APPENDIX F3: Terrestrial Ecology Impact Assessment

Mossdustria Expansion on Erf 6 and Remainder of Portion 8 of the Farm Rietvalley 225, near Mossel Bay

TERRESTRAL. PLANT AND ANIMAL BIODIVERSITY IMPACT ASSESSMENT REPORT

BY

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DATE
24 June 2026

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Table of Contents

Table of Figures

DECLARATION OF THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

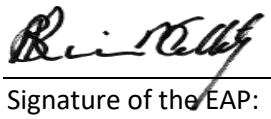
I ……Brian Colloty……, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

- 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

- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;

- I have disclosed to the applicant, the EAP, 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

- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.



Signature of the EAP: Date: 24 June 2026

EnviroSci (Pty) Ltd

Name of company (if applicable):

1 Introduction

EnviroSci (Pty) Ltd was appointed by NEMAI (Pty) Ltd, on behalf of Mossel Bay Local Municipality (MBLM), to undertake an ecological impact assessment for the proposed Mossdustria Expansion, on Remainder of Portion 8 of the Farm Rietvalley 225, near Mossel Bay, Western Cape. Mossdustria is an industrial area located adjacent to, and to the east of the Petroleum Oil & Gas Corporation of South Africa (PetroSA) Refinery, on the outskirts of Mossel Bay. The site falls under the jurisdiction of the MBLM and is located about 14 km west of Mossel Bay, along the N2 (Figure 1).

The PROTOCOL FOR SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR THE ENVIRONMENTAL IMPACTS ON BIODIVERSITY (Government Gazette 43110, 20 March 2020), superseding the Appendix 6 NEMA requirements, was also adhered to. This report thus meets the criteria to fulfil a Specialist Verification Assessment Report as the proposed site is located within an area rated as ***Very High***, High, Medium and Low sensitivity by the DFFE Screening Tool results addressed in this report, summarised as follows:

- Animals = High to Medium due to mostly birds, two mammals and invertebrate species which have the potential to occur.
- Plants = Medium and Low due to the presence of several plant species with the potential to occur in the remaining fynbos units
- Terrestrial = Very High because of being in the following:
    - CBA – Terrestrial
    - CBA 2 – Terrestrial
    - ESA Restore from other land use
    - FEPA Subcatchment
    - National Protected Area Expansion Strategy area (NPAES)
    - Endangered Hartenbos Dune Thicket

Site-specific surveys were thus conducted based on two site visits conducted in 11-13 April 2022 and a follow-up visit in October 18 -19 2022 (early Spring). 16 May 2025 (Autumn) and 18 January 2026 (summer). With a focus on post rain periods as this region falls within the Winter /Bimodal rainfall transition area, i.e. highest rainfall expected in winter but with occasional rain in summer as well.

It should be noted that the site as it currently stands is cut off from any surrounding areas by the either roads or developed areas. Development also includes transformed vegetation areas such as the farming areas. This coupled to the species assessed, which are either limited to very specific habitat areas (Plants of Species of Special Concern) and or are very mobile (birds & insects), the Project Area of Influence (POAI) was defined as the study area Erfs only. i.e. no overlapping or extended habitats beyond the site were observed.

1.1 Project description

The project entails the extension of Mossdustria and a raceway on the Remainder Portion 8 of Farm Rietvalley 225 (+/- 90 ha). The extension will include the following:

- Industrial development with associated infrastructure (+/- 12 ha);
- Alternative Energy Production Area (+/- 22 ha);
- Conservation area (+/- 15 ha); and
- Motorsport arena including tracks, parking, ablution facilities, training facilities, fuel storage (5 000 litres), 80 workshops, pavilions and associated infrastructure (+/- 38 ha).

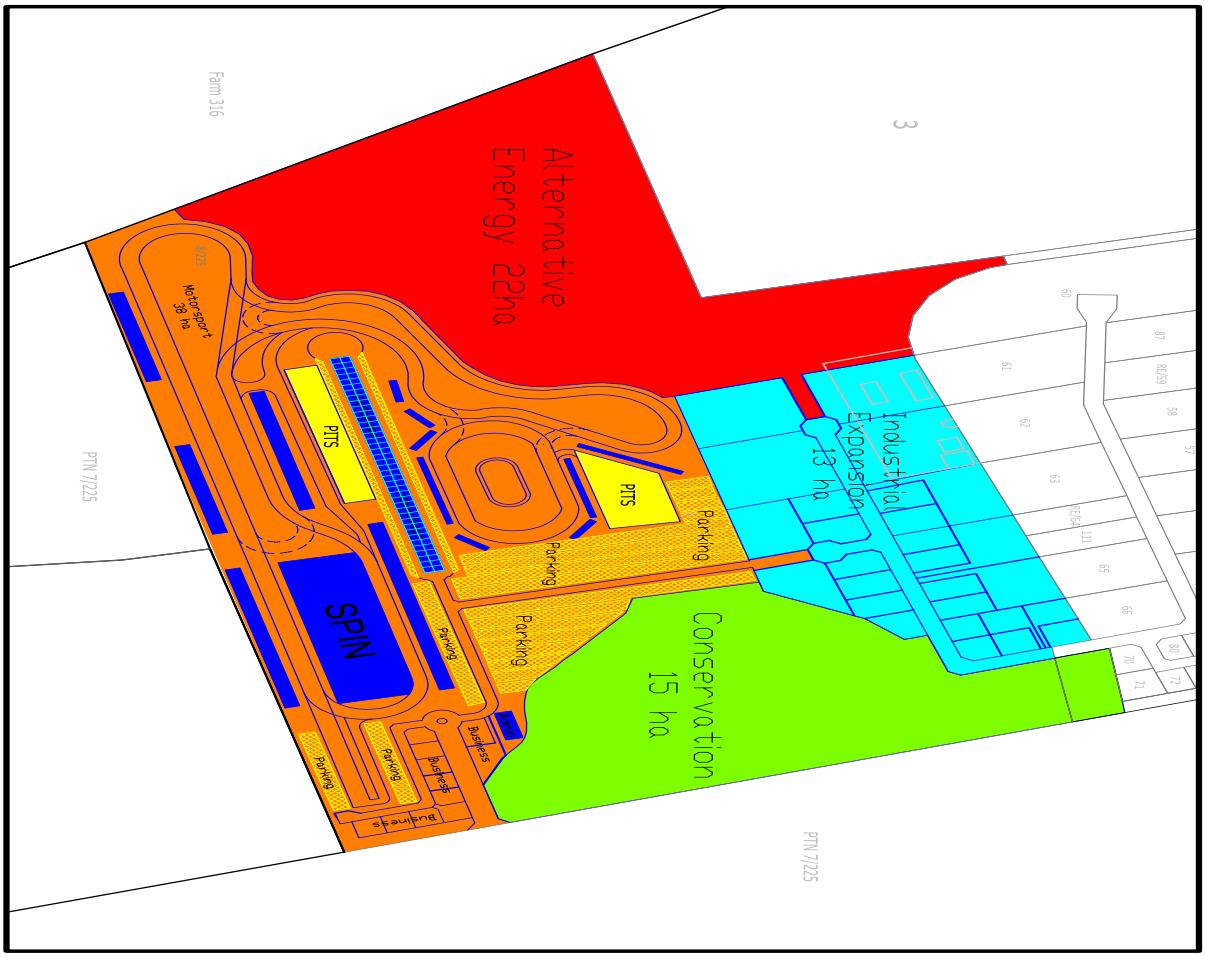


Figure 1: Preliminary layout

1.2 Aims and objectives

The aim of this report is to assess the ecologically sensitive areas in terms of aquatic and terrestrial biodiversity affected by the proposed project and provide suitable "no-go" areas and sensitivity maps. This, together with an identification of the potential issues and impacts posed by the development, and where possible, means to avoid/mitigate the identified impact are provided (i.e., provide development constraints based on ecological considerations). This assessment is based on two site visits conducted in April 2022 and a follow-up visit in October 2022 (early Spring) and May 2025 (Autumn), as there had been a significant amount of time between the initial surveys and the Scoping Phase being initiated. This is also coupled to the fact that several design iterations were assessed from the onset of the project, thus, field verification was needed.

1.3 Assumptions and Limitations

To obtain a comprehensive understanding of the dynamics of both the flora and fauna of communities within a study site, as well as the status of endemic, rare or threatened species in any area, assessments should always consider investigations at different time scales (across seasons/years) and through replication. However, due to time constraints, these long-term studies are not always feasible and are thus mostly based on instantaneous sampling. This limitation is common to many impact assessment type studies, but the findings are deemed adequate for the purposes of decision-making support regarding project acceptability, unless otherwise stated.

Therefore, due to the scope of the work presented in this report, a long-term investigation of the proposed site was possible, and a concerted effort was made to assess as much of the potential site as well as make use of any available literature, species distribution data and aerial photography.

It should be emphasised that information, as presented in this document, only has reference to the study area as indicated on the accompanying maps. Therefore, this information cannot be applied to any other area without detailed investigation.

2 Methodology

2.1 Terrestrial fauna and flora

A desktop and literature review of the study area under investigation was conducted to collate as much information as possible prior to detailed fieldwork. The purpose of the desktop assessment was to rank relevant areas according to their ecological sensitivity and to identify areas of ecological risk prior to the site visits mentioned previously. Other relevant literature, for example, from the South African Biodiversity Information Facility, South African Herpetological Atlas Projects, iNaturalist, relevant Red Data books, ordinances and all systematic bioregional / conservation plans) was also reviewed.

Fieldwork was limited to visual sightings by means of transect walks and plot-based sampling. Particular attention was paid to the occurrence of Red Data species or protected species as follows:
Vegetation units were sampled by means of the following techniques at each of the proposed development sites:

- Data collection was transect-based and in the form of vegetation samples within selected reference areas to categorise the various vegetation units.
- Results from the data analysis provided a description of the dominant and typical species occurring at each site(s), and included:
    - Threatened, endemic or rare species, with an indication of the relative functionality and conservation importance of the specific community in the area under investigation (i.e. study area);
    - Invasive or exotic species present and localities in the area, and the
    - Functional and conservation importance of all vegetation communities in the investigation area.

Mammals were sampled by means of the following techniques:

- Fieldwork included visual sightings by means of transect walks to evaluate the presence of mammal taxa. During the site visit, specific attention was given to signs (droppings, burrows, vocalisations, etc.) of taxa and the presence of suitable habitat;
- A full list of species observed and expected to occur was made, and
- Specific reference was made to the occurrence of Red Data species.

Herpetofauna (reptiles and amphibians) were sampled by means of the following techniques:

- Visual observations;
- Active searching techniques; and
- Vocalisations (for amphibians).

Invertebrates were sampled by means of the following techniques:

- Random linear transects using standard hand nets while focusing on specific indicator groups;
- All taxa caught were identified to species level if appropriate taxonomic literature is available (as is the case for butterflies), otherwise the concept known as Recognisable Taxonomic Units (RTUs) or morphospecies will be applied;
- The presence of conservation important taxa was verified by intensive searching of likely habitat types or burrows.
- Additional information on faunal communities residing within the area of investigation was sourced from distributional data/records (both recent and historical), relevant literature, the private sector and other atlas projects.

The respective site areas, based on the species compositions of the vegetation analysis, topography and soils, were ranked into High / No-Go, Medium or Low classes in terms of their significance based on the Ecological Sensitivity and Conservation Importance. This was then used to rank the suitability of the proposed alignments, along with the potential impacts.

Once the final scope and layout had been developed, the impact assessment based on a supplied methodology was then used to rate the respective impacts per Biodiversity Theme – See EIA report

3 Site Sensitivity Protocol

Based on the findings of this study, the various habitats were ranked in terms of their sensitivity to development. Typically, this is carried out using the following criteria, listed in order of importance, i.e., the habitat or vegetation unit:

- Contained Species of Special Concern (SSC)
- Habitat was protected under a form of legislation
- Exhibited a high degree of biodiversity
- Exhibited a limited degree of degradation
- A unique habitat that is not well represented within the region
- Provided an important ecosystem role or support system, e.g., ecological corridor

This approach has been formalised via the Species Environmental Impact Assessment Guidelines in support of the Terrestrial Plant and Animal Species protocols (July 2023). The guidelines provide details for implementing relevant species protocols and, in particular, a method to determine the Site Ecological Importance or SEI. The SEI protocol used in this assessment provides a species and habitat ranking approach to assessing the importance and thus indirectly the sensitivity of a particular site. This was adapted from SANBI, 2020 Ver 3.1 2022. Table 1 indicates the Sensitivity Ratings definitions

Note SEI is calculated as follows, based on Section 8 of SANBI (2022):
Site Ecological Importance (SEI) is a standardised methodology to spatially identify the importance of a development site for species (SANBI 2020). SEI is considered to be a function of the biodiversity importance (BI) of the receptor (e.g. species of conservation concern, the vegetation/fauna community or habitat type present on the site20) and its resilience to impacts (receptor resilience [RR]) as follows:
SEI = BI + RR

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

BI = CI + FI

Conservation importance (CI) is evaluated in accordance with recognised, established, internationally acceptable principles and criteria for the determination of biodiversity-related value, including the IUCN Red List of Species, Red List of Ecosystems and Key Biodiversity Areas (KBA; IUCN [2016]). Conservation importance is defined here as: 'The importance of a site for supporting biodiversity features of conservation concern present, e.g. populations of IUCN threatened and Near Threatened species (CR, EN, VU and NT), Rare species, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes.'

Functional integrity (FI) of the receptor (e.g. the vegetation/ fauna community or habitat type) is defined here as the receptor's current ability to maintain the structure and functions that define it, compared to its known or predicted state under ideal conditions. Simply stated, FI is: 'A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.' Receptor resilience (RR) is defined here as: 'The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.

Table 1: Species and habitat sensitivity ratings definitions

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

4 Description of the affected environment

4.1 Climate

The site is located within the bimodal rainfall region of South Africa, with a Mean Annual Precipitation (MAP) for the coastal region at ca. 680 mm per annum. Annual average temperatures range between 7.6 and 25^{o} C, with frost a rare occurrence of no more than 3 days per year (Mucina & Rutherford, 2007).

4.2 Geology and soils

The site is underlain with soils associated with sandstone and shale of the Ceres subgroup and Quarzitic sandstones and shales of the Nardouw Subgroup (Council of Geoscience, 2020).

4.3 Slope and aspect

The region is characterised by the higher-lying coastal plateaux between the Mossel Bay and Gourits river valley and located, between 166 and 175 m ASL (Above Sea Level).

4.4 General terrestrial environment

The study area is characterised the Southern Fynbos bioregion. The southwestern Cape is a major national and global conservation priority, especially considering the biodiversity and number of threatened plant species. Despite this, the area has been subjected to significant habitat disturbance due to land transformation and alien vegetation infestations. Historically, during 1963, the area was used for agriculture, largely livestock grazing, and the natural vegetation remains fragmented by cultivated fields and pastures (Figure 2). The development of a railway line and major roadways in the surrounding area further reduced landscaped connectivity. More recently, industrial developments such as PetroSA and Mossdustria have caused direct habitat loss. The proposed site has not been completely transformed and is undeveloped but has been negatively affected by a lack of alien plant and fire regime vegetation management. Additionally, intensive ostrich farming with associated abattoir continues to degrade portions of the land, especially on the western portion of

the site. There remains a relatively natural ecological corridor to the east of the study area, but it is separated by the R327 tar road.

Figure 2: Historic aerial photography from 1963, indicating the level of agricultural disturbance of the site in the past (red arrow)

5 Plant Theme Biodiversity Assessment

The SA Vegetation map (SANBI 2018) indicates that Hartenbos Dune Thicket and North Langeberg Sandstone Fynbos are the vegetation types on site (Figure 3). However, the original natural vegetation on the site is best classified as Mossel Bay Shale Renosterveld in terms of the vegetation map categories (Mucina & Rutherford 2012). Mossel Bay Shale Renosterveld is listed as Endangered in terms of the national list of Threatened Terrestrial Ecosystems (DEA 2011), as only 49% of its original extent remains, and the vegetation unit has a national conservation target of 36% of its original extent, with nothing (0%) formally protected (Rouget *et al.* 2004). The vegetation type is thus poorly conserved and often vulnerable to further loss, usually to agriculture, quarrying, and urban development (Rouget *et al.* 2004).

The Fine Scale Vegetation Map for the Riversdale Plain (Vlok & de Villiers 2007) is considered more accurate than the SA Vegetation Map and shows that the primary vegetation type in the study area is PetroSA Fynbos Renosterveld, with Proteus Fynbos Renoster Thicket occupying the northeastern corner, and small areas mapped as riparian and pan habitats (Figure 4). It should be noted that this vegetation type has not yet been officially adopted or reflected by the SA Vegetation Map. This classification reflects the complex, composite nature of the vegetation in this unit – with Fynbos, Renosterveld and Thicket elements (Figure 5, 6 & 7). Therefore, there seems to be some confusion what the fine scale mapping of the site should be versus the adopted / legislated vegetation map. This is important, as it is the legislated vegetation units that are used to describe the site sensitivity

in the DFFE Screening Tool. However, a concerted effort was made to identify important habitat, not only vegetation units over various years in the optimal seasons (late summer and spring), but that should also be avoided. So, the focus was on thus on defining fine scale habitats, that are largely intact and functional that must be conserved or considered No-Go areas.

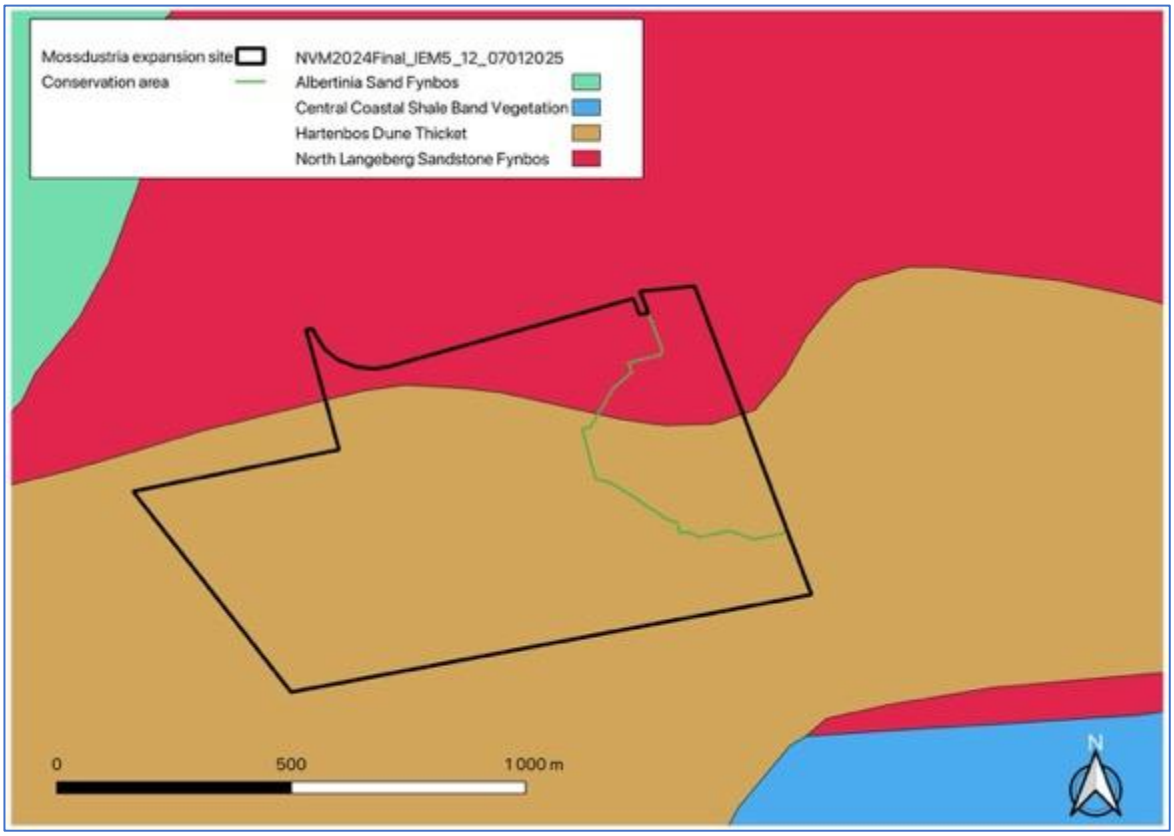


Figure 3: VEGMAP 2018 vegetation types

Figure 4: The Fine Scale Vegetation Map for the Riversdale Plain (Vlok & de Villiers 2007) showing PetroSA Fynbos Renosterveld mapped as the primary vegetation type within the study area, with Proteus Fynbos Renoster Thicket occupying the north eastern corner

The vegetation of the study site can be broadly described as follows:

VEGETATION TYPE	DESCRIPTION	VEGETATION DIVERSITY AND STRUCTURAL DIVERSITY
Fynbos Renosterveld = Vlok Proteus Fynbos Renoster Thicket = Vulnerable but due to disturbance no Proteoid component was observed (Figure 6)	Low to medium height shrubveld, variously impacted by grazing and bush-clearing with some invasion by alien Acacias. In this habitat type the Thicket bush-clumps tend to be small, but well defined without a messy boundary. Geophytes (bulbs) are a notable feature of this unit, and quite a number of succulents are present.	Vegetation diversity medium to high. Structural diversity medium. Renosterveld characterised by: *Dicerothamnus rhinocerotis*, *Helichrysum patulum*, *Metalasia acuta* and *M. pungens, Erica peltata, Diospyros dichrophylla, Searsia sp.*, *Hermannia saccifera*, ***Hermannia lavandulifolia**, Carpobrotus edulis, Bobartia robusta, Crossyne guttata, Brunsvigia orientalis, Drimia calcarata/ capensis, Eriospermum dielsianum, Oxalis* sp., *Baroes* sp., *Gladiolis* sp., *Romulea* sp. and *Hawarthia* and *Aloe* sp.
Proteoid Renosterveld Thicket = Vlok Proteus Fynbos Renoster Thicket = Vulnerable (Figure 7)	Relatively undisturbed, dense low to tall shrub *(Protea)* cover, mostly dense (mature), with thicket clumps (often on rocky outcrops). Lichens are abundant in the Thicket, indicating significant long-term stability and coastal moisture. Slight invasion by *Acacia cyclops* into the thicket along the old road and fence line	Vegetation diversity high. Structural diversity high. *Searsia lucida, Protea lanceolata, Diospyros dichrophylla, Searsia pallen, Leucadendron salignum, Erica discolor, Erica densifolia, Erica unicolor* ssp. *mutica, Erica versicolor, Erica cannaliculata, Cullumia carlinoides, Lampranthus elegans, Athanasia quinquedentata, Helichrysum patulum, Erica peltata, Dicerothamnus rhinocerotis, Sideroxylon inerme , Hawarthia* sp. *possibly H. chloracantha* (EN), *Euphorbia mauritanica* and/ or *Euphorbia burmannii, Euclea crispa, Gymnosporia capitata, Aloe ferox, Myrsine Africana, Aloe maculate*, and *Restio helenae.*
Grassy Fynbos/ disturbed Renosterveld = Degraded Petrosa Fynbos Renosterveld (Figure 8 – Fair condition) (Figure 9 –Disturbed)	There are areas where the Fynbos and Renosterveld habitats are sometimes grassy, a condition which increases with disturbance of the natural vegetation or perhaps areas that have been burnt more often in the past. In contrast, some areas can be described as "weedy". In some areas, due to a lack of utilisation for cultivation or heavy grazing, the renosterveld and fynbos appear to be in an early successional state The vegetation within the previously disturbed areas is distinct from that found in the undisturbed areas. Firstly, species diversity is significantly lower, being about 15-30% less than that observed in the undisturbed areas. Secondly, the disturbed areas are heavily dominated by only a few indigenous species, all of which are typical indicators of disturbance.	Vegetation diversity and structural diversity is low. Largely grassveld. Very few succulents or bulbs in the disturbed areas (these are common in undisturbed areas), and an almost total absence of large woody shrubs. Species include: *Themeda triandra, Eragrostis capensis, Hyparrhenia hirta, Sporobolus fimbriatus, Cynodon dactylon, Anthospermum aethiopicum, Metalasia acuta, Conyza scabrida, Boophone disticha, Indigofera nigromontana, Carpobrotus edulis, Bobartia robusta,* Oxalis sp*., Drimia capensis,* Baroes sp., Gladiolis sp., Romulea sp. (such as *R. Rosea*)*, Mesembryanthemum canaliculatum* and scattered *Elytropappus rhinocerotis* and *Osteospermum moniliferum.* No rare or threatened plant species were found in significant numbers within the disturbed areas.
Transformed areas = no resemblance to any of the described vegetation units for the region (Figure 10)	Completely transformed into bare ground or pasture from the original thicket, fynbos and renosterveld.	Vegetation diversity very low. Structural diversity very low. It consists dominantly of grazed Kikuyu grass and clumps of *Eragrostis curvula.*

The observed species were also then compared the DFFE Screening Tool results shown below, that indicated that the Plant Biodiversity was rated as High sensitivity due to the presence of *Hermannia lavandulifolia* (Vulnerable A2c) while several other species were rated as medium. These species were actively searched for were relevant habitat occurred, where the presence of the *Hermannia* species was confirmed (more than 20 plants) while the remaining Medium sensitivity rated species, including the Endangered Species 264 below where not observed:

Sensitivity	Feature(s)
High	Hermannia lavandulifolia
Low	Low Sensitivity
Medium	Sensitive species 264
Medium	Leucospermum muirii
Medium	Leucospermum praecox
Medium	Selago glandulosa
Medium	Selago villicaulis
Medium	Aspalathus obtusifolia
Medium	Aspalathus campestris
Medium	Lampranthus pauciflorus
Medium	Lampranthus foliosus
Medium	Hermannia lavandulifolia
Medium	Muraltia knysnaensis
Medium	Thamnochortus muirii

Therefore, any natural veld around these areas were considered sensitive, which included priority areas associated with exposed stone or rock outcrops - as these contain many rare succulents and bulbs. See species list and Figure 5 below.

Mossel Bay Shale Renosterveld is known to support several rare and threatened *Haworthia* species (e.g. *H. parksiana*; Bayer 1999; Mucina & Rutherford 2006), and these small, highly cryptic succulent plants could well be present on some of the undisturbed parts of the site. There is a fair to good chance that other SCC, such as *Ruellia pilosa* (Vulnerable) and *Haworthia pygmaea var. argenteo-maculosa,* may also occur on site.

The best quality patches of Thicket in the study area support individuals of white milkwood (*Sideroxylon inerme*). This tree is common and widespread along the south coast but it is still listed as a Protected Species in terms of the Forest Act of 1998 (updated 2018) and permits are required for the removal or even the trimming of this species, but it should be noted that in fact many other species (probably between 30 and 40% of all species in the area, including all Ericaceae and all Iridaceae) are also legally protected by the Western Cape Protected Species Ordinance (2000), and permits are technically required for removal of any of these species as well.

Figure 5: Photographs from the site of Haworthia sp., Hermannia lavandulifolia, Sideroxylon inerme and Cullumia carlinoides

Figure 6: Photographs of the slightly disturbed PetroSA Fynbos Renosterveld with elements of fynbos and small thicket clumps. The high bulb density is typical of Renosterveld vegetation.

Figure 7: Photographs of the Proteus Fynbos-Renoster-Thicket vegetation type identified in the northeastern corner of the southern site; a Proteoid Silcrete Mosaic Renoster and Thicket habitat

Figure 8: Photographs of the slightly modified grassy fynbos renosterveld vegetation located on both sites. In some areas this habitat has been given a medium sensitivity rating as it contains some bulbs and renosterbos. It borders the undisturbed areas, has remnant characteristic vegetation, and could be rehabilitated to provide ecological support services

Figure 9: Photographs of the disturbed grassy fynbos within low sensitivity areas on site which are dominated by grasses, have low plant diversity, limited bulbs, succulents, renosterbos or thicket species

Figure 10: Photographs of the very low sensitivity area, which has been transformed from natural renosterveld habitat to ostrich camps and livestock pasture

Alien trees such as *Acacia saligna* (Port Jackson) and rooikrans (*A. cyclops*) have established in some disturbed grassveld and thicket areas in the southeastern corner of the southern site (Figure 11). Alien grass species such as *Pennisetum clandestinum* (kikuyu grass) are widespread in the disturbed, heavily grazed areas. In all cases, the invasive alien plants, whatever their density, reduce sunlight, overtop and outcompete the natural vegetation, use the soil moisture to a greater extent than the indigenous vegetation and thus limit the range of habitat availability.

Figure 11: Photographs of alien invasive trees within areas mapped as low sensitivity due to their modified state and lack of characteristic renosterveld/fynbos/ thicket vegetation type

In summation, please refer to Section 11, of this report where sensitivity of the habitats important to any plant species is discussed in detail, and shown in a sensitivity map.

6 Plant Theme Impact Assessment

During the impact assessment potential key issues and impacts that would directly affect plant species, or habitats associated with important species / species assemblages were identified, and these were assessed as follows:

- Impact 1: Loss of terrestrial vegetation or habitats that could contain various species of special concern or species listed as High & Medium Sensitivity in the DFFE Screening Tool
- Impact 2: Spread of alien tree species
- Impact 2: Cumulative impacts

6.1 Impact 1: Loss of terrestrial vegetation or habitats that could contain various species of special concern or species listed as High & Medium Sensitivity in the DFFE Screening Tool

Environmental Impact:	***Activity/Aspect & Impact Source:***	***Proposed Mitigation:***
The clearing of terrestrial habitat with a HIGH sensitivity rating, notably the Fynbos habitat associated with a Threatened Ecosystem (See Figure 16)	Due to the nature of the project this will persist in the long term into the operational phase impact and would impact in particular on intact Renosterveld rated as HIGH (Figure 16), although the intact areas will be retained within the proposed Conservation Area	Ideally all areas rated as HIGH should be excluded from the development proposal, however as this is not possible due to various development & economic constraints the following is proposed: Loss of any area rated High would typically require an offset with protection of any remaining areas within and adjacent to the site., however as the development proposes an on-site conservation area of important habitat, this is not envisaged. This will also serve to protect any important or conservation worth species identified in this assessment and highlighted in the DFFE Screening Tool, e.g. *Hermannia lavandulifolia* All alien cover must be removed and then be allowed to fully recover and revegetate with climax fynbos species. These areas should remain free form alien plants and be monitored for any erosion. Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region. A detailed walkdown must be conducted to determine the final list of species that will require Cape Nature & DFFE permits. As the majority of Fynbos species are difficult to relocate, alternative means of collecting seed and or propagules must be used to assist with the revegetation of any disturbed areas or areas clear of alien vegetation. Construction must be limited to the footprint only to minimise secondary disturbance, thus reducing the size of the areas that require revegetation, to a minimum.

Impact Significance

	Extent	**Duration**	**Severity**	**Reversibility**	**Irreplaceable Loss**	**Probability**	**Impact Significance**
Without Mitigation:	Local (2)	Long-term (4)	High (8)	Completely (0)	Partly (0.5)	Definite (5)	High (72.5)
With Mitigation:	Site (1)	Long-term (4)	Low (4)	Completely (0)	Partly (0.5)	Probable (3)	Low (22.5)

Potential to Mitigate: Moderate potential / easy to mitigate	***Assessment Confidence:*** Complete

6.2 Impact 2: Spread of alien invasive trees

Environmental Impact: The clearing of any areas during the construction phase especially will result in areas being colonised by alien invasive species already present in the landscape	***Activity/Aspect & Impact Source:*** Due to the nature of the project this will persist in the long term into the operational phase impact and would impact in particular the proposed Conservation Area	***Proposed Mitigation:*** All alien cover must be removed and then be allowed to fully recover and revegetate with climax fynbos species. These areas should remain free form alien plants and be monitored for any erosion. Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region. Construction must be limited to the footprint only to minimise secondary disturbance, thus reducing the size of the areas that require revegetation, to a minimum.

Impact Significance

	Extent	**Duration**	**Severity**	**Reversibility**	**Irreplaceable Loss**	**Probability**	**Impact Significance**
Without Mitigation:	Local (2)	Long-term (4)	High (8)	Completely (0)	Partly (0.5)	Definite (5)	High (72.5)
With Mitigation:	Site (1)	Long-term (4)	Low (4)	Completely (0)	Partly (0.5)	Probable (3)	Low (22.5)

Potential to Mitigate: Moderate potential / easy to mitigate	***Assessment Confidence:*** Complete

6.3 Impact 3: Cumulative impacts

Environmental Impact: The cumulative impacts are related to the loss habitats associated with a Threatened Ecosystem or listed / protected species.	***Activity/Aspect & Impact Source:*** Due to the nature of the project this will persist in the long term in the operational phase impact.	***Proposed Mitigation:*** Ideally all areas rated as HIGH should be excluded from the development proposal, however as this is not possible due to various development & economic constraints the following is proposed: Loss of any area rated High would typically require an offset with protection of any remaining areas within and adjacent to the site., however as the development proposes an on-site conservation area of important habitat, this is not envisaged All alien cover must be removed and then be allowed to fully recover and revegetate with climax fynbos species. These areas should remain free form alien plants and be monitored for any erosion. Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region. A detailed walkdown must be conducted to determine the final list of species that will require CAPE NATURE & DFFE permits. As the majority of Fynbos species are difficult to relocate, alternative means of collecting seed and or propagules must be used to assist with the revegetation of any disturbed areas or areas clear of alien vegetation. Construction must be limited to the footprint only to minimise secondary disturbance, thus reducing the size of the areas that require revegetation, to a minimum.

Impact Significance							
Without Mitigation:	**Extent** Site (1)	**Duration** Long-term (4)	**Severity** Moderate (4)	**Reversibility** Completely (0)	**Irreplaceable Loss** Partly (0.5)	**Probability** Definite (5)	**Impact Significance** Moderate (47.5)
With Mitigation:	**Extent** Site (1)	**Duration** Long-term (4)	**Severity** Minor (2)	**Reversibility** Completely (0)	**Irreplaceable Loss** Partly (0.5)	**Probability** Probable (3)	**Impact Significance** Low (22.5)
Potential to Mitigate: Moderate potential / easy to mitigate				***Assessment Confidence:*** Complete			

7 Animal Biodiversity Theme Assessment

During this assessment, a specific focus was on determining which portions of the proposed project would be located within intact portions of any important vegetation types that would contain habitat for animal species. Especially those with limited mobility or unique habitat requirements, that would be at risk during the construction phase.

Table 2 and Figure 12 includes the faunal species observed during this assessment, none of which are considered sensitive or conservation needy. With regards to mammal species, Species 13 & 24 listed by the DFFE Screening Tool, have limited to no likelihood of occurring within the site, while the avifaunal and invertebrate species will move from the site once any activities commence. Appendix 3 includes photos of other singular animal species observed within the intact areas or adjacent the site. These species would easily make use of the proposed Conservation area, as this is their favoured habitat. The currently degraded areas are not seen as optimal habitat any animal species and especially those observed and shown as present in Table 2.

Table 2: Faunal species observed within the site, previously recorded or likely to occur in the general study area, together with the conservation status. Key =: Y = Observed; U = Unconfirmed, but within the distribution range

Taxon	Common Name	RDB/SSC	Presence
Amphibians			
Amietophrynus pardalis	Eastern Leopard Toad	ENCO, IUCN LC	U
Amietophrynus rangeri	Raucous Toad	ENCO, IUCN LC	U
Breviceps adspersus pentheri	Penther's Rain Frog	ENCO, IUCN LC	U
Cacosternum boettgeri	Common caco	ENCO, IUCN LC	U
Cacosternum nanum	Bronze Caco	ENCO, IUCN LC	U
Hyperolius marmoratus	Painted Reed Frog	ENCO, IUCN LC	U
Kassina senegalensis	Bubbling Kassina	ENCO, IUCN LC	U
Semnodactylus wealii	Rattling Frog	ENCO, IUCN LC	U
Strongylopus fasciatus	Striped Stream Frog	ENCO, IUCN LC	U
Strongylopus grayii	Clicking Stream Frog	ENCO, IUCN LC	U
Tomopterna delalandii	Cape Sand Frog	ENCO, IUCN LC	U
Vandijkophrynus angusticeps	Cape sand Toad	ENCO, IUCN LC	U
Xenopus laevis	Common Platanna	ENCO, IUCN LC	U
Reptiles			
Acontias gracilicauda	Thin tailed legless skink	ENCO, IUCN LC	U
Acontias lineicauda	Algoa legless skink	ENCO, IUCN NT	U
Acontias meleagris orientalis	Eastern legless skink	ENCO, IUCNLC	U
Acontias percivali tasmani	Tasman's legless skink	ENCO, IUCN LC	U
Agama atra	Southern rock agama	ENCO, IUCN LC	U
Aspidelapse lubricus	Cape coral snake	ENCO, IUCN LC	U
Bitis arietans	Puff adder	ENCO, IUCN LC	Y
Bradypodion ventrale	Southern Dwarf Chameleon	ENCO, IUCN LC, CITIES 2	U
Causus rhombeatus	Night adder	ENCO, IUCN LC	U
Chersina angulata	Angulate tortoise	ENCO, IUCN LC, CITIES 2	Y
Cordylus cordylus	Cape girdled lizard	ENCO, IUCN LC, CITIES 2	U
Cordylus tasmani	Tasman's girdled lizard	CITES 2 ,ENCO, IUCN VU	U
Crotaphopeltis hotamboeia	Herald snake	ENCO, IUCN LC	U
Dasypeltis scabra	Rhombic egg eater	ENCO, IUCN LC	U
Hemachatus haemachatus	Rinkhals	ENCO, IUCN LC	U
Hemidactylus mabouia	Tropical house gecko	ENCO, IUCN LC	U
Lamprophis aurora	Aurora house snake	ENCO, IUCN LC	U
Lamprophis capensis	Brown house snake	ENCO, IUCN LC	U
Lamprophis fuscus	Yellow bellied house snake	ENCO, IUCN NT	U

Lamprophis inornatus	Olive house snake	ENCO, IUCN LC	U
Lycodonomorphus rufulus	Brown water snake	ENCO, IUCN LC	U
Naja nivea	Cape cobra	ENCO, IUCN LC	U
Nucras intertexta	Spotted Sandveld Lizard	ENCO	U
Pelomedusa subrufa	Marsh terrapin	ENCO, IUCN LC	U
Philothamnus natalensis occidentalus	Natal green snake	ENCO, IUCN LC	U
Psammophis notostictus	Karroo whip snake	ENCO, IUCN LC	U
Psammophylax rhombeatus	Rhombic skaapsteker	ENCO, IUCN LC	U
Pseudaspis cana	Mole snake	ENCO, IUCN LC	Y – 1 moved to cover when observed
Stigmochelys pardalis	Leopard Tortoise	ENCO, IUCN LC CITIES 2	U
Trachylepis capensis	Cape skink	ENCO, IUCN LC	Y – 1 moved to cover when observed
Trachylepis homalcephala	Red sided skink	ENCO, IUCN LC	U
Trachylepis varia varie	Variable skink	ENCO, IUCN LC	U
Varanus albigularis	Rock Monitor	ENCO, IUCN LC CITIES 2	U
Varanus niloticus	Water Monitor	ENCO, IUCN LC CITIES 2	U
Mammals			
Amblysomus corriae	Fynbos golden mole	ENCO, IUCN NT	U
Amblysomus hittentotus	Hottentot Golden Mole	ENCO, IUCN DD	U
Aonyx capensis	African clawless otter	ENCO, IUCN LC	U
Atilax paludinosus	Marsh mongoose	ENCO, IUCN LC	U
Caracal caracal	Caracal	ENCO, IUCN LC	U
Cercopithecus pygerythrus	Vervet monkey	ENCO, IUCN LC	Y 3 observed on the fence adjacent the site
Chlorotalpa duthieae	Duthie's golden mole	ENCO, IUCN LC	U
Crocidura cyanea	Reddish-Grey Musk Shrew	ENCO, IUCN DD	U
Crocidura flavescens	Greater red musk shrew	ENCO, IUCN LC	U
Cryptomys hottentotus	African mole rat	ENCO, IUCN LC	Y – Mole hills
Cynictis penicillata	Yellow mongoose	ENCO, IUCN LC	Y - 1 moved from the site when observed
Dendromus melanotis	Grey climbing mouse	ENCO, IUCN LC	U
Dendromus mesomelas	Brant's climbing mouse	ENCO, IUCN LC	U
Felis cattus	Domestic cat	Alien	Y – 1 near current factories
Felis silvestris	African wild cat	ENCO, IUCN LC	U
Galerella pulverulenta	Cape grey mongoose	ENCO, IUCN LC	U
Genetta genetta	Small spotted genet	ENCO, IUCN LC	U
Genetta tigrina	Large spotted genet	ENCO, IUCN LC	U
Georychus capensis	Cape mole rat	ENCO, IUCN LC	U
Graphiurus murinus	Woodland dormouse	ENCO, IUCN LC	U
Graphiurus ocularis	Spectacled dormouse	ENCO, IUCN LC	U
Herpestes ichneumon	Large grey mongoose	ENCO, IUCN LC	U
Hystrix africaeaustralis	Cape porcupine	ENCO, IUCN LC	U
Ictonyx striatus	Striped pole cat	ENCO, IUCN LC	U
Lepus saxatilis	Scrub hare	ENCO, IUCN LC	Y - scat observed
Macroscelides proboscideus	Round eared elephant shrew	ENCO, IUCN LC	U
Mastomys natalensis	Natal multimammate mouse	ENCO, IUCN LC	U
Mellivora capensis	Honey badger	ENCO, IUCN CITES 3 NT	U
Micaelamys namaquensis	Namaqua rock mouse	LC	U
Mus minutoides	Pygmy mouse	LC	U
Mus musculus	House mouse	Alien	Y 1 on rubble
Myosorex varius	Forest Shrew	ENCO, IUCN DD	U
Neoromicia capensis	Cape serotine bat	ENCO, IUCN LC	U
Nycteris thebaica	Egyptian slit faced bat	ENCO, IUCN LC	U

Orycteropus afer	Aardvark	ENCO, IUCN LC	U
Otocyon megalotis	Bat eared fox	ENCO, IUCN LC	U
Otomys irroratus	Vlei rat	ENCO, IUCN LC	U
Otomys unisulcatus	Bush vlei rat	ENCO, IUCN LC	U
Panthera pardus	Leopard	ENCO, IUCN LC	U
Papio cynocephalus ursinus	Chacma baboon	ENCO, IUCN LC	U
Species13		ENCO, IUCN CITES2 VU	Likely in dense vegetation areas
Poecilogale albinucha	African striped weasel	ENCO, IUCN VU	U
Potamochoerus larvatus	Bush pig	ENCO, IUCN LC	U
Raphicerus campestris	Steenbok	ENCO, IUCNLC	U
Raphicerus melanotis	Grysbok	ENCO, IUCNLC	U
Rattus rattus	House rat	ENCO, IUCN LC	U
Rhabdomys pumilio	Four striped grass mouse	ENCO, IUCN LC	Y Figure 12 - runs
Saccostomus campestris	Pouched mouse	ENCO, IUCNLC	U
Suncus infinitesimus	Least dwarf shrew	ENCO, IUCN E	U
Sylvicapra grimmia	Common duiker	ENCO, IUCN LC	U
Tragelaphus scriptus	Bush buck	ENCO, IUCN LC	U
Vulpes chama	Cape Fox	ENCO, IUCN LC	U

Where:
ARRSA = Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland. 2014. Edited by Michael F. Bates, William R. Branch, Aaron M. Bauer, Marius Burger, Johan Marais, Graham J. Alexander & Marienne S. de Villiers. SANBI, Pretoria.
RDB, 2015 = Taylor MR, Peacock F, Wanless RM (eds) 2015. The 2015 Eskom Red Data Book of birds of South Africa, Lesotho and Swaziland. BirdLife South Africa, Johannesburg.
SABCA = Mecenero, S., J.B. Ball, D.A. Edge, M.L. Hamer, G.A. Hening, M. Krüger, E.L. Pringle, R.F. Terblanche & M.C. Williams (eds). 2013. Conservation assessment of butterflies of South Africa, Lesotho and Swaziland: Red List and atlas. Saftronics (Pty) Ltd., Johannesburg and Animal Demography Unit, Cape Town.

Based then on the status of the environment, the potential animal species that have been rated as High / Medium Sensitivity in the DFFE Screening Tool were assessed, and it was concluded that these would all have a low probability of occurrence. This due to an overall lack of habitat or the species is highly mobile:

Sensitivity	Feature(s)
High	Aves-Circus ranivorus
High	Aves-Neotis denhami
High	Aves-Polemaetus bellicosus
High	Aves-Circus maurus
High	Aves-Bradypterus sylvaticus
High	Aves-Afrotis afra
Medium	Aves-Circus ranivorus
Medium	Aves-Bradypterus sylvaticus
Medium	Aves-Afrotis afra
Medium	Insecta-Aloeides thyra orientis
Medium	Insecta-Lepidochrysops littoralis
Medium	Sensitive species 24
Medium	Sensitive species 13
Medium	Invertebrate-Aneuryphymus montanus

As previously stated, thhe fauna of this area was therefore typical of the peri-urban fringe community in this area, with a relatively high diversity of small mammals, moderate reptile, butterfly and bird diversity, (Figure 12). Faunal diversity is likely to be strongly correlated with habitat availability and diversity, and this means that essentially the high sensitivity botanical areas are also likely to be the highest sensitivity faunal areas. In summation, animal species do occur, most are highly mobile, but

all prefer the intact areas that will be included in the proposed 15 ha conservation area, noting that no SSC were observed, but all species see are protected by Provincial legislation. Please refer to Section 11, of this report where sensitivity of the habitats important to any animals is discussed in detail, together with a overall sensitivity map.

Figure 12: Photographs of faunal activity on site indicating the presence of endemic rodents and insects

8 Animal Theme Impact Assessment

During the impact assessment several potential key issues / impacts were identified, and these were assessed as follows:

- Impact 1: Loss of terrestrial vegetation or habitats that could contain habitat important habitat for fauna
- Impact 2: Habitat fragmentation, through development and or encroaching alien vegetation
- Impact 3: Cumulative impacts

8.1 Impact 1: Loss of terrestrial vegetation or habitats that could contain various animal species of special concern and or important habitat for fauna

Environmental Impact:	***Activity/Aspect & Impact Source:***	***Proposed Mitigation:***
The clearing of terrestrial habitat with a HIGH sensitivity rating, notably the Fynbos habitat associated with a Threatened Ecosystem (See Figure 16), could also result in the loss or additional	Due to the nature of the project this will persist in the long term into the operational phase impact and would impact on particular on intact Renosterveld rated as HIGH (Figure 16), although the intact areas will be retained within the proposed Conservation Area, thus providing habitat for any remaining species	Ideally all areas rated as HIGH should be excluded from the development proposal, however as this is not possible due to various development & economic constraints the following is proposed: Loss of any area rated High would typically require an offset with protection of any remaining areas within and adjacent to the site., however as the development proposes an on-site conservation area of important habitat, this is not envisaged. This 15 ha conservation area will then provide suitable habitat for all of the species that are expected to occur, as when as any highlighted by the Screening

fragmentation of faunal habitat		Tool, especially the Birds, butterfly and mammal species listed. All alien cover must be removed and then be allowed to fully recover and revegetate with climax fynbos species. These areas should remain free form alien plants and be monitored for any erosion. Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region. A detailed walkdown must be conducted to determine the final list of species that will require CAPE NATURE & DFFE permits, to relocate any reptiles for example Construction must be limited to the footprint only to minimise secondary disturbance, thus reducing the size of the areas that require revegetation, to a minimum.

Impact Significance

	Extent	**Duration**	**Severity**	**Reversibility**	**Irreplaceable Loss**	**Probability**	**Impact Significance**
Without Mitigation:	Local (2)	Long-term (4)	High (8)	Completely (0)	Partly (0.5)	Definite (5)	High (72.5)
With Mitigation:	Site (1)	Long-term (4)	Low (4)	Completely (0)	Partly (0.5)	Probable (3)	Low (22.5)

Potential to Mitigate: Moderate potential / easy to mitigate	***Assessment Confidence:*** Complete

8.2 Impact 2: Habitat fragmentation – direct construction and operational phase impact

Environmental Impact: Based on the information collected during the assessment, that contained within the conservation plant, vegetation maps the potential for habitat fragmentation - reduction in ecosystem corridors for the terrestrial animals	***Activity/Aspect & Impact Source:*** Due to the nature of the project this will persist in the long term into the operational phase impact and would impact on particular on intact Renosterveld rated as HIGH (Figure 16), although the intact areas will be retained within the proposed Conservation Area, thus providing habitat for any remaining species.	***Proposed Mitigation:*** Ideally all areas rated as HIGH should be excluded from the development proposal, however as this is not possible due to various development & economic constraints the following is proposed: Loss of any area rated High would typically require an offset with protection of any remaining areas within and adjacent to the site., however as the development proposes an on-site conservation area of important habitat, this is not envisaged All alien cover must be removed and then be allowed to fully recover and revegetate with climax fynbos species. These areas should remain free form alien plants and be monitored for any erosion. Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region. In adhering to the above, habitat fragmentation within, and more importantly the connection with intact habitats still surrounding the site, will be promoted, assuming that the areas around the site will remain undeveloped in the near future. i.e. integrated into regional conservation plans for the municipality.

Impact Significance

	Extent	**Duration**	**Severity**	**Reversibility**	**Irreplaceable Loss**	**Probability**	**Impact Significance**
Without Mitigation:	Site (1)	Long-term (4)	Moderate (4)	Completely (0)	Partly (0.5)	Definite (5)	Moderate (47.5)

	Extent	Duration	Severity	Reversibility	Irreplaceable Loss	Probability	Impact Significance
With Mitigation:	Site (1)	Long-term (4)	Minor (2)	Completely (0)	Partly (0.5)	Probable (3)	Low (22.5)
Potential to Mitigate: Moderate potential / easy to mitigate				***Assessment Confidence:*** Complete			

8.3 Impact 3: Cumulative impacts

Environmental Impact: The cumulative impacts are related to the loss habitats associated with a faunal habitats or species. This also relates to animal loss due to traffic, noise and vibration impacts, as these already occur in and around the site (farming and industrial activities). Therefore this must be assessed as a cumulative impact	***Activity/Aspect & Impact Source:*** Due to the nature of the project this will persist in the long term in the operational phase impact.	***Proposed Mitigation:*** Ideally all areas rated as HIGH should be excluded from the development proposal, however as this is not possible due to various development & economic constraints the following is proposed: Loss of any area rated High would typically require an offset with protection of any remaining areas within and adjacent to the site., however as the development proposes an on-site conservation area of important habitat, this is not envisaged All alien cover must be removed and then be allowed to fully recover and revegetate with climax fynbos species. These areas should remain free form alien plants and be monitored for any erosion. Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region. A detailed walkdown must be conducted to determine the final list of species that will require CAPE NATURE & DFFE permits. Construction must be limited to the footprint only to minimise secondary disturbance, thus reducing the size of the areas that require revegetation, to a minimum. The conservation area should be demarcated as no-go from the onset of the project, to allow any resident fauna not relocated to, be able to move to this area of safety, so ideally should not be fenced but only pegged as no-go.

Impact Significance

	Extent	Duration	Severity	Reversibility	Irreplaceable Loss	Probability	Impact Significance
Without Mitigation:	Site (1)	Long-term (4)	Moderate (4)	Completely (0)	Partly (0.5)	Definite (5)	Moderate (47.5)
With Mitigation:	Site (1)	Long-term (4)	Minor (2)	Completely (0)	Partly (0.5)	Probable (3)	Low (22.5)
Potential to Mitigate: Moderate potential / easy to mitigate				***Assessment Confidence:*** Complete			

8.4 Conclusion - Animals

Overall, the site presents many constraints to development, whoever the current layout is found acceptable as this will allow for conservation of an important area, that within the No-Go option would continue to degrade due to an increase in alien plant invasion and illegal waste dumping that was more noticeable in the last two years. Therefore, with the implementation of the above mitigations and recommendations, the specialist has not objection to the approval of the project.

9 Terrestrial Theme Biodiversity Assessment

All areas of natural vegetation have a high local and regional conservation value in this area. Conservation value of habitat is a product of species diversity, plant community composition, rarity of habitat, degree of habitat degradation, rarity of species, ecological viability and connectivity, vulnerability to impacts, and reversibility of threats.

The northeastern pocket is Proteus Fynbos Renoster Thicket – Proteoid silcrete Fynbos renosterveld. The mid-portion is Mesic Mosaic Proteoid Fynbos - PetroSA Fynbos Renosterveld but becomes slightly disturbed and grassy.

The north and eastern areas of the property are covered by relatively undisturbed natural habitat (Figure 13). The undisturbed areas contain a mosaic of thicket renosterveld and Fynbos renosterveld with slightly disturbed areas containing more grasses and no thicket species as one transitions towards the western degraded land (Figure 13). Alien trees such as *A. saligna* (Port Jackson) and Rooikrans (*A. cyclops*) have established in some disturbed thicket areas and are dominant in the southeastern corner of the site. Alien grass species such as *Pennisetum clandestinum* (kikuyu grass) are widespread in the disturbed, heavily grazed areas to the west. Other invasive species less common on site include *Hakea sericea* (Silky hakea, and *Opuntia ficus-indica* (prickly pear). *Plantago lanceolata* is the most common alien herb on the site. A small number of Pine trees (*Pinus* spp.) were also observed in the May 2025 assessment (Autumn) in this area.

As shown in Figure 13 below, the disturbed areas would correspond with the areas previously used for agriculture (See Figure 2) and more recently for Ostrich farming / abattoir. This disturbance is also substantiated by the exclusion of the southern portion of the site from being considered as a Critical Biodiversity Area (WCBSP, 2023 updated 2025 – Figure 15).

Figure 13: Habitat types proposed for development

Figure 14: A milkwood tree (Sideroxylon inerme) located within one of the small pockets of thicket habitat (left) and transformed vegetation from past agriculture use and present livestock grazing (right)

9.1 Critical Biodiversity Areas

The Western Cape Biodiversity Spatial Plan (WCBSP), revised in 2023 with spatial information updated in December 2025, identifies areas crucial for conserving a representative sample of biodiversity and maintaining ecosystem functioning. Critical Biodiversity Areas (CBAs) are required to meet biodiversity targets. These areas have high biodiversity and ecological value and therefore must be kept in a natural state without further loss of habitat or species. Low-impact, biodiversity sensitive land uses are the only land uses allowed in CBAs. Critically Endangered (CR) ecosystems, critical corridors for maintaining landscape connectivity and areas required to meet biodiversity pattern targets, are included in CBAs.

The WCBSP made a distinction between areas likely to be in a natural condition (CBA1) and areas that could be degraded (CBA2). Ecological Support Areas (ESAs) are not essential for meeting biodiversity targets but are important as they support the functioning of CBAs and Protected Areas (PAs). ESAs support landscape connectivity, surrounds ecological infrastructure that provide ecosystem services, and strengthen resilience to climate change. These areas include Endangered vegetation, water source and recharge areas and riparian habitat around rivers and wetlands. The WCBSP also made a distinction between ESAs in a functional condition (ESA1) and degraded areas in need of restoration (ESA2).

Much of the site proposed for development is identified by the WCBSP and critical biodiversity area, despite the national vegetation type being largely inaccurate and having a lower threat status (Figure 15). The WCBSP reasons are stated as:

- Petrosa Fynbos-Renosterveld (Vlok variant) Critically Endangered CBA 2 Natural
- Hartenbos Dune Thicket Critically Endangered CBA 1 – near natural state
- Hartenbos Dune Thicket Critically Endangered CBA 2 – Degraded
- Southern Sandstone Fynbos Seep CBA 1 - Natural

These ratings where then reflected in the DFFE Screening tool ratings, of Very High for the site as follows:

Sensitivity	Feature(s)
Very High	CBA: Terrestrial
Very High	CBA2: Terrestrial
Very High	ESA 2: Restore from other land use
Very High	FEPA Subcatchment
Very High	National Protected Area Expansion Strategy (NPAES)
Very High	EN_Hartenbos Dune Thicket

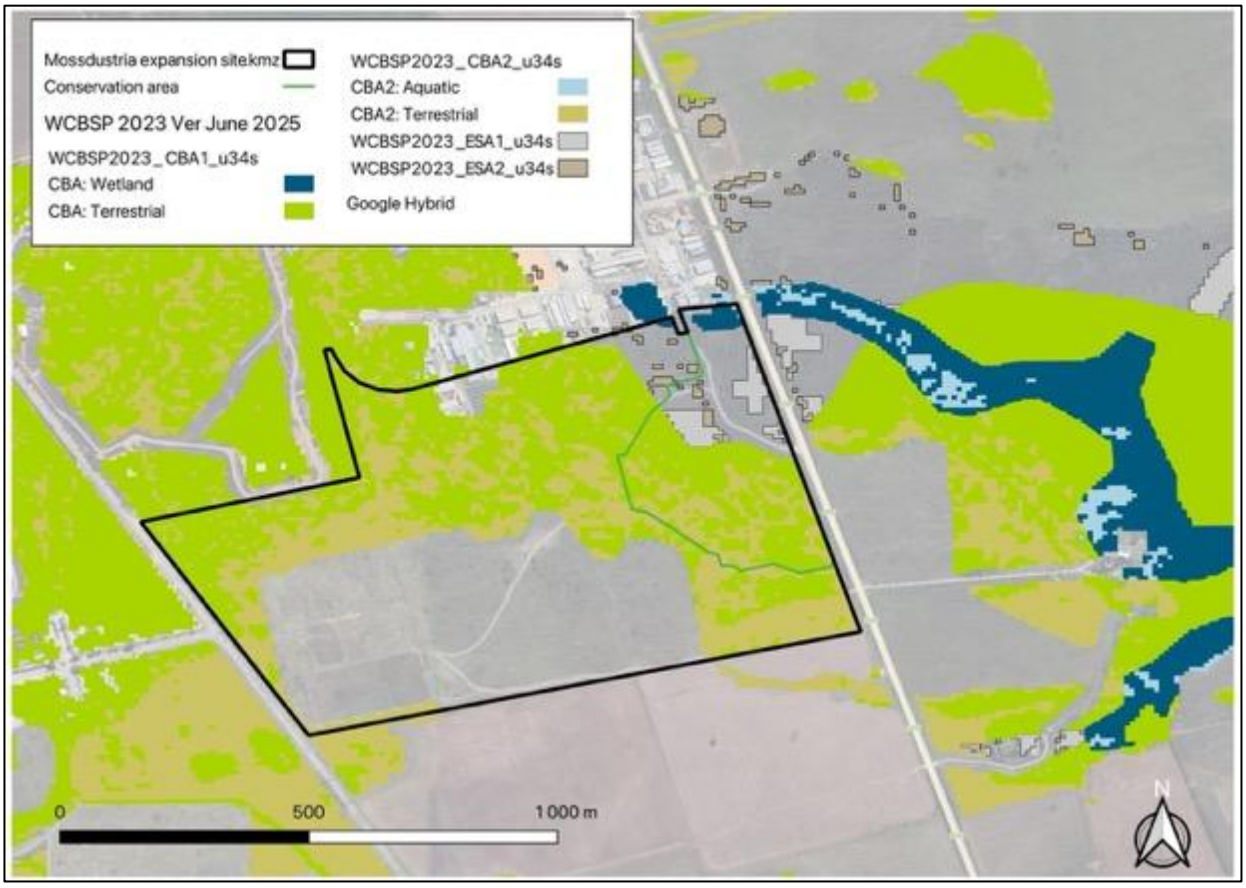


Figure 15: Map of the Critical Biodiversity Areas relative to site (WCBSP, 2023 as amended 2025)

From Figure 15, the site is either mapped as either transformed and or degraded or is shown as a mosaic of CBA Terrestrial and CBA 2 Terrestrial (WCBASP, 2023). So, in essence the site composed of a mosaic of near natural to degraded areas. This as stated in this report was confirmed, but with a higher proportion of near natural areas, found in the proposed Conservation Area, which would

then allow over time for the expansion of the Critically Endangered vegetation units regardless of the mapped descriptions.

9.2 Ecological viability and connectivity

Each habitat type must not be seen in isolation, but rather in terms of its importance in a landscape context - for example, connectivity with other areas of similar habitat on the study area and on adjacent land is important, as is the management and rehabilitation of these connected areas. The habitats identified on the study area extend well beyond the boundaries of property. The thicket, fynbos and renosterveld mosaic with disturbed areas of lands, pastures, and alien tree infestations, repeats itself continuously in the coastal area. The habitats of the study area are thus not unique, but they are under threat throughout the area. The threat of urban expansion, commercial forestry and agriculture, coupled with invasion by aggressive alien trees elevates the value of each remaining patch of natural habitat, giving it threatened, conservation-worthy and high sensitivity to disturbance status. However, the site has been disconnected from any ecological corridors by the railway and road infrastructure, as well as through land fragmentation from industrial development and cultivation.

Fire is acknowledged to be one of the primary drivers within Renosterveld (Helme & Rebelo 2016a) and Lowland Fynbos (Helme *et al* 2016) habitats. Most of the vegetation on site currently, does not appear to have burnt for at least 25 or 30 years. Optimal fire frequency in these sorts of Fynbos and Renosterveld systems is anywhere from once every 10 years to once every 15 years (Helme & Rebelo 2016, Helme & Rebelo 2016a). The primary factor limiting the spread of the Thicket is probably fire, and in the long- term absence of fire the Thicket is likely to spread into the Fynbos and Renosterveld areas. Therefore, a burning regime for the continued presence of the renosterveld and fynbos habitat on site should be considered as part of a maintenance plan but probably not practical due to scale of the site and its proximity to PetroSA

10 Terrestrial Biodiveristy Theme Impact Assessment

During the impact assessment the following potential key issues / impacts were identified, and assessed as follows:

During the impact assessment several potential key issues / impacts were identified, and these were assessed as follows:

- Impact 1: Loss of terrestrial vegetation or habitats that could contain habitat important habitat for fauna and linked to Critical Biodiversity Areas or Threatened Ecosystems
- Impact 2: Habitat fragmentation especially via development and or impacts related to alien tree encroachment
- Impact 3: Cumulative impacts

10.1 Impact 1: Loss of terrestrial vegetation or habitats that could contain various species of special concern, habitat rated as Critically Endangered and or important habitat for fauna

Environmental Impact:	***Activity/Aspect & Impact Source:***	***Proposed Mitigation:***
The clearing of terrestrial habitat with a HIGH sensitivity rating, notably the Renosterveld habitat associated	Due to the nature of the project this will persist in the long term into the operational phase impact and would impact on particular on intact Renosterveld rated as HIGH (Figure 16), although the intact areas will be retained within the proposed	Ideally all areas rated as HIGH should be excluded from the development proposal, however as this is not possible due to various development & economic constraints the following is proposed: Loss of any area rated High would typically require an offset with protection of any remaining areas within and adjacent to the site., however as the

with a Threatened Ecosystem (See Figure 16), could also result in the loss or additional fragmentation of faunal habitat	Conservation Area, thus providing habitat for any remaining species	development proposes an on-site conservation area of important habitat, this is not envisaged All alien cover must be removed and then be allowed to fully recover and revegetate with climax fynbos species. These areas should remain free form alien plants and be monitored for any erosion. Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region. A detailed walkdown must be conducted to determine the final list of species that will require CAPE NATURE & DFFE permits. Construction must be limited to the footprint only to minimise secondary disturbance, thus reducing the size of the areas that require revegetation, to a minimum.

Impact Significance

	Extent	**Duration**	**Severity**	**Reversibility**	**Irreplaceable Loss**	**Probability**	**Impact Significance**
Without Mitigation:	Local (2)	Long-term (4)	High (8)	Completely (0)	Partly (0.5)	Definite (5)	High (72.5)
With Mitigation:	Site (1)	Long-term (4)	Low (4)	Completely (0)	Partly (0.5)	Probable (3)	Low (22.5)

Potential to Mitigate: Moderate potential / easy to mitigate	***Assessment Confidence:*** Complete

10.2 Impact 2: Habitat fragmentation due to development and or alien invasive plant encroachment – direct construction and operational phase impact

Environmental Impact: Based on the information collected during the assessment, that contained within the conservation plant, vegetation maps the potential for habitat fragmentation - reduction in ecosystem corridors for the terrestrial animals	***Activity/Aspect & Impact Source:*** Due to the nature of the project this will persist in the long term into the operational phase impact and would impact on particular on intact Renosterveld rated as HIGH (Figure 20), although the intact areas will be retained within the proposed Conservation Area, thus providing habitat for any remaining species.	***Proposed Mitigation:*** Ideally all areas rated as HIGH should be excluded from the development proposal, however as this is not possible due to various development & economic constraints the following is proposed: Loss of any area rated High would typically require an offset with protection of any remaining areas within and adjacent to the site., however as the development proposes an on-site conservation area of important habitat, this is not envisaged All alien cover must be removed and then be allowed to fully recover and revegetate with climax fynbos species. These areas should remain free form alien plants and be monitored for any erosion. Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region. In adhering to the above, habitat fragmentation within, and more importantly the connection with intact habitats still surrounding the site, will be promoted, assuming that the areas around the site will remain undeveloped in the near future. i.e. integrated into regional conservation plans for the municipality.

Impact Significance

	Extent	**Duration**	**Severity**	**Reversibility**	**Irreplaceable Loss**	**Probability**	**Impact Significance**
Without Mitigation:	Site (1)	Long-term (4)	Moderate (4)	Completely (0)	Partly (0.5)	Definite (5)	Moderate (47.5)

	Extent	Duration	Severity	Reversibility	Irreplaceable Loss	Probability	Impact Significance
With Mitigation:	Site (1)	Long-term (4)	Minor (2)	Completely (0)	Partly (0.5)	Probable (3)	Low (22.5)
Potential to Mitigate: Moderate potential / easy to mitigate				***Assessment Confidence:*** Complete			

10.3 Impact 2: Cumulative impacts

Environmental Impact: The cumulative impacts are related to the loss habitats associated with a Critical Biodiveristy Areas and Ecological Support Areas.	***Activity/Aspect & Impact Source:*** Due to the nature of the project this will persist in the long term in the operational phase impact.	***Proposed Mitigation:*** Ideally all areas rated as HIGH should be excluded from the development proposal, however as this is not possible due to various development & economic constraints the following is proposed: Loss of any area rated High would typically require an offset with protection of any remaining areas within and adjacent to the site., however as the development proposes an on-site conservation area of important habitat, this is not envisaged All alien cover must be removed and then be allowed to fully recover and revegetate with climax fynbos species. These areas should remain free form alien plants and be monitored for any erosion. Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region. A detailed walkdown must be conducted to determine the final list of species that will require CAPE NATURE & DFFE permits. As the majority of Fynbos species are difficult to relocate, alternative means of collecting seed and or propagules must be used to assist with the revegetation of any disturbed areas or areas clear of alien vegetation. Construction must be limited to the footprint only to minimise secondary disturbance, thus reducing the size of the areas that require revegetation, to a minimum.

Impact Significance

	Extent	Duration	Severity	Reversibility	Irreplaceable Loss	Probability	Impact Significance
Without Mitigation:	Site (1)	Long-term (4)	Moderate (4)	Completely (0)	Partly (0.5)	Definite (5)	Moderate (47.5)
With Mitigation:	Site (1)	Long-term (4)	Minor (2)	Completely (0)	Partly (0.5)	Probable (3)	Low (22.5)
Potential to Mitigate: Moderate potential / easy to mitigate				***Assessment Confidence:*** Complete			

11 Overall Site Sensitivity Summary

High sensitivity areas support largely intact natural habitat that has the potential to support at least one plant Species of Conservation Concern, and in most cases may support from one to two such species. Overall species diversity is high, with more than 75% of the potential complement of species present. This vegetation is all mostly still in a natural condition although invasion of the edges by alien plants does impact some areas. These units should be given the highest conservation status. These units are thus a high priority for nature conservation and should not be impacted in any way. They are also important habitat for endemic/rare fauna and function as important corridors for landscape connectivity.

Medium sensitivity habitat has typically been partly disturbed (often heavily brush-cut or grazed) but could still be rehabilitated to a fully functional degree and generally supports about 20-50% of the original species diversity. (Fragmented, slightly disturbed and grassy areas)

Low sensitivity habitat has usually been heavily disturbed (often by ripping or some form of cultivation or soil disturbance), is unlikely to support any plant Species of Conservation Concern and is not easily to rehabilitated. Species diversity is usually less than 20% of what it would have been prior to disturbance.

The vegetation of Very Low sensitivity habitat has been completely transformed from its original state. Removal of the original natural vegetation cover, tilling of the soil and the establishment and management of pasture grasses or crops has resulted in a completely artificial agricultural habitat. When not managed or grazed, certain pioneer fynbos plants do proliferate within the pasture areas, but most of the plant biodiversity has been lost and would have to be specially re-established to rehabilitate the original natural habitat. This unit is thus a lower priority in terms of nature conservation and is thus better suited for development than the renosterveld, thicket or fynbos units, and all areas that are not completely transformed are likely to be of High or Very High Sensitivity. Only the transformed pasture areas are most suitable for development and the other vegetation units should be rehabilitated and then managed as connected fynbos, renosterveld and thicket conservation areas (Figure 16).

The vegetation in the undisturbed areas is species rich, with a diversity of life forms. Any natural veld in the area must be considered sensitive, and the priority areas are wherever there is exposed stone or rock of any sort - as these contain many rare succulents and bulbs. From this standpoint the habitats mapped will be affected as follows:

Habitat Type	**Current coverage (ha)**	**Loss (ha & %)**	**Sensitivity rating**
Proteoid Fynbos Thicket	10	1.4 or 24%	High
Renosterveld Mesic Mosaic Proteoid Fynbos	14	7 or 50%	Medium
Grassy fynbos / disturbed renosterveld	16	13.7 or 85%	Low
Remaining areas = Very Low			

Figure 16: Site sensitivity map for the site, where the remaining areas are all rated as VERY LOW sensitivity

12 Conclusion

The proposed for expansion of the Mossdustria area could pose a risk to several sensitive habitats and species of conservation concern, as some of the remaining vegetation is considered as critically endangered. Therefore, any development within any in this area would result in unacceptably high impacts to ecological infrastructure and processes.

Typically, then Biodiversity offsets would be implemented (as a last resort) to account for residual impacts but as a sizeable portion of the site (15ha), containing the High sensitivity habitats will remain under conservation, while the disturbed areas will be developed, this will also serve to protect any important or conservation worth species identified in this assessment and highlighted in the DFFE Screening Tool, e.g. *Hermannia lavandulifolia*

This is based on the following final recommendations:

The vegetation in the undisturbed areas is species rich, with a diversity of life forms. Any natural veld in the area must be considered sensitive, and the priority areas are wherever there is exposed stone or rock of any sort - as these contain many rare succulents and bulbs. This then should also then form the basis of a Conservation / Rehabilitation Plan for the conservation site

Implement a programme to control the spread of invasive alien trees as soon as possible and concentrate on invasions within the conservation area.

Overall, the sites present many constraints to development, the current layout is found acceptable as this will allow for conservation of an important area, that within the No-Go option would continue to degrade due to an increase in alien plant invasion and illegal waste dumping that was more noticeable in the last two years. Therefore, with the implementation of the above mitigations and recommendations, the specialist has not objection to the approval of the project.

Specific mitigation to be included in the EMPr are reiterated here:

General:

- A detailed walkdown must be conducted to determine the final list of species that will require CAPE NATURE & DFFE permits.
- Construction must be limited to the footprint only to minimise secondary disturbance, thus reducing the size of the areas that require revegetation, to a minimum.

Animals:

- The conservation area should be demarcated as no-go from the onset of the project, to allow any resident fauna not relocated to be able to move to this area of safety, so ideally should not be fenced but only pegged as no-go.

Plants:

- All alien cover must be removed and then be allowed to fully recover and revegetate with climax fynbos species. These areas should remain free form alien plants and be monitored for any erosion. Where soils are slow to revegetate, these areas should be grubbed and planted with species suited to the region.
- A detailed walkdown must be conducted to determine the final list of species that will require Cape Nature & DFFE permits.

- As most Fynbos species are difficult to relocate, alternative means of collecting seed and or propagules must be used to assist with the revegetation of any disturbed areas or areas clear of alien vegetation.

13 References

- Agenda 21 – Action plan for sustainable development of the Department of Environmental Affairs and Tourism (DEAT) 1998.
- Agricultural Resources Act, 1983 (Act No. 43 of 1983).
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- Du Preez, L. And Carruthers, V. 2009. A Complete Guide To Frogs Of Southern Africa. Struik Nature, Cape Town
- IUCN (2019). Red List of Threatened Species. IUCN Species Survival Commission, Cambridge Available: http://www.iucnredlist.org/
- Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), as amended.
- Mucina, L., & Rutherford, M.C., 2006. The Vegetation of South Africa, Lesotho and Swaziland, Strelitzia 19, South Africa.
- National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.
- National Water Act, 1998 (Act No. 36 of 1998), as amended
- Ramsar Convention, (1971) including the Wetland Conservation Programme (DEAT) and the National Wetland Rehabilitation Initiative (DEAT, 2000).
- South African Bird Atlasing Project 2 (SABAP2). 2017. Animal Demographic Unit. Available online: http://sabap2.adu.org.za/
- Stuart, C and Stuart, T. 2007. A field guide to the mammals of Southern Africa. Struik Nature, Cape Town.

14 Appendix 1 – Copy of Specialist CV

CURRICULUM VITAE
Dr Brian Michael Colloty
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Profession: Ecologist & Environmental Assessment Practitioner (Pr. Sci. Nat. 400268/07)
Member of the South African Wetland Society
Specialisation: Ecology and conservation importance rating of inland habitats, wetlands, rivers & estuaries
Years experience: 30 years

SKILLS BASE AND CORE COMPETENCOES

- 30 years experience in environmental sensitivity and conservation assessment of aquatic and terrestrial systems inclusive of Index of Habitat Integrity (IHI), WET Tools, Riparian Vegetation Response Assessment Index (VEGRAI) for Reserve Determinations, estuarine and wetland delineation throughout Africa. Experience also includes biodiversity and ecological assessments with regard sensitive fauna and flora, within the marine, coastal and inland environments. Countries include Mozambique, Kenya, Namibia, Central African Republic, Zambia, Eritrea, Mauritius, Madagascar, Angola, Ghana, Guinea-Bissau and Sierra Leone. Current projects also span all nine provinces in South Africa.
- 15 years experience in the coordination and management of multi-disciplinary teams, such as specialist teams for small to large scale EIAs and environmental monitoring programmes, throughout Africa and inclusive of marine, coastal and inland systems. This includes project and budget management, specialist team management, client and stakeholder engagement and project reporting.
- GIS mapping and sensitivity analysis

TERTIARY EDUCATION

- 1994: B Sc Degree (Botany & Zoology) - NMU
- 1995: B Sc Hon (Zoology) - NMU
- 1996: M Sc (Botany - Rivers) - NMU
- 2000: Ph D (Botany – Estuaries & Mangroves) – NMU

EMPLOYMENT HISTORY

- 1996 – 2000 Researcher at Nelson Mandela University – SAB institute for Coastal Research & Management. Funded by the WRC to develop estuarine importance rating methods for South African Estuaries
- 2001 – January 2003 Training development officer AVK SA (reason for leaving – sought work back in the environmental field rather than engineering sector)
- February 2003- June 2005 Project manager & Ecologist for Strategic Environmental Focus (Pretoria) – (reason for leaving – sought work related more to experience in the coastal environment)
- July 2005 – June 2009 Principal Environmental Consultant Coastal & Environmental Services (reason for leaving – company restructuring)
- June 2009 – August 2018 Owner / Ecologist of Scherman Colloty & Associates cc
- August 2018 Owner / Ecologist - EnviroSci (Pty) Ltd

SELECTED RELEVANT PROJECT EXPERIENCE

World Bank IFC Standards

- Kenmare Mining Pilivilli, Mozambique - wetland (mangroves, peatlands and estuarine) assessment and biodiversity offset analysis - current
- Botswana South Africa 400kv transmission line (400km) biodiversity assessment on behalf of Aurecon - current
- Farim phosphate mine and port development, Guinea Bissau – biodiversity and estuarine assessment on behalf of Knight Piesold Canada – 2016.
- Tema LNG offshore pipeline EIA – marine and estuarine assessment for Quantum Power (2015).
- Colluli Potash South Boulder, Eritrea, SEIA marine baseline and hydrodynamic surveys co-ordinator and coastal vegetation specialist (coastal lagoon and marine) (on-going).

- Wetland, estuarine and riverine assessment for Addax Biofeuls Sierra Leone, Makeni for Coastal & Environmental Services: 2009
- ESHIA Project manager and long-term marine monitoring phase coordinator with regards the dredge works required in Luanda bay, Angola. Monitoring included water quality and biological changes in the bay and at the offshore disposal outfall site, 2005-2011

South African

- Plant and animal search and rescue for the Karusa and Soetwater Wind Farms on behalf of Enel Green Power, Current
- Plant and animal search and rescue for the Nxuba, Oyster Bay and Garob Wind Farms on behalf of Enel Green Power, 2018 - 2019
- Plant and Animal Search and Rescue for the Port of Ngqura, Transnet Landside infrastructure Project, with development and management of on site nursery, Current
- Plant and Animal Search and Rescue for the Port of Ngqura, OTGC Tank Farm Project (2019)
- Plant search and rescue, for NMBM (Driftsands sewer, Glen Hurd Drive), Department of Social Development (Military veterans housing, Despatch) and Nxuba Wind Farm, - current
- Wetland specialist appointed to update the Eastern Cape Biodiversity Conservation Plan, for the Province on behalf of EOH CES appointment by SANBI – current. This includes updating the National Wetland Inventory for the province, submitting the new data to CSIR/SANBI.
- CDC IDZ Alien eradication plans for three renewable projects Coega Wind Farm, Sonop Wind Farm and Coega PV, on behalf of JG Afrika (2016 – 2017).
- Nelson Mandela Bay Municipality Baakens River Integrated Wetland Assessment (Inclusive of Rehabilitation and Monitoring Plans) for CEN IEM Unit - Current
- Rangers Biomass Gasification Project (Uitenhage), biodiversity and wetland assessment and wetland rehabilitation / monitoring plans for CEM IEM Unit – 2017
- Gibson Bay Wind Farm implementation of the wetland management plan during the construction and operation of the wind farm (includes surface / groundwater as well wetland rehabilitation & monitoring plan) on behalf of Enel Green Power - 2018
- Gibson Bay Wind Farm 133kV Transmission Line wetland management plan during the construction of the transmission line (includes wetland rehabilitation & monitoring plan) on behalf of Eskom – 2016.
- Tsitsikamma Community Wind Farm implementation of the wetland management plan during the construction of the wind farm (includes surface / biomonitoring, as well wetland rehabilitation & monitoring plan) on behalf of Cennergi – completed May 2016.
- Alicedale bulk sewer pipeline for Cacadu District, wetland and water quality assessment, 2016
- Mogalakwena 33kv transmission line in the Limpopo Province, on behlaf of Aurecon, 2016
- Cape St Francis WWTW expansion wetland and passive treatment system for the Kouga Municipality, 2015
- Macindane bulk water and sewer pipelines wetland and wetland rehabilitation plan 2015
- Eskom Prieska to Copperton 132kV transmission line aquatic assessment, Northern Cape on behalf of Savannah Environmental 2015.
- Joe Slovo sewer pipeline upgrade wetland assessment for Nelson Mandela Bay Municipality 2014
- Cape Recife Waste Water Treatment Works expansion and pipeline aquatic assessment for Nelson Mandela Bay Municipality 2013
- Pola park bulk sewer line upgrade aquatic assessment for Nelson Mandela Bay Municipality 2013
- Transnet Freight Rail – Swazi Rail Link (Current) wetland and ecological assessment on behalf of Aurecon for the proposed rail upgrade from Ermelo to Richards Bay
- Eskom Transmission wetland and ecological assessment for the proposed transmission line between Pietermaritzburg and Richards Bay on behalf of Aurecon (2012).
- Port Durnford Exarro Sands biodiversity assessment for the proposed mineral sands mine on behalf of Exxaro (2009)
- Fairbreeze Mine Exxaro (Mtunzini) wetland assessment on behalf of Strategic Environmental Services (2007).
- Wetland assessment for Richards Bay Minerals (2013) – Zulti North haul road on behalf of RBM.
- Biodiversity and aquatic assessments for 118 renewable projects in the past 9 years in the Western, Eastern, Northern Cape, KwaZulu-Natal and Free State provinces. Clients included RES-SA, Red Cap, ACED Renewables, Mainstream Renewable, GDF Suez, Globeleq, ENEL, Abengoa amongst others. Particular aquatic sensitivity assessment and Water Use License Applications on behalf of Mainstream Renewable Energy (8 wind farms and 3 PV facilities.), Cennergi / Exxaro (2 Wind farms), WKN Wind current (2 wind farms & 2 PV facilities), ACED (6 wind farms) and Windlab (3 Wind farms) were also conducted. Several of these projects also required the assessment of the proposed transmission lines and switching stations, which were conducted on behalf of Eskom.
- Vegetation assessments on the Great Brak rivers for Department of Water and Sanitation, 2006 and the Gouritz Water Management Area (2014)
- Proposed FibreCo fibre optic cable vegetation assessment along the PE to George, George to Graaf Reinet, PE to Colesburg, and East London to Bloemfontein on behalf of SRK (2013-2015).

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Brian Michael Colloty

Registration Number: 400268/07

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Ecological Science (Professional Natural Scientist)

Effective **7 November 2007** Expires **31 March 2027**

President of Council

Chief Executive Officer

To verify this certificate scan this code

15 Appendix 2 Species list:

- *Searsia lucida: thicket: abundant*
- *Searsia pallen: thicket*
- *Sideroxylon inerme (two or three): thicket fence line*
- *Diospyros dichrophylla: thicket and establishing in fringe fynbos/renosterveld areas*
- *Euclea crispa: thicket*
- *Gymnosporia capitata: dense thicket*
- *Myrsine africana: thicket: western rock outcrop*
- *Osteospermum moniliferum: grassy renostervel and thicket*
- *Aloe ferox (only one location in north east corner at end of old road): thicket*
- *Carpobrotus edulis: grassy fynbos and thicket understory*
- *Protea lanceolata: Proteoid fynbos thicket: north eastern corner*
- *Leucadendron salignum: Proteoid fynbos renoster thicket: abundant: north eastern corner*
- *Bobartia robusta: fynbos and renosterveld and grassy fynbos*
- *Erica peltata: fynbos and renosterveld: abundant and widespread*
- *Erica discolor, erica densifolia, Erica unicolor ssp. mutica (EN), and erica versicolor: abundant in Proteoid fynbos and thicket*
- *Erica cannaliculata*
- *Hermannia saccifera: grassy fynbos and renosterveld*
- *Hermannia lavandulifolia (VU): grassy fynbos and renostervel: abundant in areas*
- *Helichrysum anomalum and H.flammea : Grassy fynbos and renosterveld*
- *Helichrysum patulum: Fynbos and Renosterveld and grassy fynbos renosterveld: abundant and widespread*
- *Metalasia acuta and M. pungens: Renosterveld and grassy fynbos: abundant*
- *Athanasia quinquedentata: fynbos renosterveld rocky outcrops*
- *Elytropappus rhinocerotis: Renosterveld fynbos: abundant*
- *Indigofera nigromontana: Renosterveld and grassy fynbos*
- *Lampranthus elegans: Fynbos and renosterveld*
- *Oxalis sp. : grassy fynbos renosterveld*
- *Drimia capensis: grassy fynbos*
- *Elytropappus rhinocerotis: Renosterveld fynbos*
- *Aspalathus alopecurus: Fynbos*
- *Cullumia carlinoides (NT): Proteiod fynbos 34°09'53.50"S 22°00'37.65"E*
- *Romulea sp. (such as R. Rosea)*
- *Hypoxis sp.*
- *Conyza scabrida*
- *Aloe maculata: north western rock outcrop*
- *Boophone disticha*
- *Baroes sp.: Grassy fynbos*
- *Gladiolis sp. : grassy renoster-fynbos*
- *Brunsvigia orientalis*
- *Crossyne guttata*
- *Hawarthia sp. possibly H.chloracantha (EN) 34 9 50.69 22 0 32.13*
- *Mesembryanthemum canaliculatum*
- *Eragrostis curvula*
- *Euphorbia mauritanica and/ or Euphorbia burmannii*
- *Anthospermum aethiopicum: grassy renosterveld fynbos*
- *Themeda triandra*
- *Sporobolus fimbriatus*
- *Cynodon dactylon*

Unconfirmed:

- *Aloe delicatifoliua: rockey outcrop fynbos thicket: abundant 34°09'47.32"S 22°00'28.64"E*
- *Acrodon bellidiflorus: fynbos thicket: rockey outcrop*
- *Crassula ericoides and C. nudicaulis var. nudicaulis: fynbos renosterveld rocky outcrops*
- *Haemanthus sanguineus: Renosterveld grassy fynbos*
- *Freesia sp: Renosterveld grassy fynbos*
- *Eriospermum pubescens or E. descendens: Fynbos thicket renosterbos rockey areas, or a Holothrix sp.34°09'45.69"S 22°00'28.11"E*
- *Dimorphotheca pluvialis or Arctotis sp. : fynbos 34°09'53.42"S 22°00'37.30"E*
- *Restio helenae: thicket clump*
- *Delosperma litorale: fynbos and thicket on rocky outcrop*
- *Selago corymbosa: Renosterveld and grassy fynbos*
- *Trichodiadema occidentale (VU) possible*
- *Cephalophyllum diversiphyllum (NT) possible*

There is a fair to good chance that other SCC, 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, timber plantations, coastal developments and alien infestation. None of the species appear on the IUCN Red List3. These species cannot be easily searched and rescued as a form a mitigation and are therefore not recommended for search and rescue. Any natural veld around that area must be considered sensitive, and the priority areas are wherever there is exposed stone or rock of any sort - as these contain many rare succulents and bulbs.

15.1 Appendix 3 Photographs

Proteoid renoster thicket:

Leucadendron salignum

Protea lanceolata

Aspalathus alopecurus

Erica discolor

Lampranthus elegans

Cullumia carlinoides

Erica peltata

Erica sp

Erica sp

Dicerothamnus rhinocerotis

Metalasia acuta

Sideroxylon inerme

Helichrysum patulum

Restio sp.

Crossyne guttata

Baroes sp

Indigofera nigromontana

Eriospermum pubescens

Hypoxis sp

Brunsvigia orientalis

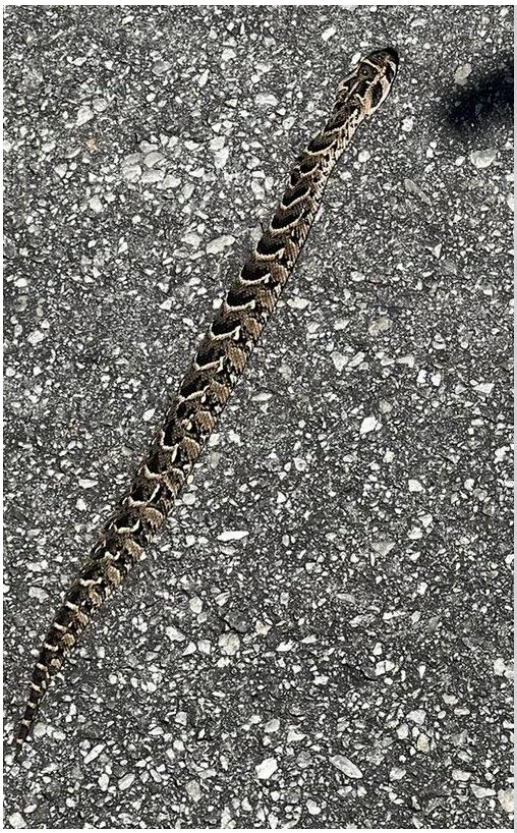
Aloe maculata

Carpobrotus sp.

Conyzna sp.

Bobartia robusta

Observed animal records photos



Young puff adder (Bitis ariens) seen leaving the site during the 2025 site visit

Angulate tortoise (*Chersina angulata*), with damaged carapace (shell)


Scrub Hare scat (*Lepus saxatilis)* found observed in grassy fynbos areas throughout the site