Appendix F Terrestrial Biodiversity, Plant and Animal Theme SSVR

Environmental and Social Impact Assessment for Field Development in Block 11B/12B and associated production activities, South Africa

Draft Scoping Report

SLR Project No.: 700.000130.00001

14 September 2026

Site Sensitivity Verification Report

Terrestrial Biodiversity, Plant and Animal Theme

Field Development in Block 11B/12B and associated production activities

Mossel Bay Local Municipality, Garden Route District Municipality, Western Cape Province, South Africa

11/08/2026

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Project Title	**Field Development in Block 11B/12B and associated production activities**	
Report Name	Site Sensitivity Verification Report	
Specialist Theme	Terrestrial Biodiversity, Plant and Animal Theme	
Project Reference	Onshore Gas Pipelines	
Date	Draft 1 / 11/08/2026	
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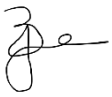
Technical Support	Brittney Jamieson (Can. Nat. Sci. 178794)	
Declaration	The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, Amended. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principles of science.	

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1 Introduction

Main Street 1549 (Pty) Ltd (Main Street)[1], together with its Joint Venture (JV) partners at the time[2], conducted exploration activities in Block 11B/12B, located ~75 km off the South Coast of South Africa, roughly between Mossel Bay and Cape St Francis (see Figure 1-1). These activities, undertaken under their Exploration Right (Ref. No. 12/3/067), included seismic surveys and exploration well drilling, which led to the discovery of gas and associated condensates in the Brulpadda 1AX (2019) and Luiperd 1X (2020) wells.

Following the discovery of gas-condensate within the Paddavissie Fairway, the JV partners evaluated several development scenarios, considering both current and potential future domestic gas market demand. In September 2022, the JV partners submitted an application for a Production Right (PR 12/4/013) (PR).

Under TEEPSA leadership, the JV also applied for an Environmental Authorisation (EA) and commissioned an Environmental and Social Impact Assessment (ESIA) for an early field development scenario, accompanied by a public participation process in 2022 and 2023. However, in 2024, TEEPSA resigned as operator of Block 11B/12B, and together with QatarEnergy and CNRI, withdrew from the project. Main Street, elected to continue with the Project and assumed operatorship.

As the new operator, Main Street planned to advance the project through a downscaled, largely non-intrusive survey campaign to assess the metocean, benthic, geotechnical and geophysical conditions in the area, thereby informing potential future development scenarios. An EA application for this survey campaign was subsequently submitted, and the associated ESIA process commenced in February 2025.

As a result of the progressive evaluation and advancement of technical development work, and in accordance with the principles of integrated environmental management under the National Environmental Management Act, 1998 (No. 107 of 1998) (NEMA), Main Street has expanded the ESIA to encompass the entire field development of the Paddavissie Fairway. This approach ensures comprehensive assessment of all reasonably foreseeable environmental and socio-economic impacts. This expansion in scope has led to the submission of the current EA application and associated ESIA process.

In terms of the requirements of the Environmental Impact Assessment (EIA) Regulations 2014 (as amended), published under NEMA, the proposed development and production activities require an application for EA and the undertaking of an ESIA process.

Main Street appointed SLR Consulting (South Africa) (Pty) Ltd to undertake the ESIA process. The Biodiversity Company has in turn been appointed to undertake the Site Sensitivity Verification (SSV) for the proposed onshore gas pipeline alternatives which forms part of the overall ESIA for “Field Development in Block 11B/12B and associated production activities”.

This report, after considering the findings and recommendations provided by the specialist herein, should inform and guide the Environmental Assessment Practitioner (EAP) and regulatory authorities at a scoping level, enabling informed decision making.

[1] Main Street is owned by Africa Energy SA Corp (Africa Energy) and Arostyle Investments (RF) Limited.
[2] Main Street’s JV partners in the Exploration right were Canadian Natural Resources International (South Africa) Limited (CNRI), QatarEnergy International E&P LLC (previously Qatar Petroleum International Upstream LLC) and TOTAL Energies EP South Africa (now TotalEnergies EP South Africa S.A.S.) (TEEPSA).

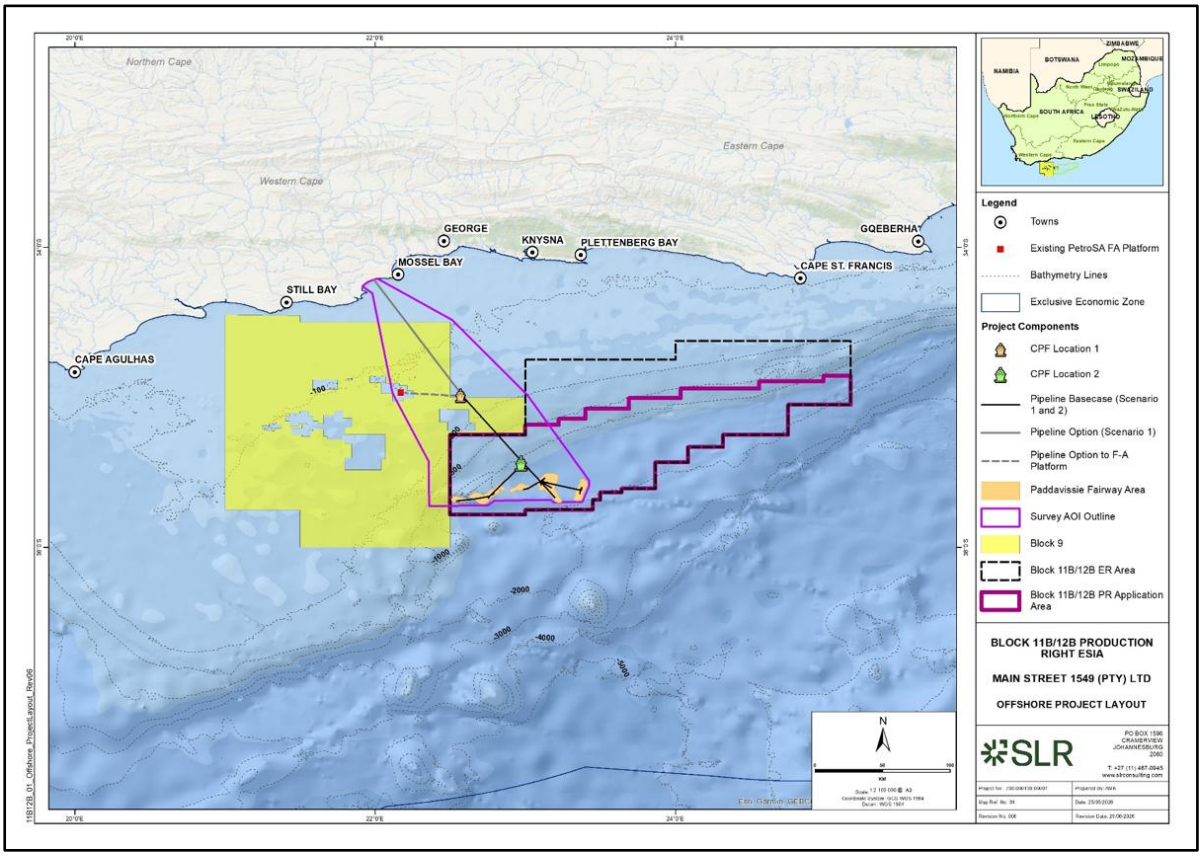


Figure 1-1 ***Locality map of Block 11B/12B, showing the offshore survey area, Paddavissie Fairway and Development Scenarios, off the South African South Coast (SLR, 2026)***

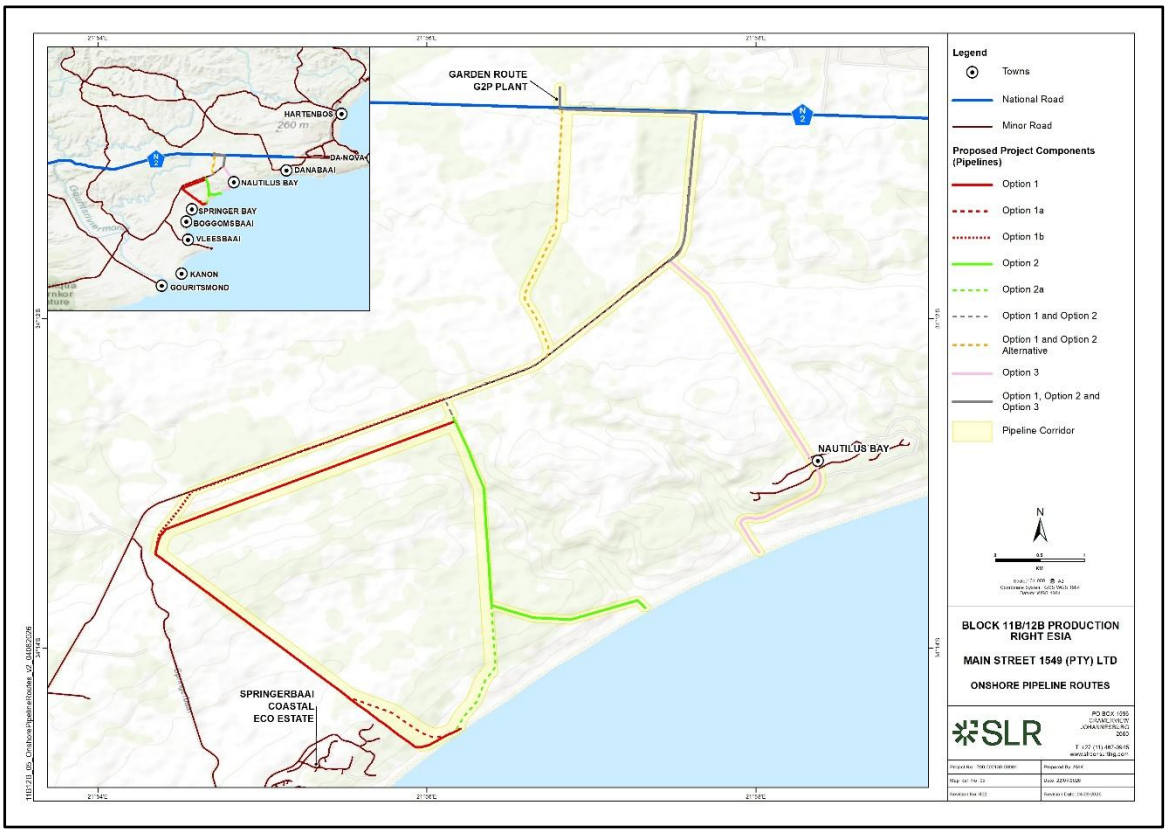


Figure 1-2 Map illustrating the proposed pipelines as received from SLR Consulting (July 2026)

1.1 Project Area of Influence

The project site is located within and around the Mossel Bay city, which falls within the jurisdiction of the Mossel Bay Local Municipality and the Garden Route District Municipality in the Western Cape Province (Figure 1-1). Figure 1-2 illustrates the proposed pipeline alternatives as received from SLR. The proposed pipeline alternatives and associated 100 m corridors as provided are collectively referred to as the Project Area of Influence (PAOI) for reporting purposes (Figure 1-3).

Six (6) pipeline alternatives were provided, with an associated 100 m corridor for each alternative. These are collectively referred to as the PAOI for reporting purposes and were assessed during the site survey (Figure 1-3).

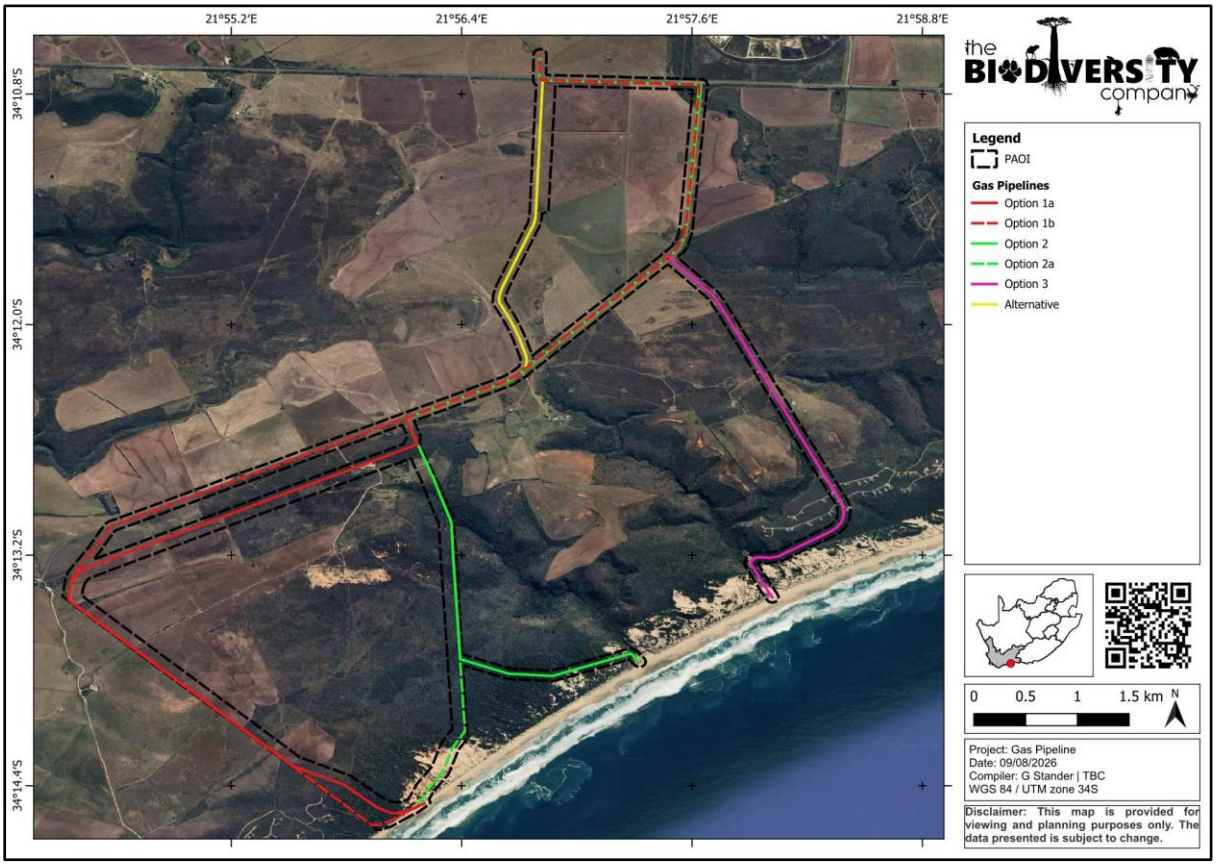


Figure 1-3 Map illustrating the local context of Project Area of Influence (PAOI)

1.2 Project Description

1.2.1 Development Scenarios

Main Street has elected to assess two optional full-field development scenarios for the Paddavissie Fairway. These scenarios represent conservative, maximum footprint cases that are reasonably foreseeable, ensuring that the environmental assessment captures the upper bound of potential impacts. The final development concept will ultimately be shaped several factors, including the evolution of the future regional gas market. By assessing the maximum reasonable development envelope, the resulting EA would accommodate a range of potential development configurations. Any development scenario with a smaller environmental footprint than that assessed would, by implication, fall within the authorised impact envelope.

The two development scenarios are outlined below and illustrated schematically in Figure 1-4 and Figure 1-5 (offshore) and Figure 1-2 (onshore).

- **Production Scenario 1: Full field development of the Padavissie Fairway and piping gas onshore (Figure 1-2 and Figure 1-4):**
    - Mooring a Floating Production, Storage and Offloading (FPSO) facility at one of two alternative locations: (1) in deep water near the wells or (2) in shallower water on the continental shelf. The FPSO will separate and process the produced liquid/gas from the wells.
    - Installing up to two ~80 km multiphase pipelines (including MEG pipeline and umbilical) from the wells to the FPSO, a ~100 km gas pipeline from the FPSO

to the shore[3], and an up to ~13 km onshore pipeline to the proposed gas receiving facility associated with the reference development case (currently a a proposed GtP facility, subject to separate EA application). This pipeline infrastructure will convey the produced well fluids from the wells to the FPSO for separation / processing and then transport the dry gas onshore for supply to the reference development case and/or other potential gas off-take opportunities that may be identified during the gas marketing phase (i.e. to the end user).

- Transferring separated condensate from the FPSO to Dynamically Positioned Shuttle Tankers (DPST), which will then transport the condensate to its final destination. Treated produced water will be discharged overboard from the FPSO.

- **Production Scenario 2: Full field development of the Padavissie Fairway and liquefying gas offshore (Figure 1-5):**
    - Mooring a Floating Liquefied National Gas (FLNG) facility at one of two alternative locations: (1) in deep water near the wells or (2) in shallower water on the continental shelf. The FLNG will separate the produced liquid and gas streams from the well fluids, and will undertake liquefaction of the produced gas. A Floating Storage and Offloading (FSO) vessel is anticipated to be required to provide additional storage for the condensate which will be received from the FLNG facility. The FSO provides a condensate offloading point separate to the LNG offloading point which increases operational flexibility.
    - Installing a ~80 km multiphase pipeline (including MEG pipeline and umbilical) from the wells to the FLNG, which will convey the produced well fluids to the FSO.
    - Transferring separated condensate from the FSO to DPST and LNG from the FLNG to DPST (LNG carrier), which will then transport the products to their final destinations. Treated produced water will be discharged overboard from the FLNG.

Each of these two full-field options may be preceded by partial development of the field through existing PetroSA facilities, with continued partial export of products via these facilities during and after full development of the Paddavissie Fairway. In the event that the use of the PetroSA facilities precedes the full-field development, the ~80 km multiphase pipeline from the wells will be extended by ~40 km to the PetroSA offshore facility, whilst continued use of the PetroSA facilities during and post full-field development is envisaged by exporting a portion of the gas via a ~40 km dry gas pipeline from the FPSO or FLNG vessel to the PetroSA facility and/or delivering processed condensate to PetroSA's receiving terminal in Mossel Bay.

[3] The alignment of the offshore gas pipeline will only be finalised after the offshore surveys have been completed. The base case routing is ~100 km in length from the FPSO to the shore.

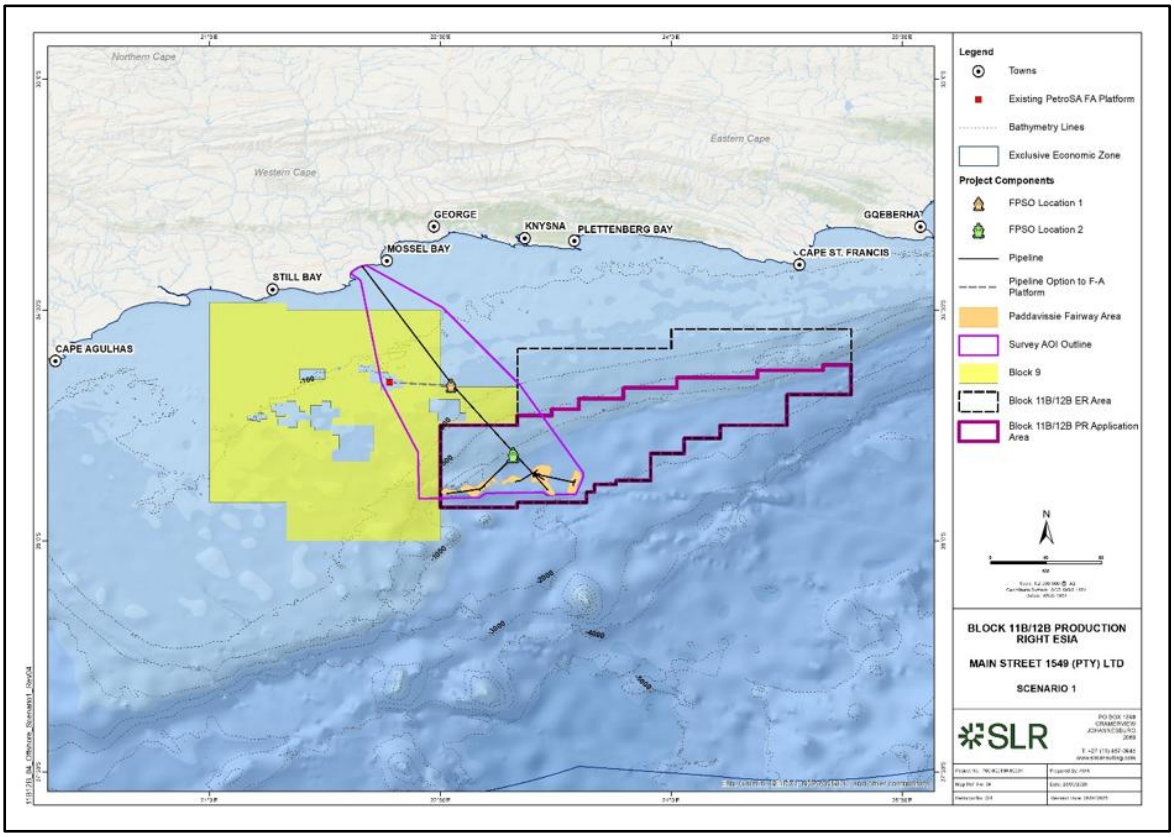


Figure 1-4 Production Scenario 1: Full field development of the Padavissie Fairway and piping gas onshore

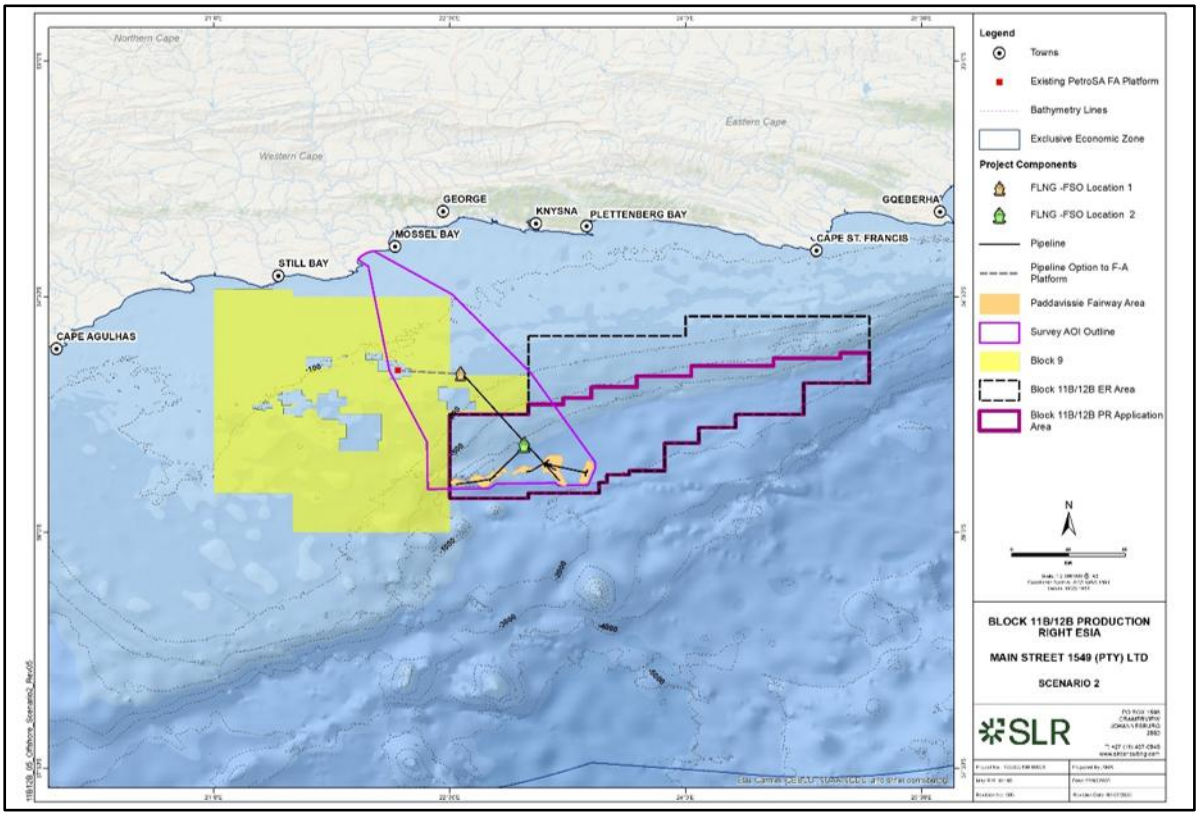


Figure 1-5 Production Scenario 2: Full field development of the Padavissie Fairway and liquefying gas offshore

1.2.2 Project Phases and Activities

Key project phases and activities with the proposed development, installation and operation are summarised below. **Key onshore Project activities relevant to this assessment are highlighted in red below.**

- **Route and Site Assessment Surveys (over ~16 months):**
  - Offshore: A largely non-intrusive survey campaign (including bathymetry, sonar and metocean data collection, but also seafloor sampling) will be undertaken of the production sites in Block 11B/12B and along pipeline routes from the Block onto the continental shelf and to shore, as well as into adjacent Block 9.
  - Onshore: The onshore survey along the pipeline route will also be largely non-intrusive, including topographical, ground penetrating radar, magnetometer, electromagnetic, multi-channel analysis of surface waves, and electrical resistance tomography. The survey will also include some trial pits, coring and cone penetration tests.
- **Construction (drilling and installation) activities (over ~11 years[4]):**
  - Drilling of up to 19 wells in the Paddavissie Fairway (including production, appraisal and possibly gas injection wells). Before completion, some wells may be tested to refine the knowledge of the reservoir characteristics.
  - Installation and commissioning of subsea infrastructure, which includes all infrastructure located on or below the seabed used to extract hydrocarbons from the reservoir and connect the wells to the Central Processing Facility (CPF), including wellheads, Xmas trees, flow line tie-ins and end-points, and Subsea Umbilicals, Risers and Flowlines (SURF).
  - Mobilisation, mooring and commissioning of the CPF (either a FPSO or FSO/FLNG depending on the development scenario).
  - Installation and commissioning of gas pipeline from FPSO to shore, with a buried portion from the shore crossing to proposed gas receiving facility (e.g. GtP facility) (Scenario 1), or F-A Platform (Scenario 1 & 2). The pipeline section traversing the coastal zone will be installed using horizontal directional drilling (HDD).
  - Onshore, marine and aviation support operations using available facilities.
- **Production (operation) activities (~25 years) [5]:**
  - Offshore production operations, including the activities of the shuttle tankers, which may be used to offload the processed gas and/or condensate from the CPF; and
  - Onshore, marine and aviation support operations using available facilities.
- **Decommissioning activities (~0.5 year):**
  - Plugging and abandonment of development wells following standard procedures.
  - Flushing and disconnection of pipelines and umbilicals.
  - Retrieval of selected subsea infrastructure, such as production risers and umbilicals. pipelines, structures and wellheads will be left in-situ on the seafloor.

[4] Construction activities to take place intermittently over an 11-year period, as indicated in Table 1-1

[5] Production could extend up to 20 to 30 years.

- Removal and relocation of CPF.
- Onshore, marine and aviation support operations using available facilities.

1.2.3 Project Timeline

An indicative duration of key activities and timeline highlighting key milestones of the Project are summarised in Table 1-1. Where relevant, activity durations also incorporate expected operational weather or other routine interruptions, to provide a realistic schedule basis.

Table 1-1 Indicative Durations of Key Activities

Activity	Duration
Route and Site Surveys (~16 months)	
• **Offshore and onshore geophysical and geotechnical surveys**	Up to 480 days in total (including mobilisation and standby time). Some surveys will take place concurrently.
Well Drilling (over ~11 years)	
• **Offshore well drilling (up to 19 wells): production, appraisal and potentially gas injection wells**	Up to 210 days (~7 months) per three well campaign (including mobilisation), and up to seven campaigns over a period of ~11 years.
Offshore Installation & Construction (over ~11 years)	
• **Xmas Tree installation (Scenario 1 & 2)**	15 – 24 days per three well campaign thereafter
• **Pipeline (20" ND) from CPF location to Luiperd manifold location (Scenario 1 & 2)**	Up to 110 days total for installation and commissioning activities
• **Mooring lines, manifolds, Subsea Umbilical Distribution Unit (SUDUs) and Subsea Umbilical Risers and Flowlines (SURF) Installation (Scenario 1 & 2)**	Up to 180 days
• **Main umbilical installation (Scenario 1 & 2)**	Up to 30 days
• **FPSO Installation (Scenario 1)**	Up to 20 days
• **FLNG / FSO Installation (Scenario 2 only)**	Up to 80 days:
• **Offshore export pipeline (24" ND) from shore to FPSO (Scenario 1 only)**	Total duration of up to 120 days: Up to 90 days for pipelay. Up to 30 days for trenching.
• **Installation of F-A pipeline (Scenario 1 & 2)**	Up to 20 days
• **Pipeline (20" ND) from CPF location to subsea Inline Tee (ILT) (Scenario 1 & 2)**	Up to 90 days to install a second pipeline from CPF location to ILT, prior to tie-back of Brulpadda, Blaasop, Woudboom and Plantanna
• **Brulpadda, Blaasop, Woudboom, Platanna Tie-Backs (Scenario 1 & 2)**	Up to 180 days per campaign (including well drilling).
Onshore Installation & Construction (Scenario 1 only)	
• **Onshore pipeline (24" ND)**	Up to 200 days
• **Shore crossing**	Up to 180 days
Production	
• **Operation of gas field and infrastructure**	Up to 20 to 30 years
Decommissioning	
• **Decommissioning**	Up to 180 days

1.3 Legal Framework

This assessment was conducted in accordance with the amendments to the EIA 2014 (GNR 326, 7 April 2017) of NEMA. The approach has taken cognisance of the published GN 320 (20 March 2020) and GN 1150 (30 October 2020) in terms of NEMA, dated 20 March and 30 October 2020: "Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation" (Reporting Criteria).

The SSV must be undertaken:

- For the footprint on which the proposed activities are proposed to take place;

- By specialists registered in the field for which they are undertaking the SSV and, where relevant, with demonstrated experience in the taxonomic group of the species being considered;

- Within the season which would be most relevant to identify the specific species or vegetation of interest; and

- For a period of time as necessitated by the sensitivity of the proposed site and size of the proposed facility

1.4 Scope of Work

In accordance with the procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Sections 24(5)(a) and (h) and 44 of the NEMA, 1998, when applying for EA the current use of the land and the environmental sensitivity of the site under consideration as identified by the national web-based environmental screening tool, must be confirmed by undertaking a SSV.

The outcome of this SSV is to:

- Confirm or dispute the current use of the land and the environmental sensitivity as identified by the screening tool; and

- Motivate and provide evidence of either the verified or different use of the land and environmental sensitivity of the site.

1.5 Assumptions and Limitations

The following limitations should be noted for the assessment:

- The assessment area was defined based on the information and GIS data provided by the client, which were assumed to be accurate and complete;

- The single site survey conducted for the PAOI from the 27th to the 29th of July 2026 corresponds with the wet (winter) season for the Albany Thicket and Fynbos biomes according to SANBI[6]. Therefore, floral identifications were limited by seasonal constraints and due to the high number of flora Species of Conservation Concern (SCC) expected for the area, a threatened species walkdown must be conducted during the correct flowering season for the biomes (between September to November) following sufficient rains to induce flowering;

- The PAOI was surveyed during a single site survey (27 – 29 July 2026) and does therefore not consider temporal trends;

- This assessment only considers reptile, amphibian, non-volant mammal and avifauna species;

- While every effort is made to cover as much of the PAOI as possible within time, weather, road driveability and vegetation density limitations. Representative sampling is therefore completed, and by its nature, it is likely that some plant and animal species that are present on site were not recorded during the field investigations; and

[6] South African National Biodiversity Institute (SANBI). 2020. Species Environmental Assessment Guideline. Guidelines for the implementation of the Fauna and Flora Species Protocols for environmental impact assessments in South Africa. South African National Biodiversity Institute, Pretoria. Version 4.1 2026. page 57

- The Global Positioning System (GPS) used in the assessment has an accuracy of 5 m, and consequently, any spatial features may be offset by 5 m.

2 Approach

One (1) field survey for the PAOI was undertaken to confirm the current use of land and habitats within the PAOI. The field survey tracks and survey points can be seen presented in Figure 2-1. A total of 151 survey points were taken (Appendix B:) however only 20 are presented for mapping and reporting purposes.

Due to the field survey being conducted in the winter (wet) season, a walkdown must be conducted for the PAOI (between September to November following sufficient rains to induce flowering) to identify any protected and threatened plant species that are likely present. The expected SCCs are provided in Table 8-8

CVs and specialist declarations are provided in the appendices. A SSV report has been prepared in accordance with the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity (GN 320, dated 20 March 2020).

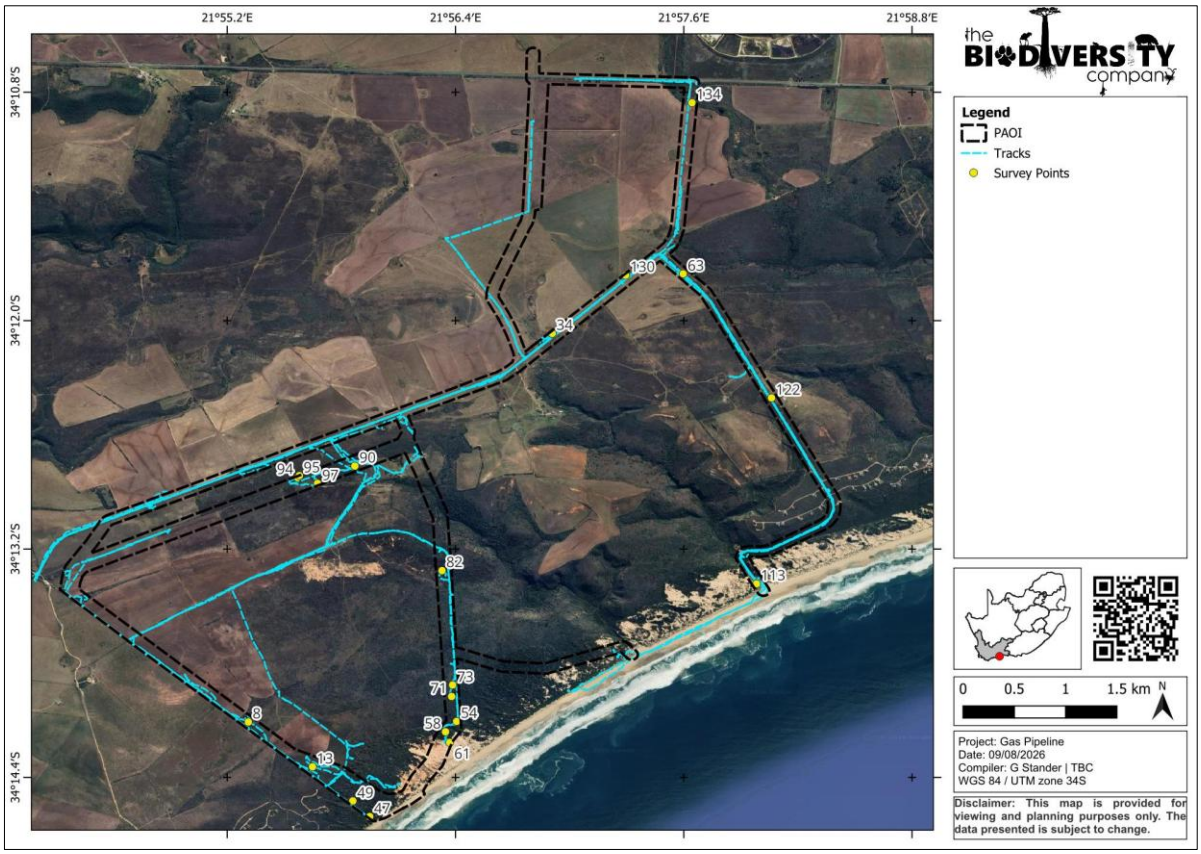


Figure 2-1 Map illustrating the field survey tracks and survey points

3 Desktop Ecological Sensitivity

3.1 Ecologically Important Landscape Features

The relevance of the proposed development to ecologically important landscape features are summarised in Table 3-1.

Table 3-1 Summary of relevance of the proposed project to ecologically important landscape features

Desktop Information Considered	Relevance	Reasoning
Ecosystem Threat Status	Relevant	Overlaps with Endangered (EN), Near Threatened (NT) and Least Concern (LC) ecosystems (NBA, 2025 and RLE, 2022)
Ecosystem Protection Level	Relevant	Overlaps with a Not Protected (NP), Poorly Protected (PP), Moderately Protected (MP) and Well Protected (WP) Ecosystems (NBA, 2025 and NBA, 2018)
Provincial Conservation Plan	Relevant	Overlaps with Terrestrial and Aquatic Critical Biodiversity Area (CBA) 1, Terrestrial and Aquatic CBA 2, Aquatic Ecological Support Area (ESA) 1, ESA 2 and Other Natural Areas (ONA) (WC BSP, 2023)
South Africa Protected Areas Database (SAPAD) and South Africa Conservation Areas Database (SACAD)	Relevant	Located within the Gouritz Cluster Biosphere Reserve (SACAD, 2025). No protected areas are located within 5 km of the PAOI (SAPAD, 2025)
National Protected Areas Expansion Strategy (NPAES)	Relevant	Overlaps with NPAES Priority Focus Areas (NPAES, 2018)
Key Biodiversity Areas (KBA)	Relevant	Overlaps with the Gouritz Cluster-Mossel Bay KBA (KBA, 2024)
South African Inventory of Inland Aquatic Ecosystems (SAIIAE)	Relevant	Overlaps with a Critically Endangered (CR) and Vulnerable (VU) wetlands (NBA, 2018)
National Freshwater Ecosystem Priority Area (NFEPA)	Relevant	Overlaps with priority and non-priority FEPA wetlands (NBA, 2011)
Strategic Water Source Areas (SWSA)	Irrelevant	Does not fall within 500 m of any relevant areas (SANBI, 2021)

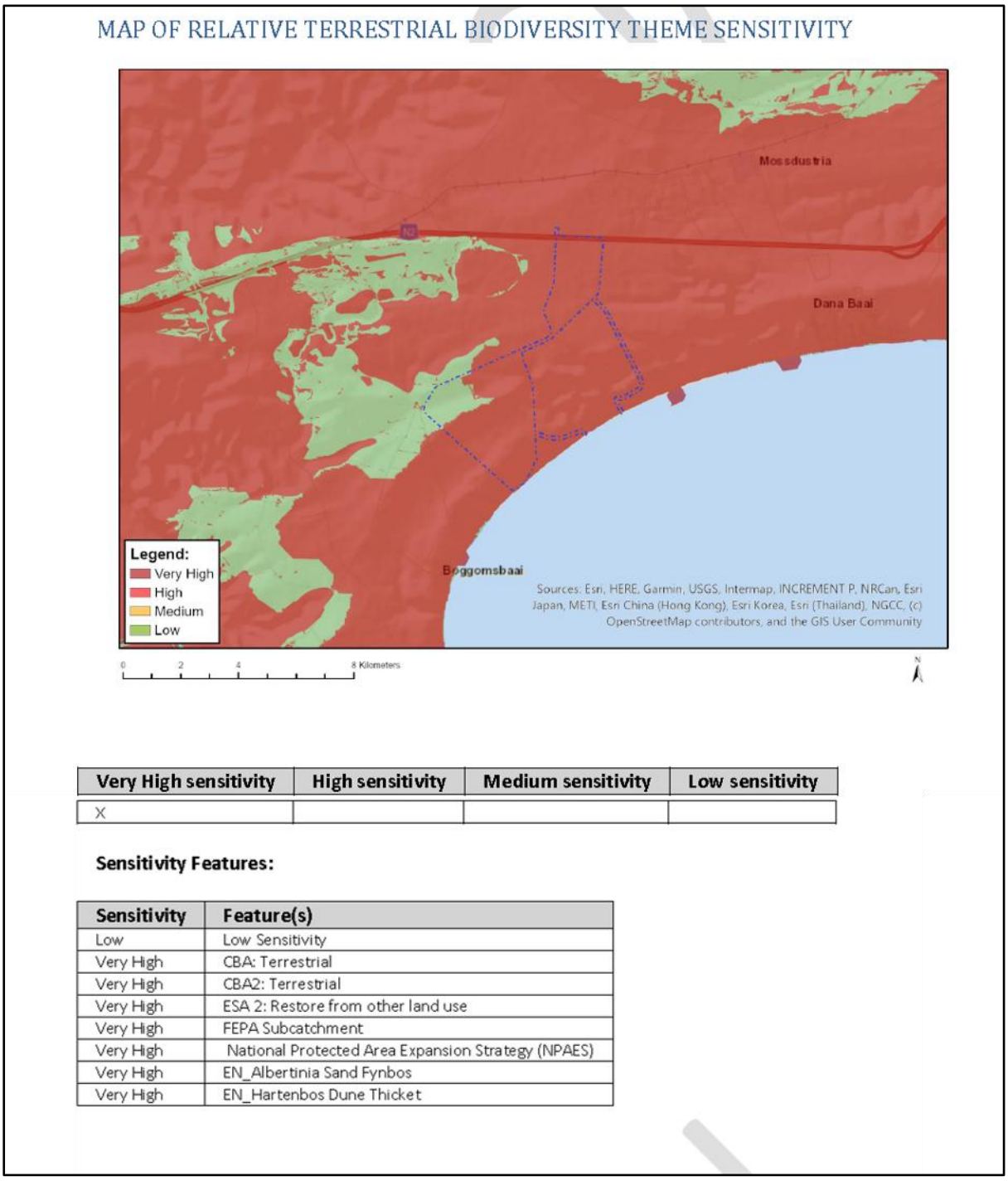
3.2 Screening Report

The following is deduced from the National Web-based Environmental Screening Tool Regulation 16(1)(v) of the EIA Regulations 2014, as amended):

- Terrestrial Biodiversity Theme sensitivity is Very High for the PAOI due to the presence of a CBA1: Terrestrial, CBA2: Terrestrial, ESA2: Restore from Other Land Use, FEPA subcatchments, NPAES, and Endangered Ecosystems. (Figure 3-1);

- Plant Species Theme sensitivity is High for the PAOI due to the possible presence of one (1) High sensitivity species and numerous Medium sensitivity species (Figure 3-2); and

- Animal Species Theme sensitivity is High for the PAOI due to the possible presence of four (4) High sensitivity avifauna species, four (4) Medium sensitivity avifauna species, two (2) Medium sensitivity insect species, one (1) Medium sensitivity invertebrate species and two (2) Sensitive Species (Figure 3-3).



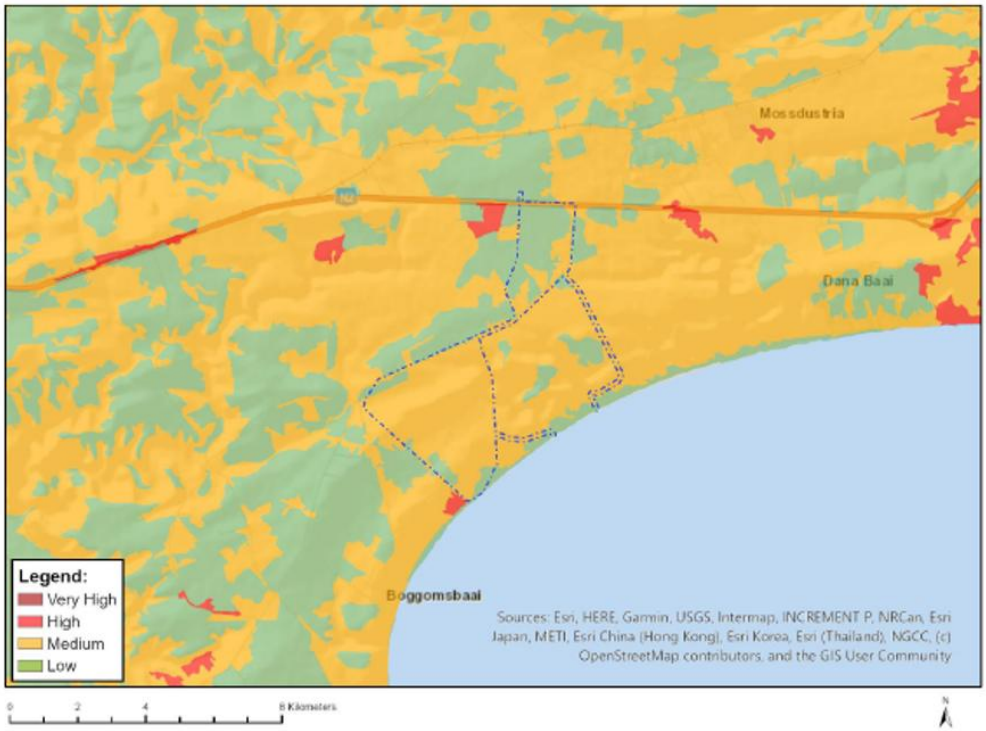
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	CBA: Terrestrial
Very High	CBA2: Terrestrial
Very High	ESA 2: Restore from other land use
Very High	FEPA Subcatchment
Very High	National Protected Area Expansion Strategy (NPAES)
Very High	EN_Albertinia Sand Fynbos
Very High	EN_Hartenbos Dune Thicket

Figure 3-1 Relative Terrestrial Biodiversity Theme Sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

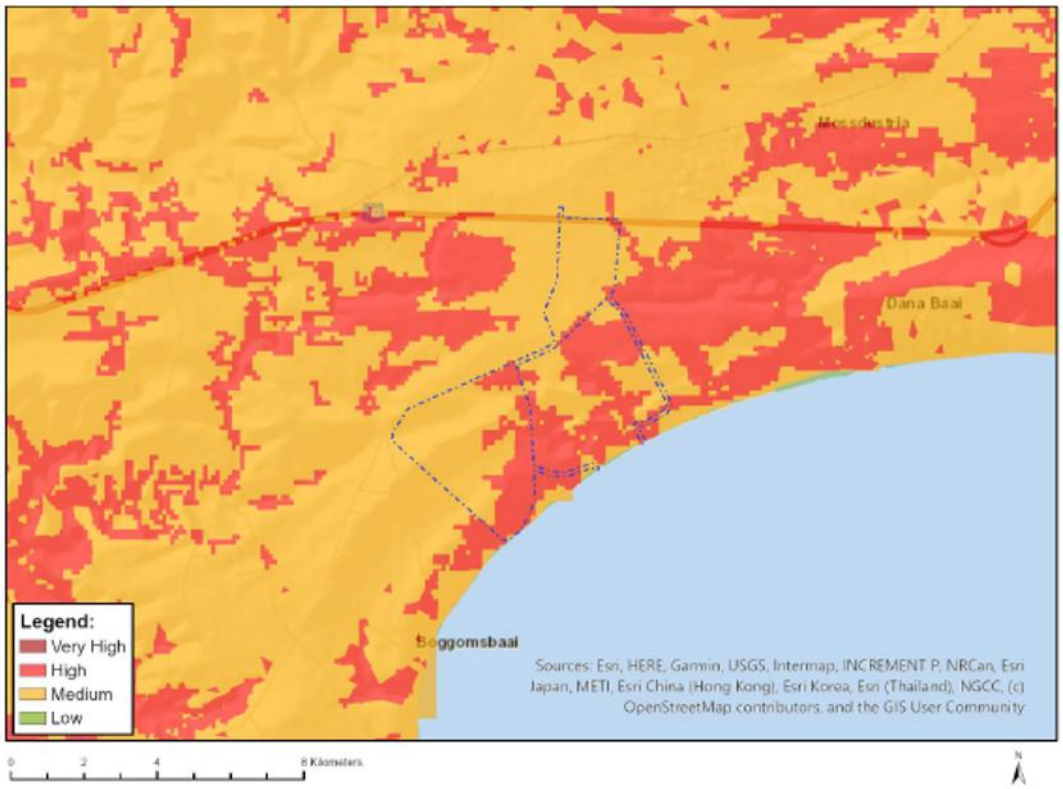
Sensitivity Features:

Sensitivity	Feature(s)
High	Agathosma muirii
Low	Low Sensitivity
Medium	Sensitive species 264
Medium	Leucospermum muirii
Medium	Leucospermum praecox
Medium	Wahlenbergia polyantha
Medium	Selago glandulosa
Medium	Selago ramosissima
Medium	Selago villicaulis
Medium	Lebeckia gracilis
Medium	Leucadendron galpinii
Medium	Ruschia leptocalyx
Medium	Aspalathus arenaria

Medium	Aspalathus obtusifolia
Medium	Aspalathus campestris
Medium	Lampranthus pauciflorus
Medium	Lampranthus diutinus
Medium	Lampranthus fergusoniae
Medium	Lampranthus foliosus
Medium	Lampranthus ceriseus
Medium	Sensitive species 18
Medium	Sensitive species 1171
Medium	Hermannia lavandulifolia
Medium	Sensitive species 1012
Medium	Lobostemon belliformis
Medium	Polygala pubiflora
Medium	Agathosma muirii
Medium	Agathosma eriantha
Medium	Euchaetis albertiniana
Medium	Agathosma riversdalensis
Medium	Muraltia knysnaensis
Medium	Heliophila linearis var. reticulata
Medium	Athanasia cochlearifolia
Medium	Thamnochortus muirii
Medium	Sensitive species 515
Medium	Sensitive species 85

Figure 3-2 Relative Plant Species Theme Sensitivity

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Circus maurus
High	Aves-Neotis denhami
High	Aves-Polemaetus bellicosus
High	Aves-Afrotis afra
Low	Subject to confirmation
Medium	Aves-Circus ranivorus
Medium	Aves-Stephanoaetus coronatus
Medium	Aves-Hydroprogne caspia
Medium	Aves-Bradypterus sylvaticus
Medium	Insecta-Aloeides thyra orientis
Medium	Insecta-Lepidochrysops littoralis
Medium	Sensitive species 24
Medium	Sensitive species 13
Medium	Invertebrate-Aneuryphymus montanus

Figure 3-3 Relative Animal Species Theme Sensitivity

3.3 Avifauna Expected Species

SABAP2 (South African Bird Atlas Project 2) data indicate that 305 avifauna species are expected for the PAOI and surrounding areas. Of these, 56 are considered SCC. During the field survey thirteen SCC were observed in the PAOI. This project forms part of a larger development area for which an avifauna assessment was also undertaken by TBC (2025). Accordingly, the confirmed species recorded within the broader area are also included in the table below. The likelihood of occurrence for all expected SCC within the POAI is indicated in Table 3-2 below.

Table 3-2 Threatened avifauna species that are expected to occur within the PAOI. CR = Critically Endangered, EN = Endangered, LC = Least Concern, NA = Not Applicable, NT = Near Threatened and VU = Vulnerable

Scientific Name	Common Name	Regional *	Global (IUCN)+	Likelihood of occurrence	Confirmed larger area TBC 2025	Confirmed for this Footprint
Afrotis afra	Southern Black Korhaan	VU	VU	High		
Anas erythrorhyncha	Red-billed Teal	NT	LC	Confirmed	Confirmed	Confirmed
Anas undulata	Yellow-billed Duck	NT	LC	Confirmed	Confirmed	Confirmed
Anhinga rufa	African Darter	NT	LC	Confirmed	Confirmed	Confirmed
Anthropoides paradiseus	Blue Crane	VU	VU	Confirmed	Confirmed	Confirmed
Aquila verreauxii	Verreaux's Eagle	VU	LC	Low		
Ardea alba	Great Egret	NT	LC	Moderate		
Ardea brachyrhyncha	Yellow-billed Egret	NT	LC	High		
Ardenna grisea	Sooty Shearwater	NT	NT	Low		
Arenaria interpres	Ruddy Turnstone	NT	NT	Low		
Bradypterus sylvaticus	Knysna Warbler	NT	VU	Confirmed		Confirmed
Buteo trizonatus	Forest Buzzard	NT	NT	Moderate		
Calidris alba	Sanderling	NT	LC	Moderate		
Calidris canutus	Red Knot	NT	NT	Low		
Calidris ferruginea	Curlew Sandpiper	VU	VU	High		
Calidris fuscicollis	White-rumped Sandpiper	LC	VU	Low		
Calidris subruficollis	Buff-breasted Sandpiper	NA	VU	Low		
Campethera notata	Knysna Woodpecker	LC	NT	Confirmed		Confirmed
Certhilauda brevirostris	Agulhas Long-billed Lark	NT	NR	Confirmed	Confirmed	Confirmed
Charadrius pecuarius	Kittlitz's Plover	NT	LC	Confirmed	Confirmed	
Chroicocephalus hartlaubii	Hartlaub's Gull	VU	LC	Moderate		
Ciconia nigra	Black Stork	EN	LC	Moderate		
Circus maurus	Black Harrier	EN	EN	Confirmed	Confirmed	Confirmed
Circus ranivorus	African Marsh Harrier	VU	LC	Confirmed	Confirmed	
Coracias garrulus	European Roller	NT	LC	Low		
Crithagra leucoptera	Protea Canary	NT	NT	Moderate		
Dendrocygna bicolor	Fulvous Whistling Duck	NT	LC	Moderate		
Elanus caeruleus	Black-winged Kite	NT	LC	Confirmed	Confirmed	Confirmed

Falco biarmicus	Lanner Falcon	NT	LC	Confirmed	Confirmed	
Falco naumanni	Lesser Kestrel	VU	LC	Low		
Hydropogne caspia	Caspian Tern	VU	LC	Moderate		
Macronectes halli	Northern Giant Petrel	NT	LC	Low		
Morus capensis	Cape Gannet	VU	EN	Confirmed	Confirmed	
Mycteria ibis	Yellow-billed Stork	VU	LC	Low		
Neotis denhami	Denham's Bustard	VU	NT	Confirmed		Confirmed
Netta erythrophthalma	Southern Pochard	NT	LC	High		
Nycticorax nycticorax	Black-crowned Night Heron	NT	LC	High		
Oxyura maccoa	Maccoa Duck	VU	EN	Moderate		
Pelecanus onocrotalus	Great White Pelican	VU	LC	Low		
Phalacrocorax capensis	Cape Cormorant	EN	EN	Confirmed	Confirmed	
Phoeniconaias minor	Lesser Flamingo	VU	NT	High		
Phoenicopterus roseus	Greater Flamingo	NT	LC	High		
Pluvialis squatarola	Grey Plover	NT	VU	High		
Podiceps cristatus	Great Crested Grebe	VU	LC	High		
Polemaetus bellicosus	Martial Eagle	EN	EN	Confirmed		Confirmed
Procellaria aequinoctialis	White-chinned Petrel	VU	VU	Low		
Sagittarius serpentarius	Secretarybird	VU	EN	Confirmed	Confirmed	
Sarkidiornis melanotos	Knob-billed Duck	NT	LC	Low		
Sarothrura affinis	Striped Flufftail	VU	LC	Moderate		
Scopus umbretta	Hamerkop	NT	LC	Confirmed		Confirmed
Spatula smithii	Cape Shoveler	NT	LC	Confirmed	Confirmed	Confirmed
Spheniscus demersus	African Penguin	EN	CR	Low		
Stercorarius antarcticus	Brown Skua	EN	LC	Low		
Thalassornis leuconotus	White-backed Duck	NT	LC	Moderate		
Turnix hottentottus	Fynbos Buttonquail	NT	LC	High		
Zapornia pusilla	Baillon's Crake	NT	LC	Moderate		

**(Lee et al. 2025), + (IUCN 2021)*

4 Results & Discussion

4.1 Field Survey Results

The following sections discuss the results from the field survey that was conducted for the proposed project. The field survey methods are presented in Appendix A. A total of 151 survey points were taken (Appendix B:) however only 20 are presented for mapping and reporting purposes. The habitat types associated with the survey points are described in Table 4-1. Nationally protected tree species and provincially protected species were observed within the PAOI. A brief overview of the observed species is provided below (Table 4-1). More details pertaining to these species will be discussed in the Terrestrial Biodiversity Impact Assessment report.

Nine (9) different major terrestrial habitat types were delineated within the PAOI, as well as a set of Freshwater Features (Figure 4-1 and Figure 4-2):

- Modified;
- Disturbed Areas;
- Hartenbos Dune Thicket;
- Disturbed Hartenbos Dune Thicket;
- Albertinia Sand Fynbos;
- Disturbed Albertinia Sand Fynbos;
- Canca Limestone Fynbos;
- Southwestern Strandveld;
- Cape Seashore Vegetation; and
- Freshwater Features.

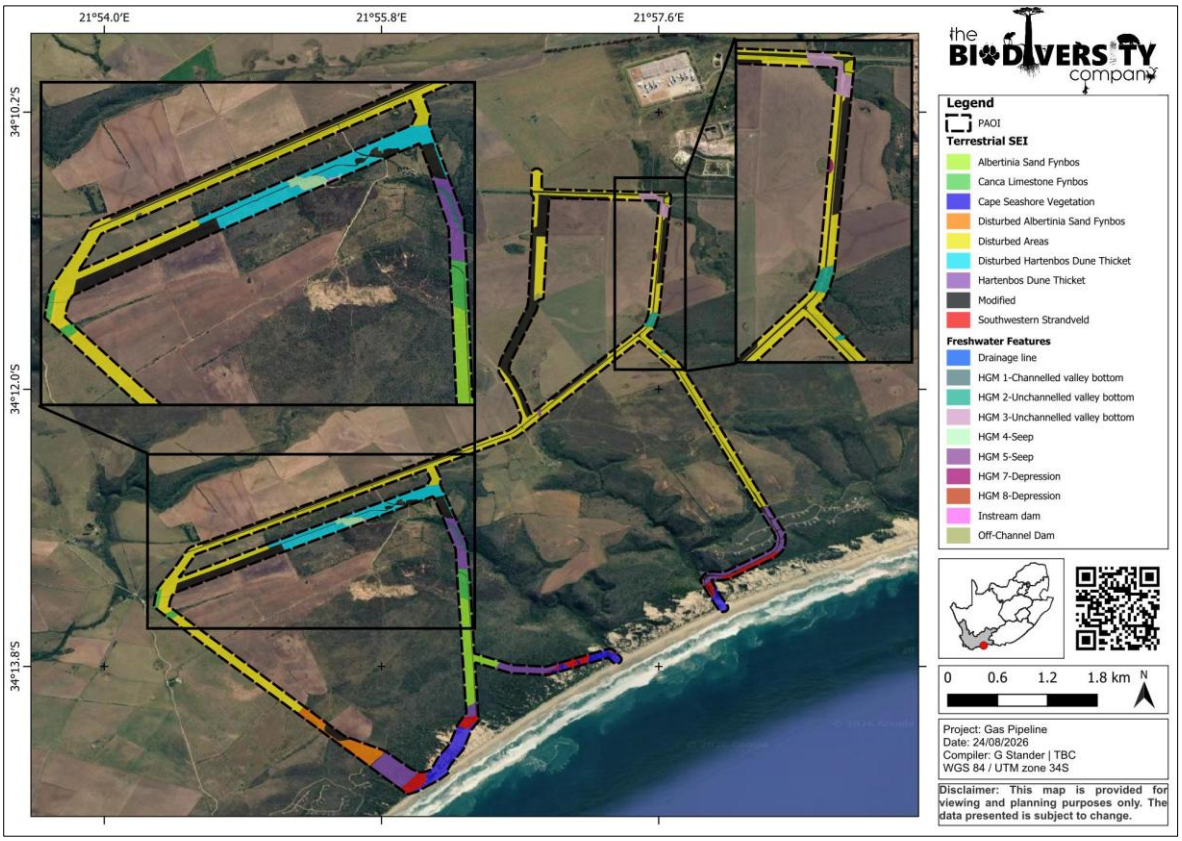


Figure 4-1 Map illustrating the habitats identified for the PAOI

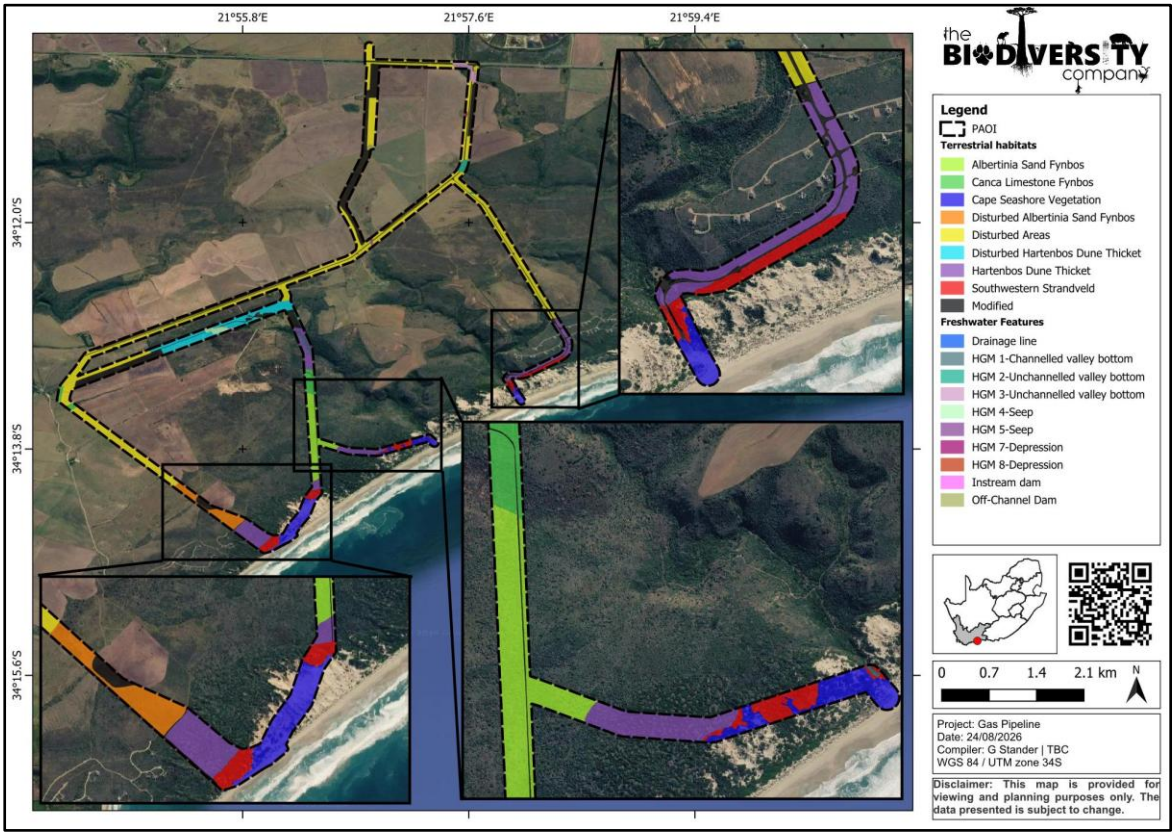


Figure 4-2 Map illustrating the habitats identified for the PAOI (continued)

Table 4-1 Table presenting the field survey points and their descriptions

Survey Point	Habitat Description
	Modified
	This habitat unit includes all areas that maintain little to no native vegetation and/or where anthropogenic activity has substantially modified an area's primary ecological functions and species composition. This habitat unit no longer maintains its functional integrity and does not contribute significantly to ecosystem services. Within the PAOI, these areas are made up of agricultural fields, residential areas, homesteads, roads and cleared areas. No fauna or flora SCC were recorded and none are expected within this habitat unit. Avifauna SCC recorded here includes: Black Harrier, Agulhas Long-billed Lark, Denham's Bustard
	
Site GPS Reference: 34, 63, 90	
	

	Disturbed Areas
	This habitat unit is composed of areas that show disturbance due historical and current anthropogenic impacts. The condition and level of disturbance vary throughout this habitat unit depending on the level of impact. This habitat unit consist of disturbed fynbos areas currently used for grazing, previously cleared areas currently used as pastures, isolated fynbos patches surrounded by modified habitats and road shoulders. Current land use of these areas and of the surrounding areas have resulted in the degradation of the ecosystem. Current impacts include the edge effects associated with modified habitats (agricultural fields, residential areas, homesteads, roads and cleared areas), livestock grazing, vehicle ingress and invasions by alien and invasive plant (AIP) species. Dominant species include, *Dicerothamnus rhinocerotis, Oedera genistifolia, Nidorella ivifolia, Chironia baccifera, Helichrysum patulum, Seriphium plumosum, Aloe arborescens, Aloe ferox, Lepidium africanum, Chaenostoma caeruleum* and *Rumex hypogaeus*. AIP species observed include *Echium plantagineum, Plantago lanceolata and Sonchus asper*. Despite the disturbed condition of this habitat unit, flora SCC could possibly occur in sections of this habitat unit. Fauna SCC could use this habitat as movement corridors. Avifauna SCC recorded here includes: Blue Crane, Black Harrier, Agulhas Long-billed Lark, Hamerkop
Site GPS Reference: 2, 122, 130	
	

Hartenbos Dune Thicket

This habitat unit is typical and representative of the Hartenbos Dune Thicket vegetation type. This habitat occurs on coastal dunes and is characterised by a mosaic of low thicket, small trees and woody shrubs.

The habitat exists in a fairly good condition. Current impacts include the edge effects associated with existing roads transversing this habitat unit and invasions by AIP species. However , it was evident that effort is being made to clear the invasive species, *Acacia cyclops*, from sections within the habitat unit. It forms part of a threatened ecosystem [EN (NBA, 2025) and NT and LC (RLE, 2022)] and maintenance and conservation is important. One species of Nationally Protected tree was also recorded from this habitat unit, *Sideroxylon inerme*.

Dominant species include *Pterocelastrus tricuspidatus, Sideroxylon inerme*, *Aloe ferox, A. arborescens, Euphorbia burmannii, Euphorbia mauritanica*, *Brunsvigia orientalis, Freesia leichtlinii, Grewia occidentalis, Tarchonanthus littoralis, Asparagus africanus, Searsia glauca, S. pterota, Helichrysum patulum* and *Thamnochortus insignis*

No flora or fauna SCC were observed. However, suitable habitat exists for flora SCC and are expected within this habitat unit. The habitat unit provides suitable habitat and movement corridors for fauna SCC. Avifauna SCC recorded here: Knysna Woodpecker and Knysna Warbler

Site GPS Reference: 49 & 54

Disturbed Hartenbos Dune Thicket

This habitat unit shows similar species composition to the Hartenbos Dune Thicket habitat unit, however it is in a disturbed state. Impacts observed are associated with edge effects of the surrounding areas which include existing roads and vehicle ingress, fragmentation and isolation of the habitat unit, *Dicerothamnus rhinocerotis* encroachment and invasion by the AIP species, *Acacia cyclops*. Despite its disturbed state it still forms part of a threatened ecosystem [EN (NBA, 2025) and NT and LC (RLE, 2022)] and maintenance and conservation is important.

Dominant species include *Dicerothamnus rhinocerotis, Thamnochortus insignis, Chironia baccifera, Searsia glauca, Helichrysum patulum* and *Erica* spp.

Despite the disturbed condition of this habitat unit, flora SCC could still occur in sections of this habitat unit. Fauna SCC could use this habitat as movement corridors.

Site GPS Reference: 94 & 95

Albertinia Sand Fynbos

This habitat unit is typical and representative of the Albertinia Sand Fynbos vegetation type. It is characterised by fynbos shrubland of medium to tall shrubs and is fairly dense.

The habitat exists in a fairly good condition. Current impacts include the edge effects associated with existing roads transversing this habitat unit and invasions by AIP species. However, it was evident that effort is being made to clear the invasive species, *Acacia cyclops*, from sections within the habitat unit. It forms part of a threatened ecosystem [EN (NBA, 2025) and NT (RLE, 2022)] and maintenance and conservation is important. One species of Nationally Protected tree was also recorded from this habitat unit, *Sideroxylon inerme*.

Some of the dominant species observed include *Osteospermum moniliferum, Searsia* spp., *Bobartia robusta*, *Erica* spp., *Metalasia acuta, Diospyros dichrophylla*, *Grewia occidentalis, Tarchonanthus littoralis, Chironia baccifera* and *Cynodon dactylon.*

No flora or fauna SCC were observed. However, suitable habitat exists for flora SCC and are expected within this habitat unit. The habitat unit provides suitable habitat and movement corridors for fauna SCC. Avifauna SCC confirmed in this habitat: Knysna Woodpecker, and Knysna Warbler

Site GPS Reference: 71 & 73

Disturbed Albertinia Sand Fynbos

This habitat unit is in a disturbed state. Google Satellite imagery (Google Earth) indicates that sections of this habitat unit were cleared for agricultural purposes. Although disturbed, the area is recovering,with indigenous species being dominant throughout. Despite its disturbed state, it still forms part of a threatened ecosystem [EN (NBA, 2025) and NT (RLE, 2022)] and maintenance and conservation is important. Current impacts include the edge effects associated with agricultural fields, vehicle ingress and invasions by AIP species.

Some of the dominant species include, *Oedera genistifolia, Polygala myrtifolia, Helichrysum teretifolium, Helichrysum patulum, Themeda triandra, Tarchonanthus littoralis, Drimia capensis, Chironia baccifera, Chaenostoma caeruleum* and *Felicia muricata.*

Despite the disturbed condition of this habitat unit, flora SCC could still occur in sections of this habitat unit. Fauna SCC could use this habitat as movement corridors. Avifauna SCC recorded here: Blue Crane and Agulhas Long-billed Lark

Site GPS Reference: 8 & 13

Canca Limestone Fynbos

This habitat unit showed some disturbances and is considered to be semi – natural condition. Despite this, it is still considered to be representative of the Canca Limestone Fynbos vegetation type. Current impacts include the edge effects associated with existing roads transversing this habitat unit, edge effects due to fragmentation and surrounded modified areas and invasions by AIP species. However, it was evident that effort is being made to clear the invasive species, *Acacia cyclops* and *Acacia saligna*, from sections within the habitat unit.

Dominant species observed include *Osteospermum moniliferum, Thamnochortus insignis, Carpobrotus edulis, Myrsine africana, Ficinia secunda, Bobartia robusta, Salvia aurea, Diospyros dichrophylla, Freesia leichtlinii*, *Scolopia zeyheri* and *Muraltia ericifolia.*

One flora SCC was recorded within this habitat unit, *Leucospermum praecox* (VU). More flora SCC are expected to occur within this habitat unit. The habitat unit provides suitable habitat and movement corridors for fauna SCC. Avifauna SCC recorded here: Martial Eagle

Site GPS Reference: 82

Southwestern Strandveld

This habitat unit consist of dense, shrub-dominated vegetation and is typical of the Southwestern Strandveld vegetation type. It occurs on coastal plains and dunes and is a transitional zone between vegetation types. This habitat occurs on 'moving dunes'[7] therefore, its composition and structure changes over time. It forms part of a threatened ecosystem [EN (NBA, 2025) and LC (RLE, 2022)] and maintenance and conservation is important. The habitat exists in a good condition, with the most significant impact being the high density of the AIP species , *Acacia cyclops*, in some sections. However, it was evident that effort is being made to clear this AIP species in certain areas.

Some of the dominant species observed include *Euclea* spp., *Searsia* spp., *Cussonia thyrsiflora, Passerina rigida, Olea exasperate, Agathosma capensis, Pterocelastrus tricuspidatus, Asparagus africanus* and *Thamnochortus insignis.*

No flora or fauna SCC were observed. However, suitable habitat exists for flora SCC and are expected within this habitat unit. The habitat unit provides suitable habitat and movement corridors for fauna SCC.

Site GPS Reference: 47 & 58

[7] Moving (mobile or shifting) dunes are dynamic, unconsolidated wind-blown sand formations that actively migrate across coastal or arid landscapes driven by continuous wind and sediment dynamics

Cape Seashore Vegetation

This habitat is characterised by beach and coastal dunes with grassy, herbaceous and dwarf-shrub vegetation. This habitat occurs on 'moving dunes,' therefore, its composition and structure changes over time. The habitat exists in a good condition, with impacts associated with the nearby residential housing estate and human ingress by beach visitors, as well as invasion of the AIP species, *Acacia cyclops*.

Dominant species from this habitat unit include, *Passerina rigida, Sporobolus virginicus, Morella cordifolia, Searsia glauca, Searsia pterota, Metalasia muricata, Carpobrotus edulis, Crassula umbellate, Arctotheca populifolia* and *Tetragonia decumbens.*

No fauna or flora SCC were observed. Suitable habitat exists for flora SCC. The habitat unit provides suitable habitat and movement corridors for fauna SCC.

Site GPS Reference: 61 & 113

Freshwater Features

The non-terrestrial habitat unit is composed of Seep, Depression, Channelled Valley-bottom, Unchannelled Valley-bottom wetlands and dams within the PAOI. Suitable habitat exists for fauna and flora SCC and are expected to occur. More information on this habitat unit can be found in the accompanying freshwater assessment (TBC, 2026).

Avifauna SCC recorded in this habitat: African Darter, Red-billed Teal, Yellow-billed Duck, Cape Shoveler, Blue Crane

Site GPS Reference: 97 & 134

One (1) flora SCC was observed during the field survey; *Leucospermum praecox*. The species is listed as Vulnerable (A2c) at both the regional level by SANBI and the global level by the IUCN. In accordance with the Species Environmental Assessment Guidelines (SANBI, 2020), a 200 m buffer should be applied around threatened species, including those listed as Vulnerable. Figure 4-3 illustrates the location of the recorded *Leucospermum praecox* individuals, together with the associated 200 m buffer. It should be noted that the flora SCC presented in Figure 4-3 are limited to species identified during the field survey and may not represent all flora SCC occurring within the PAOI. Since floral identifications were limited by seasonal constraints and due to the potentially high number of flora SCC expected for the area (Table 8-8), a threatened species walkdown must be conducted during the correct flowering season for the biomes (between September to November) following sufficient rains to induce flowering.

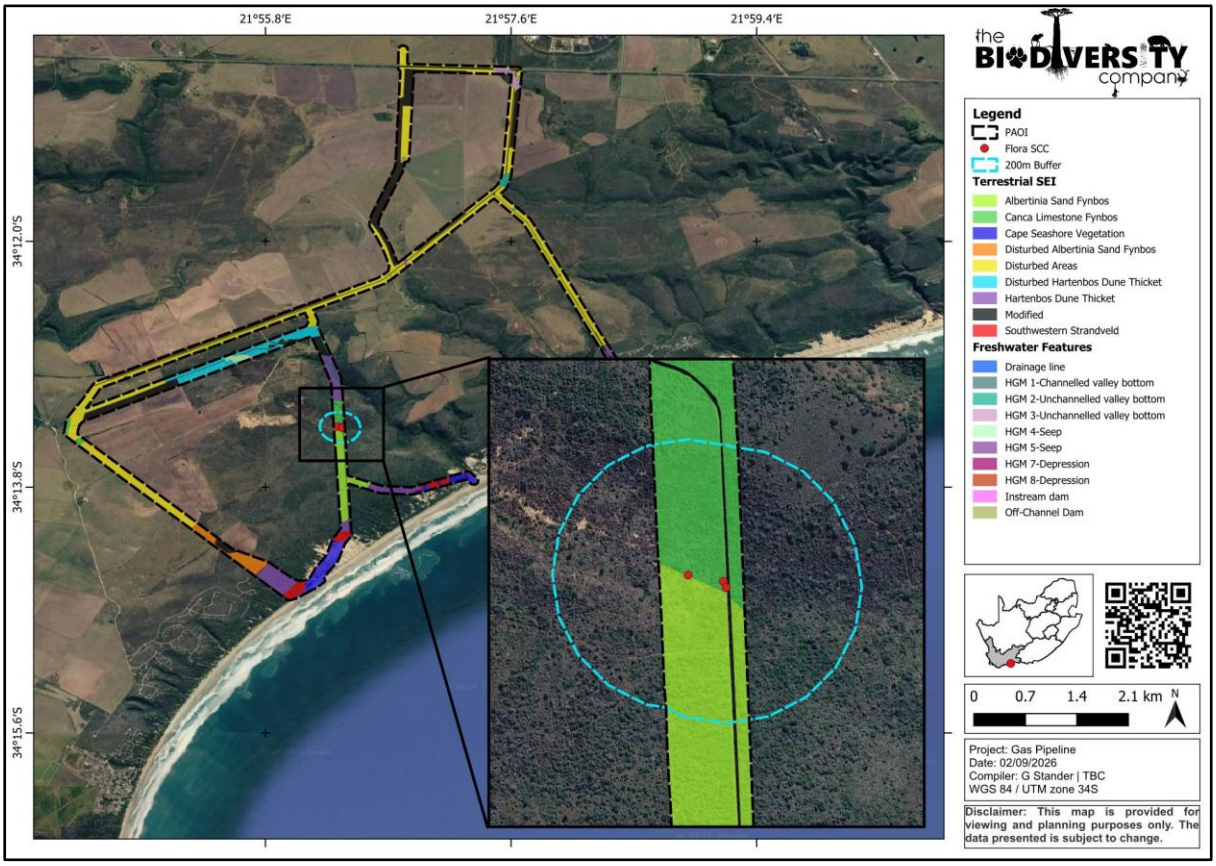


Figure 4-3 Map illustrating the flora SCC recorded with associated buffer

4.2 Site Ecological Importance

The different habitat types within the PAOI were delineated and identified based on observations during the field assessment and available satellite imagery. These habitat types were assigned Site Ecological Importance (SEI) categories based on their ecological integrity, conservation value, and the presence of species of conservation concern. Due to floral identifications being limited by seasonal constraints at the time of this assessment, the precautionary principle was applied to accommodate the high likelihood of occurrence of flora SCC within the various habitat types on site.

Nine (9) major terrestrial habitat types and a set of Freshwater Features were delineated within the PAOI: Modified, Disturbed Areas, Hartenbos Dune Thicket, Disturbed Hartenbos Dune Thicket, Albertinia Sand Fynbos, Disturbed Albertinia Sand Fynbos, Canca Limestone Fynbos, Southwestern Strandveld, Cape Seashore Vegetation and Freshwater Features. Their respective SEI and the corresponding mitigation guidelines are summarised in Table 4-2 and the SEI is illustrated in Figure 4-4.

It is important to note that these maps do not replace any local, provincial, or national government legislation relating to these areas or the land use capabilities or sensitivities of these environments.

Table 4-2 Summary of habitat types delineated within the PAOI

Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
Modified	Very Low	Low	Very Low	Very High	Very Low

Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
	No confirmed and highly unlikely populations of SCC.	Several minor and major current negative ecological impacts.		Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.
Disturbed Areas	**Medium**	**Medium**	**Medium**	**High**	**Low**
	> 50% of receptor contains natural habitat with potential to support SCC.	Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.		Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Hartenbos Dune Thicket	**High**	**High**	**High**	**Medium**	**High**
	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.	Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	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.
Disturbed Hartenbos Dune Thicket	**Medium**	**Medium**	**Medium**	**High**	**Low**
	> 50% of receptor contains natural habitat with potential to support SCC.	Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance.		Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
	High	**High**	**High**	**Medium**	**High**

Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
Albertinia Sand Fynbos	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.	Only minor current negative ecological impacts, with no signs of major past disturbance and good rehabilitation potential.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	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	**Medium**		**High**	**Low**
Disturbed Albertinia Sand Fynbos	> 50% of receptor contains natural habitat with potential to support SCC.	Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance.	**Medium**	Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
	Medium	**Medium**		**Medium**	**Medium**
Canca Limestone Fynbos	> 50% of receptor contains natural habitat with potential to support SCC. Confirmed or highly likely occurrence of populations of Near Threatened (NT) species, threatened species (CR, EN, VU) listed under Criterion A	Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance.	**High**	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Southwestern Strandveld	**High**	**High**	**High**	**Medium**	**High**

Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
	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.	Only minor current negative ecological impacts, with no signs of major past disturbance and good rehabilitation potential.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	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.
Cape Seashore Vegetation	**Medium**	**High**	**Medium**	**Medium**	**Medium**
	> 50% of receptor contains natural habitat with potential to support SCC.	Only minor current negative ecological impacts, with no signs of major past disturbance and good rehabilitation potential.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Freshwater Features (HGM 1, HGM 2, HGM 3, HGM 4, HGM 5, HGM 7, HGM 8, Instream Dam)	**Medium**	**Medium**	**Medium**	**Medium**	**Medium**
	> 50% of receptor contains natural habitat with potential to support SCC.	Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Freshwater Features (Drainage line and Off-channel dam)	**Medium**	**Low**	**Low**	**Medium**	**Low**
	> 50% of receptor contains natural habitat with potential to support SCC.	Several minor and major current negative ecological impacts.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.

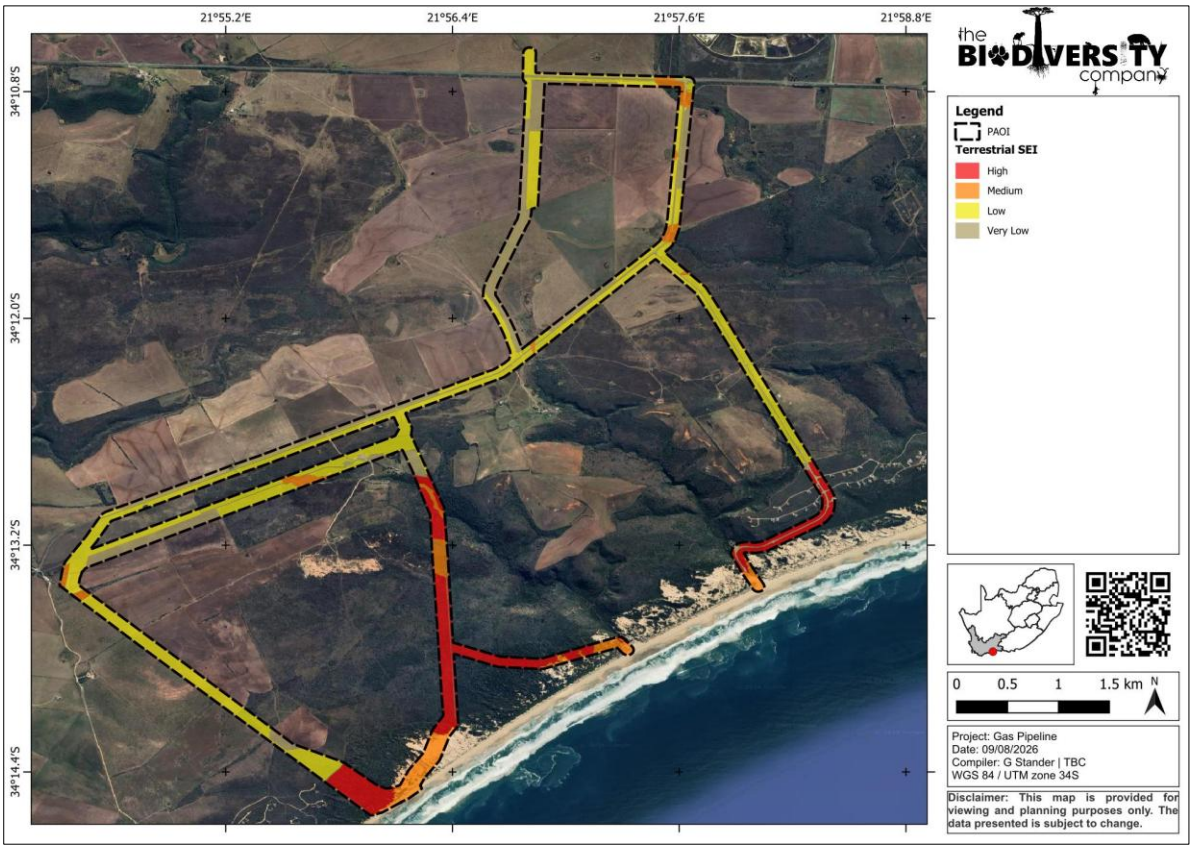


Figure 4-4 Map illustrating the Terrestrial Site Ecological Importance (SEI) for the PAOI

4.2.1 Avifauna SEI

The different habitat types within the PAOI were delineated and identified based on observations during the field assessment, and available satellite imagery. These habitat types were assigned SEI categories based on their ecological integrity, conservation value, the presence of SCC.

Nine habitat types (in terms of avifauna) were delineated within the PAOI, their associated SEI is shown in Figure 4-5. Their respective SEI and the corresponding mitigation guidelines are summarised in Table 4-3.

Table 4-3 Summary of avifauna habitat types delineated within field assessment area and their associated avifauna SEI

Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
Modified	Very Low	Low	Very Low	Very High	Very Low

Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
	No confirmed and highly unlikely populations of SCC.	Several minor and major current negative ecological impacts.		Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.
Disturbed Areas	**Medium**	**Medium**	**Medium**	**High**	**Low**
	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.	Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.		Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Hartenbos Dune Thicket	**High**	**High**	**High**	**Medium**	**High**
	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	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.
Disturbed Hartenbos Dune Thicket	**High**	**Medium**	**Medium**	**Medium**	**Medium**
	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.

Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
Albertinia Sand Fynbos	**High**	**High**	**High**	**Medium**	**High**
	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	Only minor current negative ecological impacts, with no signs of major past disturbance and good rehabilitation potential.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	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.
Disturbed Albertinia Sand Fynbos	**High**	**Medium**	**Medium**	**High**	**Low**
	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance.		Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Canca Limestone Fynbos	**High**	**Medium**	**Medium**	**Low**	**High**
	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance.		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.	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.
Southwestern Strandveld	**High**	**High**	**High**	**Medium**	**High**

Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	Only minor current negative ecological impacts, with no signs of major past disturbance and good rehabilitation potential.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	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.
Cape Seashore Vegetation	**High**	**High**	**High**	**Medium**	**Medium**
	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	Only minor current negative ecological impacts, with no signs of major past disturbance and good rehabilitation potential.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Freshwater Features (HGM 1, HGM 2, HGM 3, HGM 4, HGM 5, HGM 7, HGM 8, Instream Dam)	**High**	**Medium**	**Medium**	**Low**	**High**
	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance.		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.	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.
Freshwater Features (Drainage line and Off-channel dam)	**Medium**	**Low**	**Low**	**Medium**	**Low**
	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	Several minor and major current negative ecological impacts.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.

Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
	than 10 000 mature individuals				

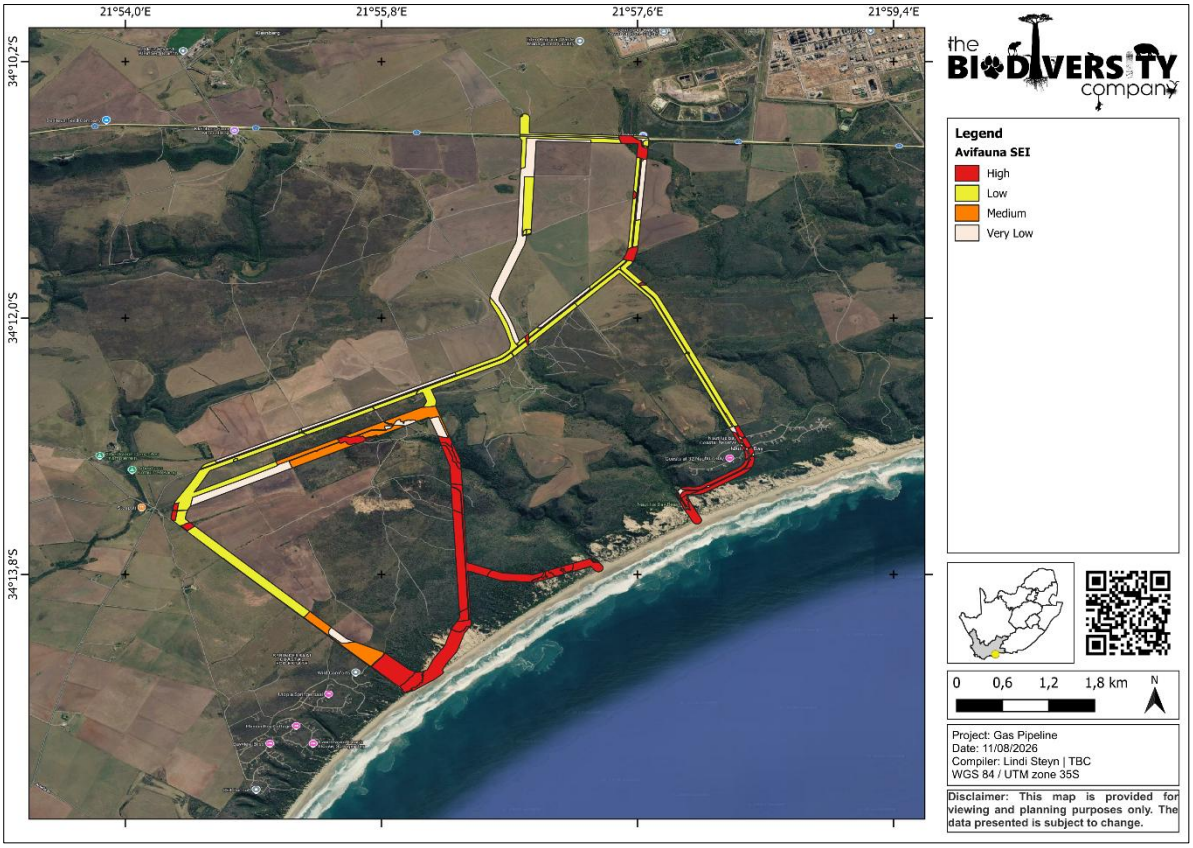


Figure 4-5 Map illustrating the Avifauna Site Ecological Importance (SEI) for the PAOI

4.2.2 Screening Tool Comparison

The allocated sensitivities for each of the relevant themes are either disputed or validated for the assessed areas in Table 4-4 below. A summative explanation for each result is provided as relevant. The specialist-assigned sensitivity ratings are based largely on the SEI process followed in the previous section, and consideration is given to any observed or likely presence of SCC. The sensitivities delineated for the PAOI are illustrated in Figure 4-4.

Table 4-4 Summary of the screening tool vs specialist assigned sensitivities

Screening Tool Theme	Screening Tool	Habitat	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Animal Theme	High	Modified	Very Low	Disputed – Avifauna were assessed separately. Habitat is modified with little to no natural vegetation remaining. Fauna SCC could use the area for movement corridors.
		Disturbed Areas	Low	Disputed – Avifauna were assessed separately. Habitat is disturbed. Fauna SCC could use the area for movement corridors.
		Hartenbos Dune Thicket	High	Validated – Avifauna were assessed separately. Habitat is largely natural providing suitable habitat for fauna SCC. Fauna SCC are expected to occur within this unit.
		Disturbed Hartenbos Dune Thicket	Low	Disputed – Avifauna were assessed separately. Habitat is disturbed, but some suitable habitats exist within this unit and fauna SCC are expected to use this area temporarily and as movement corridors
		Albertinia Sand Fynbos	High	Validated – Avifauna were assessed separately. Habitat is largely natural providing suitable habitat for fauna SCC. Fauna SCC are expected to occur within this unit.
		Disturbed Albertinia Sand Fynbos	Low	Disputed – Avifauna were assessed separately. Habitat is disturbed, but some suitable habitats exist within this unit and fauna SCC are expected to use this area temporarily and as movement corridors.
		Canca Limestone Fynbos	Medium	Disputed – Avifauna were assessed separately. Suitable habitats exist within this unit and fauna SCC are expected to occur.
		Southwestern Strandveld	High	Validated – Avifauna were assessed separately. Habitat is largely natural providing suitable habitat for fauna SCC. Fauna SCC are expected to occur within this unit.
		Cape Seashore Vegetation	Medium	Disputed – Avifauna were assessed separately. Suitable habitats exist within this unit and fauna SCC are expected to occur.
		Freshwater Features	Low – Medium	Disputed/Validated – This habitat unit is inherently sensitive in nature and provides valuable ecosystem services but experiences ongoing disturbance due to surrounding land-use. More information regarding this habitat unit can be found in the accompanying freshwater Site Sensitivity Verification Report (SSVr).
Plant Theme	High	Modified	Very Low	Disputed – Habitat is modified with little to no natural vegetation remaining. No flora SCC recorded and none are expected.
		Disturbed Areas	Low	Disputed – Habitat is disturbed. However, flora SCC could occur in localised patches within the disturbed habitat.
		Hartenbos Dune Thicket	High	Validated – Habitat is in a natural condition and flora SCC are expected to occur throughout.
		Disturbed Hartenbos Dune Thicket	Low	Disputed – Habitat is disturbed, however some suitable habitat for flora SCC occurs within this unit.
		Albertinia Sand Fynbos	High	Validated – Habitat is in a natural condition and flora SCC are expected to occur throughout.
		Disturbed Albertinia Sand Fynbos	Low	Disputed – Habitat is disturbed, however some suitable habitat for flora SCC occurs within this unit.
		Canca Limestone Fynbos	High	Validated – Habitat is in a natural condition. One (1) flora SCC was recorded, and more are expected.
		Southwestern Strandveld	High	Validated – Habitat is in a natural condition and flora SCC are expected to occur throughout.

		Cape Seashore Vegetation	Medium	Validated – Habitat is in a natural condition and provides suitable habitat for flora SCC. Flora SCC are therefore expected.
		Freshwater Features	Low – Medium	Disputed/Validated– This habitat unit is inherently sensitive in nature and provides valuable ecosystem services but experiences ongoing disturbance due to surrounding land-use. More information regarding this habitat unit can be found in the accompanying freshwater SSVr
Terrestrial Theme	Very High	Modified	Very Low	Disputed – This habitat is modified with little to no natural vegetation remaining. It no longer exhibits the composition and characterises of the fynbos which it once was.
		Disturbed Areas	Low	Disputed – This habitat unit is in a disturbed state and experiences ongoing impacts associated with the surrounding land-use, livestock grazing, as well as invasions by alien and invasive species. Without active rehabilitation, it will continue to degrade over time.
		Hartenbos Dune Thicket	High	Disputed – Habitat is intact, in good condition and exhibits a high diversity of species. It represents a functional constituent of an EN vegetation type Due to the nature of the proposed project activities; this habitat is expected to recover fairly quickly with rehabilitation. However, vegetation clearing within this EN ecosystem for project activities should be cautiously planned and minimised where possible.
		Disturbed Hartenbos Dune Thicket	Low	Disputed – Habitat is disturbed due to historical and current anthropogenic activities. Despite this, it still provides habitat and contributes to ecological services.
		Albertinia Sand Fynbos	High	Disputed – Habitat is intact, in good condition and exhibits a high diversity of species. It represents a functional constituent of an EN vegetation type Due to the nature of the proposed project activities; this habitat is expected to recover fairly quickly with rehabilitation. However, vegetation clearing within this EN ecosystem should be cautiously planned and minimised where possible.
		Disturbed Albertinia Sand Fynbos	Low	Disputed – Habitat is disturbed due to historical and current anthropogenic activities. Despite this, it still provides habitat and contributes to ecological services.
		Canca Limestone Fynbos	Medium	Disputed - Habitat is intact, in good condition and exhibits a high diversity of species. Due to the nature of the proposed project activities, this habitat is expected to recover fairly quickly with rehabilitation. However, vegetation clearing for project activities should carefully be considered.
		Southwestern Strandveld	High	Disputed - Habitat is intact, in good condition and exhibits a high diversity of species. It represents a functional constituent of an EN vegetation type. Due to the nature of the proposed project activities, this habitat is expected to recover fairly quickly with rehabilitation. However, vegetation clearing within this EN ecosystem should be cautiously planned and minimised where possible.
		Cape Seashore Vegetation	Medium	Disputed - Habitat is intact, in good condition and exhibits a high diversity of species. Due to the nature of the proposed project activities, this habitat is expected to recover fairly quickly with rehabilitation. However, vegetation clearing for project activities should carefully be considered.
		Freshwater Features	Low - Medium	Disputed – This habitat unit is inherently sensitive in nature and provides valuable ecosystem services but experiences ongoing disturbance due to surrounding land-use. More information regarding this habitat unit can be found in the accompanying freshwater SSVr.

4.2.2.1 Avifauna screening tool comparison

The table below assesses the screening tool assigned sensitivities from an avifauna perspective alone (Table 4-5).

Table 4-5 Summary of the screening tool vs specialist assigned sensitivities for avifauna

Screening Tool Theme	Screening Tool	Habitat	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Animal Theme	High	Modified	Very Low	Disputed – Avifauna were assessed separately. Habitat is modified with little to no natural vegetation remaining. Avifauna SCC could use the area for movement corridors.

	Disturbed Areas	**Low**	Disputed – Habitat has been degraded, it can however still support avifauna SCC
	Hartenbos Dune Thicket	**High**	Validated –Habitat is largely natural providing suitable habitat for fauna SCC. Avifauna SCC has been observed here, and more is expected to occur.
	Disturbed Hartenbos Dune Thicket	**Medium**	Disputed –Habitat is disturbed, but some more intact patches does occur in this habitat. Avifauna SCC has been observed here, and more is expected to occur.
	Albertinia Sand Fynbos	**High**	Validated – This fynbos habitat is mostly natural and has the potential to host both feeding and nesting SCC.
	Disturbed Albertinia Sand Fynbos	**Low**	Disputed – The habitat has been disturbed historically, some smaller more intact patches do occur. Avifauna SCC can still utilise this habitat for foraging
	Canca Limestone Fynbos	**High**	Validated – Larger portions of this habitat are intact, with small sections found between more disturbed habitat. However, in the larger sections SCC were recorded including the Martial Eagle.
	Southwestern Strandveld	**High**	Validated –Habitat is largely natural providing suitable habitat for avifauna SCC.
	Cape Seashore Vegetation	**Medium**	Disputed – Suitable habitat does exist in this habitat for avifauna SCC, it would be more shore birds that would utilise smaller sections of this habitat.
	Freshwater Features	**Low – High**	Disputed/Validated – This habitat unit is inherently sensitive in nature and provides valuable ecosystem services but experiences ongoing disturbance due to surrounding land-use. More information regarding this habitat unit can be found in the accompanying freshwater SSVr. A number of avifauna SCC were confirmed in this habitat, more is also likely to breed in this habitat.

5 Impact Assessment

Considering the anthropogenic activities and influences within the landscape, several negative impacts to biodiversity were observed within the PAOI. These include:

- Grazing by livestock;
- Erosion;
- Waste dumping;
- Invasions by alien invasive plant (AIP) species;
- Human and vehicle ingress;
- Housing developments;
- Linear infrastructure, such as roads, fences and overhead powerlines; and
- Loss of indigenous flora and associated edge effects from existing land use and mismanagement.

A summary of the potential impacts expected during the construction and operational phases of the proposed activity are presented in Table 5-1.

Table 5-1 Summary of potential impacts to biodiversity associated with the proposed activity

Main Impact	Project Activities	Secondary Impacts Anticipated
Loss of indigenous habitats including flora species within	• Direct loss as a result of construction and operation of the pipeline infrastructure. • Erosion as a secondary impact as a result of the placement of infrastructure, cutting back vegetation and redirecting of lateral water flow. • Secondary impacts associated with noise, dust and influx of alien invasive plants into these areas	• Habitat fragmentation. • Loss of ecosystem services. • Emigration of fauna species.
Degradation of habitats in general	• Prevention of fires or incorrect fire regimes. • Removal of vegetation. • Improper solid waste disposal. • Dust generation/precipitation. • Spilling of hazardous chemicals from machinery. • Illegal hunting. • Bush encroachment due to land mismanagement in the form of invasive vegetation due to inadequate rehabilitation.	• Loss of flora and fauna. • Increased potential for soil erosion. • Increased potential for bush encroachment. • Habitat fragmentation. • Increased potential for establishment of invasive alien vegetation.
Encroachment of alien invasive species in disturbed areas	• Vegetation removal. • Soil disturbance. • Vehicles movement potentially spreading seed.	• Habitat loss for native flora & fauna (including SCC). • Alteration of fauna assemblages due to habitat modification.
Direct mortality of fauna	• Preparation of soil with heavy machinery. • Vegetation clearing and soil disturbance. • Intentional killing of fauna for food (hunting) or persecution (especially with regard to herpetofauna).	• Loss of ecosystem services. • Disruption of the ecological food chain.
Emigration of fauna	• Disturbance from construction activities. • Loss of habitat and degradation of surrounding habitats.	• Reduced population of indigenous fauna. • Loss of ecosystem services.

6 Conclusion

6.1 Terrestrial

Several sections within the PAOI are in a natural and good condition, forming functional and intact components of their respective ecosystems. Many of these natural habitats overlap threatened ecosystems, of which they are representative. The natural habitats within the PAOI can be regarded as important, not only within the local landscape, but also regionally; as they are used as habitat, foraging and movement corridors for fauna within a landscape fragmented by agricultural development and encroachment by alien invasive plant species. The PAOI further overlaps CBA, ESA, NPAES and Conservation Areas (Gouritz Cluster Biosphere Reserve). However, large sections of the PAOI, especially towards the north, are modified and in a disturbed state. Some of these areas have little to no natural vegetation remaining, while others still provide some ecological services.

The assessment was conducted in the wet (winter) season resulting in some limitations to floral identification. One (1) flora SCC (*Leucospermum praecox*) was recorded, along with one (1) Nationally Protected tree, *Sideroxylon inerme*. Many more flora SCC and protected species are expected to occur within the PAOI. A walkdown must be conducted during the correct flowering season for the biomes (between September to November following sufficient rains to induce flowering), to locate and identify any additional flora SCC and protected species. Take note that buffers will be assigned to any flora SCC recorded from the site where applicable following a protected and threatened species walkdown.

Table 6-1 presents the sensitivities assigned to the habitats delineated for the site.

Table 6-1 Table presenting the terrestrial sensitivities assigned to the habitats delineated for the PAOI

Habitat	SEI
Modified	Very Low
Disturbed Areas	Low
Hartenbos Dune Thicket	High
Disturbed Hartenbos Dune Thicket	Low
Albertinia Sand Fynbos	High
Disturbed Albertinia Sand Fynbos	Low
Canca Limestone Fynbos	Medium
Southwestern Strandveld	High
Cape Seashore Vegetation	Medium
Freshwater Features	Low – High

The ecological integrity, importance and functioning of these terrestrial biodiversity areas provide a variety of ecological services considered beneficial, with one key service being the maintenance of biodiversity. The rehabilitation and preservation of these systems is the most important aspect to consider for the proposed project.

Figure 6-1 below illustrates the gas pipeline alternatives. From a terrestrial perspective, all route options following the National Road and Minor Road are considered acceptable. These routes follow existing roads and largely overlap with Very Low and Low SEI areas.

The “Option 1 and Option 2” Alternative (orange dashed line) overlaps with Low and Very Low SEI areas and is acceptable from a terrestrial perspective. Similarly, the “Option 1 and Option 2” alternative (grey dashed line) as well as the “Option 1, Option 2 and Option 3” alternative (grey solid line) are

considered acceptable as they follow existing roads and largely overlap with Very Low and Low SEI areas.

Option 3 (pink solid line) largely follows an existing road and overlaps Very Low and Low SEI areas in the northern section. In the southern section, however, the route traverses the Nautilus Bay Coastal Reserve and Resort, where it overlaps with High SEI areas. Although existing roads occur within portions of these High SEI areas, they are surrounded by natural and intact High SEI habitat. Construction related vegetation clearing would, therefore, extend beyond the existing road footprints and encroach into these sensitive areas.

Options 2 (solid green line) and 2a (dashed green line) predominantly traverse areas of Low and Very Low SEI and follow existing roads in the northern section. However, both alternatives largely overlap with High SEI areas in the south. Although existing roads occur within portions of these High SEI areas, they are surrounded by natural and intact habitats. Construction related vegetation clearing would, therefore, extend beyond the existing road footprints and encroach into these sensitive areas. In addition, Option 2 (solid green line) deviates eastwards through a section of High SEI habitat where no existing roads were observed. This deviation would result in additional disturbance within intact natural habitat. *Leucospermum praecox* (Flora SCC) was also recorded along this route. The presence of this flora SCC increases the potential impact significance of this alternative on terrestrial biodiversity and flora SCC. The eastward deviation of Option 2 is not recommended as it traverses intact natural habitat and does not follow an existing road.

The Option 1b alternative (dotted red line) is acceptable from a terrestrial perspective because it largely following existing roads and overlaps areas of Very Low and Low SEI. Option 1b (red dashed line) represents a short eastward deviation that overlaps areas of High SEI. Option 1 (red solid line) largely follows existing roads in the northern section, overlapping areas of Very Low and Low SEI. In the southern section, the route follows an existing road along the western fence boundary before deviating eastwards through areas of High SEI.

Overall, Option 1 (red solid line), Option 1a (red dashed line) and Option 1b (red dotted line) are the preferred route alternatives from a terrestrial biodiversity perspective. Of these, Option 1 (red solid line) and Option 1b (red dotted line) are preferred because they predominantly overlap areas of Low and Very Low SEI, with only limited overlap with High SEI areas. These alternatives, therefore, demonstrate a greater degree of avoidance and minimisation of potential impacts on sensitive terrestrial habitats. There is no preferred routing alternative with regards to beach access (i.e. Option 1 versus Option 1b), with both route alignments falling within the same habitat types.

Table 6-2 presents the gas pipeline route alternatives and their associated developability ratings. Several alternatives have been proposed, which allows for the avoidance and minimisation of impacts on areas of High SEI. From a terrestrial biodiversity perspective, the route alternatives have been ranked according to their relative preference, with a rating of 1 representing the most preferred route and a rating of 4 representing the least preferred route.

Given the linear nature of the proposed gas pipeline, the development footprint is expected to be relatively narrow and spatially confined. By selecting the preferred route alternatives, avoiding and minimising areas of High SEI and implementing appropriate mitigation measures, including the demarcation of the approved development footprint, flora SCC and protected species walkdown, and progressive rehabilitation, potential impacts on terrestrial biodiversity can be effectively reduced.

Table 6-2 Gas pipeline rout alternatives with developability preference

Route Alternative	Map reference (Figure 6-1)	SEI	Preference
Option 1 and Option 2 Alternative	Orange dashed line	Very Low and Low	1
Option 1 and Option 2	Grey dashed line	Very Low and Low	1
Option 1, Option 2 and Option 3	Grey solid line	Very Low and Low	1
Option 1	Red solid line	Very Low, Low, Medium and High	1
Option 1b	Red dotted line	Very Low, Low and Medium	1
Option 1a	Red dashed line	Low, Medium and High	2
Option 3	Pink solid line	Very Low, Low and High	3
Option 2a	Green dashed line	Medium and High	3
Option 2	Green solid line	Very Low, Low, Medium and High	4

It is the specialist's opinion that the proposed developability of the PAOI is as follows:

- The proposed development should as far as possible prioritise Very Low, Low and Medium SEI areas;
- The development of pipelines following existing roads and cleared areas needs to be prioritised;
- Vegetation clearance in threatened ecosystems should be minimised as far as possible;
- Avoidance mitigation wherever possible. Minimisation mitigation (High SEI Areas): 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 (this will be determined during the Impact Assessment Phase);
- Minimisation and restoration mitigation (Medium SEI Areas): Any development activities of medium impact acceptable followed by appropriate restoration activities;
- Minimisation and restoration mitigation (Low SEI Areas) – development activities of medium to high impact acceptable followed by appropriate restoration activities; and
- Minimisation and restoration mitigation (Very Low SEI Areas): Any development activities of medium-high impact acceptable and restoration activities may not be required.

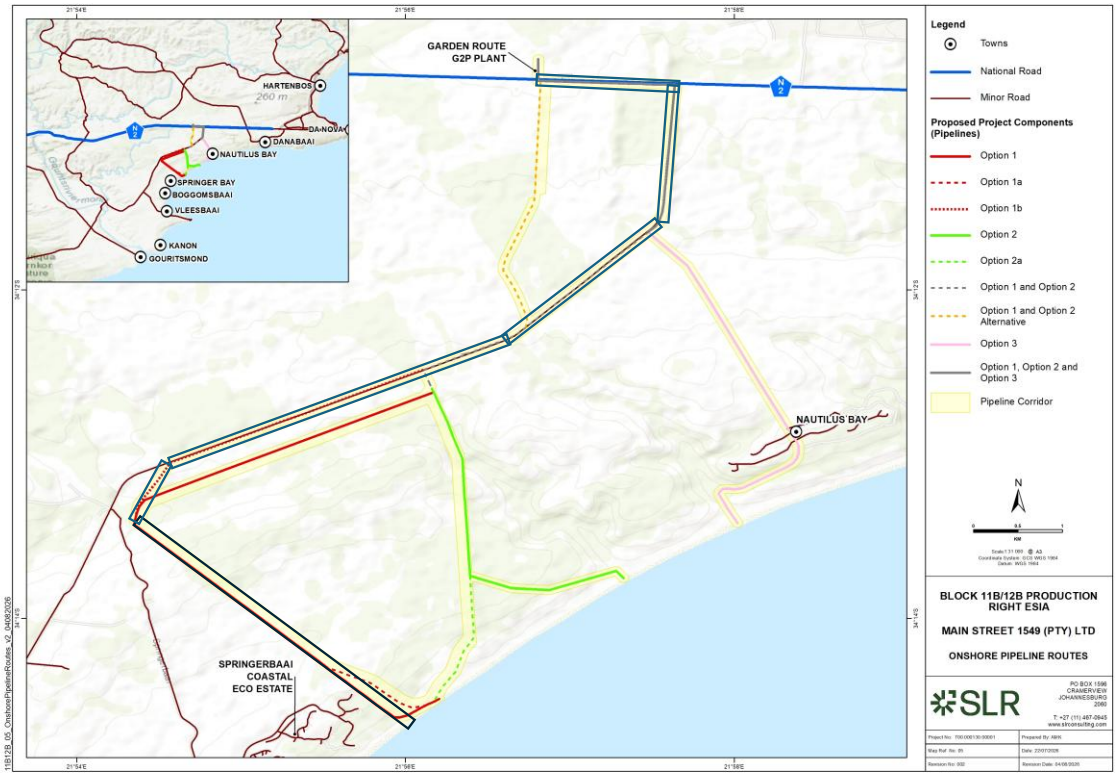


Figure 6-1: Preferred pipeline route option indicated by blue polygon

6.2 Avifauna

Large sections of the PAOI were found to be natural and to house a number of avifauna SCC. The fynbos habitat is of particular importance due to the confirmed presence of Black Harriers (*Circus maurus*), should any areas of intact fynbos be disturbed, a full Black Harrier assessment which must include a nest assessment will need to be conducted prior to construction. This must take place in the breeding season (July to September) of this species.

Table 6-3 presents the sensitivities assigned to the habitats delineated for the site.

Table 6-3 Table presenting the avifauna sensitivities assigned to the habitats delineated for the PAOI

Habitat	SEI
Modified	Very Low
Disturbed Areas	Low
Hartenbos Dune Thicket	High
Disturbed Hartenbos Dune Thicket	Medium
Albertinia Sand Fynbos	High
Disturbed Albertinia Sand Fynbos	Low
Canca Limestone Fynbos	High
Southwestern Strandveld	High
Cape Seashore Vegetation	Medium
Freshwater Features	Low – High

From an avifauna perspective Option 1 is the preferred option. Specifically, “Option 1b” (red dotted line), to the north as it avoids more intact habitats, followed by “Option 1 (red solid line) and Option 1a (red dashed line). These are the preferred options because they predominantly overlap areas of Low and Very Low SEI, with only limited overlap with High SEI areas. These alternatives therefore demonstrate a greater degree of avoidance and minimisation of potential impacts on sensitive terrestrial habitats. There is no preferred routing alternative with regards to beach access (i.e. Option 1 versus Option 1b), with both route alignments falling within the same habitat types. Option 2 and 3 are the least preferred as they transverse High SEI area especially in the south.

In terms of the routing preferences the avifauna specialist agree with the options stated above by the terrestrial specialist as the most important factor is protecting the habitat for the avifauna SCCs that utilise it. Given the linear nature of the proposed gas pipeline, the development footprint is expected to be relatively narrow and spatially confined. By selecting the preferred route alternatives, avoiding and minimising areas of High SEI and implementing appropriate mitigation measures, including the demarcation of the approved development footprint, fauna SCC/nests, and progressive rehabilitation, potential impacts on avifauna biodiversity can be effectively reduced.

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8 Appendix Items

8.1 Appendix A: Methods

8.1.1 Field Assessment

8.1.1.1 Flora Survey

The fieldwork and sample sites were placed within targeted areas (i.e. target sites) perceived as ecologically sensitive based on the preliminary interpretation of satellite imagery (Google Corporation) and GIS analysis (which included the latest applicable biodiversity datasets) available prior to the fieldwork. The focus of the fieldwork was therefore to maximise coverage and navigate to each target site in the field, to perform a rapid vegetation and ecological assessment at each sample site. Emphasis was placed on sensitive habitats, especially those overlapping with the proposed PAOI. The floristic diversity and search for flora SCC were conducted through timed meanders within representative habitat units delineated during the scoping fieldwork. Emphasis was placed mostly on sensitive habitats overlapping with the proposed PAOI. The timed meander search was performed based on the original technique described by Goff *et al.* (1982). Suitable habitat for SCC were identified according to Raimondo *et al.* (2009) and targeted as part of the timed meanders. At each sample site notes were made regarding current impacts (e.g., livestock grazing, erosion etc.), subjective recording of dominant vegetation species and any sensitive features (e.g. wetlands, outcrops etc.). In addition, opportunistic observations were made while navigating through the PAOI.

8.1.1.2 Fauna Survey

The faunal field survey comprised of the following techniques:

- Visual and auditory searches - This typically comprised of meandering and using binoculars to view species from a distance without them being disturbed; and listening to species calls; and
- Active hand-searches - are used for species that shelter in or under particular micro-habitats (typically rocks, exfoliating rock outcrops, fallen trees, leaf litter, bark etc.).

8.1.1.3 Avifauna Survey

Point Counts

Standardized point counts (Buckland et al., 1993) were conducted to gather data on the species composition and relative abundance of species within the broad habitat types identified. The standardized point count technique was utilized as it was demonstrated to outperform line routes (Cumming & Henry, 2019). Each point count was conducted over a 10-minute period. The horizontal detection limit was set at 150 meters. At each point, the observer would document the date, start time, end time, habitat, numbers of each species, detection method (seen or heard), behavior (perched or flying), and general notes on habitat and nesting suitability for conservation-important species.

Drive Transects

The drive transects focused on larger terrestrial birds and raptors. Transects were performed in and around the development footprint to ensure the larger area was considered. The transects were conducted by driving at approximately 15 km/h and stopping at regular intervals of 100 meters, scanning the surrounding environment with binoculars. All large terrestrial species and raptors were recorded, including their number, detection method (seen or heard), behavior (perched or flying), and general notes on habitat and nesting suitability.

Water Resource Assessments

Water resources on-site as well as larger features outside the project footprint were assessed. This consisted of a focal assessment at the water's edge to determine if SCC (species of conservation concern) as well as congregator species, were present.

Nest Survey

Possible nesting sites such as power lines, stands of trees, marshes and drainage lines, cliffs, and gravel areas were surveyed for nests. All breeding sites were mapped, and the activity at the nests was assessed during all the surveys.

Incidental Observations

To supplement the species inventory with cryptic and elusive species that may not be detected during the rigid point count and drive transect protocols, diurnal incidental searches were conducted. This involved the opportunistic sampling of species between point count periods as well as random meandering.

Nests, feathers, individuals and signs were photographed and GPS coordinates were taken.

Relevant field guides and texts consulted for identification purposes included the following:

- Roberts Bird Guide; A comprehensive field guide to over 950 bird species in southern Africa 1st Edition (Chittenden, 2007); and
- Roberts Birds of Southern Africa mobile app.

8.1.2 Terrestrial Site Ecological Importance

The different habitat types within the PAOI were delineated and identified based on observations made during the field survey, and information from available satellite imagery. These habitat types were assigned Ecological Importance (EI) categories based on their ecological integrity, conservation value, the presence of SCC and their ecosystem processes.

Site Ecological Importance (SEI) is a function of the Biodiversity Importance (BI) of the receptor (e.g., SCC, the vegetation/fauna community or habitat type present in the PAOI) and Receptor Resilience (RR) (its resilience to impacts).

BI is a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor. The criteria for the CI and FI ratings are provided in Table 8-1 and Table 8-2 respectively.

Table 8-1 Summary of Conservation Importance (CI) criteria

Conservation Importance	Fulfilling Criteria
Very High	Confirmed or highly likely occurrence of Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Extremely Rare or CR species that have a global extent of occurrence (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 an 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 Near Threatened (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 8-2 Summary of Functional Integrity (FI) criteria

Functional Integrity	Fulfilling Criteria
Very High	Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types. High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. No or minimal current negative ecological impacts, with no signs of major past disturbance.
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, with no signs of major past disturbance 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 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.

BI can be derived from a simple matrix of CI and FI as provided in Table 8-3.

Table 8-3 Matrix used to derive Biodiversity Importance (BI) from Functional Integrity (FI) and Conservation Importance (CI)

Biodiversity Importance		Conservation Importance				
		Very High	High	Medium	Low	Very Low
Functional Integrity	Very High	Very High	Very High	High	Medium	Low
	High	Very High	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very Low
	Low	Medium	Medium	Low	Low	Very Low
	Very Low	Medium	Low	Very Low	Very Low	Very Low

The fulfilling criteria to evaluate RR are based on the estimated recovery time required to restore an appreciable portion of functionality to the receptor, as summarised in Table 8-4.

Table 8-4 Summary of Receptor Resilience (RR) criteria

Resilience	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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remain at a site even when a disturbance or impact is occurring, or (ii) return to a site once the disturbance or impact has been removed.

After the determination of BI and RR, the SEI can be ascertained using the matrix as provided in Table 8-5.

Table 8-5 Matrix used to derive Site Ecological Importance from Receptor Resilience (RR) and Biodiversity Importance (BI)

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

Interpretation of the SEI in the context of the proposed project is provided in Table 8-6.

Table 8-6 Guideline for interpreting Site Ecological Importance in the context of proposed activities

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

The SEI evaluated for each taxon can be combined into a single multi-taxon evaluation of SEI for the assessment area. Either a combination of the maximum SEI for each receptor should be applied, or the SEI may be evaluated only once per receptor but for all necessary taxa simultaneously. For the latter, justification of the SEI for each receptor is based on the criteria that conforms to the highest CI and FI, and the lowest RR across all taxa.

8.2 Appendix B: Survey Points

Table 8-7 Summary of survey points

Survey Point	Date	Longitude	Latitude
1	27/07/2026	21.91210829968438	-34.2285017
2	27/07/2026	21.916356347568165	-34.23159104
3	27/07/2026	21.916229299445394	-34.2308836
4	27/07/2026	21.919010399505233	-34.2332151
5	27/07/2026	21.921098045913148	-34.23483852
6	27/07/2026	21.92152469962913	-34.2349228
7	27/07/2026	21.92188002201761	-34.23463821
8	27/07/2026	21.921848841370267	-34.235151
9	27/07/2026	21.929754100474614	-34.2392752
10	27/07/2026	21.92857931	-34.23902936
11	27/07/2026	21.927589773649668	-34.23865121
12	27/07/2026	21.92702651058958	-34.23819415
13	27/07/2026	21.927468739912264	-34.2390728
14	27/07/2026	21.928745569253376	-34.239481
15	27/07/2026	21.930948299716498	-34.2403367
16	27/07/2026	21.925251699442146	-34.2382183
17	27/07/2026	21.90717807436436	-34.22459551
18	27/07/2026	21.90765690029696	-34.2243874
19	27/07/2026	21.905817921806662	-34.22339092
20	27/07/2026	21.905895185111127	-34.22231072
21	27/07/2026	21.905780397199006	-34.22200005
22	27/07/2026	21.906177699203713	-34.22208516
23	27/07/2026	21.90727137068857	-34.22112733
24	27/07/2026	21.911579999731547	-34.2196533
25	27/07/2026	21.909687035269265	-34.21714011
26	27/07/2026	21.91297170026779	-34.2161167
27	27/07/2026	21.913005000117558	-34.2163691
28	27/07/2026	21.91336468	-34.2164201
29	27/07/2026	21.92123370022448	-34.2131106
30	27/07/2026	21.922161699862023	-34.2132383
31	27/07/2026	21.92357752431769	-34.21265307
32	27/07/2026	21.92308339954112	-34.2125771
33	27/07/2026	21.92253679966189	-34.2127402
34	27/07/2026	21.948469765434435	-34.20112331
35	27/07/2026	21.960442476158534	-34.18572057
36	29/07/2026	21.92614842231737	-34.2208684
37	29/07/2026	21.925234999884253	-34.2215117
38	29/07/2026	21.926181611438274	-34.23873706
39	29/07/2026	21.92637842200941	-34.23899934
40	29/07/2026	21.926895300454586	-34.2391649
41	29/07/2026	21.927326246784414	-34.23939819
42	29/07/2026	21.928009700944454	-34.2397503

43	29/07/2026	21.92950020018904	-34.2413739
44	29/07/2026	21.930815400417686	-34.2422892
45	29/07/2026	21.932135907305252	-34.24330482
46	29/07/2026	21.932479441205068	-34.24365764
47	29/07/2026	21.93248479996976	-34.2434346
48	29/07/2026	21.93142460006878	-34.2427588
49	29/07/2026	21.931003300275044	-34.242065
50	29/07/2026	21.930592300200374	-34.2381187
51	29/07/2026	21.930972699741396	-34.2384341
52	29/07/2026	21.93103882	-34.23831409
53	29/07/2026	21.93054699982591	-34.2375807
54	29/07/2026	21.94009691493943	-34.23509972
55	29/07/2026	21.93995006335018	-34.23532646
56	29/07/2026	21.93950816996771	-34.23538799
57	29/07/2026	21.93907640024861	-34.2357482
58	29/07/2026	21.93912327243233	-34.23601082
59	29/07/2026	21.939210499882964	-34.2363424
60	29/07/2026	21.93923827286235	-34.23664889
61	29/07/2026	21.93948905872256	-34.23694991
62	29/07/2026	21.95969112171211	-34.19614513
63	29/07/2026	21.95993889074426	-34.19590304
64	29/07/2026	21.96005221475274	-34.19587392
65	29/07/2026	21.96763669969866	-34.2069867
66	29/07/2026	21.965256622920464	-34.22127198
67	29/07/2026	21.964980773992536	-34.220872
68	29/07/2026	21.965649799795365	-34.2206364
69	29/07/2026	21.966473699502306	-34.2226399
70	29/07/2026	21.940108313653987	-34.23318962
71	29/07/2026	21.93965669767719	-34.23291769
72	29/07/2026	21.93955519996168	-34.2326484
73	29/07/2026	21.939743868481127	-34.23191342
74	29/07/2026	21.939935646614984	-34.23033671
75	29/07/2026	21.93956550233504	-34.23002098
76	29/07/2026	21.939852862976974	-34.22898861
77	29/07/2026	21.939413400197854	-34.2227572
78	29/07/2026	21.93933078851358	-34.22269489
79	29/07/2026	21.938777900313138	-34.2226106
80	29/07/2026	21.93851207	-34.22230501
81	29/07/2026	21.938752500109732	-34.2221109
82	29/07/2026	21.938817452473845	-34.22189645
83	29/07/2026	21.93896487428391	-34.22169272
84	29/07/2026	21.939038783537214	-34.22184897
85	29/07/2026	21.939082704450232	-34.22214061
86	28/07/2026	21.939357074706784	-34.22168616
87	28/07/2026	21.93929141480558	-34.22088743
88	28/07/2026	21.939185399887663	-34.2205336

89	28/07/2026	21.938542499723678	-34.2202599
90	28/07/2026	21.931177899513262	-34.21273985
91	28/07/2026	21.92738369985145	-34.2136233
92	28/07/2026	21.92567889975284	-34.2142408
93	28/07/2026	21.925610639600364	-34.2139132
94	28/07/2026	21.926153800387578	-34.2137441
95	28/07/2026	21.926315299878294	-34.2135711
96	28/07/2026	21.926835699736106	-34.2142869
97	28/07/2026	21.927916699851853	-34.2142541
98	28/07/2026	21.936267162172065	-34.21234982
99	28/07/2026	21.936927827521703	-34.21180441
100	28/07/2026	21.936743791629638	-34.21146602
101	28/07/2026	21.93638160024396	-34.2110446
102	28/07/2026	21.933478878346907	-34.20946309
103	28/07/2026	21.933758866638982	-34.20891555
104	28/07/2026	21.93387016654626	-34.20829528
105	28/07/2026	21.934327999726765	-34.2087375
106	28/07/2026	21.935250163032087	-34.20837847
107	28/07/2026	21.936511699879592	-34.2075217
108	28/07/2026	21.936311647787676	-34.20968829
109	28/07/2026	21.935746699958067	-34.208733
110	28/07/2026	21.95463619672248	-34.19676698
111	28/07/2026	21.96548960017033	-34.2206363
112	28/07/2026	21.96656749952121	-34.2224812
113	28/07/2026	21.966376652968997	-34.22305211
114	28/07/2026	21.966423900477164	-34.2232926
115	28/07/2026	21.96711650005854	-34.223459
116	28/07/2026	21.967010399835686	-34.2233506
117	28/07/2026	21.96742999994096	-34.22002723
118	28/07/2026	21.971211116654313	-34.2182747
119	28/07/2026	21.97270880025925	-34.2148133
120	28/07/2026	21.972798071470375	-34.21473277
121	28/07/2026	21.97241960033508	-34.2147535
122	28/07/2026	21.967689469678447	-34.20677026
123	28/07/2026	21.93092924736295	-34.2095292
124	28/07/2026	21.94056762	-34.20591839
125	28/07/2026	21.940784230474716	-34.20610258
126	28/07/2026	21.948072200480343	-34.2014677
127	28/07/2026	21.94796870032406	-34.2015196
128	28/07/2026	21.947639799580305	-34.2017647
129	28/07/2026	21.954421299754568	-34.1965622
130	28/07/2026	21.9549067	-34.1960322
131	28/07/2026	21.960028745259873	-34.18942862
132	28/07/2026	21.959477215579625	-34.18895659
133	28/07/2026	21.95942793052814	-34.19237553
134	28/07/2026	21.960723772420682	-34.18092621

135	28/07/2026	21.96100741	-34.18089345
136	28/07/2026	21.960391849744045	-34.18052652
137	28/07/2026	21.950920600100346	-34.1790321
138	28/07/2026	21.956231700371983	-34.2291996
139	28/07/2026	21.95552454490533	-34.22909001
140	28/07/2026	21.955191716638932	-34.22894876
141	28/07/2026	21.954946000418914	-34.2291904
142	28/07/2026	21.954209692675626	-34.22914974
143	28/07/2026	21.953792500235075	-34.2288012
144	28/07/2026	21.953667499596925	-34.2304146
145	28/07/2026	21.95030842017666	-34.23233974
146	28/07/2026	21.949843499521233	-34.2323951
147	28/07/2026	21.95535499632711	-34.22964426
148	28/07/2026	21.943108364840946	-34.19793489
149	28/07/2026	21.94629169995906	-34.1904433
150	28/07/2026	21.946409900120315	-34.1881756
151	28/07/2026	21.946850000206343	-34.1825217

8.3 Appendix C: Expected Species List

Table 8-8 Expected Flora SCC

Family Name	Species Name	Flowering Period	Regional (SANBI)	Global (IUCN)
Scrophulariaceae	Selago villicaulis	April to August	Vulnerable B1ab(ii,iii,iv,v)	Not listed
Rutaceae	Agathosma muirii	April to October	Vulnerable A4abc	Not listed
Rutaceae	Agathosma riversdalensis	April to October	Vulnerable B1ab(ii,iii,iv,v)	Not listed
Proteaceae	Leucospermum praecox	April to September.	Vulnerable A2c	Vulnerable A 2c
Polygalaceae	Polygala pubiflora	August	Vulnerable B1ab(ii,iii,iv)+2ab(ii,iii,iv)	Not listed
Brassicaceae	Heliophila linearis var. reticulata	August to February	Vulnerable B1ab(ii,iii,v)	Not listed
Asteraceae	Athanasia cochlearifolia	August to November	Endangered B1ab(ii,iii,v)	Not listed
Campanulaceae	Wahlenbergia polyantha	December	Vulnerable B1ab(ii,iii,iv,v)	Not listed
	Sensitive species 515	March to May	Endangered B1ab(ii,iii,iv,v)	Not listed
	Sensitive species 1171	February	Endangered B1ab(ii,iii,v)+2ab(ii,iii,v)	Not listed
Scrophulariaceae	Selago glandulosa	January to October	Vulnerable B1ab(ii,iii,iv,v)	Not listed
Aizoaceae	Ruschia leptocalyx	July	Endangered B1ab(ii,iii,iv,v)	Not listed
Restionaceae	Thamnochortus muirii	July	Vulnerable B1ab(i,ii,iii,iv,v)	Not listed
Proteaceae	Leucospermum muirii	July to October	Vulnerable A2c	Vulnerable A 2c
Boraginaceae	Lobostemon belliformis	July to October	Critically Endangered A2c; D	Not listed
Fabaceae	Lebeckia gracilis	June to January	Endangered A2bc; B1ab(ii,iii,iv,v)	Endangered A2c
	Sensitive species 1012	March to April	Vulnerable B1ab(iii)	Not listed
Aizoaceae	Lampranthus fergusoniae	November	Vulnerable B1ab(ii,iii,iv,v)	Not listed
	Sensitive species 264	November to December	Endangered A2cd+4cd; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)	Not listed
Rutaceae	Euchaetis albertiniana	November to July	Endangered A2c	Not listed
Aizoaceae	Lampranthus ceriseus	October	Vulnerable B1ab(ii,iii,iv,v)	Not listed
Polygalaceae	Muraltia knysnaensis	October	Endangered B1ab(ii,iii,iv,v)	Not listed
Aizoaceae	Lampranthus diutinus	October to December	Endangered B1ab(ii,iii,iv,v)	Not listed
Aizoaceae	Lampranthus foliosus	October to December	Endangered B1ab(ii,iii,iv,v)	Not listed

Aizoaceae	Lampranthus pauciflorus	October to December	Endangered B1ab(ii,iii,iv,v)	Not listed
	Sensitive species 85	October to November	Endangered C2a(i)	Not listed
Proteaceae	Leucadendron galpinii	October to November.	Endangered A2ce	Endangered A2ce
Malvaceae	Hermannia lavandulifolia	September to April	Vulnerable A2c	Not listed
	Sensitive species 18	September to April	Endangered B1ab(iii,iv,v)	Not listed
Fabaceae	Aspalathus arenaria	September to December	Vulnerable B1ab(ii,iii,iv,v)	Not listed
Fabaceae	Aspalathus campestris	September to December	Vulnerable B1ab(ii,iii,v)	Not listed
Fabaceae	Aspalathus obtusifolia	September to December	Vulnerable B1ab(ii,iii,v)+2ab(ii,iii,v)	Not listed
Rutaceae	Agathosma eriantha	September to November	Vulnerable B1ab(ii,iii,iv,v)	Not listed
Scrophulariaceae	Selago ramosissima	September to October	Endangered B1ab(iii)	Not listed

8.4 Appendix C: Specialist Declaration of Independence

I, Grietjie Stander, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of NEMA requirements.

Grietjie Stander

Terrestrial Ecologist

The Biodiversity Company

August 2026

Declaration

I, Brittney Jamieson, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of NEMA requirements.

Brittney Jamieson

Terrestrial Ecologist

The Biodiversity Company

August 2026

I, Lindi Steyn, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.

Dr Lindi Steyn

Ecologist

The Biodiversity Company

August 2026

8.5 Appendix D: Specialist CVs

Grietjie STANDER

Pri Sci Nat 162039 | +27 64 901 1724 | grietjie@thebiodiversitycompany.com

PROFILE SUMMARY

Environmental and ecological specialist with more than three years of consulting experience within South Africa and internationally. Specialist expertise as a terrestrial ecologist and project manager in various sectors including mining, engineering, renewable energy, and private sector developments. Experienced in delivering field surveys, technical reports and specialist guidance for compliance with in-country legislative requirements and international lender standards. Registered Pri Sci Nat with the South African Council for Natural Scientific Professions.

PERSONAL INFO

Nationality: South African

Date of birth: 14 September 1993

EXPERIENCE

Environmental Impact Assessments (EIA)

Environmental Management Programmes (EMP)

Project Management

Terrestrial Biodiversity Assessments

SKILLS

- ✓ Terrestrial Biodiversity, Fauna and Flora (Ecology) Assessments
- ✓ GIS
- ✓ Wetland delineation
- ✓ Rehabilitation
- ✓ Monitoring & Management Plans

LANGUAGES

English – Proficient

Afrikaans – Proficient

Signed: Grietjie Stander

ACADEMIC QUALIFICATIONS

University of Limpopo (2023): MAGISTER SCIENTIAE (MSc) – Zoology:
Thesis title: *The effect of climate change on the breeding success of three African hornbill species*

Bhejane Nature Training (2017): FGASA (NQF2)
Terrestrial and Marine Guide Training

North West University (2015): BACCALAREUS SCIENTIAE (BSc Hons) – Environmental Sciences (Aquatic health):
Research project title: Research project: *Fish diversity and health assessment of Clarias gariepinus from the Makuleke Wetlands in the Kruger National Park*

North West University (2017): BACCALAREUS SCIENTIAE (BSc) – Environmental Sciences:
Majors: Zoology and Geography

PROFESSIONAL EXPERIENCE

Sep 2023 – Present	**The Biodiversity Company** Terrestrial Ecologist
Aug 2022 – Aug 2023	**Milnex Environmental Consultants CC** Ecologist and Consultant (Water Use Licensing)
Mar 2022 – Aug 2022	**Mogalakwena Research Centre** Assistant Research Manager
Jan 2019 – Aug 2022	**Mogalakwena Research Centre** Research Assistant

INTERNATIONAL EXPERIENCE

South Africa, Angola, Mali, Mauritius, Mozambique

Dr Lindi Steyn

Pr Sci Nat 119992 +27 72 129 3759 Lindi@thebiodiversitycompany.com

PROFILE SUMMARY

Environmental and Ecological Specialist with eight years of consulting experience, including work on international projects. Proven proficiency in supporting initiatives within exploration, mining, engineering, hydropower, renewable energy, and private sector development sectors. Adept at providing expert advice, technical assistance, and facilitation to achieve compliance with local regulations and international lender requirements. Registered as a Professional Natural Scientist (Pr Sci Nat) with the South African Council for Natural Scientific Professions.

PERSONAL INFO

Nationality: South African

Date of birth: 25 May 1988

EXPERIENCE

Lender reporting requirements

Environmental, Social and Health Impact Assessments (ESHIA)

Environmental Management Programmes (EMP)

Ecology

SKILLS

- ✓ Biodiversity Assessment
- ✓ Avifauna Assessment
- ✓ Monitoring & Management Plans
- ✓ GIS spatial analysis and digital cartography
- ✓ Critical Habitat Assessments

LANGUAGES

English – Proficient

Afrikaans – Proficient

INTERNATIONAL EXPERIENCE

South Africa, Swaziland. Zimbabwe, Lesotho

Signed: Lindi Steyn

ACADEMIC QUALIFICATIONS

University of Johannesburg, Johannesburg, South Africa (2018): PHILOSOPHIAE DOCTOR (PhD) – Biodiversity and Conservation
Title: *The effect of DDT on the histology, reproductive success and overall health of the House Sparrow in designated areas.*

University of Johannesburg, Johannesburg, South Africa (2013): MAGISTER SCIENTIAE (MSc)- Biodiversity and Conservation
Title: Comparative determination of the numbers of four garden bird species, the House Sparrow, *Passer domesticus*, the Cape Glossy Starling, *Lamprotornis nitens*, the Cape Turtle Dove, *Streptopelia capicola* and the Laughing Dove, *Streptopelia senegalensis* in the Johannesburg and Vaalwater areas with study into possible causes of expected declines.

University of Johannesburg, Johannesburg, South Africa (2011): BACCALAUREUS SCIENTIAE CUM HONORIBUS (Hons) – Zoology

University of Johannesburg, Johannesburg, South Africa (2010): BACCALAUREUS SCIENTIAE IN NATURAL AND ENVIRONMENTAL SCIENCES. Majors: Zoology and Botany.

Damelin, Bramley, Johannesburg: National Certificate in Field Guiding (Lodge Management) (2007)

Damelin, Bramley, Johannesburg: Field guiding FGASA level 1 certificate (2007)

Damelin, Bramley, Johannesburg: Ecotraining- Karongwe & Selati (2007)

PROFESSIONAL EXPERIENCE

May 2018 – Present	**The Biodiversity Company** Ecologist
Jan 2012 – July 2018	**University of Johannesburg** Laboratory assistant, Demonstrator, Tutor

Brittney-Aidan Jamieson

Cand Sci Nat 178794 +27 79 888 0800 brittney@thebiodiversitycompany.com

PROFILE SUMMARY

Terrestrial ecologist with experience supporting projects across multiple provinces in South Africa. My work includes the preparation of fire management plans, compliance statements, formal biodiversity and ecological reports, and assistance with nature reserve deproclamation processes. I am experienced in field-based ecological assessments, environmental reporting, and working within multidisciplinary project teams to support environmental compliance and decision-making.I also manage permitting processes for protected plant and animal species at both provincial and national level, including the preparation and submission of applications and liaison with the relevant authorities.

PERSONAL INFO

Nationality: South African

Date of birth: 27 May 1999

EXPERIENCE

Field work

Sample processing

Report writing

Conference Presentations

SKILLS

- ✓ Research & Problem-Solving
- ✓ Data Analysis & Interpretation
- ✓ Scientific Writing & Communication
- ✓ Fieldwork & Practical Experience
- ✓ Collaboration & Leadership

LANGUAGES

English – Proficient

Afrikaans – Conversational

Spanish - Basic

ACADEMIC QUALIFICATIONS

University of Pretoria (2024 - 2025): MAGISTER SCIENTIAE (MSc) - Microbiology:
Title: *Screening South African Commercial Eucalyptus Provenances for Resistance to Quambalaria eucalypti.*

University of Pretoria (2023): BACCALAUREUS SCIENTIAE HONORIBUS (Hons) – Microbiology

University of Pretoria (2019 - 2022): BACCAUREUS SCIENTIAE IN NATURAL AND ENVIRONMENTAL SCIENCES. Majors: Genetics and Microbiology.

PROFESSIONAL EXPERIENCE

January 2026	**The Biodiversity Company** Terrestrial Intern
December 2025	**Digby Wells Environmental** Shadow Experience
June 2023 – November 2025	**University of Pretoria** Lab Demonstrator and Tutor

CURRICULUM VITAE: Lindi Steyn

PUBLICATIONS

Steyn, L., Bouwman, H., Maina, J.N. (2018). Associations between DDT and egg parameters of the House Sparrow *Passer domesticus* from the Thohoyandou area of South Africa, Chemosphere.

Steyn, L., Bouwman, H., Maina, J.N. (2018). The effect of DDT and its metabolites on the structure of the shells of the eggs of the House Sparrow, *Passer domesticus*: A morphometric study. 7th International Toxicology Symposium in Africa.

Steyn, L., Bouwman, H., Maina, A.W, Hoffman, J., Maina, J.N. (2018). Bone density and asymmetry are not related to DDT in House Sparrows: insights from micro-focus X-ray computed tomography. Chemosphere.

Steyn, L., Maina, J.N. (2016). Comparison of the numbers of three species of birds in an urban- and a rural area of South Africa and possible relationship to the numbers of free (surface) macrophages in the respiratory systems. Journal of Ornithology

Willoughby, B., Steyn, L., Maina, J.N. (2015). X-ray microcomputed tomography study of the microstructure and the morphometry of the shell of the ostrich, *Struthio camerus*, egg. Anatomical record

Steyn, L., Maina, J.N. (2013). Die verwagte afname van die getalle van vier voël spesie, die Huismossie, Kleinglansspreeu, Gewone Tortelduif en die Rooiborsduifie in Gauteng en Limpopo provinsies en moontelike oorsake van die dalings. Die Suid-Afrikaanse akademie vir wetenskap en kuns afdeling biologiese wetenskappe, Pretoria.