Botanical Statement

Proposed amendment of Hartland Estate development layout, Mossel Bay

30 August 2024

Author details

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Area of Specialisation	Botanical surveys

Mark Berry is an independent botanical specialist with over 25 years of experience mainly in the Western Cape, but also in the adjacent provinces, Free State and KwaZulu-Natal. He is also experienced in undertaking/compiling Environmental Impact Assessments (EIA's), Environmental Management Programmes (EMPr's), Environmental Control Officer (ECO) duties, audits, land use surveys and due diligence investigations. CV is available upon request.

Citation of report

Berry, M.G. 2024. Botanical statement: proposed amendment of Hartland Estate development layout, Mossel Bay. MB Botanical Surveys, Somerset West.

Declaration of Independence

I Mark Gerald Berry, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent:
  - **other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity**; or
  - ~~am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 has been appointed to review my work (Note: a declaration by the review specialist must be submitted)~~;
- in terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the Specialist:	
Name of Company:	MB Botanical Surveys
Date:	30 August 2024

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1. Introduction

Proposed development and area assessed

The applicant wishes to amend the approved layout plan for the Hartland residential development on Portion 11 of Farm Vaale Valley 219, Mossel Bay (**Figure 1-1**). The study area, which is located between Hartenbos and Klein Brak, currently comprises developed, partly developed areas, and old (fallow) land. According to the Vegetation Map of South Africa, the study area is located inside a mixture of Canca Limestone Fynbos, Hartenbos Dune Thicket and Mossel Bay Shale Renosterveld. Both Hartenbos Dune Thicket and Mossel Bay Shale Renosterveld are listed as threatened. For its largest part, the site is excluded from the biodiversity network.

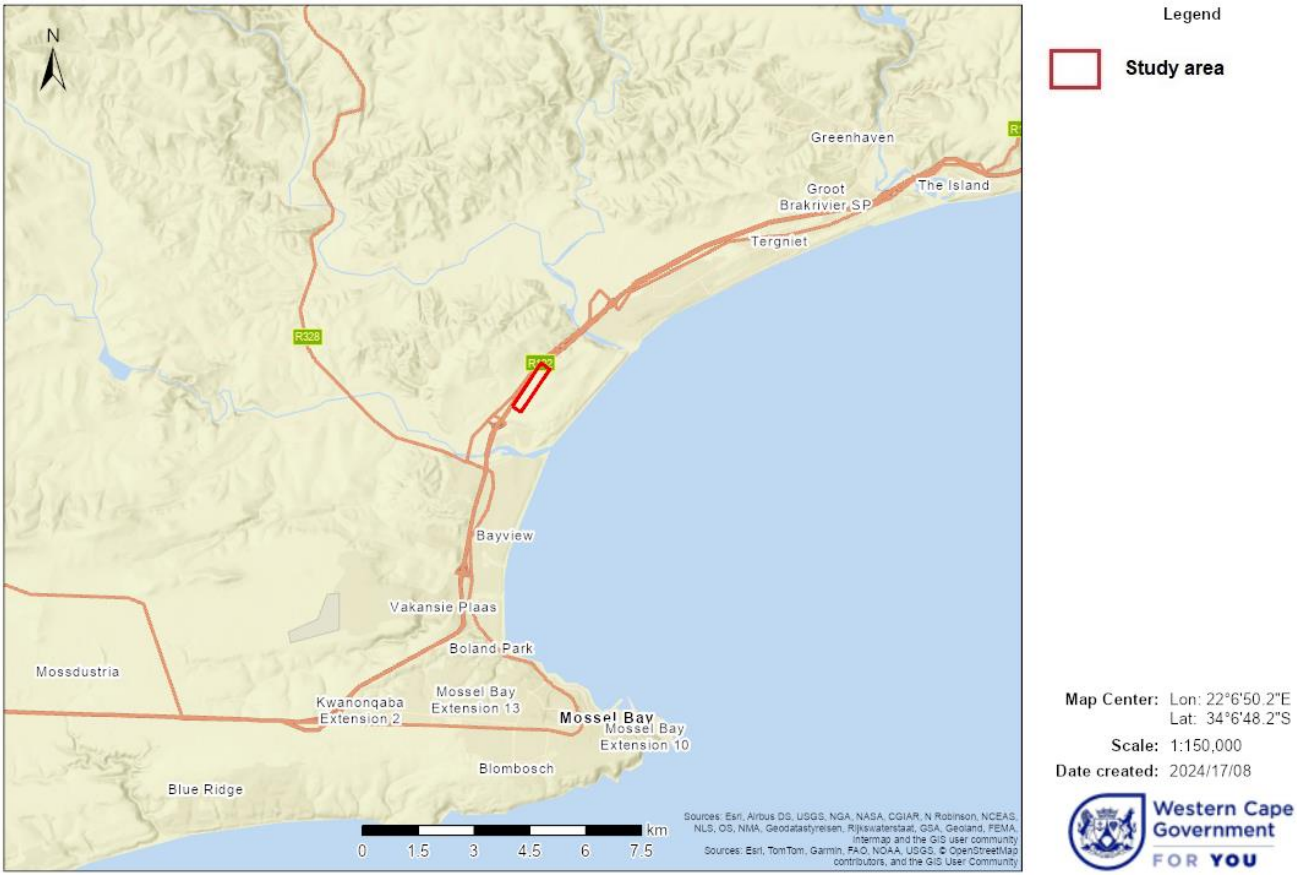

Figure 1-1: Location of site between Hartenbos and Klein Brak.

The surrounding land uses include residential (estate) development, vacant land, natural (regrowth) vegetation (in the vicinity of proposed telecom mast), and wheat farming on the western side (west of the N2 & R102). The residential development in the immediate area forms part of the larger Hartland Estate site. **Figure 1-2** shows the proposed changes or additions to the Hartland development site, including a 125 m road section and a

telecommunication mast in an elevated position in the northern part of site. Details of the latter are presented in **Figures 1-3** and **1-4**.

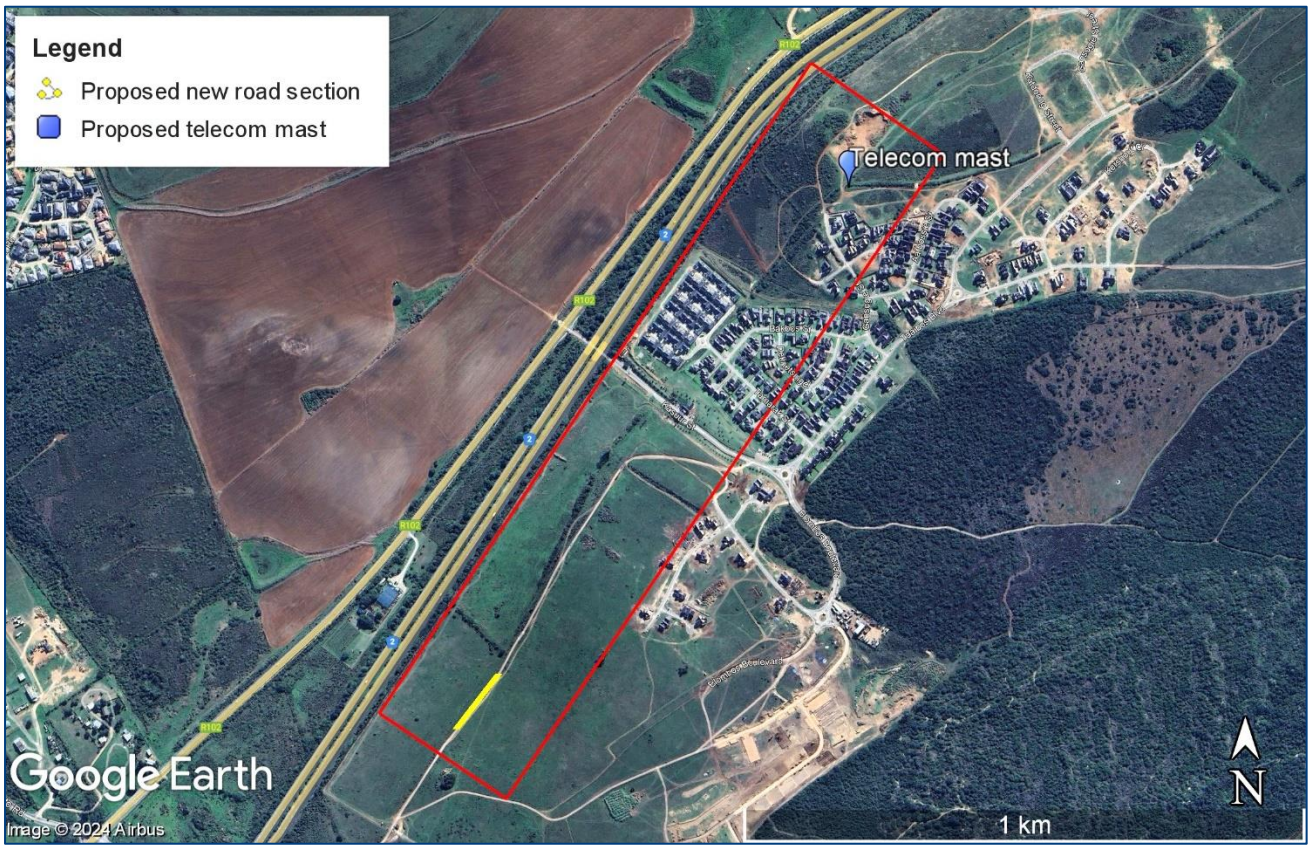

Figure 1-2: Aerial photograph of site, with the proposed changes/additions to original layout.

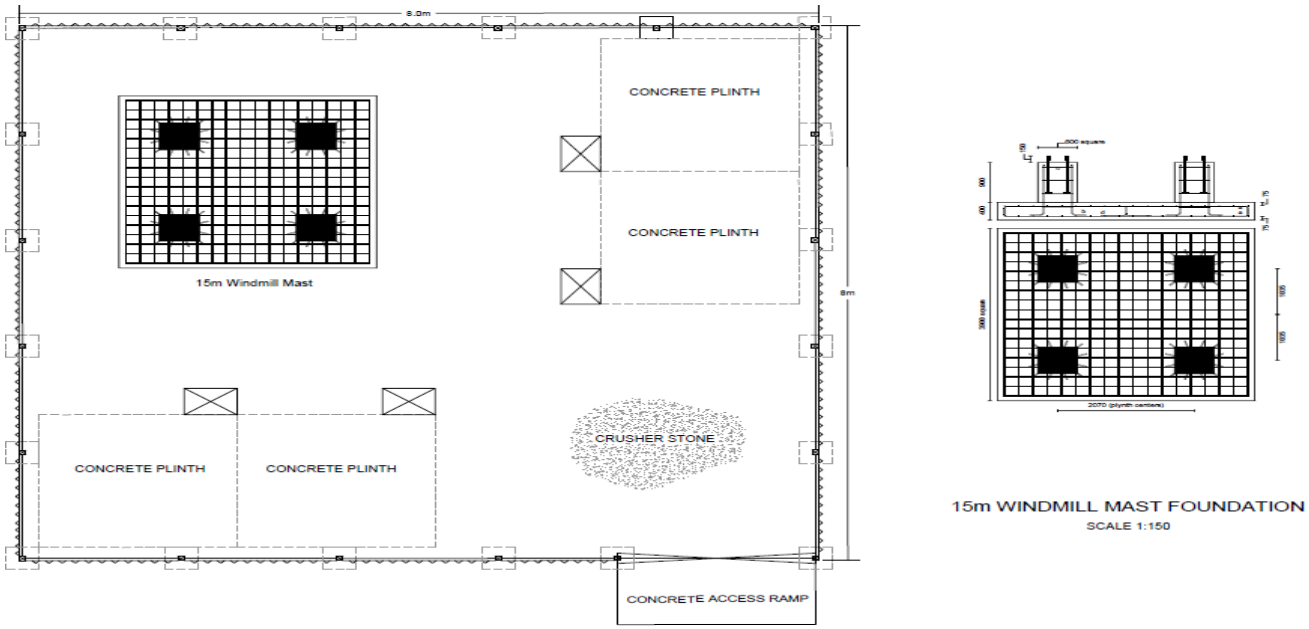

Figure 1-3: Top view of the proposed telecom mast.

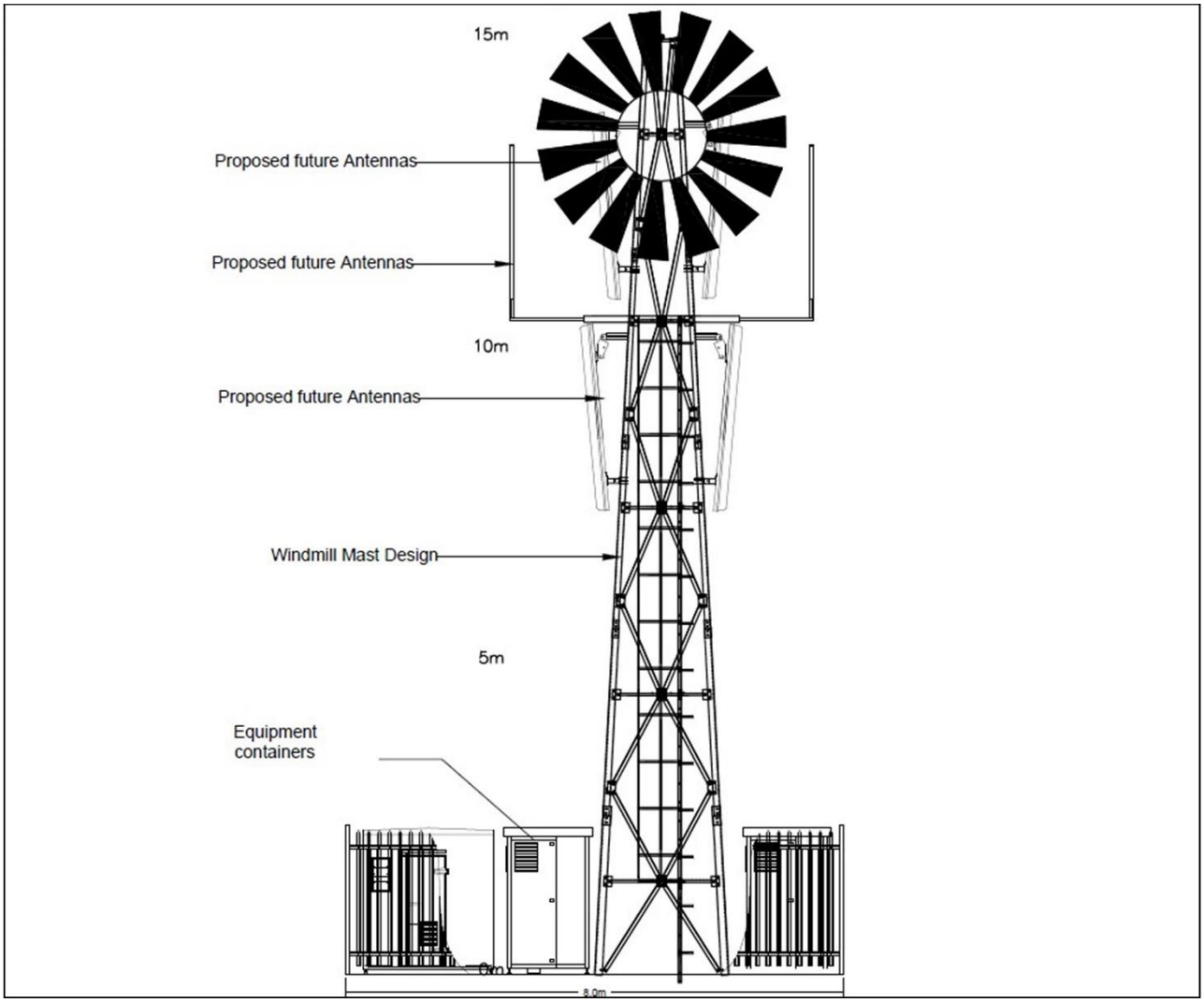

Figure 1-4: Side view of the proposed telecom mast.

According to the Screening Report, generated by Sharples Environmental Services (EAP) on 22 July 2024 for the telecom mast, the site has been mapped as Medium sensitive in the plant species theme, and Very High sensitive in the terrestrial biodiversity theme. The Very High sensitivity is ascribed to the possible presence of a threatened vegetation type. According to the Screening Report, generated on 26 August 2024 for the road section, the site has been mapped as Low sensitive in both the plant species and terrestrial biodiversity themes. As a result, MB Botanical Surveys was contracted to undertake a botanical assessment of the project area(s).

Terms of Reference

The terms of reference agreed upon for this botanical study include:

- Adhere to the EAP's terms of reference for the study, including a *status quo* assessment, followed by either a Compliance Statement or a Botanical Assessment Report, depending on the outcome of the *status quo* assessment;

- Identify and describe biodiversity patterns at a community and ecosystem level (main vegetation type, plant communities and threatened/vulnerable ecosystems), at species level (Species of Conservation Concern and protected species) and in terms of significant landscape features;
- Describe the sensitivity of the site and its immediate surroundings;
- Map or describe the presence of invasive alien plants;
- Review the relevant biodiversity plans compiled in terms of the National Environmental Management Biodiversity Act (Act 10 of 2004);
- Make recommendations with regards to the protection/management of biodiversity; and
- Adhere to the NEMA and CapeNature guidelines/protocols for biodiversity assessments.

Limitations and Assumptions

The following limitations and assumptions apply to the study:

- Since fieldwork was carried out at the end of the winter season, flowering plants that only flower at other times of the year (e.g. spring to summer), such as certain bulbs, may have been missed. The overall confidence in the completeness and accuracy of the botanical findings is however considered to be good.

Notwithstanding the above limitation and the fact that the vegetation is highly degraded or transformed, the specialist is of the opinion that the survey and findings are adequate to aid decision making.

Use of this report

This report reflects the professional judgment of its author(s). The information and recommendations presented in this report are specific to the project and site at hand and do not extend to future developments or neighbouring sites. Use of this report is therefore restricted.

2. Site Sensitivity Verification

The Department of Environmental Affairs online Environmental Screening Tool indicates that the plant species theme is of Medium sensitivity for the telecom mast site (see Screening Report, generated by the EAP on 22 July 2024). **Annexure 1** lists the threatened species and their sensitivity from the Screening Report. The Screening Report further indicates that the terrestrial biodiversity theme is of Very High sensitivity. This rating is ascribed to the possible presence of an endangered ecosystem (Mossel Bay Shale Renosterveld). The Screening Report for the proposed road section (generated on 26

August 2024) indicates a Low sensitivity for both the plant species and terrestrial biodiversity themes.

In circumstances where the *status quo* assessment proves the contrary to the above (i.e. where the site is deemed to be of Low sensitivity in respect of both themes, the GN320 of 2020 requires that a Terrestrial Biodiversity Compliance Statement is submitted as set out by the National Environmental Management Act (NEMA) (Act No. 107 of 1998) Regulations of 2020 (as amended). If the above is confirmed, then a biodiversity assessment will be required.

3. Methodology

The methodology used in this terrestrial biodiversity compliance assessment, including a desktop background assessment and one site visit, is outlined in the subsections below.

Desktop assessment

A brief review of online (e.g. Google Earth, iNaturalist.org and CapeFarmMapper) and desktop resources (available literature and reports) was undertaken to determine the nature of the site, the expected vegetation type(s), the presence of natural vegetation remnants and species of conservation concern (SCC), hydrological features, and the significance of the site in terms of biodiversity planning.

Site survey

A botanical survey of the respective sites was undertaken on 19 August 2024 by the author. A qualitative assessment of the type and condition of affected vegetation on site, disturbances and presence of alien species, SCC and protected tree species was carried out. Plant species not identified in the field, were collected and/or photographed and identified at the office and Compton (Kirstenbosch) Herbarium. The 2018 South African Vegetation Map and the latest floristic taxonomic literature and reference books were used for the purpose of this specialist study. Any plants classified as rare or endangered in the Red List of South African Plants online database[1] are highlighted. The assessment follows the relevant national guidelines/protocols for biodiversity assessments as listed in the Government Gazette No. 43110 on 20 March 2020.

The following information was recorded during the site visit:

1. The condition of the vegetation. Is the vegetation either disturbed or degraded? A disturbed or degraded area could range from agricultural fields (fallow land), or

[1] Threatened Species Programme | SANBI Red List of South African Plants

areas previously disturbed by mining activities, to an area that has been severely eroded or degraded as a result of bad land management or alien infestation.

2. Species diversity (alpha diversity). This refers to the numbers of different indigenous plant species occurring on site.
3. Species of Conservation Concern (SCC), endemics, as well as protected tree species occurring on site. This would include near threatened, rare, vulnerable, endangered or critically endangered species. SCC and protected tree species were mapped using Easy GPS v2.5 software on an iPhone. Accuracy is given as ±4 m.
4. Identification of the vegetation type(s) and communities (if discernible) on the site. This would include trying to establish the known range of a vegetation type and whether or not it is vulnerable, endangered or critically endangered.
5. Connectivity with (or isolation from) nearby natural vegetation.

Data analysis

Site ecological importance (SEI) of the affected (receptor) area has been determined by applying the criteria described in the Species Environmental Assessment Guideline (SANBI, 2020). See **Annexure 2** for a description of the SEI methodology.

4. Literature Study

A desktop literature review was undertaken during the biodiversity assessment using both online resources and existing maps and reports. A botanical assessment report previously prepared for the development also provides some background information (Wessels, 2008). A summary of the most relevant information to this assessment is presented below. Some of the information was ground-truthed during the site survey.

Location, topography & land use

The proposed road section (35-40 masl) is located on a gentle northwest-facing slope in the coastal strip between Hartenbos and Klein Brak, north of Mossel Bay (**Figure 4-1**). The proposed telecom mast is located on a high point (±92 masl) further away to the northeast. The surrounding landscape is partly transformed by past agricultural activities and residential developments. Both sites comprise old (fallow) land. Some indigenous scrub was also noted at the telecom mast site. It is not clear when the area was last cultivated, but historical Google Earth images do not show any agricultural activity since 2005.

Hydrology

According to CapeFarmMapper, there are no mapped watercourses in the study area (**Figure 4-1**). The closest watercourses are a non-perennial watercourse and a few

artificial (farm dams) and natural NFEPA (National Freshwater Ecosystem Priority Area) wetlands on the north-western side of the bypassing N2. This includes a 'flat' wetland about 400 m north of the telecom mast site. These watercourses and wetlands have been included in the biodiversity network.

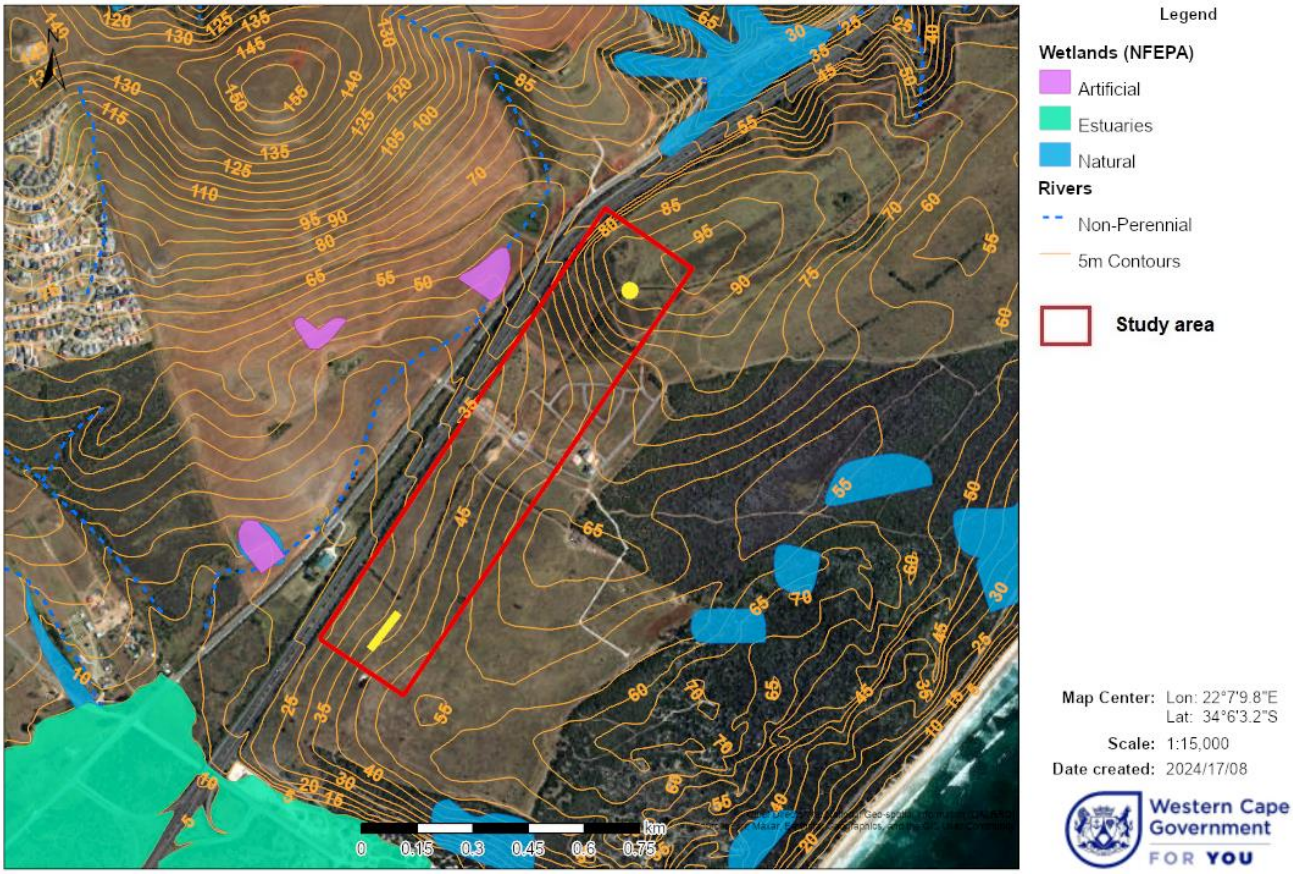

Figure 4-1: Combined topography and hydrology map. The yellow markers present the proposed infrastructure.

Climate

The mean annual rainfall for the area is 340 mm (as per Cape Farm Mapper climatic data for 1950 to 2000). The peak rainfall periods are the months of March (autumn) and October (spring), while the months of June and July (winter), and December (summer) are the driest, i.e. bimodal rainfall regime. The study area lies in the transition zone between the winter and summer rainfall regions. Mean monthly maximum and minimum temperatures are 23.8°C and 9.9°C for January/February and July, respectively (as per Cape Farm Mapper data). The Köppen-Geiger climate classification for the area is BSh/k (arid, steppe, hot/cold).

Geology

According to the 3422AA Mossel Bay 1:50 000 geological map, the study area is underlain by non-shelly sand. The latter is probably from aeolian origin (Viljoen, 1993). Also present

in the area are Waenhuiskrans Formation sediments (calcified to partly calcified dune sand) of Quaternary age. The latter overlays the Klein Brak Formation from Dias Beach north-eastwards towards Groot Brak and typically supports established dune vegetation (thicket).

Biodiversity Planning Context

The study site is located in a coastal fynbos/thicket environment on the Southern Cape coastal plain. The indigenous species recorded (mainly at the telecom mast site) are typical thicket/renosterveld species, such as *Oedera genistifolia, Hermannia lavandulifolia, Gymnosporia buxifolia, Grewia occidentalis* and *Aloe ferox*. The 2018 Vegetation Map of South Africa classifies the vegetation types found here as Hartenbos Dune Thicket, Mossel Bay Shale Renosterveld and Canca Limestone Fynbos (**Figure 4-2**). The former is usually easy to spot with its impenetrable, thorny thicket structure.

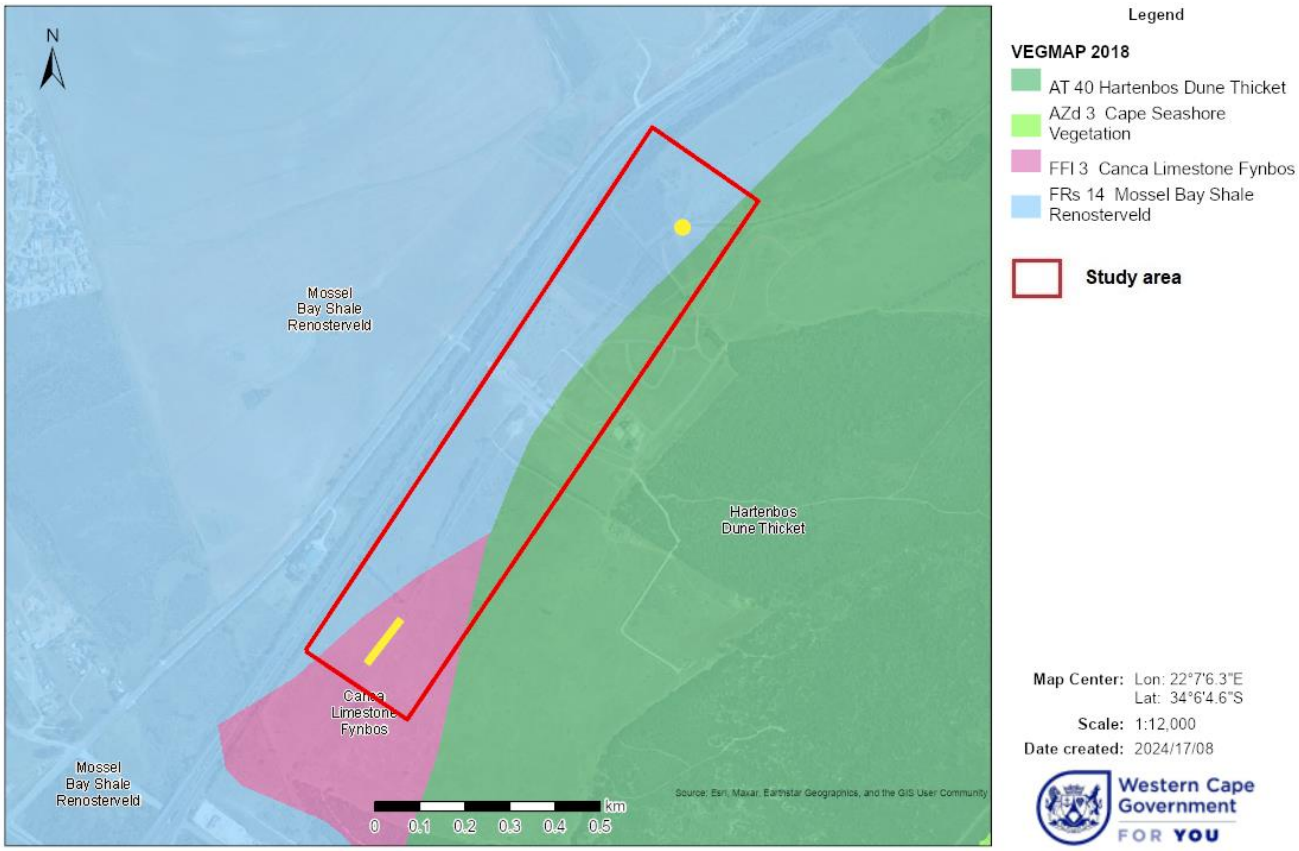

Figure 4-2: Extract of the 2018 SA Vegetation map. The yellow markers present the proposed infrastructure.

Hartenbos Dune Thicket is found on the coastal plain from the Duiwenhoks River (east of Cape Infanta) to Glentana, about 19 km east of the site. All dune thicket types fall under the Albany Thicket Biome, which is more typical of the Eastern Cape. The latter extends slightly into the Western Cape in the Little Karoo and as valley thicket in the Gouritz and Mossel Bay region (Pool-Stanvliet, 2017). It is described as "a mosaic of low (1-3 m) thicket,

occurring in small bush clumps dominated by small trees and woody shrubs, in a mosaic of low (1-2 m) asteraceous fynbos. Thicket clumps are best developed in fire-protected dune slacks, and the fynbos shrubland occurs on upper dune slopes and crests"[2]. Hartenbos Dune Thicket is well represented on the fixed dunes between Hartenbos and Glentana.

Canca Limestone Fynbos stretches across the Southern Cape lowlands from Witsand (Cape Infanta) in the west to Mossel Bay in the east (Mucina, 2006). The vegetation has tall, emergent proteoids in a medium dense low shrubland, with restioid fynbos on skeletal soils (Mucina, 2006). East of the Gouritz River, it lacks the proteoid overstorey and are poorer in species (Mucina, 2006). Mossel Bay Shale Renosterveld occurs on the undulating hills and valleys from the Kruisrivier near Riversdale to Botterberg, west of the Robinson Pass, centred on the Gouritz River (Mucina, 2006). The renosterveld is mainly a medium dense, medium tall cupressoid-leaved shrubland dominated by renosterbos. Thicket patches are common within the unit. Being part of the Fynbos Biome, both Canca Limestone Fynbos and Mossel Bay Shale Renosterveld are maintained by a regular fire regime. Unfortunately, landscape fragmentation is disrupting this 'maintenance' requirement, often leading to localised species loss and bush encroachment or alien infestation (pers. obs.).

Being well represented in the larger area, Canca Limestone Fynbos is currently not listed as threatened (DEA, 2022). Agricultural activities, alien plant infestation and coastal developments remain major threats for certain species endemic to this vegetation type. About 79% of Canca Limestone Fynbos is still left[3]. However, due to its poor conservation status its protection in the coastal areas remains a priority. Only 1.3% is protected in, among other, the Pauline Bohnen and Geelkrans Nature Reserves (Mucina, 2006).

Due to its transformed state, Mossel Bay Shale Renosterveld is currently listed as Critically Endangered in the Revised National List of Threatened Ecosystems (DEA, 2022). Only about 38% of Mossel Bay Shale Renosterveld is still left, while 0.2% is currently protected[4]. A large percentage of it has been transformed in the past for pastures and croplands (Mucina, 2006). The ecosystem is also degraded by erosion and overgrazing (Mucina, 2006). The unit is narrowly distributed with high rates of habitat loss in the past 30 years, placing it at risk of collapse. Although well represented in the larger area (79% still left), Hartenbos Dune Thicket is currently listed as Endangered[5]. It is being threatened by invasive aliens and habitat loss due to cultivation, road building and coastal developments. Almost 6% is

[2] Ecosystem Detail - Biodiversity BGIS (sanbi.org)
[3] Ecosystem Detail - Biodiversity BGIS (sanbi.org)
[4] Ecosystem Detail - Biodiversity BGIS (sanbi.org)
[5] Ecosystem Detail - Biodiversity BGIS (sanbi.org)

formally protected in the Geelkrans Nature Reserve complex and several contract nature reserves, such as Pauline Bohnen and Gourikwa.

The telecom mast site appears to be located just outside the Mossel Bay biodiversity network (**Figure 4-3**). A terrestrial ecological support area (ESA) encroaches the site from the west. The latter, along with an embedded terrestrial critical biodiversity area (CBA), appears to form part of a minor ecological corridor running along the N2 and R102, connecting larger CBA's further away. Reasons for the importance of the above-mentioned ESA and CBA include the presence of a SA vegetation type (Canca Limestone Fynbos), a threatened vegetation type (Groot Brak Dune Strandveld) and threatened vertebrate habitat (bontebok). The closest formally protected areas to the site are the Mossel Bay Seal Island Nature Reserve and the Diosma Contract Nature Reserve in Mossel Bay, located 5 km or further away to the south. The proposed road section does not encroach on the biodiversity network.

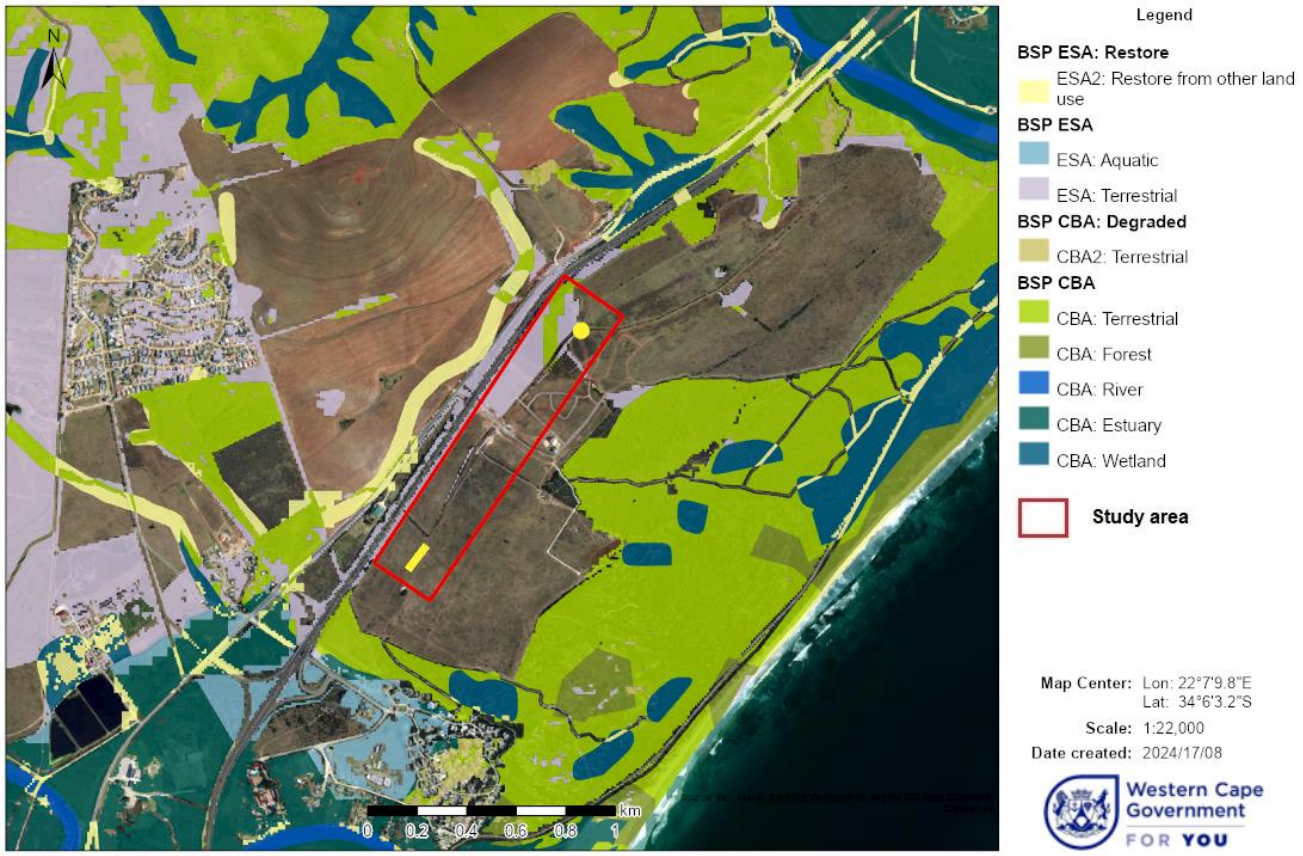

Figure 4-3: Extract of the Western Cape biodiversity network map. The yellow markers present the proposed infrastructure.

CBA's are defined as areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure (Pool-Stanvliet, 2017). These sites are selected for meeting national targets for species, habitats and ecological processes (Pool-Stanvliet, 2017). Many of these areas support known occurrences of threatened plant species, and/or may be essential elements of designated ecological corridors. Loss of designated CBA's is therefore not recommended.

ESA's, on the other hand, are supporting zones required to prevent the degradation of CBA's and Protected Areas.

5. Results

In order to fulfil in the requirements of the terrestrial biodiversity and plant species protocols, this section describes the vegetation (terrestrial biodiversity) and plant species encountered in two subsections. In the plant species subsection specific reference is made to species of conservation concern (SCC).

Terrestrial biodiversity (vegetation)

As stated earlier, the sites proposed for the road and telecom infrastructure have been largely degraded or transformed by past agricultural activities and are mainly covered by grasses, weeds and scattered shrubs. The proposed road section follows an existing farm road/track currently being used by construction vehicles (**Figure 5-1**). The area adjacent to the road comprises a grassland (pasture), dominated by *Cynodon dactylon* (fynkweek), weeds and a few pioneer shrubs, such as *Exomis microphylla, Lessertia frutescens, Searsia pallens* and *Carpobrotus edulis*. This area is significantly degraded or transformed.

Figure 5-1: View of the proposed road section.

The site proposed for the telecom mast is covered by weeds, grasses and a few indigenous shrubs, such as *Oedera genistifolia, Helichrysum rosum, Searsia pallens, Lampranthus elegans* and *Asparagus multiflorus* (**Figures 5-2** & **5-3**). It is also close to a thicket 'hedge' populated by typical thicket species, such as *Gymnosporia buxifolia, Euclea undulata, Grewia occidentalis* and *Aloe ferox* (**Figure 5-4**). The 'hedge' appears to follow an old farm road or fence line. It contributes to the amenity (and perhaps also the ecological) value of the area and should be protected. Due to the degraded/transformed state of the site, it is not possible to identify the original vegetation type. However, the presence of *Oedera genistifolia* and *Aloe ferox* points to renosterveld, which is consistent with the mapped unit of Mossel Bay Shale Renosterveld.

There is also a notable presence of woody aliens here, such as *Lantana camara* and *Acacia cyclops*. If the telecom mast is sensibly positioned in a degraded spot, the thicket elements and indigenous shrubs can be avoided. Disturbances noted in the area include the presence of farm roads, stockpiling/spoiling of excavated material (soil) and invasive species (**Figure 5-5**). Due to past and current disturbances in the area, the chances of restoring the target area back to good quality veld seem slim. **Figure 5-6** shows the botanical attributes of the proposed telecom mast site.

Figure 5-2: Proposed site for the telecom mast.

Figure 5-3: Grassy spot ±10 m north of the proposed site, also suitable for the telecom mast.

Figure 5-4: Thicket 'hedge' with *Aloe ferox* directly east of the telecom mast site.

Figure 5-5: Spoil site north of the telecom mast site.

Figure 5-6: Botanical attributes of the telecom mast site. The untoned areas are significantly degraded or transformed.

Plant species

Indigenous shrub species recorded along the proposed road section include *Felicia muricata, Osteospermum moniliferum, Lessertia frutescens, Carpobrotus edulis, Drosanthemum intermedium, Delosperma inconspicuum, Mesembryanthemum aitonis, Lycium tenue, Searsia pallens, Solanum linnaeanum, Abutilon sonneratianum, Exomis microphylla* and *Chaenostoma caeruleum*. *Carpobrotus edulis* is an excellent soil binder and should be salvaged for rehabilitation purposes. The predominant groundcover here comprises grasses and weeds, most notably *Cynodon dactylon* and *Plantago lanceolata.* The latter is an exotic weed. Other hemicryptophytes and bulbs recorded include *Eragrostis curvula, Hyparrhenia* sp, *Oxalis pes-caprae, Albuca canadensis, Bulbine lagopus* and *Moraea polyanthos*.

Indigenous shrub species recorded at and around the telecom mast site include *Oedera genistifolia* (dominant), *Helichrysum rosum, Felicia muricata, Osteospermum moniliferum, Chrysocoma ciliata, Indigofera nigromontana, Drosanthemum* sp, *Lampranthus elegans*, *Carpobrotus edulis, Aizoon pubescens*, *Crassula tetragona, C. capitella* ssp. *thyrsiflora, Aloe ferox, Lycium tenue, Gymnosporia buxifolia, Euclea undulata, Grewia occidentalis, Searsia pallens* (dominant), *S. cf glauca, Hermannia saccifera, H. lavandulifolia, Abutilon sonneratianum, Asparagus multiflorus, A. striatus, Pollichia campestris, Exomis microphylla, Lobelia erinus* and *Chaenostoma caeruleum*. Hemicryptophytes and bulbs recorded include *Cynodon dactylon* (dominant), *Commelina* sp, *Oxalis pes-caprae* (dominant), *Bulbine lagopus* and *Moraea polyanthos*. **Figure 5-7** shows a few of the indigenous species recorded.

All the recorded species are widespread and common in the region. Due to the time of the survey, spring flowering bulbs, especially members of the Iridaceae and Orchidaceae families, were not evident. These will probably show themselves later in the spring season. Floristic association with all three mapped vegetation types is fairly strong with several species regarded as important taxa in the respective units, including *Grewia occidentalis, Gymnosporia buxifolia, Aloe ferox, Oedera genistifolia* and *Drosanthemum intermedium. Hermannia lavandulifolia* (VU) is the only Species of Conservation Concern (SCC) recorded. It is fortunately still very common in the Mossel Bay area.

Exotic species recorded include *Lantana camara* (lantana, 1b), *Acacia cyclops* (rooikrans, category 1b), *Plantago lanceolata* (buckhorn plantain), *Vicia sativa* (common vetch) and *Lysimachia cf loeflingii* (blue pimpernel). As indicated above, *Lantana camara* and *Acacia cyclops* are Category 1b invaders. In terms of the National Environmental Management: Biodiversity Act (NEMBA) (Act 10 of 2004) Alien and Invasive Species List (2016), category 1b invasive species require compulsory control as part of an invasive species control programme.

Figure 5-7: A few indigenous species recorded on site, with *Drosanthemum intermedium* (top left), *Carpobrotus edulis* (top right), *Lessertia frutescens* (middle left), *Oedera genistifolia* (middle right), *Felicia muricata* (bottom left) and *Hermannia lavandulifolia* (bottom right).

Site Ecological Importance

In order to demonstrate the biodiversity sensitivity of the site, a site ecological importance (SEI) map was prepared (**Figure 5-8**). This map considers the biodiversity importance of the receptor area and its resilience to impacts. The receptor area is described as the affected habitats (i.e. degraded/transformed fynbos, renosterveld or thicket), which may

accommodate certain SCC. A Medium SEI value was allocated to the advanced regrowth area west of the telecom mast site, while the fallow land with new regrowth and the thicket 'hedge' attracted a Low value. The rest of the area, including the proposed road section, scored a Very Low value. These values were influenced by the size of areas in question, presence of SCC, threat status and condition of the vegetation, and connectivity with the biodiversity network. The results of the SEI analysis are presented in **Table 5-1**.

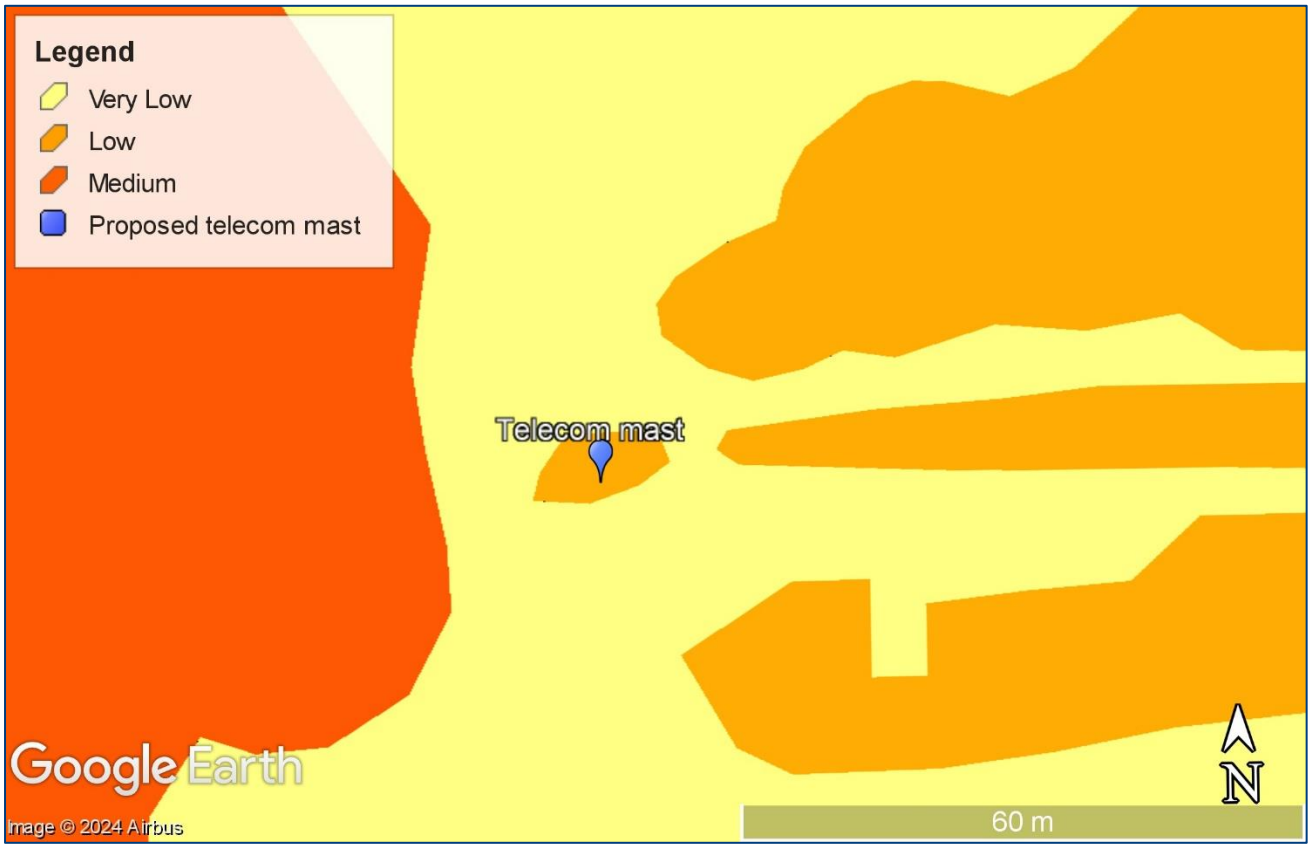

Figure 5-8: Site ecological importance (SEI) map of the telecom mast site.

Table 5-1: SEI analysis.

	CI	FI	BI	RR	SEI
Road section	Very Low	Low	Very Low	High	Very Low
Thicket 'hedge'	Medium	Low	Low	Medium	Low
Fallow land with new regrowth	Low	Medium	Low	Medium	Low
Advanced regrowth	Medium	Medium	Medium	Medium	Medium
Rest (transformed)	Very Low	Very Low	Very Low	Very High	Very Low

6. Potential Impacts

Terrestrial biodiversity (vegetation)

Due to the degraded/transformed state of the respective sites, the impact posed by the proposed infrastructure is not regarded as significant. There will be no significant loss of natural habitat. With regards to mitigation during the construction phase, an effort should be made to position the telecom mast in the most degraded spot devoid of significant indigenous growth. This should be easily achieved. As a duty of care measure, succulents and bulb species (if present) can be searched and rescued for replanting in a nearby rehabilitation area (open space) where it is safe from development. Species suitable for search and rescue include *Carpobrotus edulis, Crassula tetragona, C. capitella* ssp. *thyrsiflora, Aloe ferox* and *Bulbine lagopus*. With regards to the biodiversity network, no significant loss of mapped terrestrial CBA or ESA is expected. Therefore, the proposal will not impact on the functionality of the network.

An effort must be made to keep the surrounding areas clear of invasive aliens, such as rooikrans and lantana. Both these species add to the fuel load and may increase the risk of wildfires in the long term. As stated earlier, it is a legal requirement for the landowner(s) to clear/control the invasive aliens on their land. In addition, a firebreak (to be determined by a fire safety specialist) is needed between the development and the dune thicket on eastern side. This will aid in safeguarding the development from wildfires.

Plant species

The impact on plant species, including potential SCC, is also expected to be of little significance or concern. All the recorded species are common and widespread in the region. The only gap in the information provided above is the possible presence of spring flowering bulbs, which may include threatened or sensitive species. This can only be ascertained during a survey later in spring. Only one SCC was recorded in the vicinity of the telecom mast site, namely *Hermannia lavandulifolia* (VU). It is fortunately still very common in the Mossel Bay area. The probability of SCC listed in the Screening Report to be present on site is indicated in **Annexure 1**. No protected tree species were recorded.

The identified construction and operational phase impacts are as follows:

Construction Phase

- No direct impact on good quality natural vegetation is expected. Make sure that the telecom mast is placed in the most degraded spot devoid of significant indigenous growth.

Operational phase

- Increased alien infestation and fire risk, unless an alien management plan is drawn up and implemented.

The **cumulative botanical impact** of the project is expected to be equivalent to the impact on terrestrial biodiversity described above. In this instance, the loss of biodiversity and resultant cumulative impact is considered small (acceptable) due to the degraded (transformed) state of the site.

7. Recommended Mitigation Measures

The following mitigation measures are recommended to ensure that the impact on terrestrial biodiversity and plant species is minimal:

- Position the telecom mast in the most degraded spot devoid of significant indigenous growth.
- As a duty of care measure, succulents and bulb species (if present) can be searched and rescued for replanting in a nearby rehabilitation area (open space) where it is safe from development. Species suitable for search and rescue include *Carpobrotus edulis, Crassula tetragona, C. capitella* ssp. *thyrsiflora, Aloe ferox* and *Bulbine lagopus*. *Carpobrotus edulis* is an excellent soil binder.
- Implement alien control as a long-term (operational phase) maintenance requirement. Currently, the focus should be to eradicate *Acacia cyclops* (rooikrans) and *Lantana camara* (lantana) from the area surrounding the telecom mast site. In terms of the NEMBA (Act 10 of 2004) Alien and Invasive Species List (2016), category 1b invasive species require compulsory control as part of an invasive species control programme.

8. Conclusion & Recommendations

This report sets out the results from a desktop study, as well as a field survey conducted on 19 August 2024, to ascertain terrestrial biodiversity and plant species constraints and possible impacts associated with the amendment of the approved layout plan for a residential development on Portion 11 of Farm Vaale Valley 219, Mossel Bay. The proposed amendment entails the addition of a ±125 m long road section and a telecom mast.

Due to the highly degraded/transformed state of the site, the impact posed by the proposed amendment on terrestrial biodiversity and plant species is expected to be of low significance. The amendment will not result in a notable loss of indigenous vegetation or plant species. However, a thicket 'hedge' and some fallow land with new regrowth in the vicinity of the telecom mast site should be taken into account in the positioning the mast.

It is therefore recommended that the proposed amendment be approved, subject to the consideration of the proposed mitigation measures.

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Annexure 1: Threatened plant species as listed in Screening Report (species in bold were recorded on site)

Sensitivity	Feature(s)	Probability of presence in study area
Medium	*Lampranthus diutinus*	Limestone fynbos; Low
Medium	*Lampranthus fergusoniae*	Limestone dunes; Low
Medium	*Lampranthus pauciflorus*	Rocky coastal slopes; Low
Medium	*Ruschia leptocalyx*	Valley thicket & renosterveld; Low
Medium	*Argyrolobium harmsianum*	Dune & limestone fynbos; Low
Medium	*Lebeckia gracilis*	Coastal sandy flats; Low-medium
Medium	*Leucadendron galpinii*	Sandy coastal flats; Low
Medium	*Leucospermum praecox*	Sandy coastal flats; Low
Medium	*Wahlenbergia polyantha*	Coastal sands; Low-medium
Medium	*Selago ramosissima*	Clay flats; iNat record from dune thicket east of the Hartland development
Medium	*Selago villicaulis*	Limestone & sandy slopes; Low-medium
Medium	*Freesia fergusoniae*	Renosterveld; Low
Medium	*Erica unicolor* ssp. *mutica*	Hills & middle slopes; Low
Medium	***Hermannia lavandulifolia***	Recorded at the telecom mast site
Medium	Sensitive species 153	Sandstone flats; Low-medium
Medium	Sensitive species 633	Renosterveld; Low
Medium	Sensitive species 268	Valley thicket, rocky slopes; Low
Medium	*Thamnochortus muirii*	Coastal sands often with limestone; Low
Medium	*Marsilea schelpeana*	Wetland species; Low
Medium	*Duvalia immaculata*	Dry coastal ecotone vegetation; Low-medium
Medium	Sensitive species 1024	Dry to moist stony slopes; Low
Medium	*Oedera* (= *Relhaia*) *garnotii*	Renosterveld; Low
Medium	*Agathosma eriantha*	Coastal limestone hills; Low
Medium	*Agathosma muirii*	Coastal hills; Low-medium
Medium	*Euchaetis albertiniana*	Coastal sands and limestone; doubtful iNat record from dune thicket east of the Hartland development
Medium	*Muraltia knysnaensis*	Dry flats & hills; Low
Medium	*Polygala pubiflora*	Renosterveld & sandstone fynbos; Low
Medium	Sensitive species 980	Renosterveld at Gondwana; Low

Sensitivity	Feature(s)	Probability of presence in study area
Medium	*Nanobubon hypogaeum*	Sandy coastal fynbos; Low-medium
Medium	Sensitive species 516	Renosterveld; Low
Medium	*Drosanthemum lavisii*	Renosterveld; Low
Medium	Sensitive species 800	Alkaline sands & limestone; Low-medium
Medium	Sensitive species 500	Recent sand; Low-medium
Medium	Sensitive species 654	Coastal sand flats; Low-medium
Medium	Sensitive species 763	Coastal renosterveld & fynbos; Low
Medium	*Diosma passerinoides*	Silcrete slopes; Low
Medium	*Agathosma microcarpa*	Renosterveld, lower shale slopes; Low

Annexure 2: Site Ecological Importance

Site Ecological Importance (SEI) is considered to be a function of the biodiversity importance (BI) of the receptor (e.g. SCC, the vegetation community or habitat type present on site) and its resilience to impacts (receptor resilience or RR) as follows:

SEI = BI + RR

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

BI = CI + FI

Conservation importance (CI) is evaluated in accordance with recognised established internationally principles and criteria for the determination of biodiversity-related value, including the IUCN Red List of Species, Red List of Ecosystems and key biodiversity areas. CI is defined here as: "The importance of a site for supporting biodiversity features of conservation concern present, e.g. populations of SCC (CR, EN, VU & NT), Rare species, range-restricted species, and areas of threatened ecosystem types, through mainly natural processes". Fulfilling criteria to evaluate CI do not rely on a single specific threshold for each of the above defining characteristics but can act in combination or in isolation, providing a more robust evaluation of CI (Table 1).

Table 1: Conservation importance (CI) criteria.

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

CI	Criteria
	No confirmed or highly likely populations of range-restricted species. <50% of receptor contains natural habitat with limited potential to support SCC.
Very low	No confirmed and highly unlikely populations of SCC. No confirmed and highly unlikely populations of range-restricted species. No natural habitat remaining.

Functional integrity (FI) of the receptor (e.g. the vegetation community or habitat type) is defined here as the receptors' current ability to maintain the structure and functions that define it, compared to its known or predicted state under ideal conditions. Ecological processes can be considered to be mostly intact and functional if the receptor area has low levels of current ecological disruptors, has good connectivity to other areas and is a relatively large area. As for CI, the fulfilling criteria to evaluate FI do not rely on a single specific threshold for each of the above defining characteristics but can act in combination or in isolation (Table 2).

Table 2: Functional integrity (FI) criteria.

FI	Criteria
Very high	Very large (>100 ha) intact area for any conservation status of ecosystem type or >5 ha for CR ecosystem types. High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. No or minimal current negative ecological impacts with no signs of major past disturbance (e.g. ploughing).
High	Large (>20 ha but <100 ha) intact area for any conservation status of ecosystem type or >10 ha for EN ecosystem types. Good habitat connectivity with potentially functional ecological corridors and a regularly used road network between intact habitat patches. Only minor current negative ecological impacts (e.g. few livestock utilising area) with no signs of major past disturbance (e.g. ploughing) and good rehabilitation potential.
Medium	Medium (>5 ha but <20 ha) semi-intact area for any conservation status of ecosystem type or >20 ha for VU ecosystem types. Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches. Mostly minor current negative ecological impacts with some major impacts (e.g. established population of alien and invasive flora) and a few signs of minor past disturbance. Moderate rehabilitation potential.
Low	Small (>1 ha but <5 ha) area. Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy used road network surrounds the area. Low rehabilitation potential. Several minor and major current negative ecological impacts.
Very low	Very small (<1 ha) area.

FI	Criteria
	No habitat connectivity except for flora with wind-dispersed seeds. Several major current negative ecological impacts

Recalling that biodiversity importance (BI) is a function of conservation importance (CI) and the functional integrity (FI) of a receptor, BI can be derived from a simple matrix of CI and FI as follows:

Biodiversity importance		Conservation importance				
		Very high	High	Medium	Low	Very low
Functional integrity	Very high	Very high	Very high	High	Medium	Low
	High	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	Low	Medium	Medium	Low	Low	Very low
	Very low	Medium	Low	Very low	Very low	Very low

Receptor resilience (RR) is defined here as: "The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention." The fulfilling criteria to evaluate RR are based on the estimated recovery time required to restore an appreciable portion of functionality to the receptor (Table 3) and will require justification by the specialist.

Table 3: Receptor resilience (RR) criteria.

RR	Criteria
Very high	Habitat that can recover rapidly (<5 years) to restore >75% of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a very high likelihood of returning to a site once the disturbance or impact has been removed.
High	Habitat that can recover relatively quickly (5-10 years) to restore >75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed.
Medium	Will recover slowly (>10 years) to restore >75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.
Low	Habitat that is unlikely to be able to recover fully after a relatively long period: >15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of

RR	Criteria
	remaining at a site even when a disturbance or impact is occurring, or species that have a low likelihood of returning to a site once the disturbance or impact has been removed.
Very low	Habitat that is unable to recover from major impacts, or species that are unlikely to remain at a site even when a disturbance or impact is occurring, or species that are unlikely to return to a site once the disturbance or impact has been removed.

Finally, after the successful evaluation of both BI and RR as described above, it is possible to evaluate the **site ecological importance (SEI)** from the final matrix as follows:

Site ecological importance		Biodiversity importance				
		Very high	High	Medium	Low	Very low
Receptor resilience	Very low	Very high	Very high	High	Medium	Low
	Low	Very high	Very high	High	Medium	Very low
	Medium	Very high	High	Medium	Low	Very low
	High	High	Medium	Low	Very low	Very low
	Very high	Medium	Low	Very low	Very low	Very low

Table 4: Guidelines for interpreting SEI in the context of the proposed development activities.

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