

Terrestrial Biodiversity Compliance Statement

prepared in accordance with the
*"Protocol for the Specialist Assessment and minimum report content
requirements for environmental impacts on Terrestrial Biodiversity"*

Erf 7284, Dana Bay near Mossel Bay in the Western Cape Province



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Terrestrial Biodiversity Assessment Report for Erf 7284, Dana Bay near Mossel Bay in the Western Cape Province

15 June 2022

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SPECIALIST DETAILS & DECLARATION

This report has been prepared in accordance with the "Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity", as promulgated in terms of Section 24 (5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), published in GN. No. 320 dated 20 March 2020. It has been prepared independently of influence or prejudice by any parties.

The details of Specialists are as follows –

Table 1: Details of Specialist

Specialist	Qualification and accreditation
Dr David Hoare (Pr.Sci.Nat.)	<ul style="list-style-type: none">• PhD Botany• SACNASP Reg. no. 400221/05 (Ecology, Botany)

Declaration of independence:

David Hoare Consulting (Pty) Ltd in an independent consultant and hereby declare that it does not have any financial or other vested interest in the undertaking of the proposed activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998). In addition, remuneration for services provided by David Hoare Consulting (Pty) Ltd is not subjected to or based on approval of the proposed project by the relevant authorities responsible for authorising this proposed project.

Disclosure:

David Hoare Consulting (Pty) Ltd undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and will provide the competent authority with access to all information at its disposal regarding the application, whether such information is favourable to the applicant or not.

Based on information provided to David Hoare Consulting (Pty) Ltd by the client and in addition to information obtained during the course of this study, David Hoare Consulting (Pty) Ltd present the results and conclusion within the associated document to the best of the author's professional judgement and in accordance with best practise.



Dr David Hoare

15 June 2022
Date

TERMS OF REFERENCE

PROTOCOL FOR THE SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON TERRESTRIAL BIODIVERSITY

This report follows the requirements of The Environmental Impact Assessment Regulations, as promulgated in terms of Section 24 (5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), published in GN. No. 320 dated 20 March 2020.

General information

1.1. An applicant intending to undertake an activity identified in the scope of this protocol, on a site identified on the screening tool as being of "**very high sensitivity**" for terrestrial biodiversity, must submit a Terrestrial Biodiversity Specialist Assessment.

1.2. An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being "**low sensitivity**" for terrestrial biodiversity, must submit a Terrestrial Biodiversity Compliance Statement.

1.3. However, where the information gathered from the site sensitivity verification differs from the designation of "very high" terrestrial biodiversity sensitivity on the screening tool and it is found to be of a "low" sensitivity, then a Terrestrial Biodiversity Compliance Statement must be submitted.

1.4. Similarly, where the information gathered from the site sensitivity verification differs from that identified as having a "low" terrestrial biodiversity sensitivity on the screening tool, a Terrestrial Biodiversity Specialist Assessment must be conducted.

1.5. If any part of the proposed development footprint falls within an area of "very high" sensitivity, the assessment and reporting requirements prescribed for the "very high" sensitivity apply to the entire footprint, **excluding linear activities** for which impacts on terrestrial biodiversity are temporary and the land in the opinion of the terrestrial biodiversity specialist, based on the mitigation and remedial measures, can be returned to the current state within two years of the completion of the construction phase, in which case a compliance statement applies. Development footprint in the context of this protocol means the area on which the proposed development will take place and includes any area that will be disturbed.

Terrestrial Biodiversity Specialist Assessment

2.1. The assessment must be prepared by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP) with expertise in the field of terrestrial biodiversity.

2.2. The assessment must be undertaken on the preferred site and within the proposed development footprint.

2.3. The assessment must provide a baseline description of the site which includes, as a minimum, the following aspects:

2.3.1. a description of the ecological drivers or processes of the system and how the proposed development will impact these;

2.3.2. ecological functioning and ecological processes (e.g. fire, migration, pollination, etc.) that operate within the preferred site;

2.3.3. the ecological corridors that the proposed development would impede including migration and movement of flora and fauna;

2.3.4. the description of any significant terrestrial landscape features (including rare or important flora-faunal associations, presence of strategic water source areas (SWSAs) or freshwater ecosystem priority area (FEPA) sub catchments;

2.3.5. a description of terrestrial biodiversity and ecosystems on the preferred site, including:
(a) main vegetation types;
(b) threatened ecosystems, including listed ecosystems as well as locally important habitat types identified;
(c) ecological connectivity, habitat fragmentation, ecological processes and fine-scale habitats; and
(d) species, distribution, important habitats (e.g. feeding grounds, nesting sites, etc.) and movement patterns identified;

2.3.6. the assessment must identify any alternative development footprints within the preferred site which would be of a "low" sensitivity as identified by the screening tool and verified through the site sensitivity verification; and

2.3.7. the assessment must be based on the results of a site inspection undertaken on the preferred site and must identify:

2.3.7.1. terrestrial critical biodiversity areas (CBAs), including:
(a) the reasons why an area has been identified as a CBA;
(b) an indication of whether or not the proposed development is consistent with maintaining the CBA in a natural or near natural state or in achieving the goal of rehabilitation;
(c) the impact on species composition and structure of vegetation with an indication of the extent of clearing activities in proportion to the remaining extent of the ecosystem type(s);
(d) the impact on ecosystem threat status;
(e) the impact on explicit subtypes in the vegetation;
(f) the impact on overall species and ecosystem diversity of the site; and
(g) the impact on any changes to threat status of populations of species of conservation concern in the CBA;

2.3.7.2. terrestrial ecological support areas (ESAs), including:
(a) the impact on the ecological processes that operate within or across the site;
(b) the extent the proposed development will impact on the functionality of the ESA; and
(c) loss of ecological connectivity (on site, and in relation to the broader landscape) due to the degradation and severing of ecological corridors or introducing barriers that impede migration and movement of flora and fauna;

2.3.7.3. protected areas as defined by the National Environmental Management: Protected Areas Act, 2004 including-

(a) an opinion on whether the proposed development aligns with the objectives or purpose of the protected area and the zoning as per the protected area management plan;

2.3.7.4. priority areas for protected area expansion, including-

(a) the way in which the proposed development will compromise or contribute to the expansion of the protected area network;

2.3.7.5. SWSAs including:

(a) the impact(s) on the terrestrial habitat of a SWSA; and

- (b) the impacts of the proposed development on the SWSA water quality and quantity (e.g. describing potential increased runoff leading to increased sediment load in water courses);
- 2.3.7.6. FEPA subcatchments, including-
 - (a) the impacts of the proposed development on habitat condition and species in the FEPA sub catchment;
- 2.3.7.7 indigenous forests, including:
 - (a) impact on the ecological integrity of the forest; and
 - (b) percentage of natural or near natural indigenous forest area lost and a statement on the implications in relation to the remaining areas.

2.4. The findings of the assessment must be written up in a Terrestrial Biodiversity Specialist Assessment Report.

Terrestrial Biodiversity Specialist Assessment Report

3.1. The Terrestrial Biodiversity Specialist Assessment Report must contain, as a minimum, the following information:

- 3.1.1. contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;
- 3.1.2. a signed statement of independence by the specialist;
- 3.1.3. a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
- 3.1.4. a description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;
- 3.1.5. a description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;
- 3.1.6. a location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);
- 3.1.7. additional environmental impacts expected from the proposed development;
- 3.1.8. any direct, indirect and cumulative impacts of the proposed development;
- 3.1.9. the degree to which impacts and risks can be mitigated;
- 3.1.10. the degree to which the impacts and risks can be reversed;
- 3.1.11. the degree to which the impacts and risks can cause loss of irreplaceable resources;
- 3.1.12. proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);
- 3.1.13. a motivation must be provided if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a "low" terrestrial biodiversity sensitivity and that were not considered appropriate;
- 3.1.14. a substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and
- 3.1.15. any conditions to which this statement is subjected.

3.2. The findings of the Terrestrial Biodiversity Specialist Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr where relevant.

3.3. A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.

INTRODUCTION

Site location

The site is Erf 7284 Dana Bay near Mossel Bay to the south of the N2 national road west of Mossel Bay. Refer to Figure 1 below for the general location.

The site is within the township of Dana Bay and is accessed either from the top at Aloe Ferrox Street, or from the bottom at Nerina Road (Figure 2). The site is a green belt between the existing houses.

The scope of this report is the entire property indicated within the boundary lines in Figure 2.



Figure 1: Location of the site in Groot Brakrivier.



Figure 2: Aerial image of the site and surrounding areas.

Identified Theme Sensitivities

A sensitivity screening report from the DEA Online Screening Tool was requested in the application category: Transformation of land | Indigenous vegetation. The DEA Screening Tool report for the area indicates the following ecological sensitivities:

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Animal Species Theme			X	
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Animal Species theme

Sensitivity features are indicated as follows:

Sensitivity	Feature(s)
Medium	Sensitive species 8
Medium	Invertebrate-Aneuryphymus montanus

Plant Species theme

Sensitivity features are indicated as follows:

Sensitivity	Feature(s)
Low	Low sensitivity

Terrestrial Biodiversity theme

Sensitivity features are indicated as follows:

Sensitivity	Feature(s)
Very High	Ecological support area 1
Very High	Ecological Support Area 2

ASSESSMENT METHODOLOGY

The detailed methodology followed as well as the sources of data and information used as part of this assessment is described below.

Project Area of Influence (PAOI)

The proposal is to upgrade the storm water infrastructure within the valley that constitutes the site.

A hydrological analysis of the Dana Bay catchment for the 20-year return flood was conducted. A ground survey was also carried out demarcating the affected properties adjacent to the watercourse, the culvert area, and the elevation fall to the Nerina Road culvert. The site investigation revealed a failed gabion weir structure as indicated in the images of the channel.

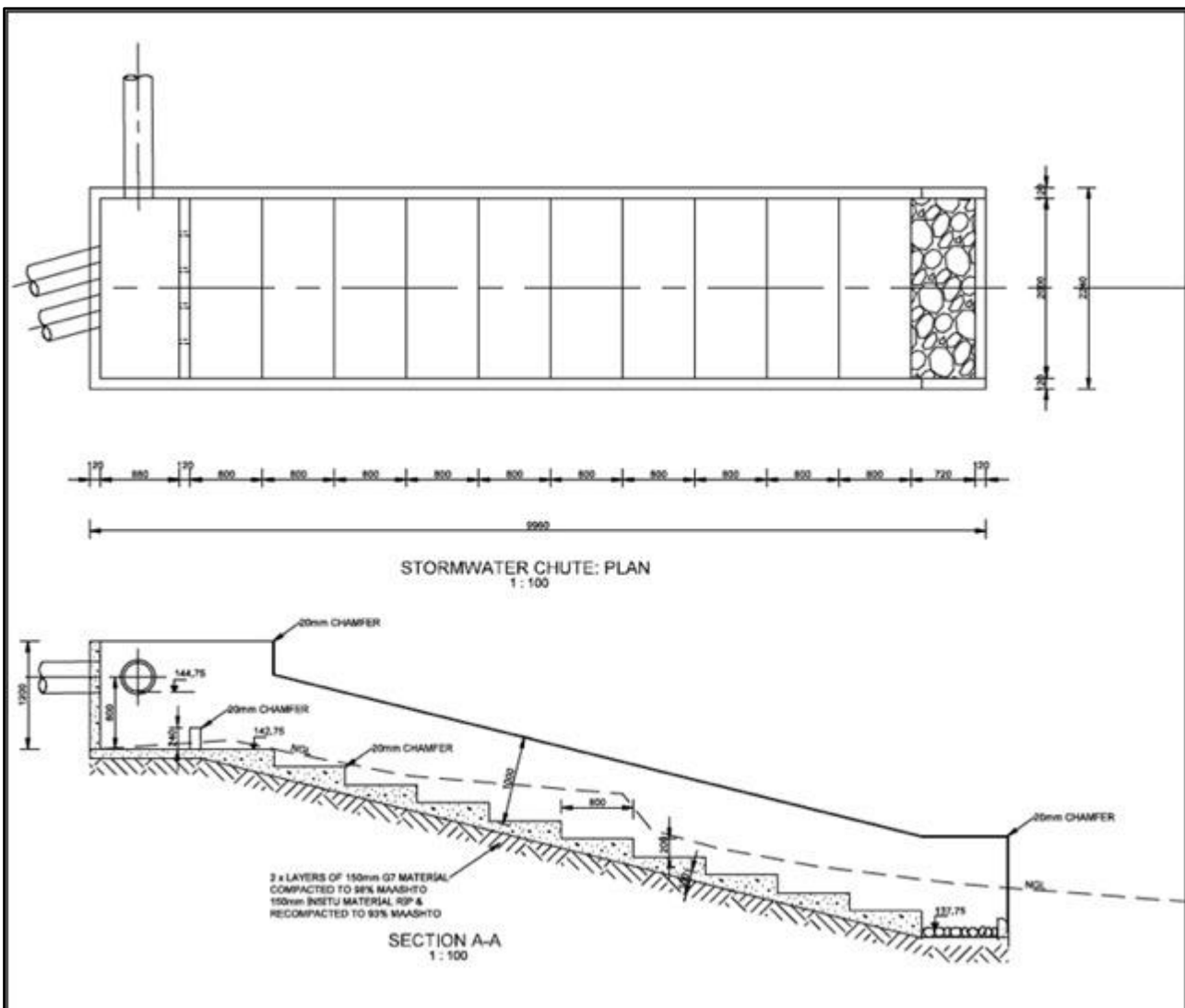


Figure 3: Proposed development.

High velocity and volume discharge into the watercourse were determined by the analysis. The energy of the flow erodes the embankments of the channel and was the cause of the gabion structure failure. Therefore, based on the above analysis, a hydraulic design was carried out to manage stormwater runoff velocity and volume.

The recommended stormwater management systems are: (1) a stepped spillway as an energy dissipation structure to reduce flow velocity, and (2) a stilling basin with an outlet weir sill to manage volume. These are designed to ensure the protection of the watercourse embankments and private property situated on the eroding embankments. These measures will also minimise the impact on the downstream flows and manage capacity for future urban development. Figure 3 shows the Stepped Spillway Design and Stilling Basin. The design optimizes the use of the area by only occupying 400m² of a total 1316m² of the culvert. Therefore, the design protects natural vegetation and ensures that approximately 70% of the natural culvert is protected. The PAOI is therefore treated here as the development footprint within which direct impacts will occur (Figure 3).

Survey timing

The study commenced as a desktop-study followed by site-specific field study on 2 April 2022. The site is within the Fynbos Biome with an all-year rainfall season with a slight dip in early winter (Figure 4). A more accurate indication of rainfall seasonality, which drives most ecological processes, is shown in Figure 5, which shows that Mossel Bay has peak rainfall from August to November, with another smaller peak in March to April. The timing of the survey in April is therefore optimal in terms of assessing the flora and vegetation of the site. The overall condition of the vegetation was therefore possible to be determined with a high degree of confidence.

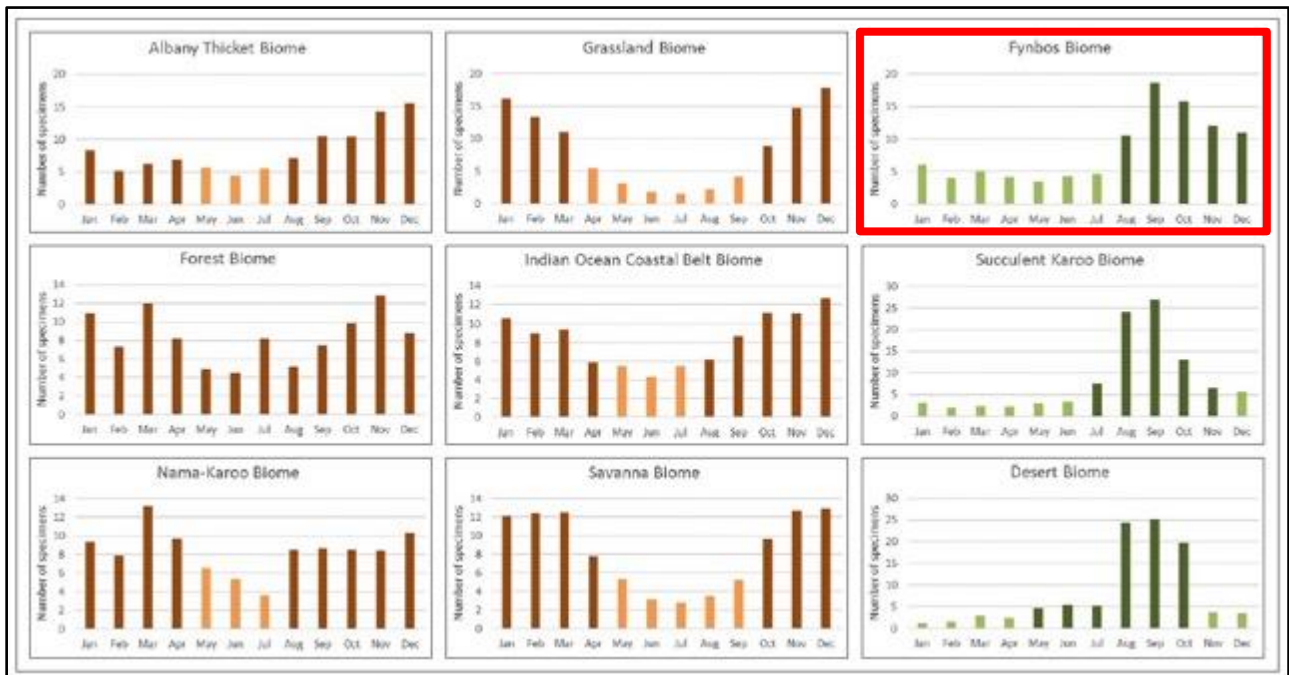


Figure 4: Recommended survey periods for different biomes (Species Environmental Assessment Guidelines). The site is within the Fynbos Biome.

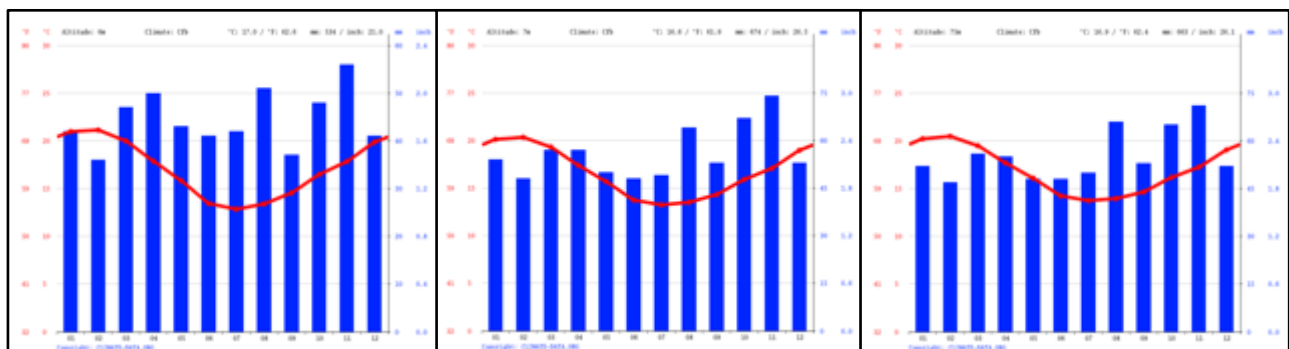


Figure 5: Climate diagrams showing monthly rainfall for Mossel Bay (left), Knysna (centre) and Plettenberg Bay (right).

Field survey approach

During the field survey of habitats on site, the entire site was assessed on foot. A meander approach was adopted with no time restrictions - the objective was to comprehensively examine all natural areas. A hand-held Garmin GPSMap 64s was used to record a track within which observations were made. Digital photographs were taken of features and habitats on site, as well as of all plant and animal species that were seen. All plant and animal species recorded were uploaded to the iNaturalist website (<https://www.inaturalist.org>) and are accessible by viewing the observations for the site (use the Explore menu, zoom and pan until the desired study area is within the browser window, click the button "Redo search in map", and all observations for that area will be shown and listed)..

Aerial imagery from Google Earth was used to identify and assess habitats on site. This included historical imagery that may show information not visible in any single dated image. Patterns identified from satellite imagery were verified on the ground. Digital photographs were taken at locations where features of interest were observed. During the field survey, particular attention was paid to ensuring that all habitat variability was covered physically on the ground.

Sources of information

Regional Vegetation

- Broad vegetation types occurring on site were obtained from Mucina and Rutherford (2006), with updates according to the SANBI BGIS website (<http://bgis.sanbi.org>), as follows:
 - Mucina, L. and Rutherford, M.C. (editors) 2006. Vegetation map of South Africa, Lesotho and Swaziland: an illustrated guide. Strelitzia 19, South African National Biodiversity Institute, Pretoria.
 - South African National Biodiversity Institute 2018 Final Vegetation Map of South Africa, Lesotho and Swaziland [Vector] 2018. Available from the Biodiversity GIS website, downloaded on 23 September 2021.
- The description of each vegetation type includes a list of plant species that may be expected to occur within the particular vegetation type.

Threatened Ecosystems

- The conservation status of the vegetation types were obtained from Mucina and Rutherford (2006) and the National List of Ecosystems that are Threatened and in need of protection (GN1002 of 2011), published under the National Environmental Management: Biodiversity Act (Act No. 10, 2004). Updates from the National Biodiversity Assessment 2018 were taken into consideration, although these have not yet been gazetted.
- The plant species checklist of species that could potentially occur on site was compiled from a plant species checklist extracted from the NewPosa database of the South African National biodiversity Institute (SANBI) for the quarter degree grid in which the site is located.
- The IUCN Red List Category for plant species, as well as supplementary information on habitats and distribution, was obtained from the SANBI Threatened Species Programme (Red List of South African Plants, <http://redlist.sanbi.org>).

Regional plans

- Information from the National Protected Areas Expansion Strategy (NPAES) was consulted for possible inclusion of the site into a protected area in future (available on <http://bgis.sanbi.org>).
- The 2017 Western Cape Biodiversity Spatial Plan (WCBSBP) Maps were consulted for inclusion of any parts of the site into any Critical Biodiversity Areas or Ecological Support Areas (CapeNature. 2017 WCBSBP Bitou [Vector] 2017. Available from the Biodiversity GIS website (biodiversityadvisor.sanbi.org)).

Vegetation and plant species

- Plant species that could potentially occur on in the general area was extracted from the NewPosa database of the South African National biodiversity Institute (SANBI) for the quarter degree grid/s in which the site is located.
- The IUCN Red List Category for plant species, as well as supplementary information on habitats and distribution, was obtained from the SANBI Threatened Species Programme (Red List of South African Plants, <http://redlist.sanbi.org>).
- Lists were compiled specifically for any species at risk of extinction (Red List species) previously recorded in the area. Historical occurrences of threatened plant species were obtained from the South African National Biodiversity Institute (<http://posa.sanbi.org>) for the quarter degree square/s within which the study area is situated. Habitat information for each species was obtained from various published sources. The probability of finding any of these species was then assessed by comparing the habitat requirements with those habitats that were found, during the field survey of the site, to occur there.
- Regulations published for the National Forests Act (Act 84 of 1998) (NFA) as amended, provide a list of protected tree species for South Africa. The species on this list were assessed in order to determine which protected tree species have a geographical distribution that coincides with the study area and habitat requirements that may be met by available

habitat in the study area. The distribution of species on this list were obtained from published sources (e.g. van Wyk & van Wyk 1997) and from the SANBI Biodiversity Information System website (<http://sibis.sanbi.org/>) for quarter degree grids in which species have been previously recorded. Species that have been recorded anywhere in proximity to the site (within 100 km), or where it is considered possible that they could occur there, were listed and were considered as being at risk of occurring there.

Fauna

- Lists of animal species that have a geographical range that includes the study area were obtained from literature sources (Bates et al., 2014 for reptiles, du Preez & Carruthers 2009 for frogs, Mills & Hes 1997 and Friedmann and Daly, 2004 for mammals). This was supplemented with information from the Animal Demography Unit website (adu.uct.ac.za) and literature searches for specific animals, where necessary.

Limitations

The following assumptions, limitations, uncertainties are listed regarding the assessment of the site:

- The assessment is based on a single site visit. The current study is based on an extensive site visit as well as a desktop study of the available information. The time spent on site was adequate for understanding general patterns across affected areas.
- Compiling the list of species that could potentially occur on site is limited by the paucity of collection records for the area. The list of plant species that could potentially occur on site was therefore taken from a wider area and from literature sources that may include species that do not occur on site and may miss species that do occur on site. In order to compile a comprehensive site-specific list of the biota on site, studies would be required that would include different seasons, be undertaken over a number of years and include extensive sampling. Due to legislated time constraints for environmental authorisation processes, this is not possible.
- Rare and threatened plant and animal species are, by their nature, usually very difficult to locate and can be easily missed.

OUTCOME OF THE ASSESSMENT

Broad vegetation patterns

There is one regional vegetation type in the study area, namely Hartenbos Dune Thicket (Figure 7). In the event that natural habitat remains on site, there are likely to be floristic and vegetation structural influences from either of these vegetation types within the site, depending on local ecological conditions. The national vegetation map is, however, not mapped at a fine scale and it is probable that local topography could support other habitat types, such as thicket or low forest. The vegetation type that occurs on site and nearby areas, according to the national map, is briefly described below.

The vegetation at this location was previously described as Canca Limestone Fynbos.

Hartenbos Dune Thicket

Distribution

This vegetation type occurs in the Western Cape Province. In coastal stretches from the Duiwenhoks River Mouth eastward to Glentana near the Great Brak River.

Vegetation & Landscape Features



Figure 6: Regional vegetation types of the site and surrounding areas.

On flat to moderately undulating coastal dunes. 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. Succulent karroid elements (*Aloe ferox*, *A. arborescens*, *Eriocephalus africanus*) occur along bands of mudstone and shale.

Geology & Soils

Predominantly occurs in Wankoe and Strandveld Formations. The most important land types are Fc, Hb, Ha.

Climate

Non-seasonal rainfall dominates the region, with MAP between 261 mm and 666 mm. Frost is present for approximately 3 days per year. The mean monthly maximum is 25.19 °C in February and the mean monthly minimum is 6.47 °C in July. Altitude ranges from 0 - 273 masl.

Important Taxa

Growth form	Species
Small tree	<i>Pterocelastrus tricuspidatus</i> (d), <i>Sideroxylon inerme</i> (d)
Succulent tree	<i>Aloe ferox</i>
Succulent shrub	<i>Aloe arborescens</i> , <i>Carpobrotus acinaciformis</i> (d), <i>Carpobrotus edulis</i> , <i>Conicosia pugioniformis</i> , <i>Cotyledon orbiculata</i> , <i>Crassula nudicaulis</i> , <i>Cleretum bellidiforme</i> , <i>Euphorbia burmannii</i> , <i>Euphorbia caput-medusae</i> , <i>Jordaaniella dubia</i> , <i>Roepera morgsana</i> (d)
Succulent herb	<i>Carpobrotus muirii</i> , <i>Haworthia mirabilis</i> var. <i>paradoxa</i> , <i>Euphorbia bayeri</i>
Geophytic herb	<i>Brunsvigia orientalis</i> , <i>Chasmanthe aethiopica</i> , <i>Freesia leichtlinii</i> , <i>Haemanthus coccineus</i> , <i>Ixia orientalis</i>
Low shrub	<i>Eriocephalus africanus</i> , <i>Eriocephalus africanus</i> var. <i>paniculatus</i> , <i>Felicia echinata</i> , <i>Helichrysum patulum</i> , <i>Muraltia spinosa</i> , <i>Salvia africana-lutea</i> (d), <i>Agathosma apiculata</i> (d), <i>Agathosma muirii</i> , <i>Athanasia cochlearifolia</i> , <i>Athanasia quinquedentata</i> subsp. <i>rigens</i> , <i>Diosma aristata</i> , <i>Euchaetis albertiniana</i> , <i>Hermannia muirii</i> , <i>Muraltia barkerae</i> , <i>Muraltia depressa</i>
Graminoid	<i>Restio eleocharis</i> (d), <i>Sporobolus fimbriatus</i> , <i>Stenotaphrum secundatum</i> (d), <i>Thamnochortus insignis</i> (d), <i>Themeda triandra</i> (d)
Tall shrub	<i>Azima tetraacantha</i> , <i>Carissa bispinosa</i> , <i>Cassine peragua</i> , <i>Cussonia thyrsoiflora</i> , <i>Euclea racemosa</i> (d), <i>Grewia occidentalis</i> , <i>Lauridia tetragona</i> , <i>Maytenus procumbens</i> (d), <i>Metalasia muricata</i> (d), <i>Morella cordifolia</i> , <i>Mystroxydon aethiopicum</i> , <i>Olea exasperata</i> (d), <i>Osteospermum moniliferum</i> (d), <i>Passerina rigida</i> (d), <i>Putterlickia pyracantha</i> , <i>Robsonodendron maritimum</i> , <i>Scutia myrtina</i> , <i>Searsia crenata</i> (d), <i>Searsia glauca</i> , <i>Searsia lucida</i> , <i>Searsia pterota</i> , <i>Leucospermum praecox</i>
Herbaceous climber	<i>Cynanchum ellipticum</i> , <i>Rhoicissus digitata</i> , <i>Solanum africanum</i>

Note that this is a desktop description of what could possibly occur on site, based on mapped vegetation types. The on-site habitat assessment, described in a section below, determines whether any such vegetation occurs on site or not: although mapped as occurring within Hartenbos Dune Thicket, such vegetation does not necessarily occur on site.

Conservation status of broad vegetation types

Hartenbos Dune Thicket is a newly described vegetation type (Grobler et al. 2018) resulting from ongoing review of the National Vegetation Map. This newly described vegetation type has been assessed as being Least Concern (Table 2).

The National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011), published under the National Environmental Management: Biodiversity Act (Act No. 10, 2004), lists national vegetation types that are afforded protection on the basis of rates of transformation. The vegetation type is listed as Vulnerable in the National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011).

Table 2: Conservation status of different vegetation types occurring in the study area.

Vegetation Type	Conservation status		
	Driver et al. 2005 ; Mucina et al., 2006	2018 NBA (Skowno et al. 2019)	National Ecosystem List (NEM:BA) (2018)
Hartenbos Dune Thicket	None	Least Concern	None

Note that this is a desktop description of what could possibly occur on site, based on mapped ecosystems. The on-site habitat assessment, described in a section below, determines whether any such vegetation occurs on site or not.

It is therefore verified that the site does not occur within any mapped Listed Ecosystem, as listed in The National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011). The site therefore has LOW sensitivity with respect to this attribute.

Biodiversity Conservation Plans

The Western Cape Biodiversity Spatial Plan (WCBSP) classifies the habitats of the province according to conservation value in decreasing value, as follows:

1. Protected Areas (PA);
2. Critical Biodiversity Areas 1 (CBA1);
3. Critical Biodiversity Areas 2 (CBA2);
4. Ecological Support Area 1 (ESA1);
5. Ecological Support Area 2 (ESA2);

The WCBSP map for Mossel Bay shows that the entire site is within an ESA1 or ESA2 area (Figure 9). Both of these areas continue beyond the boundaries of the site. This indicates that the remaining vegetation on site is considered to be important for maintaining ecological patterns in the landscape.

Note that the purpose of the specialist study, as undertaken here, is to verify whether the vegetation on site meets the standards for inclusion in a conservation zone or not. Provincial-level conservation assessments make use of remote methods for mapping and do not ground-truth all locations. It is



Figure 7: Western Cape Biodiversity Spatial Plan of the site and surrounding areas.

necessary to verify on the ground whether natural habitat occurs on site or not in order to determine whether the inclusion in a conservation zone is justified.

This desktop description verifies that the site is included in conservation zones and that an on-site assessment is required to verify the sensitivity of the site with respect to this attribute.

Natural habitats on site

No habitat mapping was undertaken for the site. This is because the site is very small, and consists of an eroded drainage channel and surrounding remnant and secondary vegetation. A series of photographs is provided below to show conditions on site. None of this is considered to be vegetation in a natural state, although several indigenous species were found on site.

The central channel running through the site is mostly dominated by kikuya grass (*Cenchrus clandestinus**) (evident in most of the photographs, Figures 8 - 11), along with large patches of the invasive fern, *Nephrolepis cordifolia**. This is bordered by a motly collection of shrubs and weeds, some of which are indigenous, for example, *Gymnosporia buxifolia*, *Searsia lucida* and *Olea europaea*, and most of which are alien invasive species, including *Acacia cyclops** (NEMBA Category 2), *Acacia saligna** (NEMBA Category 2), *Cestrum laevigatum** (NEMBA Category 1b), and *Lantana camara** (NEMBA Category 1b).

Some individuals of the protected tree, *Sideroxylon inerme* (PROTECTED, National Forests Act), were found at the bottom end of the site. If possible, these should be protected, otherwise a permit obtained for their destruction.



Figure 9: View upwards from the bottom (southern end) of the site.



Figure 8: Culverts at the bottom end of the site showing kikuya grass dominating.



Figure 11: View from halfway towards the top.



Figure 10: View from top of site towards the south.

Red List plant species of the study area

According to the National Web-Based Environmental Screening Tool, there are no plant species of concern that are flagged for the site (see previous section of this report). Based on the habitat assessment, it is not considered likely that any would occur there.

There are therefore no threatened, near threatened or rare species that are likely to occur in the study area. It is therefore verified that the Plant Species Theme has LOW sensitivity for this site.

Animal species flagged for the study area

According to the National Web-Based Environmental Screening Tool, a small number of animal species have been flagged as of concern for the current project (see previous section of this report). These are all species that require specific habitat conditions to inhabit the site.

***Aneuryphymus montanus* (Yellow-winged Agile Grasshopper)**

Vulnerable B2ab(iii,v)

Only known from six localities in the Cape region (Brown 1960). The species is associated almost strictly with fynbos vegetation, although extending geographically towards East London, where it has been collected "amongst partly burnt stands of evergreen Sclerophyll in rocky foothills" (Brown 1960). It prefers south-facing cool slopes (Kinvig 2005). It is a medium-sized, robust, active geophilous insect which readily flies off when disturbed and is easily distinguished in flight by the pale lemon base of the hind wing (Brown 1960).

Published descriptions suggest that it is not often seen but, when observed, occurs in obvious numbers. No grasshoppers were seen on site that matched the description of this species. If it occurred in the area it would be found within fynbos, which does not occur on site. It is therefore unlikely that it would occur on site.

It is therefore verified that the Animal Species Theme has LOW sensitivity for the site.

Summary of site sensitivity

In its current state, the site has LOW sensitivity, especially the areas within the channel in the centre of the site. Unless stormwater erosion is better managed, this poses a threat to downstream areas. Areas on the margin of the channel have some ecosystem support value, but the banks need to be stabilized to protect the long-term value of these areas.

CONCLUSION

Desktop information, field data collection and mapping from aerial imagery provides the following verifications of patterns for various themes:

1. The site consists of degraded vegetation within an eroded drainage valley with low indigenous diversity. The drainage channel is dominated by exotic kikuya grass and other exotic species. The margins of the eroded channel consist of a mixture of indigenous and alien invasive shrubs.
2. The site is designated as a combination of Ecological Support Area 1 and (Ecological Support Area 2. The habitat is not considered to be representative of any natural ecosystem. Although it contains some indigenous species, these are not representative of the ecosystem type, and are post-disturbance colonisers in combination with alien invasive species.
3. No plant species of concern were found on site and, based on the available habitat, it is considered unlikely that any would occur there. None are flagged for the site.
4. The site is not considered to be good habitat for any of the animal species flagged for the site.
5. The proposed project is to stabilize the channel to prevent further erosion. This will have a positive impact on both the remaining vegetation on site, as well as all downstream areas. The development is therefore supported.

RECOMMENDATIONS

- It is recommended that the proposed project be authorised so that the landscape can be properly stabilised. This will promote the ecological support value of the site.
- Rehabilitation of disturbed areas, as well as previously invaded areas, should promote establishment of site-appropriate indigenous thicket species.
- An ongoing alien invasive management programme should take place on site. This will protect surrounding sensitive habitats from degradation and allow indigenous species to flourish on site.

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APPENDICES:

Appendix 1: Plant species recorded on site.

Acacia cyclops* (NEMBA Category 2)
Acacia saligna* (NEMBA Category 2)
Aloe arborescens
Cenchrus clandestinus
Cestrum laevigatum* (NEMBA Category 1b)
Chaenostoma hispidum
Coleus barbatus*
Drimia capensis
Carpobrotus edulis
Erucastrum sp*
Felicia muricata
Yucca oleifolia*
Gymnosporia buxifolia
Helichrysum patulum
Lantana camara* (NEMBA Category 1b)
Lavandula dentata*
Megathyrsus maximus
Metalasia acuta
Nephrolepis cordifolia* (NEMBA Category 1b)
Nidorella ivifolia
Olea europaea subsp cuspidata
Physalis peruviana*
Schinus terebinthifolia*
Searsia lucida
Sideroxylon inerme (PROTECTED, National Forests Act)