Terrestrial Biodiversity and Plant Species Assessment:

Erf 1118 Paradysstrand, Kouga Municipality, Eastern Cape

Report v. 0.1
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Report prepared by

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Declaration

In terms of Chapter 5 of the National Environmental Management Act of 1998, specialists involved in Impact Assessment processes must declare their independence and include an abbreviated Curriculum Vitae.

I, Barend Adriaan Grobler, do hereby declare that I am financially and otherwise independent of the client and their consultants, and that all opinions expressed in this document are substantially my own.

B. Adriaan Grobler

The author believes that the information presented in this report complies with the Protocols for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity (Government Gazette 43110 20 March 2020) and Plant Species (Government Gazette 43855 of 30 October 2020).

Contents

1. Introduction

This Terrestrial Biodiversity and Plant Species Assessment report was commissioned to inform the environmental impact assessment of a residential development on Erf 1118 in Paradysstrand, Kouga Municipality, Eastern Cape Province (Figure 1). Erf 1118 covers an area of approximately 800 m^2 and is located in a coastal dune landscape just over 100 m from the high tide mark. Adjacent properties to the north and south of the site have been developed for housing, but properties on the seaward side of Erf 1118 remain undeveloped. The proposed development entails a single double-storey house covering approximately 240 m^2 (30.5% of the site). Much of the remainder of the property will, however, be paved and in addition, a pool and six standard-sized parking bays will be constructed, resulting in a total development footprint of approximately 520 m^2 (Figure 2).

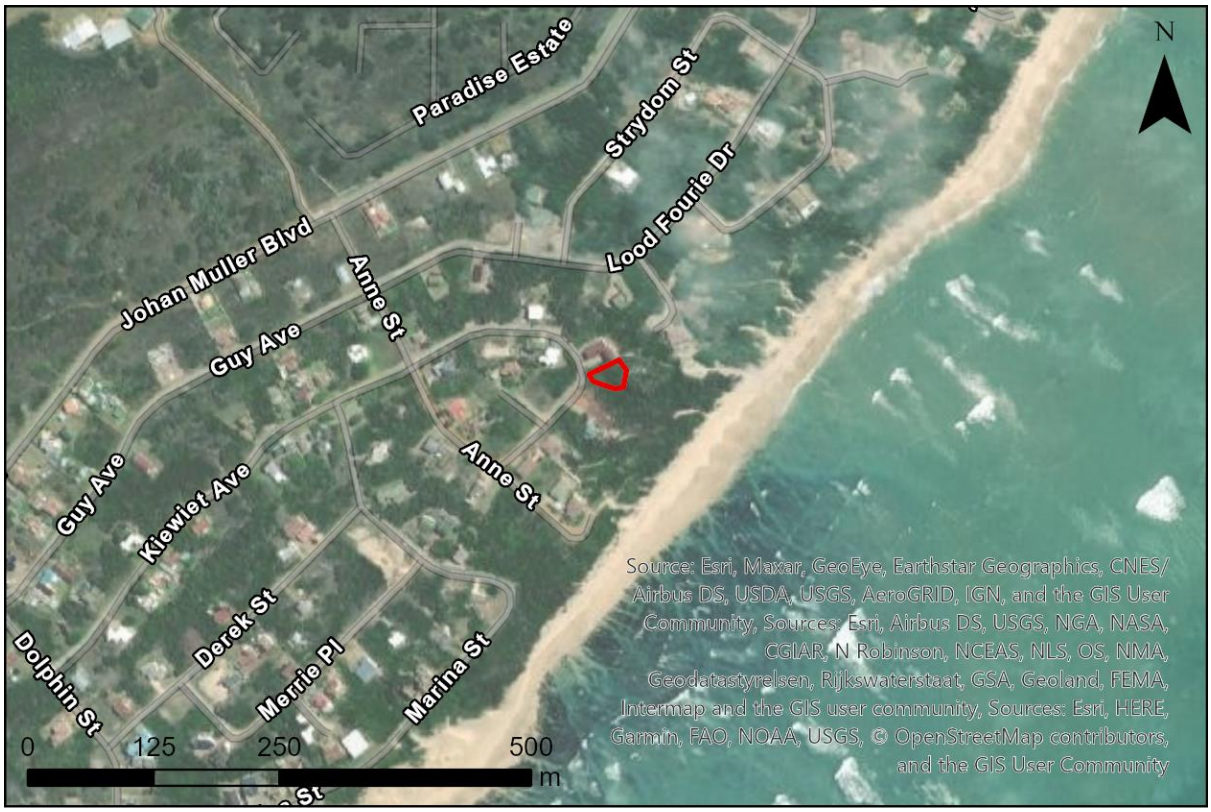


Figure 1: Location of Erf 1118 Paradysstrand (red outline) in the Kouga Municipality, Eastern Cape Province. The site covers approximately 800 m^2.

Figure 2: The preferred development footprint (black dotted area) for a single-storey house on Erf 1118 Paradysstrand (red outline).

2. Terms of Reference

The terms of reference for this assessment were as follows:

- A desktop assessment of available literature to identify and describe the mapped status of the vegetation on site in terms of applicable local and regional conservation planning frameworks (e.g., Vegetation Map of South Africa, National Biodiversity Assessment, Eastern Cape Biodiversity Conservation Plan, Garden Route Biodiversity Sector Plan).
    - Include the identification and evaluation of Critical Biodiversity Areas, Ecologically Sensitive Areas and Biodiversity Corridors mapped on site, if any.
- Field survey to identify, map and describe the current state of the vegetation on site, supported by relevant photographs.
- Determine appropriate buffer zones for sensitive areas, as well as No-Go areas on site.
    - Identify and assess impacts on sensitive areas and No-Go areas on the site and where necessary, establish appropriate buffer areas.
    - Include the designation of areas to be set aside for conservation (biodiversity target areas), in terms of the relevant planning frameworks for the area.
    - Identify and determine the relative abundance of Species of Conservation Concern (Vulnerable, Endangered or Critically Endangered) within the site.
    - Identify and determine the presence and distribution of alien vegetation on site, if any, and the potential for post-removal recovery of indigenous vegetation on site.
    - Provide a vegetation sensitivity map of the site.
    - Provide a disturbance and transformation map of the vegetation on site.
- Identify and map sensitive or specialized habitats.
- Identify and assess potential project related impacts (positive and negative) for the construction and operational phases of the project, using the prescribed methodology. Where feasible, include the assessment of cumulative impacts.
- Outline mitigatory measures for the future management of potential project related impacts.
- Outline management recommendations for the construction and operational phases of the project.

3. Methodology and Limitations

3.1 Desktop Study

An understanding of regional conservation priority areas was informed by the 2019 Eastern Cape Biodiversity Conservation Plan (EC BCP; Eastern Cape Department: Economic Development, Environmental Affairs and Tourism, 2020), the 2010 Garden Route Biodiversity Sector Plan (GRBSP; Holness et al., 2010; Vromans et al., 2010) and the 2017 National Protected Areas Expansion Strategy (NPAES; Government of South Africa, 2016).

To gain an understanding of broader vegetation patterns in the surrounding landscape, reference was made to the Vegetation Map of South Africa, Lesotho and Swaziland 2018 version (VEGMAP) (SANBI, 2006–2018, 2018a), which reflects important recent updates for the region under study (Dayaram et al., 2019). Conservation status and targets for vegetation types were identified from the National Biodiversity Assessment 2018 (SANBI, 2018b; Skowno et al., 2019). Further information about vegetation patterns and the local flora in the area was drawn from the scientific literature (Cowling, 1983, 1984; Cowling et al., 2019; Strydom et al., 2021) and unpublished botanical reports (Low, 2011; Grobler, 2019, 2022; Vlok et al., 2008).

A list of plant species of conservation concern (SCC) that could potentially occur in the study area were identified from the following sources:

- The National Web-based Environmental Screening Tool (https://screening.environment.gov.za);
- The online Red List of South African Plants v. 2020 (SANBI, 2012–2020) (http://redlist.sanbi.org).
- The online Botanical Database of Southern Africa (SANBI, 2016) (http://newposa.sanbi.org/).
- The Custodians of Rare and Endangered Wildflowers (CREW) Eastern Cape database (V. Zikishe, pers. comm.);
- Observations submitted to the iNaturalist online biodiversity database (https://www.inaturalist.org).

Plant SCC are those species whose populations are naturally small or geographically confined, and those whose populations are declining due to human impacts (i.e., currently threatened with extinction or likely to become threatened). Plant SCC thus include any species with a conservation status of Rare, Critically Rare, Near Threatened (NT), Vulnerable (VU), Endangered (EN), Critically Endangered (CR) or Critically Endangered Possibly Extinct (CR PE) (Raimondo et al., 2009). SCC habitat preferences were checked against the online Red List of South African Plants v. 2020 (SANBI, 2012–2020) and regional floras (Manning and Goldblatt, 2012; Bredenkamp et al., 2019).

Plant species that are protected under provincial or national legislation were identified from lists published in terms of the Cape Nature and Environmental Ordinance (Ordinance 19 of 1974), the National Environmental Management: Biodiversity Act (Act 10 of 2004) and the National Forests Act (Act 84 of 1998). Declared weeds and alien invasive plant species were identified from lists published

in terms of the Conservation of Agricultural Resources Act (1983) and National Environmental Management: Biodiversity Act (2004).

3.2 Field Survey

Fieldwork for this study was conducted on 5 March 2022 during the late summer/early autumn season. As the site falls in the coastal, temperate climate, year-round rainfall zone, seasonality is muted and thus the phenology of plants and vegetation is also subdued in comparison with more seasonal regions. The summer/autumn sampling is considered appropriate as most plant species were identifiable, including SCC.

Given the small area, virtually the entire site was surveyed, and care was taken to inspect representative portions of all suspected habitats on site. During the survey, vegetation units and other habitat types were roughly mapped and assessed for their ecological condition. Vegetation units were further surveyed for their dominant and typical component species. Any associations with specific soils, underlying geology, or landforms were noted. The locations of any SCC subpopulations encountered were recorded using a GPS.

3.3 Mapping

Following the field survey, vegetation units within 250 m of the study area were mapped using ESRI ArcGIS Pro. Available satellite imagery was captured on 11 August 2019, had an accuracy of 5 m and a resolution where 1 pixel equals 0.5 m ground distance. The distributions of SCC populations were mapped using the same software.

3.4 Assessment of Site Ecological Importance

The Site Ecological Importance (SEI) was evaluated according to the protocol outlined in the Species Environmental Assessment Guideline (SANBI, 2020). This protocol produces a standardised metric for identifying site-based ecological importance for species in relation to a proposed project. The SEI is a function of the biodiversity importance of a specific receptor (e.g., vegetation unit or SCC population) and its resilience to environmental impacts. The biodiversity importance is, in turn, a function of the conservation importance and functional integrity of the specific receptor.

4. Terrestrial Biodiversity

4.1 Bioregional Context

The study area falls within the southeastern portion of the Cape Floristic Region (CFR), a globally recognized Biodiversity Hotspot (Mittermeier et al., 2011). The CFR is the richest floristic region in southern Africa, hosting nearly 10,000 plant species (Manning and Goldblatt, 2012). In biogeographic terms, the CFR is a very complex zone as it includes elements from five biomes (Fynbos, Succulent

Karoo, Forest, Subtropical Thicket and Grassland) (Cowling, 1992). The landscapes of the CFR are dominated by Fynbos-Biome vegetation, an evergreen, sclerophyllous, fire-prone shrubland characterised structurally by the presence of restioids, a high cover of ericoid shrubs, and the common occurrence of overstorey proteoid shrubs (Cowling et al., 1997; Rebelo et al., 2006). More typical of coastal areas in the CFR, especially on coastal dunes, is a mosaic of asteraceous fynbos and subtropical thicket vegetation, with overstorey proteoids generally absent (Cowling, 1984).

The study area forms part of geologically youthful coastal landscapes of the CFR, mantled by calcareous sediments that harbour a diverse array of calcicolous plant species (Grobler and Cowling, 2021). These species are intimately associated with coastal dunes and limestones, having evolved in the region over the past five million years. Given their harsh environmental conditions and dynamic nature, coastal dune floras of the CFR are surprisingly rich in species, with numerous rare and geographically disjunct populations of dune-endemic species (Grobler et al., 2020; Grobler and Cowling, 2021). The Humansdorp coastal plain, for example, supports several species restricted to dunes, many of which are local or regional endemics (Cowling, 1984; Cowling et al., 2019).

4.2 Bioregional Conservation Planning

The EC BCP (Eastern Cape Biodiversity Conservation Plan, 2020) identifies no Critical Biodiversity Areas (CBA) at the site, although the coastal strip found about 60 m southeast of the site is categorized as CBA1, while an Ecological Support Area (ESA1) is located about 300 m northwest of the site (Figure 3).

Similarly, the 2010 GRBSP (Holness et al., 2010) identifies no CBAs at the site, but the coastal strip (60 m southeast of the site) and a portion of land northwest (250 m) of the site are categorized as CBAs, while an ESA occurs about 320 m north of the site (Figure 4).

Two protected areas occur in the broader landscape surrounding Erf 1118 Paradysstrand: Kromensee Nature Reserve, which lies approximately 2 km southwest of the site; and the Seekoei River Nature Reserve, found approximately 2 km north of the site (Figure 5). The 2017 NPAES (Government of South Africa, 2016) identifies a single priority area for protected area expansion about 2 km east of Erf 1118 (Figure 5). It should be noted that the site is included in the Garden Route Biosphere Reserve (Figure 5), a nationally important conservation area that was recognised by UNESCO as South Africa's ninth Biosphere Reserve in June 2017 (https://gardenroutebiosphere.org.za/).

Figure 3: The conservation network identified by the 2019 Eastern Cape Biodiversity Conservation Plan (EC BCP; Eastern Cape Department: Economic Development, Environmental Affairs and Tourism, 2020) in the landscapes surrounding Erf 1118 Paradysstrand. CBA, Critical Biodiversity Area; ESA, Ecological Support Area.

Figure 4: Important conservation areas identified by the 2010 Garden Route Biodiversity Sector Plan (Holness et al., 2010; Vromans et al., 2010) occurring in the landscapes surrounding Erf 1118 Paradysstrand.

Figure 5: Important conservation areas identified by the 2017 National Protected Area Expansion Strategy (NPAES; Government of South Africa, 2016) occurring in the landscapes surrounding Erf 1118 Paradysstrand.

4.3 Regional-Scale Vegetation Patterns

VEGMAP (SANBI, 2006–2018, 2018) identifies a single vegetation type occurring in the study area, namely AT 57 St Francis Dune Thicket (Figure 7). This vegetation type is restricted to the Eastern Cape Province where it occurs on coastal dunes from near the Tsitsikamma River Mouth (west of Oyster Bay) eastward to the Sundays River Mouth. St Francis Dune Thicket comprises a mosaic of dune thicket clumps occurring in a matrix of asteraceous dune fynbos (Grobler et al., 2018). The thicket clumps are best developed in fire-protected dune slacks, while the fynbos predominates on upper dune slopes and crests and on fire-exposed flats.

The dune thicket is dominated by tall, broad-leaved shrubs, including *Azima tetracantha, Carissa bispinosa, Cassine peragua, Cussonia thyrsiflora, Euclea racemosa, Grewia occidentalis, Maytenus procumbens, Mystroxylon aethiopicum, Olea exasperata, Osteospermum moniliferum, Putterlickia pyracantha, Rapanea gilliana, Robsonodendron maritimum, Searsia crenata, Searsia glauca,* and *Searsia pterota* (Grobler et al., 2018). *Olea capensis, Pterocelastrus tricuspidatus, Sideroxylon inerme* and *Tarchonanthus litoralis* are some of the common tree species found in St Francis Dune Thicket.

The dune fynbos is dominated by fine-leaved, low-growing shrubs like *Achyranthemum sordescens, Agathosma apiculata, Agathosma stenopetala, Coleonema pulchellum, Erica chloroloma, Erica glumiflora, Eriocephalus africanus, Felicia echinata, Metalasia muricata, Muraltia spinosa,* and *Phylica ericoides*, while graminoids like the grasses *Cymbopogon pospischilii, Cynodon dactylon, Ehrharta calycina, Imperata cylindrica, Pentasmeris heptameris, Pentameris pallida, Stenotaphrum secundatum* and *Themeda triandra*, and the restios *Elegia microcarpa* and *Restio eleocharis*, are also common (Grobler et al., 2018).

St Francis Dune Thicket, especially the fynbos component, is rich in regional and local endemic species (Cowling, 1983, 1984; Cowling et al., 2019; Grobler, 2019; Low, 2011), most of which are restricted to coastal dunes of the Cape Floristic Region (Grobler and Cowling, 2021). This vegetation type is threatened by sand mining, alien plant invasions and urban sprawl (coastal development). While this vegetation type is poorly protected (Grobler et al., 2018), it is currently listed as Least Concern in terms of ecosystem conservation status (SANBI, 2018b; Skowno et al., 2019).

Two other vegetation types mapped near the site should be noted. The first, AZd 3 Cape Seashore Vegetation, occurs about 100 m southeast of the site and is associated primarily with hummock dunes along the sandy beaches in the area. The second, AT 50 Sundays Mesic Thicket, is mapped as occurring about 50 m to the northwest of the site; however, personal observations in the area suggest that this boundary – comprising ecotonal communities between Sundays Mesic Thicket and St Francis Dune Thicket – occurs 200–250 m further northwest (i.e., just northwest of Johan Muller Boulevard).

Figure 6: The historical distribution of vegetation types in the landscapes surrounding Erf 1118 Paradysstrand, as classified by the Vegetation Map of South Africa, Lesotho and Swaziland Version 2018 (SANBI 2006–2018, 2018a).

4.4 Local-Scale Vegetation Patterns

In accordance with VEGMAP (Dayaram et al., 2019; SANBI, 2006–2018, 2018a), the findings of the field survey revealed that only a single broad vegetation type occurs in the study area, namely AT 57 St Francis Dune Thicket (Dune Fynbos–Thicket Mosaic). Two component plant communities, dune fynbos and dune thicket, can be found on site (Plate 1; Figure 7).

Plate 1: Dune Fynbos–Thicket Mosaic vegetation on Erf 1118 Paradysstrand. The fynbos component is dominant in the foreground on the right, while the thicket component is dominant in the background on the left.

4.4.1 Dune Fynbos

A small patch of dune fynbos occurs along the eastern boundary of Erf 1118 on the crest and upper slope of a dune (Plate 2; Figure 7). This vegetation community comprises mainly dwarf and low shrubs, including *Achyranthemum argenteum*, *Agathosma apiculata*, *Chironia baccifera*, *Disparago anomala*, *Helichrysum asperum*, *Metalasia muricata*, *Otholobium* sp. nov. 'algoensis' and *Pelargonium capitatum*. The Endangered shrub *Rapanea gilliana* occurs in the ecotone between the dune fynbos and dune fynbos along the lower dune slope. The ground layer includes mainly herbs of the daisy family (Asteraceae) like *Felicia amoena* subsp. *latifolia, Felicia echinata, Senecio elegans, Senecio litorosus* and *Ursina anthemoides*, but is dominated by the graminoid *Restio eleocharis*. Other graminoids found here are the grass *Pentameris heptameris* and *Restio leptoclados*. A few hedge-forming shrubs more typically associated with dune thicket also occur in the dune fynbos patch, especially *Euclea racemosa*, *Searsia glauca* and *Salvia aurea*. Note that virtually all species occurring in the fynbos community are dune endemics, with several being restricted to coastal dunes of the CFR (e.g., *Achyranthemum argenteum*, *Metalasia muricata*, *Restio eleocharis*).

Plate 2: Dune Fynbos (foreground), comprising mainly dwarf shrubs (*Achyranthemum argenteum*, *Disparago anomala*), hedge-forming shrubs (*Euclea racemosa*, *Salvia aurea*) and graminoids (e.g., *Pentameris heptameris*, *Restio eleocharis*), on the crest and southwest-facing slope of a dune on Erf 1118 Paradysstrand.

4.4.2 Dune Thicket

Dune thicket dominates Erf 1118 but is best developed in the dune swale along the south of the site (Plate 3; Figure 7). This vegetation community is dominated by 4–5 m tall trees and shrubs like *Euclea racemosa*, *Mystroxylon aethiopicum* and *Sideroxylon inerme*. Other typical dune thicket shrubs occurring on site include *Carissa bispinosa*, *Cussonia thyrsiflora*, *Lauridia tetragona*, *Maytenus procumbens*, *Olea exasperata*, *Psydrax obovata*, *Pterocelastrus tricuspidatus*, *Rhoiacarpos capensis*, *Robsonodendron maritimum*, *Salvia aurea*, *Scolopia zeyheri*, *Searsia crenata*, *Searsia glauca* and *Tarchonanthus littoralis*. Several climbers are intertwined with the shrubs, for example *Asparagus aethiopicus*, *Cynanchum obtusifolium*, *Kedrostis nana* var. *nana* and *Rhoicissus digitata.* The orchid *Bonatea speciosa*, although not common, is restricted to dune thicket. As with the dune fynbos community, several species associated with dune thicket are restricted to coastal dunes, with some being endemic to the CFR (e.g., *Olea exasperata*, *Robsonodendron maritimum*).

4.4.3 Disturbed Vegetation

A small area along the northwest of Erf 1118 has recently been disturbed (Plate 4; Figure 7). Here, some of the indigenous shrubs and trees (including protected *Sideroxylon inerme* subsp. *inemere*) were cut and cleared (Plate 5), with the open dune sand providing opportunities for ruderal (e.g., *Senecio chrysocoma*, *Solanum linnaeanum*) and exotic species (e.g., *Cestrum laevigatum*, *Myoporum montanum*) to establish. There is no evidence of significant soil disturbance, and the vegetation is likely to fully recover given enough time and control of alien invasive plants.

Plate 3: Dune Thicket, dominated by vertical-growing (*Euclea racemosa*, *Scolopia zeyheri*) and laterally spreading shrubs and trees (*Mystroxylon aethiopicum*, *Sideroxylon inerme*), in a dune swale on Erf 1118 Paradysstrand.

Plate 4: Disturbed dune vegetation, comprising typically ruderal (*Senecio chrysocoma*, *Solanum linnaeanum*) and exotic shrubs (*Cestrum laevigatum*, *Myoporum montanum*).

Plate 5: Stump of a protected white milkwood (*Sideroxylon inerme* subsp. *inerme*) that was cut and is now resprouting.

4.5 Ecological Processes

4.5.1 Fire

Fire plays and important role in maintaining the dynamics and structure of Dune Fynbos–Thicket Mosaic vegetation. In the absence of fire (over a period of decades), thicket elements can encroach on the fynbos and eventually result in closed-canopy thicket replacing more open fynbos shrublands (Cowling and Hoffman, 2021). Several non-sprouting dune fynbos species further rely on regular fire to stimulate recruitment from soil-stored seedbanks (Pierce and Cowling, 1991a). Land-use changes around Paradysstrand initiated in the 1960's has led to an increase in fire-return intervals (from 5–10 years historically to 30–50 years today) and active fire suppression around residential areas has led to a disruption of the natural fire regime in the area (Cowling and Hoffman, 2021).

4.5.2 Pollination

Most plant species in the study area are insect- and wind-pollinated, with no bird-pollinated species recorded on Erf 1118. As relatively large and connected patches of intact vegetation still line the coastal margin, plant–pollinator mutualisms are likely still predominantly intact.

4.5.2 Seed Dispersal

Most plant species in the study area, particularly those associated with dune thicket, depend on birds for seed dispersal (Cowling et al., 1997), while some dune fynbos species rely on ants for dispersal (Pierce and Cowling, 1991b). Given the relatively continuous closed-canopy structure and connectivity between habitat patches along the coastal margin in the study area, seed dispersal processes likely remain largely functional.

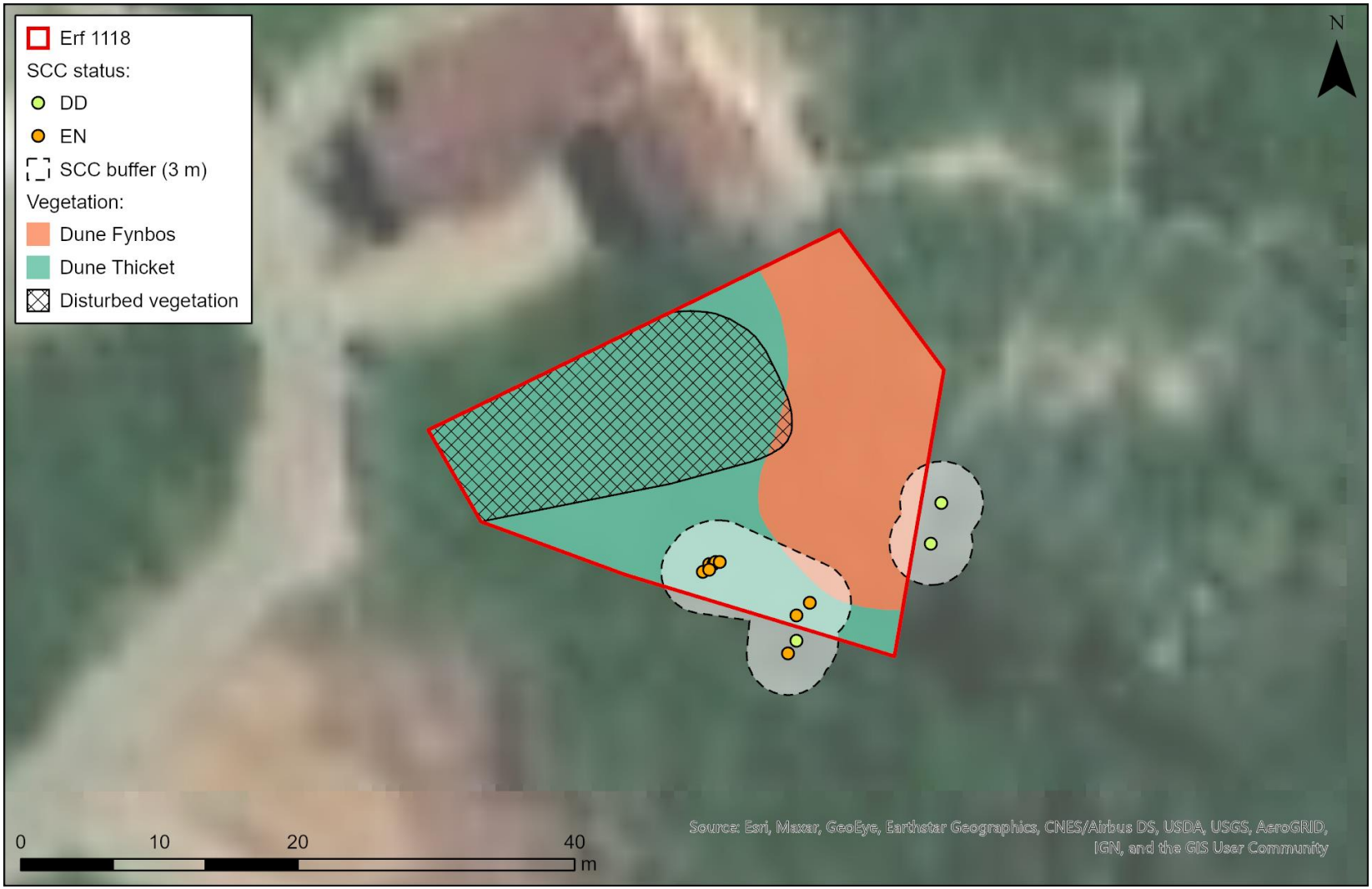


Figure 7: Local-scale vegetation patterns and distribution of plant species of conservation concern (SCC) (+ 3 m buffer area) on Erf 1118 Paradysstrand. The approximate distribution of disturbed vegetation is also indicated. SCC status codes: DD, Data Deficient (likely threatened); EN, Endangered.

5. Plant Species

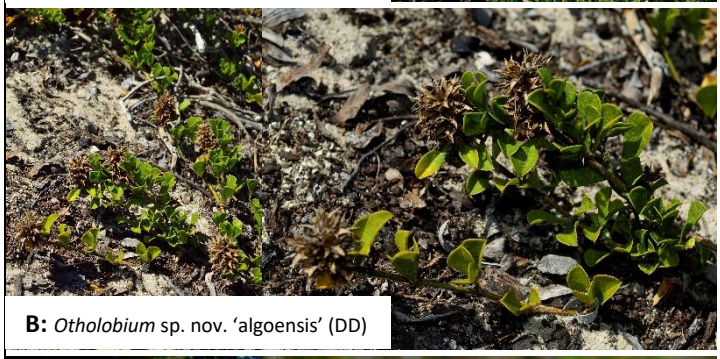
5.1 Species of Conservation Concern

A total of 35 plant SCC were identified as potentially occurring in the study area (Table 1). Of these, three SCC (*Achyranthemum argenteum*, *Otholobium* sp. nov. 'algoensis', *Rapanea gilliana*) were confirmed to occur on site during the field survey (Plate 6), while one SCC (*Hyobanche robusta*, a root parasite only detectable during its flowering period in spring) was identified as having a Medium likelihood of occurrence based on its habitat preferences and available habitats at the site. The remaining 31 SCC have a Low likelihood of occurring on site as no or very limited suitable habitat occurs there and as they were not detected despite substantial survey effort. SCC confirmed to occur in the study area include two DD (*Achyranthemum argenteum*, *Otholobium* sp. nov. 'algoensis') and one EN (*Rapanea gilliana*) species (Table 1; Plate 6). The SCC with a Medium likelihood of occurrence is a VU species. All three SCC are associated primarily with the dune fynbos community.

A: *Achyranthemum argenteum* (DD)

Distribution:
Endemic to coastal dunes of the far southeastern Cape Floristic Region (Tsitsikamma coast to Port Alfred).

On-site population:
2 individuals in healthy state.



B: *Otholobium* sp. nov. 'algoensis' (DD)

Distribution:
Endemic to coastal dunes of the far southeastern Cape Floristic Region (Cape St Francis to Cape Recife).

On-site population:
5–10 individuals in healthy state.

C: *Rapanea gilliana* (EN)

Distribution:
Endemic to coastal dunes of the far southeastern Cape Floristic Region (Oyster Bay to Port Alfred).

On-site population:
5–10 individuals in healthy state.

Plate 6: Plant species of conservation concern (SCC) recorded during the field survey of the study area: (A) DD *Achyranthemum argenteum*; (B) DD *Otholobium* sp. nov. 'algoensis'; (C) EN *Rapanea gilliana*.

Table 1: Plant species of conservation concern (SCC) that are associated with vegetation in the landscapes surrounding Erf 1118 Paradysstrand. Conservation status is from the Red List of South African Plants v. 2020 (SANBI, 2012–2020) (http://redlist.sanbi.org). Status: DD, Data Deficient; NT, Near Threatened; VU, Vulnerable; EN, Endangered; CR, Critically Endangered. Vegetation: DF, Dune Fynbos; DT, Dune Thicket. Note that potentially identifying information for sensitive species has been omitted.

Family	Species	Status*	Vegetation	Habitat†	Likelihood	Justification
Amaryllidaceae	*Apodolirion macowanii*	VU	–	Stony clay soils in renosterveld or open thicket.	Low	No suitable habitat present.
Apiaceae	*Centella tridentata* var. *hermanniifolia*	Rare	DF	Low, open fynbos on coastal dunes.	Low	–
Asteraceae	*Achyranthemum argenteum*	DD	DF	Deep coastal dune sand in low, open fynbos.	Confirmed	–
Asteraceae	*Achyranthemum sordescens*	VU	DF	Shallow dune sands near the coast.	Low	No suitable habitat present.
Asteraceae	*Arctotis elongata*	DD	DF	Low, open fynbos on coastal dunes.	Low	–
Asteraceae	*Seriphium* sp. nov. 'dunensis'	DD	–	Partially-stabilized, deep coastal dune sand.	Low	No suitable habitat present.
Brassicaceae	*Heliophila linearis* var. *reticulata*	VU	–	Partially-stabilized, deep coastal dune sand.	Low	No suitable habitat present.
Crassulaceae	*Cotyledon adscendens*	EN	DT	Open, arid coastal dune thicket.	Low	No suitable habitat present.
Ericaceae	*Erica chloroloma*	VU	DF	Fynbos–thicket mosaics on coastal dunes.	Low	High sampling effort, not detected.
Ericaceae	*Erica glandulosa* subsp. *fourcadei*	VU	–	Fynbos–forest ecotones on leached, inland dunes.	Low	–
Ericaceae	*Erica glumiflora*	VU	DF	Fynbos–thicket mosaics on coastal dunes.	Low	High sampling effort, not detected.
Fabaceae	*Argyrolobium crassifolium*	EN	–	Lowland grassy sandstone fynbos.	Low	No suitable habitat present.
Fabaceae	*Aspalathus recurvispina*	CR	DF	Fynbos–thicket mosaics on coastal dunes.	Low	High sampling effort, not detected.
Fabaceae	*Indigofera tomentosa*	NT	–	Partially stabilized dune sand near the coast.	Low	High sampling effort, not detected.
Fabaceae	*Indigofera* sp. nov. 'sinusalgoae'	DD	DF	Fynbos–thicket mosaics on coastal dunes.	Low	High sampling effort, not detected.
Fabaceae	*Lebeckia gracilis*	EN	–	Sand fynbos on leached, inland dunes.	Low	No suitable habitat present.
Fabaceae	*Otholobium* sp. nov. 'algoensis'	DD	DF	Low, open fynbos on coastal dunes.	Confirmed	–
Fabaceae	*Psoralea repens*	NT	–	Partially-stabilized, deep coastal dune sand.	Low	–
Iridaceae	*Bobartia macrocarpa*	VU	–	Grassy sandstone fynbos.	Low	No suitable habitat present.
Iridaceae	*Moraea australis*	NT	DF	Open grassy areas on coastal dunes.	Low	No suitable habitat present.
Myrsinaceae	*Rapanea gilliana*	EN	DF	Fynbos–thicket mosaics on coastal dunes.	Confirmed	–
Orobanchaceae	*Hyobanche robusta*	VU	DF	Partially-stabilized, deep coastal dune sand.	Medium	Limited suitable habitat present.
Poaceae	*Capeochloa cincta* subsp. *sericea*	VU	–	Dune slack wetlands in transverse dunefields.	Low	No suitable habitat present.
Rutaceae	*Agathosma stenopetala*	VU	DF	Fynbos–thicket mosaics on coastal dunes.	Low	High sampling effort, not detected.
–	Sensitive species 78	VU	–	–	Low	High sampling effort, not detected.

Table 1 continued on next page

Family	Species	Status*	Vegetation	Habitat†	Likelihood	Justification
–	Sensitive species 308	VU	–	–	Low	High sampling effort, not detected.
–	Sensitive species 448	VU	–	–	Low	High sampling effort, not detected.
–	Sensitive species 500	EN	–	–	Low	No suitable habitat present.
–	Sensitive species 588	VU	–	–	Low	High sampling effort, not detected.
–	Sensitive species 670	VU	–	–	Low	No suitable habitat present.
–	Sensitive species 657	EN	–	–	Low	High sampling effort, not detected.
–	Sensitive species 763	VU	–	–	Low	No suitable habitat present.
–	Sensitive species 1032	VU	–	–	Low	High sampling effort, not detected.
–	Sensitive species 1192	EN	–	–	Low	No suitable habitat present.
–	Sensitive species 1252	VU	–	–	Low	High sampling effort, not detected.

* All undescribed species are assigned a conservation status of DD.

† "Coastal dunes" refers to recently deposited dunes (late Pleistocene – Holocene) of the Schelmhoek Formation (calcareous sands); "inland dunes" refers to palaeo-dunes (Pliocene – Pleistocene) of the Nanaga Formation (acid sands).

5.2 Protected Species

Five protected species listed in terms of national and provincial legislation were recorded on Erf 1118 (Table 2). These were *Bonatea speciosa*, *Carpobrotus deliciosus*, *Cynanchum obtusifolium* and *Mesembryanthemum aitonis*, all protected under Schedule 3 of the Cape Environmental and Nature Conservation Ordinance (1974), and *Sideroxylon inerme*, protected under the National Forest Act (1998). Of these protected species, only *Sideroxylon inerme* was moderately abundant on site, and there was evidence that some individuals of this species had been cut (Plate 5).

Table 2: Protected plant species, listed in terms of the Cape Environmental and Nature Conservation Ordinance (1974) (ENCO) and National Forests Act (1998) (NFA), that were recorded on Erf 1118 Paradysstrand.

Species	Common name	Protected category	Abundance
Bonatea speciosa	Green woodorchid	ENCO Schedule 3	Low
Carpobrotus deliciosus	Suurvy	ENCO Schedule 3	Low
Cynanchum obtusifolium	Melktou	ENCO Schedule 3	Low
Mesembryanthemum aitonis	Brakslaai	ENCO Schedule 3	Low
Sideroxylon inerme subsp. *inerme*	White milkwood	NFA	Medium

5.3 Alien Invasive Species

Four declared alien invasive plant (AIP) species were recorded at the site (Table 3), namely *Acacia cyclops*, *Cestrum laevigatum*, *Myoporum montanum* and *Phytolacca octandra*. These species were concentrated in disturbed areas (Plate 4; Figure 7). *Acacia cyclops*, the only AIP that was moderately abundant on site, poses a significant threat to the local flora and terrestrial biodiversity as it easily invades areas subjected to disturbance, after which it can outshade and outcompete indigenous species associated with the fynbos shrubland component of the Dune Fynbos–Thicket Mosaic.

Table 3: Alien invasive plant species, listed in terms of the Conservation of Agricultural Resources Act (1983) (CARA) and National Environmental Management: Biodiversity Act (2004) (NEMBA), that were recorded on Erf 1118 Paradysstrand.

Species	Common name	CARA category	NEMBA category	Abundance
Acacia cyclops	Rooikrans	2	1b	Medium
Cestrum laevigatum	Inkberry	1	1b	Low
Myoporum montanum	Manatoka	3	3	Low
Phytolacca octandra	Forest Inkberry	–	1b	Low

6. Site Ecological Importance

The site is situated entirely in the AT 57 St Francis Dune Thicket vegetation type (Figure 8; Dayaram et al., 2019; SANBI, 2006–2018, 2018a), which is a non-threatened ecosystem type (SANBI, 2018b, 2019; Skowno et al., 2019). Most of the vegetation here remains in a near-natural state, with only a small portion being recently disturbed due to superficial clearing. One threatened plant species population, that of the Endangered *Rapanea gilliana*, was recorded during the field survey of the site, as well as two DD species (Table 1; Plate 6). While the conservation statuses of these DD species remain to be assessed, available information (Grobler and Cowling, 2021) suggests that these species are range-restricted dune-endemics that are likely to be threatened.

The Site Ecological Importance (SEI) of Erf 1118 was evaluated as Low and Medium (Table 4), with areas of Low SEI covering most of the site and those of Medium SEI being restricted to the southeastern corner of the site where plant SCC populations occur (Figure 8). The recommended mitigation measures for areas of Low and Medium SEI are as follows (SANBI, 2020): "Minimisation and restoration mitigation – development activities of medium impact [to high impact for Low SEI] acceptable followed by appropriate restoration activities".

Table 4: Evaluation of Site Ecological Importance (SEI) of plant habitats (vegetation units) on Erf 1118 Paradysstrand. See Figure 8 for spatial distribution of SEI. BI, Biodiversity Importance; RR = Receptor Resilience.

Habitat	Conservation Importance	Functional Integrity	Receptor Resilience	Site Ecological Importance
Dune Fynbos–Thicket Mosaic vegetation hosting plant SCC populations (+ 3 m buffer area)	**High** Confirmed occurrence of EN species (and DD species likely to be threatened); presence of range-restricted species.	**Medium** Medium semi-intact area; narrow corridors for landscape connectivity dissected by road network and residential areas; mostly minor negative ecological impacts, but with established alien invasive plants.	**Medium** Will recover slowly (> 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality.	**Medium** BI = Medium RR = Medium
Dune Fynbos–Thicket Mosaic vegetation without plant SCC populations	**Low** No confirmed or highly likely occurrence of SCC or range-restricted species.	**Medium** Medium semi-intact area; narrow corridors for landscape connectivity dissected by road network and residential areas; mostly minor negative ecological impacts, but with established alien invasive plants.	**Medium** Will recover slowly (> 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality.	**Low** BI = Low RR = Medium

In accordance with the Protocols for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity (Government Gazette 43110 20 March 2020) and Plant Species (Government Gazette 43855 of 30 October 2020), an alternative development footprint has been identified within the site which would be of a "low" sensitivity as identified by the screening tool and verified through the site sensitivity verification (Figure 8).

Figure 8: Site Ecological Importance (SEI) of plant habitats on Erf 1118 Paradysstrand with the proposed development footprint of the preferred (left) and an alternative layout (right) superimposed. See Table 4 for evaluation of plant habitat SEI.

7. Impact Identification and Assessment

7.1 Project Alternatives

The advantages/disadvantages associated with three project alternatives, namely the No-Go option (i.e., development does not proceed), the preferred layout and the alternative layout, are summarised in Table 5 below. Advantages and disadvantages of the No-Go option are based on current impacts on site that are likely to continue.

Table 5: Evaluation of advantages and disadvantages of project alternatives.

Project alternative	Advantages	Disadvantages
No-Go option	No additional negative impacts on terrestrial biodiversity and plant species.	Continued invasion of indigenous vegetation by alien invasive plants; continued encroachment of dune fynbos by dune thicket shrubs.
Preferred layout	Preferred development layout of the applicant.	Destruction of relatively intact St Francis Dune Thicket vegetation (Low SEI) and habitat of three plant SCC (Medium SEI); destruction of individuals of Endangered plant species.
Alternative layout	Smaller footprint and lower impact on terrestrial biodiversity and plant species on site (largely restricted to areas of Low SEI).	Destruction of relatively intact St Francis Dune Thicket vegetation (Low SEI).

The preferred development layout will result in the clearing of approximately 460 m^2 of vegetation with Low SEI and 60 m^2 of vegetation of Medium SEI (Table 6). The alternative development layout, with a total footprint of approximately 430 m^2 (about 90 m2 less than the preferred layout), will lead to 430 m^2 of Low SEI vegetation and 1 m^2 of Medium SEI vegetation being cleared.

Table 6: Areal footprint of the preferred and alternative development layout for each category of Site Ecological Importance (SEI). See Figure 8 for spatial distribution of alternative development footprints and SEI.

Site Ecological Importance	Preferred layout	Alternative layout
Low	463.30 m^2	428.67 m^2
Medium	58.74 m^2	1.00 m^2
Total:	522.04 m^2	429.67 m^2

7.2 Impact Assessment of Preferred Layout

The following sections provide details on the anticipated impacts of the proposed development activities, and the assessment thereof is aligned with the requirements for Basic Assessment Reports, as stipulated in GN R326 Appendix 1, 3. (1) of the National Environmental Management Act (No. 107 of 1998) Environmental Impact Assessment Regulations (2014) (as amended in 2017). Impacts are evaluated for the for the Construction and Operational phases of the preferred development footprint as no Decommissioning phase is anticipated. Should decommissioning occur, then the relevant legislation, guidelines and rehabilitation requirements applicable at that time must be adhered to.

7.2.1 Construction Phase

Direct Impacts

Direct Impact	**Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be negatively affected by clearing.**
Extent	Site-specific
Duration	Permanent
Severity	High
Probability	Definite
Degree of Confidence	High
Reversibility	Irreversible
Irreplaceable Loss of Resources	Partially replaceable
Status and Significance (without mitigation)	High Negative
Mitigation	▪ Limit vegetation clearing to areas within the approved development footprint. ▪ Disturbance to intact vegetation must be restricted by demarcating those areas that will be cleared during construction, including lay-down and stockpile areas. ▪ Lay-down areas should be contained within the planned clearance areas and should not be placed in the surrounding intact vegetation. ▪ All construction personnel active on site must be notified of the importance of avoiding disturbance to intact vegetation outside of demarcated clearance areas. ▪ Permits for the destruction of protected plant species (SCC and *Sideroxylon inerme*) must be obtained from the relevant authorities.
Status and Significance (after mitigation)	**Medium Negative**

Direct Impact	**Individuals of plant SCC (5–10 individuals of EN and 2 individuals of DD species) will be negatively affected by destruction or damage caused during vegetation clearing.**
Extent	Site-specific
Duration	Permanent
Severity	High
Probability	Definite
Degree of Confidence	High
Reversibility	Irreversible
Irreplaceable Loss of Resources	Irreplaceable
Status and Significance (without mitigation)	High Negative
Mitigation	▪ Permits for the removal and translocation of plant SCCs should be obtained from the appropriate authorities. ▪ Prior to vegetation clearing, demarcated development footprints must be surveyed for threatened plant SCC by an Environmental Control Officer or similarly qualified person and a search-and-rescue operation undertaken for species that are suitable for translocation – this includes only *Rapanea gilliana*, which grows from underground rootstocks; care must therefore be taken to excavate all belowground parts and to keep these intact. ▪ Rescued plants should be translocated to suitable areas outside of the approved development footprint. ▪ Care must be taken to not disturb any individuals of plant SCC that are not to be translocated.

	▪ Translocation should occur during cooler and wetter periods of the year (e.g., autumn or winter) to minimize stress on the plants. ▪ Plants must be watered once every week for the first two months following translocation to enhance their survival potential. ▪ Survival of all translocated plants must be monitored and recorded monthly for the first year following translocation; these results must be reported to the authors of this report (which are to be shared with the South African National Biodiversity Institute).
Status and Significance (after mitigation)	**Medium Negative**

Direct Impact	**Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be positively affected by destruction of alien invasive plants (AIP) during vegetation clearing.**
Extent	Site-specific
Duration	Permanent
Severity	Low
Probability	High
Degree of Confidence	High
Reversibility	Partially reversible
Irreplaceable Loss of Resources	Partially replaceable
Status and Significance (without mitigation)	Low Positive
Mitigation	▪ An AIP management plan must be developed for the site and implemented during the Construction and Operational phases of the project. This plan should aim to eradicate and control the spread of AIPs within the portions of the site that are not proposed for development. ▪ Any AIP material removed during clearing of the development footprints must be removed from the site and destroyed so that reestablishment on site is avoided. ▪ Follow-up clearing for AIPs within the intact vegetation should take place on a yearly basis.
Status and Significance (after mitigation)	**Medium Positive**

Indirect Impacts

Indirect Impact	**Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including three threatened species) will be negatively affected by increased soil erosion.**
Extent	Site-specific
Duration	Long term
Severity	Medium
Probability	Medium
Degree of Confidence	High
Reversibility	Partially reversible
Irreplaceable Loss of Resources	Partially replaceable
Status and Significance (without mitigation)	Medium Negative

Mitigation	▪ Disturbance to intact vegetation must be restricted by demarcating those areas that will be cleared during construction, including access roads, haul roads, lay-down and stockpile areas, personnel rest areas and site offices. ▪ Wind erosion should be limited by using mesh netting set up around any cleared footprints as soon as clearing has taken place.
Status and Significance (after mitigation)	**Low Negative**

Indirect Impact	**Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be negatively affected by the establishment of an ecologically inappropriate fire regime.**
Extent	Local
Duration	Medium-term (10–15 years)
Severity	High
Probability	Low
Degree of Confidence	High
Reversibility	Partially reversible
Irreplaceable Loss of Resources	Partially replaceable
Status and Significance (without mitigation)	Medium Negative
Mitigation	▪ No open fires must be allowed on site.
Status and Significance (after mitigation)	**Neutral**

Indirect Impact	**Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be negatively affected by increased alien plant invasion due to disturbance.**
Extent	Local
Duration	Long-term
Severity	High
Probability	Medium
Degree of Confidence	High
Reversibility	Partially reversible
Irreplaceable Loss of Resources	Partially replaceable
Status and Significance (without mitigation)	High Negative
Mitigation	▪ An AIP management plan, which aims to eradicate and control the spread of AIPs, must be developed for the site and implemented during the Construction and Operational phases of the project. ▪ Disturbance to intact vegetation must be restricted by demarcating those areas that will be cleared during construction, including lay-down and stockpile areas. ▪ Areas disturbed during construction must be inspected for establishing AIPs on a regular basis, and these should be removed and destroyed as soon as possible before setting seed to limit their spread. ▪ Follow-up clearing of AIPs should take place on a yearly basis.
Status and Significance (after mitigation)	**Medium Positive**

Indirect Impact	**Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be negatively affected by plant poaching.**
Extent	Local
Duration	Short-term
Severity	Medium
Probability	Medium
Degree of Confidence	High
Reversibility	Partially reversible
Irreplaceable Loss of Resources	Partially replaceable
Status and Significance (without mitigation)	Medium Negative
Mitigation	▪ Construction workers must be notified of the prohibition of poaching plants and a fine system implemented.
Status and Significance (after mitigation)	**Neutral**

Cumulative Impacts

Cumulative Impact	**The regional vegetation variant (St Francis Dune Thicket) and its component plant SCC populations will be negatively affected by loss of natural vegetation cover (through direct damage to plants, increased wind erosion, increased plant invasion). Vegetation clearing on site will contribute to transformation of St Francis Dune Thicket in the surrounding landscape, which further includes past and future vegetation transformation on adjacent properties.**
Extent	Regional
Duration	Long-term
Severity	High
Probability	Medium
Degree of Confidence	High
Reversibility	Partially reversible
Irreplaceable Loss of Resources	Partially replaceable
Status and Significance (without mitigation)	High Negative
Mitigation	▪ The approved development footprint should be clearly demarcated prior to any construction personnel, machinery or vehicles entering the site, and no clearing should be permitted outside of this area. ▪ Lay-down and stockpile areas should be contained within the planned clearance area and should not be placed in the surrounding intact vegetation. ▪ All construction personnel active on site must be notified of the importance of avoiding disturbance to intact vegetation outside of demarcated clearance areas.
Status and Significance (after mitigation)	**Medium Negative**

Cumulative Impact	**Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be negatively affected by further impairment of ecological connectivity.**
Extent	Site-specific
Duration	Long-term
Severity	Low
Probability	High

Degree of Confidence	High
Reversibility	Partially reversible
Irreplaceable Loss of Resources	Partially replaceable
Status and Significance (without mitigation)	Medium Negative
Mitigation	▪ Clearing of vegetation must be restricted to approved development footprints. ▪ Existing major roads should be used as transport corridors to and from the site.
Status and Significance (after mitigation)	**Low Negative**

7.2.2 Operational Phase

Direct Impacts

Direct Impact	**Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be negatively affected by infrastructure maintenance.**
Extent	Site-specific
Duration	Long-term
Severity	Low
Probability	High
Degree of Confidence	High
Reversibility	Partially reversible
Irreplaceable Loss of Resources	Partially replaceable
Status and Significance (without mitigation)	Medium Negative
Mitigation	▪ Any activity associated with maintenance should take place in areas where vegetation has already been cleared and must not encroach on intact vegetation. ▪ Mowing/brushcutting of vegetation along roads/fire breaks should be minimal. Mowed strips must not exceed 3 m (average height of vegetation).
Status and Significance (after mitigation)	**Low Negative**

Indirect Impacts

Indirect Impact	**Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be negatively affected by increased pedestrian traffic around the site (trampling damage to plants and subsequent increased soil erosion).**
Extent	Local
Duration	Long-term
Severity	Low
Probability	Medium
Degree of Confidence	High
Reversibility	Partially reversible
Irreplaceable Loss of Resources	Partially replaceable
Status and Significance (without mitigation)	Low Negative
Mitigation	▪ Residents should not be permitted to construct private walkways from their residences through intact vegetation to access the beach. ▪ Residents must use existing and paths to walk through intact vegetation.

Status and Significance (after mitigation)	**Neutral**

Indirect Impact	**Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be negatively affected by the introduction of inappropriate flora (e.g., weeds and alien invasive plants) via landscaping.**
Extent	Local
Duration	Long-term
Severity	Low
Probability	Low
Degree of Confidence	High
Reversibility	Partially reversible
Irreplaceable Loss of Resources	Partially replaceable
Status and Significance (without mitigation)	Medium Negative
Mitigation	▪ Extensive lawns should be avoided, but where these are necessary, only grass species indigenous to the region (e.g., buffalo grass, *Stenotaphrum secundatum*, or quick grass, *Cynodon dactylon*) should be used; no invasive grass species (e.g., kikuyu, *Pennisetum clandestinum*) should be permitted. ▪ Residents must be notified of the risks involved with introducing exotic plant species into a landscape and encouraged to use only plant species indigenous to the region during landscaping activities. Ideally, these plants should be locally sourced to avoid dilution of genetic diversity in wild populations. ▪ Planting of bird-dispersed exotic plant species must be avoided. ▪ Dumping of garden refuse into intact vegetation adjacent to the residential unit is not be permitted, and residents must be notified of this.
Status and Significance (after mitigation)	**Neutral**

8. Conclusion

Based on the project information, potential impacts of the proposed development activities have been identified and are summarised in Table 5 below. The most significant impacts relate to the direct and cumulative loss of St Francis Dune Thicket vegetation and its associated SCC (one EN and two DD species) during the construction phase. In general, the proposed development is likely to have lwo to moderate potential to negatively impact on the terrestrial biodiversity and plant SCC in the study area as most potential impacts were evaluated to be of Low and Medium significance following the implementation of appropriate mitigation measures. Therefore, it is the terrestrial biodiversity and plant species specialists' opinion that the development project may be approved, but only if mitigations are stringently implemented and this is verified by an appointed Environmental Control Officer or similarly qualified person.

Table 7: Potential impacts of prospecting activities in the Oyster Bay and Thysbaai dunefields. The significance of impacts are indicated with and without appropriate mitigation measures.

Project Phase	Impact type	Impact	Significance	
			Without mitigation	With mitigation
Construction:	**Direct:**	Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be negatively affected by clearing.	**High Negative**	**Medium Negative**
		Individuals of plant SCC (5–10 individuals of EN and 2 individuals of DD species) will be negatively affected by destruction or damage caused during vegetation clearing.	**High Negative**	**Medium Negative**
		Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be positively affected by destruction of alien invasive plants (AIP) during vegetation clearing.	**Low Positive**	**Medium Positive**
	Indirect:	Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including three threatened species) will be negatively affected by increased soil erosion.	**Medium Negative**	**Low Negative**
		Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including three threatened species) will be negatively affected by the establishment of an ecologically inappropriate fire regime.	**Medium Negative**	**Neutral**
		Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including three threatened species) will be negatively affected by increased alien plant invasion due to disturbance.	**High Negative**	**Medium Positive**
		Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including three threatened species) will be negatively affected by plant poaching.	**Medium Negative**	**Neutral**
	Cumulative:	The regional vegetation variant (St Francis Dune Thicket) and its component plant SCC populations will be negatively affected by loss of natural vegetation cover (through direct damage to plants, increased wind	**High Negative**	**Medium Negative**

		erosion, increased plant invasion). Vegetation clearing on site will contribute to transformation of St Francis Dune Thicket in the surrounding landscape, which further includes past and future vegetation transformation on adjacent properties.		
		Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including three threatened species) will be negatively affected by further impairment of ecological connectivity.	**Medium Negative**	**Low Negative**
Operational:	**Direct:**	Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including three threatened species) will be negatively affected by infrastructure maintenance.	**Medium Negative**	**Low Negative**
	Indirect:	Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be negatively affected by increased pedestrian traffic around the site (trampling damage to plants and subsequent increased soil erosion).	**Low Negative**	**Neutral**
		Indigenous vegetation (St Francis Dune Thicket) that provides habitat to plant SCC (including one threatened species) will be negatively affected by the introduction of inappropriate flora (e.g., weeds and alien invasive plants) via landscaping.	**Medium Negative**	**Neutral**

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Table A1: Disseminated photographic evidence of plant species of conservation concern (SCC) recorded during the field survey of the study area. All records were submitted to the iNaturalist online database (www.inaturalist.org).

Species	**Record URL**
Achyranthemum argenteum	https://www.inaturalist.org/observations/111396090
Otholobium sp. nov. 'algoensis'	https://www.inaturalist.org/observations/111396091
Rapanea gilliana	https://www.inaturalist.org/observations/111396089