

TERRESTRIAL BIODIVERSITY SPECIALIST ASSESSMENT

**S24G REPORT FOR CONSTRUCTION OF DWELLING ON
PORTION 118 OF FARM 489, ZWARTE JONGERSFONTEIN,
STILLBAAI, WESTERN CAPE.**



CAPENSIS

In association with

ADAM LABUSCHAGNE

JULY 2026

**REPORT PREPARED FOR
ECO ROUTE ENVIRONMENTAL CONSULTANCY**

NATIONAL LEGISLATION AND REGULATIONS GOVERNING THIS REPORT

This is a 'specialist report' and is compiled in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014, as amended.

APPOINTMENT OF SPECIALIST

Capensis Ecological Consulting (Pty) Ltd was appointed by Eco Route Environmental Consultancy to provide specialist botanical, faunal, and terrestrial biodiversity consulting services for an S24G process concerning the building of a dwelling on Portion 118 of Farm 489 Zwarte Jongersfontein, Stillbaai, Hessequa Municipality, Western Cape.

CONDITIONS RELATING TO THIS REPORT

The content of this report is based on the authors' best scientific and professional knowledge as well as available information. Capensis Ecological Consulting (Pty) Ltd reserves the right to modify the report in any way deemed fit should new, relevant or previously unavailable or undisclosed information become known to the author from on-going research or further work in this field, or pertaining to this investigation.

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THE SPECIALIST

I, Adam Edward Labuschagne, as the appointed specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent:
- other than fair remuneration for work performed/to be performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
- in terms of the remainder of the general requirements for a specialist, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- have disclosed/will disclose, to the applicant all material information that have or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application;
- have ensured/will ensure that information containing all relevant facts in respect of the application was/will be distributed or was/will be made available to interested and affected parties and the public and that participation by interested and affected parties was/will be facilitated in such a manner that all interested and affected parties were/will be provided with a reasonable opportunity to participate and to provide comments;
- have ensured/will ensure that the comments of all interested and affected parties were/will be considered, recorded and submitted to the Department in respect of the application;
- have ensured/will ensure the inclusion of inputs and recommendations from the specialist reports in respect of the application, where relevant;
- have kept/will keep a register of all interested and affected parties that participate/d in the public participation process; and
- am aware that a false declaration is an offence in terms of regulation 48 of the 2014 NEMA EIA Regulations.

Note: The terms of reference of the review specialist must be attached.

Signature of the specialist:



Name of company: Capensis Ecological Consulting (Pty) Ltd

Date: 16 July 2026

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1. INTRODUCTION

Capensis Ecological Consulting has been appointed by Eco Route Environmental Consultancy to provide specialist botanical, faunal, and terrestrial biodiversity consulting services for the S24G process concerning the construction and extension of a dwelling on Portion 118 of Farm 489, Zwarte Jongersfontein, in Stillbaai, Hessequa Municipality, Western Cape.

The dwelling, a single level house with a footprint of 104.328m², is the third such building constructed on the property. The third dwelling was constructed in 2011 and was built without obtaining Environmental Authorisation, thereby triggering the S24G process. Furthermore, approximately ~1450m² of Endangered Hartenbos Dune Thicket was cleared between 2022 and 2024, assumed to be in anticipation of the proposed extension to Building 3. The applicant intends to extend Building 3, which will include the addition of a sunroom, third en-suite bedroom and covered patio (**Figure 1**).

Building 1 is the main dwelling on the property, constructed in 1972 and upgraded in 1978 and 2005, and was built prior to Environmental Impact Assessment legislation. Building 2, the secondary dwelling, was constructed in 1999 and pre-dates the 2010 Listing Notices (did not require Environmental Authorisation). The location and extent of the three buildings are shown in **Figure 2**.

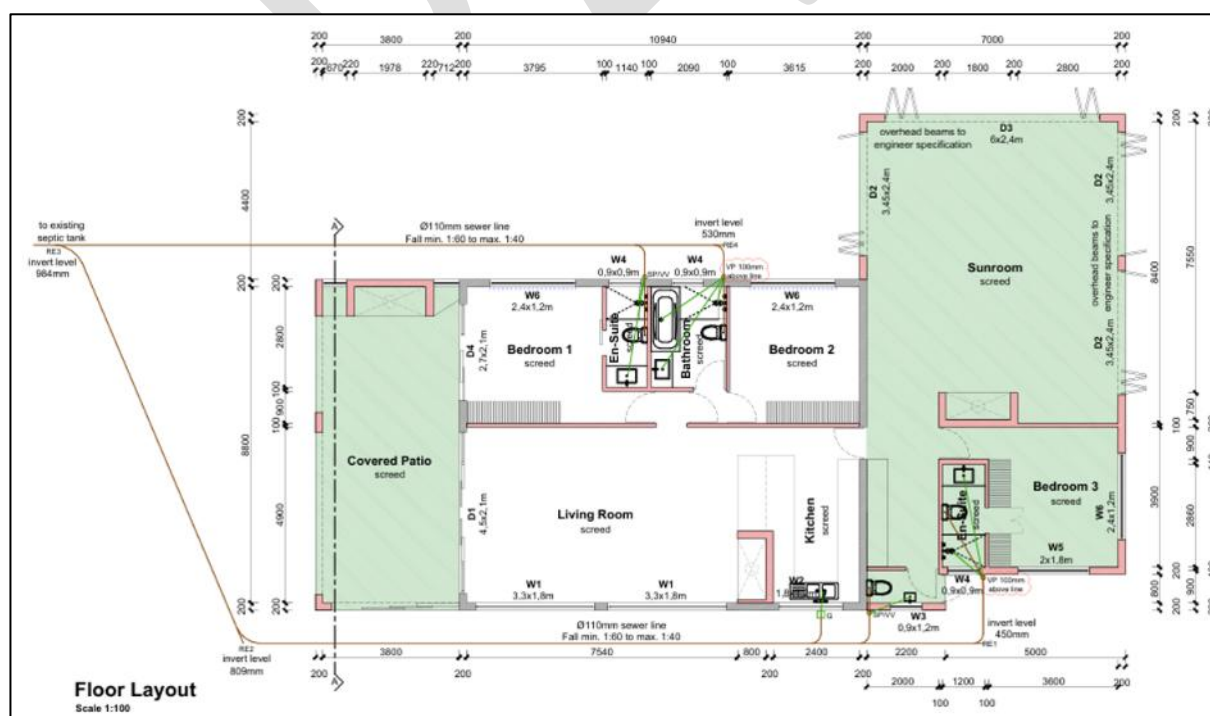


Figure 1. Floor plan for the proposed development (extension to building 3) provided by EcoRoute Environmental Consultants. New additions are shaded in green.



Figure 2. Location of the three existing buildings on Portion 118 of Farm 489, including the 100m high water mark and the boundaries of the property. Image provided by EcoRoute Environmental Consultants.



Figure 3. (Left) Photograph showing Building 3 and the cleared area in which the applicant intends to extend the dwelling; (Right) Buildings 2 & 3, with part of Building 1 visible in the bottom right corner.

2. TERMS OF REFERENCE FOR IMPACT ASSESSMENTS

2.1. GENERAL

Ecological assessments must follow guidelines set out in the following documents:

- Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for Involving Biodiversity Specialists in the EIA Process (Brownlie, 2005);
- Ecosystem Guidelines for Environmental Assessment in the Western Cape (Cadman et al., 2016);
- Procedures for the assessment and minimum criteria for reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and 44 of the National Environmental Management Act (Government Gazette, 2020);
- Protocol for the Assessment and Reporting of Environmental Impacts on Terrestrial Biodiversity (Government Gazette 43855, 2020).
- Amendment to the Protocols for the Specialist Assessment Minimum Report Content Requirements for Environmental Impacts and terrestrial Animal and Plant Species in terms of Sections 24(5)a and (h) and 44 of the National Environmental Management Act, 1998. and Reporting of Environmental Impacts on Terrestrial Biodiversity (Government Gazette 49028, 2023);
- Species Environmental Assessment Guideline. Guidelines for the implementation of the Terrestrial Fauna and Terrestrial Flora Species Protocols for environmental impact assessments in South Africa (SANBI, 2022).

2.2. SPECIFIC

- Identify and describe biodiversity patterns at community and ecosystem level (main vegetation type, plant communities in the vicinity and threatened/vulnerable ecosystems), at species level (threatened Red List species, presence of alien species) and in terms of significant landscape features;
- Identify ecological drivers and ecological processes, including any likely presence of important faunal species;
- Assess the local and regional importance of the vegetation communities and plant species within the affected areas based on the relevant biodiversity plans, bioregional planning documents and Environmental Management Frameworks.
- Determine the implications that the proposed project has for the relevant fine-scale biodiversity plan (in this case the, 2023 Western Cape Biodiversity Spatial Plan).

- Describe the sensitivity of the site and its environs and map these resources.
- Identify any areas not suitable for construction activities (No-Go Areas) and related buffers that should be observed.
- Describe the direct, indirect and cumulative impacts (both before and after mitigation) and provide an assessment of the significance of the impacts.
- Describe the measures to mitigate any impacts, and an indication of whether or not the measures (if implemented) would change the significance of the impact.
- On the basis of the impact assessment findings provide an authorisation opinion regarding whether or not the proposed activity should proceed.

3. PROTOCOL FOR DETERMINING LEVEL OF REPORTING

Prior to the commencement of the survey, the sensitivity of the site was assessed using the Department of Forestry, Fisheries and the Environment's (DFFE) Screening Tool (<https://screening.environment.gov.za/screeningtool/>). The results of the screening tool indicate that the site has areas deemed to have a **Very High**, **High**, and **Medium** sensitivity for Terrestrial Biodiversity, Animal species, and Plant species themes respectively (**Figure 4**). Should this level of sensitivity be confirmed during the site assessment, a **Terrestrial Biodiversity Impact Assessment** is to be submitted as part of the application for Environmental Authorisation (EA).

The study area was found to contain areas of Low, Medium, and High Sensitivity from an Animal species, Plant species, and Terrestrial Biodiversity perspective. The presence of at least three Plant Species of Conservation Concern (*Agathosma muirii* (**VU**), *Cullumia carlinoides* (**NT**), & *Leucospermum praecox* (**VU**)) necessitates a Botanical Specialist Assessment. Furthermore, the presence of habitat likely to support faunal SCC also necessitates a Faunal Specialist Assessment.

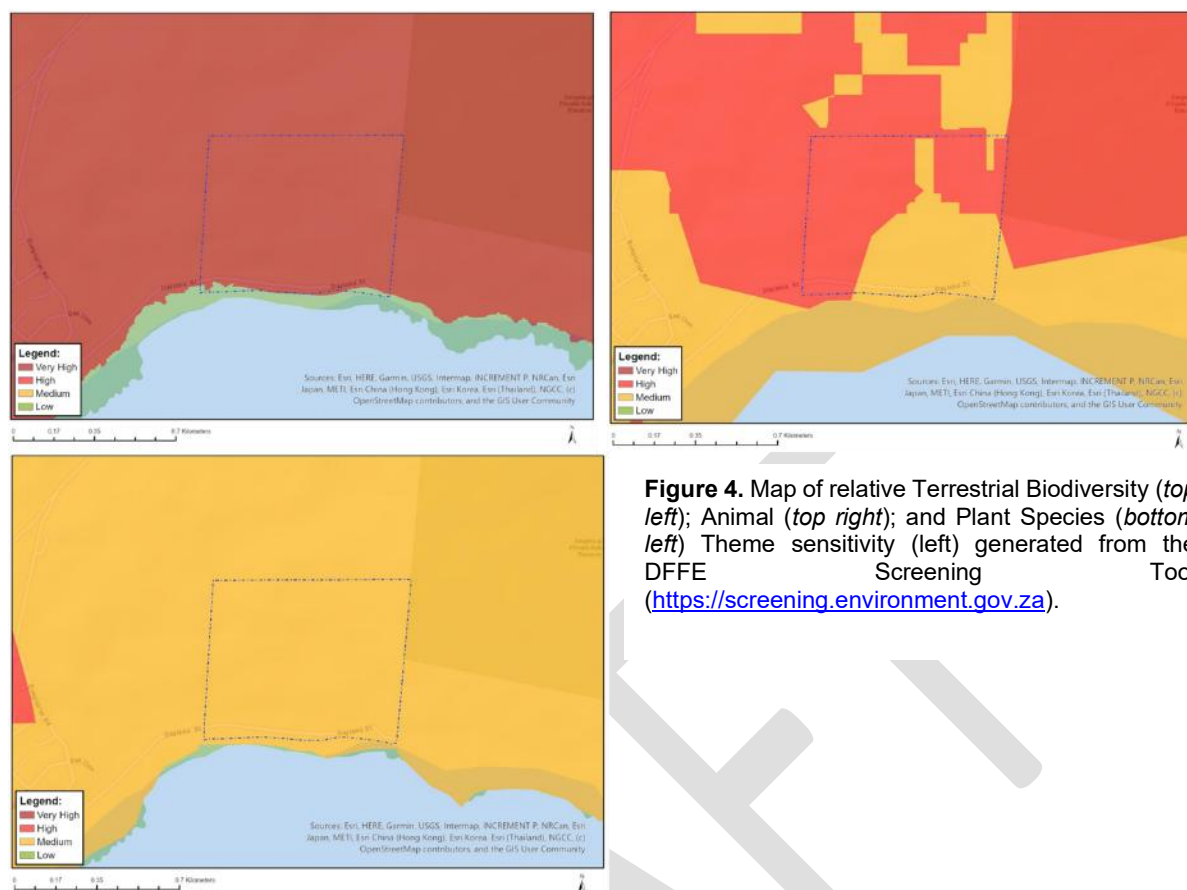


Figure 4. Map of relative Terrestrial Biodiversity (*top left*); Animal (*top right*); and Plant Species (*bottom left*) Theme sensitivity (left) generated from the DFFE Screening Tool (<https://screening.environment.gov.za>).

4. METHODOLOGY, LIMITATIONS AND ASSUMPTIONS

The study area was visited on the 15th of May 2026. The site was surveyed on foot, with sample waypoint positions obtained using a Garmin GPS eTrex 10. Photographs were taken and using a Nikon D5300 and synced with GPS track.

The following sources have been used to inform this study:

- **Site boundaries:** The property boundaries have been downloaded from the Cape Farm Mapper Website (<https://gis.elsenburg.com/apps/cfm/>). Location of proposed development footprints and proposed building plans were provided by the client.
- **Ecosystem threat status:** Informed by (1) The Revised National List of Ecosystems that are Threatened and in Need of Protection (Government Gazette, 2022) Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes, Government Notice No. 320 (Gazetted 20 March 2020).
- Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species, Government Notice No. 1150 (Gazetted 30 October 2020).
- South African National Biodiversity Institute (SANBI). 2022. Species Environmental Assessment Guideline. Guidelines for the implementation of the terrestrial fauna and

terrestrial flora species protocols for environmental impact assessments in South Africa. South African National Biodiversity Institute, Pretoria. Version 3.1 2023.

- *Vegetation Types*: Based on *The Vegetation of South Africa, Lesotho and Swaziland* (VEGMAP) (Mucina & Rutherford, 2006). The South African National Biodiversity Institute (SANBI) has updated the mapping for the VEGMAP (2024) and these shapefiles have been used.
- *Biodiversity planning*: Biodiversity planning: Western Cape Biodiversity Spatial Plan (WCBSP) 2023 (CapeNature 2024). Ground-truthing was undertaken to verify habitat condition and the accuracy of the WCBSP.
- *Important animal species*: The presence or absence of threatened (i.e. species of conservation concern) and ecologically important species informs the ecological condition and sensitivity of the site. Presence/absence data for the area around the site was drawn from Global Biodiversity Information Facility (GBIF; <https://www.gbif.org/>) and iNaturalist (<https://www.inaturalist.org/>). The latest conservation status of species is checked on The IUCN Red List of Threatened Species (<http://www.iucnlist.org>); Red List of Mammals of South Africa, Lesotho and Swaziland (Child et al., 2016); The Regional Red Data Book of Birds (<https://www.birdlife.org.za/red-data-book/>) (Lee et al., 2025); Red List of South Africa Species (for reptiles, amphibians and invertebrates) (www.speciesstatus.sanbi.org); National Environmental Management: Biodiversity Act (Act No. 10 of 2004); Threatened or Protected Species List (Notice 389 of 2013).
- *Important plant species*: Conservation status was verified using the Red List of South African Plants (Raimondo et al. 2009; continuously updated at <http://redlist.sanbi.org>). A sensitive-species list was generated using the National Web-Based Environmental Screening Tool (screening.environment.gov.za). Certain species locations may not be disclosed in terms of the requirements of the Screening Tool. Relevant observations from iNaturalist (www.inaturalist.org) in and around the study area were also considered.

The site visit was conducted during early winter. From a botanical perspective the timing of the survey is considered sub-optimal as many geophytic and annual plant species flower during spring. Some bulbs species were visible and identifiable e.g. *Lachenalia punctata*, however many other geophytic species are not identifiable to species level either due to lack of floral structures or absence of above ground material due to winter dormancy. Despite the site visit occurring during winter, the year-round precipitation experienced in the Southern Cape region somewhat ameliorates this seasonal limitation and thus is not considered to have had a highly significant effect on botanical sampling efforts. From a faunal perspective, the season is considered sub-optimal for avifauna as well as several lepidopteran species such as the Coastal Blue *Lepidochrysops littoralis*, which has a flight period during the summer months. However, the

season is unlikely to have significant impact on other faunal species likely to be present at the site.

5. STUDY AREA

5.1. LOCALITY

The study area is located on the southern cape coastline, on the eastern edge of the village of Jongensfontein, west of Stillbaai, Hessequa Municipality (**Figures 4 & 5**). The surrounding landscape is characterized by low, vegetated coastal dunes, sloping from north to south (**Figure 6**). Broadly speaking the surrounding coastline is undeveloped, with the exception of Jongensfontein, with the landscape becoming more agricultural to the north. The property on which the proposed development (cottage) is situated is extremely close to the shore (~65m from the high-water mark).



Figure 5. (*top row*) The southern boundary of the property directly abuts the Indian ocean coastline, with only an access road separating the boundary from the shoreline (*bottom*) The untransformed vegetated dunes north of the development, with the village of Jongensfontein visible to the west.

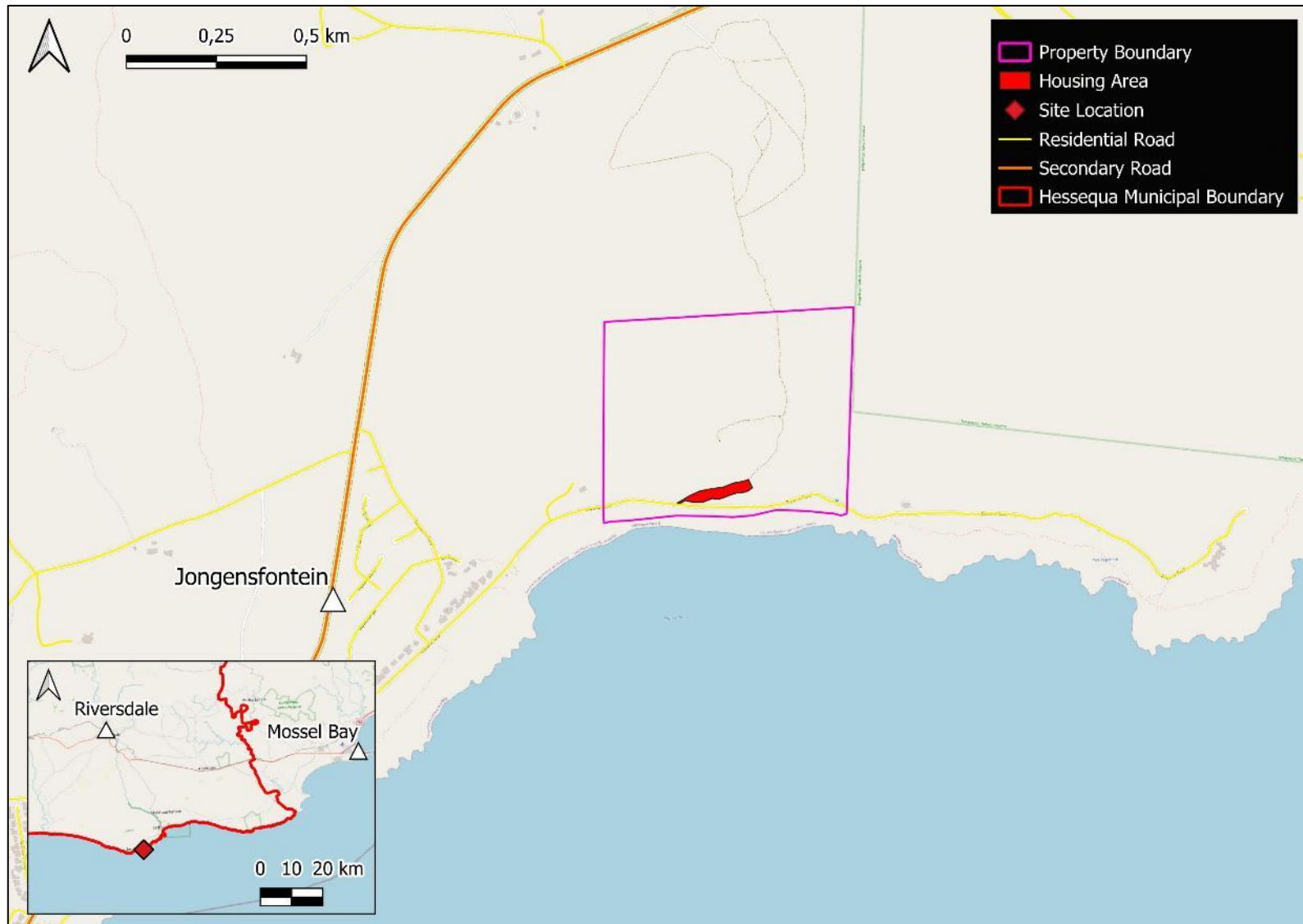


Figure 6. The location of the study area within the context of the Hessequa Municipality and greater Garden Route/Southern Cape Area (including closest towns, roads, and rivers), overlaid on an Open Topo World™ Map.

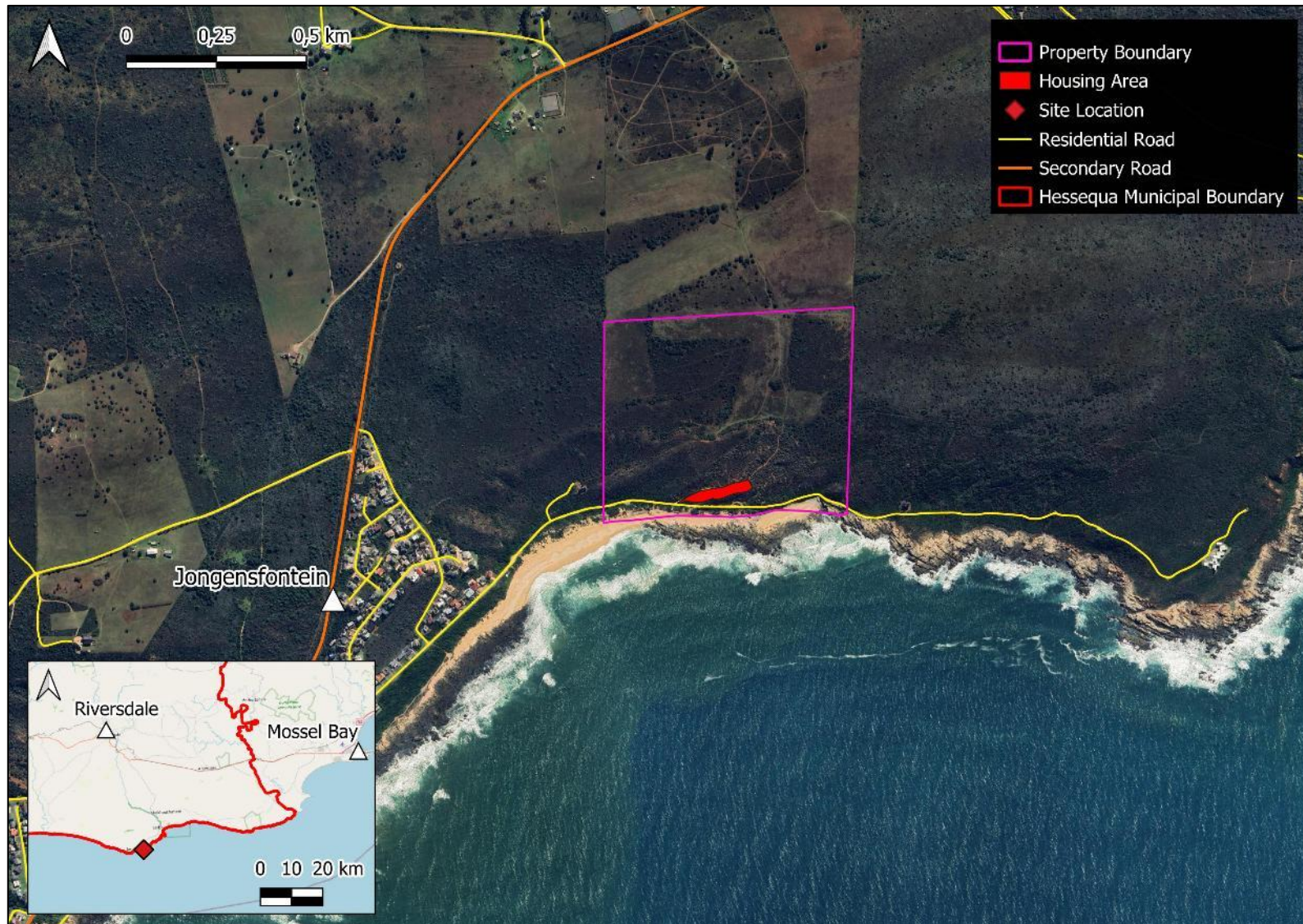


Figure 7. A Google Earth TM satellite image of the study area within the context of the Hessequa Municipality and greater Garden Route/Southern Cape Area (including closest towns, roads, and rivers).

5.2. LANDSCAPE AND GEOLOGY

Broadly speaking, the landscape of the Southern Cape consists of a coastal platform comprised of bedrock paleozoic sediments belonging to the Bokkeveld group (early to middle Devonian marine shelf sediments) that are overlain by cenozoic Bredasdorp Group deposits, primarily those of the Wankoe Formation (**Figure 8**) which form a calcarenite layer (Malan, 1990; Helm *et al.*, 2025). At the site the soils consist of more recent quaternary aeolian deposits, resulting in a pale-red sandy substrate (**Figure 9, bottom**). It should be noted that the survey only includes the southern third of the property; it is likely that the soils further north at the site contain more lime and are more characteristic of soils derived from the Wankoe Formation sediments that dominate the landscape. Along the coastline there are outcrops of quarzitic sandstone belonging to the Table Mountain group (**Figure 9, top**). The Land type at the site is classified as Fc52, with lime generally present in the entire landscape.

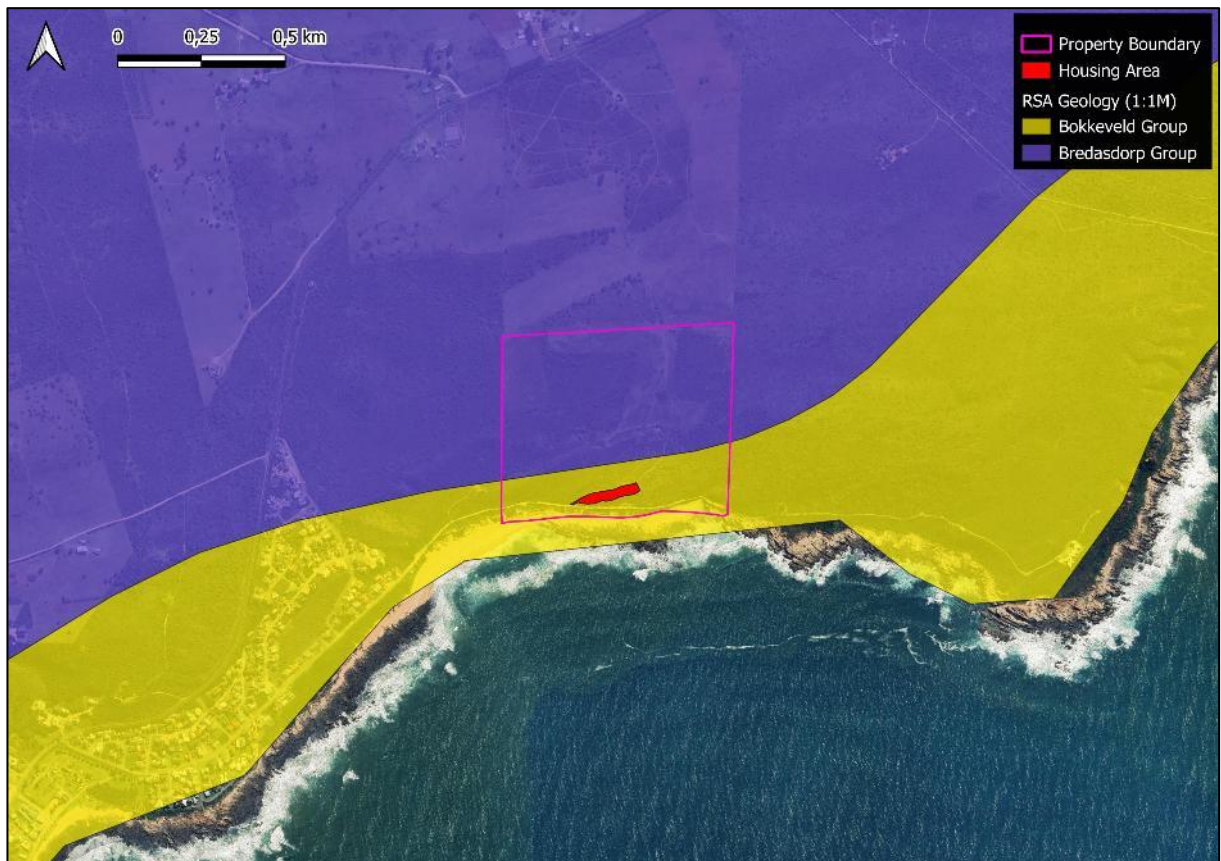


Figure 8. Geological Map (Council of Geoscience, Geology classification (1:1M)) of the study area overlaid on a Google EarthTM Satellite image.



Figure 9. (Top) Shoreline showing exposed quartzitic sandstones belonging to Table Mountain Group; (Bottom left) Pale-red sandy substrate present across the site.

The study area is situated on the Southern Cape coastline and includes primary vegetated dunes, a fixed dune field, and part of the inland coastal plain. The site is south facing (~36 ha) (**Figure 10**), gently sloping from a highpoint of ~90m asl in the north-east corner down to ~ 5m asl along the southern boundary along the coast, with the flattest portion of the site being the area on which the cottages have been built.

Non-seasonal rainfall dominates the region, with MAP between 261 mm and 666 mm (~428mm at Jongensfontein) with a frost occurrence of approximately 3 days per year. The mean monthly maximum is 25.19 °C in February and the mean monthly minimum is 6.47 °C in July. The climate of the area is described as a Cold Semi-Arid climate (*Bsk*) (Beck *et al.*, 2018), characterised by hot dry summers and cold winters.

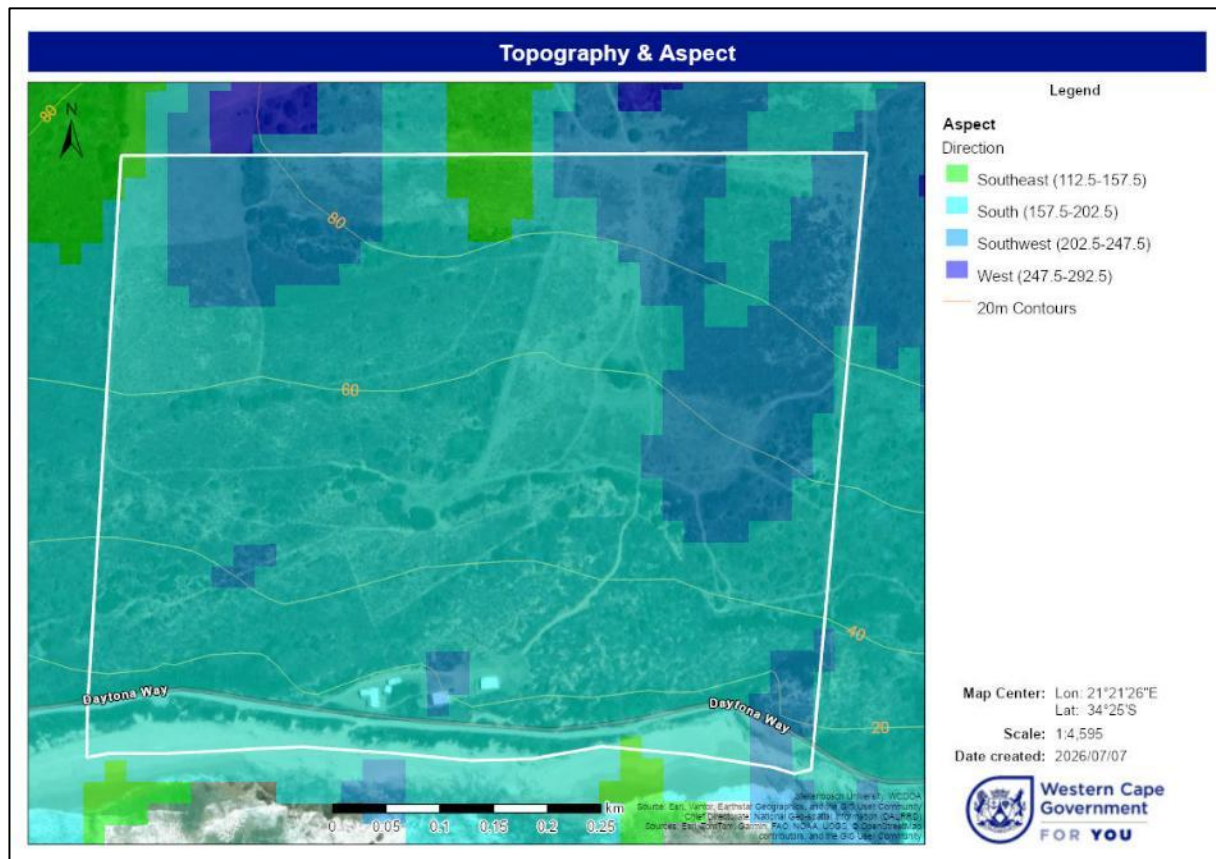


Figure 10. Topographical map of the site. Created using Cape Farm Mapper (<https://gis.elsenburg.com/apps/cfm/>)

6. OVERVIEW OF VEGETATION, PLANT SPECIES, ANIMAL SPECIES, AND CONSERVATION PLANS

6.1 SATELLITE IMAGERY

Prior to the initial site visit, satellite imagery was examined to determine the presence of general habitat features and to assess possible disturbance regimes that would impact the presence of plant and animal species in the study area. Historic aerial photography obtained from the Department of Land and Rural Development CD:NGI portal (<https://ngigeoportal.dlrrd.gov.za/cdngiportal/>) (Figure 11) indicate that the area in which the three dwellings are currently placed was historically a mobile dune field (~ 4 ha). This small dune field is formed by the deposition of beach sand by strong onshore winds from the South West. This small dune field remains fairly consistent throughout the last 50 years of the 20th century, with limited colonisation by dune thicket vegetation until the latter part of the 20th century.

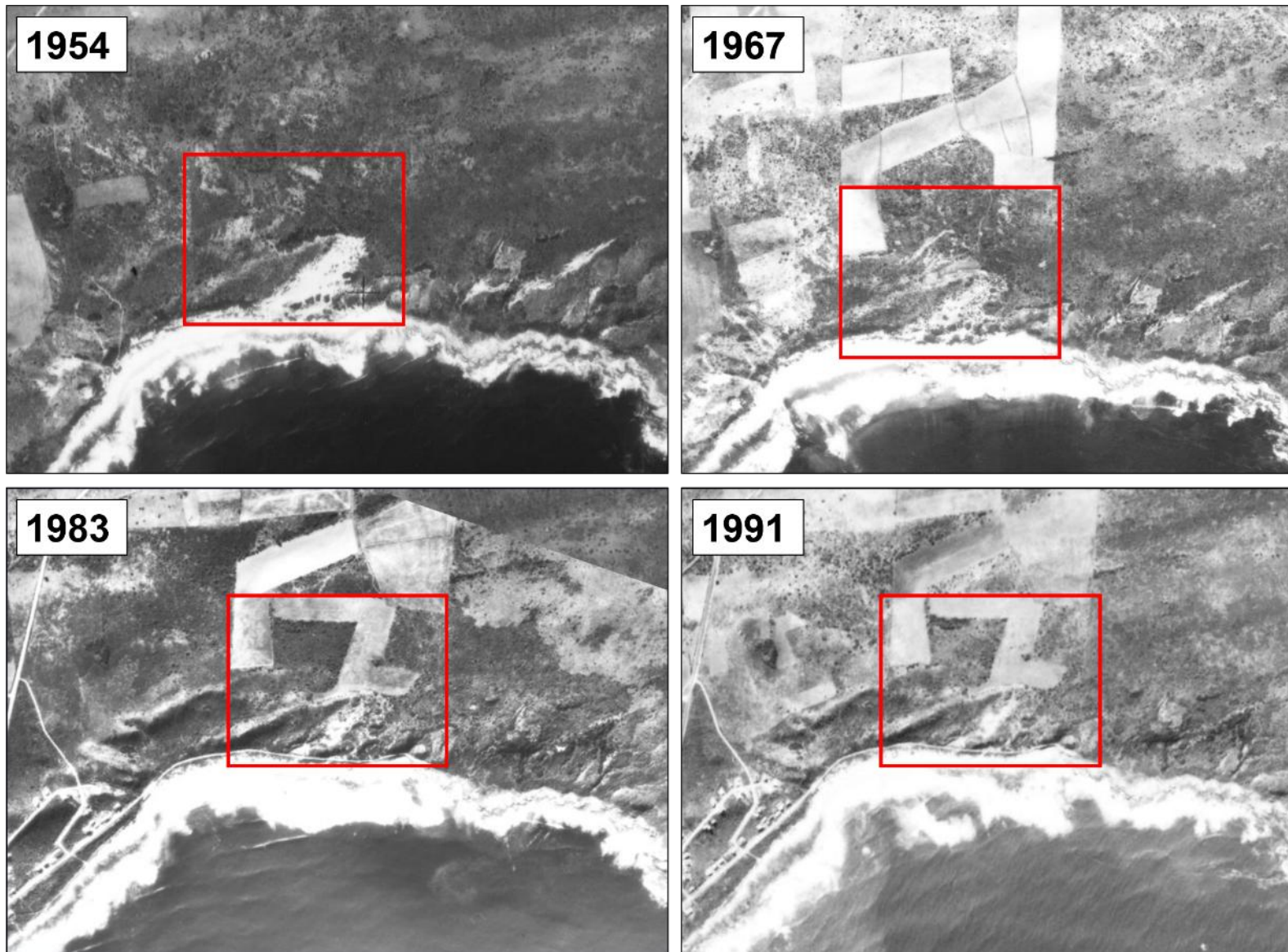


Figure 11. Historic aerial photography Imagery of Portion 118 of Farm 489, Zwarte Jongersfontein from 1954 (*top left*) to 1991 (*bottom right*). Aerial imagery obtained from Department of Land Reform and Rural Development CD:NGI portal <https://ngigeoportal.dlrrd.gov.za/cdngiportal/> . Approximate farm boundary is outlined in red.

According to the property owner the dune field around the main dwelling was stabilized through the deposition of *Dekriet* bundles i.e. (*Thamnochortus insignis*) to trap wind blown sand. This process facilitated the growth of dune thicket vegetation visible around Building 1 and 2 in 2004 (**Figure 12, Top**).

The site on which Building 3 is currently located was cleared between November 2006 and May 2011 (**Figure 12, Bottom row**), with the building having been erected by August 2011. It does not appear that any vegetation was cleared between August 2011 (with the exception of small thicket clumps directly adjacent to building 3) and October 2022. Sometime between October 2022 and March 2024, the vegetation surrounding Building 3 was cleared to make space for the extension of Building 3 (**Figure 13**). Based on these satellite images approximately 1450m² of Hartenbos Dune Thicket vegetation was cleared between 2022 and 2024.



Figure 12. (Top) Satellite image of the site from 2004 showing two cottages (Building 1 & 2); (Bottom left) Satellite image from May 2011 showing cleared area ready to receive Building three; (Bottom right) Satellite image from August 2011 showing the recently constructed Building three.



Figure 13. (Top) Satellite image from 2022 showing all three buildings; (Bottom) Satellite image from 2024 showing clearance of approximately 780m² of Hartenbos Dune Thicket vegetation.

6.2. VEGETATION TYPE

6.2.1 National Vegetation Type

According to *The Vegetation of South Africa, Lesotho and Swaziland* (VEGMAP, 2024) (Rebelo *et al.* 2006 in Mucina & Rutherford, 2006) two vegetation types are found at the site. The majority of the site is mapped as containing Hartenbos Dune Thicket, with a small band of Cape Seashore Vegetation along the coast (**Figure 14**). Hartenbos Dune Thicket occurs along the coast from the Duiwenhoks River Mouth eastward to Glentana near the Great Brak River. Likewise, Cape Seashore Vegetation occurs as a narrow band of vegetation along the temperate coastlines of the Atlantic and Indian Oceans, stretching from the Olifants River mouth to East London. The landscape and the vegetation structure of both vegetation types are described by Rebelo *et al.* (in Mucina and Rutherford, 2006):

Hartenbos Dune Thicket	<i>"A mosaic of low (1-3 m) thicket, occurring in small bush clumps dominated by small trees and woody shrubs, in a mosaic of low (1-2 m) asteraceous fynbos. Thicket clumps are best developed in fire-protected dune slacks, and the fynbos shrubland occurs on upper dune slopes and crests. Succulent karroid elements (Aloe ferox, A. arborescens, Eriocephalus africanus) occur along bands of mudstone and shale."</i>
Cape Seashore Vegetation	<i>"Beaches, coastal dunes, dune slacks and coastal cliffs of open grassy, herbaceous and to some extent also dwarf-shrubby (sometimes succulent) vegetation, often dominated by a single pioneer species. Various plant communities reflect the age of the substrate and natural disturbance regime (moving dunes), distance from the upper tidal mark and the exposure of dune slopes (leeward versus seaward)."</i>

Ecological drivers:

The key ecological drivers in **Strandveld, Dune Thicket & Dune Fynbos** ecosystems according to Cadman et al. (2016) include the following:

- Substrate: Strandveld and Dune Fynbos occur in sandy soils, with distance from the sea a significant variable (the further away from the sea the more acidic the substrate, with vegetation changing from Strandveld to Sand Fynbos).
- Rainfall: Dune Thicket is associated with spring-dominant bimodal precipitation, with rainfall varying across the coast, generally increasing from west to east. The relative abundance of rain can support climax Dune Thicket which resembles forest in sheltered, fire-protected locations. On the West Coast, precipitation and species diversity decreases from south to north.
- Faunal behaviour: High faunal densities are key to maintaining pollination and seed dispersal. Thicket has the highest proportion of fruit-producing plants for any vegetation type in the Fynbos Biome, making dispersal of berries and seed by frugivorous birds a key "driver" of this system. Additionally, large herbivores likely helped maintain the thicket-fynbos mosaic through disturbance. Dune Thicket also acts as a key corridor for the movement of birds and mammals along the coastal strip.
- Fire: Fire is important to maintain a mosaic pattern of vegetation with fynbos; however, this is much more important in mesic eastern vegetation types (West Coast habitats rarely have enough fuel to support large scale fires). In Dune Thicket and Dune Fynbos mosaics, Dune Thicket occupies fire-protected sites (such as calcrete outcrops or the northern base of dunes) while the more combustible Dune Fynbos is often associated with fire-prone, usually wetter, locations. In some areas, such as Goukamma Dune Fynbos, there are rare plant endemics associated with the Dune Fynbos that will disappear if the area is not periodically burnt. Left unburnt, Dune Fynbos is eventually replaced with Dune Thicket.
- Water: In Dune Thicket, dune slack wetlands contribute to overall diversity of the system; water drainage is therefore an important driver of structure.

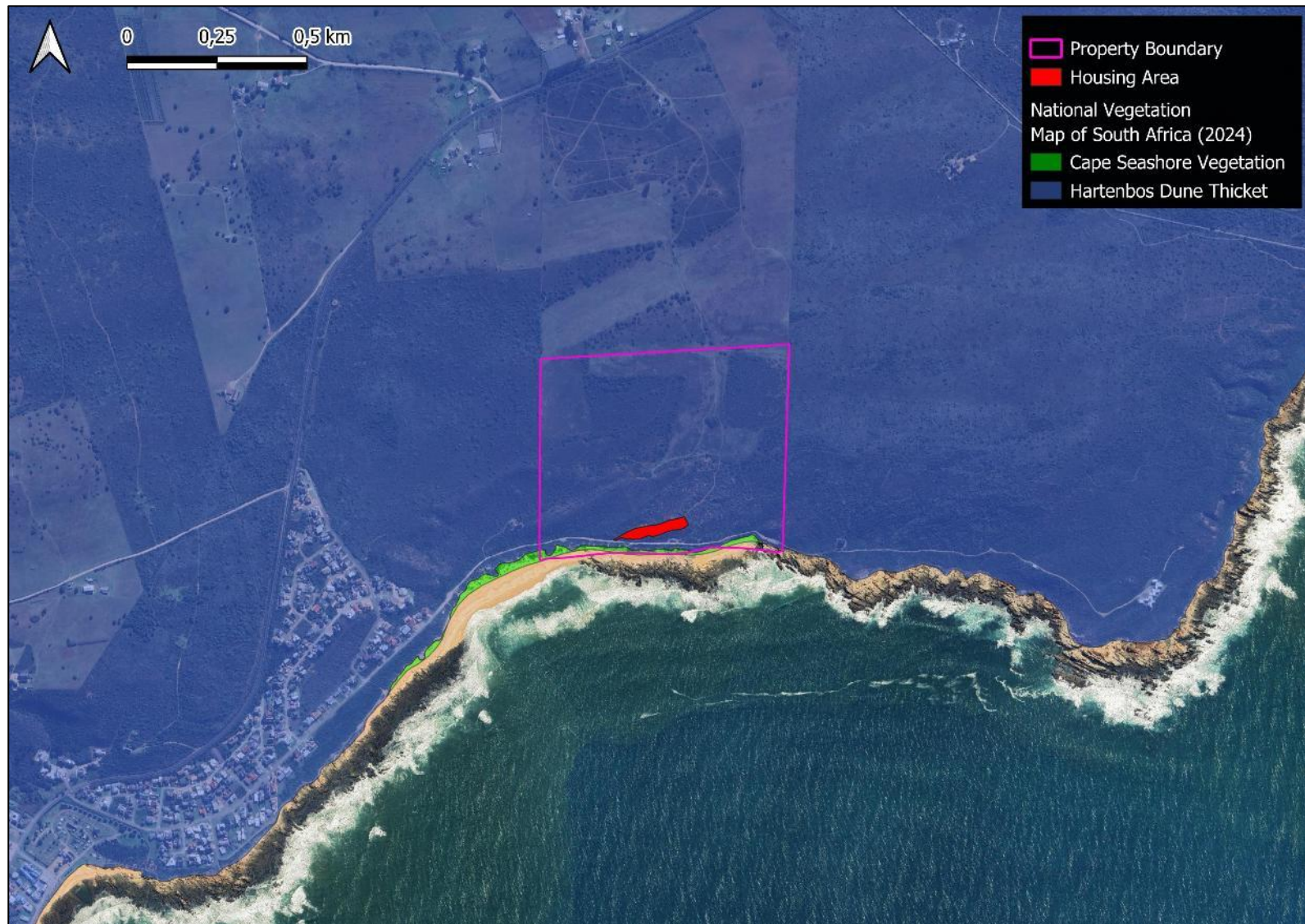


Figure 14. The study area in relation to the National Vegetation Map of Southern Africa (SANBI, 2024) overlaid on a Google Earth™ satellite image.

6.2.2 Riversdale Vegetation Map (2007)

The vegetation within the study area was mapped at a fine scale by Vlok, & de Villiers (2007) in the C.A.P.E. Fine-scale Mapping Project. According to this map two vegetation units are found within the study area, namely Gouritz Dune Thicket and Ystervarkpunt Forest-Thicket-Fynbos (**Figure 15**).

Gouritz Dune Thicket: “Thicket habitat is dominated by dense stands of often spiny shrubs and trees such as *Azima tetracantha*, *Capparis sepiaria*, *Carissa bispinosa*, *Cassine peragua*, *Euclea racemosa*, *Gymnosporia capitata*, *Lycium cinereum*, *Mystroxydon aethiopicum*, *Nylandtia spinosa*, *Pterocelastrus tricuspidatus*, *Putterlickia pyracantha*, *Rhus crenata*, *Rhus pterota*, *Sideroxydon inerme* and *Tarchonanthus camphoratus* abundant and characteristic. Lianas (e.g. *Asparagus aethiopicus*, *Cynanchum ellipticum*, *Rhoicissus digitata*, *Sarcostemma viminalis* and *Solanum quadrangulare*) are usually abundant. Succulents are usually also abundant (e.g. *Cotyledon orbiculata*, *Crassula nudicaulis*, *Euphorbia caput-medusae*, *Euphorbia clandestina*, etc.), with *Aloe arborescens* quite distinct. In more open areas the vegetation is less spiny and has species such as *Chrysanthemoides monilifera*, *Metalasia muricata*, *Passerina rigida*, *Salvia africana-lutea* and *Zygophyllum morgesana* abundant. Localized endemic species to the thicket is probably limited to *Carpobrotus murii*. Gouritz Dune Thicket occurs mostly as dense stands of woody species, sometimes even with *Euclea undulata* present and then approaching the Valley Thicket Dune habitat type, but diagnostic is the presence of *Aloe arborescens* and absence of *Aloe ferox*.” (Vlok & de Villiers, 2007).

Ystervarkpunt Forest-Thicket-Fynbos: “thicket bush-clumps more extensive, with *Restios* such as *Thamnochortus insignis* much more abundant as well as uncommon species such as *Athanasia cochlearifolia* and *Leucadendron galpinii* in the matrix fynbos. The latter species indicate that the matrix vegetation forms part of the Sandplain Fynbos that is typical of the Albertinia-Riversdale region. *Hermannia muirii* is a threatened species present that may be endemic to this unit. (Vlok & de Villiers, 2007).

The ecosystem threat status of the vegetation types included in the Riversdale Vegetation Map (Vlok & de Villiers, 2007) are derived from the C.A.P.E. Fine-Scale Systematic Conservation Planning Assessment: Technical Report (Pence, 2008). A summary table of the equivalent ecosystem threat status for each vegetation type mapped at the site can be found in **Table 1**.

Table 1. Ecosystem threat status for the FSP vegetation units derived from available information sources.

Vegetation type	National Equivalent Ecosystem Status
Gouritz Dune Thicket	LEAST CONCERN
Ystervarkpunt Forest-Thicket-Fynbos	LEAST CONCERN

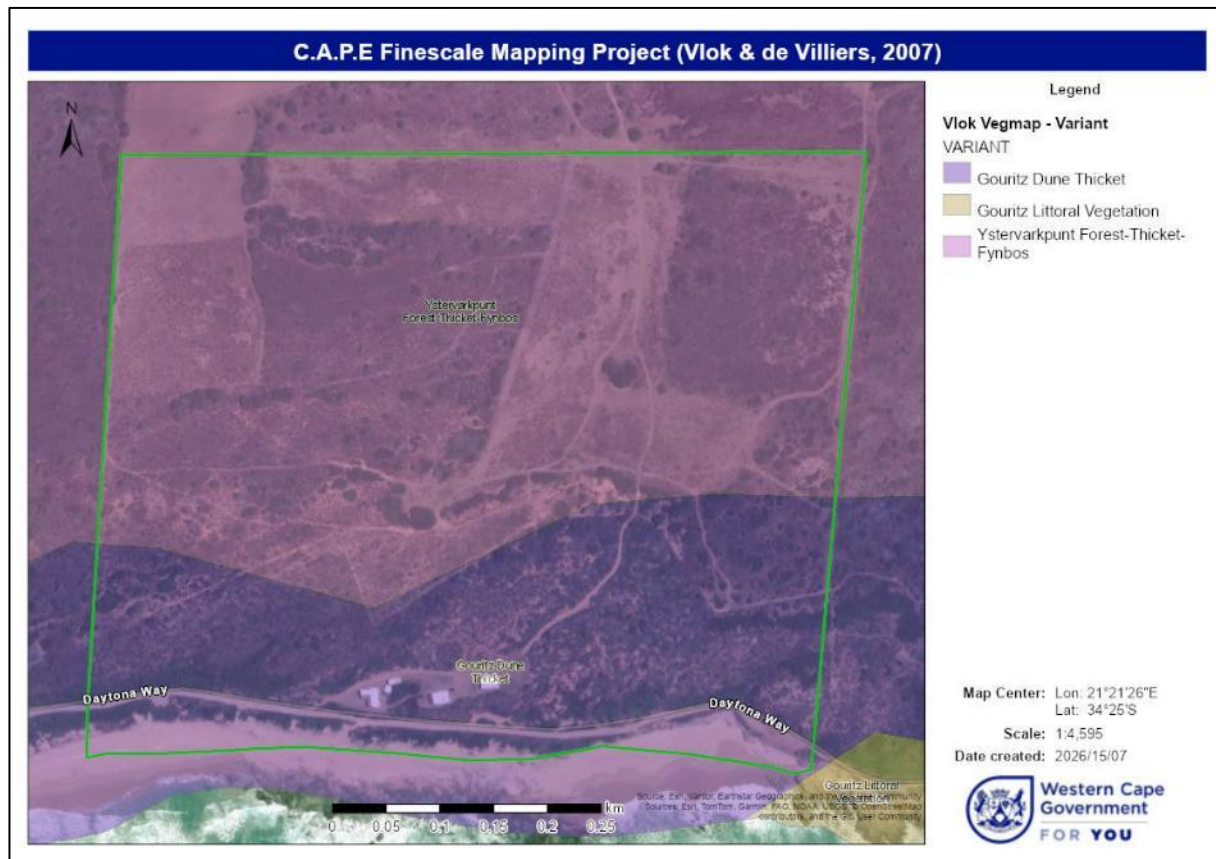


Figure 15. The study area in relation to the Riversdale Vegetation Map, part of the C.A.P.E Fine-scale Vegetation Project.

Created using Cape Farm Mapper (<https://gis.elsenburg.com/apps/cfm/>)

6.3 NATIONAL ECOSYSTEM THREAT STATUS

Ecosystem threat status is informed by *The Revised National List of Ecosystems that are Threatened and Need of Protection* (RNLETNP) (Government Gazette, 2022). Species information is not provided in the RNLETNP and is thus taken from *The National List of Ecosystems that are Threatened and in Need of Protection* (Government Gazette, 2011). **Table 2** provides a summary of (a) the ecosystem status and reasons, (b) the remaining percentage of the ecosystem and the original (national) extent, (c) the proportion of ecosystem target protected, and (d) the national conservation target. The majority of the ERF on which the developments are located is mapped as containing remnant Hartenbos Dune Thicket (**Figure 16**). The site visit broadly confirms the presence of remnant vegetation; however, the fine scale delineation appears to be inaccurate, especially in the northern section of the ERF.

Table 2. Ecosystem threat status derived from available information sources

	The Revised National List of Ecosystems that are Threatened and in Need of Protection
Hartenbos Dune Thicket	
Ecosystem threat status	ENDANGERED
Reason	B (Rate of loss of natural habitat)
Remaining % of ecosystem	79% of 65069 (ha)
Conservation target	19%
Protected area	5.7 %
NOTES	B1(iii) - Hartenbos Dune Thicket is narrowly distributed with evidence of ongoing biotic disruption from invasive species. Scope: Global & national status (global extent assessed)
Cape Sea Shore Vegetation	
Ecosystem threat status	LEAST CONCERN
Reason	(No Criteria for LC)
Remaining % of ecosystem	98% of 21989 (ha)
Conservation target	20 %
Protected area	62.3 %
NOTES	Cape Seashore Vegetation has experienced low rates of natural habitat loss and biotic disruptions, placing this ecosystem at low risk of collapse
National Biodiversity Assessment (SANBI, 2018) Ecosystem Threats	Cape Seashore Vegetation has experienced low rates of natural habitat loss and biotic disruptions, placing this ecosystem at low risk of collapse. Scope: Global & national status (global extent assessed).

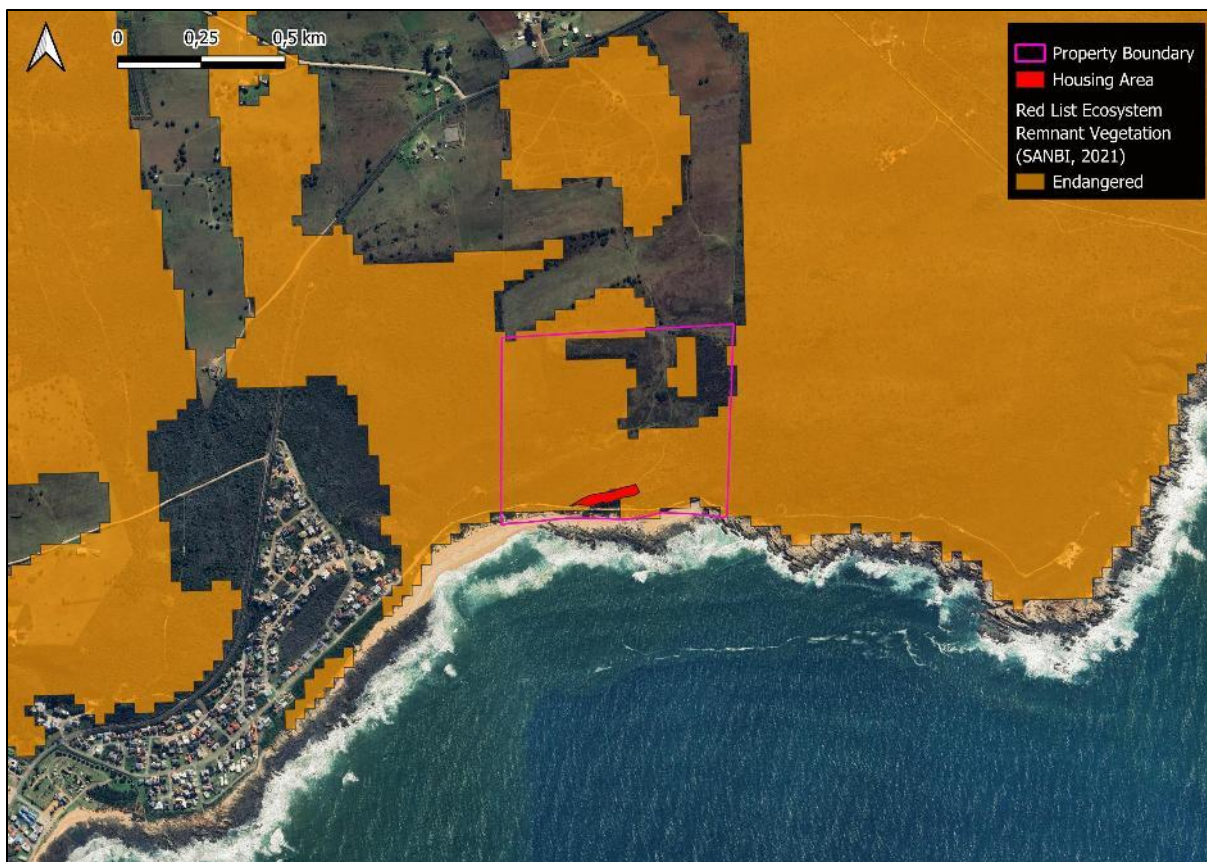


Figure 16. Red List Ecosystem Remnant Vegetation (SANBI, 2021) mapped in the vicinity of the site, overlaid on a Google Earth™ satellite image.

6.4 CONSERVATION AND BIODIVERSITY PLANS

6.4.1 Western Cape Biodiversity Spatial Plan (2025)

The Western Cape Biodiversity Spatial Plan (WCBSP)(CapeNature, 2024) is linked to the Western Cape Biodiversity Act 6 of 2021 (WCBA), which “identifies a province-wide network of biodiversity priority areas defined as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs)” designed to meet conservation objectives. The WCBSP includes a map composed of multiple layers that “provides the relevant spatial data crucial to advise planning decisions that will result in both sustainable development and the conservation of important biodiversity and ecological infrastructure.” The management objectives for each map category is provided in **Table**

3. Ground-truthing of the assigned CBA sites are described in the vegetation and discussion section below.

The majority of the property is classified as CBA 1 or CBA 2 (**Figure 17**). Areas designated as Critical Biodiversity Area 1 are defined as “*Areas in natural condition that are required to meet biodiversity targets for species, ecosystems, or ecological processes and infrastructure*” and should be managed to maintain natural or near natural state with no further habitat loss. Areas designated as Critical Biodiversity Area 2 are defined as “*Areas in a degraded or secondary condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure*” and should be maintained in a natural or near natural state, with degraded areas prioritised for rehabilitation. The three buildings are situated within areas mapped as CBA 1 and CBA 2 (**Figure 17**). The recent clearance of vegetation (between October 2022 – April 2024) involved the removal of vegetation classified as CBA 1. The site also borders a protected area to the east; Jongensgat Private Nature Reserve.



Figure 17. The study area in relation to the Western Cape Biodiversity Spatial Plan (CapeNature, 2025) overlaid on a Google Earth™ satellite image.

Table 3. Summary of 2023 WCBSP map categories and their meanings.

Map Category	Definition	Desired Management Objective	Sub-Category
Protected Area	Areas proclaimed as protected areas in terms of national or provincial legislation.	Must be kept in a natural state, with a management plan focused on maintaining or improving the state of biodiversity. A biodiversity benchmark.	
Critical Biodiversity Area 1	Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.	Maintain in a natural or near- natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity- sensitive land-uses are appropriate.	River Estuary Wetland Forest Terrestrial
Critical Biodiversity Area 2	Areas in a degraded or secondary condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.	Maintain in a functional, natural, or near-natural state, with no further loss of natural habitat. These areas should be rehabilitated.	Degraded
Ecological Support Area 1	Areas that are not essential for meeting biodiversity targets but play an important role in supporting the functioning of PAs or CBAs and are often vital for delivering ecosystem services.	Maintain in a functional, near- natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised. Maintaining and improving protection of areas identified as ESA Water Source and Water Recharge important to secure water resources, particularly in Strategic Water Source Areas (SWSAs).	Foredune Forest Climate Adaptation Corridor Coastal Resource Protection Endangered Ecosystem River Estuary Wetland Watercourse Protection Water Source Protection Water Recharge Protection
Ecological Support Area 2	Areas not essential for meeting biodiversity targets but have an important role in supporting the functioning of PAs or CBAs. Often vital for delivering ecosystem services.	Restore and/or manage to minimise impact on ecological infrastructure functioning; especially soil and water-related service.	Restore from Non-Natural
Ecological Support Area: Species Specific Overlay	Terrestrial No Natural Remaining areas that provide a critical support function to a threatened or protected species e.g. cultivated land associated with nesting/roosting sites.	Maintain current land-use or rehabilitate to functional natural area.	Species Specific
Other Natural Areas: Natural to Near-Natural	Areas that have not been identified as a priority in the systematic biodiversity plan but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. They are still an important part of the natural ecosystem.	Minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning. Offers flexibility in permissible land-uses, but authorisation required for high-impact land-uses.	Natural to Near-Natural Degraded
No Natural Remaining	Areas that have been modified by human activity to the extent that they are no longer natural nor contribute to biodiversity targets. These areas may still provide limited biodiversity and ecological infrastructure functions, even if not currently prioritised for conservation action.	Manage in a biodiversity- sensitive manner, aiming to maximise ecological functionality. Offers the most flexibility regarding potential land-uses, but authorization/s may still be required for high-impact land-uses.	No Natural Remaining

6.4.2 The South African Protected Areas Database (SAPAD, 2025) and The South African Conservation Areas Database (SACAD, 2025).

The South African Protected Areas Database (SAPAD) contains spatial data for the conservation estate of South Africa, including both formally protected areas and areas that have less formal protection. SAPAD is updated on a continuous basis and forms the basis for the Register of Protected Areas which is a legislative requirement under the National Environmental Management: Protected Areas Act, Act 57 of 2003. The latest iteration of this database is from Q4 2025, published in April 2026 (<http://egis.environment.gov.za/>). The site is located within the buffer zone of the Gouritz Cluster Biosphere Reserve (GCBR) (**Figure 18**). The GCBR is South Africa's largest Biosphere reserve and was proclaimed by UNESCO in 2015. Stretching over 3 million hectares (including a core zone of 608 844 ha, and a buffer area of 1 966 595 ha) it straddles the Western and Eastern Cape Provinces and includes three biodiversity hotspots; Fynbos, Succulent Karoo and Maputoland-Tongoland-Albany regions (<https://gouritz.com/about-gouritz-cluster-biosphere-reserve/>). The site does not fall within any protected areas however it does border the Jongensgat Private Nature Reserve which is located on the eastern boundary of the property (**Figure 18**).

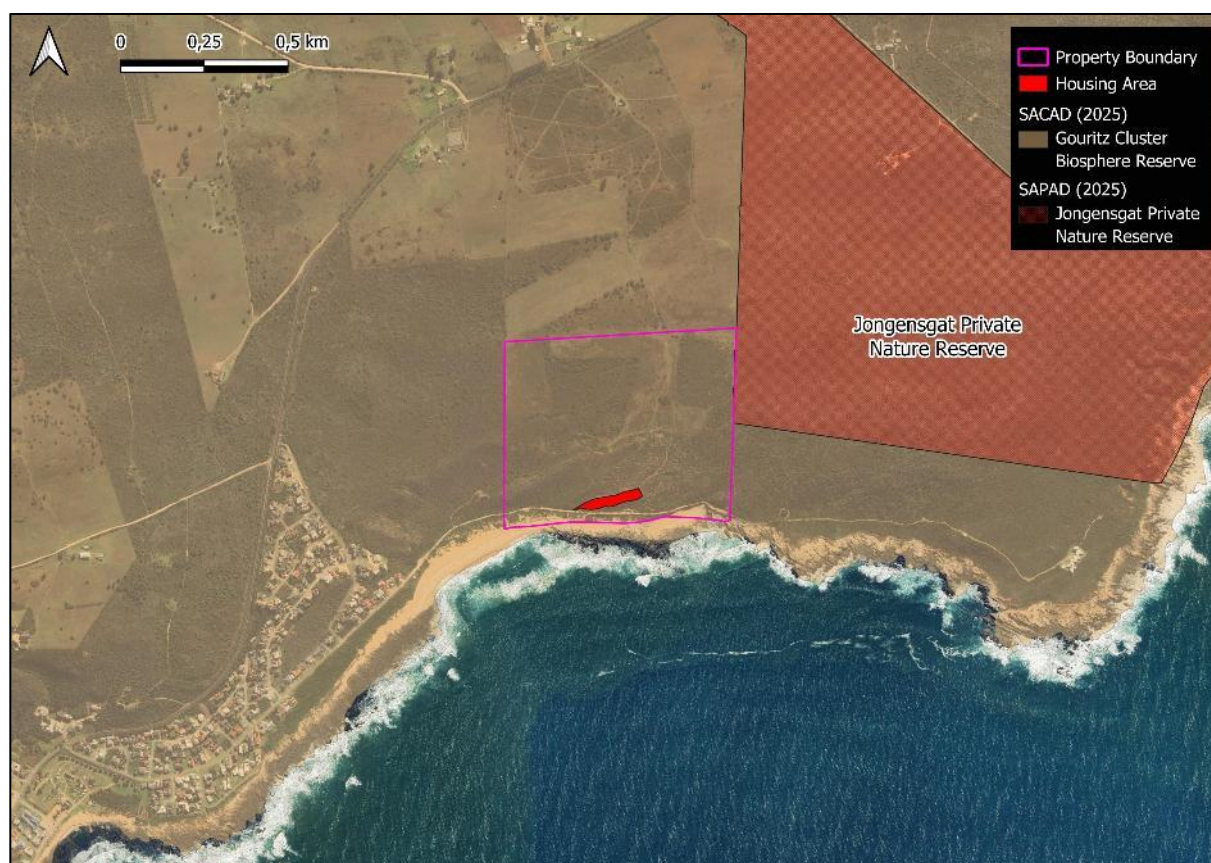


Figure 18. The study area in relation to areas included the South African Protected Areas and Conservation Areas Database (SAPAD, 2025; SACAD 2025), overlaid on a Google Earth™ satellite image.

6.5 WATER STRATEGIC WATER SOURCE AREAS, WETLANDS, & RIVERS.

6.5.1 Strategic Water Source Areas (SWSAs)

Strategic Water Source Areas (SWSAs) surface water refer to the 10% of South Africa's land area that provides a disproportionate 50% of the country's water runoff. Understanding where these SWSAs are is crucial to planning and management of water resources, including the ecosystems that support water quality and quantity. The 2021 spatial layer for SWSAs for surface water is a fine-scale delineation of the SWSAs, intended to support the integration of SWSAs in a range of catchment- and local-level planning, management, and regulatory processes. Portion 118/489 Zwarte Jongersfontein is not located within any SWSAs.

6.5.2 Wetlands (NFEPA)

The Inland Aquatic Assessment, part of the 2018 National Biodiversity Assessment (SANBI, 2018) described and assessed wetland ecosystem types and habitat condition on a national scale. The delineations are based largely on satellite imagery and do not include historic wetlands lost through drainage, ploughing and concreting. It should be noted that the assessment likely contains gaps as remote sensing does not detect all wetlands. The site has been mapped as containing a small seep wetland situated in the dune slack behind the primary vegetated dune (**Figure 19**).



Figure 19. Map of wetland habitats described in the National Wetland Map conducted as part of the National Biodiversity Assessment (SANBI, 2018), overlaid on a Google Earth TM satellite image. Site outlined in pink.

6.6. PROTECTED AREA EXPANSION STRATEGY

The National Protected Area Expansion Strategy for South Africa 2018 (DEA, 2018), hereafter referred to as the NPAES, outlines the need for protected area expansion across South Africa. The strategy identifies priority areas and the mechanisms through which such expansion can be achieved. The main motivation for protected area expansion according to the NPAES is that “South Africa’s protected area network currently falls far short of representing all ecosystems and maintaining ecological processes”. No part of the site is located in an area that has been delineated as part of the NPAES, with the closest such area being located 8km away along the banks of the Goukou River.

6.7 POTENTIAL ANIMAL SPECIES OF CONSERVATION CONCERN

Prior to the initial site visit, a list of potential animal species was compiled for the area around the site. A 10km boundary, with the site as the centre point, was used to extract presence/absence data from iNaturalist, whilst a 25km boundary was used to extract presence/absence data from the IUCN Red List of Threatened Species (see Section 4. Methodology Limitations, & Assumptions). The results from these sources were amalgamated and can be found in Appendix 1. Potential SCC for the study area were extracted from this species list and are displayed in **Table 4**, accompanied by a summary of each species’ habitat preference, threat status and likelihood of occurrence within the study area. A total of forty-six (46) animal species of conservation concern were flagged as potentially occurring at the site. This list includes SCC identified by the DFFE screening tool report.

Probability of occurrence at the site or in the surrounding landscape is based on the following parameters:

- **Habitat requirements:** Most threatened species have very specific habitat requirements (**Table 4**). The presence of these habitats in and adjacent to the site was evaluated.
- **Habitat status:** The status or ecological condition of available habitat was assessed. Often a high level of habitat degradation will negate the potential presence of sensitive species.
- **Habitat linkage:** Dispersal and movement between natural areas for breeding and feeding are important population-level processes. Habitat connectivity to surrounding natural habitat and corridors was evaluated to determine the likely persistence of species of conservation concern.

The probability of occurrence is presented in the following categories:

- Recorded: Any species of conservation concern observed/documented during the field visit;
- Probable: The species is likely to occur on the site due to suitable habitat and resources being present on the site;
- Possible: The species may occur on the site, or move through the site (in the case of mobile species), due to potential habitat and/or resources;
- Unlikely: the species will not likely occur on the site due to lack of suitable habitat and resources, or significant differences in its Area of Occupancy (AOO) compared to its Extent of Occurrence (EOO).

Local or National threat statuses are derived from *The 2025 Red Data Book of Birds of South Africa, Lesotho and Eswatini* (Lee et al., 2025), Child et al., (2016) for mammals, and Mercenero et al., (2013) for butterflies. International threat statuses were obtained from the IUCN Red List of Threatened Species (<https://www.iucnredlist.org/>).

Table 4. Summary of animal SCC threat status, habitat requirements, and likelihood of occurrence. Note that species highlighted in yellow were identified by the screening tool.

Class	Species	Common Name	Threat Status		Habitat Requirement	Habitat Present	Likelihood of Occurrence
			International	Local			
Aves	<i>Spheniscus demersus</i>	African Penguin	Critically Endangered	Endangered	Forage for small pelagic fish in inshore waters, usually within 15 km of the coast. Can travel up to 50 km from colonies while breeding. Breeding colonies are usually flat and sandy with varying degrees of vegetation cover although birds can also breed at steep, rocky sites. Nearest breeding colony in De Hoop.	No	Highly Unlikely. Some observations nearby along the coast but the site does not represent good breeding habitat and if they are to occur, will almost certainly be found along the beach.
			Decreasing	Decreasing			
Aves	<i>Pluvialis squatarola</i>	Grey Plover	Vulnerable	Near Threatened	Inhabit intertidal mudflats, bays, estuaries, salt marshes and beaches. While migrating, they may also visit inland lakes, pools, and grasslands, although most birds tend to migrate directly to coastal areas after breeding	Yes	Probable, however the developments are unlikely to have any impact as this species utilises the intertidal zone.
			Decreasing	Decreasing			
Aves	<i>Phoeniconaias minor</i>	Lesser Flamingo	Near Threatened	Vulnerable	Open, eutrophic, shallow saline and alkaline wetlands, such as salt pans and coastal lagoons and estuaries	No	Highly Unlikely. Site lacks suitable habitat.
			Decreasing	Decreasing			
Aves	<i>Oxyura maccoa</i>	Maccoa Duck	Near Threatened	Near Threatened	During the breeding season prefers small, shallow and nutrient-rich inland freshwater lakes. May use man-made infrastructure such as farm dams and sewage farms. Outside of the breeding season, the species will make use of larger sites with deeper water.	No	Highly Unlikely. Site lacks suitable habitat.
			Decreasing	Decreasing			
Aves	<i>Numenius arquata</i>	Eurasian Curlew	Near Threatened	Near Threatened	Large, relatively undisturbed estuaries or lagoons and associated mudflats.	No	Highly Unlikely. Site lacks suitable habitat.
			Decreasing	Decreasing			
Aves	<i>Calidris ferruginea</i>	Curlew Sandpiper	Vulnerable	Vulnerable	Found at coastal lagoons, estuaries, and sheltered shorelines with abundant stranded algae. Inland, it inhabits wetlands with muddy edges and areas where water levels are receding. The scattered inland distribution of the species suggests that it is less selective in wetland choice compared to other migratory species	No	Highly Unlikely. Site lacks suitable habitat.
			Decreasing	Decreasing			
Aves	<i>Neotis ludwigii</i>	Ludwig's Bustard	Endangered	Endangered	Found in the flat, open, semi-arid shrublands of the Succulent Karoo, Nama Karoo and Namib. Range extends to south cape coast	No	Highly Unlikely. Site lacks suitable habitat.
			Decreasing	Decreasing			
Aves	<i>Afrotis afra</i>	Southern Black Bustard	Vulnerable	Vulnerable	Found in Renosterveld and Strandveld, and in the Nama and Succulent Karoo biomes. Distinct preference for natural habitats over transformed land.	Yes	Unlikely. Suitable habitat is present but no nearby observations.
			Decreasing	Decreasing			
Aves	<i>Anthropoides paradiseus</i>	Blue Crane	Vulnerable	Vulnerable	Open grassland habitats and ecotones between the Grassland and Nama Karoo biomes. Common in agricultural landscapes, especially in Western Cape. Normally roost in wetlands or dams.	No	Highly Unlikely. Site lacks suitable habitat.
			Decreasing	Decreasing			
Aves	<i>Buteo trizonatus</i>	Forest Buzzard	Near Threatened	Near Threatened	Afromontane forests and plantations of alien trees, mostly Pinus species, but also Eucalyptus species	No	Highly Unlikely. Site lacks suitable habitat.

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			Stable	Stable			
Aves	<i>Bradypterus sylvaticus</i>	Knysna Warbler	Near Threatened	Vulnerable	Edges of Afro-temperate forests and in thick, tangled vegetation along the banks of watercourses or drainage lines in forest patches in the Fynbos Biome.	No	Highly Unlikely. Site lacks suitable habitat.
			Decreasing	Decreasing			
Aves	<i>Arenaria interpres</i>	Ruddy Turnstone	Near Threatened	Near Threatened	Reside almost exclusively in coastal habitats in the region during the non-breeding season and are usually found on stony, rocky, and kelp-covered shores, estuarine mud- and sand flats. Also occasionally seen on sandy beaches too	Yes	Possible. Species is restricted to intertidal zone and is unlikely to be affected by the developments at the site.
			Decreasing	Decreasing			
Aves	<i>Circus maurus</i>	Black Harrier	Endangered	Endangered	Favours lowland Fynbos, Strandveld, and Renosterveld but will also utilise mountain Fynbos. Will forage over agricultural landscapes.	Yes	Possible. Suitable habitat and nearby observation
			Decreasing	Decreasing			
Aves	<i>Calidris canutus</i>	Red Knot	Near Threatened	Near Threatened	Prefers sheltered bays and coastal lagoons, favouring extensive mud and sand flats. Habitat preference is linked to their specialised diet of molluscs, especially bivalves	No	Highly Unlikely. Site lacks suitable habitat – bay is exposed to strong prevailing winds.
			Decreasing	Decreasing			
Aves	<i>Phalacrocorax neglectus</i>	Bank Cormorant	Endangered	Endangered	Strictly a marine species, occurring mostly within the kelp zone. It breeds in close proximity to the sea on rocks/walls/artificial platforms.	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Decreasing	Decreasing			
Aves	<i>Phalacrocorax capensis</i>	Cape Cormorant	Endangered	Endangered	Found on the coast and in inshore waters (can be found offshore <50 km from the coast) foraging small pelagic fish. It breeds on islands/islets, but also on rocky outcrops of the mainland (incl. cliffs or boulders).	No	Highly Unlikely. Site lacks suitable habitat.
			Decreasing	Stable			
Aves	<i>Neotis denhami</i>	Denham's Bustard	Near Threatened	Vulnerable	Inhabits grasslands, grassy Acacia-studded dunes, fairly dense shrubland, light woodland, farmland, crops, dried marsh and arid scrub plains, high rainfall sour grassveld, planted pastures and cereal croplands in fynbos in South Africa.	No	Highly Unlikely. Site lacks suitable habitat.
			Decreasing	Decreasing			
Aves	<i>Ardenna carneipes</i>	Flesh-footed Shearwater	Near Threatened	Near Threatened	Marine and pelagic occurring mainly in waters over the continental shelf but occasionally recorded inshore. Fairly common in east coast, getting rarer towards the west.	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Decreasing	Decreasing			
Aves	<i>Ardenna grisea</i>	Sooty Shearwater	Near Threatened	Near Threatened	Breeds on subantarctic islands. Species is found throughout South African waters, primarily along the west and south coasts, but is uncommon off KwaZulu-Natal.	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Decreasing	Decreasing			
Aves	<i>Diomedea amsterdamensis</i>	Amsterdam Albatross	Endangered	Endangered	Breed in French Southern Territories (Amsterdam Island). Non-breeding visitor to South African waters	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Increasing	Increasing			
Aves	<i>Diomedea dabbenena</i>	Tristan Albatross	Critically Endangered	Critically Endangered	Breeds almost exclusively on Gough Island and occasionally on Inaccessible Island. species is a non-breeding visitor to South African waters, typically between latitudes 30°S and 45°S	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Decreasing	Decreasing			
Aves	<i>Diomedea exulans</i>	Snowy Albatross	Vulnerable	Vulnerable	Breeds on Marion Islands (and other Southern Ocean islands). Circumpolar foraging distribution, feeding on pelagic species.	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Decreasing	Decreasing			

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Aves	<i>Morus capensis</i>	Cape Gannet	Endangered	Vulnerable	Endemic to Namibia and South Africa, where they breed on just six islands. Closest breeding location is Algoa Bay. Range widely over the continental shelf while foraging for small pelagic fish	No	Highly Unlikely. Species forages primarily on continental shelf waters.
			Decreasing	Decreasing			
Aves	<i>Phoebetria fusca</i>	Sooty Albatross	Endangered	Endangered	Breeds on Tristan da Cunha Islands. Forages on pelagic fish species	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Decreasing	Decreasing			
Aves	<i>Procellaria aequinoctialis</i>	White-chinned Petrel	Vulnerable	Vulnerable	Breeds on Subantarctic Islands. Ranges widely, feeding in South African Continental waters.	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Decreasing	Decreasing			
Aves	<i>Procellaria cinerea</i>	Grey Petrel	Near Threatened	Endangered	Circumpolar distribution in subantarctic and subtropical waters (between 49°S and 18°S). Breeds on subantarctic islands. Rare non-breeding vagrant to South African continental waters.	No	Unlikely. Whilst appropriate seepage habitat is present, the mean annual precipitation is too low to support this species (estimated 829 mm at the site)
			Decreasing	Decreasing			
Aves	<i>Procellaria conspicillata</i>	Spectacled Petrel	Vulnerable	Near Threatened	Found in oceanic waters up to the continental shelf break, this species often follows trawlers and other fishing vessels. Breeds only on Tristan da Cunha	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Decreasing	Decreasing			
Aves	<i>Thalassarche carteri</i>	Indian Yellow-nosed Albatross	Endangered	Endangered	Breeds on islands in the sub-Antarctic West Indian ocean. Common off the south and east coasts of South Africa, but rarely venture north of 20°S	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Unknown	Unknown			
Aves	<i>Thalassarche cauta</i>	Shy Albatross	Near Threatened	Near Threatened	Breeds on islands off Tasmania. Only immature and juvenile birds disperse to forage in South African waters. Found off Eastern and Western Cape from August - September.	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Stable	Decreasing			
Aves	<i>Thalassarche chlororhynchus</i>	Atlantic Yellow-nosed Albatross	Endangered	Endangered	Endemic to the South Atlantic Ocean. Breeds on Tristan da Cunha, Gough Island, and Nightingale Island. During non-breeding season, individuals disperse widely across the southern Atlantic, including coastal waters of South Africa.	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Decreasing	Decreasing			
Aves	<i>Thalassarche salvini</i>	Salvin's Albatross	Vulnerable	Vulnerable	Breeds on islands near New Zealand and resident in French Southern Territories. Feeds on cephalopods in oceanic waters.	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Unknown	Unknown			
Aves	<i>Thalassarche steadi</i>	White-capped Albatross	Near Threatened	Near Threatened	Breeds on islands in Auckland Island group. Juvenile birds are thought to range in South African continental waters.	No	Highly Unlikely. Species is an oceanic non-breeding species.
			Stable	Decreasing			
Aves	<i>Circus ranivorus</i>	Marsh Harrier	Least Concern	Endangered	The species breeds in wetlands, foraging primarily over reeds and lake margins	No	Highly Unlikely. Site lacks suitable habitat.
			Decreasing	Decreasing			
Aves	<i>Crithagra leucoptera</i>	Protea Canary	Near Threatened	Near Threatened	Confined to the Protea rich mountain fynbos and semi-arid scrub of Western and Eastern Cape. Also found in tall streamside bush, forested ravines and gorges, mountain valleys, small forest patches and in semi-arid vegetation at the edge of the Karoo. Diet consists of seeds from a variety of Fynbos species, mostly Protea and Restio.	No	Highly Unlikely. Site lacks suitable habitat.
			Decreasing	Decreasing			

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Aves	<i>Geocolaptes olivaceus</i>	Ground Woodpecker	Near Threatened Decreasing	Near Threatened Decreasing	Inhabits rocky and boulder-strewn slopes in mountainous regions, usually found in treeless grasslands and shrublands. It is often seen in eroded gullies and along road cuttings. Both sexes excavate nesting holes in vertical earth banks.	No	Highly Unlikely. Site lacks suitable habitat.
Aves	<i>Monticola explorator</i>	Sentinel Rock-Thrush	Near Threatened Decreasing	Least Concern Stable	Inhabits high-altitude grasslands and heathlands with rocky areas, exposed rocks, and grassy rangelands scattered with stones	No	Highly Unlikely. Site lacks suitable habitat.
Aves	<i>Polemaetus bellicosus</i>	Martial Eagle	Endangered Decreasing	Endangered Decreasing	Prefer arid and mesic savannah but are also commonly found at forest edges and in open shrubland. Birds will occupy most habitats provided there are adequate tall trees or pylons for nesting and perching.	No	Highly Unlikely. Site lacks suitable habitat.
Aves	<i>Sagittarius serpentarius</i>	Secretarybird	Vulnerable Decreasing	Endangered Decreasing	Open grassland and scrub, with the ground cover shorter than 50 cm and with sufficient scattered trees as roost/nest sites.	No	Highly Unlikely. Site lacks suitable habitat.
Mammalia	<i>Amblysomus corraie</i>	Fynbos Golden Mole	Near Threatened Unknown	Near Threatened Unknown	Sandy soils and soft loams in Mountain Fynbos, Grassy Fynbos and Renosterveld of South West Cape. Also in Afromontane Forest and southern African moist savanna along the southern Cape coast.	No	Site does have sandy soils but this species shows preference for different habitat types (Fynbos/renosterveld/forest margins)
Mammalia	<i>Aonyx capensis</i>	African Clawless Otter	Near Threatened Decreasing	Near Threatened Decreasing	Predominantly aquatic and seldom found far from permanent water. Fresh water is an essential habitat requirement, not only for drinking but also for rinsing their fur. Prefers habitat characterised by reed beds, boulders and overhanging vegetation. Cape Clawless Otters have been found in towns and cities, and can occupy rivers with high pollution and eutrophication levels.	Yes	Possible. Several nearby observations and suitable rocky coastal habitat. Lack of freshwater habitat however means it is unlikely that the site supports any suitable sites for denning/holt construction.
Mammalia	<i>Panthera pardus pardus</i>	Cape Leopard	Vulnerable Decreasing	Vulnerable Decreasing	Wide habitat tolerance, including woodland, grassland savannah and mountain habitats but also occur widely in coastal scrub, shrubland and semi-desert. Densely wooded and rocky areas are preferred as choice habitat types.	No	Highly Unlikely. Whilst there are free ranging Leopards along the Agulhas and Southern Coastal Plain, the surrounding landscape is significantly affected by agricultural activities and is unlikely to support sufficient prey density.
Mammalia	<i>Pelea capreolus</i>	Grey Rhebok	Near Threatened Decreasing	Near Threatened Decreasing	Rocky hills and grassy mountain slopes.	No	Highly Unlikely. Lack of suitable habitat.
Insecta	<i>Aloeides thyra orientis</i>	Eastern Red Copper	Endangered Decreasing	Endangered Decreasing	Coastal fynbos on flat sandy ground between 40 m to 240 m above sea level. prefers flat sandy ground near the summit of ridges, but can also be found closer to the coastline. Unknown host plant. Flight period is October to March	Yes	Unlikely. Lack of open flat sandy ground. Site is generally heavily vegetated leading to shading of suitable habitat.
Insecta		Riversdale Opal	Endangered	Endangered		Yes	

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	<i>Chrysoritis brooksi tearei</i>		Decreasing	Decreasing	It is found on sandy, low hills, sparsely covered by shrubs, generally preferring higher ground. Its host plants are <i>Selago</i> species. Flight period is from September to February.		Unlikely. Whilst the nearest Observation is >7km to the NE Site the site is currently densely vegetated which represents sub-optimal habitat for this species.
Insecta	<i>Lepidochrysops littoralis</i>	Coastal Blue	Endangered	Endangered	It occurs on rocky limestone ridges or sand dunes in coastal fynbos. It is usually found quite close to the sea-shore	Yes	Possible. Nearest Observation is >3km to the SW. Site hosts suitable habitat and as species is strong flier its possible that this species uses the site.
			Decreasing	Decreasing			
Insecta	<i>Aneuryphymus montanus</i>	Yellow-winged Agile Grasshopper	Vulnerable	Vulnerable	Associated with fynbos vegetation, where it has been collected "amongst partly burnt stands of evergreen Sclerophyll in rocky foothills". It prefers south-facing cool slopes	No	Highly Unlikely. Prefers renosterveld habitat, not coastal thicket/fynbos.
			Unknown	Unknown			

6.8 Plant Species of Conservation Concern

The national South African Environmental Screening Tool has classified the plant species theme sensitivity of Portion 118/489 Zwarte Jongersfontein, Hessequa Municipality, as **Medium**, due to the potential presence of forty-four (44) plant Species of Conservation Concern (SCC). The Screening Tool identifies areas with potential SCC presence based on available national datasets, which include occurrence records, habitat preferences, and environmental variables. It is important to note that the tool does not account for species that are classified as Near Threatened or Data Deficient on the South African National Biodiversity Institute's (SANBI) Red List of South African Plants.

While the Screening Tool provides a precautionary basis for further investigation, the presence of any SCC on the site, including sensitive or restricted species, must be confirmed or ruled out through a site-specific botanical assessment by a qualified specialist. In addition, some of the SCC flagged in the Screening Tool report are listed as “Sensitive Species”, a designation used to protect taxa that are vulnerable to illegal collection or exploitation, particularly for commercial or traditional medicinal purposes. In line with SANBI and provincial conservation authority policies, the names, locations, and images of such sensitive species are withheld from public reports to ensure their protection.

The list of SCC in the Screening Tool report are:

<i>Agathosma eriantha</i>	<i>Lampranthus ceriseus</i>	<i>Ruschia leptocalyx</i>
<i>Agathosma minuta</i>	<i>Lampranthus diutinus</i>	<i>Selago diffusa</i>
<i>Agathosma muirii</i>	<i>Lampranthus fergusoniae</i>	<i>Selago villicaulis</i>
<i>Agathosma riversdalensis</i>	<i>Lampranthus foliosus</i>	Sensitive species 214
<i>Aspalathus calcarea</i>	<i>Lebeckia gracilis</i>	Sensitive species 515
<i>Chrysocoma strigosa</i>	<i>Lobelia valida</i>	Sensitive species 774
<i>Diosma tenella</i>	<i>Metalsia luteola</i>	Sensitive species 848
<i>Erica calcicola</i>	<i>Muraltia barkerae</i>	Sensitive species 85
<i>Erica viscosissima</i>	<i>Oedera steyniae</i>	Stoebe muirii
<i>Euchaetis albertiniana</i>	<i>Pentameris calcicola</i> var. <i>hirsuta</i>	<i>Thamnochortus pluristachyus</i>
<i>Felicia ebracteata</i>	<i>Phylica incurvata</i>	<i>Wahlenbergia polyantha</i>

7. VEGETATION OF THE STUDY AREA

7.1 OVERVIEW OF SITE

The study area is mapped as Hartenbos Dune Thicket and Cape Sea Shore Vegetation according to the *Vegetation map of South Africa, Swaziland, & Lesotho* (SANBI, 2024) (Figure 6). Fine scale mapping conducted by Vlok & de Villiers as part of the C.A.P.E Fine Scale Mapping Project (Vlok & de Villiers, 2007; Pence, 2008) describe two vegetation types as occurring within the site, namely Gouritz Dune Thicket and Ystervarkpunt Forest-Thicket-Fynbos (Figure 7). The results of the site visit indicate that the vegetation present is closely aligned with the description of Hartenbos Dune Thicket Vegetation.

Broadly speaking, the vegetation present at the site can be divided into three habitat types; Transformed vegetation, Intact Hartenbos Dune Thicket (divided into Thicket dominant and Fynbos dominant communities), and Semi-intact Hartenbos Dune Thicket. The transformed habitat is located around the three dwellings and includes the open lawn area and access road to the rest of the property. The thicket dominated vegetation is located mainly on the first primary dune and western portion of the site, whereas the fynbos dominant vegetation is located on the slopes north and north-east of the houses. A small area of Semi-intact Hartenbos Dune Thicket vegetation is located directly south of the three dwellings. The habitat map provided in **Figure 20** depicts the distribution of each vegetation community at the site, and the vegetation types present at the site are described in the following section. The description of habitat condition classes can be found in **Table 5**.

Table 5. The habitat condition descriptions used for the vegetation on the site.

Habitat category	Description
Intact vegetation	A true representation of the original vegetation type in terms of structure and species makeup. Minimal soil disturbance. Unlikely to have ever been ploughed. Disturbance may be evident.
Semi-intact	Resembles the original vegetation type in terms of structure and species makeup but has lower species diversity than intact vegetation. Dominated by disturbance-resilient species. Soils may have been heavily disturbed in the past. Restoration potential is high.
Degraded	Only a few species representative of the original vegetation type are present. The vegetation has undergone heavy disturbance. Restoration potential is either low or moderate.
Highly degraded	The original vegetation is usually absent and has been removed in the past. Only a few remnant or pioneer species are present. Soils usually ploughed in the past. Restoration potential is very low.
Transformed	No remnant species exist anymore. The landscape is altered irreversibly with no restoration potential. Examples include cultivated farmland and the built environment.

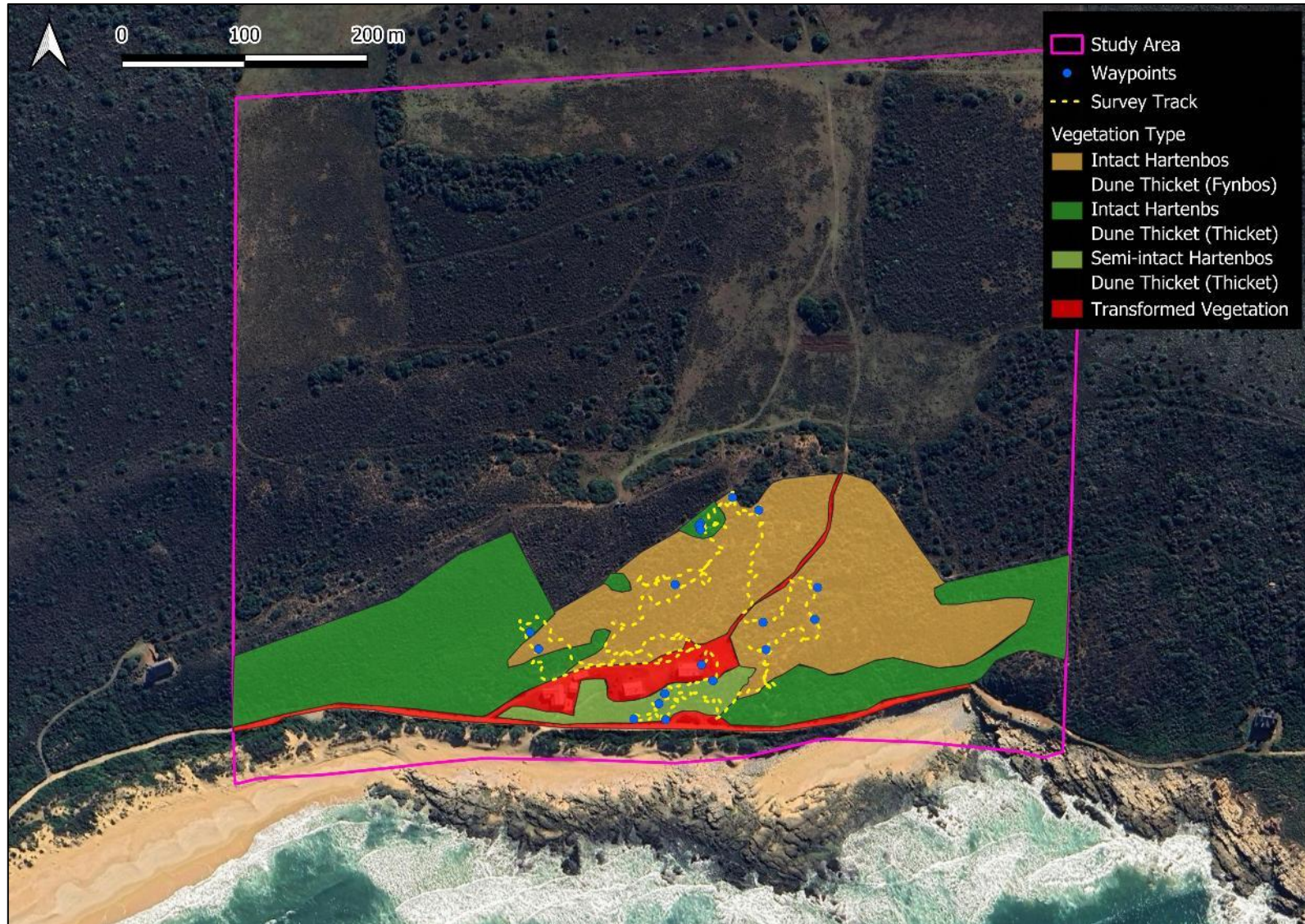


Figure 20. The habitats identified at the study area superimposed on a Google Earth™ satellite image.

7.2 TRANSFORMED VEGETATION

The areas surrounding the three dwellings are described as transformed, supporting a short lawn comprised of grasses such as Kweek/Couch grass *Cynodon dactylon*, with few naturally occurring species with the exception of pioneers such as *Trachyandra ciliata*. There is evidence of Dekreit *Thamnochortus insignis* bundles which have been used to stabilise the sand surrounding the houses. Other areas of transformed habitat include the access roads that run along the shore and up to the northern part of the farm.



Figure 21. Transformed vegetation around the houses. Note that the proposed extension to Building three is shown in the image on the *left*.



Figure 22. Access Road to the northern part of the property. This road runs through intact vegetation and appears to be used infrequently.

7.3 INTACT HARTENBOS DUNE THICKET

Most the survey area supports intact Hartenbos Dune Thicket. The floral community at the site is dominated by low shrubs such as Strandveld Blombos *Metalasia muricata*, Fives Capegorse *Aspalathus quinquefolia*, Dune currantbush *Searsia crenata*, and Dekreit *Thanmochortus insignis*, with denser thicket patches located in dune slacks and areas more protected from strong coastal winds. These thicket patches contain White Milkwood *Sideroxylon inerme* (a protected tree species), Candlewood *Pterocelastrus tricuspidatus*, Dune Kokotree *Maytenus procumbens*, Dune Guarri *Euclea racemosa*.

Table 6. Plant Species List for intact Hartenbos Dune Thicket. Species marked with * indicate dominant species.

Species	Common Name	Species	Common Name
<i>Agathosma muirii</i>	Heart Buchu	<i>Metalasia muricata</i>	Strandveld Blombush
<i>Annesorhiza macrocarpa</i>	Wild Aniseroot	<i>Morella cordifolia</i>	Dune Waxberry
<i>Aspalathus quinquefolia</i>	Fives Capegorse	<i>Muraltia satirejoides</i>	Sand Purplegorse
<i>Asparagus aethiopicus</i>	Hookthorn Asparagus	<i>Muraltia spinosa</i>	Spiny Tortoiseberry
<i>Asparagus suaveolens</i>	Catthorn Asparagus	<i>Myrsine africana</i>	Cape-Myrtle
<i>Azima tetracantha</i>	Needle Bush	<i>Mystroxydon aethiopicum</i>	Kooboo-Berry
<i>Carissa bispinosa</i>	Num-Num	<i>Olea exasperata</i>	Dune Olive
<i>Carpobrotus acinaciformis</i>	Sabre Sourfig	<i>Osteospermum moniliferum</i>	Bietou
<i>Cassine peragua</i>	Cape Saffron	<i>Othonna undulosa</i>	Clambering Babooncabbage
<i>Cassytha ciliolate</i>	Devil's Tresses	<i>Passerina paleacea</i>	Strandveld Gonna
<i>Chasmanthe aethiopica</i>	Cobra Lily	<i>Pelargonium capitatum</i>	Common Storksbill
<i>Chironia baccifera</i>	Christmas Berry	<i>Phyllica axillaris</i>	Axil Hardleaf
<i>Cineraria geifolia</i>	Hairy Cineraria	<i>Podalyria myrtillifolia</i>	Myrtle Capesweetpea
<i>Colpoon compressum</i>	Cape Sumach	<i>Polygala myrtifolia</i>	September Falsepea
<i>Cullumia carlinoides</i>	Limestone Snakethistle	<i>Restio Eleocharis</i>	Beach Pegreed
<i>Delosperma litorale</i>	Calcrete Sheepfig	<i>Rhocissus digitata</i>	Baboob Grape
<i>Dipogon lignosus</i>	Okie Bean	<i>Robsonodendron maritimum</i>	Dune Saffronwood
<i>Disparago anomala</i>	Strange Desperado	<i>Roepera morganiana</i>	Salad Twinleaf
<i>Euclea racemosa</i>	Dune Guarri	<i>Ruschia gracilis</i>	N/A
<i>Euphorbia burmanni</i>	Sweet Milkbrush	<i>Ruschia macowanii</i>	Beach Tentfig
<i>Exomis microphylla</i>	Brakbos	<i>Salvia aurea</i>	Brown Sage
<i>Ficinia lateralis</i>	Side Clubrush	<i>Searsia crenata</i>	Duinekraaibessie
<i>Galium tomentosum</i>	Velvet Bedstraw	<i>Searsia glauca</i>	Blue Kunirhus
<i>Helichrysum teretifolium</i>	Needle Everlasting	<i>Searsia laevigata</i>	Dune Curranthrus
<i>Helmutia membranacea</i>	Helmet Sedge	<i>Solanum africanum</i>	Drunken Berry
<i>Indigofera heterophylla</i>	Diverse Indigo	<i>Struthiola argentea</i>	Evening Cape Spray
<i>Kedrostis nana</i>	Porcupine Potato	<i>Tetragonia fruticosa</i>	Sprawling Seacoral
<i>Lachenalia bulbifera</i>	Red Viooltjie	<i>Thesium fragile</i>	Beach Rootthug
<i>Lachenalia punctata</i>	Dotted Viooltjie	<i>Trachyandra divaricata</i>	Branch Capespinnach
<i>Lauridia tetragona</i>	Climbing Saffron	<i>Wachendorfia cf. paniculata</i>	Common Butterflylily

<i>Leucospermum praecox</i>	Mossel Bay Pincushion	<i>Wahlenbergia tenella</i>	Fine Capebell
<i>Maytenus procumbens</i>	Dune Kokotree		



Figure 23. Intact Hartenbos Dune Thicket. (Top) Note the dominance of *Metalsia muricata* (low shrub, white flowers); (Bottom) open patches often dominated by *Restio eleocharis*.

7.4 SEMI-INTACT HARTENBOS DUNE THICKET

On the southern side of the houses, there is a narrow band of vegetation that is considered to be semi-intact dune thicket vegetation (**Figure 24, Top**). It is likely that the area was disturbed during the construction of the three dwellings, and as such is dominated by disturbance resilient species such as *Searsia crenata*, *Salvia aurea*, *Osteospermum*

moniliferum, *Helichrysum terretifolium*, and *Passerina paleacea*. Additionally, it appears that the landowner has laid brush along erosion lines in an attempt to prevent further erosion downslope of the house (**Figure 24, Bottom right**). Lastly, *Acacia cyclops* is present along the primary dune, however it does occur fairly sparsely (**Figure 24, Bottom left**).



Figure 24. (Top) Semi-intact Hartenbos Dune Thicket below the dwellings; (Bottom left) *Acacia cyclops* population imbedded in the dune thicket vegetation; (Bottom right) erosion gully packed with brush.

7.4 PLANT SCC WITHIN THE STUDY AREA

Plant species of conservation concern expected to occur within the site are listed in **Table 7**, with SCC confirmed within the site described in **Table 8 – 10 (Figure 25, Figure 26)**. One protected tree species was also identified at the site, White Milkwood *Sideroxylon inerme*. The location of these trees are also shown in **Figure 26**.



Figure 25. (Top) Heart Buchu *Agathosma muirii* (**Vulnerable**); (Middle) Mosselbay Pincushion *Leucospermum praecox* (**Vulnerable**); (Bottom) Coastal Spikedaisy *Cullumia carlinoides* (**Near Threatened**).

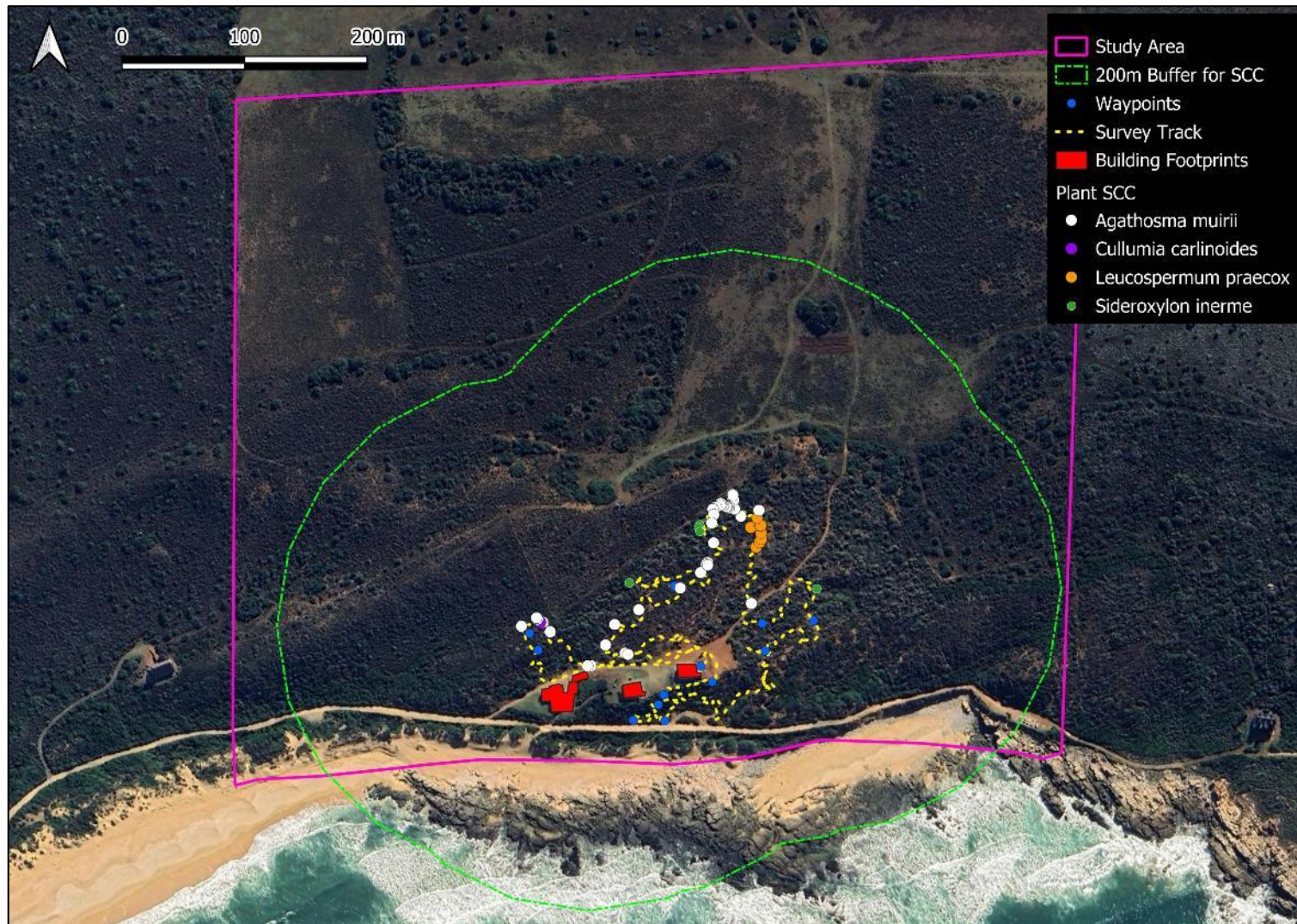


Figure 26. Map showing the location of plant and animal species of conservation concern, including 200m buffer for plant species, superimposed on Google Earth™ satellite image.

Table 7. Species predicted to be in the study area (by the screening tool) AND those not predicted in the screening tool that were found (highlighted in pink).

Species	Observed/Likelihood of Occurrence	Justification for Likelihood of Occurrence
<i>Agathosma eriantha</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Agathosma minuta</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Agathosma muirii</i>	Confirmed	NA
<i>Agathosma riversdalensis</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Aspalathus calcarea</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Chrysocoma strigosa</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Cullumia carlinoides</i>	Confirmed	NA
<i>Diosma tenella</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Erica calcicola</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Erica viscosissima</i>	No/Medium	Sandy Fynbos habitat preference
<i>Euchaetis albertiniana</i>	No/Medium	Grows in coastal sands and limestones
<i>Felicia ebracteata</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Heliophila linearis</i> var. <i>reticulata</i>	No/Medium	Found in coastal sands
<i>Lampranthus ceriseus</i>	No/Medium	Suitable habitat, observation nearby
<i>Lampranthus diutinus</i>	No/Medium	Suitable habitat, observation nearby
<i>Lampranthus fergusoniae</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Lampranthus foliosus</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Lebeckia gracilis</i>	No/Medium	Associated with coastal fynbos and Strandveld <300m asl
<i>Lobelia valida</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Leucospermum praecox</i>	Confirmed	NA
<i>Metalasia luteola</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Muraltia barkerae</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Oedera steyniae</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Pentameris calcicola</i> var. <i>hirsuta</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Phylica incurvata</i>	No/Medium	Shows preference for low lying coastal fynbos

<i>Polygala pubiflora</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Ruschia leptocalyx</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Selago diffusa</i>	No/Low	Sub-optimal habitat
<i>Selago villicaulis</i>	No/Medium	Found on fixed dunes >150m asl
Sensitive species 214	No/Low	Habitat unsuitable/outside habitat preference
Sensitive species 515	No/Low	Habitat unsuitable/outside habitat preference
Sensitive species 774	No/Low	Habitat unsuitable/outside habitat preference
Sensitive species 848	No/Low	Habitat unsuitable/outside habitat preference
Sensitive species 85	No/Low	Habitat unsuitable/outside habitat preference
<i>Stoebe muirii</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Thamnochortus pluristachyus</i>	No/Low	Habitat unsuitable/outside habitat preference
<i>Wahlenbergia polyantha</i>	No/Medium	Associated with sandy flats

Table 8. Plant Species of Conservation Concern found within the study area.

FAMILY	Species	Status	Url link to observation(s)
ASTERACEAE	<i>Cullumia carlinoides</i>	Near Threatened B1ab(ii,iii,iv,v)	https://www.inaturalist.org/observations/379971622
PROTEACEAE	<i>Leucospermum praecox</i>	Vulnerable A2c	https://www.inaturalist.org/observations/379970809
RUTACEAE	<i>Agathosma muirii</i>	Vulnerable A4abc	https://www.inaturalist.org/observations/379970917

Table 9. SCC confirmed on the site or likely to be found on the site

Species	Distribution (Figure 3)	Viability	Population Size	Nature and extent of impact on SCC	Known population size* and AOO (Appendix 8 of Guidelines) and loss
<i>Cullumia carlinoides</i>	One individual found north of dune thicket patches north of Building 1	Likely to persist in the long term with appropriate land management.	One individual found	Potentially lost individuals during clearance of vegetation.	AOO in guidelines listed as 40.66km ² EOO 2274 km ² , listed between 10-15 locations.
<i>Leucospermum praecox</i>	Occurs in intact Hartenbos Dune Thicket, in shallow dune slack upslope of the houses	Likely to persist in the long term with appropriate land management. Individuals are quite senescent and will need ecological burn to improve health of population.	At least 9 individuals but likely to be more across the broader property.	Unlikely to have been significantly impacted by vegetation clearance as population is higher up the slope and no individuals were found near the existing dwellings.	AOO in guidelines listed as 98.54 EOO 2572 km ² listed in Redlist website
<i>Agthosma muiirii</i>	Occurs across the site in intact Hartenbos Dune Thicket	Highly likely to persist in the long term with appropriate land management. Abundant on the property.	> 45 individuals documented. Likely to be in excess of 50-60 as many smaller plants growing close together. Found across the site above historic high watermark.	The broad distribution across the site and proximity of several individuals to the dwellings indicates that is highly likely that some individuals would have been lost during clearance process.	AOO in guidelines listed as 20.21 km. EOO 3800 km ² listed in Redlist website

* Derived from the Red List of South African Plants (www.redlist.org.za)

Table 10. Additional information on the SCC confirmed on the site or likely to be found on the site from The Red List of South African Plants website (www.redlist.sanbi.org)

Name	Justification	Range	Habitat Description	Threats	Population
<i>Cullumia carlinoides</i>	EOO 2274 km ² , between 10 and 15 locations continue to decline due to ongoing habitat loss to coastal development and competition from alien invasive plants.	Southern Cape coast between the Duiwenhoks River and Herold's Bay.	Coastal Limestone Fynbos	Threatened by ongoing habitat loss to coastal development as well as competition from dense infestations of unmanaged alien invasive plants.	Decreasing
<i>Leucospermum praecox</i>	<i>Leucospermum praecox</i> is restricted to the Riversdale Plain in South Africa and has an extent of occurrence of 2572 km ² and an area of occupancy of 796-800 km ² . Land cover data indicates that this species has already lost around 23% of its habitat, mainly as a result of agriculture, but this does not include habitat loss due to vegetation management for thatch harvesting, which, based on expert opinion, may have already caused a population reduction of up to 50% in the past 20-40 years. In the absence of data to accurately quantify past population reduction, a population loss of at least 30% is suspected and the population is expected to continue to decline significantly in the next 20 years due to ongoing thatch harvesting and alien plant invasion, which already affect 61% of sites. With a generation length of 20 years this species qualifies for listing as Vulnerable under criterion A.	Endemic to Riversdale Flats, from Puntjie to Mossel Bay in the Western Cape Province of South Africa.	Occurs in tertiary acid sands associated with limestone formations on the coastal forelands	A population reduction of over 30% is estimated based on habitat loss in Albertinia and Mossel Bay due to development of holiday resorts/beach housing, agriculture and recreational areas (golf courses) and severe habitat degradation. agriculture remain an ongoing threat in Albertinia district and these subpopulations are suspected to have declined. Other threats to this species include road verge clearing, too frequent fires, and increased molarat activity associated with disturbance. Drought-related mortality events have been noted.	Decreasing
<i>Agathosma muirii</i>	A population reduction of >30% is projected to be reached within the next seven years, based on a continuation of rates of population decline and habitat loss to coastal development and alien acacia invasion in the past 23 years (generation length 10 years).	Stilbaai to Mossel Bay.	Deep sands on coastal dunes associated with limestone.	Invasive Alien Species (direct effects), Habitat loss, Habitat degradation, Pollution (affecting habitat and/or species)	Decreasing

8. FAUNAL HABITAT & SPECIES AT SITE

Opportunistic sampling was used during the survey, supplemented by targeted searches of specific microhabitats (turning over rocks/logs, examining seeps etc.). A comprehensive list of potential animal species (split by taxa) is found in Appendix 2; all fauna encountered at the site are indicated in Appendix 2. Potential faunal Species of Conservation Concern, including conservation status, habitat requirements, and presence/likelihood of presence are detailed in **Table 4** (pg. 25).

8.2 MAMMALIA

A total of 63 species of mammal were identified as potentially occurring at the site, with four designated as Species of Conservation Concern (**Table 4**). No mammalian species of conservation concern were noted at the site, with only one species deemed likely to be present; Cape Clawless Otter *Aonyx capensis*.

Cape Clawless Otter *Aonyx capensis*

Aonyx capensis is classified as **Near Threatened** (Jaques, Reed-Smith, & Somers, 2021) based on criterion **A2cde+3cde** i.e. a reduction in population size of >30% over the last 10 years/three generations, a predicted continued decline of >30% over the next 10 years, observed/estimate/inferred decline in AOO and EOO, and threatened by active exploitation and effects of introduced taxa/pathogens/pollutants/climate change (IUCN, 2012).

Cape Clawless Otters have a broad distribution, being widespread south of the Sahara (**Figure 27**), and are found in a wide variety of aquatic habitats, from streams and small rivers to estuaries and coastal habitats (although frequently absent from larger rivers) (Estes, 2012). Along the coast they are restricted to rocky shore habitat, and require a nearby source of fresh water. Based on iNaturalist observations, there appears to be otter activity along the coastline in the vicinity of the site (closest observation is ~300m from Building 3). No otter signs were observed at the site, and the lack of fresh water suggests a lack of any nesting sites/holts.

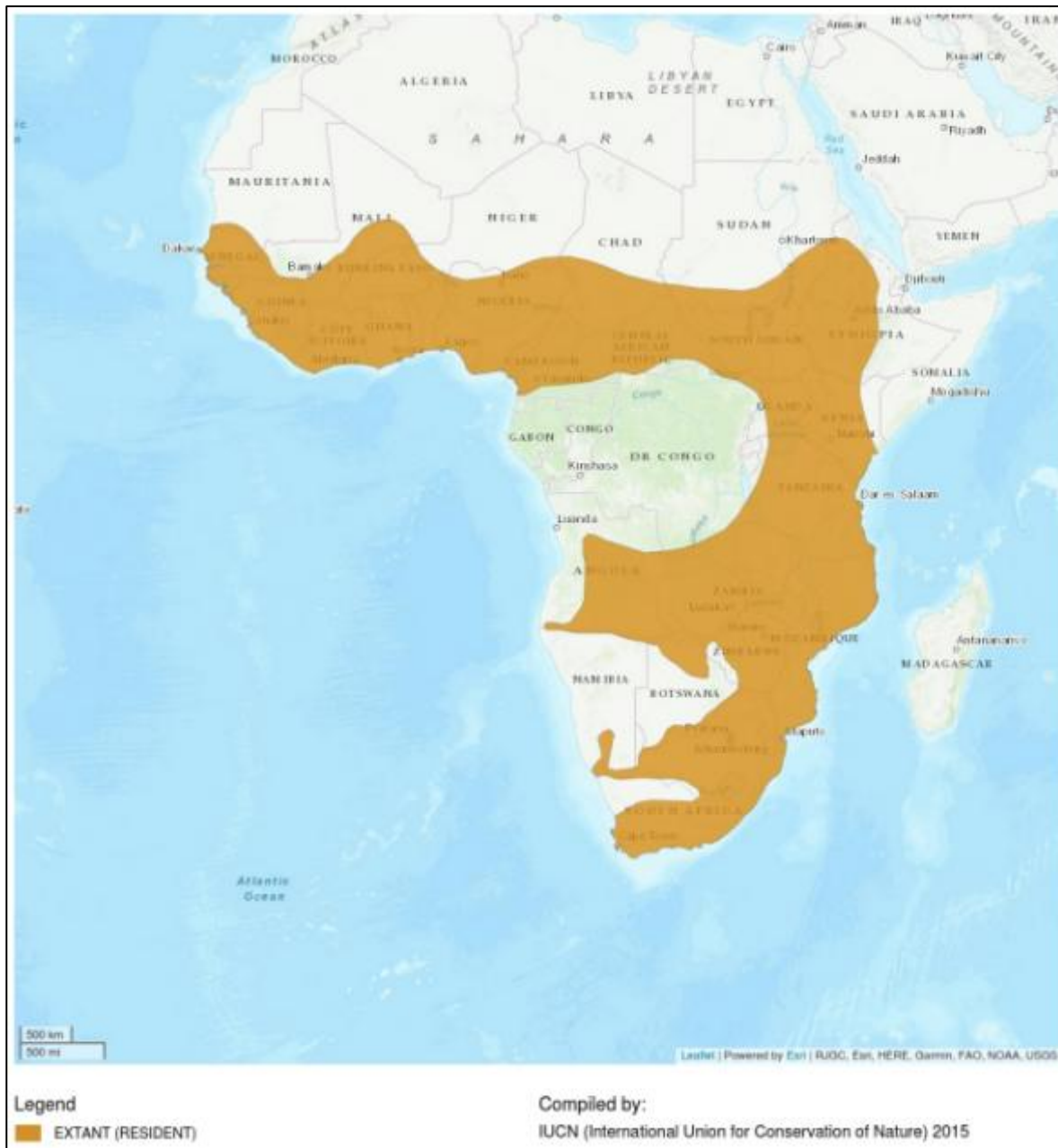


Figure 27. Distribution map of Cape Clawless Otter *Aonyx capensis* extracted from IUCN Assessment (Jaques, Reed-Smith, & Somers, 2021).

Mammal species confirmed at the site, either by direct visual or scat/spoor, include (**Figure 28**):

- Cape Golden Mole *Chrysochloris asiatica*
- Cape Dune Molerat *Bathyergus suillus*
- Cape Genet *Genetta tigrina*
- Common Duiker *Sylvicapra grimmia*
- Grysbok *Raphicerus melanotis*

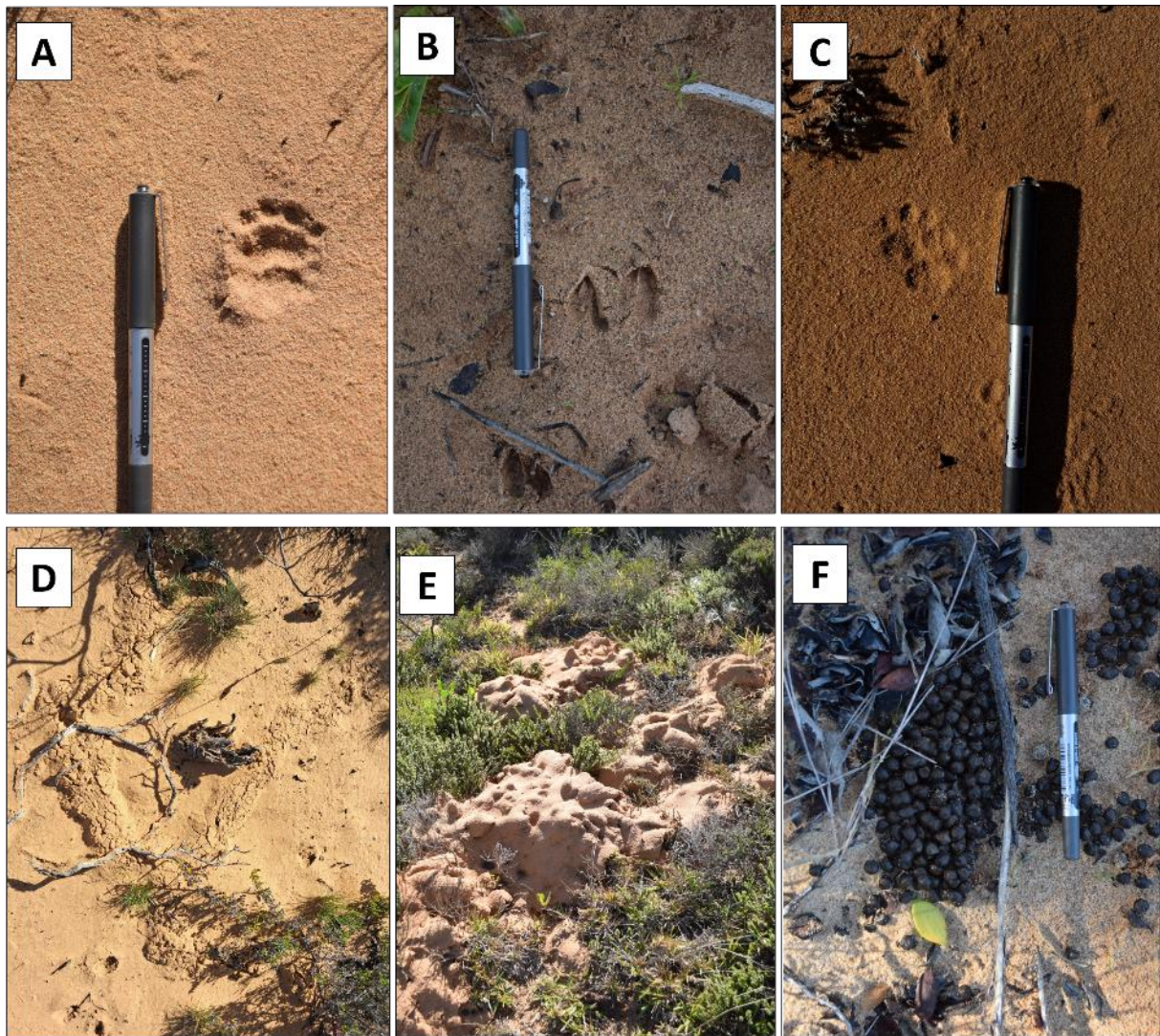


Figure 28. Photographs showing mammal species present at the site (A) *Genetta* cf. *tigrina* spoor; (B) *Raphicerus melanotis* spoor; (C) *Genetta* cf. *tigrina* spoor; (D) *Chrysochloris asiatica* foraging tunnels; (E) *Bathyergus suillus* mole hills; (F) *Sylvicapra grimmia* dung.

8.3 REPTILIA

Thirty-six species of reptile were identified as potentially occurring at the site, none of which were classified as Species of conservation Concern. One reptile species, Angulate Tortoise *Chersinia angulata*, was documented at the site (**Figure 29**).



Figure 29. Angulate Tortoise *Chersinia angulata* found at the site.

8.4 AVES

A total of 158 bird species were identified as potentially occurring at the site, of which thirty-eight (38) are considered Species of Conservation Concern. Only three SCC were deemed possible to occur at the site; Southern Black Bustard *Afrotis afra* **Vulnerable**; Black Harrier *Circus maurus* **Endangered**; and Grey Plover *Pluvialis squatarola* **Near Threatened**. It should be noted that *P. squatarola* is restricted to the intertidal zone and is thus not considered in the impact assessment or habitat sensitivity. No avian SCC were detected during the site visit. Eight species of birds were documented, including the following:

- Bokmakerie *Telophorus zeylonus*
- Cape Bulbul *Pycnonotus capensis*
- Cape Spurfowl *Pternis capensis*
- Cape Wagtail *Motacilla capensis*
- Kelp Gull *Larus Domincanus*
- Red Eyed Dove *Streptopelia semitorquata*
- Southern Double Collared Sunbird *Cinnyris chalybeus*
- Southern Fiscal *Lanius collarius*

Southern Black Bustard *Afrotis afra*

Classified as **Vulnerable A2bc+4bc** (BirdLife International, 2025). Global population has not been quantified. However, the species is considered 'uncommon to common', with concentrations highest in Eastern Cape (4.04 individuals per 100 km²) and lowest in Nama Karoo (0.29/100 km²). Species is restricted to non-grassy fynbos and succulent karoo biomes, extreme southern reaches of Nama Karoo biome, and along the western and southern coastline (**Figure 30**). There is a significant preference to the fynbos biome for this species. *A. afra* does tend to avoid transformed areas, however they will use degraded habitat were necessary. The diet consists of insects, small reptiles and plant material, including seeds and green shoots and it is considered sedentary. Threats to this species include the conversion of natural vegetation to agriculture, considered the primary risk, collision with powerlines/energy infrastructure, and climate change induced alteration of natural habitat.

The presence of this species at the site is considered unlikely despite the presence of suitable habitat. There are no recent observations of this species in the vicinity of the site.

Black Harrier *Circus maurus*

Classified as **Endangered C2a(ii)** (BirdLife International, 2021). Restricted to Southern Africa, this species is concentrated in the Western Cape however its range does include the Eastern Cape, Free State and Northern Cape (**Figure 30**). The total population of this species is estimated to be < 1000 individuals in South Africa, Lesotho, and Eswatini, having undergone a major decline (~85%) over the past century due to habitat loss. In the Western Cape it is most abundant in coastal and montane fynbos where it prefers open ground with low vegetation for hunting. In coastal habitats, their diet is dominated by small mammals, primarily *Otomys* and *Rhabdomys* species. The primary threat to this species is habitat loss for agriculture, with alien vegetation and urban expansion also contributing to habitat loss. Additionally, environmental pollution from herbicide/pesticide use on farms is thought to contribute to low hatching rates.

The presence of this species at the site is possible based on the habitat present and nearby observations (~7km to the NE), however the extensive vegetation cover represents sub-optimal foraging habitat. It is unlikely that the current development at the site poses a risk to the presence of this species.

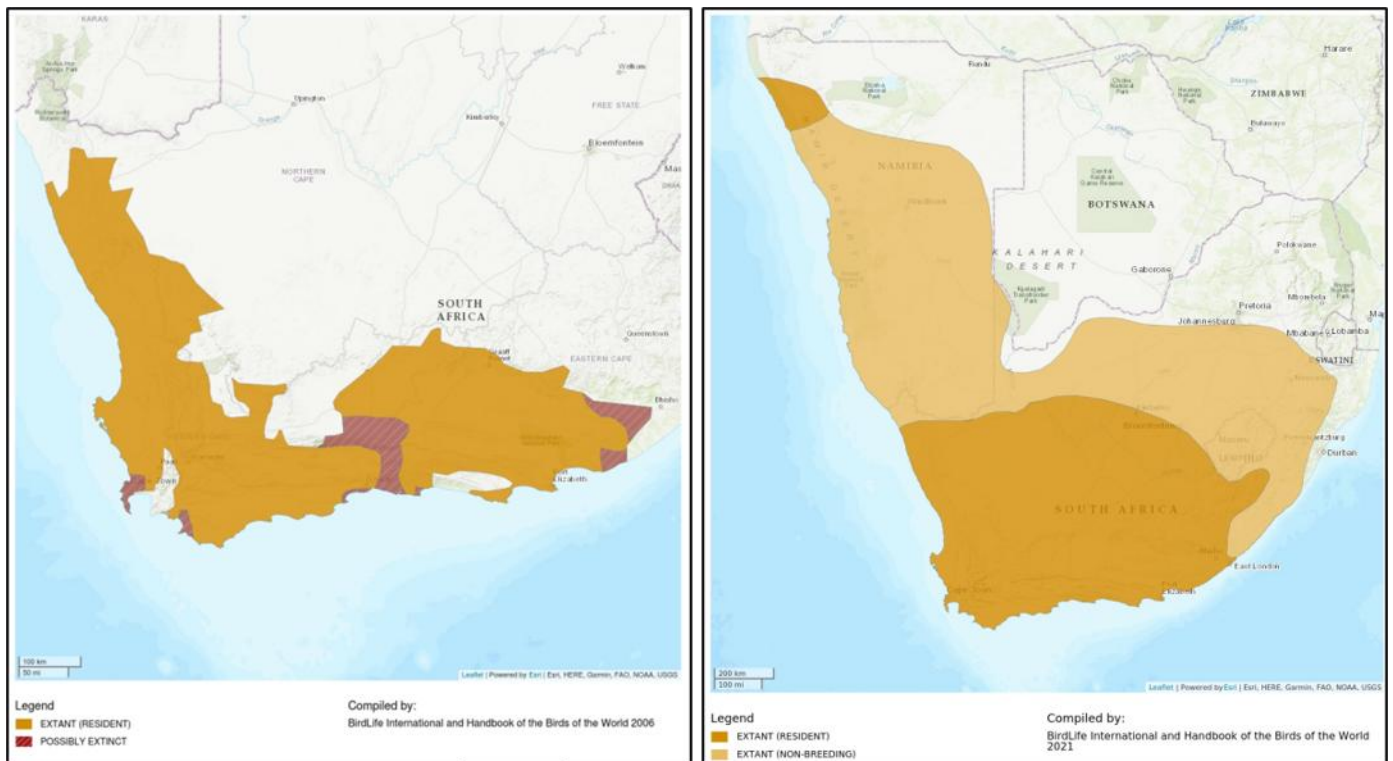


Figure 30. (Left) Distribution map for *Afrotis afra* (BirdLife International, 2025); (Right) Distribution map for *Circus maurus* (BirdLife International, 2021).

8.5 AMPHIBIA

A total of sixteen amphibian species were identified as potentially occurring at the site; none of these species are listed as Species of Conservation Concern. No amphibian species were documented during the site visit.

8.5 INVERTEBRATES

Four species of Invertebrates Species of Conservation Concern were flagged as potentially occurring at the site; The Eastern Red Copper *Aloeides thyra orientis* (EN); The Riversdale Opal *Chrysomitris brooksi teari* (EN); The Coastal Blue *Lepidochrysops littoralis* (EN); and the Yellow-winged Agile Grasshopper *Aneuruphymus montanus* (VU). The presence of the three butterfly species was deemed possible based on the habitat described at the site, however the presence of these SCC was not confirmed by the site visit.

Eastern Red Copper *Aloeides thyra orientis*

Classified as **Endangered B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)** (Edge, 2018), *A. Thyra orientis* is a range restricted species found in the Western cape (EOO of 2646km², AOO of 72km²), with six known

locations spread from Witsand and Gouritsmond in the West to Brenton Peninsula, Knysna in the East. These sub-populations are severely isolated, with only the two Knysna populations being in fairly close proximity (~6km apart). The dispersal range of this species is approximately 2km which precludes any gene flow between sub-populations. The preferred habitat for this species consists of flat sandy ground in sparsely vegetated coastal fynbos between 40 m to 240 m asl. The host plant of this species is unknown. Currently the greatest threat to this species is habitat loss and fragmentation due to urban expansion or alien plant encroachment. Altered fire regime also contributes to decline in available habitat as moribund vegetation shades out bare sandy patches (preferred habitat) and increased fuel load can lead to intense fire events that can cause local extinction e.g. Knysna Fires in 2017.

The presence of this species at the site is considered unlikely. Whilst suitable habitat may be present at the site, the distance to the nearest known location (Stillbaai) exceeds the dispersal distance of this species.

Riversdale Opal *Chrysotis brooksi teari*

Classified as **Endangered B1ab(i,ii,iii)+2ab(i,ii,iii)** (Edge, 2022). This species is restricted to the Western Cape of South Africa, where it is endemic (EOO of 2177 km², AOO of 48km²) and is known from 6 isolated locations (ranging from between 17 and 72 km apart). The significant distance between these populations precludes any gene flow or potential recolonization following local extinctions. The population is extremely low, with four of the six known sub-population is represented by a single individual record. This species is found on low sandy hills with sparse shrub coverage. The primary threat to this species is habitat loss due to agriculture, with habitat loss due to invasive plants and livestock grazing also prominent.

The presence of this species at the site is considered unlikely due to the distance from known sub-populations, with the closest being along the coast at Stillbaai (~6.5 km away). Additionally, the habitat present at the site is likely to represent sub-optimal habitat for the species due to the extent of vegetation cover.

Coastal Blue *Lepidochrysops littoralis*

Classified as **Endangered B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)** (Edge, 2020). This species is endemic to the Western Cape (EOO of 2488km², AOO of 84km²) and is found at ten known locations. These locations are highly fragmented, separated by distances of 10 and 35 km across degraded/transformed landscapes. It is assumed that distances of 10 km is likely beyond dispersal range of this species (2-5 km average). As such all known locations represent isolated, closed

subpopulations, some of which are non-viable. This species occurs on rocky limestone ridges or sand dunes in coastal fynbos and is usually found quite close to the shore. The host plant for this species belong to the *Selago* genus. Threats include the ongoing habitat loss due to urban expansion or coastal recreational development, alongside habitat loss due to Invasive Alien Plant species such as *Acacia cyclops*.

The presence of this species at the site is considered possible given the proximity of the site to a known population in Jongensfontein, which is within the dispersal distance of this species. As the flight period for this species is from September to February it was unlikely that the survey would have been able to determine the presence of this species.

9. SITE ECOLOGICAL IMPORTANCE

Site Ecological Importance (SEI) is considered to be a function of the biodiversity importance (BI) of the receptor (species of conservation concern or habitat type present on the site) and its resilience to impacts (receptor resilience [RR]). This is calculated as follows:

$$\text{SEI} = \text{BI} + \text{RR}$$

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

$$\text{BI} = \text{CI} + \text{FI}$$

Conservation importance is defined here as:

“The importance of a site for supporting biodiversity features of conservation concern present, e.g. populations of IUCN threatened and Near Threatened species (CR, EN, VU and NT), Rare species, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes.”

Functional integrity (FI) of the receptor is defined as:

“The receptors’ current ability to maintain the structure and functions that define it, compared to its known or predicted state under ideal conditions. Simply stated, FI is: ‘A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.’”

Table 11. Conservation importance (CI) criteria (Government Gazette No. 43855, 30 October 2020).

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

Table 12. Functional Integrity criteria (Government Gazette No. 43855, 30 October 2020).

Functional Integrity (FI)	Fulfilling Criteria
Very High	Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types. High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. No or minimal current negative ecological impacts with no signs of major past disturbance (e.g. ploughing).
High	Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types. Good habitat connectivity with potentially functional ecological corridors and a regularly used road network between intact habitat patches. Only minor current negative ecological impacts (e.g. few livestock utilising area) with no signs of major past disturbance (e.g. ploughing) and good rehabilitation potential
Medium	Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type or > 20 ha for VU ecosystem types. Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches. Mostly minor current negative ecological impacts with some major impacts (e.g. established

	population of alien and invasive flora) and a few signs of minor past disturbance. Moderate rehabilitation potential.
Low	Small (> 1 ha but < 5 ha) area. Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy used road network surrounds the area. Low rehabilitation potential. Several minor and major current negative ecological impacts
Very Low	Very small (< 1 ha) area. No habitat connectivity except for flying species or flora with wind-dispersed seeds. Several major current negative ecological impacts.

Once the CI and FI for habitats within the study site has been assessed, the BI can be calculated using the Matrix in **Table 13**.

Table 13. Matrix for calculating Biodiversity Importance (BI) (Government Gazette No. 43855, 30 October 2020)

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

Lastly, the Receptor Resilience (RR) of the habitats present at the site can be calculated using the criteria in **Table 14**. The Receptor Resilience (RR) is defined as:

“The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.”

Table 14. Receptor Resilience criteria (Government Gazette No. 43855, 30 October 2020)

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

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

The SEI for each habitat was calculated using the formula **SEI = BI + RR**, and the matrix laid out in **Table 15**. The interpretation of the SEI for each development actions allowed for each SEI category are outlined in **Table 16**.

Table 15. Matrix for calculating Site Ecological Importance (SEI) (Government Gazette No. 43855, 30 October 2020)

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

Table 16. Guidelines for interpreting SEI in the context of the proposed development activities (Government Gazette No. 43855, 30 October 2020)

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

9.1 SEI FOR PORTION OF FARM 118/489 ZWARTE JONGERSFONTEIN

The SEI has been assessed for Portion 118/489 Zwarte Jongersfontein, taking into account the animal, plant species, and terrestrial biodiversity themes. The study area contains the following habitats; Transformed vegetation, and Intact Hartenbos Dune Thicket. Several plant Species of Conservation Concern were confirmed present at the site, two of which are listed as Vulnerable, and one listed as Near Threatened. Almost the entirety of the site supports Hartenbos Dune Thicket, which is classified as an Endangered vegetation type. The site contains habitat deemed likely to support several faunal species of conservation concern. Lastly, whilst the landscape north of the site has experienced significant transformation or degradation (primarily for agriculture), the site borders a private nature reserve and has good connectivity to intact or semi-intact vegetation along the coast. Given the factors listed above, almost the entirety of the site is deemed to have **Very High Site Ecological Importance (Figure 31 & Table 17)** excluding areas of the site that have either been disturbed by construction or transformed/cleared of vegetation, resulting in small areas of **High** and **Very Low** Site Ecological Importance. It should be noted that whilst there may be a difference between the SEI for the plant and animal themes, the highest level of SEI supersedes the lower i.e. if an area has Medium SEI for the animal theme and Very High SEI for the plant theme the overall SEI is considered to be Very High.

Table 17. Evaluation of SEI for SCC habitats within the study area. BI = Biodiversity Importance, RR = Receptor Resilience. The top row for each habitat type displays SEI for Plant Theme, whereas the bottom row displays SEI for the Animal Theme.

Habitat Type	Conservation Importance	Functional Integrity	Receptor Resilience	SEI
Transformed Vegetation	Very Low - No confirmed and highly unlikely populations of SCC	Very Low - Very small (< 1 ha) area; Several major current negative ecological impacts.	Low - Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality	Very Low
	Very Low - No confirmed and highly unlikely populations of SCC	Very Low - Very small (< 1 ha) area; Several major current negative ecological impacts.	Low - Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality	Very Low
Intact Hartenbos Dune Thicket	High – Confirmed presence of SCC (CR, EN, VU); Natural area of EN ecosystem type	High - Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types. Good habitat connectivity with potentially functional ecological corridors	Very High - Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality; species have a very high likelihood of returning to a site once the	Very High

			disturbance or impact has been removed.	
	High – Confirmed presence of SCC (CR, EN, VU); Natural area of EN ecosystem type	High - Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types. Good habitat connectivity with potentially functional ecological corridors	Very High - Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality; species have a very high likelihood of returning to a site once the disturbance or impact has been removed.	Very High
Semi-intact Hartenbos Dune Thicket	Medium – Highly likely presence of SCC (CR, EN, VU). >50% of receptor contains natural habitat likely to support SCC	High - Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types. Good habitat connectivity with potentially functional ecological corridors	Very High - Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality; species have a very high likelihood of returning to a site once the disturbance or impact has been removed.	High
	Medium – Highly likely presence of SCC (CR, EN, VU). >50% of receptor contains natural habitat likely to support SCC	High - Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types. Good habitat connectivity with potentially functional ecological corridors	Very High - Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality; species have a very high likelihood of returning to a site once the disturbance or impact has been removed.	High

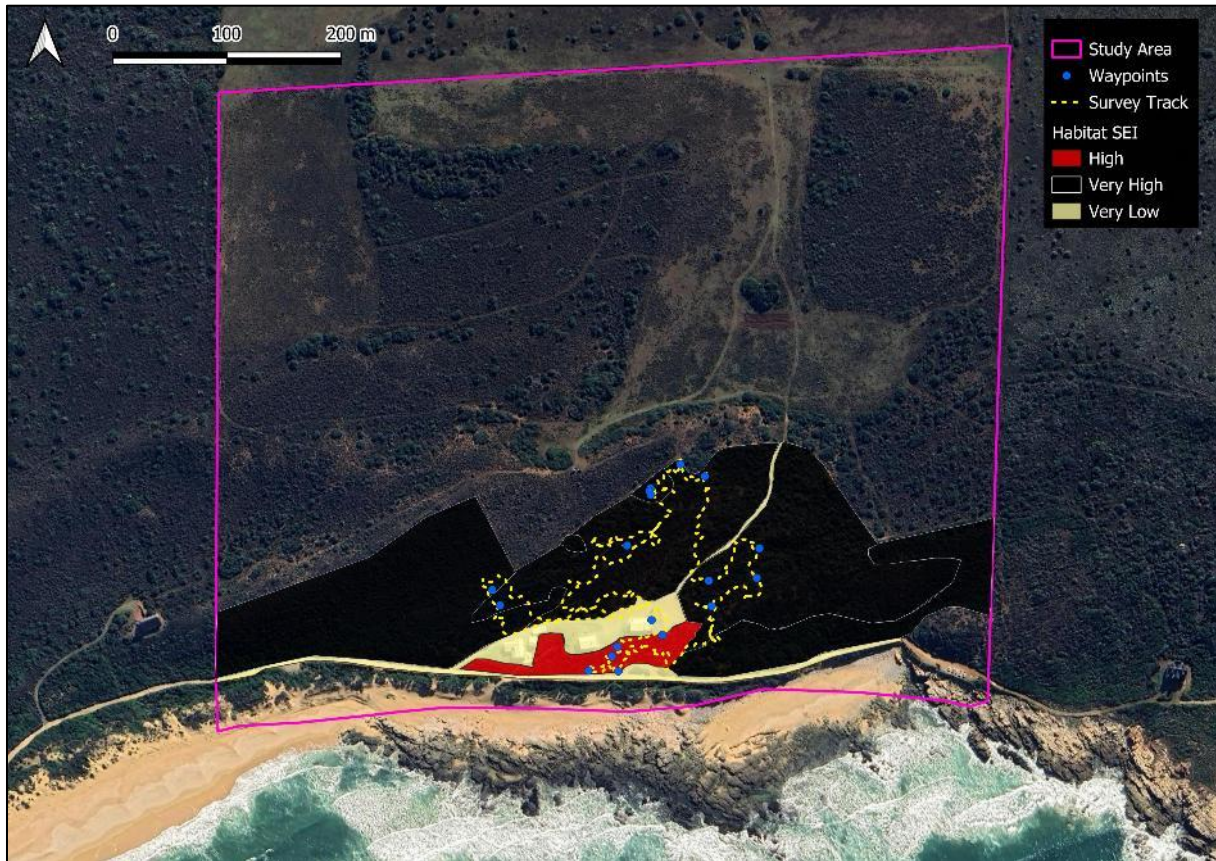


Figure 31. Map showing the SEI for each habitat delineated at the site, overlain on a Google Earth™ satellite image.

10. IMPACT ASSESSMENT

Due to the presence of several plant species of conservation concern, presence of intact vegetation classified as Endangered, and habitat deemed likely to support faunal species of conservation concern, an impact assessment of the completed and proposed development is required, assessing the impacts on Plant, Animal, and Terrestrial Biodiversity themes. The impact assessment is a measure of the impacts likely to occur on the affected environment, specifically the loss of vegetation, ecological processes, important species and destruction of habitats. They are considered for (a) the 'No Go' scenario and (b) the direct, indirect and cumulative impacts of the development. Impacts are assessed for both the construction and operational phase (**Table 18**). The impact assessment methodology is explained in detail in Appendix 1.

10.1. 'NO GO' OR NO DEVELOPMENT SCENARIO

The 'No Go' or no development scenario takes into consideration the impacts associated with the no construction option. It is a prediction of the future state of the affected area in the event of no construction activities taking place and is based on the current and/or anticipated future land use.

In the context of this project, the 'No Go' scenario is moot given that the construction of Building Three has been completed and is thus not considered in **Table 18**.

10.2. DIRECT IMPACTS

Construction Phase

Direct impacts are those that have occurred as a direct result of the development (construction of Building Three) and proposed extension to Building Three. Direct impacts can occur during both the construction and operational phase of the development and are assessed in **Table 18**. The direct impacts assumed as a result of the development are as follows:

1. Potential Loss of Plant Species of Conservation Concern (*Agathosma muirii*, *Cullumia carlinoides*, & *Leucospermum praecox*)
2. Potential Loss of Protected Tree Species
3. Confirmed Loss of Endangered Hartenbos Dune Thicket
4. Loss of habitat deemed likely to support faunal Species of Conservation Concern
5. Potential Disruption of Ecological Functioning

Operational Phase

The operational phase impacts are related to the use of the site for residential use. The majority of the expected impacts are unlikely to be significant in this phase of the project, as the most disruptive or damaging impacts have ceased after the construction of the dwellings. The most significant impact is the assumed exclusion of fire from the landscape, which is likely to lead to the senescence of the veld and eventual dominance of thicket species over fynbos species in the surrounding landscape. This is likely to have a significant impact on *Leucospermum praecox* which requires fire to stimulate recruitment, potentially leading to the loss of this species from the site. Depending on the presence of pets (free ranging cats and dogs have a significant deleterious effect on small mammal, reptile and bird species), the impact on ecological functioning at the site during the operational phase is assumed to be Low Negative to Negligible. Likewise, it is assumed that there will be no further loss of Endangered vegetation or protected tree species during the operational phase. The direct impacts expected as part of the operational phase are assessed in **Table 18**.

Table 18. Impact table for the construction phase and operational phase of the development.

	Loss of Plant SCC	Loss of Endangered Vegetation	Loss of Protected Tree Species	Loss of faunal habitat	Disruption to Ecological functioning
Construction Phase					
Potential impact and risk:	Potential loss/damage of Plant SCC	Confirmed loss of approximately 1450m ² Endangered Hartenbos Dune Thicket vegetation	Potential Loss/damage of <i>Sideroxylon inerme</i>	Loss of habitat deemed likely to support Animal SCC	Habitat fragmentation/degraded connectivity due to habitat removal
Nature of impact:	Negative	Negative	Negative	Negative	Negative
Extent and duration of impact:	Site (1), and Long-term (3)	Local (2) and Long-term (3)	Site (1) and Long-term (3)	Site (1) and Long-term (3)	Site (1) and Long-term (3)
Magnitude	High (3)	High (3)	High (3)	High (3)	High (3)
Consequence of impact or risk:	Moderately detrimental (7)	Highly detrimental (8)	Moderately detrimental (7)	Moderately detrimental (7)	Moderately detrimental (7)
Probability of occurrence:	Definite (4)	Definite (4)	Probable (3)	Definite (4)	Definite (4)
Degree of irreplaceable loss of resources:	Medium	High	Low	High	Medium
Reversibility	Medium	Low	High	Low	Low
Cumulative impact	Low	Low	Very Low	Low	Low
Significance rating	Medium (28)	High (32)	Low (21)	Medium (28)	Medium (28)
Degree to which the impact can be avoided:	Cannot be avoided	Cannot be avoided	Cannot be avoided	Cannot be avoided	Cannot be avoided
Degree to which the impact can be managed:	Medium	Medium	High	Medium	Medium
Degree to which the impact can be mitigated post impact:	Moderate	Moderate	High	Moderate	Moderate
Mitigation/Rehabilitation/Restoration Measures	Rehabilitation of areas elsewhere on the property; Implement fire management and alien species management Plan	Rehabilitation of areas elsewhere on the property; Implement fire management and alien species management Plan	Rehabilitation of areas elsewhere on the property; Implement fire management and alien species management Plan	Rehabilitation of areas elsewhere on the property; Implement fire management and alien species management Plan	Rehabilitation of areas elsewhere on the property; Implement fire management and alien species management Plan

Operational Phase					
Nature of impact:	Negative	Negative	Negative	Negative	Negative
Extent and duration of impact:	Site (1), and Long-term (3)	Site (1) and Long-term (3)	Site (1) and Long-term (3)	Site (1) and Long-term (3)	Site (1) and Long-term (3)
Magnitude	Low (1)	Low (1)	Low (1)	Low (1)	Low (1)
Consequence of impact or risk:	Slightly detrimental (5)	Slightly detrimental (5)	Slightly detrimental (5)	Slightly detrimental (5)	Slightly detrimental (5)
Probability of occurrence:	Possible (2)	Possible (2)	Unlikely (1)	Possible (2)	Possible (2)
Degree of irreplaceable loss of resources:	Low	High	Low	High	Medium
Reversibility:	Medium	Low	High	Low	Low
Cumulative impact	Low	Low	Very Low	Low	Low
Significance rating	Very Low (10)	Very Low (10)	Negligible (5)	Very Low (10)	Very Low (10)
Degree to which the impact can be avoided:	Cannot be avoided	Cannot be avoided	Cannot be avoided	Cannot be avoided	Cannot be avoided
Degree to which the impact can be managed:	High	High	High	High	High
Degree to which the impact can be mitigated:	Medium	Low	High	Low	Low
Mitigation/Rehabilitation/Restoration Measures	Avoid clearance of any further vegetation; garden maintenance to be strictly limited to the disturbed footprint.	Avoid clearance of any further vegetation; garden maintenance to be strictly limited to the disturbed footprint.	Avoid clearance of any further vegetation; garden maintenance to be strictly limited to the disturbed footprint.	Avoid clearance of any further vegetation; garden maintenance to be strictly limited to the disturbed footprint.	Outdoor lighting to be on timers/motion sensors and modified to shine down; herbicide/pesticide use to be strictly limited (this includes the use of rodenticide); animals are to be appropriately confined so as to prevent hunting behaviour in natural vegetation.

10.3 INDIRECT IMPACTS

Indirect impacts are secondary or tertiary consequences as a result of proposed developments, often displaced from the construction phase (either temporally or spatially) and are less conspicuous. Examples include loss of diversity due to loss of connectivity between vegetation remnants or disruption to ecological functionality e.g. loss of pollination of seed dispersal.

The primary indirect impact identified at this site is fire suppression. In some Dune Thicket Vegetation Types, such as Hartenbos Dune Thicket, fire acts to maintain a mosaic of fynbos and thicket dominated vegetation. If fire is excluded from the landscape, it is likely that fynbos elements within the plant species assemblage will disappear, eventually being replaced with thicket species. In the case of this site, this will lead to the loss of at least one species of plant listed as **Vulnerable**. It is recommended that a fire management plan be formulated, with the potential inclusion of ecological burns pending the outcome of risk assessments.

10.4 CUMULATIVE IMPACTS

Cumulative impacts are those impacts linked but not limited to (a) increased loss of vegetation type or the ecosystems listed in the Revised National List of Ecosystems that are threatened and in need of protection (Government Gazette, 2022) and (b) other local developments taking place in the region. It is estimated that approximately 1450m² or 0.145 Ha of Endangered Hartenbos Dune Thicket was cleared as part of the development i.e. the construction of Building Three. It is estimated that this represents >0.01% of the remaining 51404 Ha of Hartenbos Dune Thicket (Government Gazette, 2022). Considering the low percentage lost the cumulative impact of this development is considered to be **Low negative**.

10.5 MITIGATION

Mitigation options are generally considered in terms of the following mitigation hierarchy: (1) avoidance, (2) minimization, (3) restoration and (4) offsets. A distinction is also made between essential mitigation (non-negotiable mitigation measures that lower the impact significance) and non-essential mitigation (best practise measures that do not lower the impact significance).

Given that the impacts have already occurred in the construction phase, the pre-mitigation avoidance and minimisation cannot be applied. Mitigation is thus limited to restoration/rehabilitation and biodiversity offsets.

The recommended restoration and rehabilitation mitigation is as follows:

- Restoration of all areas disturbed by unlawful construction activities. This includes the south facing primary dune below Building 3. This is likely to require a combination of active and passive restoration interventions, depending on how well the vegetation regenerates. A restoration plan is critical to this process, requiring an initial monitoring period. This should include the following measures:
 - Remediation of erosion furrow.
 - Weed control and removal of Invasive Alien Plants (IAPs). Note that IAP removal is not technically mitigation since this is a legal obligation of the land owner but is mentioned here since it is integral to the restoration success.
 - Exclusion of traffic and vehicles from the layby below Building three.
- An additional essential mitigation measure is the implementation and long-term maintenance of an appropriate ecological fire regime through well-timed prescribed burns. This will require an appropriate Fire Management Plan. It is recommended that the applicant contact the Southern Cape Fire Management Association to assist in the formulation of this plan.
- Restoration of degraded habitat upslope of the development. As the vegetation has already been cleared for construction, it is recommended that an area of degraded vegetation upslope of the buildings be restored to account for the loss of Endangered vegetation. Much of the restoration can be achieved through passive measures, allowing species from the surrounding vegetation to recolonise, however some active restoration measures may be required to augment the species assemblage and to manage the habitat to facilitate the recolonisation of the area. This will require a rehabilitation management plan compiled by a competent practitioner.
- Restriction on the movement of free ranging animals is highly advised. Free roaming cats or dogs have a highly negative effect on small faunal species. It is recommended that cats be kept indoors or in an enclosed 'Catio'. Similarly, dogs should remain on leads/restrained or kept in a fenced area to prevent hunting behaviour in the veld.

- Brush cutting and maintenance of open space should be closely managed. Pesticide (including rodenticide) is highly discouraged. Similarly, the use of herbicide should be highly restricted; the removal of *Acacia cyclops* does not require herbicide so the necessity of herbicide at the property is negligible.
- Should outdoor lighting be required, these should be fitted to timers and motion sensors and shielded/oriented in such a way that light only shines downwards. This is to limit the harmful effects of artificial light on nocturnal insects and other wildlife.

11. CONCLUSIONS AND RECOMMENDATIONS

This 24G report aims to assess the impact of the unauthorised construction of a dwelling on Portion 118 of Farm 489, Zwarte Jongersfontein, Hessequa Municipality. The applicant also intends to extend the building in question, including the addition of a sunroom, extra bedroom, and covered patio. Two other dwellings are present at the site pre-date the 2010 listing notices and thus did not require environmental authorisation. The unauthorised construction involved the clearance of approximately 1450m² of vegetation as part of the construction process, based on the examination of historic aerial and satellite imagery.

According to the National Vegetation Map of South Africa (SANBI, 2024) the site is mapped as Hartenbos Dune Thicket, an Endangered vegetation type. The C.A.P.E Fine scale mapping project (Vlok & de Villiers, 2008) have classified the vegetation at the site as Gouritz Dune Thicket and Ystervarkpunt Forest-Thicket-Fynbos, both of which have an equivalent classification status of Least Concern. The latest Western Cape Biodiversity Spatial Plan (2024) classifies the majority of the site as CBA 1, with smaller areas classified as CBA 2. The WCBSP also indicates the presence of a protected area, the Jongensgat Private Nature Reserve, on the eastern boundary of the property.

The results of the site visit show that the vast majority of the study area (approximately the southern third of the property) supports vegetation described as intact Hartenbos Dune Thicket, with smaller areas of semi-intact or transformed habitat. This corroborates the WCBSP and Red List of Ecosystems – Remnant Vegetation map (2022). Three plant species of conservation concern were documented on site (*Agathosma muirii*, *Cullumia carlinoides*, & *Leucospermum praecox*), two of which are classified as Vulnerable, alongside one protected tree species (*Sideroxylon inerme*). Lastly, the habitat present at the site was deemed potentially likely to support at least three animal species of conservation (*Aonyx capensis*, *Circus maurus*, & *Lepidochorysops littoralis*).

Based on historic aerial and satellite imagery, it is likely that the construction of Building 3 resulted in the loss of approximately 1450m² of Endangered Hartenbos Dune Thicket Vegetation. It is difficult to state with any certainty whether any plant SCC were damaged or destroyed as part of this clearance. The clearance of habitat also resulted in the loss of habitat deemed likely to support animal SCC, in addition to disrupting the ecological functioning of the site.

As a result, the impact of the unauthorised construction is estimated to be **High Negative** due to the clearance of an Endangered vegetation type, **Medium Negative** for the potential loss of Plant SCC, Habitat deemed likely to support animal SCC, and disruption to ecological functioning. Whilst 1450m² of Endangered vegetation was lost, it is deemed to have a low cumulative impact. Furthermore, the present distribution of SCC indicates that whilst it is likely that some SCC were potentially lost during construction (namely *Agathosma muirii*) it is unlikely to have had a significantly deleterious effect on the viability of these species at the site. Additionally, the habitat lost during construction, (deemed able to support animal SCC), is also unlikely to have a severe impact in the presence of animal SCC due to the availability of similarly suitable habitat elsewhere on the property and the relatively low intensity of the ongoing impacts are unlikely to continue to prevent SCC from returning to the study area.

Whilst pre-development mitigation measures are void, due to the impacts of the development having already taken place, a number of rehabilitation, restoration, and maintenance measures have been recommended. These include the rehabilitation of areas disturbed during unauthorised construction, the formulation of a fire management and alien plant species management plans to support the long-term viability of fynbos species at the site (in particular *Leucospermum praecox*), and the recommended restoration of habitat elsewhere on the property to account for the unauthorised clearance of Endangered vegetation. If the aforementioned post-impact mitigation measures are implemented, the impacts of the development are estimated to be of **Medium to Low Negative** consequence.

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APPENDIX 1: ASSESSMENT METHODOLOGY

For each impact, the **nature** (positive/negative), **extent** (spatial scale), **magnitude/intensity** (intensity scale), **duration** (time scale), **consequence** (calculated numerically) and **probability** of occurrence is ranked and described. These criteria would be used to ascertain the **significance** of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place.

The tables below show the rankings of these variables, and defines each of the rating categories.

Table 2: Assessment criteria for the evaluation of impacts

CRITERIA	RANK	DESCRIPTION
Nature	Positive (+)	The environment will be positively affected.
	Negative (-)	The environment will be negatively affected.
Extent or spatial influence of impact	National (4)	Beyond provincial boundaries, but within national boundaries.
	Regional (3)	Beyond a 10 km radius of the proposed activities, but within provincial boundaries.
	Local (2)	Within a 10 km radius of the proposed activities.
	Site specific (1)	On site or within 100 m of the proposed activities.
	Zero (0)	Zero extent.
Magnitude/ intensity of impact (at the indicated spatial scale)	High (3)	Natural and/ or social functions and/ or processes are <i>severely</i> altered.
	Medium (2)	Natural and/ or social functions and/ or processes are <i>notably</i> altered.
	Low (1)	Natural and/ or social functions and/ or processes are <i>slightly</i> altered.
	Zero (0)	Natural and/ or social functions and/ or processes remain <i>unaltered</i> .
Duration of impact	Long Term (3)	More than 10 years, but impact ceases after the operational phase.
	Medium Term (2)	Between 3 – 10 years.
	Short Term (1)	Construction period (up to 3 years).
	None (0)	Zero duration.
Consequence (Nature x (Extent + Magnitude/ Intensity + Duration))	Extremely beneficial/ detrimental (10 – 11) (+/-)	The impact is <i>extremely</i> beneficial/ detrimental.
	Highly beneficial/ detrimental (8 – 9) (+/-)	The impact is <i>highly</i> beneficial/ detrimental.
	Moderately beneficial/ detrimental (6 – 7) (+/-)	The impact is <i>moderately</i> beneficial/ detrimental.

	Slightly beneficial/detrimental (4 – 5) (+/-)	The impact is <i>slightly</i> beneficial/detrimental.
	Negligibly beneficial/detrimental (1 – 3) (+/-)	The impact is <i>negligibly</i> beneficial/detrimental.
	Zero consequence (0) (+/-)	The impact has zero consequence.
Probability of occurrence	Definite (4)	Estimated at a greater than 95% chance of the impact occurring.
	Probable (3)	Estimated 50 – 95% chance of the impact occurring.
	Possible (2)	Estimated 6 – 49% chance of the impact occurring.
	Unlikely (1)	Estimated less than 5% chance of the impact occurring.
	None (0)	Estimated no chance of impact occurring.

The **significance** of an impact is derived by taking into account the **consequence** (nature of the impact and its extent, magnitude/intensity and duration) of the impact and the **probability** of this impact occurring through the use of the following formula:

$$\text{Significance Score} = \text{Consequence} \times \text{Probability}$$

The means of arriving at a significance rating is explained in Table 3.

Table 3: Definition of significance ratings

SIGNIFICANCE SCORE	SIGNIFICANCE RATINGS	
32 – 40	High (+)	High (-)
25 – 31	Medium (+)	Medium (-)
19 – 24	Low (+)	Low (-)
10 – 18	Very-Low (+)	Very-Low (-)
1 – 9	Negligible	

Once the significance of an impact has been determined, the **confidence** in the assessment of the impact, as well as the degree of **reversibility** of the impact and **irreplaceable loss of resources** would be determined using the rating systems outlined in Table 4, 5 and 6 respectively. Lastly, the **cumulative impact** is ranked and described as outlined in Table 7.

Table 4: Definition of confidence ratings

CONFIDENCE RATINGS	CRITERIA
High	Wealth of information on and sound understanding of the environmental factors potentially influencing the impact.
Medium	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact.
Low	Limited useful information on and understanding of the environmental factors potentially influencing this impact.

Table 5: Degree of reversibility

REVERSABILITY OF IMPACT	CRITERIA
High	High potential for reversibility.
Medium	Medium potential for reversibility.
Low	Low potential for reversibility.
Zero	Zero potential for reversibility.

Table 6: Degree of irreplaceability

IRREPLACEABLE LOSS OF RESOURCES	CRITERIA
High	Definite loss of irreplaceable resources.
Medium	Medium potential for loss of irreplaceable resources.
Low	Low potential for loss of irreplaceable resources.
Zero	Zero potential for loss of irreplaceable resources.

Table 7: Cumulative Impact on the environment

CUMULATIVE IMPACTS	CRITERIA
High	The activity is one of <i>several</i> similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the geographical, physical, biological, social, economic and cultural aspects of the environment.
Medium	The activity is one of a <i>few</i> similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the geographical, physical, biological, social, economic and cultural aspects of the environment.
Low	The activity is localised and might have a negligible cumulative impact.
Zero	No cumulative impact on the environment.

APPENDIX 2: ANIMAL SPECIES LIST FOR PORTION 118 OF FARM 489, ZWARTE JONGERSFONTEIN, HESSEQUA MUNICIPALITY

Table 1. Species list for Portion 118 of Farm 489, Zwarte Jongensfontein. The species listed are deemed possible to occur in or near the site based on species known distribution. Methodology for how this list was formulated is described in Section 4 (Methodology). Note that "Present/recorded" indicates that this species (or evidence of) was either seen or heard by this author. Bird species for this location were compiled from South African Bird Atlas Project (SABAP) for pentad 3425_2120.

Class	Species Name	Common Name	Observed/Present
Amphibian	<i>Amietia delalandii</i>	Delalande's River Frog	
Amphibian	<i>Amietia fuscigula</i>	Dark-throated River Frog	
Amphibian	<i>Amietia poyntoni</i>	Poynton's River Frog	
Amphibian	<i>Breviceps montanus</i>	Cape Mountain Frog	
Amphibian	<i>Breviceps rosei</i>	Rose's Rain Frog	
Amphibian	<i>Cacosternum australis</i>	Southern Dainty Frog	
Amphibian	<i>Cacosternum nanum</i>	Bronze Caco	
Amphibian	<i>Hyperolius horstockii</i>	Horstock's Reed Frog	
Amphibian	<i>Hyperolius marmoratus</i>	Painted Reed Frog	
Amphibian	<i>Sclerophrys capensis</i>	Raucous Toad	
Amphibian	<i>Semnodactylus wealii</i>	Weale's Running Frog	
Amphibian	<i>Strongylopus fasciatus</i>	Striped Stream Frog	
Amphibian	<i>Strongylopus grayii</i>	Gray's Stream Frog	
Amphibian	<i>Tomopterna delalandii</i>	Delalande's Sand Frog	
Amphibian	<i>Vandijkophrynus angusticeps</i>	Sand Toad	
Amphibian	<i>Xenopus laevis</i>	African Clawed Frog	
Aves	<i>Accipiter rufiventris</i>	Rufous-breasted Sparrowhawk	
Aves	<i>Acrocephalus gracilirostris</i>	Lesser Swamp Warbler	
Aves	<i>Acrocephalus scirpaceus</i>	Common Reed Warbler	
Aves	<i>Actitis hypoleucos</i>	Common Sandpiper	
Aves	<i>Alopochen aegyptiaca</i>	Egyptian Goose	
Aves	<i>Anas capensis</i>	Cape Teal	
Aves	<i>Anas erythrorhyncha</i>	Red-billed Teal	
Aves	<i>Anas smithii</i>	Cape Shoveler	
Aves	<i>Anas undulata</i>	Yellow-billed Duck	
Aves	<i>Andropadus importunus</i>	Sombre Greenbul	
Aves	<i>Anhinga rufa</i>	African Darter	
Aves	<i>Anthus cinnamomeus</i>	African Pipit	
Aves	<i>Apalis thoracica</i>	Bar-throated Apalis	
Aves	<i>Apus affinis</i>	Little Swift	
Aves	<i>Apus caffer</i>	White-rumped Swift	
Aves	<i>Apus horus</i>	Horus Swift	
Aves	<i>Ardea cinerea</i>	Grey Heron	
Aves	<i>Ardea melanocephala</i>	Black-headed Heron	
Aves	<i>Ardea purpurea</i>	Purple Heron	

Aves	<i>Arenaria interpres</i>	Ruddy Turnstone	
Aves	<i>Batis capensis</i>	Cape Batis	
Aves	<i>Bostrychia hagedash</i>	Hadada Ibis	
Aves	<i>Bradypterus baboecala</i>	Little Rush Warbler	
Aves	<i>Bradypterus sylvaticus</i>	Knysna Warbler	
Aves	<i>Bubo africanus</i>	Spotted Eagle-Owl	
Aves	<i>Bubulcus ibis</i>	Western Cattle Egret	
Aves	<i>Burhinus capensis</i>	Spotted Thick-knee	
Aves	<i>Burhinus vermiculatus</i>	Water Thick-knee	
Aves	<i>Buteo buteo</i>	Common Buzzard	
Aves	<i>Buteo rufofuscus</i>	Jackal Buzzard	
Aves	<i>Calandrella cinerea</i>	Red-capped Lark	
Aves	<i>Calidris alba</i>	Sanderling	
Aves	<i>Calidris ferruginea</i>	Curlew Sandpiper	
Aves	<i>Calidris minuta</i>	Little Stint	
Aves	<i>Campethera notata</i>	Knysna Woodpecker	
Aves	<i>Caprimulgus pectoralis</i>	Fiery-necked Nightjar	
Aves	<i>Cecropis cucullata</i>	Greater Striped Swallow	
Aves	<i>Centropus burchellii</i>	Burchell's Coucal	
Aves	<i>Cercotrichas coryphoeus</i>	Karoo Scrub Robin	
Aves	<i>Ceryle rudis</i>	Pied Kingfisher	
Aves	<i>Chalcomitra amethystina</i>	Amethyst Sunbird	
Aves	<i>Charadrius marginatus</i>	White-fronted Plover	
Aves	<i>Charadrius tricollaris</i>	Three-banded Plover	
Aves	<i>Chionis albus</i>	Snowy Sheathbill	
Aves	<i>Chlorophoneus olivaceus</i>	Olive Bushshrike	
Aves	<i>Chrysococcyx caprius</i>	Diederik Cuckoo	
Aves	<i>Chrysococcyx klaas</i>	Klaas's Cuckoo	
Aves	<i>Cinnyris afer</i>	Greater Double-collared Sunbird	
Aves	<i>Cinnyris chalybeus</i>	Southern Double-collared Sunbird	X
Aves	<i>Cisticola fulvicapilla</i>	Neddicky	
Aves	<i>Cisticola subruficapilla</i>	Grey-backed Cisticola	
Aves	<i>Cisticola tinniens</i>	Levaillant's Cisticola	
Aves	<i>Clamator jacobinus</i>	Jacobin Cuckoo	
Aves	<i>Colius colius</i>	White-backed Mousebird	
Aves	<i>Colius striatus</i>	Speckled Mousebird	
Aves	<i>Columba guinea</i>	Speckled Pigeon	
Aves	<i>Columba livia</i>	Rock Dove	
Aves	<i>Corvus albicollis</i>	White-necked Raven	
Aves	<i>Corvus albus</i>	Pied Crow	
Aves	<i>Corvus capensis</i>	Cape Crow	
Aves	<i>Corythornis cristatus</i>	Malachite Kingfisher	
Aves	<i>Cossypha caffra</i>	Cape Robin-Chat	

Aves	<i>Crithagra albogularis</i>	White-throated Canary	
Aves	<i>Crithagra flaviventris</i>	Yellow Canary	
Aves	<i>Crithagra gularis</i>	Streaky-headed Seed-eater	
Aves	<i>Crithagra sulphurata</i>	Brimstone Canary	
Aves	<i>Curruca subcoerulea</i>	Chestnut-vented Warbler	
Aves	<i>Cypsiurus parvus</i>	African Palm Swift	
Aves	<i>Delichon urbicum</i>	Common House Martin	
Aves	<i>Dendrocygna viduata</i>	White-faced Whistling Duck	
Aves	<i>Dendropicos fuscescens</i>	Cardinal Woodpecker	
Aves	<i>Dicrurus adsimilis</i>	Fork-tailed Drongo	
Aves	<i>Egretta garzetta</i>	Little Egret	
Aves	<i>Elanus caeruleus</i>	Black-winged Kite	
Aves	<i>Emberiza capensis</i>	Cape Bunting	
Aves	<i>Estrilda astrild</i>	Common Waxbill	
Aves	<i>Euplectes capensis</i>	Yellow Bishop	
Aves	<i>Euplectes orix</i>	Southern Red Bishop	
Aves	<i>Falco rupicolus</i>	Rock Kestrel	
Aves	<i>Fulica cristata</i>	Red-knobbed Coot	
Aves	<i>Galerida magnirostris</i>	Large-billed Lark	
Aves	<i>Gallinula chloropus</i>	Common Moorhen	
Aves	<i>Haematopus moquini</i>	African Oystercatcher	
Aves	<i>Halcyon albiventris</i>	Brown-hooded Kingfisher	
Aves	<i>Himantopus himantopus</i>	Black-winged Stilt	
Aves	<i>Hirundo albicollis</i>	White-throated Swallow	
Aves	<i>Hirundo dimidiata</i>	Pearl-breasted Swallow	
Aves	<i>Hirundo rustica</i>	Barn Swallow	
Aves	<i>Hydroprogne caspia</i>	Caspian Tern	
Aves	<i>Indicator minor</i>	Lesser Honeyguide	
Aves	<i>Lamprolaima bicolor</i>	Pied Starling	
Aves	<i>Laniarius ferrugineus</i>	Southern Boubou	
Aves	<i>Lanius collaris</i>	Southern Fiscal	X
Aves	<i>Larus dominicanus</i>	Kelp Gull	X
Aves	<i>Macronectes giganteus</i>	Southern Giant Petrel	
Aves	<i>Megaceryle maxima</i>	Giant Kingfisher	
Aves	<i>Melaenornis silens</i>	Fiscal Flycatcher	
Aves	<i>Merops bullockoides</i>	White-fronted Bee-eater	
Aves	<i>Microcarbo africanus</i>	Reed Cormorant	
Aves	<i>Mirafra apiata</i>	Cape Clapper Lark	
Aves	<i>Monticola rupestris</i>	Cape Rock-Thrush	
Aves	<i>Morus capensis</i>	Cape Gannet	
Aves	<i>Motacilla capensis</i>	Cape Wagtail	X
Aves	<i>Motacilla cinerea</i>	Grey Wagtail	
Aves	<i>Nectarinia famosa</i>	Malachite Sunbird	

Aves	<i>Notopholia corrusca</i>	Black-bellied Starling	
Aves	<i>Numenius phaeopus</i>	Eurasian Whimbrel	
Aves	<i>Nycticorax nycticorax</i>	Black-crowned Night Heron	
Aves	<i>Oena capensis</i>	Namaqua Dove	
Aves	<i>Onychognathus morio</i>	Red-winged Starling	
Aves	<i>Passer diffusus</i>	Southern Grey-headed Sparrow	
Aves	<i>Passer domesticus</i>	House Sparrow	
Aves	<i>Passer melanurus</i>	Cape Sparrow	
Aves	<i>Phalacrocorax capensis</i>	Cape Cormorant	
Aves	<i>Phalacrocorax lucidus</i>	White-breasted Cormorant	
Aves	<i>Phyllastrephus terrestris</i>	Terrestrial Brownbul	
Aves	<i>Ploceus capensis</i>	Cape Weaver	
Aves	<i>Ploceus velatus</i>	Southern Masked Weaver	
Aves	<i>Podiceps nigricollis</i>	Black-necked Grebe	
Aves	<i>Porphyrio madagascariensis</i>	African Swamphen	
Aves	<i>Prinia maculosa</i>	Karoo Prinia	
Aves	<i>Procellaria aequinoctialis</i>	White-chinned Petrel	
Aves	<i>Promerops cafer</i>	Cape Sugarbird	
Aves	<i>Psalidoprocne pristoptera</i>	Black Saw-wing	
Aves	<i>Pternistis capensis</i>	Cape Spurfowl	X
Aves	<i>Ptyonoprogne fuligula</i>	Rock Martin	
Aves	<i>Pycnonotus capensis</i>	Cape Bulbul	X
Aves	<i>Riparia paludicola</i>	Brown-throated Martin	
Aves	<i>Saxicola torquatus</i>	African Stonechat	
Aves	<i>Serinus alario</i>	Black-headed Canary	
Aves	<i>Serinus canicollis</i>	Cape Canary	
Aves	<i>Spheniscus demersus</i>	African Penguin	
Aves	<i>Sphenoeacus afer</i>	Cape Grassbird	
Aves	<i>Spilopelia senegalensis</i>	Laughing Dove	
Aves	<i>Sterna hirundo</i>	Common Tern	
Aves	<i>Streptopelia capicola</i>	Ring-necked Dove	
Aves	<i>Streptopelia semitorquata</i>	Red-eyed Dove	X
Aves	<i>Sturnus vulgaris</i>	Common Starling	
Aves	<i>Sylvietta rufescens</i>	Long-billed Crombec	
Aves	<i>Tachybaptus ruficollis</i>	Little Grebe	
Aves	<i>Tachymarptis melba</i>	Alpine Swift	
Aves	<i>Tchagra tchagra</i>	Southern Tchagra	
Aves	<i>Telophorus zeylonus</i>	Bokmakierie	X
Aves	<i>Terpsiphone viridis</i>	African Paradise Flycatcher	
Aves	<i>Thalassarche cauta</i>	Shy Albatross	
Aves	<i>Thalassarche cauta</i>	Shy Albatross	
Aves	<i>Thalasseus bergii</i>	Greater Crested Tern	
Aves	<i>Thalasseus sandvicensis</i>	Sandwich Tern	

Aves	<i>Threskiornis aethiopicus</i>	African Sacred Ibis	
Aves	<i>Tricholaema leucomelas</i>	Acacia Pied Barbet	
Aves	<i>Turdus olivaceus</i>	Olive Thrush	
Aves	<i>Upupa africana</i>	African Hoopoe	
Aves	<i>Urocolius indicus</i>	Red-faced Mousebird	
Aves	<i>Vanellus armatus</i>	Blacksmith Lapwing	
Aves	<i>Vanellus coronatus</i>	Crowned Lapwing	
Aves	<i>Vidua macroura</i>	Pin-tailed Whydah	
Aves	<i>Zaportina flavirostra</i>	Black Crake	
Aves	<i>Zosterops virens</i>	Cape White-eye	
Mammalia	<i>Acomys subspinosus</i>	Cape Spiny Mouse	
Mammalia	<i>Atilax paludinosus</i>	Marsh Mongoose	
Mammalia	<i>Bathergus suillus</i>	Cape Dune Mole Rat	X
Mammalia	<i>Caracal caracal</i>	Caracal	
Mammalia	<i>Chlorocebus pygerythrus</i>	Vervet	
Mammalia	<i>Crocidura cyanea</i>	Reddish-grey White-toothed Shrew	
Mammalia	<i>Crocidura flavescens</i>	Greater Red White-toothed Shrew	
Mammalia	<i>Cryptomys hottentotus</i>	African Mole-rat	
Mammalia	<i>Cynictis penicillata</i>	Yellow Mongoose	
Mammalia	<i>Damaliscus pygargus</i>	Bontebok	
Mammalia	<i>Dasymys incommutus</i>	African Marsh Rat	
Mammalia	<i>Dendromus mesomelas</i>	Brants's African Climbing Mouse	
Mammalia	<i>Felis lybica</i>	Afro-Asiatic Wildcat	
Mammalia	<i>Genetta genetta</i>	Common Genet	
Mammalia	<i>Genetta tigrina</i>	Cape Genet	X
Mammalia	<i>Georchus capensis</i>	Cape Mole-rat	
Mammalia	<i>Gerbilliscus afer</i>	Cape Gerbil	
Mammalia	<i>Gerbilliscus paeba</i>	Paeba Hairy-footed Gerbil	
Mammalia	<i>Graphiurus ocularis</i>	Spectacled African Dormouse	
Mammalia	<i>Herpestes ichneumon</i>	Egyptian Mongoose	
Mammalia	<i>Herpestes pulverulentus</i>	Cape Grey Mongoose	
Mammalia	<i>Hystrix africaeaustralis</i>	Cape Porcupine	
Mammalia	<i>Ictonyx striatus</i>	Zorilla	
Mammalia	<i>Laephotis capensis</i>	Cape Serotine	
Mammalia	<i>Leptailurus serval</i>	Serval	
Mammalia	<i>Lepus capensis</i>	Cape Hare	
Mammalia	<i>Lepus saxatilis</i>	Scrub Hare	
Mammalia	<i>Lupulella mesomelas</i>	Black-backed Jackal	
Mammalia	<i>Mastomys coucha</i>	Southern African Multimammate Mouse	
Mammalia	<i>Mellivora capensis</i>	Honey Badger	
Mammalia	<i>Micaelamys namaquensis</i>	Namaqua Rock Rat	
Mammalia	<i>Miniopterus fraterculus</i>	Lesser Long-fingered Bat	
Mammalia	<i>Miniopterus natalensis</i>	Natal Long-fingered Bat	

Mammalia	<i>Mus minutoides</i>	Pygmy Mouse	
Mammalia	<i>Mus musculus</i>	House Mouse	
Mammalia	<i>Myomyscus verreauxii</i>	Verreaux's Mouse	
Mammalia	<i>Myosorex varius</i>	Forest Shrew	
Mammalia	<i>Myotis tricolor</i>	Temminck's Myotis	
Mammalia	<i>Nycteris thebaica</i>	Egyptian Slit-faced Bat	
Mammalia	<i>Nyctinomus aegyptiacus</i>	Egyptian Free-tailed Bat	
Mammalia	<i>Oreotragus oreotragus</i>	Klipspringer	
Mammalia	<i>Orycteropus afer</i>	Aardvark	
Mammalia	<i>Otocyon megalotis</i>	Bat-eared Fox	
Mammalia	<i>Otomys irroratus</i>	Southern African Vlei Rat	
Mammalia	<i>Otomys karoensis</i>	Roberts' Vlei Rat	
Mammalia	<i>Papio ursinus</i>	Chacma Baboon	
Mammalia	<i>Poemys melanotis</i>	Grey African Climbing Mouse	
Mammalia	<i>Potamochoerus larvatus</i>	Bushpig	
Mammalia	<i>Procavia capensis</i>	Rock Hyrax	
Mammalia	<i>Proteles cristatus</i>	Aardwolf	
Mammalia	<i>Raphicerus campestris</i>	Steenbok	
Mammalia	<i>Raphicerus melanotis</i>	Cape Grysbok	X
Mammalia	<i>Rattus rattus</i>	House Rat	
Mammalia	<i>Rhabdomys pumilio</i>	Four-striped Grass Mouse	
Mammalia	<i>Rhinolophus capensis</i>	Cape Horseshoe Bat	
Mammalia	<i>Rhinolophus clivosus</i>	Geoffroy's Horseshoe Bat	
Mammalia	<i>Rousettus aegyptiacus</i>	Egyptian Rousette	
Mammalia	<i>Saccostomus campestris</i>	Southern African Pouched Mouse	
Mammalia	<i>Suncus varilla</i>	Lesser Dwarf Shrew	
Mammalia	<i>Sylvicapra grimmia</i>	Common Duiker	X
Mammalia	<i>Tragelaphus oryx</i>	Common Eland	
Mammalia	<i>Tragelaphus scriptus</i>	Bushbuck	
Mammalia	<i>Vulpes chama</i>	Cape Fox	
Reptilia	<i>Acontias orientalis</i>	Eastern Cape Legless Skink	
Reptilia	<i>Afrogecko porphyreus</i>	Marbled Leaf-toed Gecko	
Reptilia	<i>Agama atra</i>	Rock Agama	
Reptilia	<i>Bitis atropos</i>	Berg Adder	
Reptilia	<i>Boaedon capensis</i>	Brown House Snake	
Reptilia	<i>Bradypodion gutturale</i>	Little Karoo Dwarf Chameleon	
Reptilia	<i>Causus rhombeatus</i>	Rhombic Night Adder	
Reptilia	<i>Chamaesaura anguina</i>	Cape Snake Lizard	
Reptilia	<i>Chersinia angulata</i>	Cape Angulate Tortoise	X
Reptilia	<i>Cordylus cordylus</i>	Cape Girdled Lizard	
Reptilia	<i>Dispholidus typus</i>	Boomslang	
Reptilia	<i>Duberria lutrix</i>	Common Slug Eater	
Reptilia	<i>Hemachatus haemachatus</i>	Southern Rinkhals	

Reptilia	<i>Homoroselaps lacteus</i>	Spotted Harlequin Snake	
Reptilia	<i>Lamprophis aurora</i>	Aurora Snake	
Reptilia	<i>Lamprophis guttatus</i>	Spotted Rock Snake	
Reptilia	<i>Leptotyphlops nigricans</i>	Black Thread Snake	
Reptilia	<i>Lycodonomorphus inornatus</i>	Olive Ground Snake	
Reptilia	<i>Lycophidion capense</i>	Cape Wolf Snake	
Reptilia	<i>Naja nivea</i>	Cape Cobra	
Reptilia	<i>Pachydactylus geitje</i>	Ocellated Gecko	
Reptilia	<i>Pedioplanis burchelli</i>	Burchell's Sand Lizard	
Reptilia	<i>Pedioplanis lineocellata</i>	Spotted Sand Lizard	
Reptilia	<i>Philothamnus natalensis</i>	Eastern Natal Green Snake	
Reptilia	<i>Philothamnus occidentalis</i>	South African Green Snake	
Reptilia	<i>Prosymna sundevalli</i>	Sundevall's Shovel-snout	
Reptilia	<i>Psammophis crucifer</i>	Cross-marked Whip Snake	
Reptilia	<i>Psammophis notostictus</i>	Karoo Sand Snake	
Reptilia	<i>Psammophylax rhombeatus</i>	Spotted Skaapsteker	
Reptilia	<i>Pseudaspis cana</i>	Mole Snake	
Reptilia	<i>Rhinotyphlops lalandei</i>	Delalande's Beaked Blind Snake	
Reptilia	<i>Tetradactylus seps</i>	Short-legged Seps	
Reptilia	<i>Trachylepis capensis</i>	Cape Skink	
Reptilia	<i>Trachylepis homalocephala</i>	Red-sided Skink	
Reptilia	<i>Trachylepis sulcata</i>	Western Rock Skink	
Reptilia	<i>Varanus albigularis</i>	White-throated Monitor	
Reptilia	<i>Varanus niloticus</i>	Nile Monitor	

APPENDIX 3: ABBREVIATED CURRICULUM VITAE: ADAM LABUSCHAGNE

Experience

- Terrestrial and aquatic ecological field experience across a wide range of biomes including Tropical Asia, Temperate Europe, and the CFR
- Data management and analysis
- Experience with statistical and GIS programs including R and QGIS.
- Species distribution and Ecological Niche modelling experience.
- MSc Thesis Title "*Using satellite telemetry to understand the movement ecology and diving behaviour of *Caretta caretta* in the Cape Verde Archipelago*"

Career History

- 2023 – present: Independent ecologist at Capensis Ecological Surveys
- August 2023 – present: Independent Ecologist and Field Technician at Inkululeko Wildlife Services
- March 2023 – present: Independent ecology specialist and associate of Bergwind Botanical Surveys & Tours CC.
- December 2020-February 2023: Field Manager and Research Officer at Human Wildlife Solutions.

Education and qualifications

- Pr. Nat. Sci. (133686) (Ecology and Zoology)
- MSc (Ecology & Evolutionary Biology) – Queen Mary University (2019).
- BSc (Zoology) – University of Roehampton (2015-2018)

Personal Details

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