000 km² historically to around 20,000 km² by 2020 (Evans 2023, Evans 2025).

Habitat and Ecology

The species typically inhabits lowland shrublands and grasslands on flat terrain with slopes of less than four degrees (Evans 2023). It shows a strong preference for renosterveld and fynbos in the Western Cape, but also occurs in patches of Succulent Karoo, southern Nama Karoo, and Albany Thicket within its range (Evans 2025). Korhaans are omnivorous, feeding largely on arthropods such as termites, beetles, grasshoppers, and ants, and supplementing their diet with seeds, bulbs, and other plant matter (Evans 2025). Breeding takes place from August to January, with 1–2 eggs laid in shallow ground scrapes (Evans 2023). The species has been observed in agricultural landscapes such as stubble fields, fallow lands, and pastures, although these are likely ecological sinks as breeding success in transformed habitats is low (Evans 2023). Fire plays an important role in habitat dynamics, with korhaans favouring recently burned or lightly disturbed shrublands where vegetation is shorter and more open (Evans 2023, Evans 2025).

Key Threats

- **Habitat loss and fragmentation** through conversion of lowland fynbos and renosterveld to wheat and canola cultivation (Evans 2023, Evans 2025).
- **Loss of connectivity between patches**, reducing dispersal success and increasing edge effects that lower survival and reproductive success (Evans 2023).
- **Agricultural disturbance**, as mechanised ploughing and harvesting destroy nests and chicks, and heavy grazing diminishes cover and food resources (Evans 2025).
- **Predation and human disturbance**, especially by corvids which prey on eggs and chicks, compounded by disturbance in farmlands (Evans 2023).
- **Climate change**, with projected hotter, drier conditions in the Western Cape reducing prey availability and vegetation cover, increasing predation risk (Evans 2023).
- **Inadequate protection**, as much of the remaining renosterveld and fynbos habitat lies outside protected areas and continues to be threatened (Evans 2025).

Likelihood of Occurrence in Portion 4 of the Farm 643

The greater Stanford area supports populations of Southern Black (Evans 2025). The species is still regularly recorded in the region through SABAP2 and road count surveys, although numbers are declining (Evans 2023). The natural vegetation in the vicinity of Portion 4 of the Farm 643 area is moderately suitable for the species. The likelihood of occurrence of Southern Black Korhaan in the area is moderate-to-high in the natural vegetation and the surrounding agricultural mosaic Table 14.

Table 14: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Southern Black Korhaan 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.

Great White Pelican (Pelecanus onocrotalus)

Conservation status

The Great White Pelican is classified as *Vulnerable* at the regional (South African) level, with an estimated 2,500 breeding pairs in South Africa, confined to fewer than five breeding localities and susceptible to disturbance, demographic stochasticity, and short-term human impacts (Ehlers Smith and Shaw 2025). Globally, however, the species is assessed as *Least Concern* by IUCN given its extensive distribution and large total population outside South Africa (Ehlers Smith and Shaw 2025).

Distribution and population

Within South Africa, breeding of Great White Pelicans is restricted to a small number of offshore islands, including Vondeling and Dassen Islands in the Western Cape, and Lake St Lucia in KwaZulu-Natal (Ehlers Smith and Shaw 2025). Although the national population is relatively small, pelicans are widely observed outside breeding seasons, utilizing coastal estuaries, lagoons, river mouths, and inland water bodies for foraging and roosting (Ehlers Smith and Shaw 2025). In the Western Cape, estuarine systems such as the Klein River estuary have been documented as important non-breeding feeding and loafing areas (Crawford et al. 1995, Ehlers Smith and Shaw 2025).

Habitat and ecology

Great White Pelicans feed primarily on fish, typically in shallow water where they can employ group foraging techniques (Ehlers Smith and Shaw 2025). These birds also exploit anthropogenic food sources, including offal from poultry and pig farms, and agricultural waste, which can supplement natural prey under certain conditions (Ehlers Smith and Shaw 2025). Pelicans roost and loaf in estuarine and lagoon habitats but breed exclusively on predator-free islands or remote sites, where nesting colonies are less prone to disturbance (Ehlers Smith and Shaw 2025). Juvenile survival and breeding success are sensitive to fluctuations in fish availability, hydrological conditions, human disturbance, and disturbance at colony sites (Ehlers Smith and Shaw 2025).

Threats

- Disturbance at breeding colonies, including human presence, seal predation, and site abandonment (Ehlers Smith and Shaw 2025).
- Loss or degradation of foraging habitat (estuaries, lagoons and wetlands) through abstraction, pollution, altered hydrology, and development (Ehlers Smith and Shaw 2025).
- Pollution and contamination of food resources, including ingestion of toxic offal (Ehlers Smith and Shaw 2025).
- Fatal collisions with powerlines or other infrastructure during commuting flights (Ehlers Smith and Shaw 2025).
- Disease and mass mortality events, which may be exacerbated by congregating in limited roost or feeding sites (Ehlers Smith and Shaw 2025).
- Climate-driven changes in fish populations and water levels, potentially leading to breeding failure or reduced foraging opportunities (Ehlers Smith and Shaw 2025).

Likelihood of occurrence at Portion 4 of the Farm 643, Stanford

Portion 4 of Farm 643 lies directly adjacent to the upper reaches of the Klein River estuary, which is a documented foraging and loafing site for Great White Pelicans in the Western Cape (Crawford et al. 1995). Pelicans regularly utilise the estuary for feeding on fish and other aquatic prey, and it forms part of a network of key estuarine and lagoon habitats in the region that sustain non-breeding flocks. Most record however is in the lower reaches of the estuary. Given the site's proximity to this important habitat, the likelihood of occurrence of Great White Pelicans at or near the property is medium-high. While the site itself is unsuitable for breeding, the species requires isolated offshore islands such as Dassen Island, its adjacency to the estuary ensures that pelicans frequently forage and roost within the immediate landscape Table 15.

Table 15: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Great White Pelican 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.

Caspian Tern (Hydroprogne caspia)

Conservation status

The Caspian Tern is listed as Vulnerable in South Africa due to its small and localized breeding population and sensitivity to disturbance at colonies (Shaw 2025b). Globally, the species is assessed as *Least Concern* owing to its wide distribution across North America, Europe, Asia, and Africa (Gaglio et al. 2021). In southern Africa, the total population is estimated at only 1,000–1,500 birds, making it regionally scarce (Gaglio et al. 2021).

Distribution and population

In South Africa, Caspian Terns breed at only a handful of sites, including Lake St Lucia (KwaZulu-Natal), the Berg River estuary / Velddrif salt works (Western Cape), and small colonies in Algoa Bay (Eastern Cape) (Crawford et al. 2009, Gaglio et al. 2021). Historically, larger colonies occurred in the Swartkops Estuary, but numbers there have declined following the closure of saltpans (Crawford et al. 2009). The largest single breeding colony in southern Africa supports approximately 170 pairs at Lake St Lucia, with smaller colonies of around 40–60 pairs at Velddrif and in the Berg River estuary (Gaglio et al. 2021).

Habitat and ecology

Caspian Terns are the world's largest tern and forage primarily by plunge diving for fish in estuaries, lagoons, sheltered coastal bays, and large inland water bodies. They can take fish up to 250 mm in length and have been recorded eating at least 17–18 fish species in southern Africa, with mullet (*Liza richardsonii*) being the dominant prey in estuarine systems (Cyrus and McLean 1994, Gaglio et al. 2021). Although largely piscivorous, they occasionally consume crustaceans, carrion, and the chicks or eggs of other birds (Gaglio et al. 2021). Colonies are established on predator-free islands or artificial salt pan islands where disturbance is limited. Breeding pairs typically nest sparsely on open ground, often in association with gulls and other terns (Gaglio et al. 2021).

Threats

- **Disturbance at breeding colonies** from humans, vehicles, or predators, which may lead to nest abandonment (Gaglio et al. 2021)
- **Loss of breeding habitat**, particularly through closure or modification of saltpans and degradation of estuarine islands (Crawford et al. 2009).
- **Pollution and reduced fish availability** due to overfishing and estuarine modification (Cyrus and McLean 1994).
- **Kleptoparasitism** by Kelp Gulls, which can reduce chick provisioning success (Gaglio et al. 2021).
- **Small population size**, which increases vulnerability to demographic stochasticity and localised events.

Likelihood of occurrence at Portion 4 of the Farm 643, Stanford

Portion 4 of Farm 643 lies adjacent to the Klein River estuary, which provides suitable foraging habitat for Caspian Terns. The species regularly occurs in estuaries of the Western Cape, including the Klein, Berg, and Bot River systems, where they feed on mullet and other estuarine fish. While there are no breeding colonies in the Klein River estuary, the system offers abundant foraging opportunities and safe roosting sites (albeit more towards the coast and not near the upper reaches) Table 16. Consequently, Caspian Terns are likely to occur regularly in the area (foraging), especially during the breeding season when adults commute between colonies and regional feeding grounds.

Table 16: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Caspian Tern 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
Re ce	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 pantherina

Conservation status

The Western Leopard Toad (*Sclerophrys pantherina*) is listed as Endangered on the IUCN Red List under criteria B1ab(ii,iii,iv)+2ab(ii,iii,iv) due to its restricted extent of occurrence (~3,824 km²), area of occupancy (~405 km²), severe fragmentation, and ongoing habitat decline (IUCN SSC Amphibian Specialist Group and South African Frog Re-assessment Group 2016)

The species is endemic to the Western Cape of South Africa and has undergone marked declines linked to urbanisation and habitat transformation. Recent genetic monitoring has also revealed evidence of increased inbreeding in populations, particularly within the City of Cape Town, raising further concern about its long-term viability (Stephens et al. 2022).

Distribution and population

This species occurs only in the south-western Cape, from the Cape Peninsula eastward to Agulhas National Park. It is restricted to low elevations (<25 km from the coast), although individuals have been recorded up to 500 m a.s.l. (IUCN SSC Amphibian Specialist Group and South African Frog Re-assessment Group 2016). The population is divided into two disjunct units, one in the Cape Town metropolitan area and one in the Overstrand, with no gene flow between them (Casola 2017). Within the past two decades, the species has disappeared from several areas of its historical distribution, including Kleinmond and Betty's Bay, suggesting local extinctions (IUCN SSC Amphibian Specialist Group and South African Frog Re-assessment Group 2016). Although locally common during the breeding season, subpopulations are considered small, isolated, and non-viable without ongoing conservation intervention (Stephens et al. 2022).

Habitat and ecology

The Western Leopard Toad inhabits lowland fynbos heathland, farmlands, and suburban gardens, always in proximity to freshwater habitats (IUCN SSC Amphibian Specialist Group and South African Frog Re-assessment Group 2016). It is highly dependent on aquatic environments for breeding, which occurs en masse between July and September in large wetlands, vleis, and permanent or semi-permanent dams. After breeding, adults disperse to terrestrial foraging habitats, often private gardens within a 2 km radius of breeding sites (Doucette-Riise 2012). Radio-tracking studies show preference for dense shrub cover as terrestrial refugia, with individuals capable of dispersal over several kilometres, although large expanses of transformed agricultural land act as barriers (Doucette-Riise 2012). Females may lay up to 25,000 eggs per season, but survival is constrained by habitat degradation, road mortality, and invasive species (IUCN SSC Amphibian Specialist Group and South African Frog Re-assessment Group 2016).

Threats

- **Habitat loss** and fragmentation due to urbanisation and agricultural expansion (Doucette-Riise 2012, IUCN SSC Amphibian Specialist Group and South African Frog Re-assessment Group 2016).
- High mortality from **road kills** during mass breeding migrations (IUCN SSC Amphibian Specialist Group and South African Frog Re-assessment Group 2016)
- **Alien invasive vegetation** reducing wetland quality (IUCN SSC Amphibian Specialist Group and South African Frog Re-assessment Group 2016).
- **Predation and competition** from invasive fish and the introduced Guttural Toad (*Sclerophrys gutturalis*) (IUCN SSC Amphibian Specialist Group and South African Frog Re-assessment Group 2016)
- Ongoing **genetic erosion** and inbreeding linked to isolation and small subpopulation size (Stephens et al. 2022)
- **Climate change** reducing climatically suitable habitat across its range (Casola 2017).

Likelihood of occurrence at Portion 4 of the Farm 643, Stanford

Portion 4 of Farm 643 lies within the Overstrand Municipality, an area that forms part of the eastern distribution unit of the Western Leopard Toad. Genetic and distributional studies confirm the presence of breeding subpopulations in the Overstrand, although these are fewer and more spatially isolated than those in the Cape Town metropole (Doucette-Riise 2012, Casola 2017). Suitable habitats for the species include wetlands, dams, or vleis for breeding, with adjacent terrestrial refugia in gardens, shrubland, or dense vegetation. Given the proximity of the property to known breeding sites and the species' ability to disperse across the agricultural matrix, it is considered possible to likely that the Western Leopard Toad occurs on or near the site, particularly if semi-permanent water bodies are present within 2 km of natural or modified terrestrial refuges. There is no potential breeding sites present in the property. There is a research grade iNaturalist record of a roadkill next to the property Figure 20. It is therefore highly likely that the property is used by Western Leopard Toad as foraging habitat Table 17.

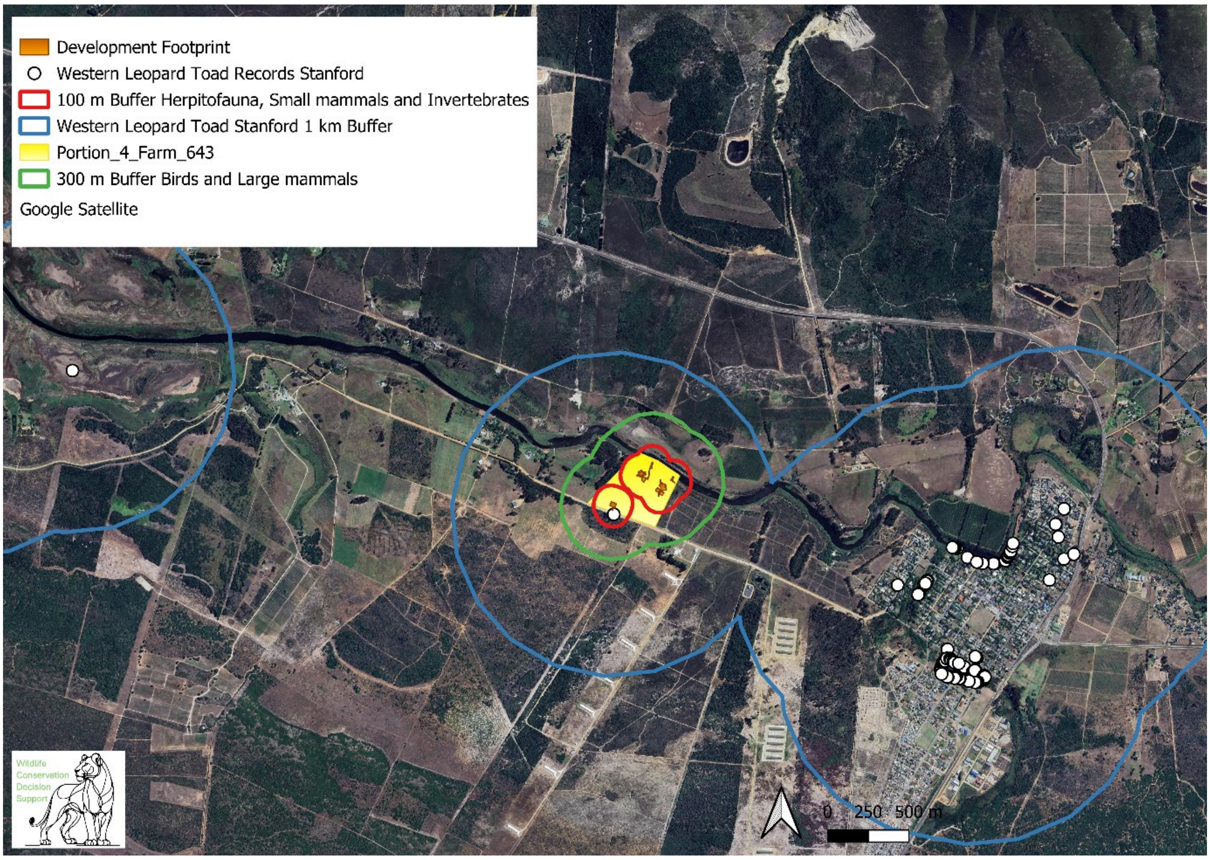

Figure 20: Western Leopard Toad records in the Stanford area in relation to the location of Portion 4 of Farm 643.

Table 17: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Western Leopard Toad 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.

Southern Adder (Bitis armata)

Conservation Status

The Southern Adder (*Bitis armata*) is nationally assessed as Vulnerable (VU) B1ab(i,iii,iv,v)(Maritz and Turner 2023). This classification reflects its severely fragmented distribution, small range, and ongoing declines in extent of occurrence (EOO), area of occupancy (AOO), habitat quality, and subpopulation numbers (Maritz and Turner 2023). The species is considered extinct in the Cape Town area due to urban expansion.

- Extent of Occurrence (EOO)**:** 17 770 km²
- Area of Occupancy (AOO): 2 140 km²

Distribution and Population

This species has a small, patchy distribution on the south-west coastal margin of the Western Cape (Maritz and Turner 2023). It occurs as three disjunct subpopulations:

1. Northern – from West Coast National Park to approximately 20 km north of Cape Town.
2. Southeastern – Hermanus to De Hoop Nature Reserve.
3. A third historical subpopulation in the Cape Town area is locally extinct. The population is suspected to be in ongoing decline and is severely fragmented.

Habitat and Ecology

B. armata inhabits coastal lowland Fynbos on sandy and rocky substrates, sometimes climbing into vegetation (Maritz and Turner 2023). It shelters under rock slabs between dense shrubs on coastal plains and is absent from mountainous terrain (Phelps 2010, Maritz and Turner 2023). Altitudinal range extends from sea level up to 300 m a.s.l. (Maritz and Turner 2023). This small-bodied, cryptic viper is an ambush predator, likely preying on small vertebrates such as lizards and amphibians (Maritz and Turner 2023).

Threats

- **Habitat loss and degradation** from urbanisation, coastal infrastructure, and agriculture.
- **Invasive alien trees**, which alter vegetation structure and reduce suitable habitat.
- **Off-road vehicle disturbance** in coastal habitats.
- **Persecution** due to negative perceptions of snakes.
- **Pet trade**: the species is recorded in the trade, with some evidence of illegal collection. The proportion sourced from wild versus captive-bred populations is unknown.

Likelihood of Occurrence Portion 4 of the Farm 643

The species' known southeastern subpopulation lies within the broader Hermanus-Stanford region. Photographic records confirm its presence in Stanford area. In addition, multiple research grade iNaturalist records exist for the Stanford area, providing contemporary, georeferenced evidence of its occurrence. Suitable habitat, coastal lowland Fynbos on sandy or rocky substrate, occurs in the Stanford area, and at Portion 4 of the Farm 643 supporting the likelihood of local presence to be high Table 18.

Table 18: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Southern Adder (Bitis armata) 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.

Mute Winter Katydid (*Brinckiella aptera*)

Conservation Status

The Mute Winter Katydid *Brinckiella aptera* Figure 21 is currently listed as Vulnerable (VU) under criterion B1ab(iii) on the South African National Red List (Bazelet and Naskrecki 2014). The assessment notes a small extent of occurrence and a continuing decline in habitat quality, which underpins the threat status. Distribution is restricted to parts of the Western Cape, with a naturally patchy, localized occurrence, and populations linked to suitable micro-habitat patches (Bazelet and Naskrecki 2014).

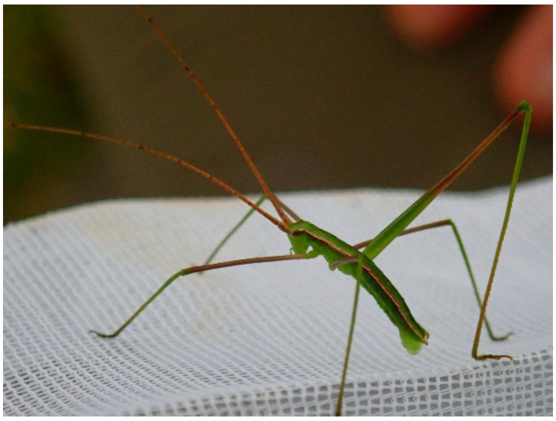

Figure 21: Mute winter katydid found at the site

Population status

Published work on the genus *Brinckiella* indicates that species typically occur as scattered, localized populations associated with discrete patches of their preferred host plants (Naskrecki and Bazelet 2009, Bazelet and Naskrecki 2014). Where suitable host stands are dense, local densities can be high (≈5–10 individuals per m²), but occupancy across the broader landscape is discontinuous. Adults in the Cederberg region have been collected mostly in September–October, implying a late-winter to early-spring activity peak. The genus is apterous (flightless), which implies poor dispersal and a strong tendency for populations to be isolated at small spatial scales.

Habitat and ecology

Brinckiella species are documented exclusively from the Fynbos and Succulent Karoo biomes (Naskrecki and Bazelet 2009). They show host-plant specificity, are most often encountered resting and feeding directly on their host plants, and are cryptic, nocturnal/crepuscular insects that do not produce calling songs (hence “mute”)(Naskrecki and Bazelet 2009). This combination of narrow habitat/host requirements and limited vagility explains the genus’ highly micro-endemic distributions and sensitivity to changes in vegetation structure (Naskrecki and Bazelet 2009). On the development site all *B. aptera* individuals were associated with short to medium tall grasses adjacent to the shrubs (van Wyk 2025)Figure 22. In fact, all records were of *B. aptera* individuals resting, perching or sunning themselves close to shrubs but in the grasses that fringe these shrubs (van Wyk 2025). Not a single B. aptera was found on the actual shrubs at the site. It seems they prefer the lower stratum by keeping to the low-lying vegetation near the ground (van Wyk 2025).

Threats

Consistent with the Red List rationale (criterion ab(iii)), the principal risk factor for *B. aptera* is ongoing degradation and loss of habitat quality within its already small range (Bazelet and Naskrecki 2014). In the Cape Floristic Region and adjoining Succulent Karoo, declines in habitat quality commonly result from invasive alien plant encroachment and altered fire regimes, which change vegetation structure and fire intensity; in more arid margins, overgrazing and land transformation can further reduce suitable host-plant patches. The species’ flightlessness and host specificity likely amplify vulnerability to fragmentation and slow recolonisation after disturbance (Naskrecki and Bazelet 2009).

Figure 22: The typical habitat where B. aptera was found. Individuals were found in the short grass next to Fynbos scrubs.

Density and distribution on the property

We first visited the site on 16 August when we recorded 4 individuals. This required more intensive surveys. Systematic surveys were then completed on 26–27 August as walked visual encounter transects (diurnal and nocturnal) because the target katydid does not vocalise. Observers moved slowly along pre-planned paths, recording every detection with a handheld GPS and noting the number of individuals at each detection. Based on field conditions and searchability of the vegetation, we assumed an effective strip width of 5 m on either side of the walking line (10 m total).

On the portion 4 of farm 643 all records were made in the central area of the site and a total of 43 individuals were counted in total (van Wyk 2025). There were 32 counted on day one (day and night sessions) and 11 counted on day two (day and night sessions). There were only 5 adult males, 2 adult females counted and 36 immature individuals. Only a single adult male was recorded quite some distance from the central aggregation of B. aptera individuals at the site. None were counted near the Klein River and they were not frequenting anywhere else except the central parts of the site.

Across all routes the team walked 40.13 km, which equates to 40.13 ha of ground actually searched (10 m strip × 40.13 km). A total of 43 individuals were recorded, giving a total of 47 which is an overall encounter rate of 1.171 individuals per kilometre. When detections were allocated to their nearest track segment, 8 of 20 segments (40%) held detections and encounter rates by segment ranged from 0 to 6.308 indiv/km (segment-level median 0.249 indiv/km), indicating a patchy distribution along the routes.

Treating the walked searches as strip transects, density was estimated as total individuals divided by the searched area. Using the agreed 5 m per side strip width, the point estimate is 1.171 indiv/ha (117.1 indiv/km²). Statistical uncertainty was summarised in two complementary ways. A Poisson model for counts over area gives a 95% confidence interval of 0.861–1.557 indiv/ha (86.1–155.7 indiv/km²). To reflect the observed between-segment heterogeneity, we also bootstrapped across segments; this yielded a median of 1.100 indiv/ha with a 95% interval of 0.238–2.589 indiv/ha. The bootstrap interval is wider, as expected when a few segments contribute disproportionately to the total.

Because density from visual searches scales with the assumed strip width, we examined sensitivity to plausible search widths. Holding all else constant, density would be 1.952 indiv/ha if the effective strip were only 3 m per side, 1.171 indiv/ha at 5 m (the baseline used above), and 0.837 indiv/ha at 7 m per side. This confirms the estimate is moderately sensitive to search width; however, within the range supported by field judgement, the result consistently remains on the order of one individual per hectare.

To summarise space use during the survey, we generated kernel density estimates from the detection coordinates in a projected CRS. Bandwidth was selected with a robust rule (Diggle bandwidth capped by the median third nearest-neighbour distance), and the analysis window was expanded to avoid edge truncation. We exported the 50% and 95% utilisation isopleths as clean polygons. The 50% isopleth delineates core areas used during the survey window, nested within a broader 95% envelope. Given that only 40% of segments held detections and that several segments had comparatively high encounter rates, the spatial products depict a clustered pattern consistent with the field observations Figure 23. These polygons should be interpreted alongside the transect network: they show where use was concentrated given the effort; they do not imply continuous occupancy in unsurveyed terrain.

Overall, the data indicate a patchily distributed population with an average density near 1.2 indiv/ha under the agreed search assumption, and credible bounds that explicitly reflect both count variability and spatial patchiness. For impact assessment, the 50% KDE should be treated as core habitat where avoidance or strong micro-siting is most warranted, while the 95% KDE provides a reasonable management envelope for mitigation and monitoring. As a precautionary measure a 50 m buffer around the 95%KDE represents a high-risk sensitive zone and the 100 m a medium risk sensitive zone Figure 23. In our opinion a 50 m buffer would be appropriate as the species is flightless. If finer precision is required, repeated surveys across seasons and additional replicate passes suitable for occupancy modelling (to separate detection from true presence) would reduce uncertainty. For the current decision context, and given the species' non-calling behaviour, the walked strip-transect approach with ESW sensitivity analysis is appropriate and defensible, provided the results are reported with the uncertainty ranges above.

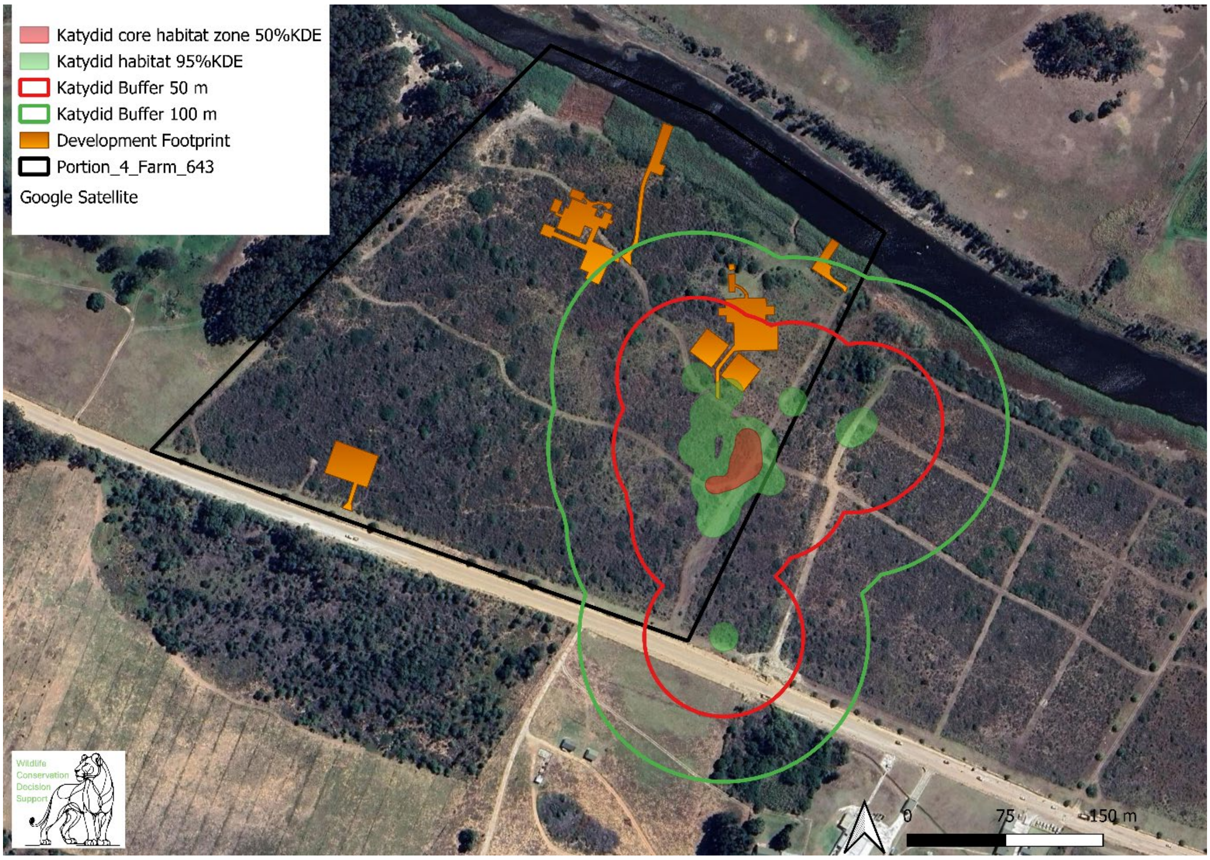

Figure 23: The modelled distribution of the B. aptera population on the property in relation to the original preferred alternative (Alternative 2). As a precautionary measure a 50 m buffer around the 95%KDE represents a high-risk sensitive zone and the 100 m a medium risk sensitive zone for the species. Note the design was adapted by the developer subsequently to avoid B. aptera 50 m habitat buffer (See Figures 5 and 25).

This is a newly discovered sub-population. Very little is known about the species distribution and habitat selection. Its localised site specificity could potentially make the population vulnerable to extirpation Table 19. A precautionary approach would be to avoid on site development close to the known buffered habitat of the species.

Table 19: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Mute Winter Katydid Brinckiella aptera 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.

Agile Grasshopper (Aneuryphymus montanus)

Conservation Status

The Yellow-winged Agile Grasshopper (*Aneuryphymus montanus*) is listed as Vulnerable under the IUCN Red List criteria, reflecting a combination of restricted and fragmented distribution, habitat specialisation, and ongoing environmental pressures (IUCN SSC Grasshopper Specialist Group, 2016). Although its estimated Extent of Occurrence (EOO) is relatively large (~170,000 km²), its Area of Occupancy (AOO) is much smaller due to its highly patchy and montane distribution pattern (Kinvig 2005). South Africa is home to the only known populations of the species; thus it is considered a South African endemic.

Distribution and Population

A. montanus is recorded primarily from Western and Eastern Cape mountain ranges, including sites near Clanwilliam, Graafwater, Lambert's Bay, De Rust, Bot River, Suurbraak, Kogelberg, and Joubertinia (Brown 1960, Kinvig 2005). These records are generally associated with elevated, rocky slopes in montane fynbos habitats.

In a national conservation assessment of grasshoppers, Kinvig (2005) confirmed that *A. montanus* has a strongly disjunct and localised distribution pattern. While its EOO spans a broad area, this is misleading in conservation terms because the species only occurs in specific microhabitat conditions within a narrow elevational and ecological band. Populations are likely to be small, isolated, and vulnerable to local extirpation.

Habitat and Ecology

A. montanus is strongly tied to rocky, montane fynbos habitats, particularly on south-facing, cool slopes with dense, sclerophyllous shrub cover and patches of exposed rock. Brown (1960) described the species as occurring "amongst partly burnt stands of evergreen sclerophyll in rocky foothills," suggesting an affinity for early-successional fynbos following fire. These areas typically have a mix of open ground for movement and complex vegetation for cover and feeding.

The species is terrestrial and strong-jumping, rather than a capable flier, and likely exhibits limited dispersal ability. Kinvig (2005) noted that individuals were not readily collected, even in seemingly suitable areas, indicating that the species may be inherently rare or cryptic. Its dependence on post-fire vegetation dynamics, cooler microclimates, and geological substrates contributes to its vulnerability to habitat alteration.

Threats

Key threats to *A. montanus* include:

- **Habitat transformation** due to agriculture, urban expansion, and plantation forestry;
- **Alteration of fire regimes**, which can either eliminate necessary early-successional stages or create overly frequent burns that degrade recovery;
- **Invasive alien vegetation**, which alters vegetation structure and reduces habitat quality;
- **Climate change**, which threatens montane fynbos by shifting biome boundaries upward and reducing habitat availability;
- **Fragmentation**, which increases the likelihood of local extinction due to isolation and limits recolonisation potential (Kinvig, 2005).

Because the species does not occur in all available fynbos areas, it is considered a microhabitat specialist, and unsuitable areas may act as barriers to movement even within continuous vegetation zones.

Likelihood of Occurrence on Portion 4 of the Farm 643, Struisbaai

The species *A. montanus* prefers montane, rocky fynbos, with dense shrub cover, patches of exposed rock and south-facing, cool slopes. Portion 4 of the Farm 643 does not meet these habitat criterea. 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, 4) the undulating, sandy dune system which slopes gently northwards for most of the property, and 5) no direct evidence of occurrence Table 20.

Table 20: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Yellow-winged Agile Grasshopper (Aneuryphymus montanus) for the proposed development, see evaluation criteria (SANBI 2020). SEI is classified as 'Very 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.

Other SCC's as listed in Table 8

All the species listed in Table 8 except for the Bontebok are species that will associate with the reedbed and estuarine habitats similar to Marsh Harrier, Caspian Tern and White Pelican. They are all listed as Near Threatened and their SEI is considered 'Low' Table 21.

Table 21: Evaluation of site ecological importance (SEI) in terms of impact on the habitat (the receptor) for Other NT SCC's 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.

Overall SEI for the PAOI

The overall SEI for the PAOI is considered '**High**' Table 22:

Table 22: Evaluation of SEI of faunal habitats/processes in the PAOI for the proposed development. BI = biodiversity importance, RR = receptor resilience.

Habitat/Process Receptors	Conservation Importance	Functional Integrity	Receptor resilience	Site ecological importance
Faunal Landscape Connectivity	**High** – Corridors in CR Agulhas Limestone Fynbos are priority.	**Medium** – ~70% of the 12 ha remains intact, but small property size limits corridor width.	**Medium** – Connectivity recovers slowly; edge effects from human use reduce effectiveness.	**Medium**
Black Harrier (EN)	**Very High** – Endangered, small population.	**High** – The property has suitable breeding and foraging habitat.	**Medium** – vegetation recovery slow; small site increases edge effects.	**High**
Marsh Harrier (VU)	**High** – Vulnerable wetland raptor.	**Medium** – Estuary edge reeds provide some foraging; development footprint only partly overlaps.	**Medium** – Wetland edges moderately resilient (>10 yrs recovery).	**Medium**
Denham's Bustard (VU)	**High** – Vulnerable.	**Low** – Small, dense shrubland patch unsuitable; no open habitat.	**Low** – Structure unlikely to recover quickly on 12 ha without management.	**Medium**
Southern Black Korhaan (VU)	**High** – Vulnerable endemic.	**Medium** – 70% intact but tall fynbos unsuitable; post-fire mosaics needed.	**Low** – Habitat recovery slow; small property size exacerbates edge disturbance.	**Medium**
Great White Pelican (VU)	**High** – Vulnerable; estuary a key forager.	**Low** – The 12 ha site provides no functional pelican habitat.	**High** – Estuary margins resilient; unaffected by small site development.	**Low**
Martial Eagle (EN)	**Very High** – Endangered species with severe national decline (~77% over three generations).	**Low** – The 12 ha site lacks tall nesting trees and extensive open foraging habitat; only provides space for occasional overflight.	**Low** – Habitat on-site is unlikely to recover to a functional state suitable for Martial Eagles (>15 years; small, edge-affected site).	**Medium**
Caspian Tern (VU)	**High** – Vulnerable, localised breeder.	**Low** – Adjacent estuary provides foraging; 12 ha site peripheral.	**High** – Estuarine systems moderately resilient.	**Low**

Western Leopard Toad (EN)	**Very High** – Endangered endemic.	**Low** – No breeding ponds within 12 ha; unsuitable for reproduction.	**Low** – Wetland habitats slow to restore and absent here.	**Medium**
Southern Adder (VU)	**High** – Vulnerable, fynbos specialist.	**High** – 70% fynbos intact, but patchy due to site's small size.	**Low** – Fynbos recovery slow; edge effects strong on 12 ha site.	**High**
Mute Winter Katydid (VU)	**High** – Vulnerable, range-restricted.	**High** – Confirmed onsite in intact patches of the 12 ha.	**Low** – Microhabitats slow to recover but 70% remain intact. Development could destroy population	**High** – Confirmed onsite; 12 ha property significant for local persistence.
Yellow-winged Agile Grasshopper (VU)	N/A	N/A	N/A	**Very Low** – Likely not present
Other SCC (Table 8)	**Medium** – Mix of NT and restricted taxa.	**Low** – Variable habitat condition across 12 ha.	**High** – Recovery varies by species group. Estuary not effected (dependant on jetty locations)	**Low**

The SEI for Faunal Habitat types varies but is considered 'High' for the majority of the property due to suitable breeding and foraging habitat for a number of the SCC's (Black harrier, Southern Adder) and foraging habitat for Western Leopard Toad Figure 24, Figure 25. The newly discovered Mute Winter Katydid population warrants part of the property to be classified 'High-to-very High' importance mainly because of the species patchy and localised distribution (a precautionary measure) Figure 24, Figure 25. The species that rely on the estuary e.g. Marsh harrier, Caspian Tern and White Pelican warrants a 'Medium' importance classification Figure 24, Figure 25.

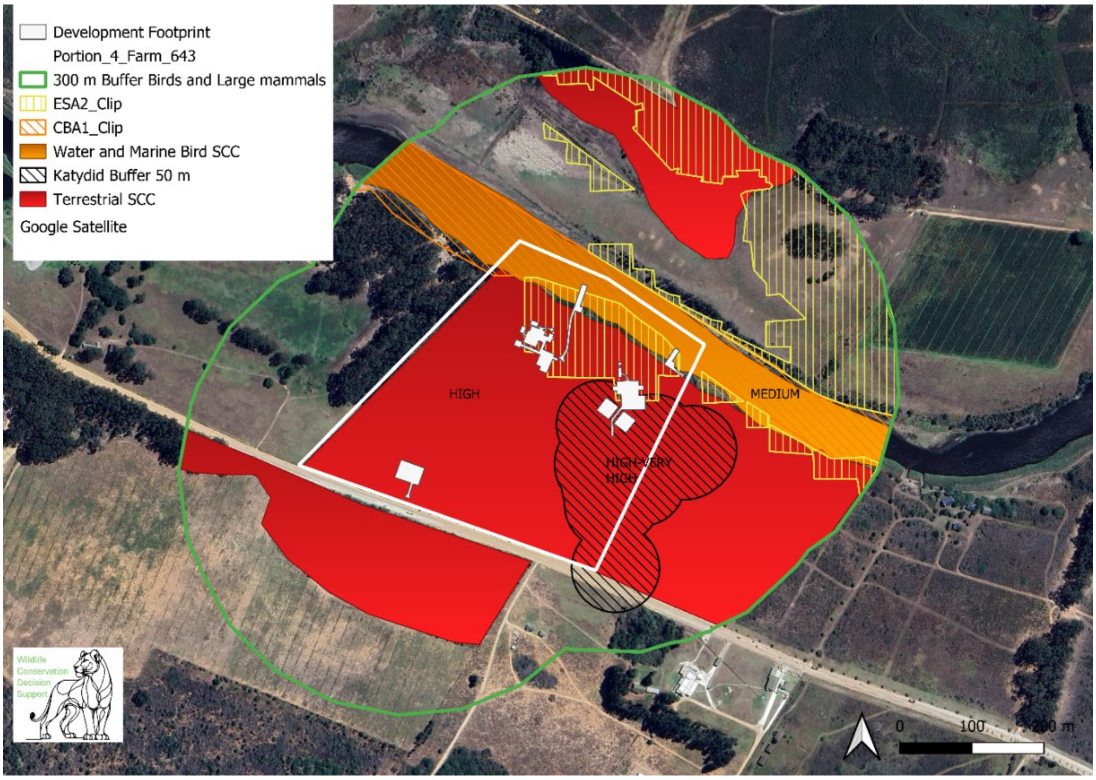

Figure 24: The SEI of the SCC faunal habitats on Portion 4 of Farm 643, Stanford as considered in the original preferred design in Venter (2025)

Figure 25: The SEI of the SCC faunal habitats on Portion 4 of Farm 643, Stanford as considered in the new preferred development design

Impact assessment and impact rating tables

The following section presents a structured assessment of potential impacts associated with the proposed development. Each impact is evaluated in terms of its nature, extent, duration, intensity, probability, and overall significance, both before and after mitigation. The tables also highlight the specific mitigation measures envisaged, which should be kept in mind when interpreting the residual significance ratings. This structured approach provides a transparent framework for comparing different impacts, illustrating the effectiveness of proposed mitigation, and ensuring alignment with accepted environmental assessment practice and regulatory requirements.

Design Revisions Implemented During the Assessment Process

During the course of this specialist assessment, two key design modifications were implemented by the developer in direct response to the original faunal sensitivity findings in Venter (2025). First, the number of proposed jetties on the estuary frontage was reduced from two to one, substantially lowering the anticipated disturbance footprint for estuary-associated birds and reducing cumulative activity levels along the shoreline. Second, following confirmation of a population of *Brinckiella aptera* (Mute Winter Katydid) and mapping of its core habitat, the residential building envelope was relocated entirely outside the recommended 50 m exclusion buffer recommended in Venter (2025). This adjustment implements avoidance, the highest tier of the SANBI (2020) mitigation hierarchy, and eliminates all direct loss of katydid habitat within the development footprint. The impact assessment tables that follow therefore present significance ratings for both the original layout (unmitigated scenario) and the revised layout (mitigated scenario), demonstrating how these design changes materially reduce impacts to Species of Conservation Concern and improve alignment with biodiversity best practice requirements.

Impact rating table for Faunal landscape connectivity

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred Alternative – Planning & Development	Original Preferred Alternative – Operational	Original Preferred Alternative – Decommissioning	Non-preferred Alternative – Planning & Development	Non-preferred Alternative – Operational	Non-preferred Alternative – Decommissioning
Potential impact / risk	None initiated.	Passive decline: alien ingress, informal paths, unmanaged lighting/pets nearby reduce permeability over time.	Not applicable.	Corridor narrowing (±30% of 12 ha); fencing/driveways; lighting; alien ingress.	Chronic edge effects (light, pets, gardens) reduce movement permeability across the 70% retained.	If hardscape remains, residual barriers/compaction persist.	As Preferred, with slightly greater sensitivity where one dwelling sits closer to estuary before mitigation.	Estuary-edge lighting/traffic marginally increases nightly barrier effect.	Decommissioned structures near estuary require riparian-edge rewilding to re-close corridor.
Nature of impact	Neutral. – no new structures or earthworks, so no immediate change to movement pathways.	Negative, indirect (unmanaged). – – without active management, night lighting from neighbours, informal paths and alien thickening slowly erode permeability of the remaining matrix.	–	Negative, direct & indirect. – building pads, driveways, fences and lighting physically narrow or break movement strips; disturbance increases avoidance of humanised edges.	Negative, indirect & chronic. – long-term edge effects (noise, pets, glare) make animals detour or avoid moving at optimal times.	Negative but reversible if restored. – if structures are removed and soils/vegetation are actively restored, corridor function can recover.	Negative, direct & indirect. – same mechanisms as Preferred, with slightly higher sensitivity where one dwelling sits closer to the estuary interface.	Negative, indirect & chronic. – estuary-facing lights/traffic slightly intensify nightly barrier effect along the river–upland axis.	Negative but reversible if restored. – targeted riparian rewilding can re-stitch the movement strip.
Extent & duration	–	Site-local; long-term gradual decline.	–	Site-local; long-term (fixed infrastructure).	Site-local; long-term (>10 yr) edge influence.	Site; medium-term with active rehab.	Site-local; long-term; slightly higher risk at estuary edge.	Site-local; long-term; nightly pressure at water-upland interface.	Site; medium-term; riparian and soils need attention.
Significance (before mitigation)	Neutral.	Low–Medium negative.	–	Medium–High negative (narrow 12 ha unit losing ±30% functional width).	Medium negative.	Low–Medium negative.	Medium–High negative (marginally higher at estuary pinch).	Medium negative.	Low–Medium negative.
Mitigation	–	–	–	Maintain ≥70% continuous natural corridor; wildlife-	Enforce pet curfews; keep 15–20 m movement	Remove barriers; rip/ de-compact; re-seed with local	As Preferred plus slightly wider estuary-edge	Shield estuary-facing lights; quarterly corridor	Riparian-edge rewilding to close corridor "gaps";

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred Alternative – Planning & Development	Original Preferred Alternative – Operational	Original Preferred Alternative – Decommissioning	Non-preferred Alternative – Planning & Development	Non-preferred Alternative – Operational	Non-preferred Alternative – Decommissioning
				permeable fencing; dark-sky lighting; ALIEN PLANT CONTROL (new commitment); cap units at 3 (no further densification); place riparian jetty: one only (reduce from two); consider formal stewardship for retained areas.	strips unfenced; monitor corridor use; maintain alien-control programme; keep jetty activity low-intensity.	fynbos; continue alien control ≥3–5 yr; formalise stewardship if adopted.	buffer to compensate closer siting; reduce to one jetty; same alien control and densification cap.	monitoring; uphold cap at 3 units; alien control ongoing.	maintain stewardship/alien programmes.
Residual impacts	–	Gradual unmanaged decline persists.	–	Edge effects persist but functional corridor retained if measures embedded.	Low, chronic edge influence remains; managed.	Recovery to >75% corridor function feasible.	Residual edge slightly higher at water-edge but buffered by wider setback, single jetty.	Low residual illumination pressure at water-edge; managed.	>75% function achievable with adaptive management.
Significance (after mitigation)	–	–	–	**Medium negative**.	**Low–Medium negative**.	**Low negative**.	**Medium negative**	**Low–Medium negative**.	**Low negative**.

Criteria	New Preferred Alternative – Planning & Development	New Preferred Alternative – Operational	New Preferred Alternative – Decommissioning
Potential impact / risk	Corridor narrowing (±30% of 12 ha); fencing/driveways; lighting; alien ingress.	Chronic edge effects (light, pets, gardens) reduce movement permeability across the 70% retained.	If hardscape remains, residual barriers/compaction persist.
Nature of impact	Negative, direct & indirect. – building pads, driveways, fences and lighting physically narrow or break movement strips; disturbance increases avoidance of humanised edges.	Negative, indirect & chronic. – long-term edge effects (noise, pets, glare) make animals detour or avoid moving at optimal times.	Negative but reversible if restored. – if structures are removed and soils/vegetation are actively restored, corridor function can recover.

Criteria	New Preferred Alternative – Planning & Development	New Preferred Alternative – Operational	New Preferred Alternative – Decommissioning
Extent & duration	Site-local; long-term (fixed infrastructure).	Site-local; long-term (>10 yr) edge influence.	Site; medium-term with active rehab.
Significance (before mitigation)	Medium–High negative (narrow 12 ha unit losing ±30% functional width).	Medium negative.	Low–Medium negative.
Mitigation	Maintain ≥70% continuous natural corridor; wildlife-permeable fencing; dark-sky lighting; Alien Plant Control (new commitment); cap units at 3 (no further densification); place riparian jetty: one only; consider formal stewardship for retained areas.	Enforce pet curfews; keep 15–20 m movement strips unfenced; monitor corridor use; maintain alien-control programme; keep jetty activity low-intensity.	Remove barriers; rip/ de-compact; re-seed with local fynbos; continue alien control ≥3–5 yr; formalise stewardship if adopted.
Residual impacts	Edge effects persist but functional corridor retained if measures embedded.	Low, chronic edge influence remains; managed.	Recovery to >75% corridor function feasible.
Significance (after mitigation)	**Low-Medium positive**.	**Low–Medium negative**.	**Low negative**.

Impact rating table for Black Harrier

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Potential impact / risk	None.	Passive habitat-quality decline (aliens/edges) – reduces suitability if unmanaged.		Habitat loss/fragmentation within potential territories; construction disturbance.	Chronic disturbance (people, lighting) could displace foraging/roosting.	Temporary disturbance; potential to restore structure.	As Preferred with slightly higher sensitivity near estuary flight lines before mitigation.	Slightly higher night-lighting effect near water edge without controls.	Opportunity to restore estuary-adjacent natural cover.
Nature of impact	Neutral. – no new disturbance sources introduced.	Negative, indirect (unmanaged). – – in the absence of management, alien – encroachment and edge creep reduce the openness and prey access Black		Negative, direct & indirect. – loss of hunting/possible nesting areas in the footprint; construction activity and machinery increase	Negative, indirect & chronic. – sustained light, people and pets reduce use of otherwise suitable edges; birds may shift hunting times/areas.	Negative but partly reversible. – removing infrastructure and re-establishing structure can restore foraging potential.	Negative, direct & indirect. – identical processes with slightly higher sensitivity where flight lines track the estuary margin.	Negative, indirect & chronic. – estuary-facing lighting marginally increases night-time avoidance.	Negative but reversible. – estuary-edge restoration accelerates return of use.

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
		Harriers need for hunting.		flush/disturbance risk.					
Extent & duration	–	Local; long-term gradual decline.	–	Local; long-term.	Local; long-term (>10 yr).	Site; medium-term with rehab.	Local; long-term; slightly heightened sensitivity.	Local; long-term; marginally higher avoidance near estuary without mitigation.	Site; medium-term.
Significance (before mitigation)	Neutral.	Low–Medium negative.	–	**Medium–High negative** (high likelihood + 30% transformation).	Medium negative.	Low–Medium negative.	Medium–High negative.	Medium negative.	Low–Medium negative.
Mitigation	–	–	–	Cluster footprint away from mapped high-use zones; dark-sky lighting; ALIEN CONTROL (new); cap at 3 dwellings; formal stewardship for retained areas considered.	Enforce pet curfews; low-glare warm lighting; maintain wide quiet strips; monitor use.	Restore vegetation structure; monitor return of hunting activity.	Add wider buffer on estuary-facing edge; same lighting/alien/densification commitments; single jetty to limit repeated disturbance pulses.	Stricter lighting shields on estuary-facing façades; dusk/dawn quiet hours; monitor activity.	Prioritise estuary-side restoration; formalise stewardship if pursued.
Residual impacts	–	Unmanaged slow decline persists.	–	Displacement risk reduced but not eliminated; foraging persists in retained strips.	Low chronic edge effects remain.	Recovery to >75% function likely with sustained rehab.	Residual risk ~Preferred if buffers + single jetty applied.	Low chronic influence persists but managed.	>75% function achievable with targeted rehab.
Significance (after mitigation)	–	–	–	**Medium negative**.	**Low–Medium negative**.	**Low negative**.	**Medium negative**.	**Low–Medium negative**.	**Low negative**.

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Potential impact / risk	Habitat loss/fragmentation within potential territories; construction disturbance.	Chronic disturbance (people, **lighting**) could displace foraging/roosting.	Temporary disturbance; potential to restore structure.
Nature of impact	Negative, direct & indirect. – loss of hunting/possible nesting areas in the footprint; construction activity and machinery increase flush/disturbance risk.	Negative, indirect & chronic. – sustained light, people and pets reduce use of otherwise suitable edges; birds may shift hunting times/areas.	Negative but partly reversible. – removing infrastructure and re-establishing structure can restore foraging potential.
Extent & duration	Local; long-term.	Local; long-term (>10 yr).	Site; medium-term with rehab.
Significance (before mitigation)	**Medium–High negative** (high likelihood + 30% transformation).	Medium negative.	Low–Medium negative.
Mitigation	Cluster footprint away from mapped high-use zones; dark-sky lighting; ALIEN CONTROL (new); cap at 3 dwellings; formal stewardship for retained areas considered.	Enforce pet curfews; low-glare warm lighting; maintain wide quiet strips; monitor use.	Restore vegetation structure; monitor return of hunting activity.
Residual impacts	Displacement risk reduced but not eliminated; foraging persists in retained strips.	Low chronic edge effects remain.	Recovery to >75% function likely with sustained rehab.
Significance (after mitigation)	**Low-Medium negative**.	**Low–Medium negative**.	**Low negative**.

Impact rating table for Marsh Harrier

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Potential impact / risk	None.	Passive riparian degradation risk without management.	–	Works near reed margin can disturb foraging/possible breeding at PAOI scale.	Chronic disturbance along reed edge (activity, light, pets).	Temporary disturbance; chance to restore riparian margin.	Dwelling slightly closer to estuary increases sensitivity during works.	Night lighting near estuary marginally increases disturbance pulses.	Focused riparian recovery needed.

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Nature of impact	Neutral.	Negative, indirect (unmanaged). – unmanaged reed edges and casual human use gradually reduce the quiet conditions favoured for foraging/roosting.	–	Negative, direct (noise/activity) & indirect (light). – construction noise and presence adjacent to reeds cause temporary displacement from foraging routes	Negative, indirect & chronic. – persistent human presence, lights and pets along the reed edge lower use of near-shore airspace.	Negative but reversible. – riparian rehabilitation restores cover and reduces disturbance.	Negative, direct & indirect (slightly higher). – closer siting to the estuary increases sensitivity during works.	Negative, indirect & chronic (slightly higher). – marginally stronger night-lighting and activity effects on reed-edge flights.	Negative but reversible. – focused reed-margin recovery re-establishes function.
Extent & duration	–	Local; long-term gradual.	–	Site-local; short–medium (build).	Site-local; long-term low-level.	Site; short–medium.	Site-local; short–medium; higher sensitivity zone.	Site-local; long-term; minor increase.	Site; short–medium.
Significance (before mitigation)	Neutral.	Low–Medium negative.	–	Medium negative.	Medium negative.	Low–Medium negative.	Medium negative (slightly higher).	Medium negative (slightly higher).	Low–Medium negative.
Mitigation	–	–	–	Reduce jetties to one; no-work buffer at reeds; time noisy work outside Aug–Nov; dark-sky lighting; pet controls; ALIEN CONTROL (new) in riparian; consider stewardship for retained riparian edge.	Maintain quiet buffered strip; shield lights; keep jetty access low-intensity; monitor.	Restore reed margin (seasonally appropriate), remove rubble; follow-up.	As Preferred with wider buffer given proximity; single jetty retained; enforce lighting shields on estuary-facing façades.	Maintain curfew/lighting shields; monitor harrier use; keep pet access away from reed toe.	Riparian rehab with native species; verify recovery.
Residual impacts	–	Low-grade unmanaged disturbance persists.	–	Local residual disturbance remains; core foraging maintained.	Low chronic disturbance remains.	Recovery expected.	Residual similar to Preferred after buffers + one jetty.	Low residual night-lighting effect near estuary remains but controlled.	Recovery feasible; verify by follow-up.

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Significance (after mitigation)	–	–	–	**Low–Medium negative**.	**Low negative**.	**Low negative**.	**Low–Medium negative**.	**Low negative**.	**Low negative**.

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Potential impact / risk	Works near reed margin can disturb foraging/possible breeding at PAOI scale.	Chronic disturbance along reed edge (activity, light, pets).	Temporary disturbance; chance to restore riparian margin.
Nature of impact	Negative, direct (noise/activity) & indirect (light). – construction noise and presence adjacent to reeds cause temporary displacement from foraging routes	Negative, indirect & chronic. – persistent human presence, lights and pets along the reed edge lower use of near-shore airspace.	Negative but reversible. – riparian rehabilitation restores cover and reduces disturbance.
Extent & duration	Site-local; short–medium (build).	Site-local; long-term low-level.	Site; short–medium.
Significance (before mitigation)	Medium negative.	Medium negative.	Low–Medium negative.
Mitigation	No-work buffer at reeds; time noisy work outside Aug–Nov; dark-sky lighting; pet controls; ALIEN CONTROL (new) in riparian; consider stewardship for retained riparian edge.	Maintain quiet buffered strip; shield lights; keep jetty access low-intensity; monitor.	Restore reed margin (seasonally appropriate), remove rubble; follow-up.
Residual impacts	Local residual disturbance remains; core foraging maintained.	Low chronic disturbance remains.	Recovery expected.
Significance (after mitigation)	**Low–Medium Positive**.	**Low negative**.	**Low negative**.

Impact rating table for Denham's bustard

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Potential impact / risk	None.	Passive structural change (shrub thickening/aliens) further reduces suitability.	–	Temporary disturbance; vegetation too closed for species requirements.	Human presence negligible effect due to habitat mismatch.	Temporary disturbance only.	Temporary disturbance near estuary still immaterial for bustard.	Operational presence negligible; mismatch persists.	Temporary; potential to improve structure if desired.
Nature of impact	Neutral.	Negative, indirect (unmanaged). – without management, shrub thickening/aliens further reduce already unsuitable structure for this open-habitat species.	–	Slight negative. – construction disturbance with little functional consequence given habitat mismatch.	Neutral–slight negative. – operational presence does not materially change suitability.	Neutral. – no persistent effect anticipated.	Slight negative. – as per Preferred; estuary proximity does not drive risk for this species here.	Neutral–slight negative. – negligible functional change.	Neutral.
Extent & duration	–	Site-local; long-term.	–	Site-local; short-term.	Site-local; long-term trivial.	–	Site-local; short-term.	Site-local; long-term trivial.	–
Significance (before mitigation)	Neutral.	Low negative.	–	Low negative.	Low negative.	Very low negative.	Low negative.	Low negative.	Very low negative.
Mitigation	–	–	–	Confine works to previously disturbed patches; cap at 3 dwellings; alien control to prevent further structural shift.	Maintain low disturbance; continue alien control.	–	Same measures; estuary proximity irrelevant for this species.	Maintain low light and activity at any open edges.	–
Residual impacts	–	–	–	Negligible.	Negligible.	–	Negligible.	Negligible.	–

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Significance (after mitigation)	–	–	–	**Very low/neutral**.	**Very low/neutral**.	–	**Very low/neutral**.	**Very low/neutral**.	–

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Potential impact / risk	Temporary disturbance; vegetation too closed for species requirements.	Human presence negligible effect due to habitat mismatch.	Temporary disturbance only.
Nature of impact	Slight negative. – construction disturbance with little functional consequence given habitat mismatch.	Neutral–slight negative. – operational presence does not materially change suitability.	Neutral. – no persistent effect anticipated.
Extent & duration	Site-local; short-term.	Site-local; long-term trivial.	–
Significance (before mitigation)	Low negative.	Low negative.	Very low negative.
Mitigation	Confine works to previously disturbed patches; cap at 3 dwellings; alien control to prevent further structural shift.	Maintain low disturbance; continue alien control.	–
Residual impacts	Negligible.	Negligible.	–
Significance (after mitigation)	**Very low/neutral**.	**Very low/neutral**.	–

Impact rating table for Southern Black Korhaan

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Potential impact / risk	None.	Passive structural shift (older tall fynbos, aliens)	–	Loss/disturbance to small, patchy suitable	Edge disturbance (people/pets)	Rehab may restore structure;	Same processes; slightly higher sensitivity only if any	Disturbance similar; estuary proximity not	Target lower/open areas first in rehab.

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
		reduces any marginal suitability.		areas; construction noise.	reduces use of marginal habitat.	recolonisation uncertain.	open fringe lies nearer estuary.	a key driver for korhaan here.	
Nature of impact	Neutral.	Negative, indirect (unmanaged). – aging/taller shrub layers and aliens reduce any marginally open patches.	–	Negative, direct & indirect. footprint trims small open patches and raises disturbance; species is sensitive to human proximity.	Negative, indirect. – pets/people and light reduce willingness to use edge-openings.	Potentially reversible. – restoring appropriate low vegetation structure may allow future use, though recolonisation is uncertain.	Negative, direct & indirect. – similar to Preferred, with attention to any estuary-proximal open strips if present.	Negative, indirect. – similar long-term edge effects at low magnitude.	Potentially reversible. with targeted structural rehab.
Extent & duration	–	Site-local; long-term.	–	Site-local; short–long-term (veg recovery).	Site-local; long-term low level.	Site; medium-term if rehab.	Site-local; short–long-term.	Site-local; long-term low level.	Site; medium-term.
Significance (before mitigation)	Neutral.	Low negative.	–	Medium negative.	Low–Medium negative.	Low negative.	Medium negative.	Low–Medium negative.	Low negative.
Mitigation	–	–	–	Avoid lower/open patches; alien control to keep mosaics; pet/light controls; consider stewardship to lock-in habitat.	Maintain micro-open patches (fire/alien programmes).	Restore structure; monitor recolonisation.	Apply same toolbox; ensure any estuary-proximal open strips are buffered.	Maintain low disturbance near suitable strips.	Restore and monitor.
Residual impacts	–	–	–	Reduced local habitat availability; regional persistence unaffected.	Low residual edge effect.	Recovery possible but uncertain.	Reduced availability comparable to Preferred.	Low residual edge effect.	Recovery possible but uncertain.
Significance (after mitigation)	–	–	–	**Low–Medium negative.**	**Low negative.**	**Low negative.**	**Low–Medium negative.**	**Low negative.**	**Low negative.**

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Potential impact / risk	Loss/disturbance to small, patchy suitable areas; construction noise.	Edge disturbance (people/pets) reduces use of marginal habitat.	Rehab may restore structure; recolonisation uncertain.
Nature of impact	Negative, direct & indirect. footprint trims small open patches and raises disturbance; species is sensitive to human proximity.	Negative, indirect. – pets/people and light reduce willingness to use edge-openings.	Potentially reversible. – restoring appropriate low vegetation structure may allow future use, though recolonisation is uncertain.
Extent & duration	Site-local; short–long-term (veg recovery).	Site-local; long-term low level.	Site; medium-term if rehab.
Significance (before mitigation)	Medium negative.	Low–Medium negative.	Low negative.
Mitigation	Avoid lower/open patches; alien control to keep mosaics; pet/light controls; consider stewardship to lock-in habitat.	Maintain micro-open patches (fire/alien programmes).	Restore structure; monitor recolonisation.
Residual impacts	Reduced local habitat availability; regional persistence unaffected.	Low residual edge effect.	Recovery possible but uncertain.
Significance (after mitigation)	**Low–Medium positive**.	**Low negative**.	**Low negative**.

Impact rating table for Great White Pelican

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Potential impact / risk	None.	Neutral: estuary use unaffected by no-build.	–	Construction disturbance; overflight only (foraging in estuary).	Occasional displacement by activity/lighting; estuary foraging unaffected.	–	Same processes; proximity change immaterial ecologically.	Low-level displacement possible but minor.	–
Nature of impact	Neutral. terrestrial site decisions do not	Neutral. – no new pressures introduced.	–	Slight negative (indirect). – temporary construction activity	Slight negative (indirect). – occasional displacement due to	Neutral. – no persistent effect once works end.	Slight negative. – as Preferred; the few metres' shift is	Slight negative. – same low-level operational effect.	Neutral.

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
	alter estuary foraging.			may cause local overflight detours.	human activity/lighting near shore; feeding habitat itself remains unaffected.		immaterial to pelicans.		
Extent & duration	–	–	–	Site-local; short-term.	Site-local; long-term trivial.	–	Site-local; short-term.	Site-local; long-term trivial.	–
Significance (before mitigation)	Neutral.	Neutral.	–	Low negative.	Very low–Low negative.	Very low.	Low negative.	Very low–Low negative.	Very low.
Mitigation	–	–	–	**Reduce jetties to one**; keep jetty low-intensity; avoid tall verticals; dark-sky lighting; consider stewardship of retained riparian edge.	Maintain buffer and low lighting; keep pets away from shore.	–	Same one-jetty policy; lighting shields on estuary-facing façades.	Maintain buffer & curfews; monitor.	–
Residual impacts	–	–	–	Negligible.	Negligible.	–	Negligible.	Negligible.	–
Significance (after mitigation)	–	–	–	**Very low/neutral**.	**Very low/neutral**.	–	**Very low/neutral**.	**Very low/neutral**.	–

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Potential impact / risk	Construction disturbance; overflight only (foraging in estuary).	Occasional displacement by activity/lighting; estuary foraging unaffected.	–

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Nature of impact	Slight negative (indirect). – temporary construction activity may cause local overflight detours.	Slight negative (indirect). – occasional displacement due to human activity/lighting near shore; feeding habitat itself remains unaffected.	Neutral. – no persistent effect once works end.
Extent & duration	Site-local; short-term.	Site-local; long-term trivial.	–
Significance (before mitigation)	Low negative.	Very low–Low negative.	Very low.
Mitigation	Keep one jetty low-intensity; avoid tall verticals; dark-sky lighting; consider stewardship of retained riparian edge.	Maintain buffer and low lighting; keep pets away from shore.	–
Residual impacts	Negligible.	Negligible.	–
Significance (after mitigation)	**Very low/neutral**.	**Very low/neutral**.	–

Impact rating table for Martial Eagle

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Potential impact / risk	None.	Neutral: unmanaged site does not affect regional overflights; nest substrates absent either way.	–	Short-term disturbance to overflying birds; no nesting/open hunting habitat on site.	Minimal chronic effect with residents.	–	Identical ecological mechanism; estuary proximity irrelevant for this species' site-use.	Minimal chronic effect persists; negligible change.	–
Nature of impact	Neutral.	Neutral. site condition has negligible bearing on wide-ranging overflights; no nest substrates either way.	–	Slight negative (indirect). construction presence may cause brief avoidance; no habitat mechanism on site.	Neutral–slight negative. – minimal operational disturbance potential.	Neutral.	Slight negative (indirect). – same as Preferred; estuary proximity not a driver for this species' use here.	Neutral–slight negative. – negligible long-term effect.	Neutral.
Extent & duration	–	–	–	Site-local; short-term.	Site-local; long-term trivial.	–	Site-local; short-term.	Site-local; long-term trivial.	–

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Significance (before mitigation)	Neutral.	Neutral.	–	Low negative.	Very low–Low negative.	Very low.	Low negative.	Very low–Low negative.	Very low.
Mitigation	–	–	–	Avoid tall verticals; reduce glare; **cap dwellings at 3**; formal stewardship of retained areas considered.	Maintain low lighting; no additional tall verticals.	–	Same technical controls; monitoring not expected to detect frequent interactions.	Keep lighting low.	–
Residual impacts	–	–	–	Negligible.	Negligible.	–	Negligible.	Negligible.	–
Significance (after mitigation)	–	–	–	**Very low/neutral**.	**Very low/neutral**.	–	**Very low/neutral**.	**Very low/neutral**.	–

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Potential impact / risk	Short-term disturbance to overflying birds; no nesting/open hunting habitat on site.	Minimal chronic effect with residents.	–
Nature of impact	Slight negative (indirect). construction presence may cause brief avoidance; no habitat mechanism on site.	Neutral–slight negative. – minimal operational disturbance potential.	Neutral.
Extent & duration	Site-local; short-term.	Site-local; long-term trivial.	–
Significance (before mitigation)	Low negative.	Very low–Low negative.	Very low.
Mitigation	Avoid tall verticals; reduce glare; cap dwellings at 3; formal stewardship of retained areas considered.	Maintain low lighting; no additional tall verticals.	–
Residual impacts	Negligible.	Negligible.	–

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Significance (after mitigation)	Very low/neutral.	Very low/neutral.	–

Impact rating table for Caspian Tern

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Potential impact / risk	None.	Neutral: foraging/roosting in estuary unaffected.	–	Temporary disturbance during works; no breeding on site.	Low-level disturbance from shore-adjacent activity/lighting.	–	Temporary disturbance; proximity change does not alter mechanism.	Low-level disturbance; maintain buffer to estuary.	–
Nature of impact	Neutral. no near-shore disturbance created	Neutral. estuary function unchanged.	–	Slight negative (indirect). temporary disturbance during works close to the water's edge; roost/forage still available.	Slight negative (indirect). low-level displacement risk from people/lights; habitat is off-site (estuary).	Neutral. disturbance ends with works.	Slight negative. – as Preferred; layout shift does not change mechanism.	Slight negative. – same low-level operational effect.	Neutral.
Extent & duration	–	–	–	Site-local; short-term.	Site-local; long-term trivial.	–	Site-local; short-term.	Site-local; long-term trivial.	–
Significance (before mitigation)	Neutral.	Neutral.	–	Low negative.	Very low–Low negative.	Very low.	Low negative.	Very low–Low negative.	Very low.
Mitigation	–	–	–	**Single jetty (reduce from two)**; quiet, unlit estuary margin; avoid peak use periods; consider stewardship for retained estuary edge.	Maintain buffer & low lighting; restrict pets near shoreline.	–	Same one-jetty policy; contractor induction on estuary sensitivity.	Maintain buffer and lighting curfew; monitor.	–

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Residual impacts	–	–	–	Negligible.	Negligible.	–	Negligible.	Negligible.	–
Significance (after mitigation)	–	–	–	**Very low/neutral**.	**Very low/neutral**.	–	**Very low/neutral**.	**Very low/neutral**.	–

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Potential impact / risk	Temporary disturbance during works; no breeding on site.	Low-level disturbance from shore-adjacent activity/lighting.	–
Nature of impact	Slight negative (indirect). temporary disturbance during works close to the water's edge; roost/forage still available.	Slight negative (indirect). low-level displacement risk from people/lights; habitat is off-site (estuary).	Neutral. disturbance ends with works.
Extent & duration	Site-local; short-term.	Site-local; long-term trivial.	–
Significance (before mitigation)	Low negative.	Very low–Low negative.	Very low.
Mitigation	Retain quiet, unlit estuary margin; avoid peak use periods; consider stewardship for retained estuary edge.	Maintain buffer & low lighting; restrict pets near shoreline.	–
Residual impacts	Negligible.	Negligible.	–
Significance (after mitigation)	**Very low/neutral**.	**Very low/neutral**.	–

Impact rating table for Western Leopard Toad

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Potential impact / risk	None.	Ongoing background risk of occasional roadkill in broader landscape; unmanaged site doesn't alter this.	None.	Construction disturbance; occasional roadkill risk during clearing/earthworks.	Edge effects (lighting, pets, pesticides) on terrestrial movement.	Rehabilitation may create more permeable ground cover and refugia.	Same mechanisms as Preferred; estuary proximity not relevant.	Same as Preferred.	Same as Preferred.
Nature of impact	Neutral – no new works.	Neutral to slight negative (indirect, regional background).	Neutral.	Negative (indirect > direct) – construction noise/lighting raise movement risk; no breeding ponds on site.	Negative (chronic, light/pets) – operational lighting and pets reduce terrestrial corridor quality.	Neutral to slight positive – rehab with amphibian-friendly features improves permeability.	Negative (indirect) – as Preferred; no estuary-related pathway.	Negative (chronic) – as Preferred.	Neutral to slight positive with restoration.
Extent & duration	–	Local; long-term low-level.	–	Site-local; short–medium.	Site-local; long-term.	Site; medium-term.	Site-local; short–medium.	Site-local; long-term.	Site; medium-term.
Significance (before mitigation)	Neutral.	Low negative.	Neutral.	Low–Medium negative.	Low negative.	Very low–Low negative.	Low–Medium negative.	Low negative.	Very low–Low negative.
Mitigation	–	–	–	Implement standard WLT measures: shallow-profile road verges; pesticide ban; indigenous landscaping/leaf litter refuges; low-spectrum, full cut-off lighting; seasonal restrictions during calling and toadlet movement; amphibian-friendly drainage; pool escape ramps; corridors between dwellings; alien plant	Maintain lighting curfew; enforce pet discipline; retain vegetated movement strips; keep signage/education ongoing.	Restore ground cover; monitor effectiveness post-works (spot checks during toadlet season).	Apply same WLT measures to the alternative layout, ensuring access tracks near estuary also have amphibian-safe crossings.	Same long-term measures: lighting, pets, corridors.	Restore ground cover; monitor.

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
				control; cap at 3 dwellings; consider stewardship for retained areas.					
Residual impacts	–	Background risk remains.	–	Small residual roadkill risk persists.	Low residual edge effects persist.	Amphibian-friendly structure can restore function.	Same residuals as Preferred.	Same residuals.	Recovery possible.
Significance (after mitigation)	Neutral.	Neutral.	Neutral.	Low negative.	Very low–Low negative.	Low negative.	Low negative.	Very low–Low negative.	Low negative.

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Potential impact / risk	Construction disturbance; occasional roadkill risk during clearing/earthworks.	Edge effects (lighting, pets, pesticides) on terrestrial movement.	Rehabilitation may create more permeable ground cover and refugia.
Nature of impact	Negative (indirect > direct) – construction noise/lighting raise movement risk; no breeding ponds on site.	Negative (chronic, light/pets) – operational lighting and pets reduce terrestrial corridor quality.	Neutral to slight positive – rehab with amphibian-friendly features improves permeability.
Extent & duration	Site-local; short–medium.	Site-local; long-term.	Site; medium-term.
Significance (before mitigation)	Low–Medium negative.	Low negative.	Very low–Low negative.
Mitigation	Implement standard WLT measures: shallow-profile road verges; pesticide ban; indigenous landscaping/leaf litter refuges; low-spectrum, full cut-off lighting; seasonal restrictions during calling and toadlet movement; amphibian-friendly drainage; pool escape ramps; corridors between dwellings; alien plant control; cap at 3 dwellings; consider stewardship for retained areas.	Maintain lighting curfew; enforce pet discipline; retain vegetated movement strips; keep signage/education ongoing.	Restore ground cover; monitor effectiveness post-works (spot checks during toadlet season).
Residual impacts	Small residual roadkill risk persists.	Low residual edge effects persist.	Amphibian-friendly structure can restore function.

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Significance (after mitigation)	Low negative.	Very low–Low negative.	Low negative.

Impact rating table for Southern Adder

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Potential impact / risk	None.	Passive risks: persecution/roadkill; habitat decline with alien ingress.	None.	Direct loss of refugia during clearing; persecution risk; roadkill during works.	Ongoing persecution and roadkill near dwellings; edge effects on refugia.	Restoration can re-establish structure, reducing risk.	Same as Preferred.	Same as Preferred.	Same as Preferred.
Nature of impact	Neutral.	Negative (indirect, unmanaged).	Neutral.	Negative (direct + indirect) – clearing and human presence remove refugia and elevate persecution.	Negative (chronic, human–wildlife) – pets and people sustain low-level mortality risk.	Negative but reversible – long-term restoration and education can rebuild refugia and tolerance.	Negative (direct + indirect).	Negative (chronic).	Negative but reversible.
Extent & duration	–	Site-local; long-term.	–	Site-local; long-term.	Site-local; long-term.	Site; medium–long-term.	Site-local; long-term.	Site-local; long-term.	Site; medium–long-term.
Significance (before mitigation)	Neutral.	Low–Medium negative.	Neutral.	High negative.	Medium–High negative.	Medium negative.	High negative.	Medium–High negative.	Medium negative.
Mitigation	–	–	–	Pre-clear search-and-rescue; avoid dens/refugia; wildlife-permeable fencing; speed limits; pet controls; retain rock/brush piles; alien control; appropriate fire regime; cap	Maintain refugia; incident reporting; resident education.	Restore shrub/ground-layer; monitor recovery.	Same as Preferred; extra induction on snake safety.	Maintain education and monitoring.	Restore and monitor.

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
				dwellings at 3; stewardship considered.					
Residual impacts	–	–	–	Reduced but persistent mortality and habitat loss within footprint.	Low residual risk remains.	Habitat function can recover substantially long-term.	Similar residuals to Preferred.	Low residual risk persists.	Recovery trend as in Preferred.
Significance (after mitigation)	Neutral.	Neutral.	Neutral.	Low-Medium negative.	Low–Medium negative.	Low negative.	Low-Medium negative.	Low–Medium negative.	Low negative.

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Potential impact / risk	Direct loss of refugia during clearing; persecution risk; roadkill during works.	Ongoing persecution and roadkill near dwellings; edge effects on refugia.	Restoration can re-establish structure, reducing risk.
Nature of impact	Negative (direct + indirect) – clearing and human presence remove refugia and elevate persecution.	Negative (chronic, human–wildlife) – pets and people sustain low-level mortality risk.	Negative but reversible – long-term restoration and education can rebuild refugia and tolerance.
Extent & duration	Site-local; long-term.	Site-local; long-term.	Site; medium–long-term.
Significance (before mitigation)	High negative.	Medium–High negative.	Medium negative.
Mitigation	Pre-clear search-and-rescue; avoid dens/refugia; wildlife-permeable fencing; speed limits; pet controls; retain rock/brush piles; alien control; appropriate fire regime; cap dwellings at 3; stewardship considered.	Maintain refugia; incident reporting; resident education.	Restore shrub/ground-layer; monitor recovery.
Residual impacts	Reduced but persistent mortality and habitat loss within footprint.	Low residual risk remains.	Habitat function can recover substantially long-term.
Significance (after mitigation)	Low-Medium negative.	Low–Medium negative.	Low negative.

Impact rating table for Mute Winter Katydid

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Potential impact / risk	None.	Passive degradation: alien grass ingress and trampling degrade micro-patches.	None.	Direct loss of occupied microhabitats; local collapse risk due to low mobility.	Trampling and gardening degrade occupied patches; edge stress.	Removal of infrastructure offers chance to restore structure.	Same as Preferred before mitigation.	Same as Preferred before mitigation.	Same as Preferred before mitigation.
Nature of impact	Neutral.	Negative (indirect, unmanaged).	Neutral.	Negative (direct + indirect; high sensitivity) – patch loss can cause extirpation.	Negative (chronic, microhabitat) – edge stress and degradation.	Negative but potentially reversible – recolonisation possible if structure restored.	Negative (direct + indirect).	Negative (chronic).	Negative but potentially reversible.
Extent & duration	–	Site-local; long-term.	–	Site-local; long-term.	Site-local; long-term.	Site; medium–long-term.	Site-local; long-term.	Site-local; long-term.	Site; medium–long-term.
Significance (before mitigation)	Neutral.	Low–Medium negative.	Neutral.	High negative.	Medium–High negative.	Medium negative.	High negative.	Medium–High negative.	Medium negative.
Mitigation	–	–	–	Relocate dwelling outside 50 m buffer; avoid all occupied patches; alien control focused on grass invasion; no mowing/gardening in buffers; seasonal timing; monitoring with adaptive triggers; cap at 3 dwellings; stewardship considered.	Maintain no-mow buffers; prohibit herbicides; limit paths; resident education; alien control.	Full habitat rehab and multi-year alien control; monitor recolonisation.	Apply same relocation and buffer measures; identical controls.	Maintain buffers; prevent garden creep; compliance checks.	Identical restoration protocol with performance criteria.

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Residual impacts	–	–	–	With relocation, residual risk drops substantially; without it, local extirpation possible.	Low chronic edge effects remain.	Recovery possible but slow.	Same as Preferred if relocation implemented.	Low chronic edge effects remain.	Recovery possible but slow.
Significance (after mitigation)	Neutral.	Neutral.	Neutral.	Medium negative (with buffer relocation).	Low–Medium negative.	Low negative.	Medium negative (with buffer relocation).	Low–Medium negative.	Low negative.

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Potential impact / risk	Direct loss of occupied microhabitats; local collapse risk due to low mobility.	Trampling and gardening degrade occupied patches; edge stress.	Removal of infrastructure offers chance to restore structure.
Nature of impact	Negative (direct + indirect; high sensitivity) – patch loss can cause extirpation.	Negative (chronic, microhabitat) – edge stress and degradation.	Negative but potentially reversible – recolonisation possible if structure restored.
Extent & duration	Site-local; long-term.	Site-local; long-term.	Site; medium–long-term.
Significance (before mitigation)	High negative.	Medium–High negative.	Medium negative.
Mitigation	Keep dwelling outside 50 m habitat buffer; avoid all occupied patches; alien control focused on grass invasion; no mowing/gardening in buffers; seasonal timing; monitoring with adaptive triggers; cap at 3 dwellings; stewardship considered.	Maintain no-mow buffers; prohibit herbicides; limit paths; resident education; alien control.	Full habitat rehab and multi-year alien control; monitor recolonisation.
Residual impacts	With relocation, residual risk drops substantially; without it, local extirpation possible.	Low chronic edge effects remain.	Recovery possible but slow.
Significance (after mitigation)	Low-Medium positive.	Low–Medium Positive.	Low negative.

Impact rating table for Yellow-winged Agile Grasshopper

Not applicable for species due to low likelihood of occurrence.

Impact rating table for Other SCCs (Table 8, mixed taxa)

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
Potential impact / risk	None.	Passive risks: alien spread, unmanaged fire, informal use degrade habitat quality.	None.	Direct loss/edge effects to SCC subsets; disturbance during works.	Chronic edge effects (lighting, pets, trampling, garden escapees).	Opportunity for restoration gains.	Same processes; estuary proximity matters only for estuary-linked taxa.	Same as Preferred.	Same as Preferred.
Nature of impact	Neutral.	Negative (indirect, cumulative).	Neutral.	Negative (direct + indirect) – footprint removes SCC patches; disturbance adds mortality risk.	Negative (chronic, edge processes) – sustained pressures maintain lower habitat quality.	Negative but partly reversible – restoration with follow-up can rebuild function.	Negative (direct + indirect).	Negative (chronic).	Negative but partly reversible.
Extent & duration	–	Site-local; long-term.	–	Site-local; long-term.	Site-local; long-term.	Site; medium–long-term.	Site-local; long-term.	Site-local; long-term.	Site; medium–long-term.
Significance (before mitigation)	Neutral.	Low–Medium negative.	Neutral.	Medium–High negative (for sensitive SCC); Medium overall.	Medium negative.	Low–Medium negative.	Medium–High negative; Medium overall.	Medium negative.	Low–Medium negative.
Mitigation	–	–	–	Avoidance hierarchy for mapped SCC patches; alien control; cap at 3 dwellings; stewardship considered; single jetty; dark-sky lighting; pet management;	Maintain buffers; continue alien control; resident education; monitor SCC indicators.	Active restoration with performance criteria; long-term follow-up.	Same measures; ensure estuary-edge buffers align with bird use.	Maintain operational controls; monitor indicator taxa.	Restore and verify by post-rehab surveys.

Criteria	No Development – Planning & Development	No Development – Operational	No Development – Decommissioning	Original Preferred – Planning & Development	Original Preferred – Operational	Original Preferred – Decommissioning	Non-preferred – Planning & Development	Non-preferred – Operational	Non-preferred – Decommissioning
				monitoring with thresholds.					
Residual impacts	–	–	–	Residual losses in developed footprint; managed edges persist.	Low chronic edges persist.	Recovery to high function feasible if long-term management applied.	Same residual outcome as Preferred.	Low chronic edges persist.	Recovery feasible with management.
Significance (after mitigation)	Neutral.	Neutral.	Neutral.	Low-Medium negative.	Low–Medium negative.	Low negative.	Low-Medium negative.	Low–Medium negative.	Low negative.

Criteria	New Preferred – Planning & Development	New Preferred – Operational	New Preferred – Decommissioning
Potential impact / risk	Direct loss/edge effects to SCC subsets; disturbance during works.	Chronic edge effects (lighting, pets, trampling, garden escapees).	Opportunity for restoration gains.
Nature of impact	Negative (direct + indirect) – footprint removes SCC patches; disturbance adds mortality risk.	Negative (chronic, edge processes) – sustained pressures maintain lower habitat quality.	Negative but partly reversible – restoration with follow-up can rebuild function.
Extent & duration	Site-local; long-term.	Site-local; long-term.	Site; medium–long-term.
Significance (before mitigation)	Medium–High negative (for sensitive SCC); Medium overall.	Medium negative.	Low–Medium negative.
Mitigation	Alien control; cap at 3 dwellings; stewardship considered; single jetty; dark-sky lighting; pet management; monitoring with thresholds.	Maintain buffers; continue alien control; resident education; monitor SCC indicators.	Active restoration with performance criteria; long-term follow-up.
Residual impacts	Residual losses in developed footprint; managed edges persist.	Low chronic edges persist.	Recovery to high function feasible if long-term management applied.
Significance (after mitigation)	Low-Medium positive.	Low–Medium positive.	Low negative.

Mitigation Measures

General Site-Wide Mitigation

- **Limit development footprint**: Restrict built infrastructure to ~30% of the 12 ha property.
- **No further densification**: Cap development at three dwellings, as assessed in this application.
- **Lighting management**: Adopt *dark-sky compliant* lighting (low-spectrum, full cut-off fittings, shield estuary-facing lights) to reduce disturbance to nocturnal fauna and birds.
- **Pet management**: Enforce pet curfews at night and discourage free-ranging cats and dogs to limit predation and disturbance to birds, reptiles and amphibians.
- **Alien plant control**: Implement a formal alien clearing and follow-up programme across retained natural areas to prevent decline in functional integrity.
- **Stewardship or conservation status**: Consider assigning all retained natural habitat (~70% of site) to a formal conservation status, such as a biodiversity stewardship agreement, to ensure long-term ecological management.

Faunal Landscape Connectivity

- Maintain a **continuous natural corridor** across at least 70% of the property to allow free movement between the Klein River estuary and adjacent upland habitats.
- Prohibit impermeable fencing; if fences are required, ensure **wildlife-permeable design** (≥30 cm ground clearance, no mesh smaller than 100×100 mm).
- Consolidate infrastructure and driveways to reduce fragmentation and maintain open strips for fauna.
- Actively rehabilitate degraded strips post-construction and manage alien regrowth to preserve corridor functionality.

Estuarine and Water-Associated Birds (African Marsh Harrier, Caspian Tern, Great White Pelican)

- **Jetty reduction**: Reduce proposed jetties from two to a single low-intensity jetty to limit repeated disturbance pulses.
- **Buffer zones**: Maintain a no-work buffer at reed margins and estuary edges during construction; enforce quiet hours at dusk and dawn to protect hunting harriers and roosting terns.
- **Lighting controls**: Shield and direct lighting away from the estuary to prevent disorientation or displacement of estuary-dependent species.
- **Timing of works**: Schedule noisy construction away from peak breeding/foraging seasons (Aug–Nov for marsh harrier; peak roost periods for terns/pelicans).
- **Stewardship**: Secure long-term management of estuary-edge natural habitat through stewardship or conservation agreements.

Terrestrial SCC Birds (Southern Black Korhaan, Denham's Bustard)

- **Avoidance of open patches**: Align dwellings and infrastructure away from the few lower, more open fynbos patches that may be marginally suitable for korhaan or bustard activity.
- **Maintain mosaic**: Use alien clearing and appropriate fire management to preserve a patchy vegetation structure, favouring species sensitive to tall, dense shrub encroachment.
- **Disturbance reduction**: Limit human and pet activity in marginal open patches and restrict additional disturbance near sensitive zones.

Amphibians (Western Leopard Toad)

Apply standard Western Leopard Toad (WLT) mitigation measures:

- **Road verges and crossings**: Shape access tracks with shallow U/V profiles; include amphibian-safe drainage.
- **Pesticide ban**: Prohibit pesticides and herbicides on site.
- **Pool safety**: Fit escape ramps or "toad savers" in swimming pools.
- **Corridors**: Retain indigenous groundcover and vegetated strips between dwellings to support terrestrial dispersal.
- **Education:** Provide residents with awareness material on toad movement periods and safe behaviours.

Reptiles (Southern Adder)

- **Pre-construction search and rescue**: Conduct supervised vegetation clearance with relocation of snakes and refugia where possible.
- **Refuge retention**: Retain or recreate rock piles, woody debris, and shrub thickets as refugia.
- **Persecution avoidance**: Educate contractors and residents about the conservation importance of Southern Adder and provide protocols for safe handling.
- **Traffic calming**: Impose strict speed limits on internal tracks to reduce roadkill risk.
- **Alien and fire management**: Maintain functional fynbos structure with alien clearing and fire in line with ecological cycles.

Invertebrates (Mute Winter Katydid, Other SCCs)

Mute Winter Katydid

- **Critical buffer**: Keep development outside the **50 m no-go buffer** surrounding mapped katydid habitat.
- Avoid **hard road surface** construction
- **Habitat protection**: Mark and protect occupied patches as **strict no-go areas** during and after construction.
- **Management restrictions**: Prohibit mowing, gardening or herbicide or pesticide use within buffers.
- **Monitoring**: Regularly survey katydid populations post-construction to verify persistence and recolonisation.

Yellow-winged Agile Grasshopper

- No targeted mitigation required as the species' specific habitat is absent; site-wide alien control and natural vegetation retention suffice.

Other SCC Invertebrates

- **Avoidance hierarchy**: Map and avoid patches supporting confirmed SCCs where possible.
- **Monitoring**: Establish indicator taxa monitoring to detect changes in population presence or habitat quality.
- **Habitat rehabilitation**: Actively restore and reseed disturbed patches post-decommissioning to return invertebrate habitat function.

Conclusion

The site supports a disproportionately high concentration of Species of Conservation Concern (SCC) relative to its small size, including confirmed records of the Mute Winter Katydid, Western Leopard Toad, and African Marsh Harrier, with several additional SCC considered highly likely within the PAOI. The property also plays a functional role in maintaining faunal connectivity between the Kleinrivier estuary and the surrounding Agulhas Limestone Fynbos landscape.

Although the proposed development has a limited overall footprint, even low-intensity residential use introduces long-term edge effects and localised disturbance in a sensitive ecological setting. In the original layout, unmitigated impacts would have been of Medium to High significance, primarily due to direct overlap with mapped katydid habitat and cumulative disturbance to estuary-associated fauna.

However, the developer, based on recommendations from Venter (2025), has implemented two key avoidance-based design changes: (1) reduction of jetty infrastructure from two to one**,** and (2) relocation of all residential infrastructure outside the recommended 50 m buffer of confirmed *Brinckiella aptera* habitat. These revisions substantially reduce predicted impacts, remove the most severe direct habitat loss risk, and align the project with the highest tier of the SANBI (2020) mitigation hierarchy. With these changes in place, and subject to full implementation of the recommended operational and landscape-level mitigation measures, residual impacts can be reduced to Low-Medium significance, noting that some irreversible ecological change remains unavoidable due to the site's inherent sensitivity.

The development may be considered acceptable only under strict conditions: adherence to the revised layout, limiting construction to three dwellings, maintaining the reduced jetty footprint, applying the full mitigation hierarchy, and ensuring long-term ecological management of undeveloped areas. Given the faunal sensitivity of the site, any deviation from the revised layout or any future expansion would carry disproportionately high ecological costs and would not be supported by this assessment.

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Venter, J. 2025. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report - Proposed Residential Development on Portion 4 of the F arm 6 43, Stanford. Wildlife Conservation Decision Support, George.

Appendix 1

CV and SACNASP Certificate of Prof JA Venter

CV and SACNASP Certificate of Dr R 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:	53		
Gender:	Male		
Nationality:	South African	**E-mail:**	NMU: JanVenter@mandela.ac.za WildCDS: janventer@wildcds.earth
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twitter **@JanBuffel**	**Conservation@Mandela**	**Jan Adriaan Venter**
Web page: Wildlife Conservation Decision Support	Web page: Wildlife Ecology Lab	
Scopus Scopus	Google Scholar	

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*	1 January 2021 – current date
		Head of Department: Conservation Management	1 January 2021 – 31 December 2023
		Program Coordinator: Nature Conservation and Game Ranch Management	1 June 2017- 31 December 2020
		Senior Lecturer	1 January 2018 – 31 December 2020
		Lecturer	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)	1 November 2011 – 31 May 2015
		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	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 h-index	20
Google Scholar i10-index	38
Scopus h-index	15

5. Scientific output

Peer reviewed Journal Publications (shading indicates publications by postgraduate students and post-doctoral researchers under my supervision)	
1)	VAN VUUREN, A., CURVEIRA_SANTOS, G., SWANEPOEL, L., VALEIX, M., FRITZ, H. & VENTER, JA. (2025) Hyaena-Mediated Landscapes of Fear: the Influence of Active Spotted Hyaena (*Crocuta crocuta*) Den Sites on the Detection Probability and Occupancy Probability of a Mammal Community. African Journal of Wildlife Research. 44: 55(1) https://doi.org/10.3957/056.055.0443
2)	DZINGWENA, L., THEL, L., CHOISY, M., GARBETT, R., WILKINSON, A., VENTER, J.A., FRITZ, H., HUCHARD, E., PRUGNOLLE, F., & ROUGERON, V. 2025 Climate and predation drive variation of diel activity patterns in chacma baboons (*Papio ursinus*) across Southern Africa. Scientific Reports https://doi.org/10.1038/s41598-025-23151-3
3)	DAVIS, RS., GOPALAWAMY, AM., ELIIOT, NB., VENTER, JA. (2025) Using spatial capture-recapture models to inform lion (*Panthera leo*) management in fenced protected areas. The Journal of Wildlife Management https://doi.org/10.1002/jwmg.70085
4)	VAN BERGEN, G., COETZEE, A., VENTER, J.A., ROETS, F, SWART, RC. (2025) Small forest patches support greater diversity of dung and carrion beetles compared to large continuous forest in South Africa, during Winter months. African Zoology 60(3)

	https://doi.org/10.1080/15627020.2025.2543237
5)	DAVIS, RS, SALOOJEE, K, VENTER, JA. 2025. Using a recently developed camera trapping method to improve monitoring efforts for African small carnivore species. Ecological Solutions and Evidence. 6:e70091. https://doi.org/10.1002/2688-8319.70091
6)	THEL, L, STOLS, D, ORTH, S, LAGENDIJK, DDG, SLOTOW, R, VENTER, JA, FRITZ, H. 2025. Long-term effects of an elephant-dominated browser community on the architecture of trees in a fenced reserve. Biotropica. 57:e70078 https://doi.org/10.1111/btp.70078
7)	MALULEKE, A., MARNEWICK, K, DRUCE, D, VENTER, JA. (2025) Spotted hyaena (*Crocuta crocuta*) recolonisation: Documenting a naturally recolonised spotted hyaena population in Welgevonden Game Reserve. African Journal of Wildlife Research. 44:421-424. https://doi.org/10.3957/056.055.0421
8)	DESTERCKE, A., JANSEN VAN VUUREN, A., VENTER, JA., 2025 Dominance at the Dinner Table: Interspecific Competition Between Hyaenas and Jackals at Scavenging Sites. African Journal of Ecology, 63:e70080 https://doi.org/10.1111/aje.70080
9)	WARRER, C.H., RIEDNER, D.C., BRIEFER, E.F., VENTER, J.A., DAVIS, R.S. 2025. Identifying areas of high snaring risk in Kruger National Park: A novel citizen science approach for carnivore conservation. Biological Conservation 310: 11353. https://doi.org/10.1016/j.biocon.2025.111353
10)	DEVARAJAN, K. et al (multiple authors) 2025. When the wild things are: Defining mammalian diel activity and plasticity. Science Advances. 11, eado3843. https://www.science.org/doi/full/10.1126/sciadv.ado3843
11)	OVERTON, E.K., DAVIS, R.S., PRUGNOLLE, F., ROUGERON, V., HONNIBAL, T, SIEVERT, O., VENTER, J.A. 2025 Carrion in Bomas: Multiple Observations of Cheetah(*Acinonyx jubatus*) Scavenging Events and Potential Causes in Managed Populations. Ecology and Evolution. https://doi.org/10.1002/ece3.70776
12)	FORTIN, D., BROOKE, C.F., FRITZ, H. & VENTER, J.A. 2024. The temporal scale of energy maximization explains allometric variations in movement decisions of large herbivores. Ecosphere. 15:e70101. https://doi.org/10.1002/ecs2.70101
13)	ZELLER ZIGAITIS, W.L, ROBINSON, A.C., VENTER, J.A., SPURIGO, L.T. & HOOG, A., 2024. Protected areas and disparate data: understanding geospatial data synthesis in poaching mitigation, Papers in Applied Geography. https://doi.org/10.1080/23754931.2024.2406470
14)	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
15)	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
16)	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
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Technical Reports	
1)	VENTER, J.A. & SWART, R., 2025. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report - Proposed development of the Stanford Green Eco Estate residential area on Erf 438, Stanford, Version2 – with offset considered. Technical Report prepared for Lornay Environmental Consulting, George, Western Cape, ZA.
2)	VENTER, J.A. & SWART, R. 2025. Section 24G Terrestrial Animal Site Sensitivity Verification Report and Compliance Statement: Development of an unlawful dam within a watercourse on No. 232, Portion 17 of the Farm Redford, The Crags, Bitou Municipal Area. Technical Report prepared for Bokamoso Environmental Consultants, George, Western Cape, ZA.
3)	VENTER, J.A. 2025. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report - Proposed Residential Development on Portion 4 of the Farm 643, Stanford. Technical Report prepared for Lornay Environmental Consulting, Hermanus, Western Cape, ZA.
4)	VENTER, J.A., SWART, R. 2025. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report - Proposed Residential Development on Erf 3495, Paapekuilfontein, Struisbaai. Technical Report prepared for Lornay Environmental Consulting, Hermanus, Western Cape, ZA.
5)	VENTER, J.A. 2025. Terrestrial Animal Site Sensitivity Verification Report and Compliance Statement - Proposed residential development of RE281, Paapekuilfontein, Struisbaai. Technical Report prepared for Lornay Environmental Consulting, George, Western Cape, ZA.
6)	VENTER, J.A., PEEL, M.J.S., MARTINDALE, G., HECHTER, F.S. 2025. Maputo National Park Wildlife Offtakes Operational Plan. Mozambique. Technical Report, Mozambique National Administration of Conservation Areas (ANAC) & Peace Parks Foundation, Maputo, Mozambique.
7)	VENTER, J.A., 2025. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report - Proposed Residential Dwelling on Erf 1071 Hoekwil in Wilderness. Technical Report prepared for Greenfire Enviro (Pry) Ltd, George, Western Cape, ZA.
8)	VENTER, J.A., 2025. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report - Proposed Dam and Aircraft Landing Strip on Farm Antjiesfontein RE/14, Prince Albert. Technical Report prepared for Greenfire Enviro (Pry)

	Ltd, George, Western Cape, ZA.
9)	VENTER, J.A. & SWART, R., 2024. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report - Proposed infrastructure upgrade and expansion of the tourist accommodation facilities on Rusty Gate Mountain Retreat, Farms 824, Rem. Farm 826 and Farm 887, in the Caledon District. Technical Report prepared for Lornay Environmental Consulting, George, Western Cape, ZA.
10)	VENTER, J.A. & SWART, R., 2025. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report - Proposed development of the Stanford Green Eco Estate residential area on Erf 438, Stanford. Technical Report prepared for Lornay Environmental Consulting, George, Western Cape, ZA.
11)	VENTER, J.A. & SWART, R., 2025. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment Report Ver. 2- Proposed development of an eco-estate/beach resort on Portion 36 of Farm Franche Kraal 708, Overberg. Technical Report prepared for Lornay Environmental Consulting, George, Western Cape, ZA.
12)	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.
13)	VENTER, J.A. & SWART, R., 2024. Terrestrial Animal Site Sensitivity Verification Report and Compliance Statement - Proposed expansion of the Aqunion (Pty) Ltd Abalone Farm, Romansbaai Farm Portion 2 of Klipfontein Farm no 711, Gansbaai. Technical Report prepared for Lornay Environmental Consulting, George, Western Cape, ZA.
14)	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.
15)	VENTER, J.A., 2024. Terrestrial Animal Site Sensitivity Verification Report and Compliance Statement - 80MWac Solar PV+130MWh BESS, Portions 11 & 89 of Farm 183 Eastbrook, Karatara. Technical Report prepared for Celior (Pty) Ltd, George, Western Cape, ZA.
16)	VENTER, J.A. & SWART, R., 2024. Terrestrial Animal Site Sensitivity Verification Report and Compliance Statement - Proposed infrastructure upgrade and expansion of the tourist accommodation facilities on Rusty Gate Mountain Retreat, Farms 824, Rem. Farm 826 and Farm 887, in the Caledon District. Technical Report prepared for Lornay Environmental Consulting, George, Western Cape, ZA.
17)	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.
18)	VENTER, J.A. 2024. Terrestrial Animal Site Sensitivity Verification Report and Species Specialist Assessment Report - Proposed development of Residential Erf 1486, Vermont, Hermanus. Technical Report prepared for Lornay Environmental Consulting, George, Western Cape, ZA.
19)	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.
20)	VENTER, J.A. 2023. Terrestrial Animal Compliance Statement Duthie's Golden Mole - *Chlorotalpa duthieae*, Eden Palms Residential, Property: Portion 21/438, Ladywood Estate, Plettenberg Bay.
21)	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 (International conferences are shaded)	
1)	VENTER, JA, DAVIS, R., RYAN, R., BALL, I., ELLIOT, N., GOPALASWAMY, A., GROOM, R., WATERMEYER, J., TZITZIKA, I. 2025 Landscapes, and Evidence: A Multi-Site Evaluation of Robust Monitoring for African Carnivore Conservation. International Wildlife Congress, 1-4 September 2025, Lillehammer, Norway.
2)	HONIBALL, T., VALEIX, M., FRITZ, H., SWANEPOEL, L. & VENTER, J.A. 2025. Rather the enemy you know: Territorial behaviour of spotted hyaenas in fenced protected areas. IX European Congress of Mammalogy (ECM 9), 31 March - 4 April 2025, Patras, Greece.
3)	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
4)	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
5)	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 Northwest Provincial Annual Biodiversity Research Symposium, Rustenburg, South Africa.
6)	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.
7)	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.
8)	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.
9)	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.
10)	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.
11)	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.
12)	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
13)	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.
14)	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.
15)	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.
16)	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.
17)	VENTER, J.A., FOUCHE, P. & VLOK, W. 2010. The development of a conservation framework for threatened southern African fish. 24th International Congress for Conservation Biology, Edmonton, Canada.
18)	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.
19)	VENTER, J.A., 2005. The feeding ecology of Cape buffalo on Doornkloof Nature Reserve, Northern Cape Province. Southern African Wildlife Management Association Symposium: Wildlife Management – A conservation or economic Incentive, Magoebaskloof, Limpopo Province South Africa.
20)	VENTER, J.A., HARLEY, V. & MALATJI, M.B. 2004. Game counts on Northern Cape Provincial Nature Reserves: Recommendations for future management. Southern African Wildlife Management Association Symposium: Innovations in Managing Wildlife Resources. Kathu, Northern Cape, South Africa.
21)	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 (International conferences are shaded)	
1)	
2)	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)
3)	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.
4)	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 estuaries to future water resource development based on a provisional ecological classification of these systems.	2012-2014 (supervisory 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,	Variables affecting mammal species rate of capture as evaluated by camera traps on	Completed (2016)

	Supervisor	Tswalu Kalahari Reserve	
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,	Assessing impacts of African elephant (*Loxodonta africana*) on the vegetation of	Completed (2019)

	Supervisor	Gondwana Private Game Reserve	
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	An assessment of a decade of surf-zone	Completed (2023)

	Resource Management), NMU, Supervisor	linefish monitoring in the Goukamma Marine Protected Area: Is the current resource use zonation effective?	*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)
43) Miss C Meyer	BSc Hons (Wildlife Management), UP, Co-Supervisor	Assessing the Indirect Effect of Elephants on Bird & Bat Assemblages	Completed (2024)
44) Mr K. Saloojee	BSc Hons (Natural Resource Management), NMU, Co-Supervisor	Testing a Novel Camera Trapping Method to Survey African Small Carnivore Populations	Completed (2024)
45) Miss J Morris	BSc Hons (Natural Resource Management), NMU, Supervisor	Balancing Fear and Forage: How zebra Equus quagga navigate risk and resources in the Makgadikgadi Pans, Botswana	In-progress (2025)
46) Miss D Ferreira	BSc Hons (Natural Resource Management), NMU, Supervisor	Golden Moles of the Southern Cape: Insights into Their Distribution and Habitat Selection	In-progress (2025)
47) Miss H Loubser	BSc Hons (Natural Resource Management), NMU, Supervisor	Environmental factors that influence lion pride spatial use in Kruger National Park	In-progress (2025)
48) Miss A Watson	BSc Hons (Natural Resource Management), NMU, Supervisor	Assessing the impacts of Environmental and Anthropogenic Factors on Elephant Spatial Distribution in a Fenced Reserve	In-progress (2025)
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,	Land use and ecosystem regulation: Exploring the influence of management	Completed (2017-2018)

	Supervisor	practise on mesopredator and herbivore interactions	
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 Conservation), NMU, Supervisor	Examining the influence of extrinsic factors on herbivore assemblage composition and resultant nutrient feedbacks in Kruger National Park	Completed (2017-2018)
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	Completed (2020-2021)

		Province.	
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, Supervisor	Investigating the effects of pulse-driven resource availability on mammal communities in the Kalahari, South Africa	Completed (2021-2022)
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)
31) Mrs Rebecca Ryan-Stolz	MSc (Nature Conservation), NMU, Supervisor	Estimating population density and assessing territoriality of African lions (Panthera leo) in Kruger National Park, South Africa	In progress (2024-2025)
32) Miss Yasmin Markides	MSc (Nature Conservation), NMU, Supervisor	Assessing landscape permeability and dispersal corridors for threatened carnivores across a multi-use landscape	Submitted (2024-2025)
33) Miss Hannah Basson	MSc (Nature Conservation), NMU, Supervisor	A landscape-level evaluation of black-footed cat (*Felis nigripes*) distribution in the south-eastern Karoo	Submitted (2024-2025)
34) Mr Dietre Stolz	MSc (Nature Conservation), NMU, Co-Supervisor	Giants of the Savannah: Unravelling the Impact of Elephant Preferences on Woody Vegetation in Madikwe and Timbavati Game Reserves.	In progress (2024-2025)
35) Miss M Venter	MSc (Wildlife Management), UP, Co-supervisor	Diet and movement patterns of two free-roaming packs of African wild dogs (Lycaon pictus) in the Waterberg, South Africa	In progress (2024-2025)
36) Miss R Mooney	MSc (Nature Conservation), NMU, Supervisor	Ranging behaviors of endangered, free-roaming African wild dogs (Lycaon pictus) outside of formally protected areas in the Waterberg, South Africa	Submitted (2024-2025)
37) Miss Marna Visagie	MSc (Nature Conservation), NMU, Supervisor	An integrated study of large carnivore ecology and behaviour in the Tswalu Kalahari Reserve	Submitted (2024-2025)
38) Miss Carina Meyer	MSc (Nature Conservation), NMU, Supervisor	The influence of complex social structures with fission-fusion properties on foraging efficiency and spatial dynamics of buffalo herds in the APNR	In progress (2025-2026)
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.	Completed (2020-2025)
10)	Dr C. Helm	PhD (Geoscience), NMU, Co-supervisor	Pleistocene fossil tracks and traces on the Cape coast of South Africa	Completed (2020-2023)
11)	Mrs Z. Strydom	PhD (Nature Conservation), NMU, Supervisor	Assessing the effects of fish stock management on endangered seabird populations in South Africa	Completed (2020-2023)
12)	Mrs W.L. Zeller Zigaitis	PhD (Geography), Pennsylvania State University, Co-supervisor	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	Social dynamics of spotted hyaenas (*Crocuta crocuta*) in fenced protected areas: Implications for conservation management of a socially intelligent species.	Completed (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,	A Game of Thrones: Rivals, territories and resources. What are the intrinsic costs to	Deregistered (2023-2023) Not completed.

	Supervisor	African lions contained in small, fenced parks?	
18) Mr S Tokota	PhD (Nature Conservation), NMU, Supervisor	A regional assessment of leopard (Panthera pardus) population status, threats, distribution, and habitat connectivity in the Eastern Cape, South Africa	In progress (2023-2025)
19) 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)
20) Miss M Rodriguez	PhD Biodiversity (U. of Barcelona), Supervisor	Enhancing Coexistence: Understanding Large Carnivore Mobility in Different Wildlife-Based Land Use Patterns in South Africa	In progress (2024-2026)

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 Researcher (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) NMU Post-Doctoral Research Fellow (2025-2026)

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	2013-2025
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
SEA REDZs Vulture Working Group	Specialist	2024-Current date
REHABS International Research Laboratory, CNRS-Université Lyon 1-Nelson Mandela University, George Campus	Deputy Director	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; Category C Skippers License; Marine VHF Radio Operator; NAUI Open Water 1 SCUBA Diver	Statistical Techniques in Ecology, Snake ID & Snakebite 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
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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 2026**

Chairperson

Chief Executive Officer

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