

# Botanical Statement

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## **Proposed amendment of approved development layout for Hartenbos Estate II, between Hartenbos and Klein Brak**

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September 2022



## Author details

| Specialist Details   Mark Berry |                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------|
| Company Name                    | Mark Berry Environmental Consultants cc – T/A Mark Berry Botanical Consulting Services |
| Physical address                | 14 Alvin Crescent, Somerset West, 7140                                                 |
| Email Address                   | markberry@webafrica.org.za                                                             |
| Telephone                       | 083 286-9470                                                                           |
| Fax                             | 086 759-1908                                                                           |
| Highest Qualification           | PhD in Botany                                                                          |
| SACNASP Reg. No.                | 400073/98 (Ecological Science)                                                         |
| Area of Specialisation          | Botanical surveys                                                                      |

Mark Berry is an independent botanical specialist with 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

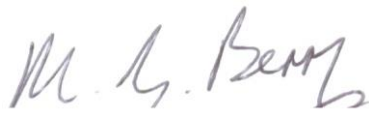
Berry, M.G. 2022. Botanical statement: proposed amendment of approved development layout for Hartenbos Estate II, between Hartenbos and Klein Brak. Mark Berry Botanical Consulting, Somerset West.

## 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:

Mark Berry Botanical Consulting

Date:

2 September 2022

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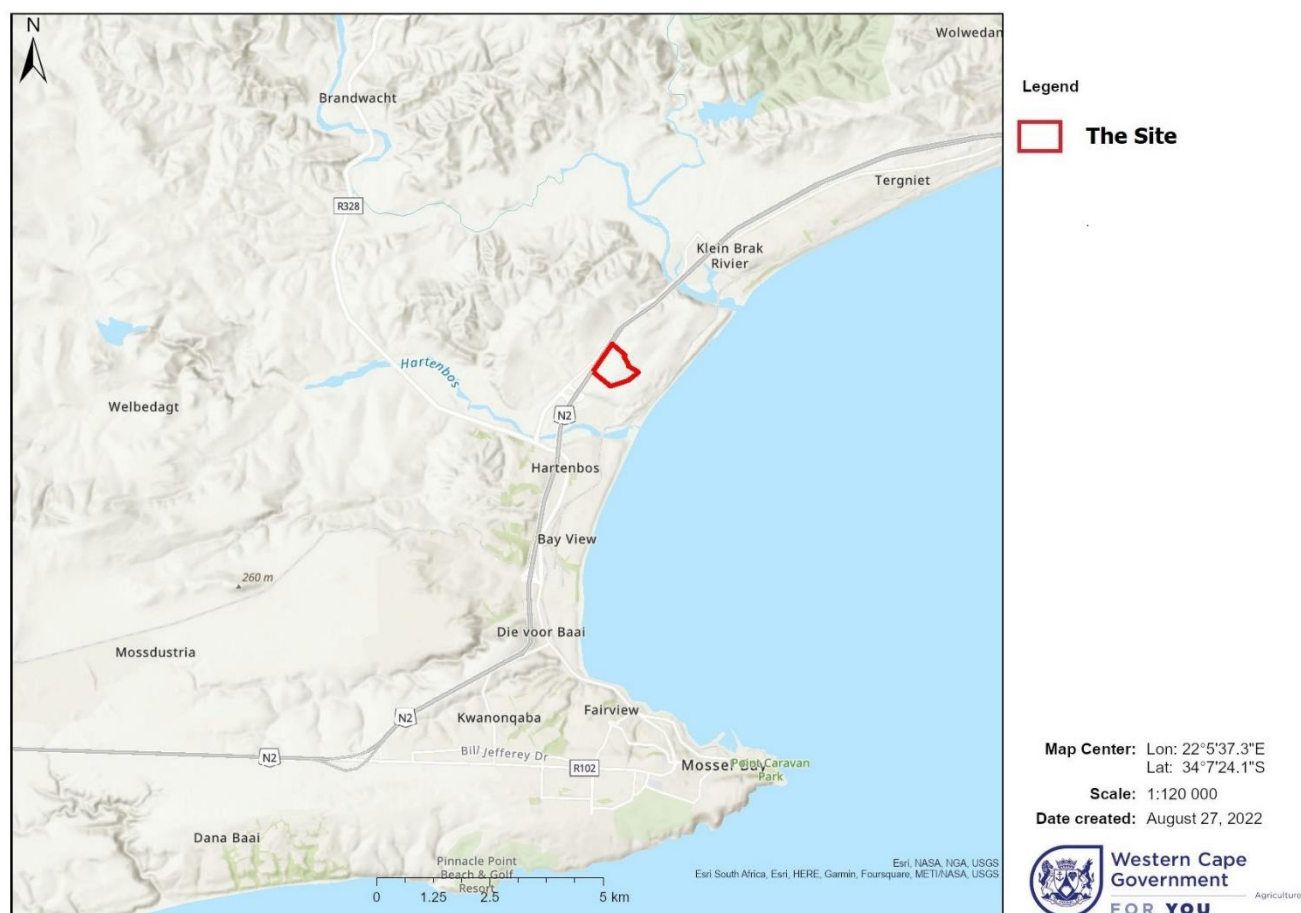
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## 1. Introduction

### Proposed development and area assessed

The applicant wishes to amend the approved layout plan for a residential development on a portion of Farm Vaale Valley 219, Mossel Bay, in order to densify housing (**Figure 1-1**). The site, which is located between Hartenbos and Klein Brak, currently comprises an old land. According to the Vegetation Map of South Africa, the site is located inside a mixture of Canca Limestone Fynbos, Hartenbos Dune Thicket and Mossel Bay Shale Renosterveld. Only the latter is listed as a threatened vegetation type. However, it seems to be completely transformed in the study area. For its largest part, the site is excluded from the CBA network.



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

The surrounding land uses include residential (estate) development on the northern side, farming on the western side (west of the N2), natural vegetation on eastern side and vacant land on southern side (similar to subject area). The residential development on northern side forms part of the larger Hartenbos Estate site. According to

CapeFarmMapper<sup>1</sup> Surveyor General information, the property is 371.95 ha in size, while the subject area is 48.2 ha. **Figure 1-2** shows the proposed changes to the open spaces. The black polygons represent the Open Space Areas, which were approved in 2009, and the white polygons are the proposed amendments to these areas.

The footprint comparisons (as presented by Sharples Environmental Services) are:

| Open Space    | Existing Layout             | Proposed Layout                                                                  | Phasing                | Difference                |
|---------------|-----------------------------|----------------------------------------------------------------------------------|------------------------|---------------------------|
| OS 1          | 16211 m <sup>2</sup>        | 14100 m <sup>2</sup>                                                             | Phase O                | -2111 m <sup>2</sup>      |
| OS 2          | 18094 m <sup>2</sup>        | 22236 m <sup>2</sup>                                                             | Within Phase C         | 4142 m <sup>2</sup>       |
| OS 3          | 13415 m <sup>2</sup>        | 13500 m <sup>2</sup>                                                             | Phase Q                | 85 m <sup>2</sup>         |
| OS 4          | 2756 m <sup>2</sup>         | 2800 m <sup>2</sup>                                                              | Phase P                | 44 m <sup>2</sup>         |
| OS 5          | 29508 m <sup>2</sup>        | 15782 m <sup>2</sup> + 21465 m <sup>2</sup> (sportsfield) = 37247 m <sup>2</sup> | Phase R + sports field | 7739 m <sup>2</sup>       |
| OS 6          | 12854 m <sup>2</sup>        | 12815 m <sup>2</sup>                                                             | Phase S                | -39 m <sup>2</sup>        |
| Rec area      | 32166 m <sup>2</sup>        | 25478 m <sup>2</sup>                                                             | -                      | -6688 m <sup>2</sup>      |
| <b>Total:</b> | <b>125004 m<sup>2</sup></b> | <b>128176 m<sup>2</sup></b>                                                      |                        | <b>3172 m<sup>2</sup></b> |



**Figure 1-2: Aerial photograph of site, with the proposed changes indicated by the white polygons.**

According to the Screening Report, generated by Sharples Environmental Services (EAP) on 4 August 2022, the site or a part thereof 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 partly ascribed to the presence of a mapped critical biodiversity area

<sup>1</sup> CFM 2.6.10 (elsenburg.com)

(CBA) and the possible presence of a threatened vegetation type. As a result, Mark Berry Botanical Consulting was contracted to undertake a botanical survey of the property.

### 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 autumn), 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 transformed, the specialist is of the opinion that the survey and findings are adequate to aid decision making. However, a survey later in spring will certainly contribute to the species list.

### 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 site (see Screening Report, generated by the EAP on 4 August 2022). **Table 2-1** lists the threatened species and their sensitivity from the Screening Report.

**Table 2-1: Threatened plant species as listed in the Screening Report.**

| Sensitivity | Feature(s)                               |
|-------------|------------------------------------------|
| Medium      | <i>Lampranthus diutinus</i>              |
| Medium      | <i>Lampranthus fergusoniae</i>           |
| Medium      | <i>Lampranthus pauciflorus</i>           |
| Medium      | <i>Ruschia leptocalyx</i>                |
| Medium      | <i>Argyrolobium harmsianum</i>           |
| Medium      | <i>Lebeckia gracilis</i>                 |
| Medium      | <i>Leucadendron galpinii</i>             |
| Medium      | <i>Leucospermum praecox</i>              |
| Medium      | <i>Wahlenbergia polyantha</i>            |
| Medium      | <i>Selago ramosissima</i>                |
| Medium      | <i>Selago villicaulis</i>                |
| Medium      | <i>Freesia fergusoniae</i>               |
| Medium      | <i>Erica unicolor</i> ssp. <i>mutica</i> |
| Medium      | <i>Hermannia lavandulifolia</i>          |
| Medium      | Sensitive species 153                    |
| Medium      | Sensitive species 633                    |
| Medium      | Sensitive species 268                    |
| Medium      | <i>Thamnochortus muirii</i>              |
| Medium      | <i>Marsilea schelpeana</i>               |
| Medium      | <i>Duvalia immaculata</i>                |
| Medium      | Sensitive species 1024                   |
| Medium      | <i>Relhania garnotii</i>                 |
| Medium      | <i>Agathosma eriantha</i>                |
| Medium      | <i>Agathosma muirii</i>                  |
| Medium      | <i>Euchaetis albertiniana</i>            |
| Medium      | <i>Muraltia knysnaensis</i>              |
| Medium      | <i>Polygala pubiflora</i>                |
| Medium      | Sensitive species 980                    |
| Medium      | <i>Nanobubon hypogaeum</i>               |
| Medium      | Sensitive species 516                    |

| Sensitivity | Feature(s)                  |
|-------------|-----------------------------|
| Medium      | <i>Drosanthemum lavisii</i> |
| Medium      | Sensitive species 800       |
| Medium      | Sensitive species 500       |
| Medium      | Sensitive species 654       |
| Medium      | Sensitive species 763       |
| Medium      | <i>Diosma passerinoides</i> |
| Medium      | <i>Agathosma microcarpa</i> |

The Screening Report further indicates that the terrestrial biodiversity theme is of Very High sensitivity. This rating is ascribed to the possible presence of, among other, a critical biodiversity area (CBA) and an endangered ecosystem (Mossel Bay Shale Renosterveld).

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 site was undertaken on 23 August 2022 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. The path walked during the survey is shown in **Figure 3-1**. 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<sup>2</sup> 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.



**Figure 3-1: Satellite photo showing the survey track.**

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 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  $\pm 4$  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.

<sup>2</sup> [Threatened Species Programme | SANBI Red List of South African Plants](#)

5. Connectivity with (or isolation from) nearby natural vegetation.

## 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

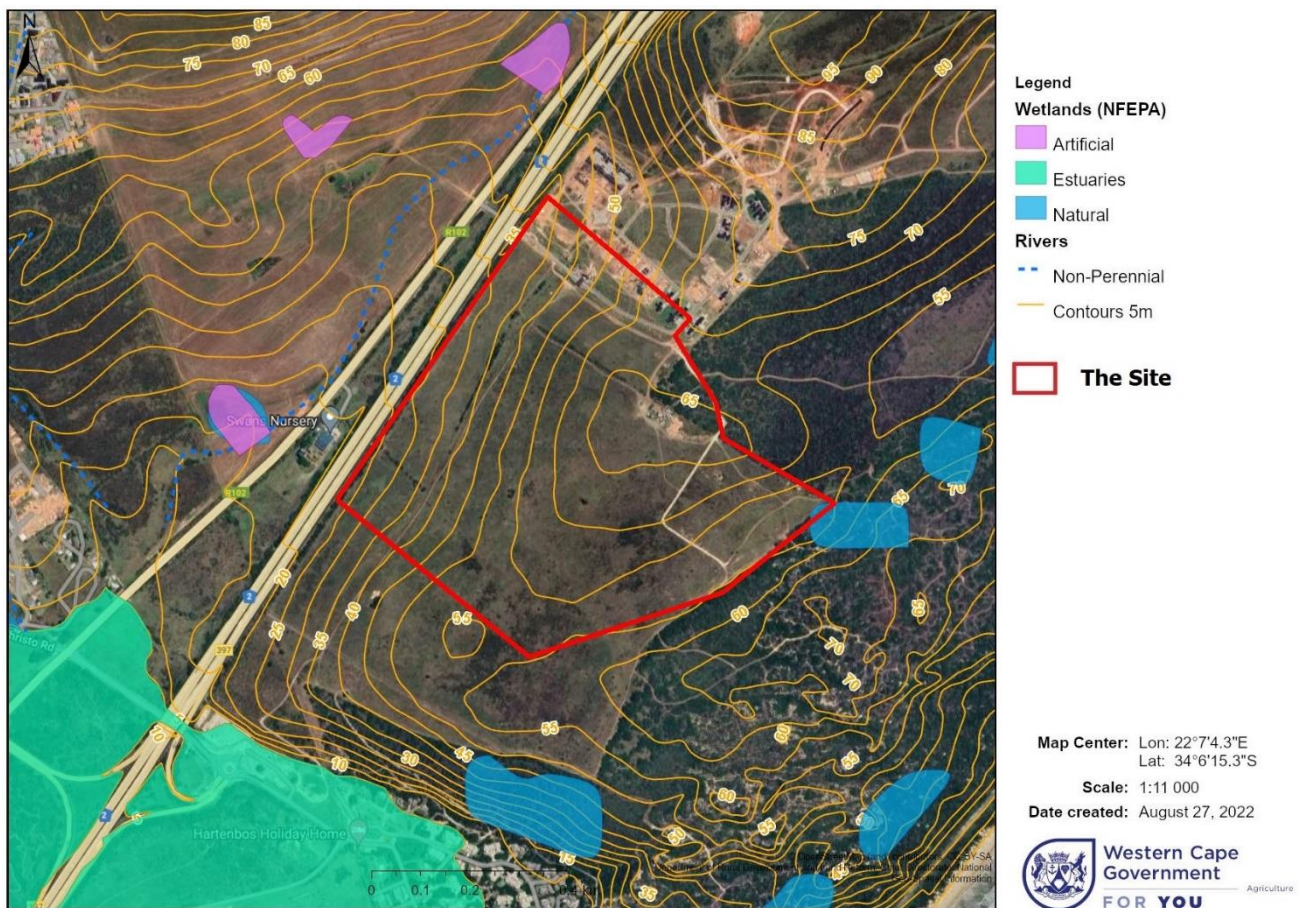
The site (25–70 masl) is located on the coastal strip between Hartenbos and Klein Brak, north of Mossel Bay. The topography and slopes are gentle (**Figure 4-1**). The landscape around the site is partly transformed by past agricultural activities and coastal developments. The site itself comprises an old land. It is not clear when it was last worked, but historical Google Earth images do not show any agricultural activity since 2005.

### Hydrology

According to CapeFarmMapper, there are no mapped watercourses on the site apart from a small NFEPA (National Freshwater Ecosystem Priority Area) wetland touching the eastern corner (**Figure 4-1**). A few more of these ‘flat’ and ‘channelled/unchannelled valley-bottom’ wetlands are found in the area. Apart from these, there are also a few non-perennial watercourses on the western side of the bypassing N2 and R102, as well as the Hartenbos River and estuary located about 0.4 km away to the south. These watercourses and wetlands have all been included in the biodiversity network.

### Climate

The mean annual rainfall for the site 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).



**Figure 4-1: Combined topography and hydrology map.**

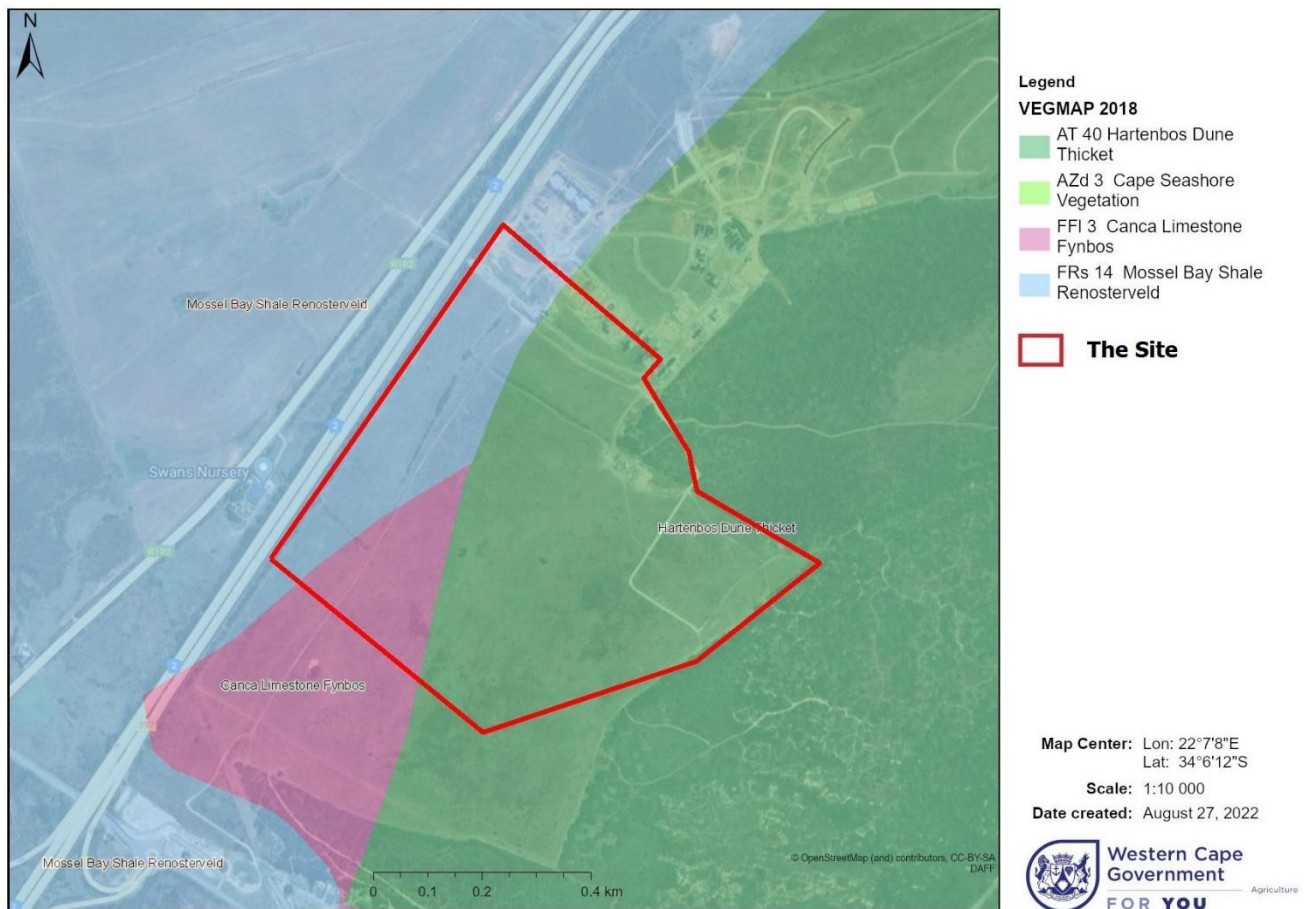
## Geology

According to the 3422AA Mossel Bay 1:50 000 geological map, the site 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 in the vegetation adjacent to the site are typical thicket species, such as *Searsia pterota*, *Sideroxylon inerme*, *Schotia afra*, *Cussonia thyrsiflora* and *Aloe arborescens*. The 2018 Vegetation Map of South Africa classifies the main vegetation type found here as Hartenbos Dune Thicket (**Figure 4-2**). The latter is easy to spot with its impenetrable, thorny thicket structure. The Vegetation Map also shows Canca Limestone Fynbos and Mossel Bay Shale Renosterveld in the western part of the site, but this is speculative as the area has been almost completely

transformed by past farming activities. There is evidence on site that the thicket may have extended across the site towards its western boundary.



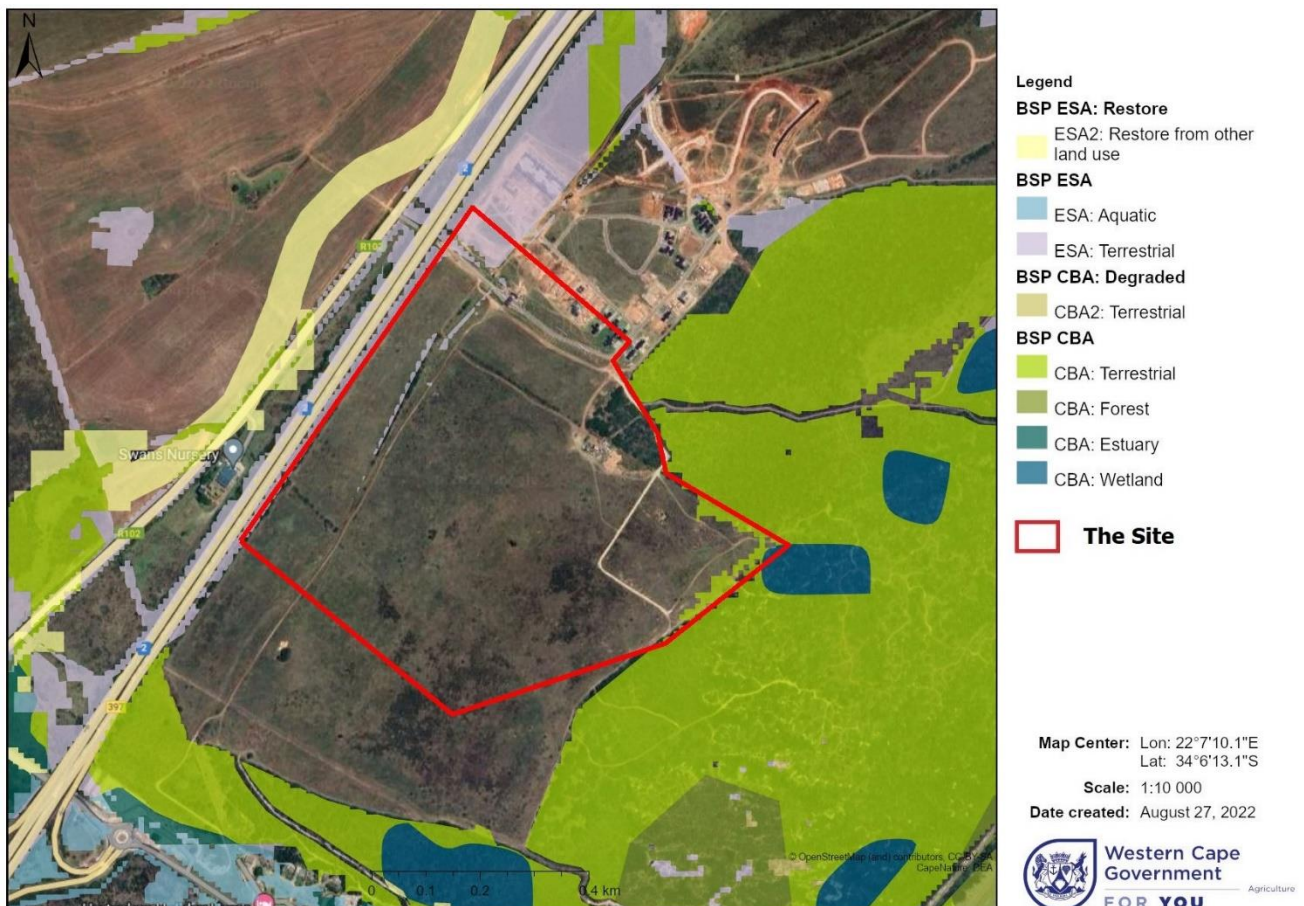
**Figure 4-2: Extract of the 2018 SA Vegetation map.**

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 resort 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). In the distant past, fynbos may have been the dominant element, but has subsequently been 'invaded' by thicket due to the exclusion of fire when farming and coastal developments have started to fragment the landscape.

Canca Limestone Fynbos stretches across the Southern Cape lowlands from Witsand (Cape Infanta) in the west to the Mossel Bay area in the east (Mucina, 2006). Like all fynbos types, limestone fynbos is maintained by a regular fire regime. Mossel Bay Shale Renosterveld, which is unlikely to have occurred on site, occurs on the coastal plains (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.

Being well represented in the larger area (>80% still left), Hartenbos Dune Thicket and Canca Limestone Fynbos are currently not considered to be threatened (Skowno, 2019). However, due to their poor conservation status their protection in the coastal areas should remain a priority. Agricultural activities, alien plant infestation and coastal developments remain major threats for certain species restricted to Canca Limestone Fynbos. Less than 1% is formally conserved in the Pauline Bohnen and Geelkrans Nature Reserves (Mucina, 2006).

Mossel Bay Shale Renosterveld is the most threatened vegetation type found in the area and is currently listed as Endangered in the National List of Threatened Ecosystems (DEA, 2011). In CapeNature's 2016 threat status assessment this status was reaffirmed (Pool-Stanvliet, 2017), but interestingly elevated to Critically Endangered in the 2018 National Biodiversity Assessment Report (Skowno, 2019). About 40% of Mossel Bay Shale Renosterveld is still left, while 0% is currently protected (Skowno, 2019). A large percentage of it has been transformed in the past for pastures and croplands (Mucina, 2006).



**Figure 4-3: Extract of the Western Cape biodiversity network map.**

The site marginally encroaches onto the Western Cape biodiversity network (**Figure 4-3**). A terrestrial ecological support area (ESA) spills over the northern corner, while the eastern corner is encroached by both terrestrial and aquatic critical biodiversity areas (CBA's). The latter extends eastwards and coincides with intact dune thicket. It also forms part of

an extensive coastal CBA link between the Hartenbos River and Klein Brak River estuaries. There is also a degraded ecological support area (ESA2) ribbon on the western side of the bypassing N2 and R102 that is aligned with a non-perennial watercourse. There are no formally protected areas within a 20 km radius of the site, only a few private game reserves. Reasons for the importance of the above-mentioned ESA's and CBA's include the presence of a SA vegetation type (Canca Limestone Fynbos), a threatened vegetation type (Groot Brak Dune Strandveld), threatened vertebrate habitat (bontebok) and a wetland type.

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 site has been largely transformed by past agricultural activities and comprises a grassland (fallow land) covered by grasses, weeds and a few scattered shrubs and trees (**Figures 5-1 & 5-2**). However, there is a significant tract of dune thicket on the north-eastern side extending across a farm road towards an extensive area of thicket to the east (**Figures 5-3 & 5-4**). There are also a few thicket ribbons inside the site, probably remnants from past farming activities. These ribbons may contribute to the amenity value of the site but are probably of little ecological value due to its reduced (linear) habitat. They do however suggest that the dune thicket may have been more extensive on the site than shown on the vegetation map. The thicket on the north-eastern and eastern side of the site is of good quality and considered to be of high conservation value. It is also a climax community, probably the result a long period of fire exclusion. Only a few woody aliens were noted. Disturbances noted include the presence of farm roads, a contractor's yard and stockpiling/dumping in a few places.



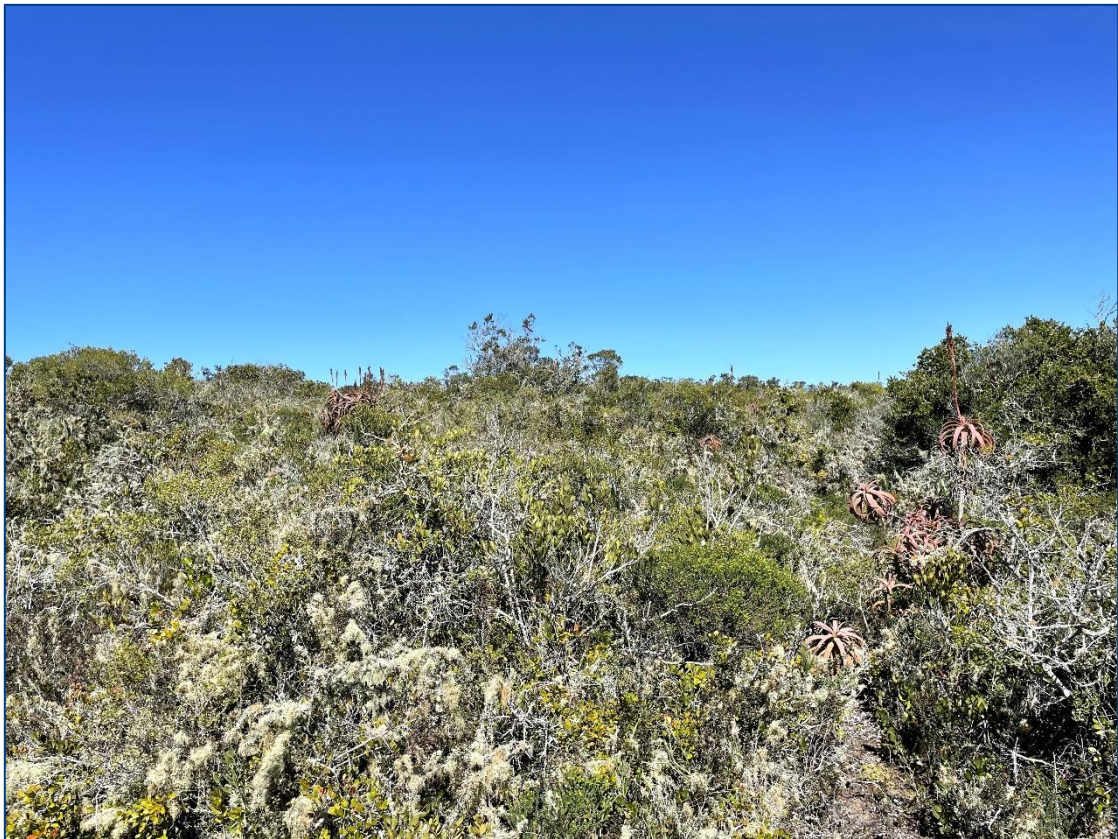
**Figure 5-1: View across the grassy eastern corner of site with dune thicket in the background.**



**Figure 5-2: Disturbed northern part of the site, with a few gum trees and some stockpiling/spoiling.**



**Figure 5-3: Good quality dune thicket on the north-eastern side of site. The farm road demarcates edge of the study area.**



**Figure 5-4: inside good quality dune thicket east of the site.**

Using Campbell's classification of structural forms in the Fynbos Biome (Campbell, 1981), the dune thicket can be described as a tall closed large-leaved shrubland (**Figure 5-**). Apart from the thicket, the site is significantly degraded or transformed, with the chance of rehabilitation slim. **Figure 5-5** shows the botanical attributes of the site, with the open spaces overlaid. The dune thicket on the north-eastern side is included in OS5.



**Figure 5-5: Botanical attributes of the site.**

### Plant species

Indigenous shrub species recorded inside the fallow land include *Felicia muricata*, *Helichrysum foetidum*, *Osteospermum moniliferum*, *Leysera gnaphalodes*, *Gnidia squarrosa*, *Drosanthemum intermedium*, *Delosperma litorale*, *Carpobrotus edulis*, *C. deliciosus* (or *C. deliciosus* x *edulis*), *Mesembryanthemum aitonis*, *Aizoon secunda* (dominant), *Euphorbia burmannii*, *Clusia daphnoides*, *Crassula multicava*, *C. expansa*, *Cotyledon orbiculata*, *Aloe ferox*, *Lycium cinereum*, *Searsia glauca*, *Sideroxylon inerme*, *Carissa bispinosa*, *Pelargonium capitatum*, *Anthospermum galioides*, *Exomis microphylla* and *Selago corymbosa*. The *Carpobrotus* species are excellent soil binders and should be salvaged for rehabilitation purposes. Geophytes recorded include *Oxalis pes-caprae*, *Drimys capensis*, *Bulbine lagopus*, *Brunsvigia orientalis* and *Moraea polyanthos*. The taller shrubs and trees, such as *Sideroxylon inerme*, *Carissa bispinosa* and *Searsia glauca*, are typically associated with dune thicket. *Sideroxylon inerme* (milkwood) is a protected tree species and a permit is required for its removal. **Figure 5-6** shows a few of the indigenous species recorded.

Indigenous species recorded in the dune thicket include *Schotia afra*, *Sideroxylon inerme*,

*Pterocelastrus tricuspidatus*, *Mystroxylon aethiopicum*, *Gymnosporia buxifolia*, *Putterlickia pyracantha*, *Searsia glauca*, *S. pterota*, *Azima tetracantha*, *Diospyros dichrophylla*, *Phylica axillaris*, *Colpoön compressum*, *Hermannia holosericea*, *Agathosma apiculata*, *Aloe arborescens*, *Jordaaniella dubia*, *Crassula muscosa*, *Cussonia thyrsiflora*, *Pelargonium peltatum*, *Rhoicissus digitata* and *Commelina africana*. *Thamnochortus insignis* is the only restioid recorded inside the thicket.



**Figure 5-6: A few indigenous species recorded on site, with *Drimia capensis* (top left), *Gnidia squarrosa* (top right), *Drosanthemum intermedium* (middle left), *Jordaaniella dubia* (middle right), *Sideroxylon inerme* (bottom left) and *Carpobrotus deliciosus* (bottom right).**

All the recorded species are widespread and fairly common. Due to the time of the survey, spring flowering bulbs, especially members of the Iridaceae and Orchidaceae families, were not picked up. These will show themselves later in the spring season. Floristic association with dune thicket (Hartenbos Dune Thicket in this case) is strong with most of the recorded species regarded as important taxa in the unit. No SCC or regional endemics were recorded.

Only a few woody and succulent exotic species were recorded, namely *Acacia cyclops* (rooikrans, category 1b), *Eucalyptus* sp (gum, 1b) and *Opuntia robusta* (blue-leaf cactus, 1a). As indicated above, all three species are Category 1a and 1b invaders. In terms of the National Environmental Management: Biodiversity Act (NEMBA) (Act 10 of 2004) Alien and Invasive Species List (2016), category 1a and 1b invasive species require compulsory control as part of an invasive species control programme.

## 6. Potential Impacts

### Terrestrial biodiversity (vegetation)

Due to the transformed state of the site, the impact posed by the adjustment of the open spaces on biodiversity is not regarded as significant. The adjustment will actually result in a 3172 m<sup>2</sup> gain in open space, but this will not result in a positive impact, nor be detrimental. In other words, there will not be a gain or loss of natural vegetation. With regards to mitigation during development, efforts should rather be directed to the protection of the remaining dune thicket, especially during the construction phase. With regards to the biodiversity network, only a small loss of mapped terrestrial CBA is anticipated in the eastern corner of the site where the open space is trimmed back. This is a minor concern and will not impact on the functionality of the network.

An effort must be made to keep the dune thicket area clear of invasive aliens, such as rooikrans and *Opuntia* species. The former adds 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 and protected species, is also expected to be of little significance or concern at this point in time. All the recorded species are common and widespread. 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. A few milkwoods, which is a protected tree species, are scattered around the site. Several more

are expected in the mapped thicket ribbons in the northern part of the site. If they cannot be accommodated in the development, a permit will be needed for their removal.

The probability of SCC listed in the Screening Report to occur in the vicinity of the site is indicated in **Table 6-1**. Given their habitat preferences, eight species have a medium or higher probability to occur on the property. Those with a lesser probability to occur here have not been recorded in Mossel Bay or were recorded in different habitats or vegetation types.

**Table 6-1: Threatened plant species as listed in the Screening Report.**

| Sensitivity | Feature(s)                                        | Habitat & probability of presence                                                |
|-------------|---------------------------------------------------|----------------------------------------------------------------------------------|
| Medium      | <i>Lampranthus diutinus</i>                       | Limestone fynbos; Low                                                            |
| Medium      | <i>Lampranthus fergusoniae</i>                    | Limestone dunes; Low                                                             |
| Medium      | <i>Lampranthus pauciflorus</i>                    | Rocky coastal slopes; Low                                                        |
| Medium      | <i>Ruschia leptocalyx</i>                         | Gouritz Valley Thicket; Low                                                      |
| Medium      | <i>Argyrolobium harmsianum</i>                    | Dune and limestone fynbos; Low                                                   |
| Medium      | <i>Lebeckia gracilis</i>                          | Coastal sandy flats; Low-medium                                                  |
| Medium      | <i>Leucadendron galpinii</i>                      | Sandy coastal flats; Low                                                         |
| Medium      | <i>Leucospermum praecox</i>                       | Sandy coastal flats; Low                                                         |
| Medium      | <i>Wahlenbergia polyantha</i>                     | Coastal sands; Low-medium                                                        |
| Medium      | <i>Selago ramosissima</i>                         | Clay flats; iNat record from dune thicket south of the site                      |
| Medium      | <i>Selago villicaulis</i>                         | Limestone and sandy slopes; Medium                                               |
| Medium      | <i>Freesia fergusoniae</i>                        | Renosterveld; Low                                                                |
| Medium      | <i>Erica unicolor</i> ssp. <i>mutica</i>          | Hills and middle slopes; Low                                                     |
| Medium      | <i>Hermannia lavandulifolia</i>                   | Coastal flats; Medium                                                            |
| Medium      | Sensitive species 153                             | Sandstone flats; Low-medium                                                      |
| Medium      | Sensitive species 633                             | Renosterveld; Low                                                                |
| Medium      | Sensitive species 268                             | Gouritz Valley Thicket, rocky slopes; Low                                        |
| Medium      | <i>Thamnochortus muirii</i>                       | Coastal sands often with limestone; Low                                          |
| Medium      | <i>Marsilea schelpeana</i>                        | Wetland species; Low                                                             |
| Medium      | <i>Duvalia immaculata</i>                         | Dry coastal ecotone vegetation; Low-medium                                       |
| Medium      | Sensitive species 1024                            | Dry to moist stony slopes; Low                                                   |
| Medium      | <i>Oedera</i> (= <i>Relhaia</i> ) <i>garnotii</i> | Renosterveld; Low                                                                |
| Medium      | <i>Agathosma eriantha</i>                         | Coastal limestone hills; Medium                                                  |
| Medium      | <i>Agathosma muirii</i>                           | Coastal hills; Medium                                                            |
| Medium      | <i>Euchaetis albertiniana</i>                     | Coastal sands and limestone; iNat record from dune thicket northeast of the site |
| Medium      | <i>Muraltia knysnaensis</i>                       | Dry flats and hills; Medium                                                      |
| Medium      | <i>Polygala pubiflora</i>                         | Renosterveld and sandstone fynbos; Low                                           |

| Sensitivity | Feature(s)                  | Habitat & probability of presence     |
|-------------|-----------------------------|---------------------------------------|
| Medium      | Sensitive species 980       | Renosterveld at Gondwana; Low         |
| Medium      | <i>Nanobubon hypogaeum</i>  | Sandy coastal fynbos; Low-medium      |
| Medium      | Sensitive species 516       | Renosterveld; Low                     |
| Medium      | <i>Drosanthemum lavisii</i> | Renosterveld; Low                     |
| Medium      | Sensitive species 800       | Alkaline sands and limestone; Medium  |
| Medium      | Sensitive species 500       | Recent sand; Low-medium               |
| Medium      | Sensitive species 654       | Coastal sand flats; Low-medium        |
| Medium      | Sensitive species 763       | Coastal renosterveld and fynbos; Low  |
| Medium      | <i>Diosma passerinoides</i> | Silcrete slopes; Low                  |
| Medium      | <i>Agathosma microcarpa</i> | Renosterveld, lower shale slopes; Low |

The identified construction and operational phase impacts are as follows:

#### Construction Phase

- No direct impact on dune thicket is expected. The dune thicket on eastern side of the site must be actively protected during the construction phase.
- Potential loss of milkwood trees. Potentially some of them can be accommodated in the development.

#### Operational phase

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

The **cumulative botanical impact** of the proposed amendment is expected to be equivalent to the impact on terrestrial biodiversity described above, i.e. no significant loss of biodiversity or species.

## 7. Recommended Mitigation Measures

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

- Do not use the proposed open spaces for construction purposes, such as parking, stockpiling, contractor's yard, etc.
- The contractor(s) must not be allowed into the dune thicket areas, which must be demarcated as a 'no-go' area.
- During the staking out of development footprints or open spaces take cognisance of the presence of milkwood trees. Try and avoid these as far as practically possible. A permit is required for the removal of milkwoods in terms of the National Forests Act.

- As a duty of care measure, indigenous bulb species and *Carpobrotus* species (sour fig) can be searched and rescued to be replanted in the open spaces or where there is a need for rehabilitation. *Carpobrotus* species are 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 *Opuntia robusta* (blue-leaf cactus) from the site. In terms of the NEMBA (Act 10 of 2004) Alien and Invasive Species List (2016), category 1a and 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 23 August 2022, 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 a portion of Farm Vaale Valley 219, Mossel Bay, in order to densify housing.

Due to the highly 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 few ribbons of thicket and couple of milkwood trees will be affected, but not more than for the approved layout.

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

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