DR. COLLEEN EBERSOHN
PhD Univ. Pretoria
Cell:072 222 6013
email:ebersohn@cyberperk.co.za

MS. JANET EBERSOHN
BSc. Hons. Environmental Manageme
Cell: 082 557 7122
e-mail: janet@ecoroute.co.za

Appendix G2: Fauna Assessment

Proposed Residential Development on Erf 2074, Plettenberg Bay, Western Cape

Terrestrial Animal Species Specialist Assessment:

Site Sensitivity Verification Report and Impact Assessment

Prepared For: EcoRoute

Author: Monica Leitner (MSc)[1], Impact Assessment updated by Kim Daniels (MSc)[2]
Confluent Environmental Pty (Ltd)
7 St. Johns Street,
Dormehls Drift,
George, 6529

SACNASP: [1]Professional Natural Scientist (Ecological Sciences), 166055
[2]Professional Natural Scientist (Ecological Sciences), 162841 (Application status-pending)

Date: August 2024

Version: Draft, pending update of Site Development Plan (SDP)

DECLARATION OF SPECIALIST INDEPENDENCE

- I consider myself 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 I 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 in an objective manner. 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;
- I declare that there are no circumstances that may compromise my objectivity in performing this specialist investigation. I 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;
- I do not have any influence over decisions made by the governing authorities;
- I undertake to disclose all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by a competent authority to such a relevant authority and the applicant;
- I have the necessary qualifications and guidance from professional experts in conducting specialist reports relevant to this application, including knowledge of the relevant Act, regulations and any guidelines that have relevance to the proposed activity;
- This document and all information contained herein is and will remain the intellectual property of Confluent Environmental. 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 furnished by me in this document are true and correct.

Monica Leitner (MSc)[1]
February 2024

Kim Daniels (MSc)[2]
July 2024

SUMMARY OF EXPERIENCE AND ABRIDGED CV
- MONICA LEITNER

Core skills

- MSc. Zoology (University of Pretoria) and 5 years of work experience (project management and field work) for ecological research projects aimed at invertebrate diversity, ecological functioning, and large mammal ecology.
- Extensive ecological and field work experience (before, during and after postgraduate degrees) across a range of environments (mesic to arid savanna, grasslands and mountain terrain, sub-Antarctic) and taxa (invertebrates, avifauna, amphibians, reptiles, small mammals and large mammals).
- Two overwintering years on Marion Island, with extensive field work as Environmental Conservation Officer and seabird monitor (2018-2019), and a marine mammal ecologist (2022-2023).

Work experience

- 2022-2023: Marine mammal field assistant on sub-Antarctic Marion Island (Marion Island Marine Mammal Programme, University of Pretoria)
- 2016-2018; 2019-2022: Project Coordinator (University of Pretoria) for international Soil Fauna in Africa consortium (funded by the United Kingdom's Royal Society and Department for International Development).
- 2019-2022: Research assistant for Marion Island Marine Mammal Programme (University of Pretoria).
- 2018-2019: Environmental Conservation Officer on sub-Antarctic Marion Island (Department of Environmental Affairs).
- 2016-2018: Research assistant for Sani Pass (Drakensburg) long term invertebrate and ecosystem monitoring project (Centre for Invasion Biology, University of Pretoria).

Qualifications

- BSc. Environmental Sciences (2011, University of Pretoria)
- BSc. Honours Zoology (with distinction, 2012, University of Pretoria)
- MSc. Zoology (with distinction, 2015, University of Pretoria)

References

- Dr. Michelle Thompson – Former colleague on Marion Island and University of Pretoria
  M2 Environmental Connections
  Email: ml.thompson89@gmail.com; Tel: +27 71 869 9042
- Prof. Mark Robertson – Previous employer (Soil Fauna in Africa Research Consortium)
  Department of Zoology and Entomology, University of Pretoria
  E-mail: mrobertson@zoology.up.ac.za; Tel: +27 84 718 5484

SUMMARY OF EXPERIENCE AND ABRIDGED CV - KIM DANIELS

Core skills

- MSc. Biodiversity and Conservation Biology (University of Cape Town) and 3 years of work experience (research assistance and education) for research projects aimed at investigating invertebrate diversity, plant diversity, insect ecology, disease ecology, invasive species, plant systematics, herpetology, and climate change impacts on a variety of taxa.
- Ecological and field work experience before, during, and after postgraduate degrees across a range of environments (mesic savanna, arid savanna, fynbos, succulent karoo, and Nama karoo) and taxa (plants, invertebrates, avifauna, amphibians, and small mammals).
- My postgraduate studies have been focused on vegetation change in the fynbos and parasitic plants as thermal refugia for arid savanna birds.

Work experience

- Teaching assistant at the Organization of Tropical Studies and Roots & Shoots
- Internships in Entomology, Horticulture, and Plant Conservation
- Research assistant at the Centre for Invasion Biology
- Field assistant at Valuing Orchard and Integrated Crop Ecosystem Services Project

Qualifications

- BSc. Biodiversity and Conservation Biology (2018, University of the Western Cape)
- BSc. Hons. Biodiversity and Conservation Biology (2021, University of the Western Cape)
- MSc. Conservation Biology (2023, University of Cape Town)

References

- Dr Timm Hoffman – Academic supervisor and previous employer

  Former Director of the Plant Conservation Unit; University of Cape Town

  Email: timm.hoffman@uct.ac.za; Tel: 021 650 5551

- Ms. Paula Strauss – Previous employer

  Research co-ordinator; Grootbos Nature Reserve

  E-mail: paula@grootbosfoundation.org; Tel: 072 611 7971

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ABBREVIATIONS

CBA	Critical Biodiversity Area
CD:NGI	Chief Directorate: National Geo-spatial Information
DFFE	Department of Forestry, Fisheries, and the Environment
ESA	Ecological Support Area
EWT	Endangered Wildlife Trust
NEMA	National Environmental Management Act
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SDP	Site Development Plan
SSVR	Site Sensitivity Verification Report
WCBSP	Western Cape Biodiversity Spatial Plan

1. INTRODUCTION

Confluent Environmental Pty (Ltd) was appointed by EcoRoute to provide Terrestrial Animal Specialist inputs for a proposed housing development on Erf 2074, Plettenberg Bay, Western Cape.

1.1 General Site Location

Erf 2074 is ca. 6.25 hectares in extent and located just east off the N2 highway within the town of Plettenberg Bay, Western Cape (Figure 1). The property is only accessible from Marine Way in the north. There are two existing houses and old agricultural land (olive grove) in the north, with the remainder of the property largely undeveloped. There is a gravel road running down the eastern boundary to the south of the property, where the remnants of a partial development (foundations of a building) are observed. The property provides a strip of natural/green area between residential housing developments, which are present along all borders except the south, which borders the Piesang River valley below.

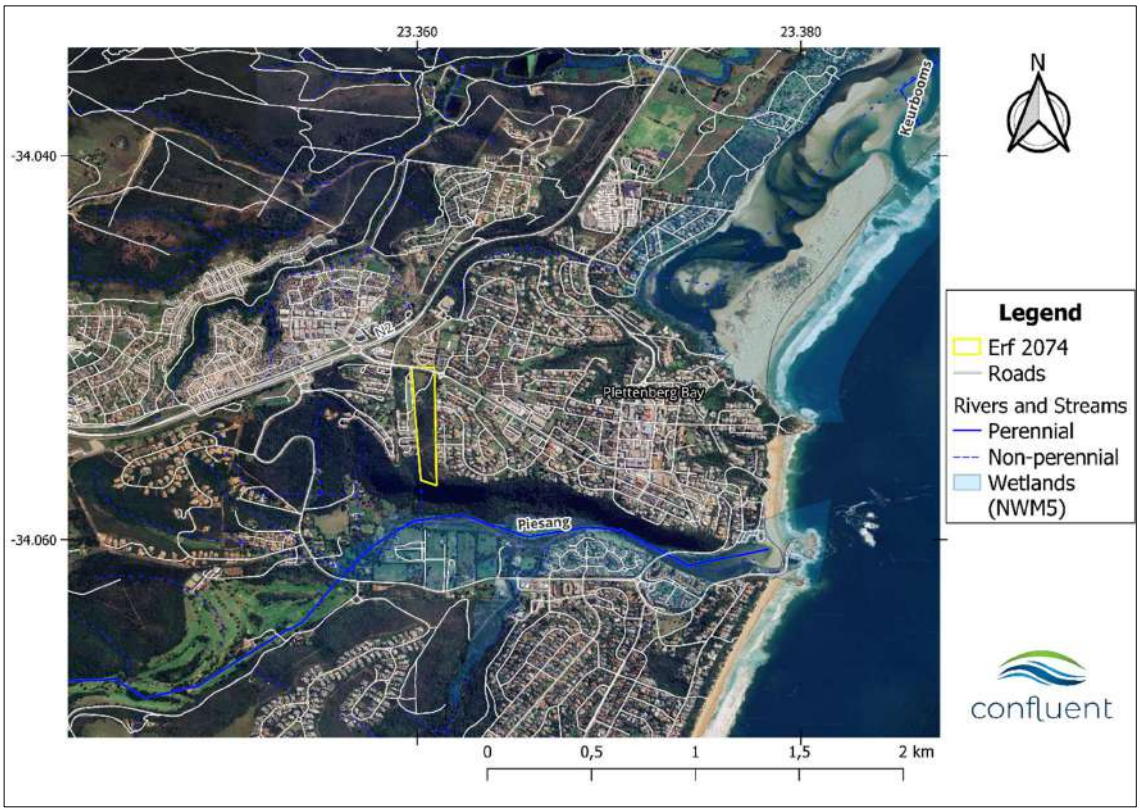

Figure 1. Erf 2074, Plettenberg Bay, Western Cape.

1.2 Development Layout

At the time of writing this report the site development plan (SDP) alternatives included a housing development with associated roads. After a preliminary assessment, the bulk of development was planned in the north of the site with the southernmost end of the property left mostly natural. SDP Alternative 2 (preferred):

- reduces the density of the development overall (with 228 units as opposed to the 250 units proposed in SDP Alternative 1)
- adds additional parking spaces per council regulations
- accommodates stormwater management by means of greater open spaces between buildings
- changes access to the site at the northern boundary
- moves the main road through the development from the centre to the eastern boundary of the erf for greater access to the neighbouring erf and to accommodate services along this boundary.

Proposed sewer and water reticulation, roads and stormwater layout is provided (Figure. 4). There is no indication of the proposed electricity supply.

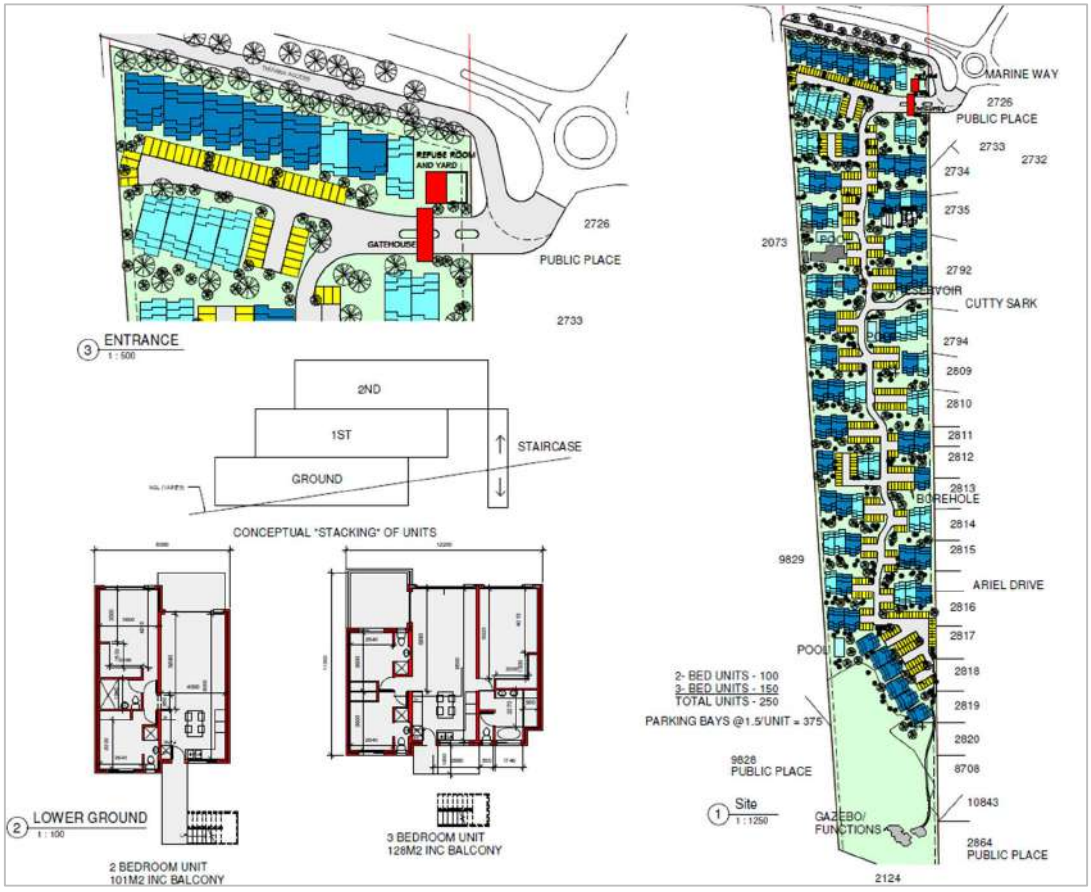

Figure 2: The Site Development Plan (SDP) Alternative 1 for Erf 2074, Plettenberg Bay

Figure 3: The Site Development Plan (SDP) Alternative 2 (preferred) for Erf 2074, Plettenberg Bay

Figure 4: Proposed sewer and water reticulation, roads and stormwater layout for SDP Alternative 1 (left) and SDP Alternative 2 (right).

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2. TERMS OF REFERENCE

2.1 Online Screening Tool

The scope of work for this report is guided by the legislative requirements of the National Environmental Management Act (NEMA; Act 107 of 1998).

The Department of Forestry, Fisheries and the Environment (DFFE) Screening Tool revealed a HIGH and MEDIUM sensitivity for the terrestrial animal species theme across Erf 2074 (Figure 5), with several animal Species of Conservation Concern (SCC) potentially present (Table 1).

As per Published Government Notice No. 1150 of the Government Gazette 43855 (30 October 2020):

A **HIGH** sensitivity rating indicates:

1. Confirmed habitat for SCC.

2. SCC, listed on the IUCN Red List of Threatened Species or South Africa's National Red List website as Critically Endangered, Endangered or Vulnerable, according the IUCN Red List 3.1. Categories and Criteria and under the national category of Rare.

These areas are unsuitable for development due to a very likely impact on SCC.

A **MEDIUM** sensitivity rating indicates:

1. Suspected habitat for SCC based either on historical records (prior to 2002) or being a natural area included in a habitat suitability model for this species.

2. SCC listed on the IUCN Red List of Threatened Species or South Africa's National Red List website as Critically Endangered, Endangered or Vulnerable according to the IUCN Red List 3.1. Categories and Criteria and under the national category of Rare.

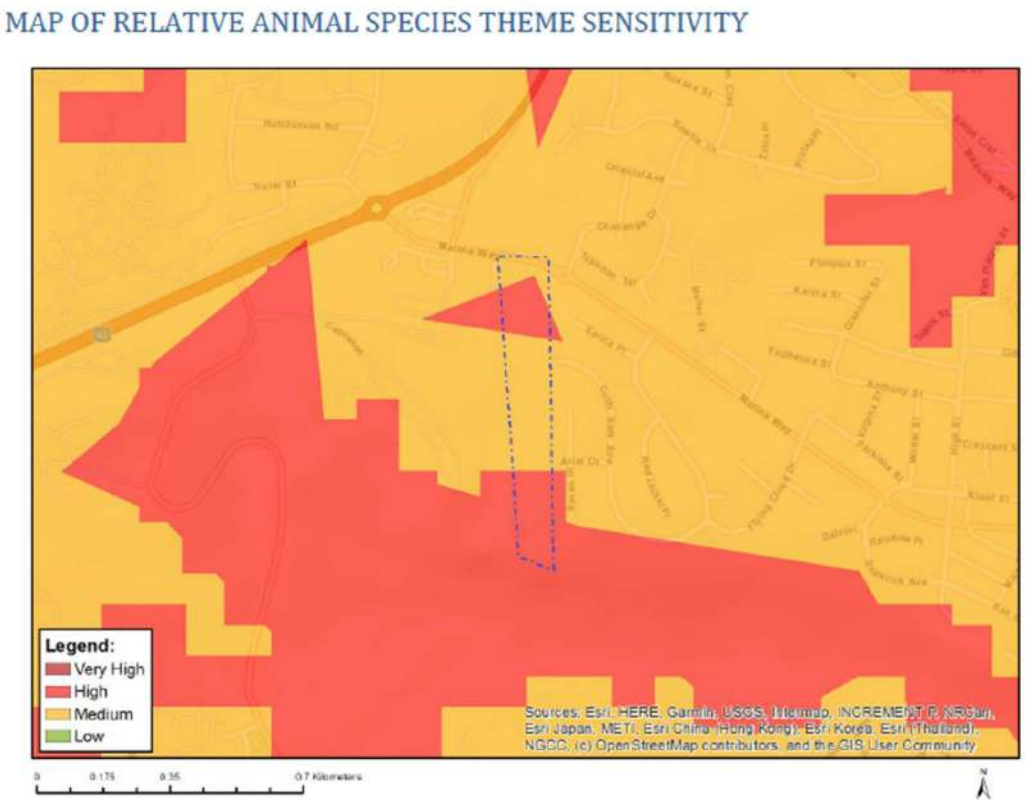

Figure 5. DFFE online Screening Tool outcome for the terrestrial animal species theme for Erf 2074. The property boundary is indicated by the blue dashed line.

Table 1. Species of Conservation Concern highlighted by the DFFE online Screening Tool for Erf 2074.

Sensitivity	Classification	Scientific name	Common name	Red list status*
High	Avifauna	*Circus ranivorus*	Marsh Harrier	Endangered
High	Avifauna	*Stephanoaetus coronatus*	Crowned Eagle	Vulnerable
High	Avifauna	*Bradypterus sylvaticus*	Knysna Warbler	Vulnerable
Medium	Amphibian	*Afrixalus knysnae*	Knysna Leaf-folding Frog	Endangered
Medium	Invertebrate	*Aloeides thyra orientis*	Red Copper Butterfly	Endangered
Medium	Mammal	*Chlorotalpa duthieae*	Duthie's Golden Mole	Vulnerable
Medium	Mammal	*Sensitive species 8*	-	Vulnerable
Medium	Invertebrate	*Sarophorus punctatus*	-	Endangered
Medium	Invertebrate	*Aneuryphymus montanus*	Yellow-winged Agile Grasshopper	Vulnerable

* Red list status as per SANBI's Red List of South African Species http://speciesstatus.sanbi.org except *S. punctatus* which is listed as endangered in 'Conservation assessment of Scarabaeine dung beetles in South Africa, Botswana and Namibia: IUCN Red List categories, atlas and ecological notes' (Davis, Deschodt and Scholtz 2020)

2.2 Scope of work

The purpose of this report is to verify the site sensitivity of Erf 2074 for the terrestrial animal species theme in accordance with the protocols specified by the Published Government Notice No. 1150, Government Gazette 43855 (30 October 2020).

The site sensitivity verification includes:

- A desktop assessment, to:
    - Characterize the vegetation, climate, general habitat features, and topography of the property.
    - Assess the property's location within the context of the Western Cape Biodiversity Spatial Plan (WCBSP).
    - Conduct a historical assessment of the property and immediate surroundings for any disturbances, development and changes in land use or habitat characteristics over time.
    - Provide information on the habitat requirements for Species of Conservation concern highlighted by the DFFE online screening tool, in addition to other SCC indicated through online resources (e.g. Virtual Museum, iNaturalist) for the property and surrounding areas.
- On-site inspection(s) and field assessments to:
    - Verify the current land use and identify current impacts or disturbances on the property.
    - Characterize faunal habitats, determine the habitat suitability and the likelihood of SCC occurring on the property.
    - Conduct taxa-specific sampling for SCC in suitable habitats.
- Any other available and relevant information from
    - Discussions with landowners/neighbours.
    - Previous report findings for the property or surrounding areas.

Should the site sensitivity verification indicate a **LOW** sensitivity for all SCC, then a Terrestrial Animal Species Compliance Statement will be issued.

Should the site sensitivity verification indicate a **HIGH** sensitivity, then a Terrestrial Animal Species Specialist Assessment will be conducted.

3. DESKTOP ASSESSMENT

3.1 Vegetation, Climate and General Habitat

Plettenberg Bay, Western Cape falls within the Fynbos biome and experiences a temperate climate year-round (Mucina and Rutherford 2006, Rebelo, et al. 2006). The mapped vegetation type for the property is South Outeniqua Sandstone Fynbos (Least Threatened), and a detailed botanical specialist assessment is available (B. Fouche, Confluent Environmental). Average temperatures range between 27^{0}C and 8^{0}C, with the hottest days experienced from December to March peaking around 38^{0}C and the coldest days experienced from June-August not falling below 2^{0}C. Rain occurs throughout the year in a bimodal pattern with peaks in autumn (April) and spring (October-November) (Figure 6).

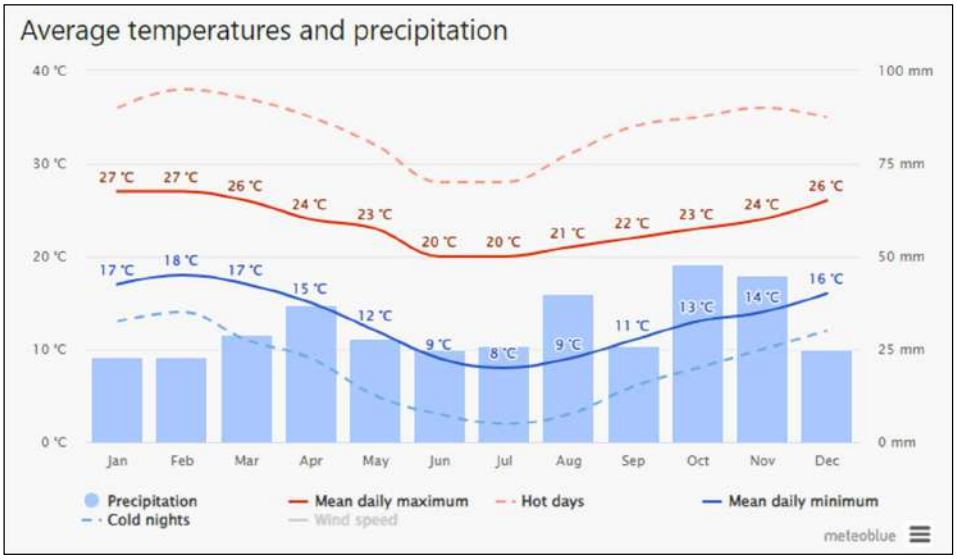

Figure 6. Summary of historical climate (modelled) for Plettenberg Bay (www.meteoblue.com).

Satellite imagery from Google Earth and Cape Farm Mapper was used to assess general vegetation structure, elevational gradients and water bodies on the property (Figure 7). The property is well vegetated, except for a patch of cleared agricultural land and around the houses in the northern portion of the property. There is also some clearing noted along the road against the eastern boundary, which splits into two in the south. Vegetation appears thickest in the middle to northern regions, with more trees (possibly alien plants), while the southern half of the property appears more fynbos in structure. Elevation is quite uniform (flat)

across most of the property, except in the far south where a steep drop is observed towards the Piesang River valley. There are no mapped watercourses or waterbodies on the property, however a drainage line is present along the south-western boundary.

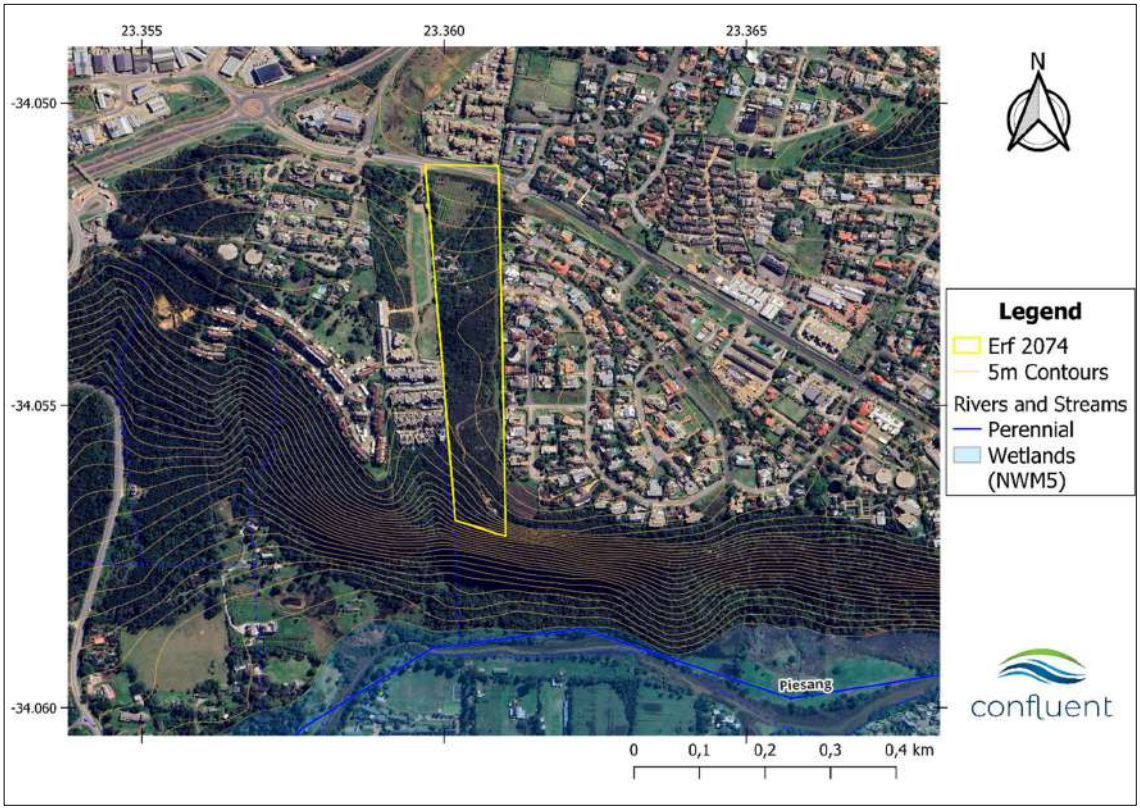

Figure 7.Satellite imagery of Erf 2074 showing topography (5m contours) and vegetation structure. There are no mapped watercourses or waterbodies on the property (NWM5).

3.2 Western Cape Biodiversity Spatial Plan

Additional mapping layers were applied to Erf 2074 to include the Western Cape Biodiversity Spatial Plan (CapeNature 2017) and to visualize Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) (Figure 8, Table 2). The southern section of the property falls within a CBA1 area, with marginal inclusions of a ESA1 and ESA2 along the southwestern boundary. The reasons for these CBA and ESA designations are due to the presence of the following mapping features:

- FEPA (Freshwater Ecosystem Priority Areas) River Corridor
- Piesang (Core) Estuary
- South Eastern Coastal Belt Permanent Lower Foothill River

- South Outeniqua Sandstone Fynbos (LC)
- Watercourse protection- South Eastern Coastal Belt

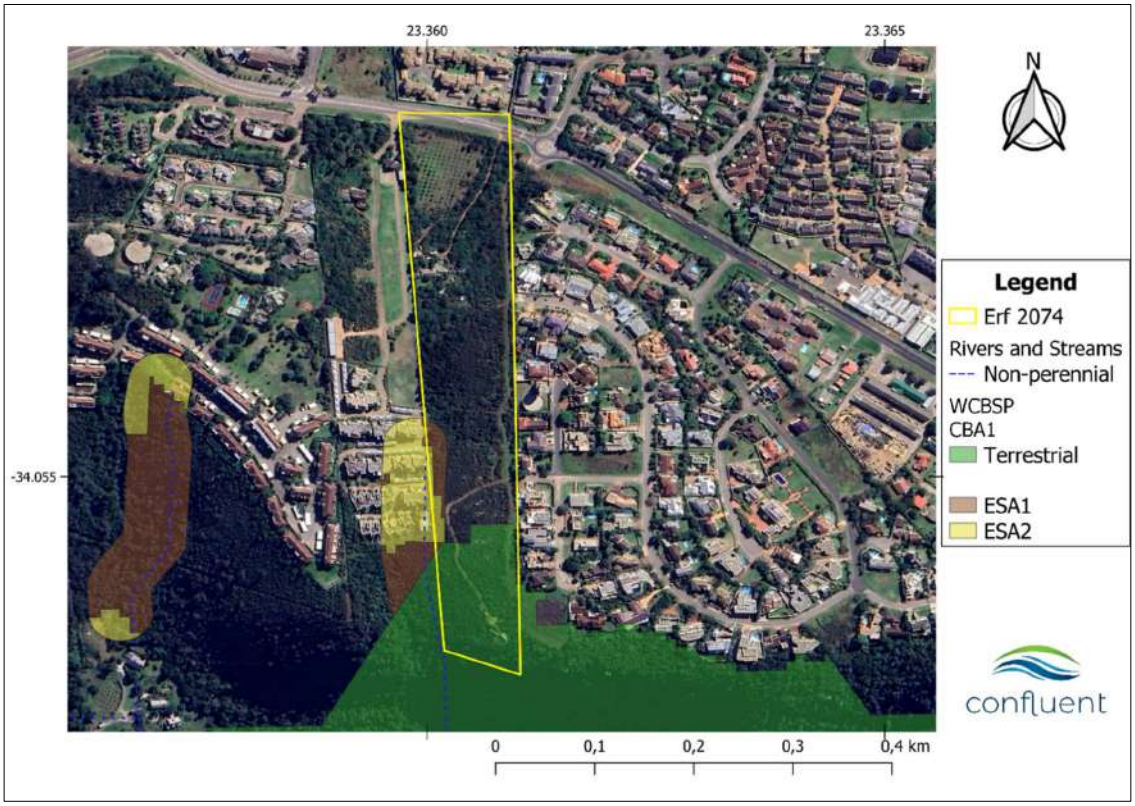

Figure 8. Erf 2074 with layers for the Western Cape Biodiversity Spatial Plan's Critical Biodiversity Areas (CBA1) and Ecological Support Areas (ESA2).

Table 2. Definitions and objectives for conservation categories identified in the Western Cape Biodiversity Spatial Plan (CapeNature 2017).

WCBSP Category	Definition	Management Objective
Critical Biodiversity Area 1 (CBA1)	Areas in a natural condition. Required to meet biodiversity targets for species, ecosystems or ecological processes and infrastructure.	Maintain in a natural or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses are appropriate.

Ecological Support Area 1 (ESA 1)	Areas vital for ecosystem services. Not essential for meeting biodiversity targets but support the functioning of Protected Areas or CBAs.	Maintain in a function, near-natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised.
Ecological Support Area 2 (ESA 2)	Areas severely degraded or have no natural cover and ecological functioning severely impaired. Not essential for meeting biodiversity targets but support ecological functioning and delivering ecosystem services.	Restoration required to return ecological functioning. Some limited habitat loss may be acceptable. A greater range of land uses over wider areas is appropriate but ensures the underlying biodiversity objectives and ecological functioning are not compromised.

3.3 Historical Assessment of Project Area

1938: Majority of the property and surrounding area is in a natural state with limited development restricted to the northern region. Clearing of vegetation evident in the northwest corner, likely for agriculture. An access road is visible from the northeast corner, with two small structures and cleared land on the neighbouring property, leading towards the only house on Erf 2074 situated on the along the western border just south of the agricultural lands. The access road extends beyond the house, with less vegetation clearing or maintenance evident, and meanders towards the middle of the property where it ends (Figure. 8).

1960: A lot of vegetation clearing observed along the western boundary, extending into the neighbouring property which also experienced vegetation clearing and the development of houses and roads. The original access road in the northeast splits into two soon after entering the property, one road still running to the house on the western boundary, and a new road running down the middle of the property along the edge of the cleared area and further south towards a circular structure, likely a small dam/reservoir along the western edge. The agricultural land in the northwest is still visible and a row of trees (windbreak) formed a dense straight line along the western boundary (Figure. 8).

1974: Extensive road networks have been developed on the neighbouring property to the east of Erf 2074. A new road extends from the existing house on the property towards the eastern neighbour's road network, and similarly, another new road runs from the cleared area in the middle of the property towards the south and then to the neighbouring property in the east. The agricultural field in the northeast has been cleared again and shows signs of active agriculture. The road running towards the round dam in the south of the property has been revegetated and is no longer visible (Figure. 8).

1990: Many trees are present across the property, particularly in the middle section, and indicates the presence of alien species. The cleared and disturbed area in the middle-west of Erf 2074 has been completely revegetated, mostly with trees. A new road extends straight across the middle of the property, connecting the western and eastern neighbours. The agricultural field in the northwest appears inactive/unmaintained although some vegetation clearing is taking place (Figure. 8).

2004: Many trees in the north of the property have been cleared, including the straight line of trees (windbreak) along the northwestern boundary that was evident until 1974. Trees are only present in the middle region, to the south of the house. The southern portion of the property appears to be natural fynbos in structure. All roads across the south of the property (linking the neighbouring properties) have been revegetated. The round structure/dam in the south of the property has been removed. The western neighbour is experiencing new vegetation clearing and road networks are expanding further south, while the housing development on the eastern neighbouring property is well established. The agricultural land in the northwest appears inactive/unmaintained, but all trees previously there have been cleared. The house on the property has expanded, with a few more buildings observed and vegetation cleared (Figure. 8).

2010: Vegetation thickening occurred along the access road in the northeast of Erf 2074 and around the houses. The agricultural land in the northwest has been cleared, with thick vegetation observed around its borders. Overall, tree density in the middle of the property increased. A newly cleared area in the south, across the width of the property, is observed. The housing developments on both western and eastern neighbouring properties are well established now (Figure. 8).

2013: The agricultural land in the northeast is actively being farmed (an orchard is observed) and is surrounded by dense vegetation/trees. Vegetation thickening is also observed along the access road and around the houses. Many of the trees in the middle of the property have been cleared, and some revegetation of the previously bare patch in the south has occurred, however, a lot of bare soil remains. Clearing (a road) is now seen along the entire length of the eastern boundary (Figure. 9).

2016: Vegetation thickening is noted throughout the property, notably around the access road, agricultural land and houses in the north. Trees and dense vegetation are expanding in the middle region, and the southern area is experiencing revegetation with shrubs/fynbos such that the previously bare areas are mostly entirely revegetated. A new road branches off from the eastern boundary road, leading to a small clearing and new structure along the southern boundary (Figure. 9).

2021: Increased vegetation cover is seen across the whole property, with little to no bare patches remaining. The only roads visible on the property are the access roads to the houses in the north, the eastern boundary clearing/road and the road to the structure on the southern boundary. No progress has occurred with the development/structure in the south of the property, with no change in size or shape since 2016 (Figure. 9).

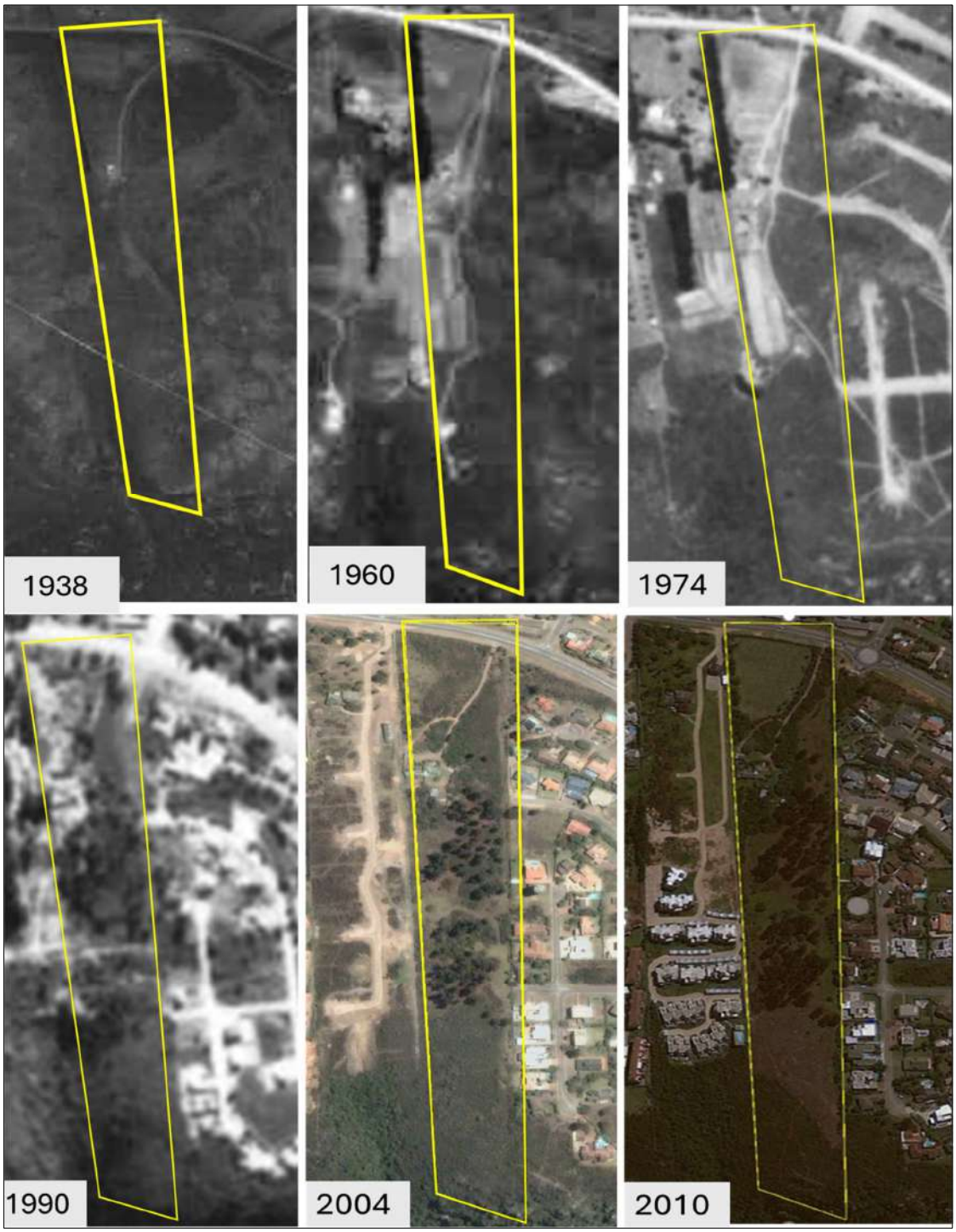

Figure 9. Historical imagery of Erf 2074 from 1938-2010 sourced from the CD: NGI geospatial portal and Google Earth. The property boundary is indicated by the yellow line.

Figure 10. Historical imagery of Erf 2074 from 2013-2021 sourced from Google Earth. The property boundary is indicated by the yellow line.

3.4 Species of Conservation Concern

In addition to the SCC highlighted by the DFFE screening tool (Table 1), the following public resources were consulted to provide additional SCC for Erf 2074 and its immediate surroundings:

1. iNaturalist (all taxa) within 3 km x 2 km of the project area (URL for iNaturalist search area).
2. Virtual Museum for herpetofauna, mammals, reptiles and invertebrate taxa within the Quarter Degree Squares (QDS) 3423AB: DungBeetleMAP, FrogMAP, LacewingMAP, LepiMAP, MammalMAP, OdonataMAP, ReptileMAP, ScorpionMAP, SpiderMAP.
3. South African Bird Atlas Project (SABAP2) for pentad 3400_2320.

Some SCC reported on the platforms were highly unlikely to occur the site given either clearly unsuitable habitat or being deemed a vagrant/transient animal. For example, given that the property does not contain any waterbodies, all animals reliant on such habitat features for their

existence are highly unlikely to occur. For the purposes of this report these animals were excluded from further assessment (see also Section 4.2 and Appendix 1 for additional information).

The combined list of SCC (from DFFE Screening Tool and public resources) possibly occurring on Erf 2074, along with their habitat, breeding and feeding requirements are listed in Table 3. The information for each SCC stems largely from the online SANBI Red List of South African Species (http://speciesstatus.sanbi.org) in addition to a few key resources for each taxa:

1. Avifauna: Roberts Birds of Southern Africa VII (Roberts, et al. 2005)
2. Mammals: The Mammals of the Southern African Subregion (Skinner 2005)
3. Invertebrates:
    - Field guide to the insects of South Africa (Picker, Griffiths and Weaving 2019)
    - Field guide to the butterflies of South Africa (Woodhall 2005)
    - Field guide to the spiders of South Africa (Dippenaar-Schoeman 2023)
4. Amphibians: A complete guide to the frogs of Southern Africa (Du Preez and Carruthers 2015)
5. Reptiles: A guide to the reptiles of Southern Africa (Alexander 2013)

Any information presented from different sources is cited in text.

Table 3. Summary of habitat, breeding and feeding requirements for faunal SCC potentially occurring on Erf 2074.

Species	Red list status	Habitat	Breeding	Feeding
AVIFAUNA				
Circus ranivorus African Marsh Harrier[1]	Endangered	- Considered a waterbird. - Roosts on taller trees around wetland edges from where it has a good vantage point. - Can adapt to novel wetland habitats such as wastewater treatment works	- Breeding occurs between September and December. - Egg-laying is from August to November in South Africa. - Nests made of grass, reed stems or sticks in reedbeds, short sedge areas or in trees along the water's edge. - The same nest is often reused by the same pair in following years.	- Dietary assessment (Simmons *et al*., 1991) of pellets and prey deliveries to nests includes birds, frogs, fish, eggs and micromammals (*Rhabdomys, Otomys*, and Shrews). - Hunts primarily in wetland habitats using various flight methods including soaring, hovering and low flight over wetlands and along the water's edge. - May hunt in open grasslands or pastures near wetland areas.
Bradypterus sylvaticus Knysna warbler[1]	Vulnerable	- Inhabits dense understorey vegetation along riverbanks in fynbos forest patches, riverine woodland and afromontane forest and has even adapted to thickets of non-native brambles (e.g. *Rubus*) (BirdLife International, 2016).	- Breeds from August and December coinciding with the greatest abundance of invertebrate species (BirdLife International, 2016).	- Mostly on ground, creeping through dense, matted vegetation and scratches in humus - Eats mostly grasshoppers, insect larvae, spiders, slugs, worms.

[1] SCC identified by the DFFE Screening Tool

Species	Red list status	Habitat	Breeding	Feeding
Stephanoaetus coronatus Crowned eagle[1]	Vulnerable	-Forest (including gallery forest), dense woodlands and forested gorges in savannas and grasslands. -Also in *Eucalyptus* and Pine plantations. -Perches for long periods, resting in canopy. Sometimes soars high over territory, then descends vertically to perch. -Manoeuvres agilely through thick forest, can take off vertically from forest floor.	-Monogamous, possibly long-term pair bond. -Territorial (at least 10 km^2), solitary nester. -Tallest trees used to build large stick platform nest (sticks/branches up to 1.5m long, 3cm thick). Nest copiously lined with beachwood (*Faurea saligna*), Pine or *Eucalyptus* leaves/needles. -Nest often reused and added to in consecutive years, can reach up 2-3m diameter, 3m high. -Nest trees often at the base of cliff/ravine or at the edge of plantation. Nest trees usually White-stinkwood (*Celtis africana*), yellowwoods (*Podocarpus* spp.), Cabbage tree (*Cussonia spicata*) but also *Eucalytus* and Pine species. -Incubation 49-51 days.	-Predominantly feeds on mammals (96% diet) and mostly on hyrax, antelope and primates. Will also take porcupine, hares, mongoose, sometimes domestic stock and domestic cats/dogs. Avian prey includes Hadeda Ibis, Egyptian geese and domestic chickens. Reptile prey mainly monitor lizards. -Most prey taken on ground, but occasionally crashes into dense foliage in pursuit. -Frequently still-hunts (stalks prey) and hunts from concealed perches frequently above waterholes in evening waiting for antelope to drink. -Pair sometimes hunt monkeys cooperatively. -Prey struck with downward blow of open foot, massive hind claw penetrates the skull killing instantly. -Large prey that cannot be lifted are partly eaten and dismembered on the ground and then cached in trees.

Species	Red list status	Habitat	Breeding	Feeding
Tyto capensis African Grass Owl[2]	Vulnerable	-Most common in areas of 700-800mm p.a. rainfall. - Only a few pairs persist in Western Cape, with occasional records from near Wilderness and Bredasdorp. - Largely nocturnal, returning to roost near dawn. - Resident in suitable habitat, nomadic in areas temporarily suitable, or unsuitable habitats after a fire/heavy grazing. - Mainly in marshes or vleis, favours patches of tall rank grass, sedges or weeds. Not exclusively linked to wetlands but needs long grass to be concealed from above. - Also found in areas of dense ground cover within scattered thorn scrub, low fynbos and renosterveld, but usually close to water and in areas of thick stands of grass (*Stenotaphrum* sp.)/sedges (*Juncus* sp.)	- Monogamous, probably territorial. - Solitary nester, but nests can be 150m apart and often near African Marsh Harrier or Marsh Owl nests. - Nest is unlined hollow on the ground within a 'cave' at the roost site, at the end of 1-2 m long tunnel through tall grass/sedges. Nests sometimes reused. - Laying dates in Eastern and Western Cape: Jan-Jul and Oct-Dec. Peaks in Jan-Mar. - Incubation 32 days, with 2-6 eggs laid. - After hatching, female eats the eggs shells. Female broods the young for 10 days, with male provisioning. - Chicks wander into surrounding areas from day 28-35, hiding in tunnels. Fledging happens from 49-55 days old.	- Emerges after dark to fly low and slow over hunting grounds. Stops to rest on low perches or ground, and periodically returns to roosting site. - Solitary hunter. Hunts from flight and less often from a perch. Strikes prey fast on the ground, snatches from foliage or sometimes in flight. - Favours vlei rats (*Otomys* spp.). Diet mainly rodents (76-98%) but also takes shrews and birds. In Western Cape, diet can include Cape Mole Rats (*Georychus capensis*) and Duthies Golden Mole (*Chlorotalpa duthiae*), but rodents still preferred. -Will hunt in most available habitats, but strong preference for tall grass areas.

[2] SCC identified by SABAP2 platform for pentad 3400_2320

Species	Red list status	Habitat	Breeding	Feeding
		-Roost is a series of tunnels through tall grass leading to 'caves'. Roost area also has open landing platforms where pellets are deposited and later removed.	- Adults sometimes perform distracting displays (calling and dropping into grass near intruder/threat) to protect chicks.	
Buteo trizonatus Forest Buzzard[2]	Least Concern (Regional), Near Threatened (Global)	-Afromontane forests and plantations (mainly Pine, but also *Eucalyptus*). -Generally unobtrusive, perching on large branches partially concealed under canopy, sometimes perching in open at the edge of forest edge.	- Monogamous, territorial, solitary nester. -Nest is platform of sticks, cup-lined with green leaves. Nests in plantations are smaller than in native forests. -Laying dates from August-November. -Breeding is confined to the Western Cape and Eastern Cape Provinces.	-Forages along forest edges and within (also plantations). Hunts mainly from perch. -Diet consists of small mammals (mice and moles), small birds, snakes, lizards, frogs and invertebrates.
Campethera notata Knysna Woodpecker[2]	Near Threatened Near Threatened	-Territorial, occurring in thornveld, Euphorbia thickets, riparian and montane evergreen forests. -Marginal occurrence in Protea communities, coastal white Milkwood (*Sideroxylon inerme*) thickets and alien trees.	-Monogamous, solitary nester. -Hole in trunk/branch of tree, usually in a dead stem 1.2-6m off the ground. -Holes infrequently reused in successive years, but a new hole can be excavated in the same branch.	-Forages at all levels of trees, especially mid-canopy - Pecks and probes for ants and termites on dead branches, but occasionally forages on ground.

Species	Red list status	Habitat	Breeding	Feeding
			-Laying from August-November.	
Grus paradisea Blue Crane[2]	Near Threatened TOPS: Protected (2023 DRAFT) CITES: Appendix II	-Open grassland, grassland/Karoo, wetlands. -Habitats with >300mm per year annual rainfall. -Adapted to crop lands and pastures and tolerant of intense grazing or burnt grasslands.	-Monogamous, solitary nester. -Nests on wet ground (on a pad of vegetation) or dry ground (small layer of stones, dung, vegetation) -Often reuses same nesting site for several years	-Pecking and digging with bill. -Omnivorous, feeds on small bulbs, seeds, roots, insects, crabs, amphibians, fish and small mammals. -Eats crops (maize, lucerne, wheat) and sometimes noted as causing damage, but also eats insect pests. -Commonly feeds at small stock feedlots.
MAMMALS				
Chlorotalpa duthieae Duthie's Golden Mole[1]	Vulnerable	- Occur on alluvial sands and sandy loams in southern Cape Afrotemperate forests - Preference for forest vegetation over fynbos. - Narrow coastal band 275 km long between Wilderness and Port Elizabeth with fairly disjunct populations. - Can occur in gardens and pastures adjoining forests. - Mainly active at night.	- Little is known but a female was recorded with a litter of two young in November.	-Shallow subsurface foraging tunnels radiate outwards from beneath the roots of trees. - Forages at night in tunnels and through the leaf litter. - Diet includes earthworms.

Species	Red list status	Habitat	Breeding	Feeding
Panthera pardus Leopard[3]	Vulnerable	-Wide habitat tolerance, but generally associated with rocky outcrops, hills, mountains and forests. -Manage to persist in areas of development provided there is adjacent cover of rocky hills or forest.	-Solitary animals with males and females holding territories and defend against same sex. -No specific breeding season but has been found to peak in unison with some ungulate prey species births in certain regions (i.e. impala in Kruger National Park). -Oestrous lasts 7 days during which male and female copulate frequently. -Gestation 106 days and cubs remain with mother for 12months after which siblings remain together for a further 2-3 months.	-Nocturnal, solitary hunter. -Small to medium animals, usually ungulates < 70kg (Impala, Klipspringer, Grey Rhebuck, Cape Grysbok, Duiker) but also take Baboons, Hyrax, hares, rodents, reptile, livestock or domestic cats/dogs. -Usually drags larger prey items into cover (dense shrubs) or up trees.
Sensitive Species 8[1]	Vulnerable	- Specialised habitat requirements within a home range of approximately 0.75 ha - Strong habitat preference for dense vegetation with good undergrowth providing good cover in which to retreat.	- This species can breed throughout the year. - Males establish territories and exhibit aggressive behaviours towards other males and to attract females.	- Highly selective feeders, often feeding on food below troops of monkeys or frugivorous birds which drop lots of material. - Preference for fruit, but also fallen leaves, flowers and insects. Seldom actively browse.

[3] SCC identified by Virtual Museum platform for QDS 3423AB

Species	Red list status	Habitat	Breeding	Feeding
		- Forest, thicket, dense coastal bush, independent of water. - Can inhabit forest edges and transitional zones. - Requires diverse plant community with variety of tree and shrub species. - Can adapt to fragmented habitat given sufficient cover and food availability. - Actively avoids open grasslands, and areas with human disturbance.		- Active in the early morning and late afternoon, foraging for around 8 hours a day within their territory.
Amblysomus corriae Fynbos Golden Mole[4]	Near Threatened	-Sandy soils and soft loams in Mountain Fynbos, Grassy Fynbos and Renosterveld of South West Cape. Also Afromontane forest and southern African moist savanna along the southern Cape coast. -Favours richer and wetter soils preferring forest fringes and associated fynbos. -Thrives in gardens, cultivated lands, golf courses and livestock paddocks.	-Fynbos Golden Moles probably breed a seasonally because pregnant females have been captured in August, May, and December. -Mean litter size is two; young are altricial and hairless at birth	-Insectivorous, mainly feeding on earthworms and insects.

[4] SCC identified by iNaturalist platform

Species	Red list status	Habitat	Breeding	Feeding
		Can be present in exotic plantations, but at lower densities.		
Leptailurus serval Serval[3]	Near Threatened TOPS: Protected (2023 DRAFT) CITES: Appendix II	-Widespread throughout sub-Saharan Africa. Mostly found in and around marshland, well-watered savannah and long-grass environments. Particularly associated with reedbeds and other riparian vegetation types. Proximity to water seems essential. -Habitats can be natural or man-made habitat (Child *et al*. 2016). - Adaptable to agricultural and industrial areas where appropriate wetland habitat is conserved or waterbodies created in combination with an abundance of prey (Child *et al*. 2016). -Predominantly nocturnal. -Previously extinct in Eastern and Western Cape province but reintroduced in EC and range expansions evident into W, although rare.	-Gestation estimated 73 days. Pregnant females found between November-March, with young usually born early-mid warm/wet season. Young seen with females between July-October.	-Feeds mainly on small mammals (preference for rodents) but also birds, reptiles and frogs occasionally. Preference shown for vlei rats. - Usually solitary hunters, but pairs and young families are occasionally reported to hunt together.
TERRESTRIAL INVERTEBRATES				

Species	Red list status	Habitat	Breeding	Feeding
Aloeides thyra orientis Red Copper Butterfly[1]	Endangered	- Restricted range taxon endemic to the Western Cape from Witsand to Gouritsmond in the west, to the Brenton Peninsula near Knysna in the east. - Declining because of alien plant encroachment and lack of regular burning of the fynbos. - Coastal fynbos on flat sandy ground (either naturally occurring or from anthropogenic disturbances such as footpaths or unsurfaced track) between 40 m to 240 m above sea level.	- Adults are on wing from July to April with peaks in October and February. - Several generations per year through the warmer months.	- Larvae feed on *Aspalathus acuminata, A. laricifolia* and *A. cymbiformis*. -The larvae are attended to by *Lepisiota capensis* ants.
Sarophorus punctatus[1]	Endangered* Davis *et al*. 2020 Checklist	-Known only from the type locality on the coastline of Keurboom Strand (Western Cape) -No adequate quantitative assessment; sampled using ground traps set from the edge into disturbed podocarp forest. - Sampled from Southern Afrotemperate Forest (FOz 1) (Forest	Not known	Not known

Species	Red list status	Habitat	Breeding	Feeding
		Biome) although grid reference coincides with adjoining South Outeniqua Sandstone Fynbos (FFs 19) (Fynbos Biome) (Davis *et al*. 2020).		
Aneuryphymus montanus Yellow-winged Agile Grasshopper[1]	Vulnerable	- Very low area of occupancy between 100 and 1 000 km^2. Threatened by declining habitat due to invasion by aliens and habitat transformation. - Strong association with sclerophyllous fynbos vegetation on the southern slopes of the Outeniqua mountains, post-fire. - Threats to the species include habitat transformation and invasion by alien plants.	- Little is known about the feeding requirements of this species.	- Little is known about the reproductive habits or requirements for this species.
Aloeides pallida littoralis	Near Threatened	- Endemic taxon to the Western Cape Province. -Relatively flat terrain near the coast, coastal fynbos.	-Little known, but *Lepisiota capensis* ants are hosts for subspecies *A. p. grandis*.	-Little is known, but larval food for the subspecies *A. p. pallida* and *A. p. jonathani* feed on *Aspalathus* species. The larvae of subspecies *A. p. grandis* are fed by trophallaxis by *Lepisiota*

Species	Red list status	Habitat	Breeding	Feeding
Knysna Pale Copper Butterfly[3]				*capensis* ants and feed on these ant eggs.
HERPETOFAUNA				
Afrixalus knysnae Knysna Leaf-folding Frog[1]	Endangered	- Typically inhabit endorheic (inward draining) wetlands with shallow water (< 50cm), high clarity, and sufficient vegetation suitable for breeding. - No streaming or running water recorded at any of the sites where they've been recorded. -The frog is associated with vegetation it can use for breeding which includes indigenous and exotic species. For example, slender knotweed (*Persicaria decipiens*) and kikuyu grass (*Pennisetum clandestinum*). -It requires a habitat with diverse plant species, including shrubs, grasses, and ferns, providing shelter and breeding sites (De Lange and Du Preez 2018).	- Females lay eggs on leaves which are folded and sealed by males, creating a protected environment. - Breeding occurs during warmer wetter months of September to November (F. De Lange 2019). - Breeding takes place near deeper parts of the waterbody, but still close to the water's edge.	- Insectivorous, feeding on small invertebrates found in its habitat (e.g. insects and spiders). - Foraging behaviour includes actively searching for prey on the forest/fynbos floor and in the leaf litter. - Uses its sticky, projectile tongue to capture and quickly ingest prey. - Primarily active at night, relying on its vision to locate and capture prey in the darkness.

4. FIELD ASSESSMENT

4.1 Methods

Following the Species Environmental Assessment Guidelines (SANBI 2020) and Table 3, taxa-specific sampling techniques were conducted in habitats where SCC were likely to occur. Taxa-specific sampling was interspersed with a meander across the project area to collect additional opportunistic data for all fauna and inspect all habitat types (Table 4).

Table 4. Sampling techniques conducted for potential SCC occurring Erf 2074.

Taxa	Field methods	Public platform where observations were reported
Avifauna	• Meander* across site for direct observations. • 8 point counts (5-minute bird counts).	Birdlasser (species lists), iNaturalist (photos)
Mammals	• Meander* across site for direct observations, tracks, scats and signs. • Camera trapping for 16 hours (overnight). • Sherman traps (baited) left active for 16 hours (overnight).	iNaturalist (photos)
Amphibia	• Meander* across site for direct observations. • Active searching.	iNaturalist (photos)
Invertebrates	• Meander* across site for direct observations. • Active searching. • Baited (dung and chicken livers) pitfall trapping for 20 hours. • Sweep netting.	iNaturalist (photos)

* Meandering involved 4.7 km of slow walking across the property through various habitat types and key landscape features. Active observations took place for all fauna throughout this walk which was then supplemented by taxa specific sampling methods in habitats deemed most suitable for SCC.

4.2 Assumptions and Limitations

1. While the public platforms mentioned in Section 3.4 are excellent sources of additional information for animal species occurring within an area, these results require expert interpretation to determine which of the SCC are relevant to include in the faunal assessment of the project area. For example, the course spatial scale of reporting within the Virtual Museum platforms (Quarter Degree Square level (27km x 27km) or

SABAP2 pentad level (9km x 7km)) can result in species records from habitats very different to those present on the property. Additionally, these platforms include sightings of vagrant or transient animals upon which an assessment cannot reasonably be based. Expert interpretation is therefore applied to the full list of SCC identified by the various public platforms (see Appendix. 1), and some species are excluded from further assessment due to the project area clearly lacking suitable habitat or the species clearly representing a vagrant or transient animal outside its normal range. The SCC assessed in this report therefore represent those which may reasonably occur on site. However, there is always the possibility that some SCC (although highly unlikely to occur) are overlooked in this process.

2. Three field visits took place to the property for the faunal assessment. This increased the likelihood of detecting animal species, but still only represents a few “snap-shots” in time and it is possible that SCC occurring on site were not observed during these visits. These results should therefore be interpreted with this in mind and not be treated as an exhaustive list of species for the property.
3. Field visits took place during daylight hours so the likelihood of encountering nocturnal species was limited. Baited camera traps and Sherman traps were however used to assist in detecting nocturnal (and diurnal) animals over a 16-hour (overnight) period.
4. Field visits coincided with summer months at the property. This is of consequence for species showing seasonal variation in breeding and activity patterns. While still during summer, this timing was just after the breeding season of the frog SCC (*Afrixalus knysnae*, September to November), decreasing its likelihood of detection. Conversely, this was the optimal time of year to detect the presence of golden mole SCC (*Chlorotalpa duthieae* and *Amblysomus corriae*), which are generally most active in warmer and wetter conditions.
5. Evidence of animals in the form of tracks, scats, and signs always brings with it a level of uncertainty, but best efforts were made in this regard and uncertainties are highlighted in the report.
6. Due to time constraints, baited pitfall trapping for the dung beetle SCC (*Sarophorus punctatus*) was limited to one site visit (Jan 2024) and was done over a 20-hour period. This limited sampling period placed constraints on the invertebrates caught by this method and this data should be interpreted as a minimum estimate.

4.3 Site Inspection Details

Three site visits took place to Erf 2074, conducted on 8 December 2023, 16 January 2024 and 17 January 2024. Weather on all days was partly cloudy and warm to hot. Habitat types found included a small, old agricultural field (olive grove); dense vegetation (trees/shrubs) in the north around the houses; modified fynbos with some Pine and Black Wattle (*Acacia mearnsii*) invasions in the middle of the property; heavily invaded areas of Blackwood (*A. melanoxylon*) in the middle of the property; and natural fynbos in the south (Figure 11). An effort was made to cover the property with the meander and to conduct taxa specific sampling techniques across a range of suitable habitats for potential SCC (Figure 12).

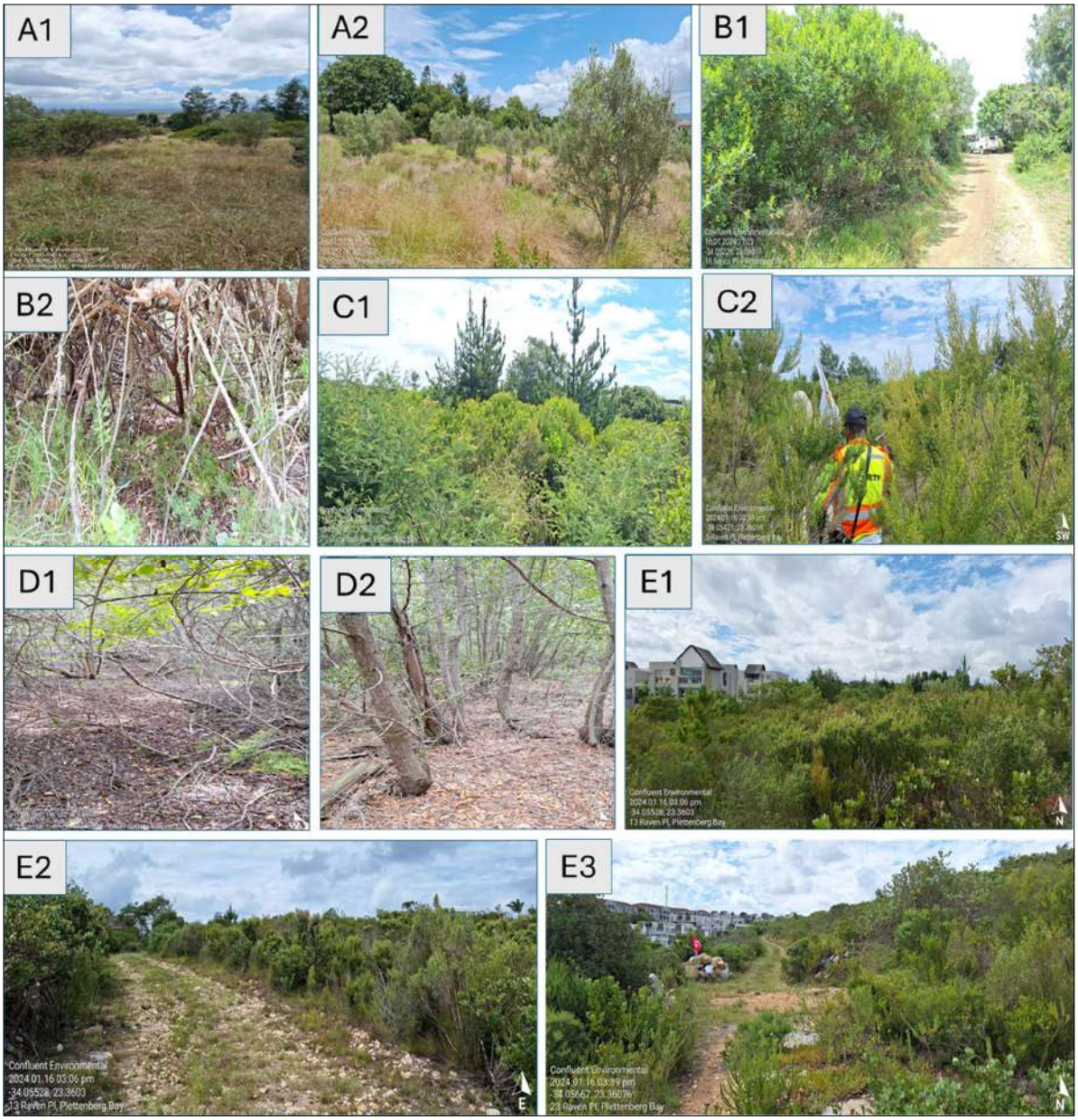

Figure 11. Habitat types identified on Erf 2074. Old agricultural field (olive grove) (A), Mixture of dense vegetation in north and around houses (B), Modified fynbos with Pine and Acacia mearnsii invasions in the middle of the property(C), Heavily invaded areas of A. melanoxylon (D) in the middle of the property, and natural fynbos (E) in the south.

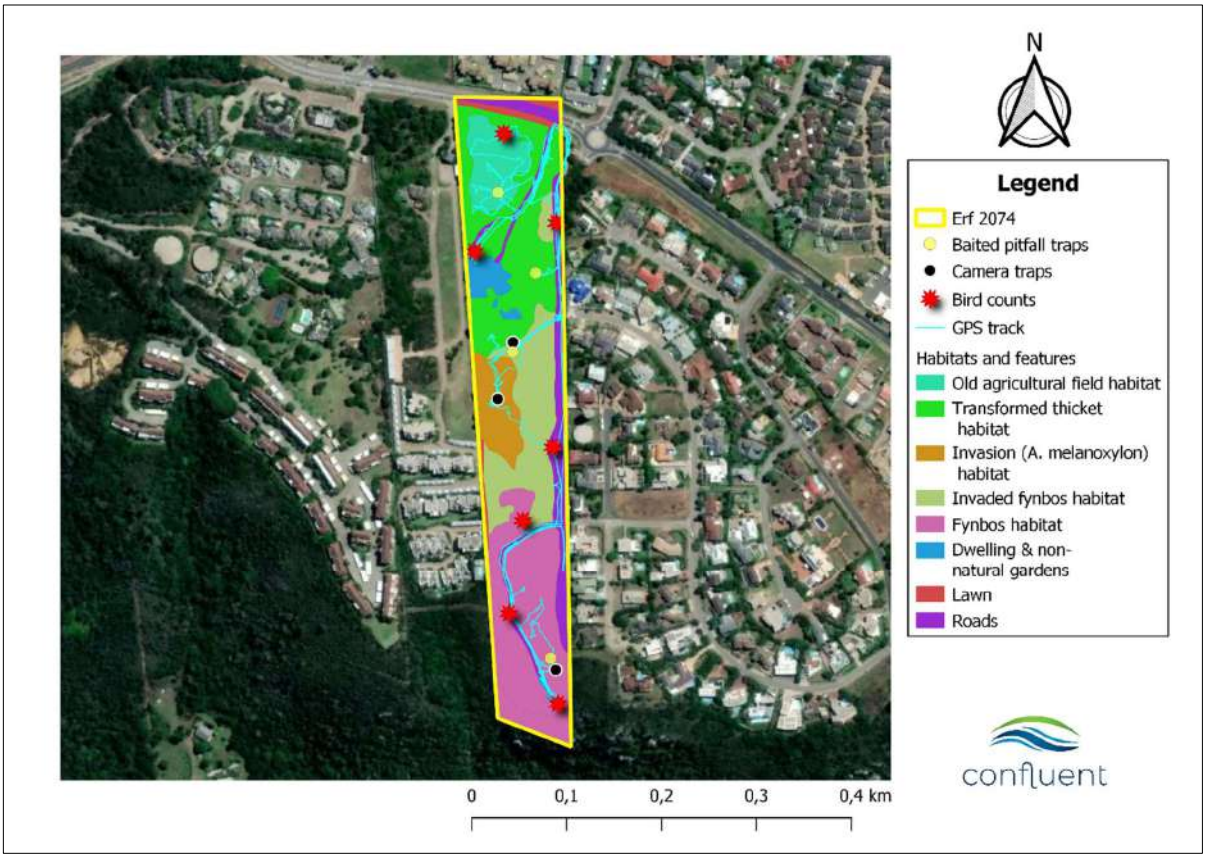

Figure 12. Taxa-specific sampling locations and GPS tracks for site visits to Erf 2074 in December 2023 and January 2024.

4.4 Results

4.4.1 Avifauna

No SCC were encountered during the site visits. Eight bird counts were conducted across the property, in addition to opportunistic sightings noted throughout the meander and searching for nests/roosting sites in suspected habitat. A total of 27 bird species were identified during the site visits (See Appendix. 2). Some eggs were found in the old agricultural field (broken and whole, although none were in a nest), and these are attributed to the Helmeted Guineafowl seen on the property (Figure 13). Tenants on the property also revealed that their dogs sometimes carry and eat Guineafowl eggs on the property. A Black-headed Heron was seen hunting and catching a snake along the cleared road along the eastern border road (Figure 13). Unfortunately, identifying the snake was not possible.

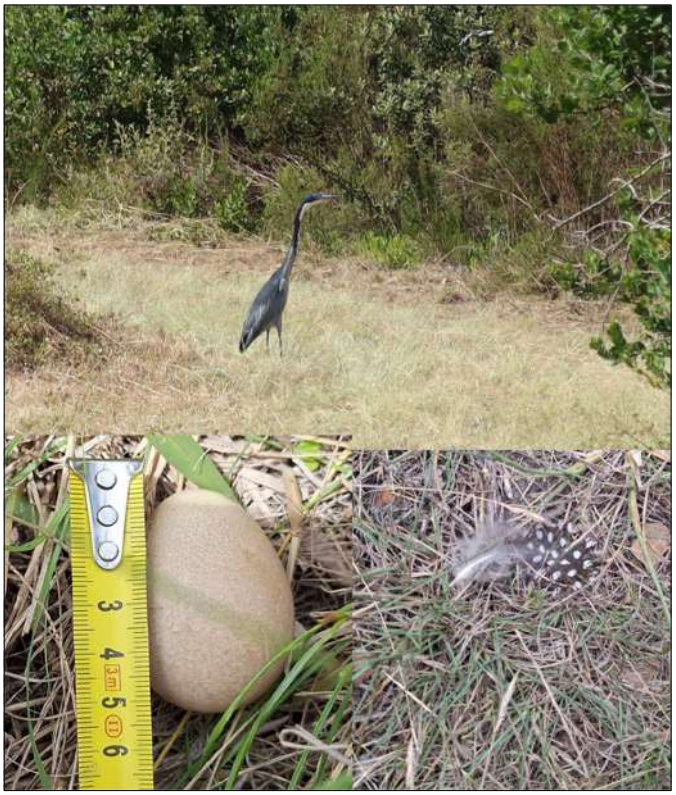

Figure 13. Black-headed Heron (Ardea melanocephala) (above) and the eggs and feather of Helmeted Guineafowl (Numida meleagris) (below) seen on Erf 2074 during site visits.

4.4.2 Mammals

No SCC were found during the site visits. A Cape Grey Mongoose was recorded on the camera trap placed within the natural fynbos region in the south and the tenant's dogs were also seen on the two camera traps in the middle of the property (Figure 14). Caracal was suspected to occur, due the presence of dung which resembled that typical of the species including lots of fur (Figure 14). Mole-rat activity was observed in the old agricultural field in the north (Figure 14) but no Golden Mole activity was seen on the property. No small mammals were caught in the Sherman traps placed overnight in any of the habitats and very few traps were even triggered. However, evidence of rodent activity was observed in the agricultural field during the meander (Figure 14). Cape Porcupine diggings and dung were also observed in the middle to north of the property. See Appendix. 3 for the list of mammals observed/suspected on Erf 2074 during the site visits. In conversation with the tenants residing on site, it was established that both mongoose and porcupine have been observed on the property, as well as domestic dogs and cats. It was also conveyed that the tenant's three dogs roam the property widely and unsupervised causing disturbance to wildlife by frequently chasing animals and eating Guineafowl eggs.

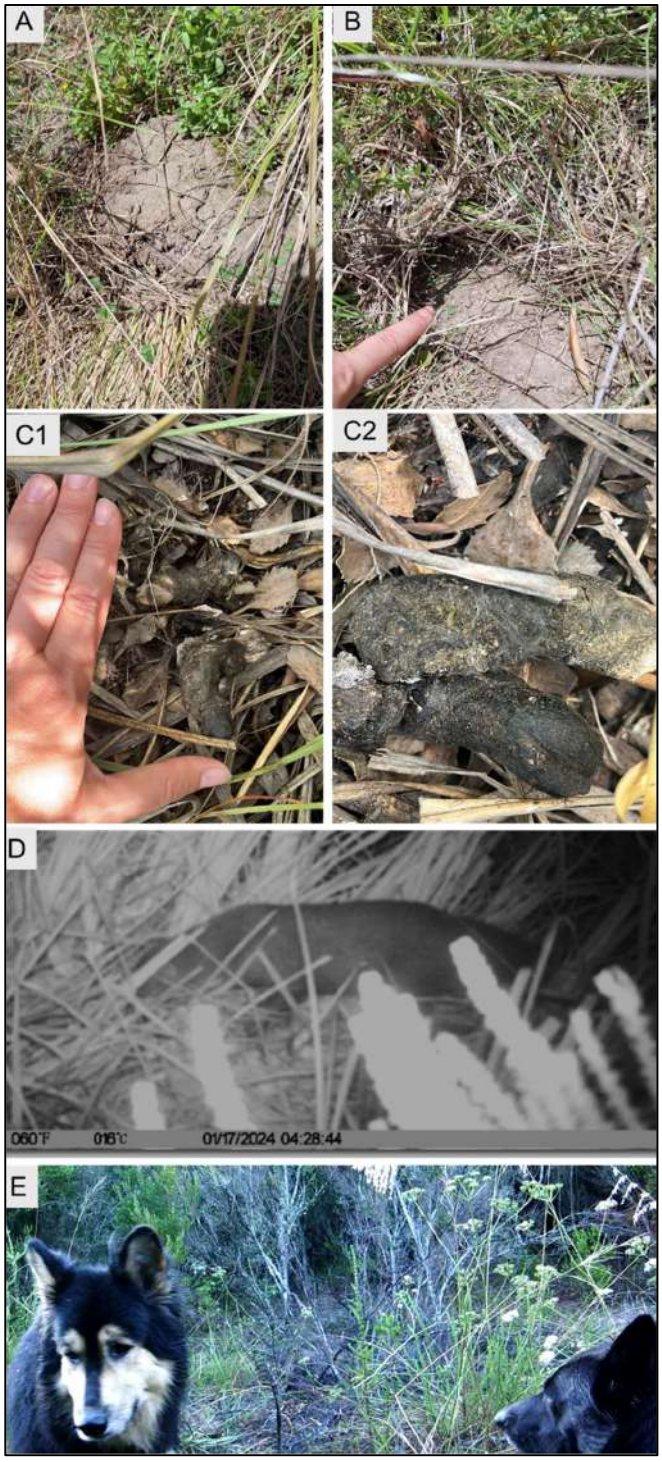

Figure 14. Mammal species identified during site visits to Erf 2074. Mole rat activity (mole hills, Family: Bathyergidae) (A) and rodent runways/tunnels (B) through the grass in agricultural field. Suspected caracal dung (Caracal caracal) (C). Cape Grey Mongoose (Galerella pulverulenta) (D) and the tenant's dogs (E) seen on camera traps.

4.4.3 Terrestrial invertebrates

No SCC were found during the site inspections. Four baited pitfall traps (with dung) were set throughout the site, which yielded only one dung beetle in the agricultural field. The dung beetle was similar in size to the SCC, but it clearly differed in morphology from the SCC by being rounder in overall shape, clearly lacking the distinct bumps/ridges on the thorax and abdomen, and the shape of the clypeus (front edge of the head) having a narrow and shallow indentation compared to the SCC with a wider open indentation (Figure 15). It is acknowledged that the trapping duration (20 hours) may have limited these results, and while caution is applied to these findings, they indicate a low overall abundance of dung beetles within the area.

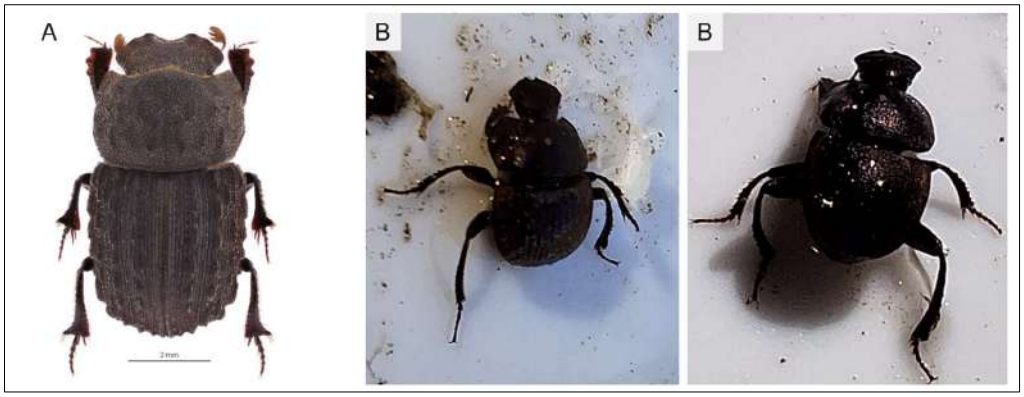

Figure 15. Dung beetle SCC Sarophorus punctatus (A) compared to the only dung beetle found on Erf 2074 (B).

During the site visits in January 2024, a lot of butterfly activity was noted, particularly in the north of the site around the agricultural field and surrounds near the houses. While no butterfly SCC was observed or sampled, some plants of the genus *Aspalathus* (*Aspalathus alopecurus*) were found. This plant species is not specifically known to be a larval host for the butterfly SCC, but it is in the same genus of plants utilized by the Red Copper butterfly (*Aloeides thyra orientis*) and the suspected genus for lesser-known breeding habits of the Knysna Pale Copper butterfly (*Aloeides pallida littoralis).* In total, invertebrates from 17 Families were photographed and identified from site (Figure 16, see also Appendix. 4).

Figure 16. Invertebrates photographed on Erf 2074 during the site visits in December 2023 and January 2024.

4.4.4 Amphibians

No SCC were encountered during the site visits. No amphibians were found on the property, which was not surprising given the lack of any waterbodies/watercourses. Consequently, there was no suitable habitat for the Knysna Leaf-folding Frog (*A. knysnae*). Although not possible to confirm, in conversation with the tenants on the property they indicated the presence of Clicking Stream Frogs (*Strongylopus grayii*) and Raucous Toads (*Sclerophrys capensis*) in their artificial garden pond.

4.4.5 Reptiles

No reptile SCC were highlighted for the property by the DFFE Screening Tool or the online platforms. As such, no targeted sampling took place for this group. However, a Black-headed Heron was seen hunting and eating a snake along the eastern border road (Figure. 16), but unfortunately no identification of the snake was possible. Although not possible to confirm, in conversation with the tenants on the property the following reptiles have been observed on the property: Puff Adder (*Bitis arietans*), Red-lipped Herald (*Crotaphopeltis hotamboeia*), Spotted Bush Snake (*Philothamnus semivariegatus*), Common Egg-eater (*Dasypeltis scabra*), Night Adder (*Causus rhombeatus*), Natal Green Snake (*Philothamnus natalensis*).

Figure 17. Black-headed Heron seen catching and eating a snake on Erf 2074.

4.4.6 Likelihood of Occurrence for SCC

Following the terrestrial fauna surveys and site inspection, the SCC highlighted for Erf 2074 were evaluated according to their likelihood of occurrence. It is always possible that a species assessed as having a low probability of occurrence can still occur on the site, especially for the Golden Mole species which are listed as having a low likelihood of detection (SANBI 2020). Therefore, Table 5 should only be used as a guideline.

Table 5. Likelihood of occurrence for terrestrial fauna SCC on Erf 2074.

Species	Red list status	Observed on site	Suitable habitat	Likelihood of occurrence	Reason
AVIFAUNA					
Circus ranivorus Marsh Harrier	Endangered	No	Low	Low	The site itself does not contain suitable marshland vegetation that the SCC has a strong association with for breeding and hunting. Despite the proximity of possible habitat in the Piesang River valley to the immediate south of the property, it is unlikely that the SCC will leave the valley to utilise the unsuitable habitat present on the property.
Bradypterus sylvaticus Knysna Warbler	Vulnerable	No	No	Low	No suitable habitat given the lack of rivers or other waterbodies on property.
Stephanoaetus coronatus Crowned Eagle	Vulnerable	No	No	Low	No suitable habitat. Property lacks dense forest vegetation and has limited stands of large trees with dense foliage. Despite small forest-like vegetation patches in the valleys to the south of the property, it is unlikely that the SCC occurs there (given its small habitat size and proximity to human disturbance) and even less likely that the SCC would utilise the property itself given the mostly unsuitable habitat.
Tyto capensis African Grass Owl	Vulnerable	No	No	Low	Very limited suitable habitat on property. While the agricultural field superficially resembles grassy habitat, it is not dense or long enough to support breeding habits (tunnels through dense grass) and is likely too disturbed by the presence of humans/vehicles (busy road with pedestrians bordering the site along the north) and domestic dogs on the property to be utilised by SCC. The fynbos in the south may be marginally suitable for the SCC, however it lacks thick stands of grass

Species	Red list status	Observed on site	Suitable habitat	Likelihood of occurrence	Reason
					(for which SCC has a strong preference for breeding and hunting) and the nearest waterbodies (to which SCC usually occurs in close proximity) are in the bottom of the valley to the south making it unlikely that the SCC will occur on the property.
Buteo trizonatus Forest Buzzard	Least Concern (Regional), Near Threatened (Global)	No	Possible	Low	Limited suitable habitat. Property has no forests or plantations required by SCC. There are some stands alien trees *(Acacia melanoxylon*) in the middle of the property, but this habitat size is limited and unlikely to be utilised by SCC. The dense vegetation in the north of the property, including some taller trees, is also unlikely to be suitable habitat given the levels of human disturbance from the busy road to the north, and tenants (and their dogs) utilising this area (close proximity to the houses).
Campethera notata Knysna Woodpecker	Near Threatened	No	Possible	Medium	Small amount of suitable habitat in the north of the property around the houses and the fringes of the agricultural fields. This area is quite disturbed in terms of human activity and noise, but this dense vegetation and tall trees may be marginally suitable habitat, The SCC is known to occur in gardens and is therefore given a medium likelihood of occurrence as this habitat is disconnected from other suitable habitat.
Grus paradisea Blue Crane	Near Threatened TOPS: Protected (2023 DRAFT)	No	No	Low	No suitable open grassland vegetation.

Species	Red list status	Observed on site	Suitable habitat	Likelihood of occurrence	Reason
	CITES: Appendix II				
MAMMALS					
Chlorotalpa duthieae Duthie's Golden Mole	Vulnerable	No	No	Low	No suitable habitat. Property has no suitable forest habitat and there is none present in the surrounding/adjoining areas. Soils in the south are very shallow, rocky and compact and are unsuitable for SCC that needs alluvial sands and sandy loams for tunnelling.
Panthera pardus Leopard	Vulnerable	No	Yes	Low	Property is not sufficiently connected to large natural areas and has little to no prey availability to attract or sustain SCC.
Sensitive Species 8	Vulnerable	No	No	Low	No suitable habitat. No forest or sufficient thicket habitat for SCC. High levels of human disturbance which SCC is known to avoid, and the dogs roaming the property are likely to deter SCC.
Amblysomus corriae Fynbos Golden Mole	Near Threatened	No	Possible	Medium	Suspected suitable habitat in north where soils are less compact and rocky. This area has been disturbed by cultivation (agricultural field/olive grove) and infrastructure (houses, roads), but SCC is known to thrive in gardens and cultivated lands and therefore can adapt and tolerate such habitat modification. The habitat is largely disconnected from surrounding suitable areas, with urban development on all surrounding properties, and the south of the site having shallow, rocky, compact soils unsuitable for the SCC. Given that this SCC has a low likelihood of detection (SANBI 2020), the precautionary principle is applied and it is given a medium likelihood of occurrence.

Species	Red list status	Observed on site	Suitable habitat	Likelihood of occurrence	Reason
Leptailurus serval Serval	Near Threatened TOPS: Protected (2023 DRAFT) CITES: Appendix II	No	No	No	No suitable habitat. Proximity to water essential for SCC (none present on property) and preference for marshland/wetland vegetation (not present on property).
TERRESTRIAL INVERTEBRATES					
Aloeides thyra orientis Red Copper Butterfly	Endangered	No	Possible	Low	Possible habitat given the open patches of ground in the fynbos habitat towards the south of the property. However, the soil in this fynbos area is very compact and rocky, not sandy as is preferred by SCC (nor is the vegetation mapped as Knysna Sand Fynbos where SCC is known to occur), and the host plant species was not observed on site. Closest observations of this SCC are in Brenton on Sea, Knysna, a distance not traversable by the subspecies.
Sarophorus punctatus	Endangered	No	No	Low	While little is known about the distribution or biology of the SCC, the only specimens collected were associated with forest-edge habitats. The property has no forest habitat, nor is there any in the immediate vicinity. The property is also surrounded by urban development and therefore is unlikely to be suitable habitat for the SCC.
Aneuryphymus montanus	Vulnerable	No	No	Low	No suitable sclerophyllous fynbos habitat on site.

Species	Red list status	Observed on site	Suitable habitat	Likelihood of occurrence	Reason
Yellow-winged Agile Grasshopper					
Aloeides pallida littoralis Knysna Pale Copper	Near Threatened	No	Possible	Medium-Low	Property has coastal fynbos and flat terrain as preferred by SCC. Larval host plants in the correct genus were observed on the property in the fynbos area in the south. However, the closest observations of this SCC are close to Brenton on Sea, a distance not traversable by the subspecies. However, the precautionary principle is applied due to suspected habitat on site and the SCC is given a medium-low likelihood of occurrence.
HERPETOFAUNA					
Afrixalus knysnae Knysna Leaf-folding Frog	Endangered	No	No	Low	No suitable habitat (waterbodies, wetlands) on property.

5. SITE SENSITIVITY VERIFICATION

After the site visit and faunal surveys, it was suspected that some SCC occur on Erf 2074, and therefore a **MEDIUM** sensitivity rating is applied to the property for the Terrestrial Animal Species Theme.

Based on the information in this report during the desktop and field assessment, the following reasons support this finding:

- The property contains marginally suitable habitat characteristics for bird (*Campethera notata*), butterfly (*Aloeides pallida littoralis*), and golden mole (*Amblysomus* corriae) SCC. Despite suitable habitat on site being relatively small and disconnected from other suitable areas in the surrounding landscape, the precautionary principle is applied, and it is deemed likely that the SCC occur on the property despite these limitations.
- The likely occurrence of some SCC is supported by their ability to adapt to semi-urban/modified environments (i.e. Knysna Woodpecker seen in gardens; Fynbos Golden Moles occur in agricultural fields/gardens) and the high likelihood that they would evade disturbance or predation by the dogs on site. The property also represents some of the last natural remaining fynbos fragments and natural space in an otherwise developed urban area, thereby providing a refuge for most animal species, and likely also the SCC.
- While no evidence of Golden Mole activity was seen on site, this SCC has a low likelihood of detection (SANBI 2020). The precautionary principle is therefore applied, and the Fynbos Golden Mole (*A. corriae*) SCC deemed likely to occur.

As per the Published Government Notice No. 1150, Government Gazette 43855 (30 October 2020), when SCC are deemed likely to occur on site, a **Terrestrial Animal Species Specialist Assessment** must be compiled.

6. SITE ECOLOGICAL IMPORTANCE

The Site Ecological Importance (SEI) is determined for habitats within the property, taking associated fauna SCC into account (Table. 6).

SEI is a function of biodiversity importance (BI) and receptor resilience (RR) such that: SEI = BI + RR. BI is further defined as a function of conservation importance (CI) and habitat

functional integrity (FI), with BI = CI + FI, and is determined by means of a matrix. SEI can therefore be fully understood as SEI = (CI + FI) + RR, where:

Conservation Importance (CI): The importance of a site for supporting biodiversity features of conservation concern present.

Functional Integrity (FI): A measure of the ecological condition of the impact receptor (i.e., habitat type) as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.

Receptor Resilience (RR): The intrinsic capacity of the receptor (i.e., habitat type or SCC) to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.

The SEI is derived for each habitat type or SCC within or likely to be within a project site by making use of two matrixes: first to calculate the BI and then the SEI. These matrices and further details can be found in Appendix 5.

Table. 7 provides the SEI calculations for each habitat type and Figure. 16 illustrates the SEI results for the property. It is important to note that the SEI reported here is specific to the proposed development and associated activities of this report and can only be used to compare multiple layouts and/or locations for the development.

Table. 6. SCC likely or confirmed to occur on Erf 2074 and assessed for Site Ecological Importance.

Taxon	Species	Red list status	Likelihood of occurrence of site based on habitat suitability
Avifauna	*Campethera notata* Knysna Woodpecker	Near Threatened	Medium
Mammal	*Amblysomus corriae* Fynbos Golden Mole	Near Threatened	Medium
Terrestrial Invertebrate	*Aloeides pallida littoralis* Knysna Pale Copper	Near Threatened	Medium

Table 7: Site Ecological Importance assessment for Erf 2074. Conservation status for SCC is abbreviated to indicate Critically Rare/Endangered (CR), Endangered (EN), Vulnerable (VU) or Near Threatened (NT). When relevant, the extent of occurrence (EOO) is indicated as part of the justification for the conservation importance (CI) metric.

Habitat and associated SCC	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Old agricultural field SCC: *Campethera notata* (NT) *Amblysomus corriae* (NT)	**LOW** There are no known populations of highly likely to occur SCC, as all SCC highlighted for this habitat type are flagged as having a medium likelihood of occurrence. The habitat is also not non-natural.	**LOW** Small with poor connectivity to other such habitats.	**LOW**	**MEDIUM** The habitat is disturbed in its current state, recovery to a disturbed state would be swift. SCC highlighted are adaptable and can thrive in modified environments.	**LOW** BI: LOW RR: MEDIUM
Fynbos SCC: *Aloeides pallida littoralis* (NT)	**MEDIUM** Medium likelihood occurrence of NT SCC *A. pallida littoralis*.	**MEDIUM** Although the habitat on the property is <2ha in size, it is connected to the larger landscape by means of a narrow riverine habitat (semi-intact).	**MEDIUM**	**LOW** The ability of this habitat to recover to its current biodiverse state is inhibited by the invasion risk posed by the adjacent habitat. *A. pallida littoralis* is not well adapted to human modified spaces.	**HIGH** BI: MEDIUM RR: LOW

Habitat and associated SCC	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Invasion (*Acacia melanoxylon*) SCC: None	**VERY LOW** No confirmed or highly likely populations of SCC. No natural habitat remaining.	**LOW** Small area ca. 1ha, Poor habitat connectivity but migrations are still possible for highly mobile species.	**VERY LOW**	**VERY HIGH** The invasive species present aids its recovery to the same invaded state.	**VERY LOW** BI: VERY LOW RR: VERY HIGH
Invaded Fynbos SCC: None	**LOW** No confirmed or highly likely populations of SCC.	**LOW** Small area ca. 1ha. Habitat connectivity is poor if the fynbos habitat is lost. Migrations are still possible for highly mobile species.	**LOW**	**HIGH** The invasive species present in this habitat unit aids its recovery to the same invaded state. Slower growing native species, however, will take some time to re-establish.	**VERY LOW** BI: LOW RR: HIGH
Transformed thicket SCC: None	**LOW** No confirmed or highly likely populations of SCC. Habitat not entirely unnatural and may be able to provide support to some species.	**LOW** Small area ca. 1ha. Migrations may still be possible by using the road network.	**LOW**	**HIGH** This habitat is already transformed. Recovery of species to this transformed state is very likely. Invasion risk is also high which is noted.	**VERY LOW** BI: LOW RR: HIGH
Dwelling and non-natural gardens	**LOW** There are no known populations of highly likely to occur SCC, as all SCC	**VERY LOW** Connectivity with other such habitats is poor and	**VERY LOW**	**LOW** Habitat is artificial and requires human intervention to establish	**VERY LOW**

Habitat and associated SCC	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
SCC: *Amblysomus corriae* (NT)	highlighted for this habitat type are flagged as having a medium likelihood of occurrence. The habitat is also not non-natural, but this suits the SCC highlighted since it is adapted to using garden environments.	the area is very small (<1ha)		and maintain even in its current state.	BI: VERY LOW RR: LOW
Lawn SCC: *Amblysomus corriae* (NT)	**LOW** There are no known populations of highly likely to occur SCC, as all SCC highlighted for this habitat type are flagged as having a medium likelihood of occurrence. The habitat is also not non-natural, but this suits the SCC highlighted since it is adapted to using modified environments.	**VERY LOW** Very small area <1ha with very poor habitat connectivity.	**VERY LOW**	**LOW** Grass species are often the first to colonise post-disturbance. It is uncertain whether the SCC has options for refuge from disturbance so as to have a source population for recolonisation after disturbance.	**VERY LOW** BI: VERY LOW RR: LOW
Roads SCC: None	**VERY LOW** No natural habitat remaining and no SCC highlighted.	**LOW** Several major negative impacts exist but it may be used as throughfare between habitats.	**VERY LOW**	**VERY HIGH** The possibility for remediation to its current state is certain since the habitat is functional for human activities in this landscape.	**VERY LOW** BI: VERY LOW RR: VERY HIGH

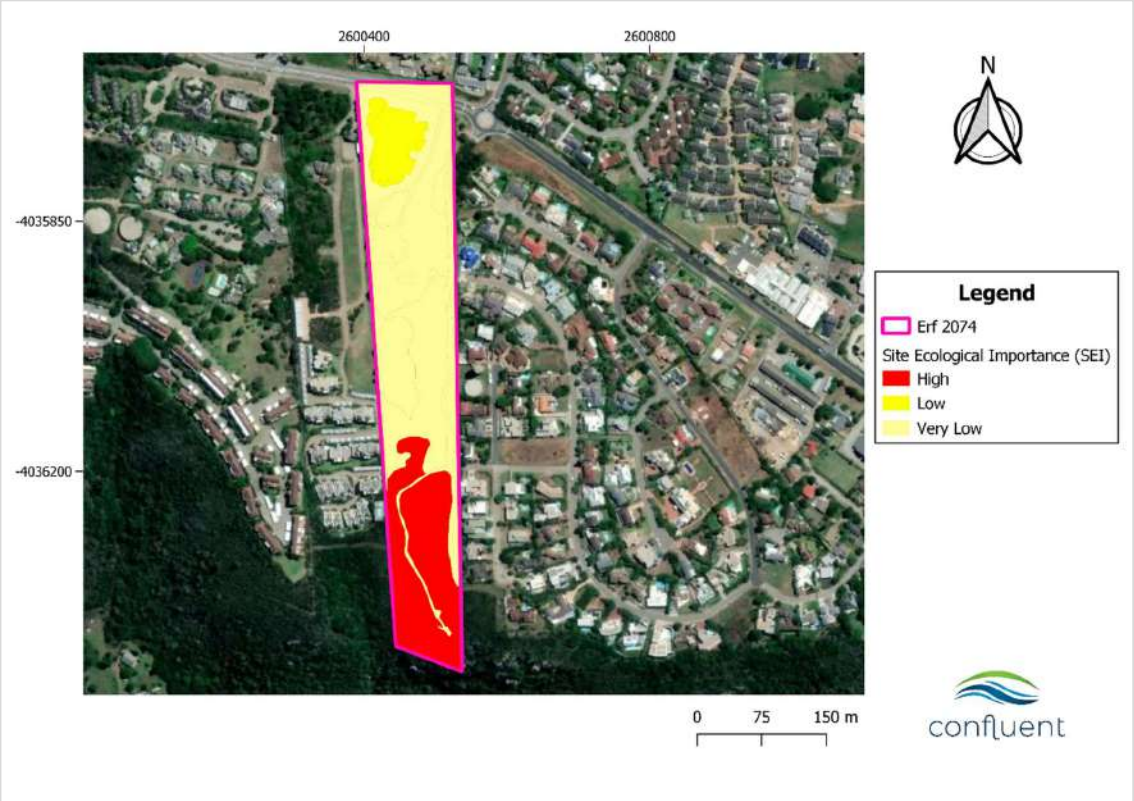

Figure 18. Site Ecological Importance map with regards to fauna for Erf 2074, Plettenberg Bay.

Most of the site has a VERY LOW SEI rating with regards to terrestrial fauna (Figure. 17; Table. 7). According to the guidelines for interpreting SEI ratings in terms of development (Table. 8, (SANBI 2020)) activities of medium to high impact are acceptable and restoration may not be required, but minimisation mitigation is necessary. The north of the site has an area of LOW SEI, where the guidelines dictate that medium to high impact development activities are allowed but must be minimised and followed by appropriate restoration. The development as proposed is a suitable land use for this extent of the property. The southern parts of the development, however, encroach on the HIGH SEI habitat. According to the guidelines for interpreting SEI ratings in terms of development (Table. 8, (SANBI 2020)), HIGH SEI areas should be avoided where possible, but minimization mitigation measures may be acceptable when the development: 1) limits the amount of habitat impacted, and 2) associated activities are limited and are of low impact. The land use suggested by both SDP options is high impact and unsuitable for the HIGH SEI area of the property. The development is similar to other developments in the area, making this habitat rare in the landscape and its conservation all the more important. Conversely, its rarity in the landscape also sets a precedent for developments that remove majority of the native vegetation in the area. It is

imperative that mitigation measures are strictly adhered to and that all measures are taken to reduce the developmental footprint wherever possible to minimize negative impacts on the faunal community and reduce the loss of critical habitats.

Table 8. Guidelines for interpreting Site Ecological Importance for proposed developments (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.

7. IMPACT ASSESSMENT

This impact assessment is based on the SDP Alternatives available at the time of writing this report and will need to be reassessed if these change in the future. The impact assessment considers the construction of a housing development with associated roads as well as a gazebo/function space and its access road on Erf 2074, Plettenberg Bay (Figure. 2; Figure. 3).

The impacts and associated mitigation measures for each development phase are discussed in the following sections. For ease of reference, an Environmental Compliance Officer (ECO) checklist is provided in Appendix. 7 to ensure that all mitigation measures are easily monitored during the various construction-related phases of development.

Impacts (pre- and post-mitigation) are evaluated for the SDP alternatives with the methods explained in Appendix 6.

7.1 Mitigation hierarchy

The principles of the mitigation hierarchy (Ekstrom *et al.*, 2015; Mitigation hierarchy guideline draft February 2023) are applied during an impact assessment. Potential impacts on biodiversity are preferentially managed through preventative, rather than remediative, measures (Figure. 19). This is achieved by suggesting avoidance or minimization methods wherever possible. Successive steps in the hierarchy should only be considered once the previous step has been exhausted. Avoidance of negative impacts is a priority. If the impacts

of a development cannot be adequately managed through the preventative measures of avoidance and minimization, then restoration and, as a last resort, offsets or compensation are considered.

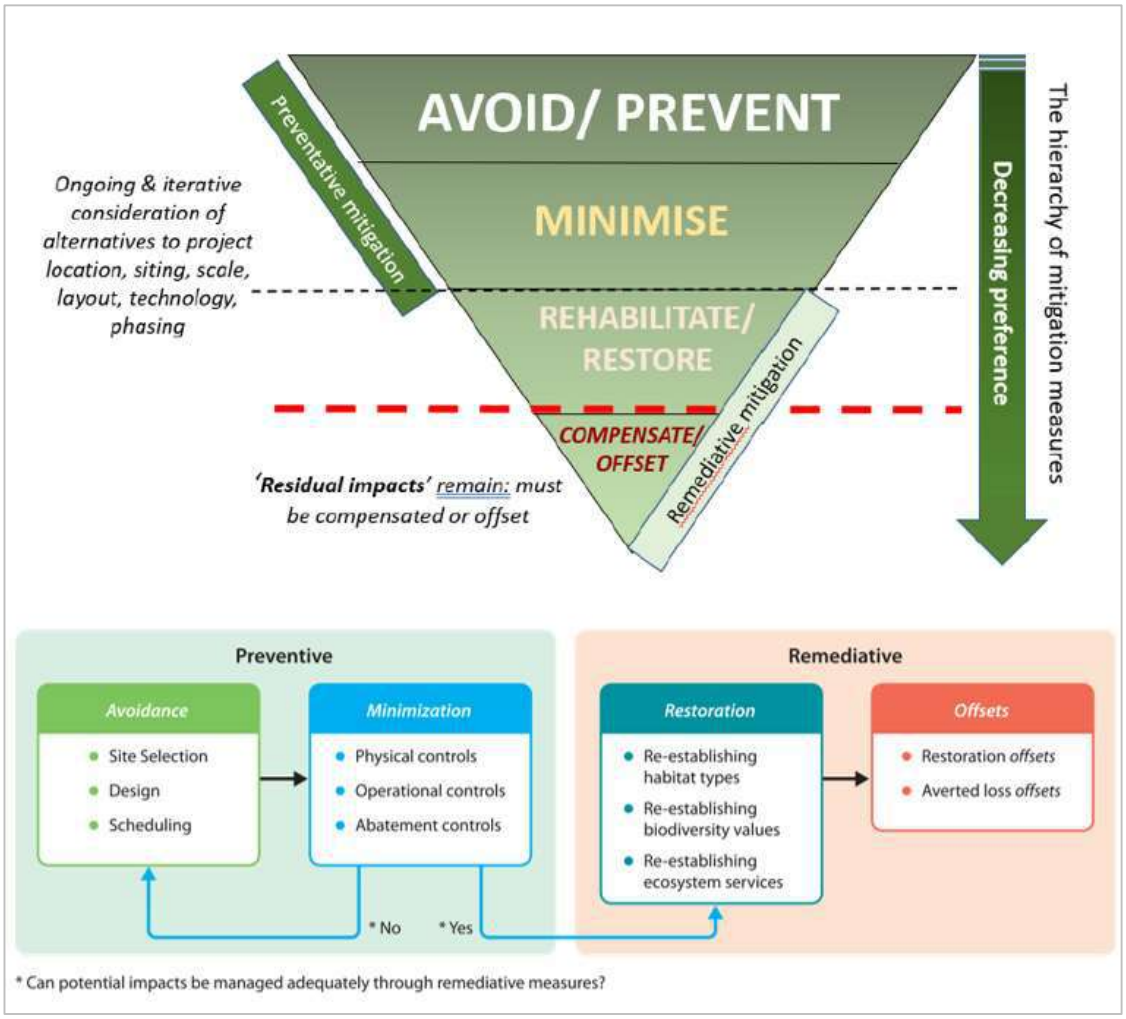

Figure 19. The iterative process of minimising predicted impacts on biodiversity and ecosystem services, as described in the mitigation hierarchy (Ekstrom et al., 2015; Mitigation hierarchy guideline draft, February 2023).

7.2 Reference to be made to Botanical Specialist Report

Many impacts to fauna can be mitigated through minimizing impacts to the natural environment within which they occur. As such, many mitigation measures throughout this section address this aspect of 'habitat protection'. In addition to the measures highlighted throughout the next sections, it is imperative that the Botanical Specialist report (B. Fouche, Confluent Environmental) also be consulted, and these mitigation measures be adhered to to

reduce the impact of the development on plant species, since fauna rely heavily on plants for resources and suitable habitat.

7.3 Project Area of Influence

The proposed development has a very low potential to have major impacts outside of the development footprint. Noise and light will be increased at the site during the construction and operation phases, but the geographical extent of this indirect disturbance is difficult to quantify. As a precaution, 50m is assigned as the footprint of indirect disturbance into the fynbos space in the south of the site for noise (traffic, etc) and light. The effects of these disturbances are mitigated by the measures to be outlined in this impact assessment.

7.4 Current Impacts

Most of Erf 2074 has had some changes since 1938, including the introduction of new roads, changes in land use (agriculture), and alien plant invasions. Some current impacts were observed on the site, which will continue if no mitigation and maintenance is considered for the property.

A current impact observed on Erf 2074 relevant to the faunal theme is alien plant invasions in the central part of the property (Blackwood (*A. melanoxylon*)), and the Pine (*Pinus*. sp) and Black Wattle (*A. mearnsii*) invasions observed throughout the site. Habitat transformation from its natural state can impact fauna through altered fire regimes (increased frequency and intensity), loss of suitable habitat, and a reduction in food resources (plants, prey species). It can also benefit fauna by adding structural diversity to the landscape. The negative effects of alien plant invasions on the faunal theme, however, far outweigh the positive.

It is highly recommended that this current impact is addressed, and that an alien plant management plan be developed (7.8.1. mitigation measure 3) and implemented on the property before any development is permitted to take place. The purpose of this is to remove invasive plants outside of the footprint of the development (namely, aliens that would not be removed by the development itself). Alien clearing must not be conducted during the breeding season of SCC Knysna Woodpecker (*Campethera notata*) (August- December). This time constraint also applies to controlled burning, should this be required at the site. Alien plant removal will benefit habitat quality and aid in reducing fire risk on the property as well as in the greater landscape.

Currently, dogs roam the entire property and cause disturbance to wildlife (chasing and catching animals) and reducing their reproductive success (e.g. eating Guineafowl eggs). This can have major negative impacts on the abundance and diversity of wildlife making use of the

property and in some cases reduces their survival. This impact is mitigated in the impact assessment (Section 7.8.3).

7.5 Layout and Design phase

There are some considerations within the layout and design phase of the project which can reduce the impact of the development on fauna and their habitat within the property.

1. Avoidance of the southern extent of the property should be strongly considered. This is important to limit the loss of natural ecosystems, which benefits all SCC and biodiversity more widely. The alternative SDP uses marginally less (ca. 0.05ha) of the area designated as high SEI than the preferred SDP, the effect of which would be negligible to fauna. It is worth noting that both SDPs are not the best-case scenario as some high SEI fynbos habitat (ca. 0.642ha to 0.692ha) is still lost to the development. To avoid this somewhat and best comply with the Mitigation Hierarchy (Section 7.1) the development could be pulled back from some of the region designated as high SEI (Figure. 17) to meet the line imposed by the CBA1 classification of the south of the erf (See Figure 20.). This change in layout can be achieved by the removal of two rows of dwellings in the southernmost extent of the property or increasing the density of the overall development (an example of this is provided in the Botanical Specialist's Report under the Project Area of Influence). There is a precedent for this in this landscape as neighbouring developments are pulled back from this line as well. It is also advised that more buildings not be included in the south of the property in the green space, and that the existing road (Figure. 19) be used to access the existing gazebo/ function space rather than adding a new road which could cause the disused road to later be populated with disturbance-loving or invasive species of limited use to the faunal SCCs outlined. Additionally, buildings in the green space would complicate fire management for natural vegetation (see point below). Such layout changes could be implemented for the development on Erf 2074 given the high SEI and animal sensitivities of the natural environment.

Figure 20: SEI for Erf 2074, SDP Alternative 2 (preferred) with the inclusion of the CBA1 boundary.

2. The proposed development will be situated within Fynbos vegetation which is fire prone and could experience burning in the largely open green space in the south. Measures must be taken to secure infrastructure such as the maintenance of fire breaks around houses forming part of the development that share a boundary with the fynbos area as well as the gazebo/ function venue in the south of the site in the green space. It is imperative that fynbos senescence leading to increased fire risk be managed in this patch of vegetation per the recommendations outlined in the Botanical Report (B. Fouche- Confluent Environmental).

3. Keep artificial lighting along roads and around infrastructure to a minimum and consider lighting colour, brightness and design options with minimal impact on biodiversity. Light pollution is of global concern given that our night skies are getting lighter due to urban development and that many animals are specifically adapted to dark night skies for navigation, foraging and behavioural aspects (i.e. sleep, hunting). A common impact is that many insects are attracted to or disorientated by artificial lights, leading to aggregations at such point sources. This interferes with their natural behaviour (i.e. feeding), associated ecosystem services they provide (e.g. pollination) and often has fatal consequences for individuals unable to escape the 'light trap'. There

is also the cumulative impact of attracting predators to light sources (e.g. birds, frogs, small mammals) and exposing them to risks in these areas as well.

a. Wherever possible in the designing phase consider 'no lighting' options to encourage dark areas and reduce light pollution, especially close to the southern part of the site, closer to natural fynbos. No lighting options should only be considered where this does not threaten safety and security of residents (no applicable to the southern end of the site which is bounded by the river.

b. Where this is not possible, the impacts of lighting can be reduced through the selection of the colour/brightness (select yellow, dim lights which are less attractive to insects than bright white or blue lights) and design elements (lights facing down towards the ground rather than facing up towards the sky).

4. Consider self-reliant water, energy and other amenities if possible (i.e. use of solar power rather than power from the national grid that requires powerlines) to reduce further impacts of infrastructure to be built on the site which results in additional habitat loss and impacts on biodiversity (e.g. birds colliding with power lines).

7.6 Construction Phase Impacts

The construction phase will have the highest impacts on fauna species due to increased moving vehicles, noise and habitat destruction associated with these activities. It is imperative that an Environmental Control Officer (ECO) be appointed for the duration of the construction phase and ensure compliance with mitigation measures that aim to minimize impacts on fauna. It is imperative that an ECO is present on site at the onset of a new construction phase, at the start of construction, and twice a week thereafter during the construction phase.

7.6.1 Disturbance and deterrence of fauna due to the noise.

Description: The faunal assessment revealed that the old agricultural field is possible breeding space for Knysna Woodpecker. Following the precautionary principle, this SCC is deemed present at the site and this impact is assessed. Noise may have effects on other animals as well, as mitigated by this impact.

Consequences of impact:

1. Construction related noise can disturb breeding birds in the vicinity which can prevent them from selecting or returning to a site to breed on the property.

2. Construction related noise can result in SCC and other fauna abandoning nests, eggs, or chicks if breeding has already begun when construction commences.
3. Noise may displace fauna which is detrimental to their wellbeing in a space with few refuges such as this landscape.

Impact Assessment

Impact Categories	Alternative 1		Alternative 2	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Nature	Negative	Negative	Negative	Negative
Duration	Brief	Brief	Brief	Brief
Extent	Local	Local	Local	Local
Intensity	Low	Low	Low	Low
Probability	Likely	Likely	Likely	Likely
Confidence	Medium	Medium	Medium	Medium
Reversibility	High	High	High	High
Resource Irreplaceability	Medium	Medium	Medium	Medium
Significance	**Minor - negative**	**Negligible - negative**	**Minor - negative**	**Negligible - negative**

Mitigation Measures

1. During laying season for Knysna Woodpecker (August to November) a dedicated search for the SCC must be conducted by a Faunal Specialist in the agricultural fields and non-natural gardens habitat to check if the species is present.
2. If a Knysna Woodpecker nest is found, no construction should take place in the dwelling and non-natural garden and old agricultural field habitat (See Figure. 12) for 6 weeks hence (time for incubation and development of the nestling before it can relocate) and in October (peak laying month to account for other Knysna Woodpeckers that may not have nested in a place that is as conspicuous as those found).
3. Alien plant removal must not take place October since the SCC may rely on these for nesting.
4. A walk through and search should be conducted to ensure that any birds are not nesting in vegetation prior to clearing of aliens and construction. If a nest with eggs

is encountered, construction must be halted and a wildlife rehabilitation facility contacted.

7.6.2 *Loss of habitat for fauna within the footprint of the proposed development.*

Description: The development as proposed will result in some loss of habitat space on the property, especially in the south of property. SDP Alternative 2 (preferred) leaves ca. 3400 m^2 of fynbos space undeveloped compared to Alternative 1.

Consequences of impact:

1. Reduction of last fragment of suitable fynbos habitat in this area for fauna SCC to live, forage and breed.
2. Loss of most of the disturbed habitat types potentially used by all species.
3. Reduction in native species with which SCC have obligatory relationships (i.e. host plants and ants for butterfly larvae).

Impact Assessment:

Impact Categories	Alternative 1		Alternative 2	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Nature	Negative	Negative	Negative	Negative
Duration	Permanent	Permanent	Permanent	Permanent
Extent	Local	Limited	Local	Limited
Intensity	Very high	Low	Extremely high	Low
Probability	Likely	Likely	Likely	Likely
Confidence	High	High	High	High
Reversibility	Medium	Medium	Medium	Medium
Resource Irreplaceability	High	Low	High	Low
Significance	**Moderate - negative**	**Minor - negative**	**Moderate - negative**	**Minor - negative**

Mitigation measures:

1. Prior to construction, the disturbance footprint of the development should be clearly defined and demarcated to prevent unnecessary additional damage to the surrounding environment:

a. Construction netting or fencing must be used to clearly indicate construction areas (see example in Figure 21). Access roads must be clearly marked so there is no confusion as to where the tracks are or how wide the road is.
b. Clear signs for “no-go” areas for vehicles and personnel should be placed strategically on the site and along access roads. No-go areas are anywhere outside of the direct area of influence of the construction phase and especially in the green space area in the south of the site.
c. A turning area for construction vehicles should be demarcated within the existing footprint of proposed hard surfaces like roads or houses.

Figure 21. Example of construction fencing to be used to demarcate construction areas.

2. Prior to construction the southern extent of the footprint of the development needs to be assessed by a Botanical Specialist for the presence of butterfly larval host plants: *Aspalathus spp.* (especially *A. acuminata, A. laricifolia and A. cymbiformis*), *Chrysanthemoides incana*, *C. monilifera*, *Indigofera erecta*, *Lebeckia plukenetiana*, *Osteospermum polygaloides*, *Thesium* spp*, Zygophyllum* spp.
    a. If located, a botanical specialist needs to oversee the transplanting of these species from the development footprint into an appropriate natural environment (outside the development footprint) closest to where the plant was originally found. By limiting the distance that the plant is moved from its original location, impacts on associated faunal communities and changes to its growing conditions (microclimate, soil texture, soil moisture) are reduced.
    b. Transplanting should follow best practice guidelines and on-going monitoring and maintenance (i.e. watering, temporary shading, etc.) of each transplanted

plant needs to occur to ensure the best chances of survival. The new location of each plant needs to be marked (GPS point and a physical marker next to the plant) to allow the plant to be revisited for monitoring and maintenance purposes, which can cease once a Botanical Specialist considers the plant well established within its new environment.

3. No further development is permitted to take place in the core of the green fynbos space in the south of the property with the exception of an upgrade of the existing gazebo with the same footprint (no expansion). The existing road is to be used as is or formalised using grass blocks.
4. Protection and reuse of topsoil (excluding topsoil under stands of alien invasive plants) can be critical for the success or rehabilitation of vegetation following construction processes as it contains valuable seedbank of indigenous plants that regenerate after the soil is replaced. Topsoil removed during construction should be treated with care.
    a. Topsoil from vegetation on the site in new excavation areas must be stripped to a depth of 30cm, or in cases where the bedrock is shallower than this, then the entire soil layer is to be removed. Topsoil is to be kept in designated piles of maximum 1 m in height, to prevent anaerobic conditions from smothering seeds and rendering them inviable and must be suitably covered with shade cloth (or another breathable material with a fine mesh) to prevent any additional invasive species seeds from falling in and establishing in the soil.
    b. If the SDP of a proposed development does not have enough space for the storage and protection of topsoil within the disturbance footprint, then the ECO must identify an alternative temporary stockpile area that is already transformed and where it can easily be retrieved for post-construction rehabilitation.
    c. The topsoil piles must be clearly labelled so that it does not mix with subsoils excavated or any other construction material for the site.

7.6.3 *Habitat and fauna negatively affected by the management of the construction site.*

Description: The management of materials and staff on the site is also an important impact of development. If managed properly, many accidents and unanticipated negative impacts on fauna and the surrounding environment can be avoided.

Consequences:

1. Loss of habitat or harm to fauna outside of designated construction areas.

2. Litter and pollution of natural environment.
3. Potential health and safety hazards (for staff and fauna) on the site and in the surrounding environment.

Impact Assessment:

Impact Categories	Alternative 1		Alternative 2	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Nature	Negative	Negative	Negative	Negative
Duration	Medium term	Brief	Medium term	Brief
Extent	Local	Very limited	Local	Very limited
Intensity	Very high	Moderate	Very high	Moderate
Probability	Likely	Likely	Likely	Likely
Confidence	High	High	High	High
Reversibility	Low	Medium	Low	Medium
Resource Irreplaceability	High	Low	High	Low
Significance	**Minor - negative**	**Negligible - negative**	**Minor - negative**	**Negligible - negative**

Mitigation measures:

1. All new staff must be briefed about the layout of the construction site and must be made aware of the no-go areas as the surrounding environment is sensitive and must not be disturbed. Staff must be made aware what all SCC looks like and to report all fauna occurring on site to the ECO. Weekly site meetings should be held, during which the ECO should remind all staff of these requirements and any questions/concerns can be raised and addressed.
2. No littering, waste dumping or burning is allowed on the site or in the surrounding environment. All waste is to be collected in designated bins with lids that can be secured or stored in a secure area when construction is not taking place (evenings, weekends, holidays, etc.) to prevent interference by animals. All waste is to be transported to a registered waste disposal facility off site.
3. Concrete, cement, plastering, and painting:
    a. Mixing areas be clearly defined on the site and must be surrounded by an impermeable material (i.e. create a temporary coffer dam with sandbags and

thick plastic sheeting) to prevent any runoff and absorption into the surrounding soils.

b. The designated mixing areas should be limited to areas that will become future hard surfaces on the site. No concrete and cement mixing is allowed in areas outside of the proposed hardened surfaces of the camping block.

c. No concrete and cement mixing is allowed in areas outside the site development plans (SDPs).

d. Cleaning of cement, plastering & paint equipment must be done into a designated, bunded, & lined slurry sump or container to avoid contaminating the environment.

4. Any small items or building materials which can be carried away by medium-large animals (i.e. baboons) should be safely stored in containers or locked away in a designated area to prevent interference from animals, causing possible harm to them and preventing them from removing such items from site.

5. All stockpiles of fine textured building materials and soils must be covered by a geotextile or plastic covering, which must also be bunded (e.g. with sandbags) when not in use (Figure 22). This will prevent material being lost to the environment and fauna from accessing stockpiles and possibly subjecting them to harm during construction.

Figure 22. Stockpiles of fine textured building materials and soils covered with geotextile/plastic covering and bunded with sandbags when not in use.

6. Construction should take place during daylight hours so that the site can be adequately monitored for fauna during work hours, and also to prevent the use of artificial lighting at night which attracts many animal species (predominantly insects and associated predators) and subjects them to the risks of construction.

7.6.4 Harm/Death of fauna, particularly Fynbos Golden Mole (Amblysomus corriae) SCC.

Description: Fauna may occur on site and be killed or seriously harmed during construction related activities. Cryptic and ground-dwelling species, like the Fynbos Golden Mole (*Amblysomus corriae*) SCC, are difficult to detect and limited in their mobility rendering them vulnerable to earthmoving and construction activities. It is suspected that the golden mole SCC could depend on the old agricultural field habitat (designated as low SEI) for its subterranean lifestyle. This SCC is highly adaptable to modified environments but impacts on individuals and the population must be kept to a minimum during construction.

Consequences of impact:

1. Loss of threatened species.
2. Loss of genetic diversity from remaining fauna populations.
3. General loss of biodiversity.

Impact Assessment:

Impact Categories	Alternative 1		Alternative 1	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Nature	Negative	Negative	Negative	Negative
Duration	Permanent	Short term	Permanent	Short term
Extent	Limited	Limited	Limited	Limited
Intensity	High	Low	High	Low
Probability	Almost certain / Highly probable	Unlikely	Almost certain / Highly probable	Unlikely
Confidence	High	High	High	High
Reversibility	Low	High	Low	High
Resource Irreplaceability	Medium	Low	Medium	Low

Significance	**Moderate - negative**	**Negligible - negative**	**Moderate - negative**	**Negligible - negative**

Mitigation measures:

1. Construction should happen in phases, such that construction related activities are confined to one area at a time on the property and can be monitored for faunal impacts appropriately. Suggested order for phases of construction should prioritize constructing access roads to completion before focusing on dwellings
2. Prior to construction of a new phase/area:
    a. After the footprint of the development has been clearly demarcated a faunal specialist should do a walk-through to search for bird nests and eggs.
    b. After grubbing has been completed, a Faunal Specialist should do a second walk-through to look for signs of fauna with limited mobility and escape potential (i.e. tortoise, chameleon, etc.) with particular attention given to the Fynbos Golden Mole SCC.
    c. Should signs of fauna with limited mobility or an SCC be found within the demarcated area, a search and rescue operation should be undertaken to relocate fauna to a suitable location on the property (See Box. 1 for guidelines on animal encounters).
    d. No construction may commence until the Faunal Specialist is satisfied that all fauna with limited mobility and/or SCC have been successfully removed from the demarcated footprint area.
3. During construction:
    a. Before construction commences for any new earthworks at the start of new phase, an ECO should do a walk-through of the demarcated area and access roads that will be used to look fauna for with limited mobility. These animals should be removed from the demarcated area to an adjacent location, and where appropriate a Faunal Specialist contacted for assistance or guidance. Construction/Earthworks for this new phase can commence thereafter.
    b. At any point during the day (during construction), if an animal with limited mobility is observed on site, this should be reported to the ECO and construction temporarily halted. Procedures outlined in Box. 1 must be followed for all fauna encounters. Construction can commence once the ECO is satisfied that all such fauna is removed from the construction area.

c. Speed limits should be imposed and monitored during construction phase, as collisions with vehicles (roadkill) pose a significant threat to many fauna species. Speed limits should be restricted at the discretion of the ECO to appropriate speeds to allow for driver alertness and ability to avoid collisions with fauna. The recommended speed is 20 km/hour on sites of this kind. Signs should be put up along the roads to remind people of speed limits, as well as warnings to look out for small animals on the roads (see examples in Figure. 23).

Figure 23. Road sign reminding drivers to look out for dung beetles (left) and tortoises (tight). Can be applied to all sensitive fauna

Box 1: Best practice principles for ALL fauna encounters during construction or operational phases of projects

If any animals are seen on site, a photo or a video should be taken if possible (to assists in identification) and all fauna encountered on site should be reported to the ECO immediately. This is particularly important when:

- An animal is harmed or compromised in any way during construction.
- Ground-dwelling animals their nests or eggs are unearthed during earthworks (e.g. moles, tortoise eggs, terrapins/frogs estivating).
- Any animal with limited mobility is found on site (e.g. tortoises, moles, chameleons).
- Any potentially dangerous animal is encountered. This includes any potentially venomous animal (e.g. snakes, scorpions) or any medium-large animal that has become cornered in an enclosed area such that it cannot escape (e.g. porcupines, monkeys, baboons, antelope). It is critical in the case of snakes/ scorpions o get pictures/videos to aid in identification and appropriate treatment of anyone needing medical assistance.
- Any animal that shows a reluctance to escape or move away from the construction site thereby increasing its exposure to harm or increasing the risk of injuring people on site.

The ECO should provide guidance or assistance to get all animals to safety, treating any injured animals, and issuing instructions on when to continue with construction (once they are satisfied that all animals have been removed from site) or put additional mitigation measures in place to protect animals on the site from harm.

For any injured animals or animals to be removed from site (domestic or wild):

A local SPCA or animal welfare society can collect and treat most animals and should be the first point of call for assistance. If they cannot directly assist, they will revert and notify the relevant authorities/vets.

For any assistance with snake removals/relocations, identifications, or bite treatment contact the African Snakebite Institute. The contact details of a suitably qualified snake handler are provided at the following link: https://snakeremoval.co.za/plettenberg-bay. Also available are the following emergency contacts:

SNAKEBITE EMERGENCIES:	
Poisons Information Helpline	+27 861 555 777
Dr Jenna Taylor	+27 83 631 4816
Dr Christoff Bell	+27 73 174 0199
Johan Marais	+27 82 494 2039
Jason Seale	+27 82 781 8498
Arno Naude	+27 83 739 9303
Dr PJC Buys	+26 481 127 5109 (Namibia)

GET THE FREE APP:

(Scan this code with your phone's camera.)

7.7 Conclusion of construction phase

The conclusion of any project is an essential, but often overlooked aspect of projects. This relates primarily to the cleaning up of the site once construction has concluded to reduce residual impacts at the site.

1. Construction sites must be cleared of all waste material, rubble, and debris associated with the construction phase at regular intervals during, and at the conclusion of the construction phase.
2. Revegetation of bare soil following construction is an essential part of concluding the construction phase of the project. This should be done with indigenous plant species that occur naturally in the surrounding environment on the property.
3. All drainage structures must be checked to ensure that there are no blockages or pollution that is blocking the free flow of water over the site; these checks will prevent erosion during and after the construction phase that could have potentially far-reaching implications beyond the footprint for the proposed development.

7.8 Operational Phase Impacts

7.8.1 Loss of fynbos habitat for fauna during maintenance activities.

Description: The development on the site will alter the disturbance regime through changes in fire regimes and vegetation clearing associated with the maintenance and operation of housing and road infrastructure. For the most part, disturbances and habitat loss/alterations will be restricted to the immediate surroundings of the roads and dwellings but some large-scale disturbances may alter the property's habitat as a whole.

If the management adopts ecologically friendly approaches in the long-term, the development can have many positive (rather than only negative) outcomes for the environment. For example, the removal of the alien plants on site and the active control thereof reduces a significant existing threat to the fynbos habitat on site and in the surrounding environment i.e. increase in natural habitat, reducing the risk of fires (reduced frequency and intensity). The owner of the property will need to develop an alien invasive management and eradication plan, as well as a fire management plan.

Consequences of impact:

1. A general loss of habitat for plants and fauna by vegetation clearing around dwellings and roads. The mismanagement of materials during routine maintenance of infrastructure can also cause habitat loss (i.e. stockpiling/long term storage of materials on site rather than removing from site).

2. Changes in habitat structure through changes in fire regimes on the property i.e. suppressing fire over a prolonged period can lead to species poor senescent fynbos habitat in the green space in the south of the property.

3. Uncontrolled alien plants can completely invade and transform natural habitats leading to a loss in associated biodiversity. Alien plants also increase fire frequency and intensity, which negatively impacts biodiversity either directly through hotter more frequent fires, or indirectly though changes in habitat (vegetation) structure.

Impact Assessment:

Impact Categories	Alternative 1		Alternative 2	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Nature	Negative	Negative	Negative	Negative
Duration	Permanent	Medium term	Permanent	Medium term
Extent	Local	Limited	Local	Limited
Intensity	Extremely high	Very low	Extremely high	Very low
Probability	Almost certain / Highly probable	Probable	Almost certain / Highly probable	Probable
Confidence	High	High	High	High
Reversibility	Medium	High	Medium	High
Resource Irreplaceability	Low	Low	Low	Low
Significance	**Moderate - negative**	**Negligible - negative**	**Moderate - negative**	**Negligible - negative**

Mitigation measures:

1. Vegetation clearing along road verges should be kept to a minimum, and avoided in areas where it poses no risk to vehicles. Where essential, vegetation along the road verges should only be cleared up to a maximum width of 1m on either side of the road. Cut vegetation should not be consolidated (gathered into piles) and left next to the side of the road where clearing took place. Instead, the cut vegetation should either be removed from site, or disposed of in a scattered/spread-out manner within the immediate surrounding of where it was cut, so as not to smother other plants or create concentrated fuel loads for fire.

2. During routine maintenance of infrastructure on the property, adequate management of materials should be implemented to reduce any unnecessary habitat loss. For example, all new building materials should be stored in areas within the disturbance footprint of the developments as far as possible to reduce additional damage to the natural (undisturbed) surroundings. Any old/removed building materials or rubble should be removed from site as soon as possible during maintenance activities and disposed of appropriately off-site. This will reduce the amount of additional space (natural surrounding habitat) lost or damaged for unnecessary storage of materials (Figure 24).

Figure 24. Inappropriate disposal or storage of pavers used during road maintenance activities.

3. It is a requirement by law than an alien and invasive plant management plan be developed and implemented on the property – see Botanical Specialist Report by B. Fouche (Confluent Environmental) for details, and refer to the National Environmental Management: Biodiversity Act (NEMBA, Act No. 10 of 2004) and the Conservation of Agricultural Resources Act (CARA, Act No. 43 of 1983).
4. Maintenance of fynbos requires fire but that will not be possible at this property. For management of senescent fynbos, and prevention of the fire risk that comes with it, and maintaining species diversity, the recommendations of the botanical specialist report (B. Fouche- Confluent Environmental) must be adhered to.

5. No insect zappers should be allowed on site, nor the general application of insecticides around infrastructure. Ecofriendly repellents are readily available (i.e. citronella oil/lotions) and should be used instead.
6. The establishment of indigenous gardens or the complete absence of gardens (i.e. fully rehabilitating any disturbed areas) within the footprint of the development will promote natural biodiversity.

7.8.2 *Disturbance of fauna due to noise and lighting associated with residential units.*

Description: The development on the site will alter the disturbance regime of the largely undeveloped area on the property through changes in noise and artificial lighting levels. For the most part, these disturbances will be restricted to the immediate surroundings of the road (i.e. traffic noise) and residential units (i.e. people talking/shouting, music). However, this can have a significant impact on biodiversity and alter the way fauna use the landscape (i.e. the creation of a landscape of fear resulting in animals avoiding certain habitats/areas around human disturbances; insects attracted to lights decreases their survival, negatively impacts on the ecosystem services they provide, and has negative knock-on consequences for their associated predators).

Consequences of impact:

1. The creation of a landscape of fear for fauna where areas of the property are avoided due to excessive anthropogenic activity, predominantly noise.
2. Light pollution, as discussed in Layout and Design Phase 7.55, acts as an attractant to many insects and associated predators, putting all at risk.

Impact Assessment:

Impact Categories	Alternative 1		Alternative 2	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Nature	Negative	Negative	Negative	Negative
Duration	Permanent	Permanent	Permanent	Permanent
Extent	Local	Very limited	Local	Very limited
Intensity	Extremely high	Low	Extremely high	Low
Probability	Almost certain / Highly probable	Probable	Almost certain / Highly probable	Probable
Confidence	High	High	High	High

Reversibility	Low	High	Low	High
Resource Irreplaceability	Medium	Low	Medium	Low
Significance	**Moderate - negative**	**Minor - negative**	**Moderate - negative**	**Minor - negative**

Mitigation measures:

1. Light pollution must be reduced and avoided wherever possible during the operational phase of the project. White LED lights have the worst negative effects for the environment, therefore dimmer lights with more natural warm light colours must be used. This must be outlined to residents.
2. Permanent lighting along roads must be avoided but should be balanced with maintaining nighttime visibility in higher traffic areas to decrease the incidence of roadkill (Section 7.8.4).
3. Noise should be minimised on the site and loud sirens/alarms must not be permitted unless there is an emergency. If security is a concern, then a silent alarm system should be implemented i.e. motion detection cameras.
4. To reduce levels of light and noise disturbance, plantings of indigenous trees and tall shrubs should be introduced to the interface between the development and the fynbos area (if fire breaks are not recommended by fire protection agencies, in which case these plantings would be within the fynbos alongside the fire break). Fire-proof indigenous hedge species are suggested in the Botanical Specialist Report (B. Fouche).

7.8.3 Human-wildlife conflict

Description: Some wild animals are attracted to human developments, usually due to the presence of a resource that has become available within the footprint of the development. If any animal becomes habituated or loses their fear of humans, they risk becoming pests and problem animals (sometimes even posing a risk to humans) and often require control, in severe cases resulting in their harm or death. Keeping pets on the premises can also increase the potential for human-wildlife conflict as pets can fight or kill animals (i.e. cats are known to be devastating for indigenous wildlife, especially birds, small mammals and reptiles), or be attractive to some animals as prey (i.e. leopards are known to take domestic cats and dogs occasionally). This is especially important for this site since the Fynbos Golden Mole SCC and

the Knysna Woodpecker SCC can adapt to human modified environments such as gardens and may suffer negative impacts because of pets. Pets also run the risk of being harmed by wildlife (i.e. snake bites) which can lead to owners wanting to control or harm the natural fauna of the area.

Consequences of impact:

1. Intentional harm or death of problem or pest animals due to their negative effects on the people (or pets) living on the property.
2. Unintentional harm or death of animals due to them consuming waste/food products which are bad for their health.
3. Pets causing death/harm to indigenous wildlife especially Knysna woodpecker and Golden Mole SCC.
4. Changes in natural foraging and movement patterns of fauna across habitats within the landscape due to the presence of a favourable resource (usually food) near the development. This can have knock-on effects for the ecosystem services they provide and their associated predators.

Impact Assessment:

Impact Categories	Alternative 1		Alternative 2	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Nature	Negative	Negative	Negative	Negative
Duration	Permanent	Short term	Permanent	Short term
Extent	Local	Very limited	Local	Very limited
Intensity	Very high	Very low	Very high	Very low
Probability	Probable	Probable	Probable	Probable
Confidence	High	Medium	High	Medium
Reversibility	Medium	High	Medium	High
Resource Irreplaceability	Medium	Low	Medium	Low
Significance	**Minor - negative**	**Negligible - negative**	**Minor - negative**	**Negligible - negative**

Mitigation measures:

1. No feeding of wildlife is permitted, and no disposal/discarding of any food waste (bones, scraps, fruit pips/cores) within the surrounding environment is allowed.
2. All food waste or general waste should be kept in a secure location (i.e. a lockup cage or sealed outside room) which is not accessible to any wildlife. Examples of wildlife-proof bins are suggested in Figure 25.
3. All waste should be stored in a double-container fashion, in such a way that it does not serve as an attractant to wildlife attempting to access the secure location (i.e. all waste products put into closed/sealed rubbish bags/containers and then placed within larger sealed containers/bins).
4. All waste, particularly food waste, should be regularly removed from the property and disposed of appropriately to prevent the scent of old products increasing the attractiveness to the disposal area and surrounding development for wildlife.
5. Residents on the property should be limited in their ability to keep pets (i.e. how many pets and what types of pets). It is highly recommended that no outdoor cats be allowed on the property as they are known to actively hunt small animals and can have detrimental effects on the wildlife of an area (see Figure. 26). Dogs are to be kept in fenced areas around the property to prevent conflicts.
6. All dog walking in the green fynbos space is strictly prohibited and clearly visible signage should convey this to residents.

Figure 25. Wildlife-proof garbage disposal container options. Large containers with a one-way shoot to dispose of garbage (left): the top lid is connected to a smaller container which swivels up when the lid is opened to block access to the larger bin and its contents below, but when the lid is closed this bin swivels down to drop the garbage into the larger container. Locking mechanisms and handles on bins (middle and right) can also be used to successfully keep wildlife out.

Figure 26. Animals killed by one house cat in one year. Article published in National Geographic (https://www.nationalgeographic.co.uk/animals/2020/09/the-232-animals-in-this-photo-were-killed-by-house-cats-in-just-one-year).

7.8.4 Harm/Death to wildlife due to collisions with vehicles.

Description: All fauna run the risk of being seriously harmed or killed due to collisions with vehicles on road infrastructure. The Endangered Wildlife Trust (EWT) has a programme aimed at tracking the impacts of roadkill and monitoring the effectiveness of various mitigation measures (https://ewt.org.za/what-we-do/saving-species/wildlife-and-transport/), illustrating the severity of this impact on fauna. Roadkill can be particularly detrimental to populations of threatened species within an area and to animals with limited mobility which are at a higher risk of injury or death due to their limited ability to escape moving vehicles.

Consequences of impact:

1. Death/Harm to any animal species (small insects to larger mammals) as a result of collisions with vehicles, particularly animals with limited mobility.
2. Decline in population size of local fauna populations, particularly that of threatened species (i.e. listed as vulnerable or endangered, etc.).

Impact Assessment:

Impact Categories	Alternative 1		Alternative 2	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Nature	Negative	Negative	Negative	Negative
Duration	Permanent	Short term	Permanent	Short term
Extent	Local	Local	Local	Local
Intensity	Very high	Low	Very high	Low
Probability	Almost certain / Highly probable	Almost certain / Highly probable	Almost certain / Highly probable	Almost certain / Highly probable
Confidence	High	High	High	High
Reversibility	Medium	Medium	Medium	Medium
Resource Irreplaceability	Medium	Medium	Medium	Medium
Significance	**Moderate - negative**	**Minor - negative**	**Moderate - negative**	**Minor - negative**

Mitigation measures:

1. Limit driving at night in the fynbos area in the south of the property. Some animals are blinded by the lights of a car, which reduces their ability to escape from collisions.
2. The strict enforcement of speed limits along all roads on the property. This speed limit should be reduced to 30km/h in areas where road-side visibility is reduced (i.e. due to dense vegetation). Speedbumps or other speed reducing techniques can be incorporated into the road design to assist in keeping speeds to a minimum.
3. In areas where there is dense vegetation along the road verges, consideration should be given to clearing a narrow road margin (i.e. maximum of 1m on each side of road). In addition to a speed limit, this can assist in preventing roadkill by improving the driver's ability to see an animal before it appears on the road and have adequate response time (through the implementation of a speed limit) to avoid collisions. However, vegetation clearing for this purpose needs to be balanced with the amount of habitat lost due to this activity.

7.8.5 *Reduction of habitat connectivity to the greater landscape*

Description: Habitat connectivity is integral to the maintenance of healthy populations of fauna to and for the wellbeing of individuals. The fewer artificial barriers put in place, the better. However, this need is balanced equally with concern for security of residents on the property.

Consequences of impact:

1. Reduction of gene flow in animal populations and the plant populations upon which they depend across the landscape.
2. Increased inter and intraspecific competition for habitat space and forage within the fynbos habitat on the property.

Impact Assessment:

Impact Categories	Alternative 1		Alternative 2	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Nature	Negative	Negative	Negative	Negative
Duration	Permanent	Immediate	Permanent	Immediate
Extent	Local	Very limited	Local	Very limited
Intensity	High	Negligible	High	Negligible
Probability	Certain / definite	Highly unlikely / none	Certain / definite	Highly unlikely / none
Confidence	High	High	High	High
Reversibility	Low	High	Low	High
Resource Irreplaceability	High	Low	High	Low
Significance	**Moderate - negative**	**Negligible - negative**	**Moderate - negative**	**Negligible - negative**

Mitigation measures:

1. It is strongly recommended that the southern boundaries of the property not be fenced. This southern area is unlikely to pose a significant security threat to residents as the property borders a steep slope/cliff acting as a natural barrier for criminals.

2. Palisade fencing is best used for the rest of the site as this offers some permeability for smaller wildlife, requires little maintenance, and is not as susceptible to damage by fire as other fencing options.

8. DISCUSSION AND CONCLUSION

Erf 2074 has many historical and current disturbances. Despite this, given that this property is one of only a few natural spaces in an urban area, it likely serves as a refuge for many animal and plant species, especially the area in the south designated as fynbos habitat in this assessment. Of the three SCC designated as having a medium likelihood of occurring at the property, one (Knysna Pale Copper) would depend on this southern portion of the property whilst the two remaining would use the northern end of the property. For these two SCC, one is highly mobile (Knysna Woodpecker) and both (Knysna Woodpecker and Fynbos Golden Mole) are highly adaptable to human modified environments such as gardens, many of which are planned in the SDP. For this reason, even high impact development is permitted in this region per the Species Environmental Assessment Guidelines (Low and Very Low SEI) but must be followed by appropriate restoration for Low SEI areas especially, a mitigation included in this impact assessment. Indigenous gardens are also highly recommended to serve as a suitable replacement for potential habitat lost to the development. This further necessitates the need for compliance with pet-related mitigations outlined in the impact assessment section of this report.

Maintenance of the natural vegetation and its diversity must be prioritised by following recommendations put forth in the Botanical Specialist report (B Fouche- Confluent Environmental) which in turn promotes animal diversity. It is strongly recommended that the southern boundaries of the property not be fenced to maximize connectivity within the surrounding landscape and allow animals to continue using this natural space. This southern area is unlikely to pose a significant security threat to residents due to the topography of the site.

Tenants on the property should be encouraged to keep their pets within enclosed areas around the houses. Currently, dogs roam the entire property and cause disturbance to wildlife (chasing and catching animals) and reducing their reproductive success (e.g. eating Guineafowl eggs). This illustrates that pets can have major negative impacts on the abundance and diversity of wildlife making use of the property and in some cases reduces their survival. The impact of this is mitigated in Section 7.8.5, mitigation 5.

This report recommends that the development be pulled back from the fynbos area. The south of the property is designated as high SEI (Figure. 16; Table. 7) for which the Species

Environmental Assessment Guidelines (SANBI 2020), states that no destructive development activities should be considered. It is, however, noted that the precedent set by neighbouring properties in this landscape is compliance instead to the CBA1 boundary as outlined in the WCBSP (see Figure 8). The CBA1 classification puts forth a management objective of maintaining a natural or near-natural state, with no further loss of habitat and states that only low-impact, biodiversity-sensitive land uses are considered appropriate. It is therefore recommended that the development be densified or reduced to meet this boundary.

SDP Alternative 2 (preferred SDP) seeks to preserve most of the core fynbos area , however, the following changes must be implemented in addition to the above: the proposed new access road must not be introduced; the current access road must be kept as is or paved with grass blocks; and no new buildings are to be erected in the south of the property.

It is the specialist's opinion that this development (that is, SDP Alternative 2, provided that all mitigation measures are strictly adhered to and layout changes are considered) will adequately balance the need to conserve animal welfare and populations as well as the need to develop housing. Having a presence on the property can also have a positive impact on the maintenance of the property, such that fynbos can be actively managed. These positive maintenance activities can improve biodiversity on the property and have benefits at a landscape scale as well, particularly when they promote the existence of fauna SCC and their associated habitats.

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APPENDIX 1: SCC IDENTIFIED FROM PUBLIC PLATFORMS FOR ERF 2074 AND THE SURROUNDING AREA

SCC identified by various online public platforms which were included or excluded from further analysis in this report based on expert interpretation and the presence/absence of key landscape and habitat features on site. See Section 4.2 Assumptions and Limitations for more information.

Species	Common name	Regional assessment	Source	Assessed (Y/N)	Reason not assessed
Avifauna					
Alcedo semitorquata	Half-collared Kingfisher	NT, LC	SABAP2	N	No River/Waterbody
Aquila verreauxii	Verreaux's Eagle	VU, LC	SABAP2	N	Last seen in 2013, not predicted in Screening Tool
Ardenna grisea	Sooty Shearwater	NT, NT	SABAP2	N	Pelagic/Ocean/Shore bird
Bradypterus sylvaticus	Knysna Warbler	VU, VU	SABAP2	Y	
Buteo trizonatus	Forest Buzzard	LC, NT	SABAP2	Y	
Calidris canutus	Red Knot	LC, NT	SABAP2	N	No River/Waterbody
Calidris ferruginea	Curlew Sandpiper	LC, NT	SABAP2	N	No River/Waterbody
Campethera notata	Knysna Woodpecker	NT, NT	SABAP2	Y	
Ciconia nigra	Black Stork	VU, LC	SABAP2	N	Last seen in 2008, not predicted up in Screening Tool
Circus maurus	Black Harrier	EN, EN	SABAP2	N	Last seen in 2022, not predicted by Screening Tool
Circus ranivorus	African Marsh Harrier	EN, LC	SABAP2	Y	
Coracias garrulus	European Roller	NT, LC	SABAP2	N	Last seen in 2022, long distance migrant
Crithagra leucoptera	Protea Canary	NT, NT	SABAP2	N	Last seen in 2015
Falco biarmicus	Lanner Falcon	VU, LC	SABAP2	N	Last seen in 2022, not predicted by Screening Tool
Falco concolor	Sooty Falcon	NA, VU	SABAP2	N	Last seen in 2020
Grus paradisea	Blue Crane	NT, VU	SABAP2	Y	
Haematopus ostralegus	Eurasian Oystercatcher	NA, NT	SABAP2	N	Pelagic/Ocean/Shore bird
Hydroprogne caspia	Caspian Tern	VU, LC	SABAP2	N	No River/Waterbody

Species	Common name	Regional assessment	Source	Assessed (Y/N)	Reason not assessed
Limosa lapponica	Bar-tailed Godwit	LC, NT	SABAP2	N	No River/Waterbody
Macronectes giganteus	Southern Giant Petrel	NT, LC	SABAP2	N	Pelagic/Ocean/Shore bird
Morus capensis	Cape Gannet	VU, EN	SABAP2	N	Pelagic/Ocean/Shore bird
Neotis denhami	Denham's Bustard	VU, NT	SABAP2	N	Last seen in 2008, not predicted up in Screening Tool
Numenius arquata	Eurasian Curlew	NT, NT	SABAP2	N	No River/Waterbody
Oxyura maccoa	Maccoa Duck	NT, EN	SABAP2	N	No River/Waterbody
Phalacrocorax capensis	Cape Cormorant	EN, EN	SABAP2	N	Pelagic/Ocean/Shore bird
Phoeniconaias minor	Lesser Flamingo	NT, NT	SABAP2	N	No River/Waterbody
Phoenicopterus roseus	Greater Flamingo	NT, LC	SABAP2	N	No River/Waterbody
Polemaetus bellicosus	Martial Eagle	EN, EN	SABAP2	N	Last seen in 2009, not predicted by ST
Procellaria aequinoctialis	White-chinned Petrel	VU, VU	SABAP2	N	Pelagic/Ocean/Shore bird
Rostratula benghalensis	Greater Painted-snipe	NT, LC	SABAP2	N	No River/Waterbody
Spheniscus demersus	African Penguin	EN, EN	SABAP2	N	Pelagic/Ocean/Shore bird
Stephanoaetus coronatus	Crowned Eagle	VU, NT	SABAP2	Y	
Stercorarius antarcticus	Brown Skua	EN, LC	SABAP2	N	Pelagic/Ocean/Shore bird
Thalassarche cauta	Shy Albatross	NT, NT	SABAP2	N	Pelagic/Ocean/Shore bird
Tyto capensis	African Grass Owl	VU, LC	SABAP2	Y	
Mammals					
Amblysomus corriae	Fynbos Golden Mole	NT	iNaturalist	Y	
Aonyx capensis	African Clawless Otter	NT	Virtual Museum	N	No River/Waterbody
Chlorotalpa duthieae	Duthie's Golden Mole	VU	Virtual Museum	Y	

Species	Common name	Regional assessment	Source	Assessed (Y/N)	Reason not assessed
Kogia breviceps	Pygmy Sperm Whale	DD	Virtual Museum	N	Marine mammal
Leptailurus serval	Serval	NT	Virtual Museum	Y	
Mesoplodon layardii	Strap-toothed Whale	DD	Virtual Museum	N	Marine mammal
Mirounga leonina	Southern Elephant Seal	NT	Virtual Museum	N	Marine mammal
Panthera pardus	Leopard	VU	Virtual Museum	Y	
Philantomba monticola	Blue Duiker	VU	Virtual Museum	Y	
Physeter macrocephalus	Sperm Whale	VU	Virtual Museum	N	Marine mammal
Sousa plumbea	Indian Humpback Dolphin	EN	Virtual Museum	N	Marine mammal
Invertebrates					
Aloeides pallida littoralis	Knysna Pale Copper	NT	Virtual Museum	Y	
Ecchlorolestes nylephtha	Queen Malachite	NT	Virtual Museum	N	No River/Waterbody
Sarophorus punctatus	-	EN	Virtual Museum	Y	

APPENDIX 2: AVIFAUNA SPECIES OBSERVED DURING SITE VISITS TO ERF 2074

Common name	Scientific name
African Sacred Ibis	*Threskiornis aethiopicus*
Bar-throated Apalis	*Apalis thoracica*
Black-headed Heron	*Ardea melanocephala*
Black-headed Oriole	*Oriolus larvatus*
Cape Robin-Chat	*Cossypha caffra*
Cape White-eye	*Zosterops virens*
Common Starling	*Sturnus vulgaris*
Fork-tailed Drongo	*Dicrurus adsimilis*
Greater Double-collared Sunbird	*Cinnyris afer*
Hadada Ibis	*Bostrychia hagedash*
Helmeted Guineafowl	*Numida meleagris*
Jackal Buzzard	*Buteo rufofuscus*
Karoo Prinia	*Prinia maculosa*
Kelp Gull	*Larus dominicanus*
Laughing Dove	*Spilopelia senegalensis*
Neddicky	*Cisticola fulvicapilla*
Pied Crow	*Corvus albus*
Pin-tailed Whydah	*Vidua macroura*
Red-eyed Dove	*Streptopelia semitorquata*
Red-winged Starling	*Onychognathus morio*
Ring-necked Dove	*Streptopelia capicola*
Sombre Greenbul	*Andropadus importunus*
Southern Fiscal	*Lanius collaris*
Speckled Mousebird	*Colius striatus*
Western Cattle Egret	*Bubulcus ibis*
White-necked Raven	*Corvus albicollis*
White-rumped Swift	*Apus caffer*

APPENDIX 3: MAMMAL SPECIES OBSERVED DURING SITE VISITS TO ERF 2074

Order	Family	Common name	Scientific name	Notes
Carnivora	Canidae	Domestic dog	*Canis familiaris*	Camera trap picture and video
Carnivora	Felidae	Caracal	*Caracal caracal*	Suspected from dung
Carnivora	Herpestidae	Cape Grey Mongoose	*Galerella pulverulenta*	Camera trap picture and video
Rodentia	Bathyergidae	Mole rats	-	Suspected species from mole hills
Rodentia	Hystricidae	Cape Porcupine	*Hystrix africaeaustralis*	Suspected from diggings

APPENDIX 4: INVERTEBRATE SPECIES OBSERVED DURING SITE VISITS TO ERF 2074

Order	Family	Common name	Scientific name
Blattodea	Blaberidae	Cape Mountain Cockroach	*Aptera fusca*
Blattodea	Blattidae	Redhead black velvet cockroach	*Deropeltis erythrocephala*
Blattodea	Ectobiidae	Wood cockroach	-
Coleoptera	Scarabaeidae	Common White-spotted Fruit Chafer	*Mausoleopsis amabilis*
Coleoptera	Scarabaeidae	African Black Beetle	*Heteronychus arator*
Coleoptera	Scarabaeidae	-	-
Diptera	Calliphoridae	Bluebottle	*Chrysoma sp*
Diptera	Muscidae	House fly	*Musca domestica*
Hemiptera	Cicadidae	Karoo Cicadas	*Quintilia sp.*
Hemiptera	Coreidae	Leaf-footed Bug	-
Hymenoptera	Formicidae	Black cocktail ants	*Crematogaster peringueyi*
Hymenoptera	Formicidae	Carpenter ants	*Camponotus sp.*
Lepidoptera	Geometridae	Oblique Peacock	*Chiasmia simplicilinea*
Lepidoptera	Lycaenidae	Bronze butterfly	*Cacyreus sp*
Lepidoptera	Nymphalidae	Acara Acraea	*Acraea acara acara*
Lepidoptera	Nymphalidae	Pearl Emporer	*Cheraxes varanes varanes*
Lepidoptera	Papilionidae	Green banded swallowtail	*Papilio nireus*
Lepidoptera	Pieridae	Common dotted border	*Mylothris agathina*
Mantodea	Mantidae	Delicate mantid	*Miomantis sp.*
Odonata	Libellulidae	Long Skimmer	*Orthetrum trinacria*
Orthoptera	Acrididae	Short horned grasshopper	-

APPENDIX 5: SITE ECOLOGICAL IMPORTANCE METHODS

The site ecological importance (SEI) is defined and calculated as highlighted as per the Species Environmental Assessment Guideline (SANBI 2020), where SEI is a function of biodiversity importance (BI) and receptor resilience (RR) such that: SEI = BI + RR.

BI is further defined as a function of conservation importance (CI) and habitat functional integrity (FI), with BI = CI + FI, and is determined by means of a matrix (Table 9).

SEI can therefore be fully understood as SEI = (CI + FI) + RR, where:

Conservation Importance (CI): The importance of a site for supporting biodiversity features of conservation concern present, e.g., populations of IUCN threatened and Near Threatened species (CR, EN, VU and NT), Rare species, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes. *Most features included in CI are provided by the screening tool but are evaluated at a finer scale following field work at the site.

Functional Integrity (FI): A measure of the ecological condition of the impact receptor (i.e., habitat type) as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.

Receptor Resilience (RR): The intrinsic capacity of the receptor (i.e., habitat type or SCC) to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.

Table 9. Matrix to calculate the biodiversity importance (BI) of a given habitat type identified from desktop and field assessments.

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

The SEI is derived for each habitat type or SCC within a project site by making use of two matrixes: first to calculate the BI (using Table 9) and then the SEI (Table 10).

SEI is therefore specific to the proposed development and can only be compared between alternative layouts for the same proposed development, but not between different developments.

Table 10. Matrix to calculate site ecological importance (SEI) of a given habitat type identified from desktop and field assessments.

Site Ecological Importance		Biodiversity Importance				
		Very High	High	Medium	Low	Very Low
Receptor Resilience	Very High	Very High	Very High	High	Medium	Low
	High	Very High	Very High	High	Medium	Very Low
	Medium	Very High	High	Medium	Low	Very Low
	Low	High	Medium	Low	Very Low	Very Low
	Very Low	Medium	Low	Very Low	Very Low	Very Low

APPENDIX 6: IMPACT ASSESSMENT METHODS

Criteria are ascribed for each predicted impact. These include the intensity (size or degree scale), which also includes the type of impact, being either a positive or negative impact; the duration (temporal scale); and the extent (spatial scale), as well as the probability (likelihood). The methodology is quantitative, whereby professional judgement is used to identify a rating for each criterion based on a seven-point scale (Table 11) and the significance is auto-generated using a spreadsheet through application of the calculations.

For each predicted impact, certain criteria are applied to establish the likely **significance** of the impact, firstly in the case of no mitigation being applied and then with the most effective mitigation measure(s) in place.

These criteria include the **intensity** (size or degree scale), which also includes the **nature** of impact, being either a positive or negative impact; the **duration** (temporal scale); and the **extent** (spatial scale). These numerical ratings are used in an equation whereby the **consequence** of the impact can be calculated. Consequence is calculated as follows:

Consequence = type x (intensity + duration + extent)

To calculate the significance of an impact, the **probability** (or likelihood) of that impact occurring is applied to the consequence.

Significance = consequence x probability

Depending on the numerical result, the impact would fall into a significance category as negligible, minor, moderate or major, and the type would be either positive or negative.

When assessing impacts, broader considerations are also considered. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in (Table 12, Table 13, and Table 14), respectively.

Table 11. Assessment criteria for the evaluation of impacts

Criteria	Numeric Rating	Category	Description
Duration	1	Immediate	Impact will self-remedy immediately
	2	Brief	Impact will not last longer than 1 year
	3	Short term	Impact will last between 1 and 5 years
	4	Medium term	Impact will last between 5 and 10 years
	5	Long term	Impact will last between 10 and 15 years
	6	On-going	Impact will last between 15 and 20 years

Criteria	Numeric Rating	Category	Description
	7	**Permanent**	Impact may be permanent, or in excess of 20 years
Extent	1	**Very limited**	Limited to specific isolated parts of the site
	2	**Limited**	Limited to the site and its immediate surroundings
	3	**Local**	Extending across the site and to nearby settlements
	4	**Municipal area**	Impacts felt at a municipal level
	5	**Regional**	Impacts felt at a regional level
	6	**National**	Impacts felt at a national level
	7	**International**	Impacts felt at an international level
Intensity	1	**Negligible**	Natural and/ or social functions and/ or processes are negligibly altered
	2	**Very low**	Natural and/ or social functions and/ or processes are slightly altered
	3	**Low**	Natural and/ or social functions and/ or processes are somewhat altered
	4	**Moderate**	Natural and/ or social functions and/ or processes are moderately altered
	5	**High**	Natural and/ or social functions and/ or processes are notably altered
	6	**Very high**	Natural and/ or social functions and/ or processes are majorly altered
	7	**Extremely high**	Natural and/ or social functions and/ or processes are severely altered
Probability	1	**Highly unlikely / None**	Expected never to happen
	2	**Rare / improbable**	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
	3	**Unlikely**	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
	4	**Probable**	Has occurred here or elsewhere and could therefore occur
	5	**Likely**	The impact may occur

Criteria	Numeric Rating	Category	Description
	6	**Almost certain / Highly probable**	It is most likely that the impact will occur
	7	**Certain / Definite**	There are sound scientific reasons to expect that the impact will definitely occur

Table 12. Definition of confidence ratings.

Category	Description
Low	Judgement is based on intuition
Medium	Determination is based on common sense and general knowledge
High	Substantive supportive data exists to verify the assessment

Table 13. Definition of reversibility ratings.

Category	Description
Low	The affected environment will not be able to recover from the impact - permanently modified
Medium	The affected environment will only recover from the impact with significant intervention
High	The affected environmental will be able to recover from the impact

Table 14. Definition of irreplaceability ratings.

Category	Description
Low	The resource is not damaged irreparably or is not scarce
Medium	The resource is damaged irreparably but is represented elsewhere

APPENDIX 7: ENVIRONMENTAL COMPLIANCE OFFICER (ECO) CHECKLIST FOR FAUNA MITIGATION MEASURES DURING PRE-CONSTRUCTION, CONSTRUCTION AND THE CONCLUSION OF CONSTRUCTION PHASES OF DEVELOPMENT.

While this checklist is designed to assist ECOs in compliance monitoring, it is a summary only and it is imperative that the details of each mitigation measure are read, fully understood and implemented as described in the text of this report (Methods to be found in the 'Impact reference' column).

Mitigation measure	Impact reference	Checklist
Pre-construction phase		
Dedicated search for Knysna Woodpecker nests and eggs to be conducted in August and October.	See Section 7.6.1; Mitigation measure 1.	
No construction to take place in October and for 6 weeks after discovery of a nest, should Knysna woodpecker nest/s be found.	See Section 7.6.1; Mitigation measure 2.	
No alien plant removal to take place in October.	See Section 7.6.1; Mitigation measure 3.	
Dedicated search for nests and eggs to be conducted prior to clearing of vegetation.	See Section 7.6.4; Mitigation measure 2.	
Botanical Specialist to assess the demarcated footprint of development to search for (and rescue) any butterfly host plant species before construction commences.	See Section 7.6.2; Mitigation measure 2.	
Construction to happen in phases, such that all activities are confined to one area at a time on the property. A plan should be developed and communicated to all staff as to which construction phase is currently underway, and which areas are therefore off-limits until further notice.	See Section 7.6.4; Mitigation measure 1.	
Before a new construction phase commences, a Fauna Specialist must do a walk-through of the demarcated development footprint. No construction may commence until the Fauna Specialist is satisfied that all fauna with limited mobility and/or SCC have been successfully removed from the demarcated footprint area.	See Section 7.6.4; Mitigation measure 3.	
Construction phase:		
Where vegetation will be cleared during construction, erosion control measures need to be put in place downslope of disturbance footprint.	See Section 7.6.2; Mitigation measure 4.	
Topsoil removed during construction, treated with care and stored appropriately for future use and rehabilitation purposes.	See Section 7.6.2; Mitigation measure 5	
Regular staff orientation and information sessions.	See Section 7.6.3; Mitigation measure 1.	
Implement appropriate waste management, storage and disposal to minimize pollution on site and in surrounding natural areas.	See Section 7.6.3; Mitigation measure 2	

Manage concrete, cement, plastering, and painting activities to prevent pollution or contamination of surrounding environment.	See Section 7.6.3; Mitigation measure 3	
All stockpiles of fine textured building materials and soils covered by a geotextile or plastic covering and bunded (e.g. with sandbags) when not in use.	See Section 7.6.3; Mitigation measure 5	
Storage of all small items/building materials in containers or locked away in a designated area to prevent interference from animals.	See Section 7.6.3; Mitigation measure 4	
Construction only to take place during daylight hours to ensure adequate monitoring for fauna and to prevent the use of artificial lighting.	See Section 7.6.3; Mitigation measure 6	
Before construction commences at the start of each day, ECO to do a walk-through of the demarcated footprint to check for (and remove if necessary) all animals with limited mobility. Contact the Fauna Specialist if necessary for assistance/guidance.	See Section 7.6.4; Mitigation measure 2	
If any fauna occur within the development footprint during construction, all activities must be halted, the incident reported to the ECO and the animal(s) removed by ECO before construction can continue.	See Section 7.6.4; Mitigation measure 2.	
Implement and enforce speed limits on all roads. Put up and maintain signs with speed limits and to warn drivers of wildlife at risk of becoming roadkill.	See Section 7.6.4; Mitigation measure 3	
Conclusion of construction phase		
Site to cleared of all waste material, rubble, and debris associated with the construction phase at regular intervals during, and at the conclusion of the construction phase.	See Section 7.7; Mitigation measure 1.	
Revegetate bare soil areas with indigenous plants.	See Section 7.7; Mitigation measure 2.	
Check all drainage structures and remove blockages or pollutants.	See Section 7.7; Mitigation measure 3.	