Terrestrial Biodiversity and Plant Species Assessment:

Proposed construction of a residential dwelling on Erf 8 Konkiebaai (Portion 53 of Eersterivier 626), Kou-Kamma Municipality, Eastern Cape

Report v. 1.1
20 September 2022

Report prepared by:

Dr B. Adriaan Grobler

9 Strandview Mansions, Summerstrand, Gqeberha, Eastern Cape 6001

Mr Roy de Kock (SACNASP 400216/16)

38 Tulip Ave, Sunridge Park, Gqeberha, Eastern Cape 6004

Report prepared for:

Eco Route Environmental Consulting

P.O. Box 1252, Sedgefield, Western Cape 6573

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 8 Konkiebaai (Portion 53 of Eersterivier 626) at Eersterivier in the Kou-Kamma Municipality, Eastern Cape Province (Figure 1). This property covers an area of approximately 855 m^2 and is located in a rural coastal landscape. Most land to the north of Erf 8 has been developed for agriculture, although areas of intact natural vegetation persist along the coastal strip (between the sea shore and the crests of steep coastal slopes) and in ravines that surround the property. The coastal strip on either side of Erf 8 is, however, punctuated by residential developments that constitute the hamlets of Oubosstrand (to the west), Eersterivier and Skuitbaai (to the east). Erf 8 borders on a steep coastal slope (to the north) and a steep-sided ravine through which a freshwater stream runs (to the east). The proposed development on Erf 8 entails a single double-storey (lower ground and ground floor) residential dwelling and associated decking, covering a combined area of approximately 360 m^2 (42% of the site). The dwelling will be constructed on stilts and will therefore allow for some vegetation to re-establish beneath the structure once construction is completed. In terms of the ecological sensitivity of the site, the National Web-based Environmental Screening Tool (https://screening.environment.gov.za) identifies Erf 8 as having a **LOW terrestrial biodiversity** sensitivity and a **MEDIUM plant species** sensitivity (Figure 2).

Figure 1: Location of Erf 8 Konkiebaai (yellow outline) at Eersterivier in the Kou-Kamma Municipality, Eastern Cape Province. Inset shows the proposed development footprint (red outline). The site covers approximately 855 m^2, while the proposed development footprint covers about 360 m^2.

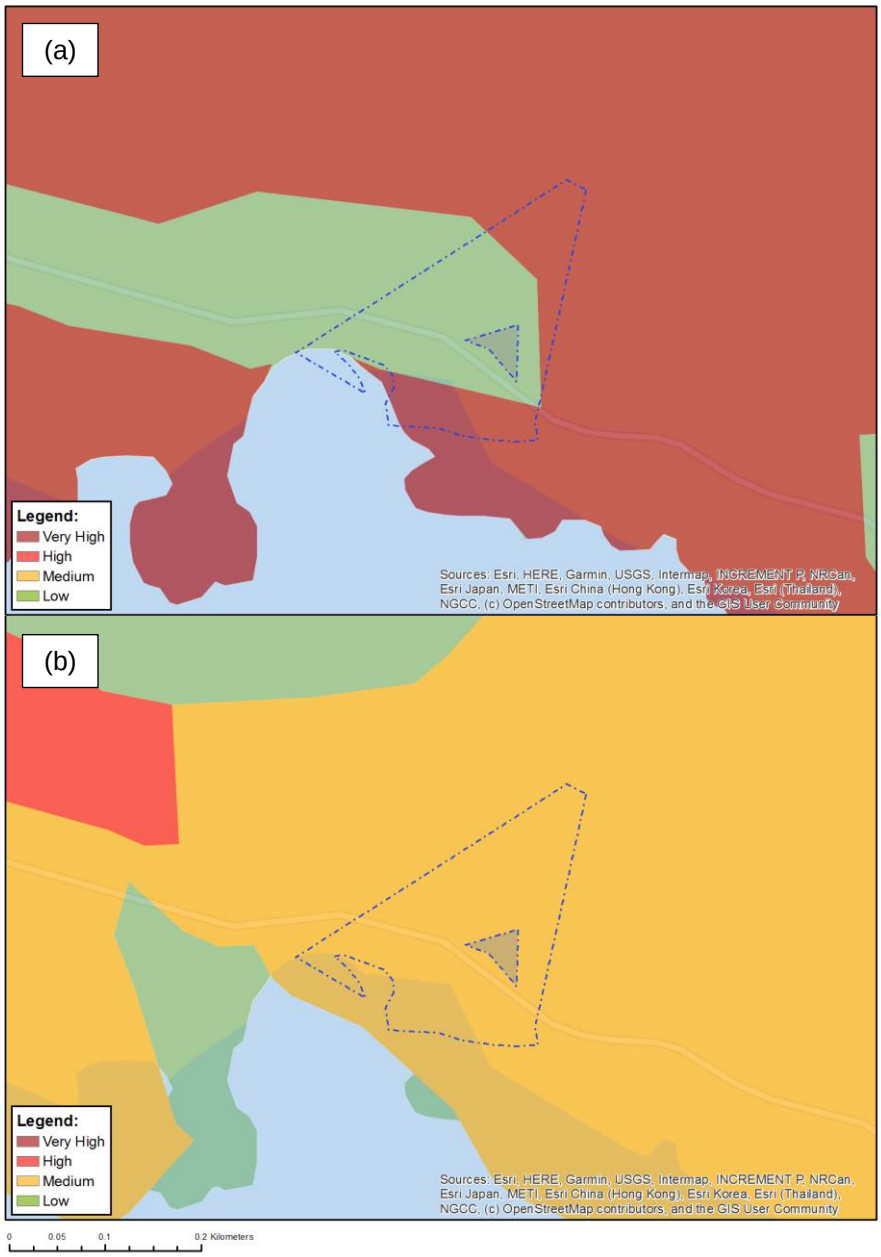

Figure 2: Environmental site sensitivity of Erf 8 Konkiebaai, according to the National Web-based Environmental Screening Tool, for (a) terrestrial biodiversity and (b) plant species.

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 South Africa's Red List of Terrestrial Ecosystems (Skowno and Monyeki, 2021). Further information about vegetation patterns and the local flora in the area was drawn from the scientific literature (Cowling, 1983, 1984).

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 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 24 May 2022 during the late autumn/early winter season (Table 1). 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 autumn/winter sampling is considered appropriate as most plant species were identifiable, including SCC. Given the small area, the entire site was surveyed, and care was taken to inspect representative portions of all suspected habitats on site (Figure 3). 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. Georeferenced photographs of plant species taken during the survey were submitted to the iNaturalist online biodiversity database at https://www.inaturalist.org/observations?q=Erf8_Konkiebaai&search_on=tags.

Table 1: Site inspection details for Erf 8 Konkiebaai at Eersterivier, Kou-Kamma Municipality, Eastern Cape.

Date:	24 May 2022
Duration:	2.5 hours
Season:	Autumn/winter
Season Relevance:	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 muted in comparison with more seasonal regions. The autumn/winter sampling is considered appropriate as most plant species were identifiable.

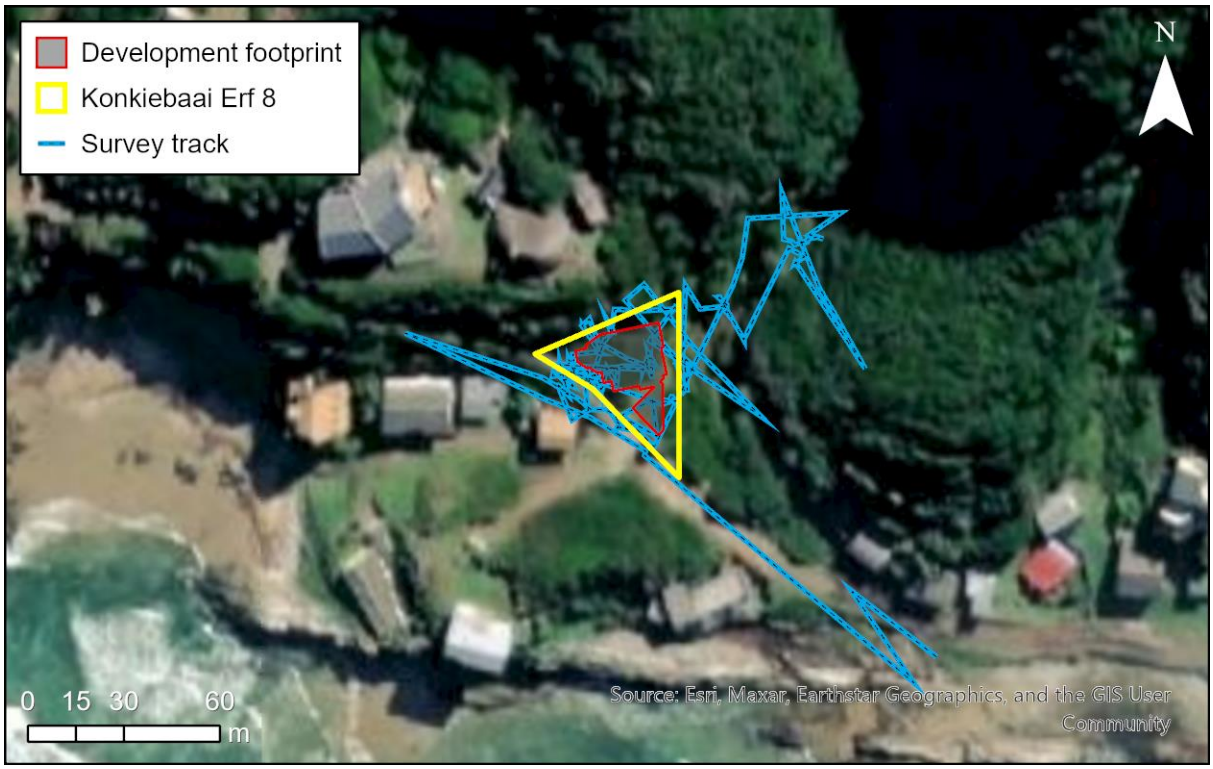

Figure 3: The track followed during the field survey of Erf 8 Konkiebaai at Eersterivier.

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 based on locality records collected during the field survey.

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.

3.5 Assessment of Environmental Impacts

To assess the significance of potential impacts on terrestrial biodiversity and plant species during the proposed project, the prescribed impact assessment methodology with a standard rating scale was used (Appendix 1). Using this methodology, the significance of each impact for the preferred project layout alternative was assessed according to the following criteria:

- The nature of the impact,
- The magnitude of the impact,
- The extent and location of the impact in space and time,
- The duration of the impact,
- The extent to which the impact can be reversed or not,
- The likelihood or probability of the impact occurring.

3.6 Assumptions and Limitations

The following assumptions and limitations of the study must be considered in the interpretation of results presented in this report:

- It is assumed that all third-party information used (e.g., GIS data and satellite imagery) is accurate and correct at the time of generating this report.
- No assessment has been made of aquatic aspects relating to any wetlands or streams as this falls outside of the scope of this terrestrial biodiversity and plant species assessment.
- The field survey was restricted to a single season (autumn/winter), but due to the muted seasonality in the region, it is not considered necessary to perform additional seasonal surveys. As far as possible, site collected data has been supplemented with desktop and database-centred distribution data (see Section 3.1).

4. Terrestrial Biodiversity

4.1 Bioregional Conservation Planning

Two protected areas occur in the broader landscape surrounding Erf 8 Konkiebaai: the Oubos–Grootrivier Nature Reserve, which lies approximately 1.1 km west-northwest of the site; and the Tsitsikamma Section of the Garden Route National Park, found approximately 3 km west-northwest of the site (Figure 4). The 2017 NPAES (Government of South Africa, 2016) identifies priority areas for protected area expansion about 2 km northwest of Erf 8 (Figure 4). It should be noted that the property, together with all the surrounding landscape, is included in the Garden Route Biosphere Reserve (Figure 4), a nationally important conservation area that was recognised by UNESCO as South Africa's ninth Biosphere Reserve in June 2017 (https://gardenroutebiosphere.org.za/).

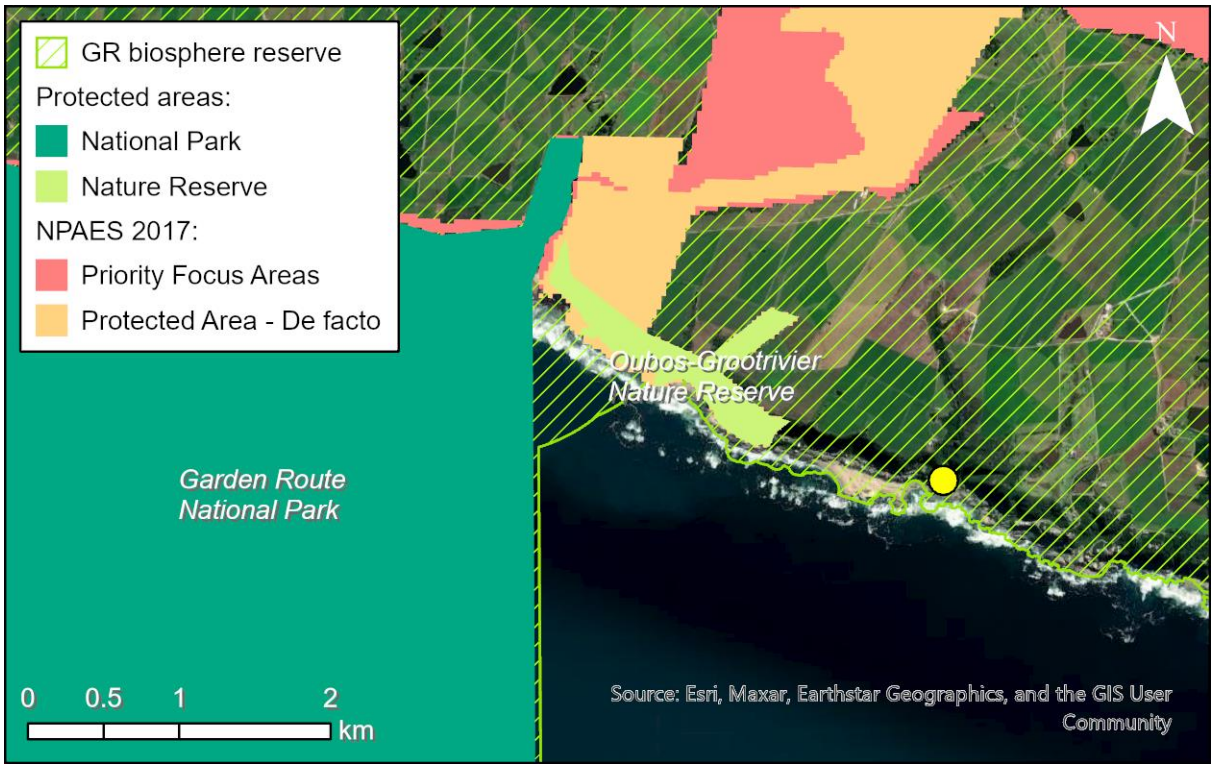

Figure 4: Important conservation areas and priority focus areas for protected-area expansion in the landscapes surrounding Erf 8 Konkiebaai (indicated by yellow point). Note that all the surrounding landscape is included in the Garden Route (GR) biosphere reserve.

The ECBCP (Eastern Cape Biodiversity Conservation Plan, 2020) identifies no Critical Biodiversity Areas (CBA) at Erf 8, although the land to the north, east and south of the site is categorized as a CBA 1 and lies within 20–50 m of Erf 8 (Figure 5 a). According to the ECBCP, there is also an Ecological Support Area (ESA 1) located about 200 m northwest of the site. Similarly, the 2010 GRBSP (Holness et al., 2010) identifies no CBAs at Erf 8, but the land immediately northwest of the site is categorized as a CBA, and a major portion of Erf 8 is identified as an ESA (Figure 4 b). According to the GRBSP, this portion of land is an important supporting area for maintaining hydrological processes, and the

management objective for this ESA is to maintain its ecological processes (Table 2). The hydrological processes active here are associated with a perennial stream occurring immediately east of Erf 8 (Figure 7).

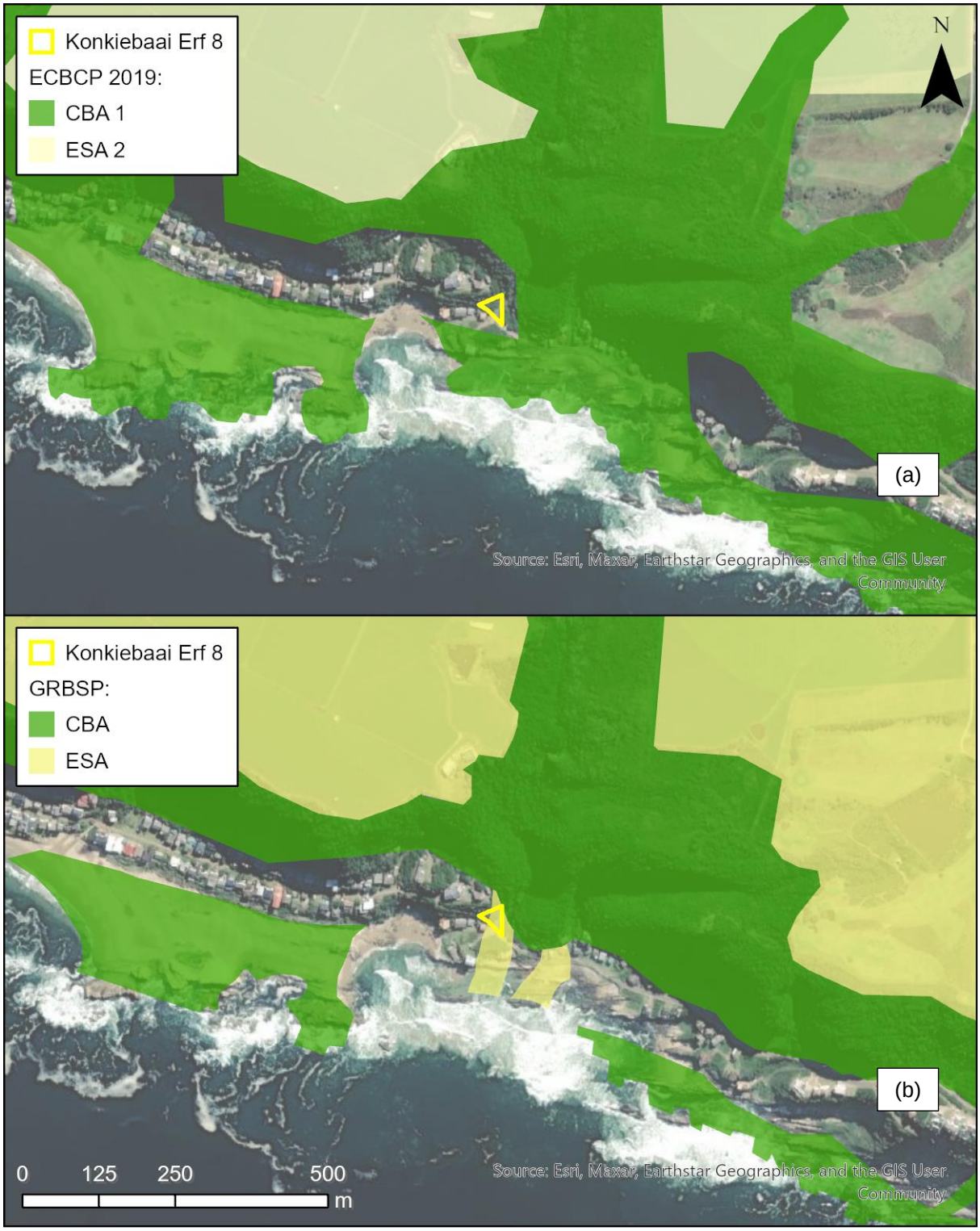

Figure 5: Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the landscapes surrounding Erf 8 Konkiebaai (yellow outline). Identification of CBAs and ESAs according to (a) the Eastern Cape Biodiversity Conservation Plan and (b) the Garden Route Biodiversity Sector Plan.

Table 2: Important areas required Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESA) identified on Erf 8 Konkiebaai. See Figure 5 for spatial distribution of these areas.

Category	Management objective	Significant ecological processes	Associated habitat
ESA	Maintain ecological processes	Hydrological processes	Perennial stream

4.2 Regional-Scale Vegetation Patterns

VEGMAP (SANBI, 2006–2018, 2018) identifies two vegetation types in the study area, namely FFs 20 Tsitsikamma Sandstone Fynbos and FOz 1 Southern Afrotemperate Forest (Figure 4). Tsitsikamma Sandstone Fynbos occurs along the Tsitsikamma Mountains, from Uniondale to Cape St Francis, north of the Keurbooms River and south of the Langkloof (Rebelo et al., 2006). This vegetation type is a medium-dense, tall proteoid shrubland over a dense, moderately tall ericoid shrubland. It comprises mainly proteoid, restioid and ericoid fynbos, with fynbos–thicket occurring in wetter areas. Dominant species include the tall shrubs *Cliffortia serpyllifolia*, *Leucadendron conicum* and *Leucadendron eucalyptifolium*, the low shrubs *Erica discolor*, *Erica sparsa* and *Ursinia scarisosa* subsp. *scariosa*, and the graminoids *Restio triticeus* and *Tetraria capillacea* (Rebelo et al., 2006).

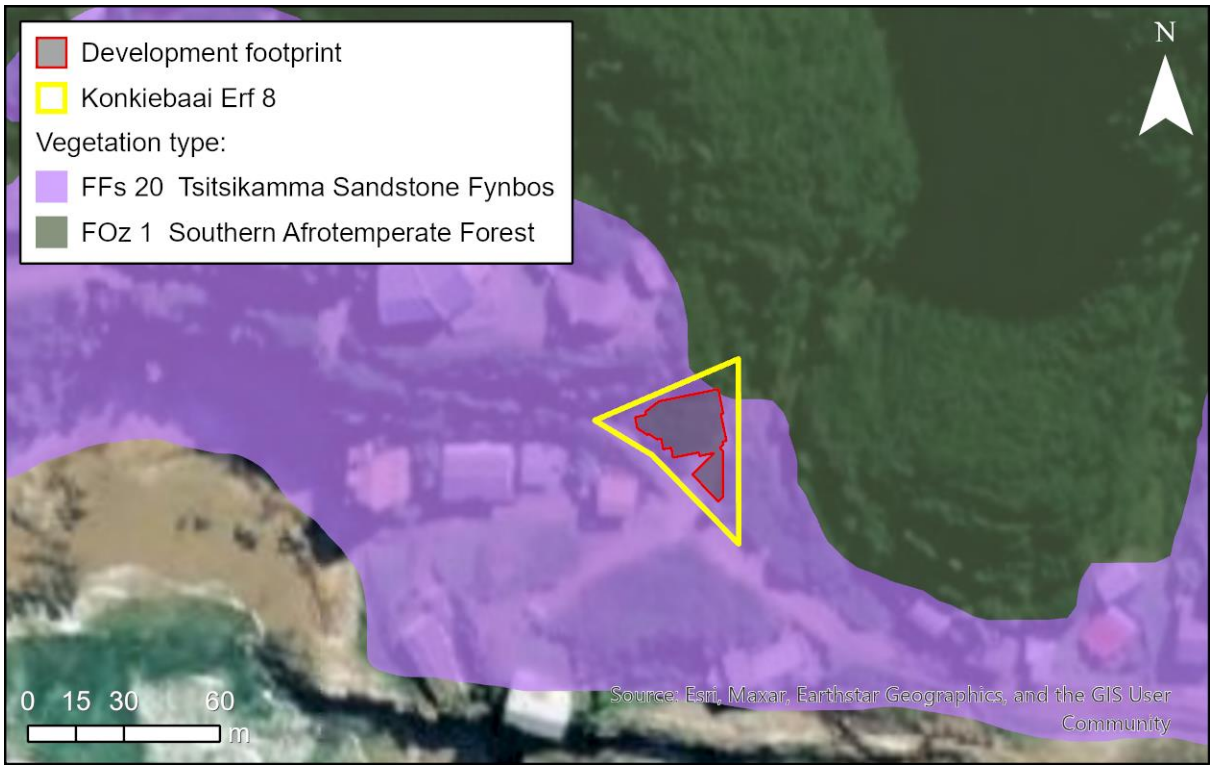

Figure 6: The historical distribution of vegetation types in the landscape surrounding Erf 8 Konkiebaai, as classified by the Vegetation Map of South Africa, Lesotho and Swaziland Version 2018 (SANBI 2006–2018, 2018a).

Southern Afrotemperate Forest occurs mainly along the southern coastal mountain ranges of the Western and Eastern Cape provinces, with the largest complex occurring along the coastal strip between Mossel Bay and Humansdorp (the Knysna–Tsitsikamma forests) (Mucina et al. 2006). Here, these forests are associated with sheltered seaward slopes and coastal scarps. This vegetation type is a tall, multi-layered Afrotemperate forest dominated by *Afrocarpus falcatus*, *Podocarpus latifolius*,

Ocotea bullata, *Olea capensis* subsp. *macrocarpa*, *Pterocelastrus tricuspidatus* and *Platylophus trifoliatus*, while *Cunonia capensis* and *Rapanea melanophloeos* predominate in scree and deep-gorge habitats (Mucina et al., 2006). The shrub understorey and herb layers are well developed, especially in mesic and wet habitats.

Both Tsitsikamma Sandstone Fynbos and Southern Afrotemperate Forest are currently well protected and have experienced low rates of natural habitat loss and biotic disruptions, and they are therefore assigned an ecosystem threat status of Least Concern (Skowno and Monyeki, 2021). Note, however, that Southern Afrotemperate Forest is a protected ecosystem type under the National Forests Act (1998, as amended in 2022).

4.3 Local-Scale Vegetation Patterns

Four plant habitats (vegetation communities) were identified on and around Erf 8 Konkiebaai during the field survey, namely: coastal thicket; forest; perennial stream; and lawn (Figure 6; Plate 1). Of these habitats, only coastal thicket, forest and lawn occur on Erf 8, while the perennial stream is located about 20 m to the east of the property (i.e., Erf 8 falls within a 32-m buffer around the stream). Brief descriptions of each of these habitats follow below. No patches of Tsitsikamma Sandstone Fynbos were identified on site: this mapping in the VEGMAP is erroneous as the underlying sandstone geology along the narrow coastal margin is mantled by calcareous sands of marine origin (i.e., dune sand), and the most analogous vegetation type for non-forest vegetation is AT 57 St Francis Dune Thicket, a non-threatened ecosystem type (Skowno and Monyeki, 2021). The forest vegetation on site is consistent with the description of Southern Afrotemperate Forest.

Coastal thicket dominates the narrow coastal strip between the shoreline and the steep seaward slopes in the local landscape (Plate 1 a). It is dominated by typical dune-thicket shrubs, such as *Maytenus procumbens*, *Osteospermum moniliferum*, *Salvia aurea*, *Searsia glauca* and *Searsia crenata*, while certain foredune shrubs like *Passerina rigida* and dune-fynbos shrubs like *Metalasia muricata* and *Phylica littoralis* are also common. Other shrubs that occur in this habitat include *Cussonia thyrsiflora*, *Euclea racemosa*, *Helichrysum cymosum*, *Helichrysum odoratissimum*, *Helichrysum petiolare*, *Helichrysum teretifolium*, *Hypoestes aristata*, *Maytenus procumbes*, *Pelargonium capitatum*, *Searsia laevigata* and *Senecio angulatus*. The regional endemic and threatened (Vulnerable) shrub *Erica glandulosa* subsp. *fourcadei* is locally restricted to this habitat. The ground layer of the coastal thicket comprises the sedges *Ficinia lateralis* and *Ficinia ramosissima*, the grasses *Melica racemosa*, *Panicum deustum* and *Stenotaphrum secundatum*, the succulents *Carpobrotus deliciosus*, *Crassula campestris* and *Gasteria acinacifolia*, and the geophytes *Bonatea speciosa*, *Chasmanthe aethiopica* and *Colchicum eucomoides*. Lianas and vines are also common, for example *Asparagus aethiopicus*, *Cissampelos capensis*, *Rhoicissus tridentata*, *Rhynchosia caribea* and *Solanum africanum*.

Forest occurs along the steep seaward slopes and along sheltered ravines in the local landscape (Plate 1 b). The canopy height ranges from about 4–8 m, depending on levels of wind exposure, and is formed by vertical-growing, single-stemmed trees, especially *Cassine peragua*, *Pterocelastrus tricuspidatus* and *Sideroxylon inerme*. Other canopy-forming trees found in this habitat include *Chionanthus foveolatus*, *Elaeodendron croceum*, *Mystroxylon aethiopicum* and *Rapanea melanophloeos*. The shrub layer comprises species like *Acokanthera oppositifolia*, *Allophylus*

decipiens, *Carissa bispinosa*, *Clausena anisata*, *Dovyalis rhamnoides*, *Gymnosporia nemorosa* and *Lachnostylis hirta*. The ground layer is dominated by low-growing shrubs like *Acalypha capensis* and *Hypoestes forskaolii*, but also includes the geophytes *Chlorophytum comosum* and *Oxalis incarnata*, and herbs like *Chaenostoma cordatum* and *Didymodoxa capensis*. *Dioscorea sylvatica*, a threatened (Vulnerable) and protected vine, occurs along the edge of the forest.

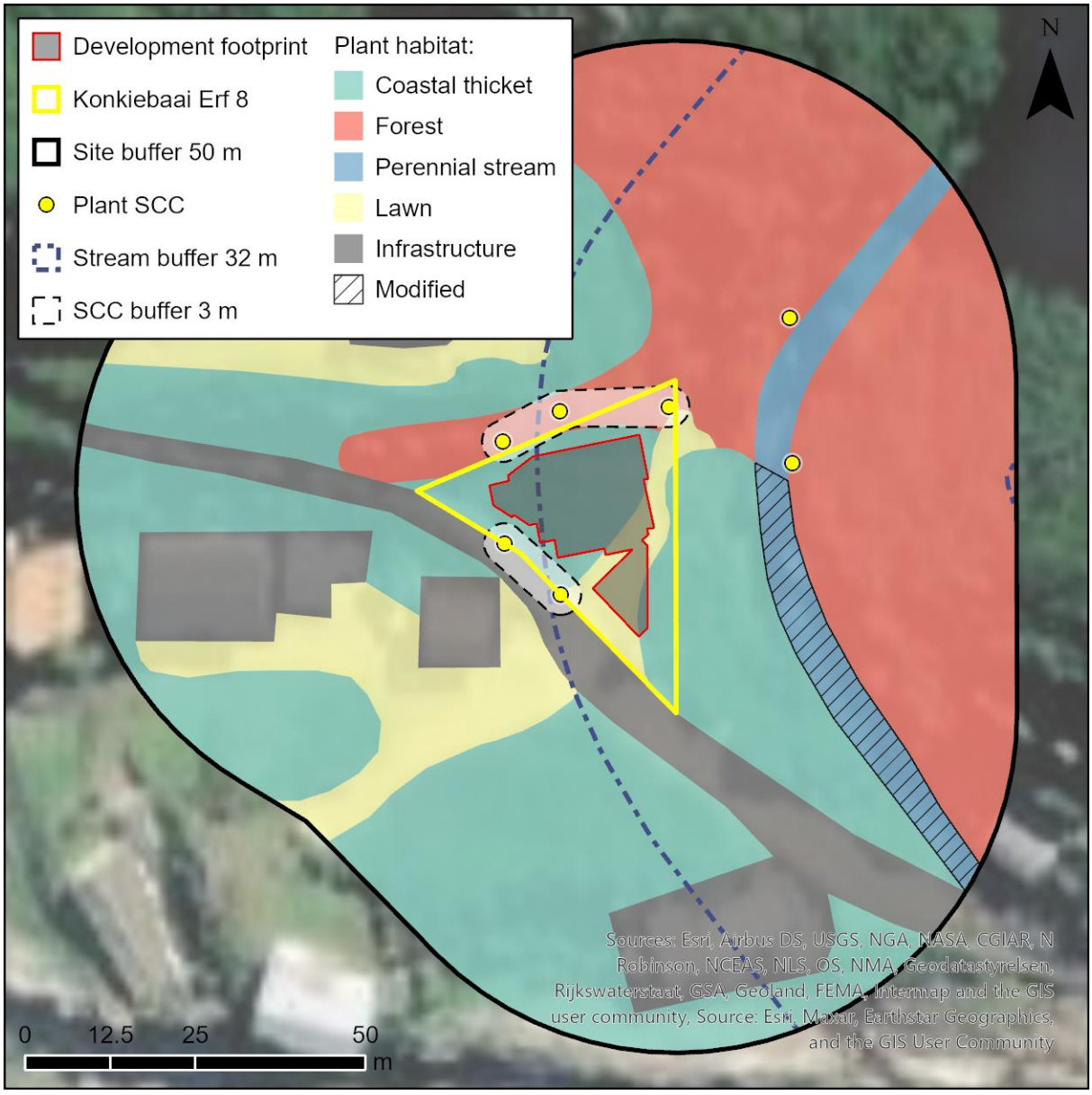

Figure 7: Local-scale vegetation patterns and distribution of plant species of conservation concern (SCC) around Erf 8 Konkiebaai at Eersterivier.

Perennial stream habitat occurs approximately 20 m east and downslope of Erf 8 at the base of a small ravine (Plate 1 c). The banks of the stream support forest vegetation (as described above), with species like *Ficus sur*, *Rapanea melanophloeos* and *Tarchonanthus littoralis* being common in the canopy. In more open areas, the stream bank is dominated by the reed *Phragmites australis* and the shrublet *Persicaria decipiens*, as well as grasses like *Ehrharta erecta*, *Panicum deustum* and *Stenotaphrum secundatum*. Shaded sandstone outcrops that occur along the stream provide habitat to the

threatened, regional endemic Sensitive species 308. While the upper reaches of this stream (i.e., northeast of Erf 8) remain intact, the lower reaches (i.e., east and southeast of Erf 8) have been modified through some infilling and the placement of rip-rap along the stream banks (Figure 7; Appendix 2).

Lawn maintained by mowing comprises mostly indigenous grass species like *Cynodon dactylon* and *Stenotaphrum secundatum*, while the exotic weed *Plantago lanceolata* is common (Plate 1 d).

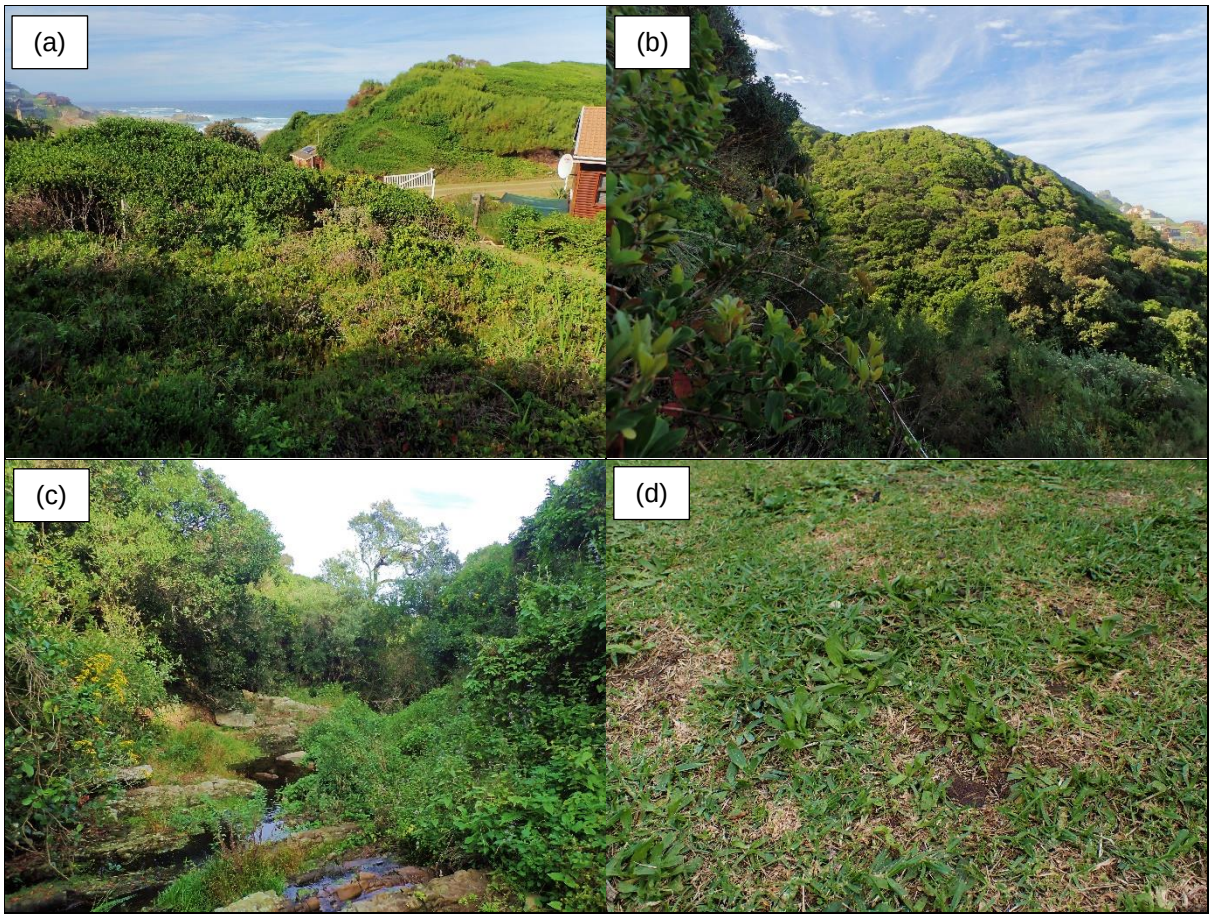

Plate 1: Plant habitats that occur on and around Erf 8 Konkiebaai at Eersterivier: (a) Coastal thicket; (b) Forest; (c) Perennial stream; (d) Lawn.

5. Plant Species

5.1 Species of Conservation Concern

A total of 14 plant SCC were identified as potentially occurring in the study area (Table 3). Of these, three SCC (*Erica glandulosa* subsp. *fourcadei*, *Dioscorea sylvatica*, Sensitive species 308) were confirmed to occur on site during the field survey, and all are classified as Vulnerable (Plate 2). *Erica glandulosa* subsp. *fourcadei* is associated with the coastal thicket habitat, *Dioscorea sylvatica* with the forest, and Sensitive species 308 with the perennial stream habitat. The remaining 11 SCC have a Low likelihood of occurring on site as no or very limited suitable habitat occurs there for some species and as none of them were detected despite substantial survey effort. Details of disseminated photographic evidence of recorded SCC are provided in Appendix 3.

(a) *Erica glandulosa* subp. *fourcadei*

Conservation status:
Vulnerable B1ab(ii,iii,iv,v)

Distribution:
Endemic to coastal sands of the southeastern Cape Floristic Region (Mossel Bay to Cape St Francis).

On-site population:
3 individuals in healthy state.

(b) *Dioscorea sylvatica*

Conservation status:
Vulnerable A2cd

Distribution:
Plettenberg Bay to tropical Africa.

On-site population:
5 individuals in healthy state.

Plate 2: Plant species of conservation concern (SCC) recorded during the field survey of Erf 8 Konkiebaai: (a) VU *Erica glandulosa* subsp. *fourcadei*; (b) VU *Dioscorea sylvatica*. Conservation status is from the Red List of South African Plants v. 2020 (SANBI, 2012–2020) (http://redlist.sanbi.org). Note that Sensitive species 308 is not inlcuded.

Table 3: Plant species of conservation concern (SCC) that are associated with vegetation in the landscapes surrounding Erf 8 Konkiebaai. Conservation status is from the Red List of South African Plants v. 2020 (SANBI, 2012–2020) (http://redlist.sanbi.org). Status: VU, Vulnerable; EN, Endangered. Vegetation: CT, Coastal thicket; FO, Forest; PS, Perennial stream. Note that potentially identifying information for sensitive species has been omitted.

Family	Species	Status*	Vegetation	Habitat†	Likelihood	Justification
Ericaceae	*Erica glandulosa* subsp. *fourcadei*	VU	CT	Fynbos–forest ecotones on leached, inland dunes.	Confirmed	–
Asteraceae	*Felicia westae*	EN	–	Streambanks in low-lying areas near the coast.	Low	High sampling effort, not detected.
Fababceae	*Indigofera hispida*	VU	–	Sandstone fynbos above 100 m elevation.	Low	High sampling effort, not detected.
Dioscoreaceae	*Dioscorea sylvatica*	VU	FO	Mesic coastal scrub and forest.	Confirmed	–
Marsileaceae	*Marsilea schelpeana*	VU	–	Margins of seasonal pools and along water courses from near sea level to 200 m elevation.	Low	High sampling effort, not detected.
Asteraceae	*Osteospermum pterigoideum*	EN	–	Along slopes in sandstone fynbos.	Low	High sampling effort, not detected.
Orchidaceae	*Pterygodium cleistogamum*	VU	–	Stony slopes in sandstone fynbos, from sea level to 340 m elevation.	Low	High sampling effort, not detected.
–	Sensitive species 308	VU	PS	–	Confirmed	–
–	Sensitive species 419		–	–	Low	High sampling effort, not detected.
–	Sensitive species 448	VU	–	–	Low	High sampling effort, not detected.
–	Sensitive species 588	VU	–	–	Low	High sampling effort, not detected.
–	Sensitive species 558		–	–	Low	High sampling effort, not detected.
–	Sensitive species 657	EN	–	–	Low	High sampling effort, not detected.
–	Sensitive species 763	VU	–	–	Low	High sampling effort, not detected.

5.2 Protected Species

Eight protected species listed in terms of national and provincial legislation were recorded on Erf 8 Konkiebaai (Table 4). These were *Bonatea speciosa*, *Carpobrotus deliciosus*, *Chasmanthe aethiopica*, *Cynanchum obtusifolium*, *Dioscorea sylvatica*, *Erica glandulosa* subsp. *fourcadei*, 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). All these species occurred at low abundances on site.

Table 4: 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 8 Konkiebaai.

Species	Common name	Protected category	Abundance
Bonatea speciosa	Green woodorchid	ENCO Schedule 3	Low
Carpobrotus deliciosus	Suurvy	ENCO Schedule 3	Low
Chasmanthe aethiopica	Cobra lily	ENCO Schedule 3	Low
Cynanchum obtusifolium	Melktou	ENCO Schedule 3	Low
Dioscorea sylvatica	Forest Elephant's Foot	ENCO Schedule 3	Low
Erica glandulosa subsp. *fourcadei*	Fourcade's glandular heath	ENCO Schedule 3	Low
Mesembryanthemum aitonis	Brakslaai	ENCO Schedule 3	Low
Sideroxylon inerme subsp. *inerme*	White milkwood	NFA	Low

5.3 Alien Invasive Species

Two declared alien invasive plant (AIP) species were recorded at the site (Table 5), namely *Cestrum laevigatum* and *Phytolacca octandra*. Both species occurred at low abundances, with only one individual of each species recorded.

Table 5: 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
Cestrum laevigatum	Inkberry	1	1b	Low
Phytolacca octandra	Forest Inkberry	–	1b	Low

6. Site Ecological Importance

Erf 8 Konkiebaai hosts intact portions of St Francis Dune Thicket and Southern Afrotemperate Forest, both of which are non-threatened ecosystem types. A perennial stream also occurs about 20 m downslope of the site. Most of the vegetation in the surrounding landscape (and on site) remains in a near-natural state, with smaller portions being maintained as lawns. Two threatened plant species were recorded on site, namely *Dioscorea sylvatica* and *Erica glandulosa* subsp. *fourcadei*, with a third, Sensitive species 308, occurring nearby along the perennial stream. The Site Ecological Importance (SEI) of Erf 8 varies from Very Low to Very High (Table 4), with areas of Medium and Very Low SEI covering most of the site (Figure 8). Areas of Very High SEI are restricted to the northern boundary of the property where *D. sylvatica* occurs in forest vegetation, while areas of High SEI occur along the southwestern boundary where *E. glandulosa* subsp. *fourcadei* occurs in coastal thicket vegetation, as well as along the perennial stream where Sensitive species 308 can be found. The recommended mitigation measures for areas of different SEI are provided in Table 7, ranging from avoidance to minimisation mitigation.

Table 6: Evaluation of Site Ecological Importance (SEI) of plant habitats (vegetation units) on Erf 8 Konkiebaai. See Figure 8 for spatial distribution of SEI. BI, Biodiversity Importance; RR = Receptor Resilience.

Habitat	Conservation Importance	Functional Integrity	Receptor Resilience	Site Ecological Importance
Forest vegetation hosting plant SCC population (VU criterion A)	**Medium** Occurrence of SCC with > 10 locations.	**Very High** High habitat connectivity; minimal current negative impacts with no major past disturbance.	**Low** Unlikely to recover fully after relatively long period: > 15 years required to restore > 50% of the original species composition and receptor functionality.	**Very High** BI = High RR = Low
Perennial stream hosting plant SCC population (VU criterion B)	**High** Occurrence of SCC with EOO of > 10 km².	**High** Good habitat connectivity with potentially functional ecological corridor; only minor current negative ecological impacts.	**Medium** Will recover slowly (> 10 years) to restore > 75% of the original species composition and receptor functionality.	**High** BI = High RR = Medium
Coastal thicket vegetation hosting plant SCC population (VU criterion B) [+ 3 m buffer area]	**High** Occurrence of SCC with EOO of > 10 km².	**High** Good habitat connectivity with potentially functional ecological corridor; only minor current negative ecological impacts.	**Medium** Will recover slowly (> 10 years) to restore > 75% of the original species composition and receptor functionality.	**High** BI = High RR = Medium
Coastal thicket vegetation without plant SCC populations	**Medium** Range-restricted species present; natural habitat with potential to support SCC.	**High** Good habitat connectivity with potentially functional ecological corridor; only minor current negative ecological impacts.	**Medium** Will recover slowly (> 10 years) to restore > 75% of the original species composition and receptor functionality.	**Medium** BI = Medium RR = Medium
Infrastructure and lawn	**Very Low** No natural habitat remaining; no SCC populations.	**Very Low** Several major current negative ecological impacts.	**Very High** Will recover rapidly (< 5 years) to restore > 75% of original species composition and receptor functionality.	**Very Low** BI = Very Low RR = Very High

According to 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 should be identified within the site which would be of a "low" sensitivity as identified by the screening tool and verified through the site sensitivity verification. However, given the narrow, linear layout of areas with "very low" sensitivity on the preferred site, this was impractical. The need for this was furthermore diminished by the fact that the preferred layout is restricted to areas of "very low" and "medium" sensitivity. The alternative layout assessed in the next section was thus proposed by the project applicant as a practicable alternative to the proposed development.

Table 7: Recommended mitigation measures for proposed development activities in the context of site Ecological importance. Adapted from the Species Environmental Assessment Guideline (SANBI, 2020).

Site Ecological Importance	Recommended mitigation measures
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).
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.
Very Low	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

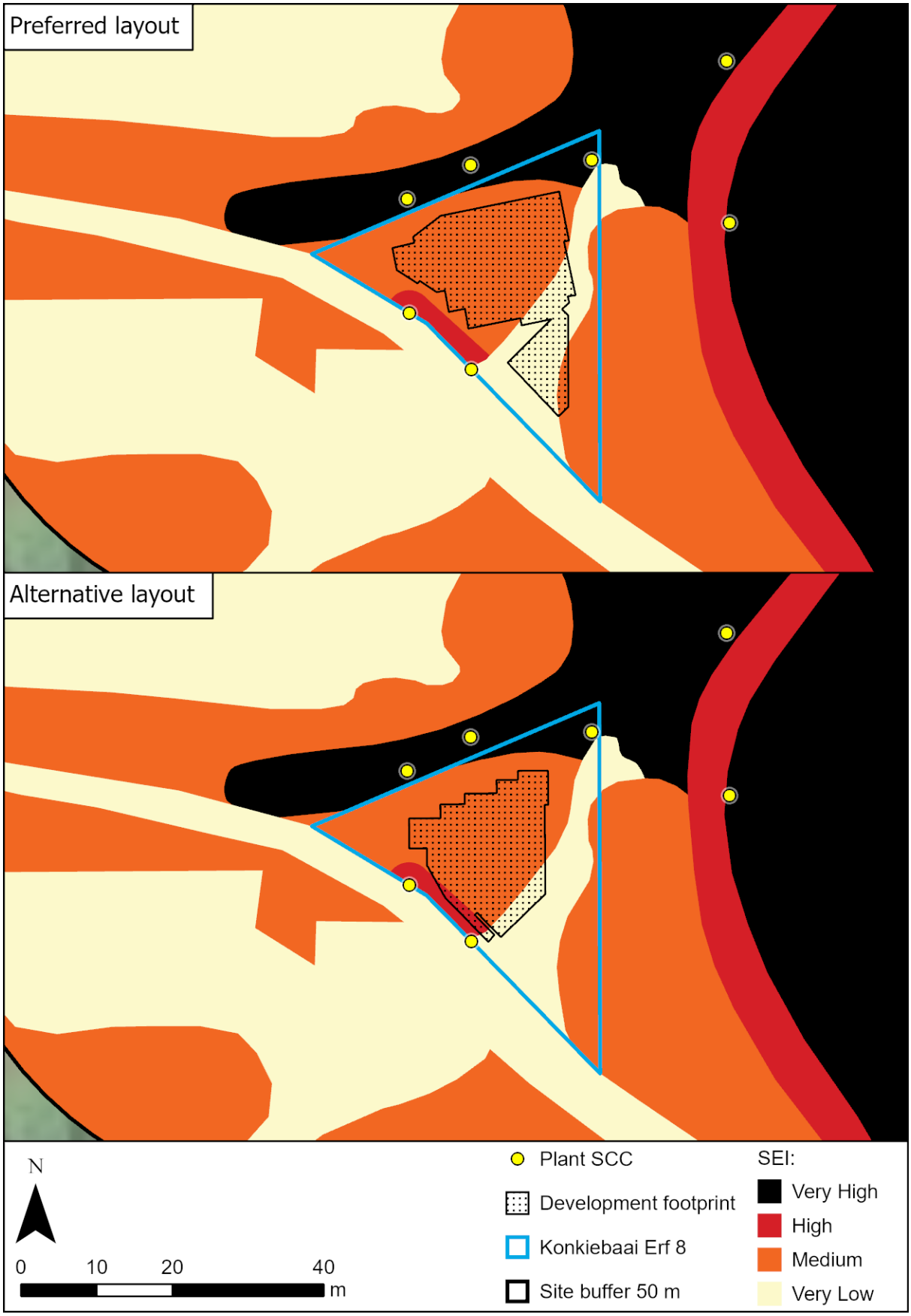

Figure 8: Site Ecological Importance (SEI) of plant habitats on Erf 8 Konkiebaai with the proposed development footprint of the preferred (top) and an alternative layout (bottom) superimposed. See Table 6 for evaluation of plant habitat SEI.

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 8 below. Advantages and disadvantages of the No-Go option are based on current impacts on site that are likely to continue.

Table 8: Evaluation of advantages and disadvantages of project alternatives on terrestrial biodiversity and plant species.

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.
Preferred layout	Preferred development layout of the applicant; lower impact on terrestrial biodiversity and plant species on site (restricted to areas of Medium and Very Low SEI).	Transformation of relatively intact coastal thicket vegetation (Medium SEI).
Alternative layout	Smaller footprint than preferred layout.	Transformation of relatively intact coastal thicket vegetation (Medium SEI) and habitat of one plant SCC (High SEI); potential destruction of individuals of Vulnerable plant species.

The preferred development layout, with a total footprint of approximately 355 m^2, will lead to 80 m^2 of Very Low SEI vegetation and 275 m^2 of Medium SEI vegetation being cleared (Table 9). The alternative development layout will result in the clearing of approximately 22 m^2 of vegetation with Very Low SEI, 231 m^2 of Medium SEI and 10 m^2 with High SEI.

Table 9: 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
Very Low	80 m^2	22 m^2
Medium	275 m^2	231 m^2
High	0 m^2	10 m^2
Total:	355 m^2	263 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 (Figure 8; Table8; Table 9) 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 (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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	▪ Clearing of vegetation in areas with Very High or High SEI must be avoided (this can be achieved by implementing the preferred layout identified in Figure 8). ▪ 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 or existing lawns 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 must be obtained from the relevant authorities.
Status and Significance (after mitigation)	**Medium Negative**

Direct Impact	**Individuals of plant SCC (3 *Erica glandulosa* subsp. *glandulosa*) 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	▪ Clearing of vegetation in areas with Very High or High SEI must be avoided (this can be achieved by implementing the preferred layout identified in Figure 8). ▪ 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 or existing lawns 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**

Direct Impact	**Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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 (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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 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 (perennial stream) that provides habitat to plant SCC (Sensitive species 308) will be negatively affected by sedimentation due to increased upslope soil erosion.**
Extent	Site-specific
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	▪ Disturbance to intact vegetation must be restricted by demarcating those areas that will be cleared during construction, including 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. ▪ No overburden or rubble should be allowed to spill downslope into the perennial stream or its banks – this can be achieved by setting up netting at the top of the slope.
Status and Significance (after mitigation)	**Neutral**

Indirect Impact	**Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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 (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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 (including any soil stockpiles) 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 (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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. ▪ This must also be included in the site induction for personell.
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)	**Low Negative**

Cumulative Impact	**Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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. ▪ The construction of the dwelling on stilts will further serve to mitigate this impact.
Status and Significance (after mitigation)	**Low Negative**

7.2.2 Operational Phase

Direct Impacts

Direct Impact	**Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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 2 m (average height of vegetation).
Status and Significance (after mitigation)	**Low Negative**

Indirect Impacts

Indirect Impact	**Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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 must use existing paths to walk through intact vegetation.
Status and Significance (after mitigation)	**Neutral**

Indirect Impact	**Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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 10 below. The most significant impacts relate to the direct and cumulative loss of coastal thicket (St Francis Dune Thicket) vegetation and its associated SCC (*Erica glandulosa* subsp. *fourcadei*) habitat during the construction phase. In general, the proposed development is likely to have low 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 10: Potential impacts of the proposed construction of a residential dwelling on Erf 8 Konkiebaai. The significance of impacts is indicated with and without appropriate mitigation measures.

Project Phase	Impact type	Impact	Significance	
			Without mitigation	With mitigation
Construction:	**Direct:**	Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) will be negatively affected by clearing.	**High Negative**	**Medium Negative**
		Individuals of plant SCC (3 *Erica glandulosa* subsp. *glandulosa*) will be negatively affected by destruction or damage caused during vegetation clearing.	**High Negative**	**Medium Negative**
		Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) will be positively affected by destruction of alien invasive plants (AIP) during vegetation clearing.	**Low Positive**	**Medium Positive**
	Indirect:	Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) will be negatively affected by increased soil erosion.	**Medium Negative**	**Low Negative**
		Indigenous vegetation (perennial stream) that provides habitat to plant SCC (Sensitive species 308) will be negatively affected by sedimentation due to increased upslope soil erosion.	**Medium Negative**	**Neutral**
		Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) will be negatively affected by the establishment of an ecologically inappropriate fire regime.	**Medium Negative**	**Neutral**
		Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) will be negatively affected by increased alien plant invasion due to disturbance.	**High Negative**	**Medium Positive**
		Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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	**High Negative**	**Low Negative**

		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.		
		Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) will be negatively affected by further impairment of ecological connectivity.	**Medium Negative**	**Low Negative**
Operational:	**Direct:**	Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) will be negatively affected by infrastructure maintenance.	**Medium Negative**	**Low Negative**
	Indirect:	Indigenous vegetation (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) 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 (coastal thicket) that provides habitat to plant SCC (*Erica glandulosa* subsp. *fourcadei*) will be negatively affected by the introduction of inappropriate flora (e.g., weeds and alien invasive plants) via landscaping.	**Medium Negative**	**Neutral**

References

Cowling, R.M. 1984. A syntaxonomic and synecological study in the Humansdorp region of the Fynbos Biome. Bothalia 15: 175–227.

Eastern Cape Department: Economic Development, Environmental Affairs and Tourism. 2020. 2019 Eastern Cape Biodiversity Conservation Plan Terrestrial. Available online at http://bgis.sanbi.org/SpatialDataset/Detail/4701

Government of South Africa. 2016. National protected area expansion strategy for South Africa 2017. Priorities for expanding the protected area network for ecological sustainability and climate change adaptation. The Government of South Africa, Pretoria.

Hawley, G., Desmet, P. and Berliner, D. 2019. Eastern Cape Biodiversity Conservation Plan Handbook. Department of Economic Development and Environmental Affairs, King Williams Town.

Holness, S.D., Bradshaw, P. and Brown, A.E. 2010. Critical Biodiversity Areas of the Garden Route. Conservation Planning Report. Garden Route Initiative. South African National Parks, Knysna.

Mucina, L., Geldenhuys, C.J., Rutherford, M.C., Powrie, L.W., Lötter, M.C., von Maltitz, G.P., Euston-Brown, D.I., Matthews, W.S., Dobson, L. and McKenzie, B. 2006. Afrotemperate, subtropical and azonal forests. In: Mucina, L. and Rutherford, M.C. (Eds.). The Vegetation of South Africa, Lesotho and Swaziland, p. 584–615. South African National Biodiversity Institute (SANBI), Pretoria.

Raimondo, D., von Staden, L., Foden, W., Victor, J.E., Helme, N.A., Turner, R.C., Kamundi, D.A., and Manyama, P.A. 2009. Red List of South African Plants. South African National Biodiversity Institute, Pretoria.

Rebelo, A.G., Boucher, C., Helme, N., Mucina, L. and Rutherford, M.C. 2006. Fynbos Biome. In Mucina, L. and Rutherford, M.C. (eds.). The Vegetation of South Africa, Lesotho and Swaziland, p. 52–219. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

Rutherford, M.C., Mucina, L. and Powrie, L. 2006. Biomes and Bioregions of Southern Africa. In: Mucina, L. and Rutherford, M.C. (eds.). The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19, pp. 30–51. South African Biodiversity Institute, Pretoria.

Skowno, A.L. and Monyeki, M.S. 2021. South Africa's Red List of Terrestrial Ecosystems (RLEs). Land 10: 1048. https://doi.org/10.3390/land10101048

South African National Biodiversity Institute (SANBI). 2006–2018. The Vegetation Map of South Africa, Lesotho and Swaziland, Version 2018. Mucina, L., Rutherford, M.C. and Powrie, L.W. (Editors). Available online at http://bgis.sanbi.org/Projects/Detail/186

South African National Biodiversity Institute (SANBI). 2012–2020. Red List of South African Plants v. 2020. Available online at http://redlist.sanbi.org/

South African National Biodiversity Institute (SANBI). 2018a. Final Vegetation Map of South Africa, Lesotho and Swaziland 2018 [spatial dataset]. Available online at http://bgis.sanbi.org/SpatialDataset/Detail/1674

South African National Biodiversity Institute (SANBI). 2018b. Terrestrial ecosystem threat status and protection level – remaining extent [spatial dataset] 2018. Available online at http://bgis.sanbi.org/SpatialDataset/Detail/2676

South African National Biodiversity Institute (SANBI). 2020. Species Environmental Assessment Guideline: Guidelines for the implementation of the Terrestrial Fauna and Terrestrial Flora Species Protocols for environmental impact assessments in South Africa. Version 3.1.2022. South African National Biodiversity Institute, Pretoria.

Vromans, D.C., Maree, K.S., Holness, S. D., Job, N. and Brown, A.E. 2010. The Garden Route Biodiversity Sector Plan for the southern regions of the Kouga and Koukamma Municipalities: Supporting land-use planning and decision-making in Critical Biodiversity Areas and Ecological Support Areas for sustainable development. Garden Route Initiative. South African National Parks, Knysna.

Appendix 1: Impact assessment methodology used to assess the significance of potential impacts on terrestrial biodiversity and plant species during the construction and operation of the proposed project.

Different types of impacts may occur from the undertaking of an activity. The impacts may be positive or negative and may be categorized as being direct (primary), indirect (secondary) or cumulative impacts.

- **Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious.
- **Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place because of the activity.
- **Cumulative impacts** are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities (e.g. discharges of nutrients and heated water to a river that combine to cause algal blooms and subsequent loss of dissolved oxygen that is greater than the additive impacts of each pollutant). Cumulative impacts can occur from the collective impacts of individual minor actions over a period and can include both direct and indirect impacts.

Factors that should be considered in impact prediction and assessment include:

- the nature of the impact i.e. positive, negative, direct, indirect, cumulative;
- the magnitude of the impact i.e. severe, moderate, low;
- the extent and location of the impact in terms of the area covered, volume distribution, etc;
- when the impact will occur i.e. during construction, operation and/or decommissioning as well as whether the impact will occur immediately or be delayed;
- the duration of the impact i.e. short term, long term, intermittent or continuous;
- the extent to which the impact can be reversed or not;
- the likelihood or probability of the impact occurring; and
- the significance of the impact on a local, regional or global level

Criteria used to assess impacts

The following criteria will be utilized to assess the significance of predicted impacts. For each identified impact, a comparison must be made between the preferred development option, and the 'no-go' option; with and without mitigation measures in place.

In the criteria presented below, a scale of how each can be measured and/or rated is discussed. This scale is based on qualitative data and the assignment of 'values' in each instance will be done in an objective manner. This will be achieved by using objectively derived data gathered from various sources (i.e., recommendations from specialist studies and other scientific publications, observations made during detailed site investigations, consideration of comments from interested and affected parties, discussions with relevant stakeholders, and perusal of relevant environmental planning guidelines).

Extent:

Whether the impact will occur on a scale limited to the immediate areas or site of the development activity or will the impact occur on a sub-regional, regional and/or national scale.

Table 1: Extent

Description	Explanation	Scoring
Footprint/Site	The impact could affect the whole, or a significant portion of the site.	1
Local	Impact could affect the adjacent landowners and areas surrounding the site.	2
Regional	Impact could affect the wider area around the site, that is, from a few kilometres, up to the wider region.	3
National	Impact could have an effect that expands throughout a significant portion of South Africa – that is, as a minimum has an impact across provincial borders.	4

Duration:

Whether the lifetime of the impact will be of a short duration (0–5 years); medium term (5–15 years); long-term (> 15 years, with the impact ceasing after the operational life of the development); or considered permanent where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.

Table 2: Duration

Description	Explanation	Scoring
Short term	The impact will either disappear with mitigation or will be mitigated through a natural process, and will be relevant for 0–5 years.	1
Medium term	The impact will be relevant for 5 to 15 years.	2
Long term	The impact will continue or last for the entire operational lifetime of the development, but will be mitigated by direct human action or by natural processes thereafter (> 15 years).	3
Permanent	This is the only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient (i.e. impact will remain after the operational lifetime of the project).	4

Intensity:
Whether the intensity of the impact is high, medium, low or negligible (no impact). Where possible the intensity of impacts is quantified. This will be a relative evaluation within the context of all the activities and the other impacts within the framework of the project. Note that intensity is scored differently as this is a critical issue in terms of the overall risk and impact assessment. The intensity is thus measured as the degree to which the project affects or changes the environment.

Table 3: Intensity

Description	Explanation	Scoring
Very Low	The impact alters the affected environment in such a way that the natural processes or functions are not affected.	2
Low	The impact alters the affected environment in such a way that the natural processes or functions are slightly affected.	4
Medium	The affected environment is altered, but functions and processes continue, albeit in a modified way.	6
High	Function or process of the affected environment is disturbed to the extent where the function or process temporarily or permanently ceases.	8

Probability:
The probability of the impact actually occurring as either improbable (low likelihood); probable (distinct possibility); highly probable (most likely) or definite (impact will occur regardless of preventative measures).

Table 4: Probability

Description	Explanation	Scoring
Unlikely	The possibility of the impact occurring is none, due either to the circumstances, design or experience.	1
Probable	There is a possibility that the impact will occur to the extent that provisions must therefore be made.	2
Highly Probable	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity.	3
Definite	The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied upon.	4

Significance:
The significance of impacts of the proposed project are assessed with the mitigation measures which will be included in the contractors specifications as well as with the additional mitigation measures recommended in this report being implemented. The significance of the identified impacts on the components of the affected environment (and where relevant, with respect to potential legal infringement) are described as:

- **No Impact** – Where the project action will not cause any adverse or beneficial changes to the natural (biophysical), and/or socio-economic environment.
- **Impact of Low Significance** – Where the project actions will result in minor short-term changes to the biophysical and/or socio-economic environment. The impacts will usually be restricted to the immediate area of the project action. The affected system should return to its natural or almost natural state in a short period of time (0–5 years). The impacts on human populations will be of a short duration and will not have any lasting consequences.
- **Impact of Moderate Significance** – Where the project actions will result in moderate short-term or medium-term changes to the biophysical and/or socio-economic environment. The effects of the impact could be experienced

outside of the project action area and may be evident at a sub-regional or even a regional level. Minor indirect impacts may arise from the project action. The system should recover but it is unlikely that it will return to its natural state. Recovery would only take place in the medium term (5–15 years). Impacts on the human population will be felt after the project action is completed but are not severe and/or disruptive to their quality of life or economic wellbeing.

- **Impacts of High Significance** – Where the project actions will result in major long-term changes to the biophysical and/or socio-economic environment. The effects of the impact will be experienced outside of the project action area and may be evident at a regional, national and even at the international level. Secondary or indirect impacts may arise from the project action. The system may recover over the long-term (> 15 years) but will not revert to its natural state. Impacts on human populations will be felt after the project action is completed. The impacts are of a long-term nature and are disruptive to the previous life style of the affected population.

Determination of significance is made on the assumption that any mitigation and / or management measure, which is recommended, will be implemented by the developer. The level of significance is expressed as the sum of the area exposed to the risk (extent), the length of time that exposure may occur over in total (duration), the severity of the exposure (intensity) and the likelihood of the event occurring (probability).

Significance value = (Extent + Duration + Intensity) × Probability

A distinction will be made for the significance rating without the implementation of mitigation measures and with the implementation of mitigation measures. The purpose of mitigation measures is to reduce the significance level of the anticipated impact. Therefore, the reduction in the significance level after mitigation is directly related to the scores used in the impact assessment criteria. The effect of potential mitigation measures to reduce the overall significance level is also to be considered in each issues table (i.e. values with or without mitigation are presented).

Table 5: Significance

Description	Explanation	Scoring
No or Very Low	There is no impact or a very low impact.	1–9
Low	The impacts are less important, but some mitigation is required to reduce the negative impacts.	10–27
Medium	The impacts are important and require attention; mitigation is required to reduce the negative impacts.	28–45
High	The impacts are of high importance and mitigation is essential to reduce the negative impacts	46–64

Status of the Impact:

This describes whether the impact is positive (a benefit) or negative (a cost), or neutral.

Degree of Confidence in Predictions:

The degree of confidence in the predictions, based on the availability of information and/or specialist knowledge.

Appendix 2: Photographs showing the condition of the lower reaches of the perennial stream adjacent to Erf 8 Konkiebaai.

Appendix 3: Disseminated photographic evidence of plant species of conservation concern (SCC) recorded during the field survey of Erf 8 Konkiebaai at Eersterivier. All records were submitted to the iNaturalist online database (www.inaturalist.org).

Species	**Record URL**
Erica glandulosa subsp. *fourcadei*	https://www.inaturalist.org/observations/118616286
Dioscorea sylvatica	https://www.inaturalist.org/observations/118616223
Sensitive species 308	Available on request

Province of the
EASTERN CAPE
ECONOMIC DEVELOPMENT, ENVIRONMENTAL AFFAIRS & TOURISM

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST IN TERMS OF REGULATIONS 12 AND 13 OF THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED.

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for environmental authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amendments to the Environmental Impact Assessment Regulations, 2014. This form is valid as of 6 January 2021.

PROJECT TITLE

Development of a residential dwelling on Erf 8 Konkiebaai (Portion 53 of Eersterivier 626), Kou-Kamma Municipality, Eastern Cape

SPECIALIST [1]			
Contact person:	B. Adriaan Grobler		
Postal address:	1 Burgess Street, Richmond Hill, Gqeberha		
Postal code:	6001	Cell:	079 394 1233
Telephone:	–	Fax:	–
E-mail:	adriaan.grobler85@gmail.com		
Professional affiliation(s) (if any)	–		

Project Consultant:	Eco Route Environmental Consulting		
Contact person:	Samantha Teeluckdhari		
Postal address:	P.O. Box 1252, Sedgefield, Western Cape		
Postal code:	6573	Cell:	072 773 5397
Telephone:	–	Fax:	–
E-mail:	samantha@ecoroute.co.za		

4.2 The SPECIALIST

I, , declare that –

General declaration:

- 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 environmental impact assessments, 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 will take into account, to the extent possible, the matters listed in regulation **8** of the regulations when preparing the application and any report relating to the application;
- 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;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;

- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Amendments to Environmental Impact Assessment Regulations, 2014 as amended.
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

Signature of the specialist:

Name of company:

1 September 2022

Date:

E. N. BADENHORST

Signature of the Commissioner of Oaths:

GEMEENSKAPSDIENSSENTRUM

01 SEP 2022

Date:

Designation: Warrant Officer

[1] Curriculum Vitae (CV) attached

Official stamp (below).

Annexure 1

CV

CURRICULUM VITAE

Barend Adriaan Grobler

Botanical and Ecological Specialist

Address: 1 Burgess Street, Richmond Hill, Gqeberha, Eastern Cape 6001
Tel: +27 79 394 1233
E-mail: adriaan.grobler85@gmail.com

EDUCATION

2018 — **PhD in Botany**
Nelson Mandela University, Port Elizabeth
Dissertation title: "Roads and their effects in fynbos of the southeastern Cape: implications for management and conservation of road verge vegetation"

2012 — **MSc in Botany**
Nelson Mandela Metropolitan University, Port Elizabeth
Dissertation title: "A systematic conservation assessment and plan for the Baakens River Valley, Port Elizabeth"

2010 — **BSc Honours in Botany**
Nelson Mandela Metropolitan University, Port Elizabeth
Specialization: Conservation Biology

2009 — **BSc in Environmental Science**
Nelson Mandela Metropolitan University, Port Elizabeth
Majors: Botany and Environmental Geography

EMPLOYMENT

Jan 2012 – Present — **Botanical and Ecological Specialist**
Freelance
Independent specialist consultant conducting botanical and ecological impact assessments and biodiversity surveys in the Eastern and Western Cape provinces.

Jan 2021 – Present — **Postdoctoral Research Fellow**
African Centre for Coastal Palaeoscience, Nelson Mandela University
African Centre for Coastal Palaeoscience postdoctoral fellowship (2021–2022), working on project "Last Glacial Maximum vegetation patterns in the Greater Cape Floristic Region".

Jan 2019 – Dec 2020 — **Postdoctoral Research Fellow**
African Centre for Coastal Palaeoscience, Nelson Mandela University
DSI-NRF Innovation Postdoctoral Fellowship (2019–2020), working on the project "Plant Evolution on the Palaeo-Agulhas Plain: A Coastal Adaptation in the Cape Flora".

Continued on next page

Apr 2018 – Dec 2018

Postdoctoral Fellow

African Centre for Coastal Palaeoscience, Nelson Mandela University

Nelson Mandela University Postdoctoral Fellowship (2018), working on the project "Inventory of the Flora and Vegetation of the Calcareous Dunes of the Cape South Coast".

Feb 2018 – Mar 2018

Research Assistant

Botany Department, Nelson Mandela University

Coordinated the Thicket-Biome update for Vegetation Map of South Africa 2018, acting as liaison between Nelson Mandela University, South African National Biodiversity Institute and other project stakeholders.

Dec 2016 – Mar 2017

Research Assistant

Custodians of Rare and Endangered Wildflowers (Threatened Species Programme), South African National Biodiversity Institute

Field botanist conducting plant surveys and monitoring populations of rare and threatened plant species in the Eastern Cape.

Jan 2014 – Mar 2016

Research Assistant

Ria Olivier Herbarium, Nelson Mandela University

Multiple short-term appointments, processing and identifying plant specimens collected throughout South Africa.

RECENT PUBLICATIONS

2022

Grobler, B.A. and Campbell, E.E. 2022. Road and landscape-context impacts on bird pollination in fynbos of the southeastern Cape Floristic Region. *South African Journal of Botany* 146: 676–684.

Grobler, B.A. and Cowling, R.M. 2022. Which is the richest of them all? Comparing area-adjusted plant diversities of Mediterranean- and tropical-climate regions. *Frontiers of Biogeography* 14: e56241.

Strydom, T., Kraaij, T., **Grobler, B.A.**, Cowling, R.M. 2022. Canopy plant composition and structure of Cape subtropical dune thicket are predicted by the levels of fire exposure. *PeerJ* 10:e14310

Quick, L., Chase, B., Carr, A., Chevalier, M., **Grobler, B.A.** and Meadows, M. 2021. A 25,000 year record of climate and vegetation change from the southwestern Cape coast, South Africa. *Quaternary Research* 105: 82-99.

2021

Grobler, B.A. and Cowling, R.M. 2021. The composition, geography, biology and assembly of the coastal flora of the Cape Floristic Region. *PeerJ* 9: e11916. https://doi.org/10.7717/peerj.11916

Strydom, T., **Grobler, B.A.**, Kraaij, T. and Cowling, R.M. 2021. Pre-and post-fire architectural guilds of subtropical dune thicket species in the southeastern Cape Floristic Region. *Journal of Vegetation Science* 32: e13079.

2020

Grobler, B.A. and Campbell, E.E. 2020. Pollinator activity and the fecundity of a rare and highly threatened honeybush species along a highway in the Cape Floristic Region. *International Journal of Plant Sciences* 181: 581–593.

Grobler, B.A., Cawthra, H.C., Potts, A.J. and Cowling, R.M. 2020. Plant diversity of Holocene dune landscapes in the Cape Floristic Region: The legacy of Pleistocene sea-level dynamics. *Quaternary Science Reviews* 235: 106058.

RECENT PROJECT EXPERIENCE

2022

Grobler, B.A. and De Kock, R. 2022. *Terrestrial Biodiversity and Plant Species Assessment: Proposed construction of a residential dwelling on Erf 8 Konkiebaai (Portion 53 of Eersterivier 626), Kou-Kamma Municipality, Eastern Cape.* Report prepared for Eco Route Environmental Consulting.

Potts, A.J. and **Grobler, B.A.** 2022. *Clearing of forest and large-scale changes to topography and soil structure at Duineplaas (Duinbaai Portion 5 of Farm Matjiesfontein No. 495, Thornhill, Kouga Municipality)*. Report prepared for Province of the Eastern Cape: Department of Economic Development, Environmental Affairs and Tourism.

Grobler, B.A. and De Kock, R. 2022. *Terrestrial Biodiversity and Plant Species Compliance Statement: Erf 1510, Sea Vista, St Francis Bay, Kouga Municipality, Eastern Cape*. Report prepared for Eco Route Environmental Consulting.

Grobler, B.A. 2022. *Vegetation Survey: Erf 3485 Kenton-on-Sea, Ndlambe Municipality, Eastern Cape*. Report prepared for Hortcouture Landscape Architects & Planning.

Grobler, B.A. and De Kock, R. 2022. *Terrestrial Biodiversity and Plant Species Assessment: Shoprite Checkers Freshmark Distribution Centre, Wells Estate, Nelson Mandela Bay Municipality, Eastern Cape*. Report prepared for PHS Consulting.

Grobler, B.A. and De Kock, R. 2022. *Terrestrial Biodiversity and Plant Species Assessment: Erf 1118 Paradysstrand, Kouga Municipality, Eastern Cape*. Report prepared for HabitatLink Consulting.

Grobler, B.A. 2022. *Botanical Survey: Crossways Airstrip, Crossways Farm Village, Kouga Municipality, Eastern Cape*. Report prepared for Crossways Ventures (Pty) Ltd.

Grobler, B.A. and De Kock, R. 2022. *Terrestrial Biodiversity and Plant Species Assessment: Indlovu Sand Prospecting Right Application, Oyster Bay and Thysbaai Dunefields, Kouga Municipality, Eastern Cape*. Report prepared for Algoa Consulting Mining Engineers.

Grobler, B.A. and De Kock, R. 2022. *Terrestrial Biodiversity and Plant Species Compliance Statement: Erf 3420, Sea Vista, St Francis Bay, Kouga Municipality, Eastern Cape*. Report prepared for Eco Route Environmental Consulting.

2021

Grobler, B.A. 2021. *Biodiversity Assessment: VWSA Vehicle Test Track, Uitenhage, Nelson Mandela Bay Municipality, Eastern Cape*. Report prepared for Volkswagen Group South Africa.

Grobler, B.A. 2021. *Botanical Impact Amendment Report: Intsomi citrus development, Sundays River Valley Municipality, Eastern Cape*. Report prepared for Public Process Consultants.

Grobler, B.A. 2021. *Botanical Impact Assessment Report: Tango citrus development, Sundays River Valley Municipality, Eastern Cape*. Report prepared for Public Process Consultants.

Grobler, B.A. 2021. *Coastal Dune Rehabilitation: 11 Uys Street, Jeffreys Bay, Kouga Local Municipality, Eastern Cape Province*. Report prepared for HabitatLink Consulting.

Grobler, B.A. and Landman, M. 2021. *Botanical Impact Amendment Report: Intsomi goat-breeding facility development, Sundays River Valley Municipality, Eastern Cape*. Report prepared for Public Process Consultants.

Continued on next page

2020

Grobler, B.A. 2020. *Botanical Impact Assessment Report: Eindelik and Rebelsvlei citrus expansion, Sundays River Valley, Eastern Cape*. Report prepared for East Cape Diverse Consultants.

2019

Grobler, B.A. 2019. *Botanical Assessment of 'Hemelsigt' (Portion 29 of Farm Maitland Mines No. 478), Nelson Mandela Bay Municipality*. Report prepared for Eco-Route Environmental Consultancy.

Grobler, B.A. 2019. *Botanical Assessment of the Moregrove cluster drought-relief borehole sites in Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province*. Report prepared for SRK Consulting.

Grobler, B.A. 2019. *Botanical Impact Assessment for the proposed residential development at Rocky Coast Farm (Portions 78 and 79 of the Farm Ongegund Vryheid No. 746), Cape St Francis, Kouga Municipality*. Report prepared for Public Process Consultants.

2018

Grobler, B.A. and Botha, S. 2019. *Biodiversity and ethnobotanical assessment of Erf 657, Still Bay, Hessequa Municipality*. Report prepared for Still Bay Interest Forum.

Grobler, B.A. 2018. *Assessment of vegetation impacted by clearing on the farm Zoutpoortjie, Farm 629, and Portion 3 of Farm 683, Sundays River Valley Municipality*. Report prepared for Province of the Eastern Cape: Department of Economic Development, Environmental Affairs and Tourism.

Grobler, B.A. 2018. *Botanical Assessment for the proposed augmentation of the Westering sewer network, Nelson Mandela Bay Municipality*. Report prepared for Aurecon South Africa.

Grobler, B.A. 2018. *Botanical Assessment for the proposed Zuurberg Pass road upgrade, Sundays River Valley and Blue Crane Municipalities*. Report prepared for Aurecon South Africa.

OTHER ACTIVITIES

Jan 2019 – Present

Director, Vice Chair

Fynbos Forum NPC

Affiliation that meets annually to discuss the collaborative production of knowledge that underpins regional conservation efforts in the Fynbos Biome (committee member since January 2019; director, vice chair since September 2021).

Jul 2009 – Present

Society Committee Member

Botanical Society of South Africa (Algoa Branch)

Committee member of the regional branch (inactive from 2016–2019).

Jul 2009 – Present

Volunteer

Custodians of Rare and Endangered Wildflowers (Port Elizabeth Group)

Citizen science programme to collect distribution and demographic data on rare and threatened plant species; local group champion since 2012.