

# BIODIVERSITY ASSESSMENT: PROPOSED STORAGE FACILITY ON ERF 21275, MOSSEL BAY

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October 2021



*Protea lanceolata*



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Declaration of independence

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### APPENDIX

BRIEF CV OF SPECIALIST

## 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 Environmental Consultants

Date:

17 October 2021

## 1 INTRODUCTION

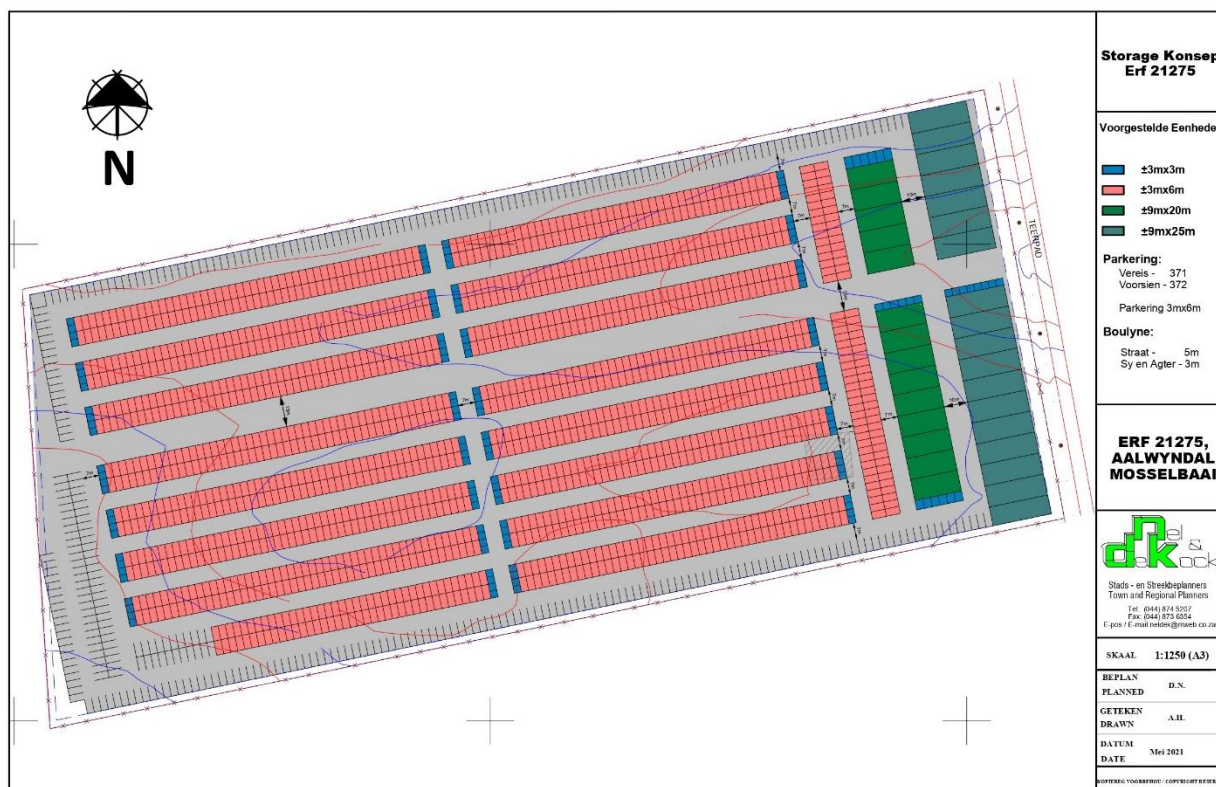
This report investigates the biodiversity aspects of Erf 21275 in Aalwyndal, a small-holding area northwest of Mossel Bay nearby the Mossel Bay airfield (see Map 1). The site (7.75 ha) comprises a storage/industrial shed, a small cultivated area next to the shed and fynbos. The latter has been degraded in places by bush-cutting and invasive aliens. The property is currently only used for minor industrial/storage purposes and cultivation/planting. The aim of the study, which was requested by Sharples Environmental Services (EAP), is to determine the status of vegetation found on site and its biodiversity value and potential impact imposed by the proposed storage facility. The site is earmarked for a self-storage development. According to the 2018 SA Vegetation Map, the site is located inside North Langeberg Sandstone Fynbos.



**Map 1** Satellite photo showing the location of the site (outlined in red) northwest of Mossel Bay.

## 2 DESCRIPTION OF THE PROPOSED PROJECT

The applicant wishes to develop a self-storage facility on the property. The area (7.75 ha) indicated for the storage facility covers the entire site (see Map 2). According to the concept layout, four size categories are proposed for the storage units, with the 3x6 m units being the predominant size. Provision is also made for access and parking. No layout alternatives are presented.



**Map 2** Concept layout map.

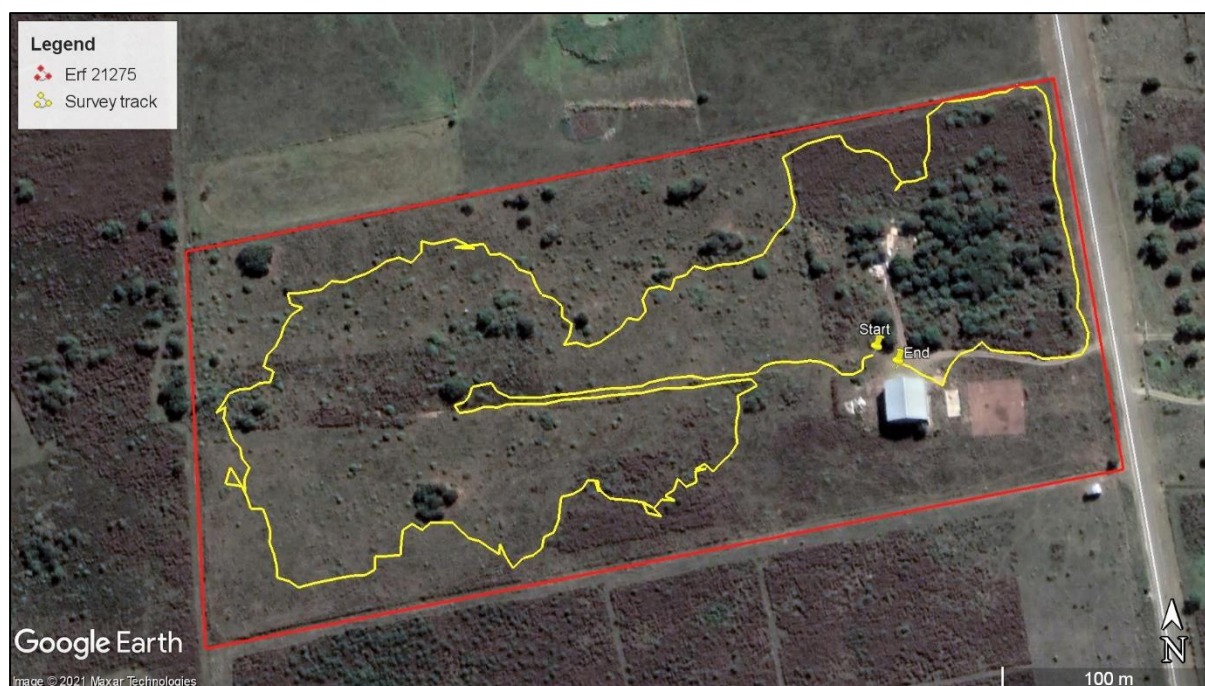
### 3 TERMS OF REFERENCE

- 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, protected species, presence of alien 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 for biodiversity assessments.

### 4 METHODOLOGY

A botanical survey of the site was undertaken on 3 June 2021 by Mark Berry (see CV attached). A few follow-up surveys were also undertaken by the author and a local CREW member to try and establish the identity of late flowering orchid (*Satyrion* sp). A qualitative

assessment of the type and condition of affected vegetation on site, disturbance and presence of alien species, Species of Conservation Concern (SCC) and protected species was carried out. The survey track is shown on Map 3. 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 are highlighted. The assessment follows the relevant national guidelines for biodiversity assessments as listed in the Government Gazette No. 43110 on 20 March 2020.



**Map 3** Satellite photo of 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. The species diversity. This refers to the numbers of different indigenous plant species occurring on site. Indigenous fauna observed was also noted.
3. SCC, endemics, as well as protected tree species occurring on site. This would include rare, vulnerable, endangered or critically endangered species.
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 this vegetation type is vulnerable, endangered or critically endangered.

## **5 LIMITATIONS TO THE STUDY**

Fieldwork was carried out early in the winter season, as well as during the spring season, flowering plants that only flower at othertimes of the year (e.g. summer to autumn), such as certain bulbs (Iridaceae and Amaryllidaceae), may have been missed. The overall confidence in the completeness and accuracy of the botanical findings is therefore considered to be good.

## **6 LOCALITY & SITE DESCRIPTION**

### **General location, topography and land use**

The site (7.75 ha) is located on an elevated coastal platform northwest of Mossel Bay (see Map 2). The terrain, situated at about 165 m above sea level, is flat. The property is currently only used for minor industrial/storage purposes and small-scale cultivation (see Photo 1). A large part of it is lying vacant and covered with fynbos. The surrounding land uses appear to be of a similar nature, i.e. smallholdings some of which are used for paddocks and others used exclusively for residential purposes and covered with fynbos. The Mossel Bay Airfield is located on the south-western side of site.

### **Climate**

The mean annual rainfall for the property, which is located in the Garden Route, is 475 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 driest periods are the winter and summer months, 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 25.2°C and 8.7°C for January/February and July/August, respectively (as per Cape Farm Mapper data). The Köppen-Geiger climate classification for the Mossel Bay area is BSk (arid, steppe).

### **Geology**

According to the 3422 AA Mossel Bay 1:50 000 geological map, the site is underlain by Table Mountain Group sandstone (Skurweberg Formation), which comprises light-grey quartzitic sandstone with subordinate shale and pebble layers (see Photo 2). It is described as a marine planed surface located between 150 and 180 m above sea level at Vyf-Brakke Fontein (Viljoen & Malan 1993). It is well exposed along the coast west of Cape St Blaize.



**Photo 1** Industrial shed and mowed area in the south-eastern corner of site.



**Photo 2** Sandstone (Skurweberg Formation) outcrop in the western part of site.



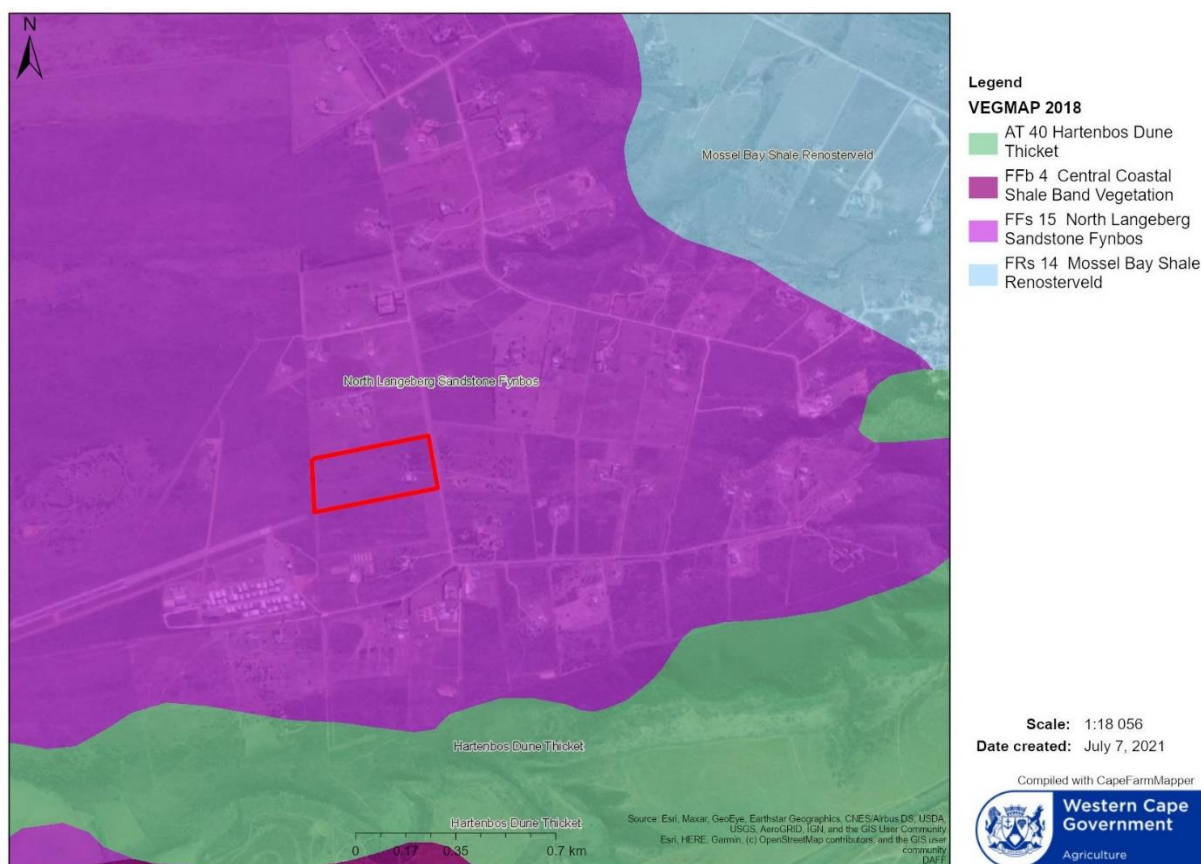
## 7 BIOGEOGRAPHICAL CONTEXT

Being located on the Southern Cape coastal plain, the site occurs in a typical coastal fynbos environment. This is confirmed by the presence of fynbos species, such as *Protea lanceolata*, *Erica versicolor*, *E. peltata* and *Restio albotuberculatus* (see Photo 3). These species are also common on other nearby sites surveyed by the author and others (see Photo 3). According to the SA Vegetation Map, the vegetation occurring on site and the surrounding area has been mapped as North Langeberg Sandstone Fynbos (see Map 4).



**Photo 3** North-eastern corner of site covered by *Erica peltata*.

North Langeberg Sandstone Fynbos is associated with the northern slopes of the Langeberg, as well as the Aasvoëlberg hills from Albertinia to Mossel Bay (Mucina & Rutherford 2006). It is puzzling why this fynbos is included under North Langeberg Sandstone Fynbos since it is completely isolated from the latter and do not share any (many) geographically important species. The presence of species, such as *Aloe ferox*, *Diospyros dichrophylla*, *Elytropappus rhinocerotis*, *Metalasia pungens* and *Lauridia tetragona*, indicates an influence of nearby Gouritz Valley Thicket and Mossel Bay Shale Renosterveld. Significant elements of the latter were observed by the author in the area, which have been erroneously mapped as Hartenbos Dune Thicket on the SA Vegetation Map (see Map 4).



**Map 4** Extract of the 2018 SA Vegetation Map, showing the position of the site (outlined in red) inside North Langeberg Sandstone Fynbos.

## 8 VEGETATION & FLORA

While the vegetation found on site can be described as sandstone fynbos, it also shows an affinity with Gouritz Valley Thicket and Mossel Bay Shale Renosterveld, with the presence of important valley thicket and renosterveld species such as *Aloe ferox*, *Diospyros dichrophylla*, *Elytropappus rhinocerotis*, *Metalasia pungens* and *Lauridia tetragona*. Typical fynbos species, such as *Protea lanceolata*, *Erica peltata* and *Restio albotuberculatus*, are however prominent. It comprises a prominent shrub layer (<1 m tall), with a few emerging shrub/tree species, such as *Protea lanceolata* and *Acacia cyclops* (rooikrans). Structurally, it can be described as a low closed ericoid shrubland following Campbell's (1981) classification. Height of the vegetation is considerably lower in the mowed areas.

Disturbances noted on site include mowing activities, small-scale cultivation and alien infestation, notably *Acacia cyclops* (see Map 5 and Photos 4-6). The severest disturbances were noted in the eastern part of the site around the shed. However, due to the good quality of the remaining fynbos and high diversity of indigenous species encountered it should revert

back to the original vegetation if further disturbance is ceased. Map 6 shows the botanical attributes of the site.



**Map 5** Historical aerial photograph showing the effect of mowing in March 2017, not considered a significant impact.



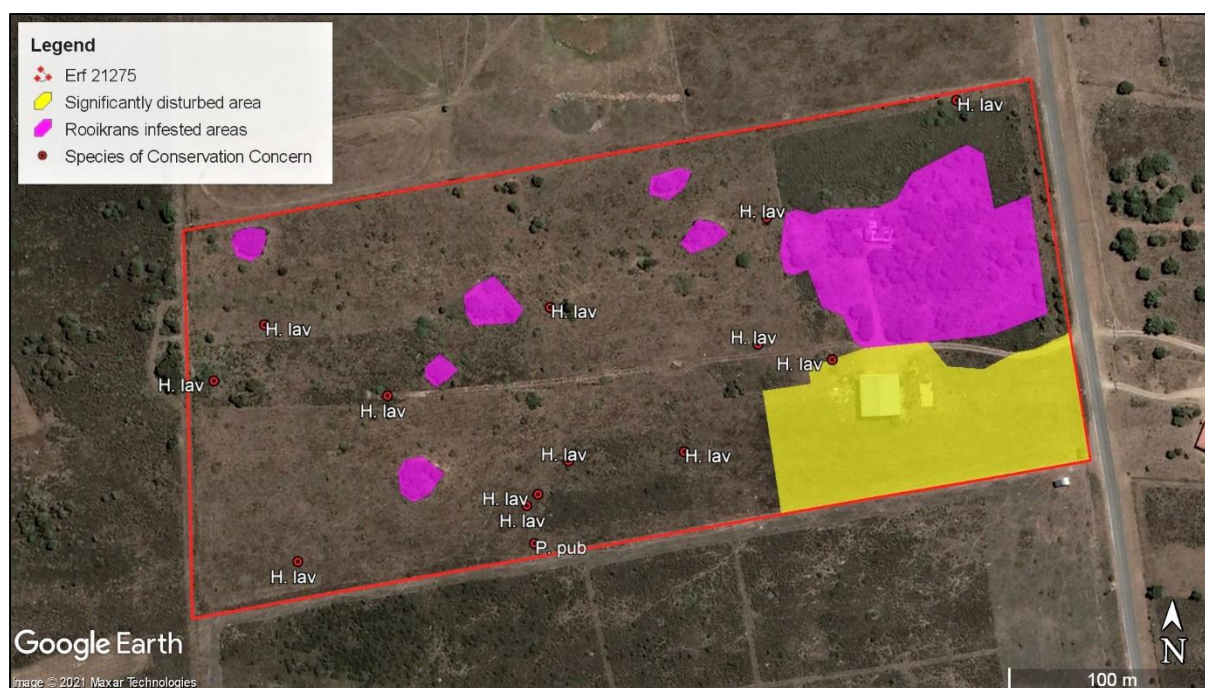
**Photo 4** View across a previously mowed part of the site.



**Photo 5** Rooikrans (*Acacia cyclops*) infested eastern part of the site.



**Photo 6** Cultivated area in the eastern part of the site.



**Map 6** Aerial photograph showing the biodiversity attributes of the site. The untuned area is considered to be good quality fynbos.

Indigenous shrub species recorded include *Erica discolor* (4-nate, suggesting an *E. versicolor* x *discolor* hybrid), *E. versicolor*, *E. peltata* (dominant), *Protea lanceolata*, *Osteospermum moniliferum*, *Helichrysum anomalum*, *H. patulum*, *Oedera imbricata*, *O. pungens*, *Metalasia acuta*, *M. pungens*, *Athanasia quinquedentata*, *Elytropappus rhinocerotis*, *Berkheya armata*, *Indigofera nigromontana*, *Searsia lucida*, *S. pallens*, *Searsia incisa* var. *effusa*, *S. laevigata*, *Carpobrotus edulis*, *C. acinaciformis*, *Lampranthus elegans*, *Drosanthemum parvifolium*, *Delosperma neethlingiae*, *Acrodon bellidiflorus*, *Crassula ericoides*, *C. nudicaulis* var. *nudicaulis*, *Aloe ferox*, *Adromischus caryophyllaceus*, *Gnidia nodiflora*, *Gnidia* sp, *Asparagus suaveolens*, *A. multiflorum*, *Hermannia salviifolia*, *H. lavandulifolia* (dominant in places), *H. flammea*, *Muraltia ericifolia* (dominant), *Polygala pubiflora*, *Pelargonium candicans*, *Lobelia tomentosa*, *Jamesbrittenia microphylla*, *Selago nigrescens*, *S. corymbosa*, *Grewia occidentalis*, *Carissa bispinosa*, *Diospyros dichrophylla*, *Euclea crispa* and *Lauridia tetragona* (see Photo 7). Hemicryptophytes and bulbs recorded include *Restio albotuberculatus*, *Cyanotis speciosa*, *Crossyne guttata*, *Haemanthus sanguineus*, *Bobartia robusta*, *Freesia* sp, *Satyrrium membranaceum*, *Oxalis ciliaris*, *Massonia setulosa*, *Ledebouria revoluta* and *Drimia capensis* (common on site).

At least two Species of Conservation Concern (SCC) were recorded on site, namely *Hermannia lavandulifolia* (Vul) and *Polygala pubiflora* (Vul) (see Map 6). The latter was recorded by others and it is very difficult to spot when not in flower. There is a fair to good

chance that others, such as *Ruellia pilosa* (Vul) and *Haworthia pygmaea* var. *argenteo-maculosa*, may also occur on site. These species were recorded by the author and others in the vicinity. According to the online Red List of South African Plants, they are all under threat from crop cultivation, coastal developments and alien infestation. *Hermannia lavandulifolia* is still well represented in the Mossel Bay area and is frequently encountered. It is abundant on site. *Polygala pubiflora* is also regularly encountered in the larger Mossel Bay area, but mainly in renosterveld. In this regard, the site has been mapped as medium sensitive.



**Photo 7** A few indigenous species recorded on site, with *Murraltia ericifolia* (top left), *Hermannia lavandulifolia* (top right), *Aloe ferox* (bottom left) and *Erica versicolor* (bottom right).

In the NEMA Screening Report, prepared by Sharples Environmental Services on 8 April 2021, the following species are listed as sensitive species that may also occur on site:

Sensitivity	Feature(s)
Medium	Sensitive Species 1024 [REDACTED]
Medium	Sensitive Species 654 [REDACTED]

It is unlikely that any of these species occur on site. [REDACTED] has been recorded in renosterveld in the Gondwana Game Reserve, east of Herbertsdale. It is a regional endemic

and listed as Endangered. According to the online Red List, it has “become very rare or extinct throughout much of its former distribution. Much of its known habitat is now replaced with urban expansion, agriculture and forestry”. [REDACTED] on the other hand, is listed as Vulnerable. “Its rapid decline along the Cape coast is due to urban and coastal development and alien plant invasion”. As far as the author knows, there are no confirmed records of these species from the Aalwyndal area.

Only a few invasive species were recorded on site, namely *Acacia cyclops* (rooikrans) and *A. mearnsii* (black wattle). A dense stand of the former was observed in the eastern part of the site, nearby the shed, and a few smaller clumps in the western part. In terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) Alien and Invasive Species List (2016), the harbouring of black wattle (Category 2 invader) on a property is prohibited without a permit.

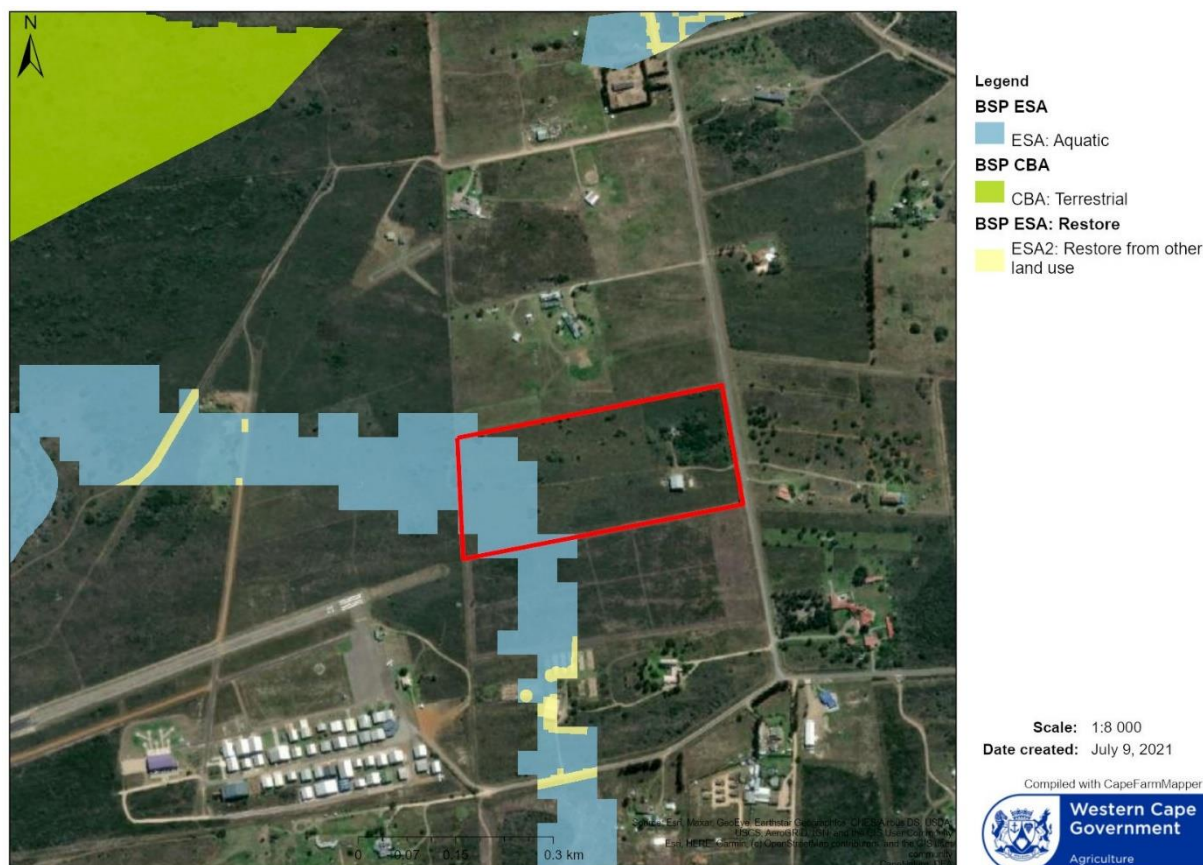
## **9 CONSERVATION STATUS, THREATS & BIODIVERSITY NETWORK**

Being well represented in the larger area, North Langeberg Sandstone Fynbos is not currently listed as a threatened vegetation type (DEA 2011). About 92% of it remains, while 13% is formally conserved in the Boosmansbos Wilderness Area and an additional 45% in mountain catchment areas (Mucina & Rutherford 2006). This rating is reaffirmed in the 2018 National Biodiversity Assessment (Skowno *et al.* 2019). However, as discussed above under Biogeographical Context, this coastal fragment of the above vegetation type deserves its own unit name and is likely more threatened than stated above, especially in the Mossel Bay area where it is considerably more transformed.

The site’s western end forms part of the Mossel Bay CBA network (see Map 7). It protrudes into an aquatic ecological support area (ESA), which connects a series of depression wetlands located to the west with an east-west running watercourse to the south of the site (between the Mossel Bay Airfield and N2). It seems to be artificially routed around the eastern end of the airfield through the site. There is no evidence of any wetlands or watercourses on the site itself, which questions the mapped status of the ESA.

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 *et al.* 2017). These sites are selected for meeting national targets for species, habitats and ecological processes (Pool-Stanvliet *et al.* 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. With the site protruding into a seemingly artificially mapped aquatic ESA, one can expect a low to medium impact on the network. The proposed development does not pose a direct impact on any mapped CBA's.



**Map 7** Extract of the Western Cape biodiversity network map, with the site outlined in red and protruding into an aquatic ESA (blue).

## 10 IMPACT ASSESSMENT

The development proposal as currently presented will result in the entire site being developed, with no option for conserving a part of it. This implies that about 5.8 ha of good quality fynbos will be cleared. Mitigation in such an instance will be impossible to achieve unless some of the plant material, e.g. bulbs, succulents and topsoil containing fynbos seeds, can be salvaged and reintroduced elsewhere in the area where it can aid rehabilitation and conservation efforts. The surrounding fynbos, especially on the western and southern sides of the property, seems to be in a good condition. The vegetation on the properties to the north and east is more disturbed by clearing and mowing activities.



North Langeberg Sandstone Fynbos is seemingly well represented and protected in the region. However, if this fragment, located between Albertinia and Mossel Bay, is allocated as a new fynbos type, its conservation status may be less favourable. As it currently stands, the perceived impact on vegetation type is of low to moderate concern. It is difficult to propose a buffer or an area on site that could be set aside for conservation if one does not know what the future holds for the surrounding area. There is currently an initiative to densify the Aalwyndal area for much needed housing and industrial purposes.

Given the above, the impact on the biodiversity (CBA) network is also of concern, but is probably of the same order as for the vegetation type. The mapped aquatic ESA through the western end of the site seems artificial as no visible watercourse or wetland features were noted here. The author feels that a proper east-west biodiversity corridor should rather be planned for and conserved between Mossdustria and the coast through Aalwyndal. This site will not necessarily fall inside such a corridor, which will be beneficial for both future development initiatives in the area and conservation. Significant tracts of fynbos occur westwards towards Mossdustria. The impact on biodiversity is summarized in Table 1 below, which compares the impact of the preferred alternative against the no-go alternative.

**Table 1** Impact of construction activities on vegetation type, the biodiversity network and SCC (vegetation clearing, erosion of the CBA network, loss of SCC, etc).

Mitigation	Spatial extent	Duration	Intensity	Probability of occurrence	Significance – preferred alternative	Significance – no-go alternative	Confidence
<b>Without mitigation</b>	Entire site	Perm	Med-high	High	Med (-)	Low (-)	Med
<b>With mitigation</b>	Entire site	Perm	Med-high	High	Low-med (-)	Low (-)	Med
<p><b>Mitigation measures:</b></p> <ul style="list-style-type: none"> <li>• If the entire site is to be developed, consideration should be given to the salvage of plant material (e.g. bulbs, succulents and topsoil containing fynbos seeds), to be reintroduced elsewhere in the area where it can aid rehabilitation and conservation efforts.</li> <li>• Strict control must be exercised to avoid the harming/catching of wildlife in the area during the construction phase. Tortoises (noted on site by the author) should be rescued and relocated to a safe haven elsewhere in the Aalwyndal area.</li> </ul>							

The impact on Species of Conservation Concern (SCC) will be of the same order as for vegetation and the CBA network. At least two SCC will be directly impacted, namely

*Hermannia lavandulifolia* (Vul) and *Polygala pubiflora* (Vul). Both are still frequently encountered by the author and others in the Mossel Bay area. There is a fair to good chance that others, such as *Ruellia pilosa* (Vul) and *Haworthia pygmaea* var. *argenteo-maculosa*, will also be affected. These species cannot be easily searched and rescued as a form a mitigation.

With regards to the no-go alternative, the property is currently used for small-scale industrial and farming purposes. Sheep is also being kept on the property, which graze on the fynbos, while a small area has been cultivated. These practices will probably continue if the development is not authorised.

## 11 SUMMARY & RECOMMENDATIONS

The development proposal as currently presented will result in the entire site being developed, with no option for conserving any part of it. This implies that about 5.8 ha of good quality fynbos (i.e. North Langeberg Sandstone Fynbos) will be cleared. Mitigation in such an instance will be impossible to achieve unless some of the plant material, e.g. bulbs, succulents and topsoil containing fynbos seeds, can be salvaged and reintroduced elsewhere in the area where it can aid rehabilitation and conservation efforts.

North Langeberg Sandstone Fynbos is not listed as a threatened vegetation type. It is seemingly well represented and protected in the region. However, if the fragment, located between Albertinia and Mossel Bay, is allocated to a new fynbos type, its conservation status may be less favourable. As it currently stands, the perceived impact on vegetation type is of low to moderate concern. The impact on the biodiversity (CBA) network is also of concern, but is probably of the same order as for the vegetation type. The mapped aquatic ESA through the western end of the site seems artificial as no visible watercourse or wetland features were noted on site.

At least two SCC will be directly impacted, namely *Hermannia lavandulifolia* (Vul) and *Polygala pubiflora* (Vul). Both are still frequently encountered by the author and others in the Mossel Bay area. There is a fair to good chance that a few more SCC may occur on site, but not any of the sensitive species listed in the Screening Report.

From a biodiversity perspective, it is difficult to recommend the development of the entire site as it will support the continued erosion of Aalwyndal's biodiversity. The setting aside of a portion of the site for conservation is also difficult as one does not know what the future holds for the adjacent areas. Strategic planning in this regard is a priority for the Aalwyndal area and

must be pursued. Please consider the following recommendations/mitigation measures with regards to the proposed development and way forward:

- If the entire site is to be developed, consideration should be given to the salvage of plant material (e.g. bulbs, succulents and topsoil containing fynbos seeds), to be reintroduced elsewhere in the Aalwyndal area where it can aid rehabilitation and conservation efforts. Obviously this can only be achieved if a suitable (similar) receiving area can be found in the area. The summer months should be avoided for search and rescue efforts.
- Strict control must be exercised to avoid the harming/catching of wildlife in the area during the construction phase. Tortoises (noted on site by the author) should be rescued and relocated to a safe haven elsewhere in the Aalwyndal area.

## REFERENCES

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## APPENDIX

### Brief CV of specialist

**M.G. (Mark) BERRY**

**BIODIVERSITY SPECIALIST & ENVIRONMENTAL CONSULTANT**

**Address:** 14 Alvin Crescent, Somerset West, 7130, Western Cape

**Tel:** 083 286-9470 **Fax:** 086 759-1908 **E-mail:** [markberry@webafrica.org.za](mailto:markberry@webafrica.org.za)

### PROFESSIONAL STATEMENT

Environmental assessment professional and biodiversity specialist with over 20 years of experience mainly in the Western Cape Province, but also in the Northern Cape, Eastern Cape and Free State. Experience in Environmental Impact Assessments (EIA's), biodiversity assessments, Environmental Management Programmes (EMPr's), Environmental Control Officer (ECO) duties and environmental due diligence investigations.

### WORK EXPERIENCE

- 1989-1990** Served as a Nature Conservation Officer in the South African Air Force, based at Langebaan Road Air Force Base.
- 1997-2005** Employed as principal environmental specialist at Planning Partners, a multi-disciplinary consultancy specialising in town and regional planning, environmental planning and landscape architecture. Duties included the conducting of EIA's, compiling EMPr's, ECO duties, biodiversity surveys and status quo environmental assessments for spatial development frameworks.
- 2000-2006** Examiner for the Board of Control for Landscape Architects (BOCLA), responsible for the setting up and marking of the Environmental Planning Section of exam paper.
- 2005-current** Started Mark Berry Environmental Consultants in June 2005. Responsibilities include office management, seeking tenders, conducting EIA's, compiling EMPr's, construction site environmental audits, biodiversity surveys, etc. A relationship is maintained with previous employer, and, among other, undertook land-use surveys and reporting for the Eskom's site safety reports for three proposed nuclear power plants in the Western and Eastern Cape Provinces.

### QUALIFICATIONS

- BSc (1988) University of Stellenbosch
- BSc-Hons in Botany (1991) University of Stellenbosch
- MSc in Botany (1993) Nelson Mandela Metropolitan University
- PhD in Botany (2000) Nelson Mandela Metropolitan University.

### PROFESSIONAL MEMBERSHIP

Professional member (reg. no. 400073/98) of the South African Council for Natural Scientific Professions (SACNASP).

### REFERENCES

Dr John Manning (Compton Herbarium, Kirstenbosch)  
Phone: (021) 799-8660, e-mail: [J.Manning@sanbi.org.za](mailto:J.Manning@sanbi.org.za)

Warren Manuel (Environmental Manager at Mossel Bay Municipality)  
Phone: (044) 606-5163, e-mail: [wmanuel@mosselbay.gov.za](mailto:wmanuel@mosselbay.gov.za)

John Sharples (Sharples Environmental Services, George)  
Phone: (044) 873-4923, e-mail: [john@sesc.net](mailto:john@sesc.net)

Andrew Cleghorn (civil engineer and branch manager at Knight Piesold (Pty) Ltd)  
Phone: (021) 555-0400, e-mail: [acleghorn@knightpiesold.com](mailto:acleghorn@knightpiesold.com)

Prof Eileen Campbell (Department of Botany, Nelson Mandela Metropolitan University)  
Phone: (041) 504-2329, e-mail: [Eileen.Campbell@nmmu.ac.za](mailto:Eileen.Campbell@nmmu.ac.za)