Specialist Botanical and Terrestrial assessment for the proposed diesel storage and distribution business on Erven 56 & 57 in the Mossdustria complex near Mossel Bay.

Prepared in accordance with the "Protocol for the Specialist Assessment and minimum report content requirements for environmental impacts in Terrestrial Biodiversity and Terrestrial Plant Species".

Prepared for Sharples Environmental

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ABBREVIATIONS

WC BSP	Western Cape Biodiversity Spatial Plan
CBA	Critical Biodiversity Area
CD:NGI	Chief Directorate: National Geo-spatial Information
IAPs	Invasive Alien Plants
NEM:BA	National Environmental Management: Biodiversity Act
CARA	Conservation of Agricultural Resources Act
ONA	Other Natural Areas
PAOI	Project Area of Influence
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SDP	Site Development Plan
SEI	Site Ecological Importance
ECO	Environmental Control Officer

DECLARATION OF SPECIALIST INDEPENDENCE

Bianke Fouche from Confluent Environmental was appointed by Sharples Environmental to provide specialist consulting services for the Basic Assessment / Environmental Impact Assessment for the proposed Confuel (Pty) Ltd development on Erven 56 & 57 of Mossdustria, near Mossel Bay. The consulting services comprise an assessment of the potential impacts on flora, vegetation, and terrestrial ecology of the proposed development footprint. The following declaration is given by the appointed specialist:

- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP).
- At the time of conducting the field assessment and compiling this report I did not have any interest, hidden or otherwise, in the proposed development that this report has reference to, except for financial compensation for work done in a professional capacity.
- Work performed for this site was done in an objective manner. Even if this results in views and findings that are not favourable to the client/applicant, I will not be affected in any manner by the outcome of any environmental process of which this report may form a part, other than being members of the general public.
- I declare that there are no circumstances that may compromise my objectivity in performing this specialist investigation. I do not necessarily object to or endorse any proposed developments, but aim to present facts, findings and recommendations based on relevant professional experience and scientific data.
- I do not have any influence over decisions made by the governing authorities.
- I undertake to disclose all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by a competent authority to such a relevant authority and the applicant.
- I have the necessary qualifications and guidance from professional experts in conducting specialist reports relevant to this application, including knowledge of the relevant Act, regulations and any guidelines that have relevance to the proposed activity.
- This document and all information contained herein is and will remain the intellectual property of Confluent Environmental. This document, in its entirety or any portion thereof, may not be altered in any manner or form, for any purpose without the specific and written consent of the specialist investigators.
- All the particulars furnished by me in this document are true and correct.

Signed: 24 May 2023

BIANKE FOUCHÉ ABRIDGED CV

Qualifications

- B.Sc. Environmental Sciences,
- B.Sc. Honours (Botany),
- M.Sc. Conservation Biology 2022-2023 (currently completing at the University of Cape Town).

SACNASP Registration No: 141757 (Candidate Botanical Scientist)

Skills and Core Competencies

- My MSc research will add to our understanding of plant community niche construction and Alternative Stable State (ASS) theory. The knowledge gained will be used to advise landscape stewardship practices, especially regarding reforestation initiatives in the Overstrand.
- I have worked closely with the conservation team of the Grootbos Foundation, where I assisted with vegetation surveys, mounting voucher specimens in the Grootbos herbarium, and taken part in controlled fynbos fires in the Overberg.
- Postgraduate studies of mine included assessing the allelopathic effects of *Eucalyptus* leaves on garden peas and leeks and assessing the accuracy of the climate leaf analysis multivariate programme (CLAMP) in predicting the climate of fynbos vegetation.
- In Cape Town I have regularly taken part in alien clearing activities and helped to identify relevant listed invasive plants.
- I am currently a member of the Botanical Society of South Africa and the custodians for rare and endangered wildflowers (CREW) in George.

DAVID HOARE ABRIDGED CV

Qualifications

- B.Sc. (Botany and Zoology) Rhodes University.
- B.Sc. Honours (Botany) Rhodes University,
- M.Sc. (Botany) University of Pretoria
- PhD – Nelson Mandela Metropolitan University, Port Elizabeth

SACNASP Registration No: 400221/05 (Professional Ecological & Botanical Scientist)

Skills and Core Competencies

- Botanical researcher in projects involving the description of terrestrial and coastal ecosystems.
- Broad expertise in the ecology and conservation of grasslands, wetlands, fynbos, and coastal ecosystems. Project expertise includes baseline biological surveys for the mining, forestry and utility industries, national vegetation mapping programmes for government and research organisations, natural resource management using satellite remote sensing and aerial photography, environmental management, and project management (research projects).
- Botanical Specialist responsible for vegetation inventories, vegetation, habitat, and land-use mapping, threatened plant species survey, alien species survey.
- Professional member: South African Institute of Ecologists and Environmental Scientists.

1. INTRODUCTION

1.1 General Site Location

The proposed development will occur over erven 56 and 57 and is located north of Danabaai and north-west of Mossel Bay in the Mossdustria industrial development complex (Fig. 1). The proposed development site is located ca. 5.5 km from the coastline, 5.3 km from Danabaai, and 12.5 km from Mossel Bay. The perimeter of both erven is ca. 550 m, which includes a total area of ca. 1.82 ha. The site can be accessed from the R327, taking the turnoff onto Barrier Street, and then Mzuki Street which runs along the south of the erven. On the western neighboring property, there is an existing building with businesses stands, while the erf immediately to the east of the site currently contains no buildings. To the north an invaded (mostly *Acacia saligna*) open section occurs before the next row of industrial business developments of the Mossdustria complex.

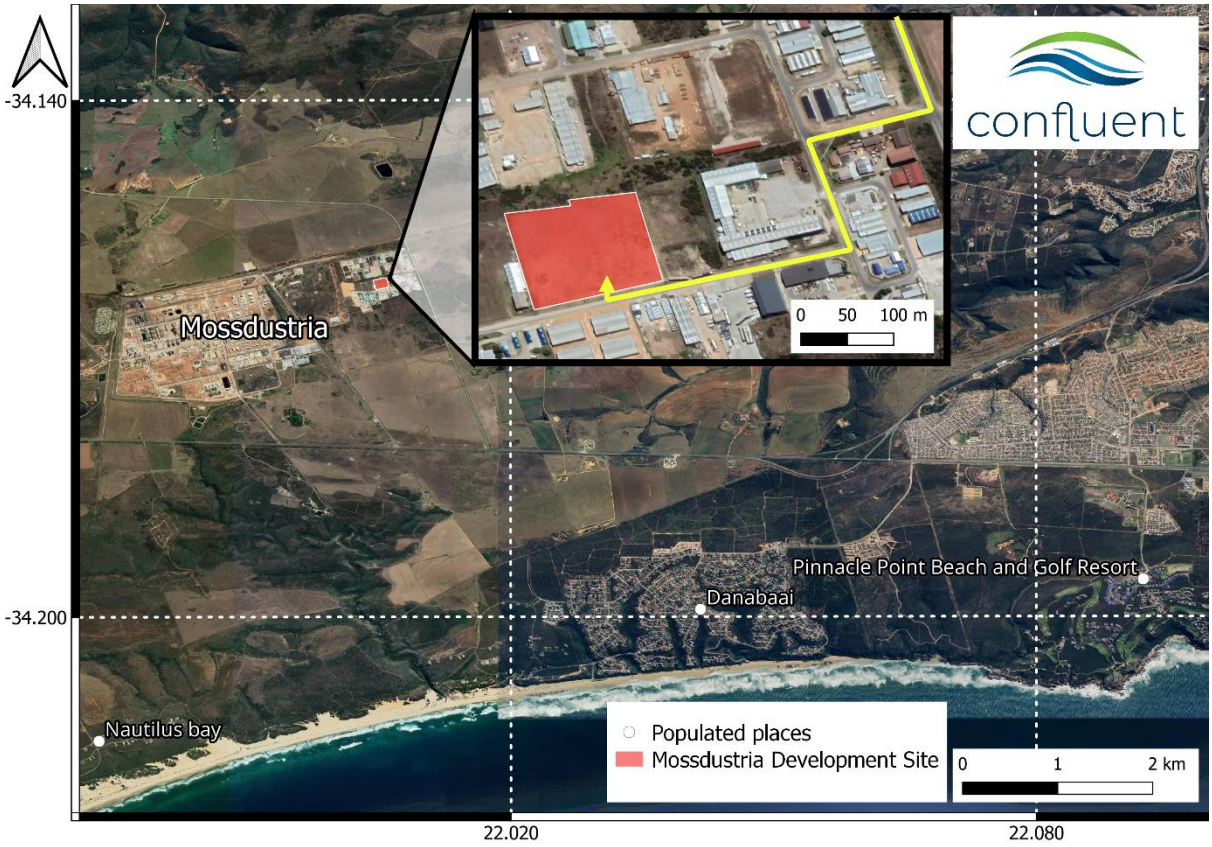

Figure 1: The general location of the proposed development, With an inset map showing the site in the Mossdustria complex.

1.2 The current development layout

The total area covered by the erven is 18155 m^2 and the total area reported in the site development plan (SDP; Fig. 2) is 1477.28 m^2. This means that the proposed development coverage schedule is ca. 8% of the site. This coverage does not account for the driveways, fences, basic services installation (like water and electricity), or parking areas for cars and trucks. The actual area that will be affected by the development of the site will therefore be substantially larger than the 8% reported in the SDP. A breakdown of the planned development is summarized below. Both erven will require new sewer, electricity (including a mini substation in the south-western corner of Erf 57), and water connections.

The proposed development on Erf 56 will include:

- A guard room,
- driveway for trucks,
- sliding gate,
- high wall and “clearvu” fence sections,
- Truck parking areas
- Truck wash bay

The proposed development on Erf 57 will include:

- A brick boundary wall,
- A “clearvu” fence and gate,
- main entrance sliding gate,
- main office and entrance porch with 2 parking bays,
- driveways,
- storeroom,
- ablution block,
- canteen & storage rooms,
- dining area, garden, and laundry section,
- bulk office,
- Diesel locker room,
- Diesel covered patio,
- Diesel office / IT room,
- filling stations (space for x7 trucks),
- water reservoirs (370 Kl x2),
- diesel tanks (86 000 L x8 and 46 000 L x3),
- parking spaces for truck

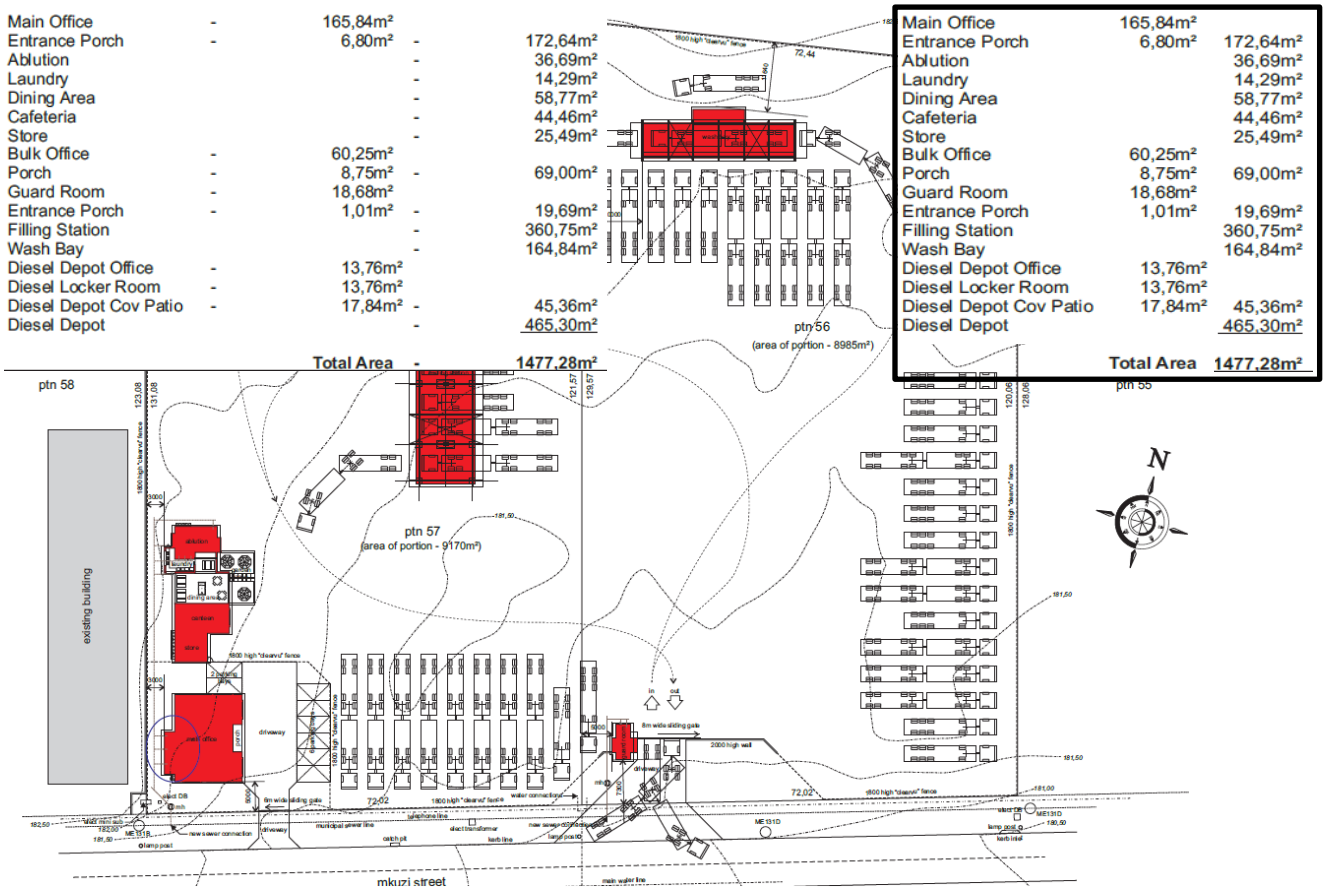

Figure 2: The site development plan (SDP) with the reported planned areas to be covered by the proposed development on Erven 56 and 57 in the Mossdustria complex.

2. TERMS OF REFERENCE AND SCOPE

This screening report provides information on the terrestrial biodiversity and terrestrial plant species sensitivity of the proposed development site. The results presented are based on a desktop and field assessment, which includes a consideration of historical photographic records of the site. The assessment presented in this report follows the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity, and Terrestrial Plant Species.

This site sensitivity assessment 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), which includes:
    - The protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial plant species (30 October 2020).
    - The protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity (20 March 2020).
- Additional guidelines for the terrestrial biodiversity theme:
    - The second edition of Ecosystem Guidelines for Environmental Assessment in the Western Cape (de Villiers et al., 2016).
    - The Western Cape Biodiversity Spatial Plan Handbook and summary booklet (CapeNature, 2017; Pool-Sandvliet et al., 2017).

The findings of the Terrestrial and Botanical 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. The assessment was undertaken by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP) with relevant expertise in the field of Botanical and/or Ecological science.

2.1 Terrestrial Biodiversity Report

- The assessment was undertaken on the preferred site and within the proposed development footprint.
- The assessment provides a baseline description of the site which includes:
    - a description of the ecological corridors, functions, drivers, and processes of the system and how the proposed development will impact these within the preferred site.
    - the description and mapping of any significant terrestrial landscape features (including rare or important flora-faunal associations), main vegetation types, threatened ecosystems, ecological connectivity, habitat fragmentation, and important habitats.
    - the assessment is based on the results of a site inspection and desktop assessment, where terrestrial critical biodiversity areas (CBAs), terrestrial ecological support areas (ESAs), other natural areas (ONAs), protected areas (PAs), priority areas for PA expansion, and indigenous forests were identified and mapped, including:

        - the reasons why an area has been identified as a CBA or ESA, and 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.
        - the impact on ecosystem threat status, and the extent that the proposed development will impact on the functionality of ESAs.
        - the impact on overall species and ecosystem diversity of the site in relation to the remaining areas.
        - the impact on any changes to threat status of populations of species of conservation concern in the CBA.
        - an opinion on whether the proposed development aligns with the objectives or purpose of CBAs, ESAs, ONAs, and PAs identified at the site.
    - The assessment also includes the impact(s) on the terrestrial habitat of a SWSA and impacts of the proposed development on habitat condition and species in FEPA sub-catchments.

2.2 Terrestrial Plant Species Report

- Where the nature of the activity is not expected to have an impact on species of conservation concern (SCC) beyond the boundary of the preferred site, the study area is the proposed development footprint within the preferred site.
- Where the nature of the activity is expected to have an impact on SCC beyond boundary of the preferred site, the project areas of influence (PAOI) must be determined by the specialist in accordance with Species Environmental Assessment Guideline, and the study area must include the PAOI, as determined.
- The assessment was undertaken within the study area and was undertaken in accordance with the Species Environmental Assessment Guideline which must:
    - Identify the SCC which were observed or are likely to occur within the study area. Discuss the presence or likelihood of additional SCC including threatened species not identified by the screening tool
    - Provide evidence, and a literature review on the distribution, location, viability, population size of the SCC, conservation importance and interventions, as well as any national or provincial species management plans of each SCC found or observed within the study area.
    - Identify the nature and the extent of potential impacts of the proposed development to the population of the SCC located within the study area.
    - Determine the potential impact of the proposed development on the habitat and long-term viability of the SCC located within the study area.
    - Determine buffer distances (if necessary) as per the Species Environmental Assessment Guidelines used for the population of each SCC.

2.3 Assessment philosophy

The Cape Floristic Region of South Africa is a biodiversity hotspot with a high level of species endemism and diversity. Different sites vary in their uniqueness, ecological complexity, and degree to which they have been disturbed. Potential negative impacts will be assessed keeping in mind the important biodiversity features on the site, including species, ecosystems, and processes. An impact

assessment for the proposed development requires an evaluation of the conservation value of the site relative to other natural areas nearby. The hierarchy of important biodiversity features that can be used to evaluate the importance and potential for a no-go scenario for the site are as follows:

Species

1. Threatened plant species
2. Nationally protected tree species

Ecosystems

1. Threatened ecosystems
2. Protected ecosystems
3. Critical biodiversity areas
4. Centres of endemism

Processes

1. Ecosystem corridors
2. Mega-conservancy networks
3. Rivers and wetlands
4. Important topographical features

This aim of this report is to present and interpret a comprehensive species list for the site to characterise the vegetation on the site and describe the vegetation type of the site. This assessment highlights rare, threatened, protected, and other species / habitats and ecosystems of conservation importance that are present on the site (or are likely to be present) and are likely to suffer negative consequences as a result of the proposed activity / development on the site.

2.4 Online Screening Tool

The Department of Forestry, Fisheries, and the Environment (DFFE) screening tool report identified the **terrestrial plant theme** sensitivity of the site as Medium. The plant species that were identified by the screening tool (Table 1) all have a medium screening tool sensitivity, which indicates that:

> *"Model-derived suitable habitat areas for threatened and/or rare species are included in the medium sensitivity level. Two types of spatial models have been included. The first is a simple rule-based habitat suitability model where habitat attributes such as vegetation type and altitude are selected for all areas where a species has been recorded to occur. The second is a species distribution model which uses species occurrence records combined with multiple environmental variables to quantify and predict areas of suitable habitat. The models provide a probability-based distribution indicating a continuous range of habitat suitability across areas that have not been previously surveyed. A probability threshold of 75% for suitable habitat has been used to convert the modelled probability surface and reduce it into a single spatial area which defines areas that fall within the medium sensitivity level."* ~ (Verburgt et al., 2020)

Table 1: The species of conservation concern (SCC) identified by the DFFE screening tool report.

Screening tool sensitivity	Feature(s)	IUCN Red List status	Growth Form	Probability of occurrence
Medium	*Agathosma eriantha*	Vulnerable	Shrub	Low
Medium	*Agathosma microcarpa*	Vulnerable	Dwarf Shrub	Low
Medium	*Agathosma muirii*	Vulnerable	Shrub	Low
Medium	*Agathosma riversdalensis*	Vulnerable	Shrub	Medium
Medium	*Argyrolobium harmsianum*	Endangered	Herbaceous perennial	Very Low
Medium	*Aspalathus campestris*	Vulnerable	Herbaceous perennial	Low
Medium	*Aspalathus obtusifolia*	Vulnerable	Herbaceous perennial	Medium
Medium	*Drosanthemum lavisii*	Endangered	Succulent	Low
Medium	*Erica unicolor subsp. mutica*	Endangered	Shrub	Medium
Medium	*Euchaetis albertiniana*	Endangered	Shrub	Very Low
Medium	*Hermannia lavandulifolia*	Vulnerable	Herbaceous perennial	FOUND
Medium	*Lampranthus ceriseus*	Vulnerable	Succulent	Medium
Medium	*Lampranthus diutinus*	Endangered	Succulent	Low
Medium	*Lampranthus fergusoniae*	Rare	Succulent	Very Low

Medium	*Lampranthus foliosus*	Endangered	Succulent	Low
Medium	*Lampranthus pauciflorus*	Endangered	Succulent	Medium
Medium	*Lebeckia gracilis*	Endangered	Shrub	Low
Medium	*Leucadendron galpinii*	Vulnerable	Shrub	Low
Medium	*Leucospermum muirii*	Endangered	Shrub	Low
Medium	*Leucospermum praecox*	Vulnerable	Shrub	Low
Medium	*Muraltia cliffortiifolia*	Vulnerable	Perennial	Medium
Medium	*Muraltia knysnaensis*	Endangered	Perennial	Low
Medium	*Nanobubon hypogaeum*	Endangered	Herbaceous perennial	Very Low
Medium	*Polygala pubiflora*	Vulnerable	Herbaceous perennial	Medium
Medium	*Ruschia leptocalyx*	Endangered	Succulent	Low
Medium	*Selago glandulosa*	Vulnerable	Herbaceous perennial	Low
Medium	*Selago villicaulis*	Vulnerable	Herbaceous perennial	Very Low
Medium	Sensitive species 1024	Endangered	Tuberous geophyte	Low
Medium	Sensitive species 153	Endangered	Tuberous perennial	Low
Medium	Sensitive species 268	Endangered	Succulent	Low
Medium	Sensitive species 500	Endangered	Tuberous geophyte	Low
Medium	Sensitive species 516	Endangered	Succulent	Low
Medium	Sensitive species 654	Endangered	Tuberous geophyte	Low
Medium	Sensitive species 800	Vulnerable	Geophyte	Low
Medium	*Thamnochortus muirii*	Vulnerable	Graminoid	Low
Medium	*Wahlenbergia polyantha*	Vulnerable	Herbacous perennial	Low

The terrestrial biodiversity sensitivity theme was identified as Very High according to the Screening tool report for the site. The reasons given for this sensitivity were that the site is part of a Critical Biodiversity Area 1 (CBA1) and because the site falls within a Freshwater Ecosystem Priority Area (FEPA). Due to the identified sensitivities for the terrestrial biodiversity and plant themes, a specialist assessment needs to be completed in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation (March 2020),

> "*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*".

Furthermore, this legislation states that "when applying for Environmental Authorisation (October 2020),

> "*An applicant intending to undertake an activity identified in the scope of this protocol, on a site identified by the screening tool as being of "medium sensitivity" for terrestrial plant species, must submit either a Terrestrial Plant Species Specialist Assessment Report or a Terrestrial Plant Species Compliance Statement, depending on the outcome of a site inspection/site sensitivity verification undertaken*".

3. METHODOLOGY

3.1 Desktop Assessment

The desktop assessment was performed using Cape Farm Mapper and QGIS version 3.28.3 "Firenze". Plant species data was sourced from the following sources:

- The DFFE screening tool listed SCC.
- Information on plant occurrence prior to the site visit was sourced from SANBIs Botanical Research and Herbarium Management System (BRAHMS) for the Plants of Southern Africa (POSA) database.
- iNaturalist observations of the property and surrounding areas.

Ecosystem/ vegetation type data was sourced from:

- The 2018 updated South African National Vegetation Map from SANBIs Biodiversity GIS (BGIS) database, and the National Biodiversity Assessment report of 2018 (Skowno et al., 2018).
- Shapefiles for the Western Cape Biodiversity Spatial Plan (WC-BSP) i.e., information on PAs, CBAs, ESAs, and ONAs were downloaded from BGIS database (CapeNature, 2017; Pool-Sandvliet et al., 2017).
- Cape Farm Mapper for additional spatial information required for the site.
- Chief Directorate: National Geo-spatial Information (CD: NGI) Geospatial Portal and Google Earth for the acquisition of historical aerial imagery of the site.
- The conservation status of ecosystems was found in the Revised National List of Ecosystems that are Threatened and in need of protection, published under the National Environmental Management: Biodiversity Act (Act No. 10, 2004, as revised in Nov. 2022), and also using The Vegetation of South Africa, Lesotho, and Swaziland (Mucina & Rutherford, 2006).

3.2 Field Assessment

Field work was undertaken on the 15th of March 2023. The method for identifying species was similar to a BioBlitz, also described as a "timed meander", where the specialist especially keeps an eye out for rarer and threatened species. Apart from shrubs that are more easily detectable in the field, this survey method tries to account for the short and single survey period, where detection probability of some rare and threatened species are low (Garrard et al., 2008; Wintle et al., 2012). The detection of annuals, small succulents, small herbs, and geophytes are lower than the detection probability for shrub plant species. This was taken into consideration during the site assessment to try and account for lower detection probabilities for some species (see the growth forms of plant SCC triggered in the screening tool in Table 1). Observations of individual species and environmental characteristics were documented using an app called "Spot Lens", which records location, elevation, date, time, and photo notes as a stamp on each photograph.

3.3 Assumptions & Limitations

This assessment is subject to a few assumptions, uncertainties, and limitations, as listed below:

- Only one survey took place during autumn on the 15th of March of 2023. Seasonal and time constraints always play a role in limiting the findings of a terrestrial specialist report.

- Some rare and threatened plant species are difficult to locate and easily overlooked in the field (e.g., succulent species, succulents, and species that occur as individual plants over a large geographical area). The species list for the area is limited to the findings of the one field assessment, as well as past records on iNaturalist and the Plants of Southern Africa (POSA) database for the proposed development site and its surrounding areas.
- Many plant species flower seasonally and are therefore difficult to identify outside of their flowering season. Environmental factors such as the fire regime and level of alien invasion influence the successional stage of the vegetation present at the site, and therefore the species visible at the time of assessment (Cowling et al., 2010; Privett et al., 2001).
- Effort was made to identify possible impacts for the layout and design phase of the project, but it is always possible that some impacts were missed or neglected. The exclusion of important impacts does not mean that they do not exist, and the development always has a duty of care to mitigate negative impacts to the environment.
- Effort was made to identify no-go areas and possible impacts for the layout and design phase of the project, but it is always possible that some impacts were missed or neglected. The exclusion of important impacts does not mean that they do not exist, and the development always has a duty of care to mitigate negative impacts to the environment.

4. RESULTS: DESKTOP ASSESSMENT

4.1 Climate

The nearest town to the proposed development site is Dana Bay to the south, and then Mossel Bay in the south-east. This area has a subtropical oceanic climate, and therefore the weather there is usually very mild (Fig. 3). Winter temperatures are mild, and summers are warm. Rain is not abundant, but rainfall is aseasonal, being relatively evenly distributed throughout the year. Winds from the interior of the country can bring very hot days, especially during spring and autumn seasons. Even during the winter hot days can occur when there are warm winds that blow from the mountains in the north. Despite the mild winters, the coldest nights of the year can have temperatures that drop to around 0˚C. All graphs were sourced from worldweatheronline.com.

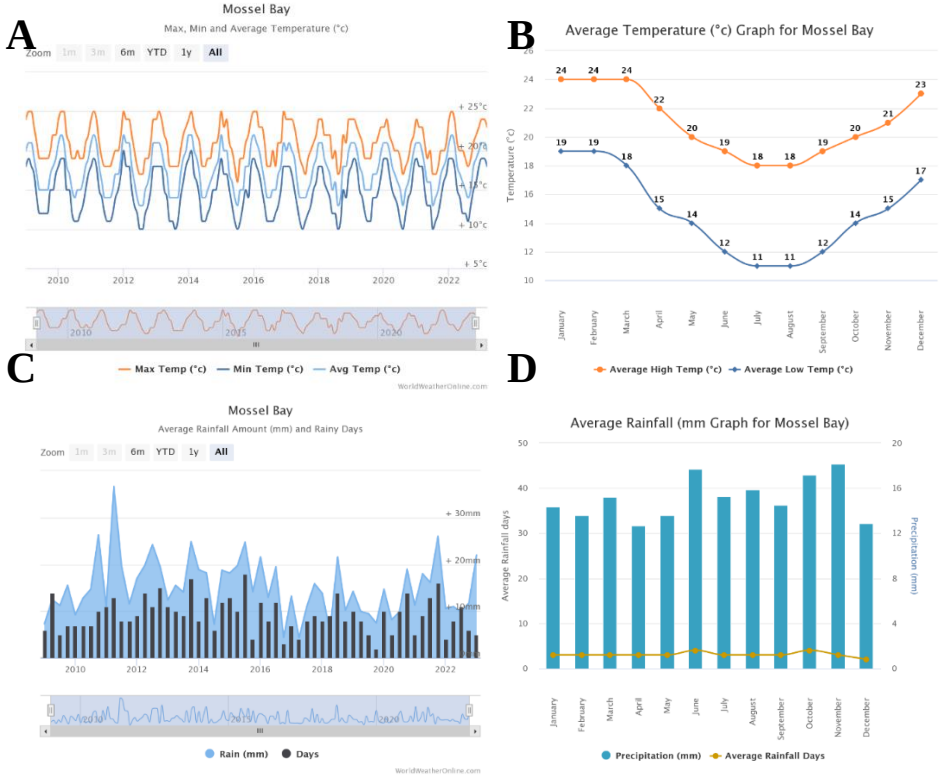

Figure 3: General climate data for Mossel Bay showing A) the long-term temperature trends between 2010 and 2022, B) the average maximum and minimum temperatures by month, C) long term precipitation data between 2010 and 2022, and D) the average rainfall per month for Mossel Bay.

4.2 Geology and Soil

The underlying substrate geology is mainly quarzitic sandstone of the Table Mountain Group, with some shales and siltstones in between that belong to the Bokkeveld Supergroup. Some Enon conglomerate may also be present in some areas, however this was not seen in Mossdustria. The erodibility of soils in this area is considered high (Cape Farm Mapper describes the erodibility factor as 0.67). Soil in this area has a marked clay accumulation in the soil profile and are strongly structured with diagnostic horizons easily identifiable in the soil profile. Soils in this area generally are not reddish in colour and have a dominant B horizon.

4.3 Vegetation type(s)

The whole of Mossdustria is mapped as **North Langeberg Sandstone Fynbos**, which is not a Red Listed ecosystem according to the Revised National List of Ecosystems that are Threatened and in Need of Protection (Dayaram et al., 2019; Mucina & Rutherford, 2006; NEM:BA Act, 2022). This ecosystem type is found only in the Western Cape and occurs over a broad altitude range (100 to 1800 m). The vegetation is mainly characterised by proteoid and restioid fynbos. Asteraceous fynbos is also found at lower altitudes. The Vlok vegetation map suggests that the proposed development site is at a transition between Petrosa Fynbos-Renosterveld and Proteus Fynbos-Renoster-Thicket. Currently the site represents disturbed vegetation that is just starting to recover following the clearance of vegetation from the entire site in late 2022. There are sections in the site that are adjacent to IA stands just outside of the property boundary, and so vegetation on the periphery of the site is prone to re-invasion by *Acacia saligna* (Fig. 4).

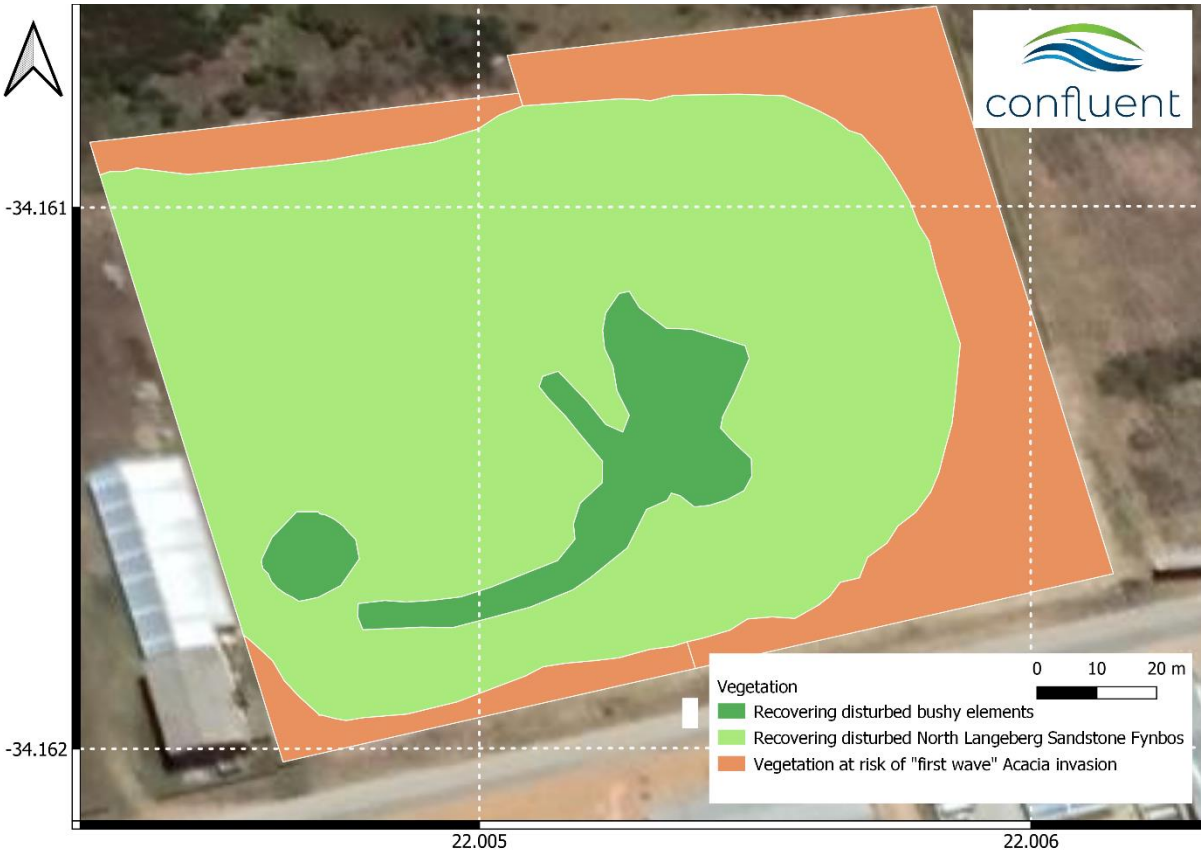

Figure 4: A map of the vegetation present on Erf 56 and 57 as derived after the site assessment on the 15th of March 2023.

4.4 Conservation Planning

The Biodiversity Spatial Plan for the Western Cape has mapped the proposed development site as being part of a terrestrial critical biodiversity area (CBA1) and other natural areas (ONA). Erf 56 is mostly mapped as an ONA, and Erf 57 is mostly mapped as a CBA1 (Fig. 5). The Biodiversity Spatial Plan (BSP) map is subject to ground truthing by comparing the observed environmental conditions with the definitions provided by the BSP. Given the past disturbance of the site and the fact that it is in the middle of the Mossdustria industrial complex, Erven 56 and 57 do not meet the definition for being considered CBA1 areas (BOX 1), as the vegetation on the site is not in a natural condition, and it is not feasible or practical to use these properties to contribute towards the biodiversity targets of the Western

Cape (see Appendix 10.4 for activities recommended under different BSP categories). Should the development go ahead, the majority of the area of Erven 56 and 57 will become areas with "No Natural Remaining" biodiversity in the areas that will be developed, used for driveways and parking. Since the industry that proposed for development here is considered a high impact industry, any realisation of the development activities occur with caution.

BOX 1: The Biodiversity Spatial Plan

Critical Biodiversity Area 1

Definition: Areas in a natural condition. Required to meet biodiversity targets for species, ecosystems or ecological processes and infrastructure.

Objective: Maintain in a natural or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses are appropriate.

Other Natural Areas

Definition: These areas retain most of their natural character and perform biodiversity and ecological infrastructure functions but have not been prioritised in the current Western Cape Biodiversity Spatial Plan.

Objective: Minimise habitat and species loss to ensure ecosystem functionality through strategic landscape planning. Some flexibility in permissible land uses, but authorisation may still be required for high impact uses.

No Natural Remaining

Definition: Modified by human activity and no longer natural nor contributing to biodiversity targets. May still provide limited biodiversity and ecological infrastructure functions, even if never prioritised for conservation action.

Objective: Manage in a biodiversity-sensitive manner, aiming to maximise ecological functionality. Most flexibility i.t.o. potential land uses. Authorisation may still be required for high-impact land uses.

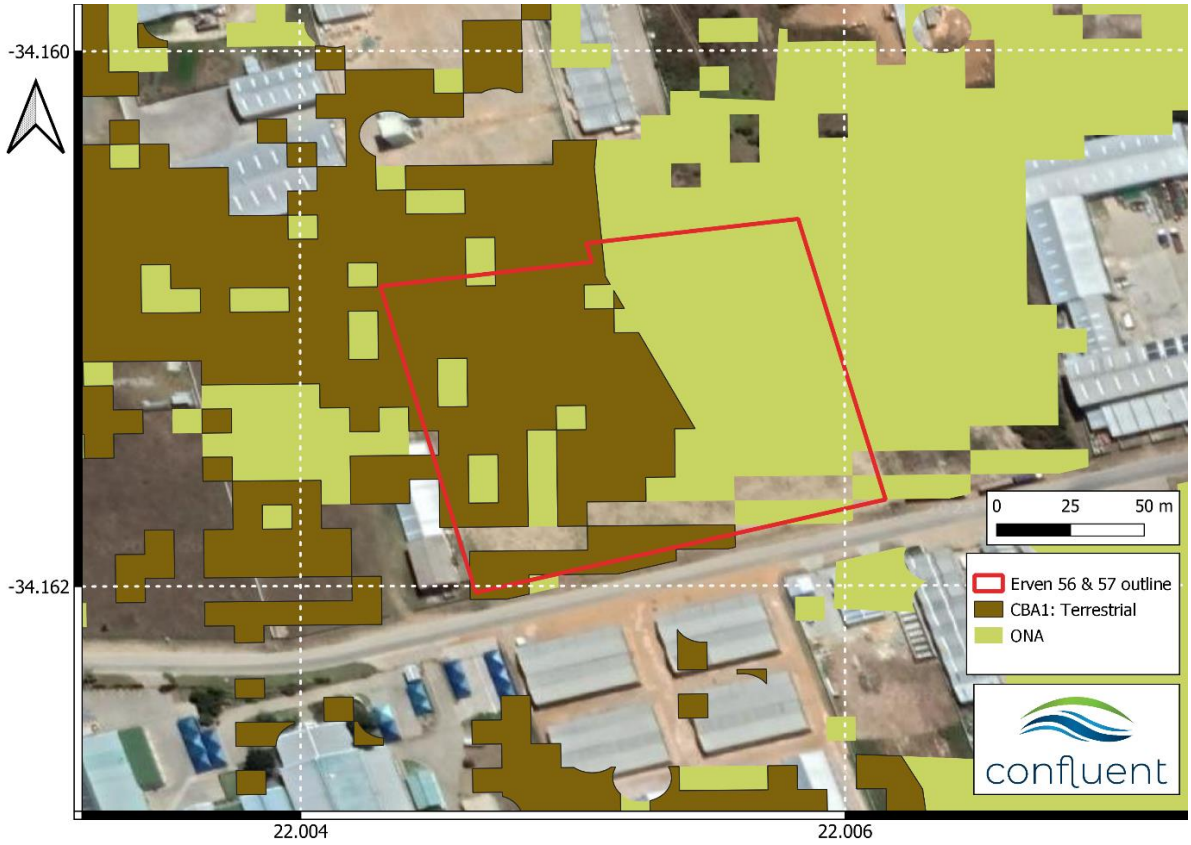

Figure 5: The mapped Western Cape Biodiversity Spatial Plan (WC BSP) categories that have been mapped for the site are terrestrial CBA1 and ONAs.

4.5 Historical Aerial Imagery

The oldest aerial imagery of the site is from 1939, at which time the proposed development site and surrounding landscape seems to have had relatively little anthropogenic influence and disturbance. Soon after (between 1939 and 1963) the area was transformed to agricultural fields, which remained until the 1990's when the first roads and developments of Mossdustria began (Fig. 6). High resolution historical imagery for the area dating back to 1939 can be sourced upon email request from the CD:NGI Geospatial portal, or in person from their offices in Mowbray, Cape Town. Since Mossdustria developments began, the proposed development site and surrounding landscape became invaded by invasive Australian Acacias. The most dominant invasive alien plant (IAP) that was noted in the industrial complex was *Acacia saligna*, and some sections that were invaded by *A. cyclops* (rooikrans). It also seems that due to the secondary IAP invasion and densification, attempts to thin out the IAPs on erven 56 and 57 were made at least three times since 2004 i.e., once between 2004 and 2009, again between 2019 and 2020, and then all vegetation was cleared towards the end of 2022 (Fig. 6 & 7). If the site is left without any intervention for the next few years, it is very likely that Acacia stands surrounding the erven will spread and densify again onto erven 56 and 57, reducing the biodiversity of the site to a near monoculture (Fig. 8).

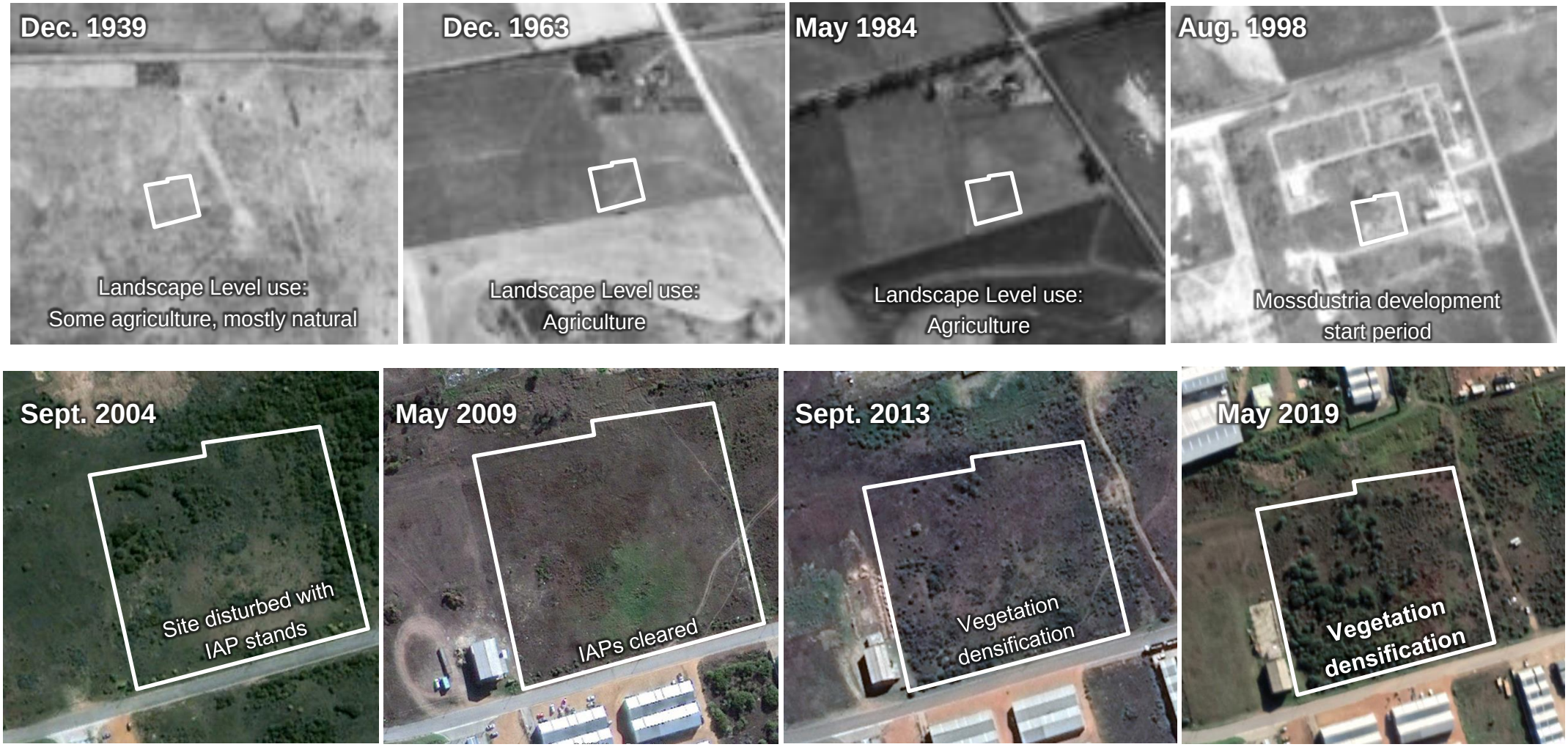

Figure 6: Historical imagery for the proposed development and wider Mossdustria area (1939 to May 2019). The top row of images are zoomed out to show the general pattern for the surrounding area as well as the proposed development site and represents the oldest imagery available for the area. The bottom row of images were all taken in the 21st century.

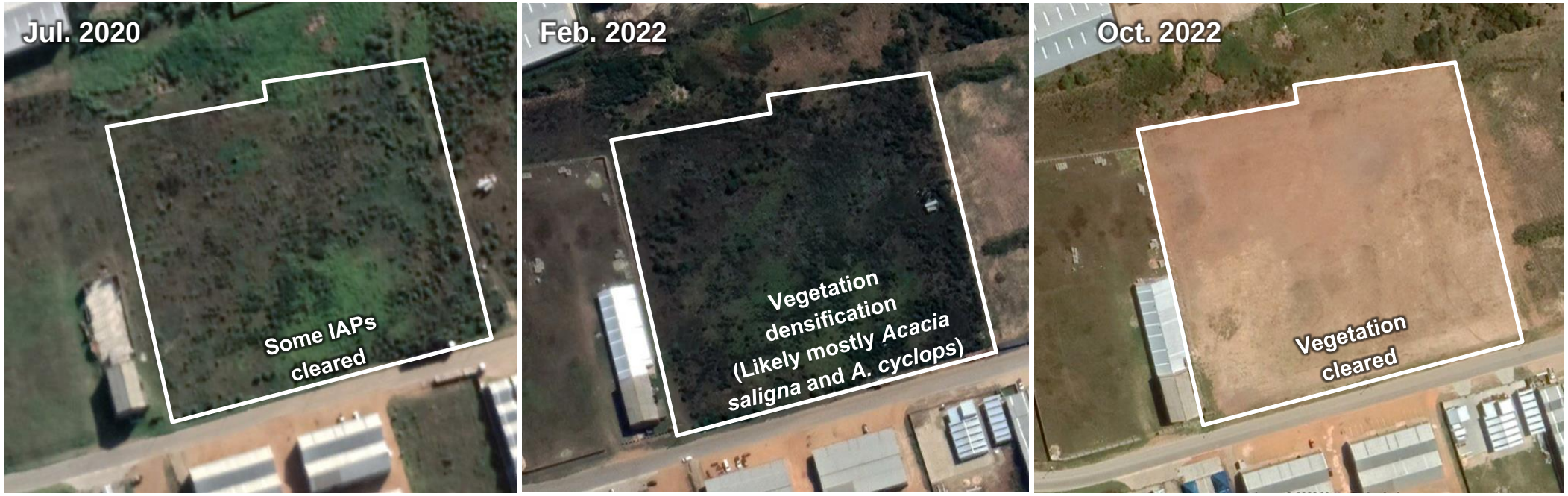

Figure 7: The most recent historical imagery for the proposed development site (July 2020 to October 2022).

Figure 8: An image of the northern boundary of the site showing the site currently dominated by graminoids, with a dense *Acacia saligna* stand just north of the recently cleared Erven 56 and 57

4.6 The Project Area of Influence (PAOI)

The outline of the project area of influence (PAOI) is illustrated in Fig. 9 and covers the entire area of the proposed development site. The discussion following is based on this map.

- The total area that the development will occupy (including features like fences, parking and driveways) will be ca. 12 673 m^2 (or ca. 1.27 ha) over both properties which cover a total of 18 082 m^2.
- The additional 5409 m^2 of "open" areas will likely also be transformed for use as additional parking spaces for large trucks.
- This means that the total area covered by the PAOI on Erven 56 & 57 will be the total area of both properties, plus an additional 2m disturbance strip beyond the boundary of the erven. This is because the boundary of these two properties will be subject to negative edge effects due to the development and transformation of the site.

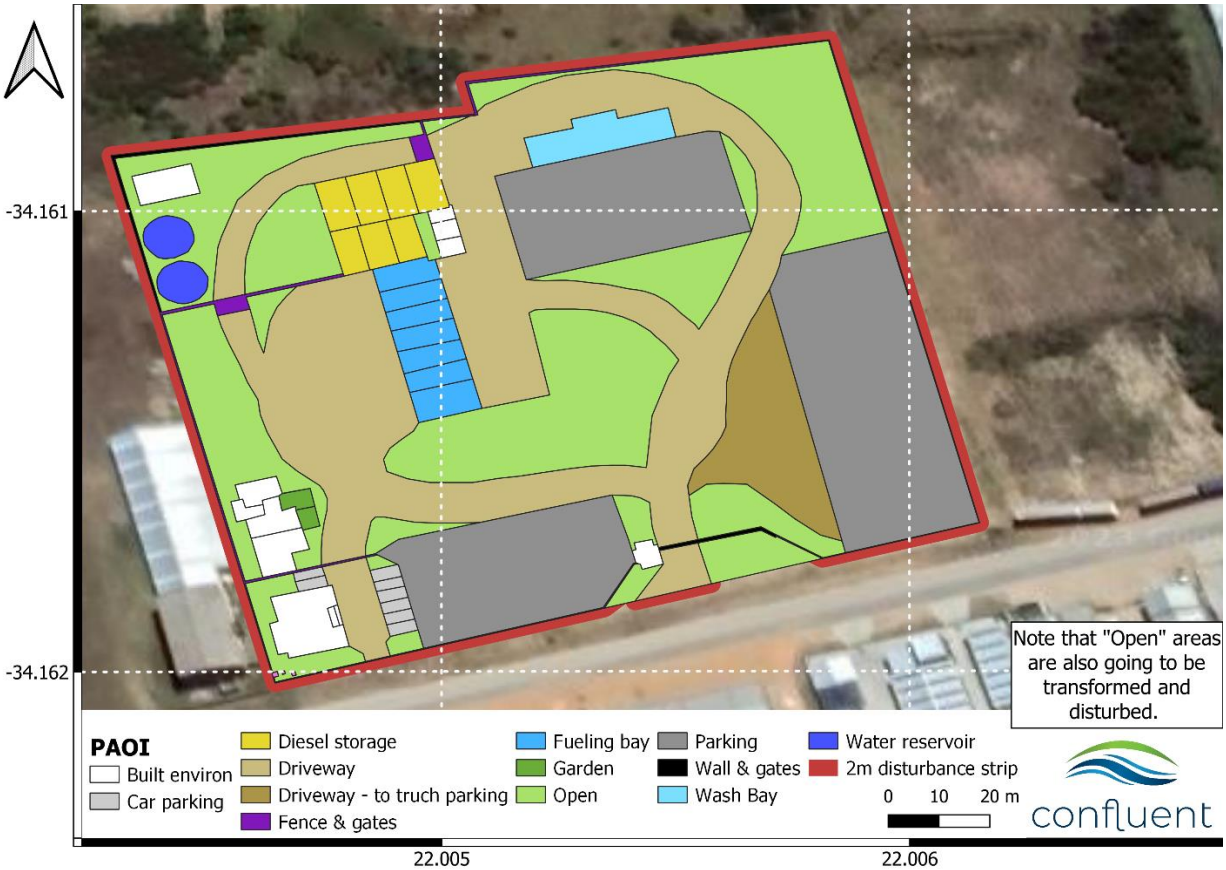

Figure 9: The Project Area of Influence (PAOI) for the proposed development site, illustrated as the primary PAOI features, and a 2m disturbance strip (secondary PAOI) outside of the boundaries of erven.

5. RESULTS: FIELD ASSESSMENT

5.1 Species list and species accumulation curve for the site

A full list of species that were observed on the site as well as a species accumulation curve for the site assessment observations on the 15th of March 2023 are illustrated in Table 2 and Fig. 10 below. A total of 67 species were recorded on the site, of which one was a species of conservation concern (SCC), which is discussed in the next section (5.2) of this report.

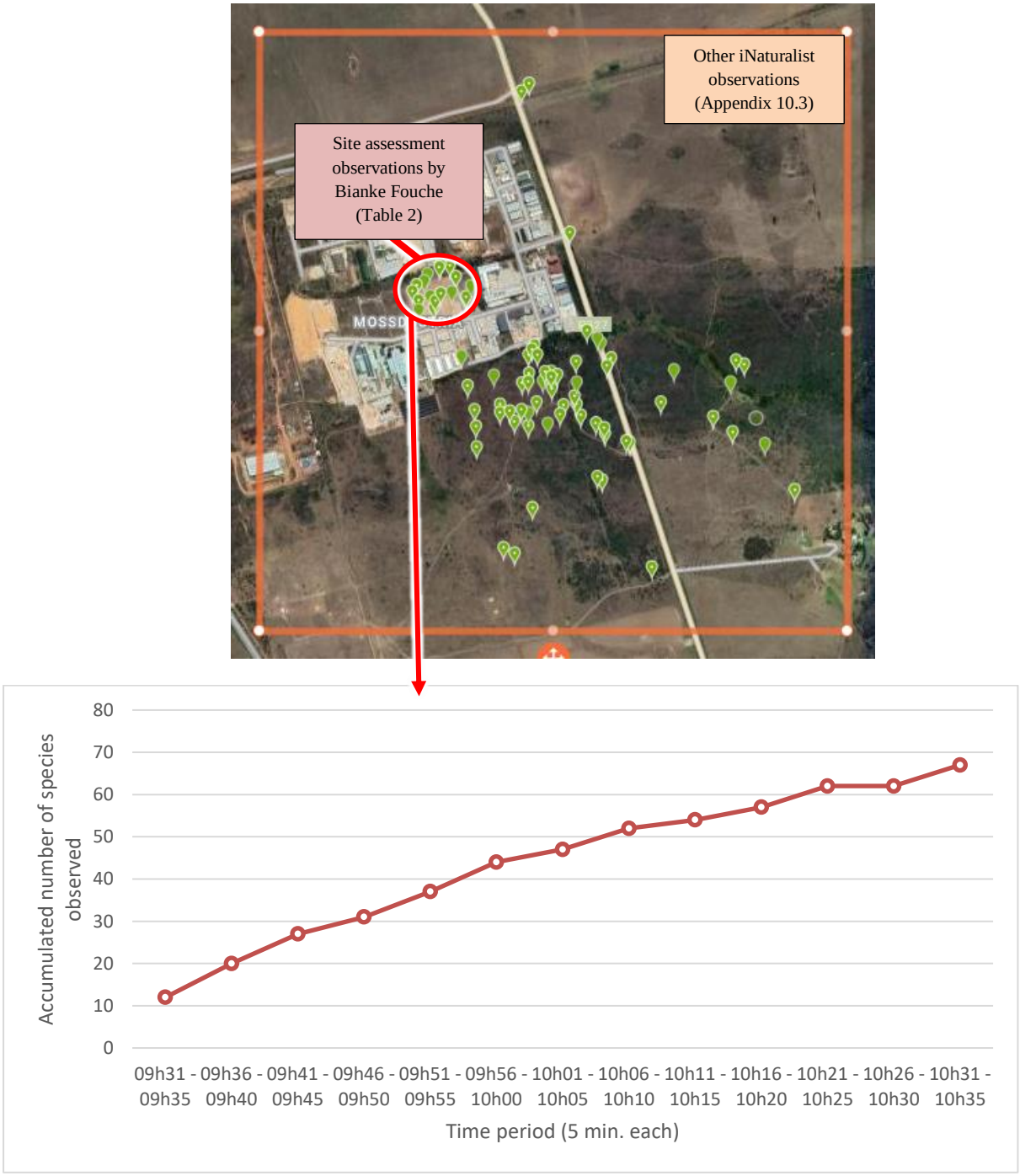

Figure 10: The area on iNat within which observations were noted to improve the understanding of potential SCC for the site and other species present nearby. Observation data in the species accumulation curve on the right show only site assessment observations. Additional plant species observations made by other people are listed in Appendix 10.3.

Table 2: A provisional species list, including all of the species that were recorded on Erven 56 & 57 during the site visit on 15 March 2023. The only SCC on the site is highlighted in green; the rest of the plants that were observed are not threatened.

Scientific name	Common name	Family
Carpobrotus edulis	sea fig	Aizoaceae
Atriplex semibaccata	berry saltbush	Amaranthaceae
Centella asiatica	Gotu Cola	Apiaceae
Foeniculum vulgare	fennel	Apiaceae
Arctotheca prostrata	Prostrate Capeweed	Asteraceae
Athanasia quinquedentata	Fivetooth Kanniedood	Asteraceae
Berkheya rigida	Weed African Thistle	Asteraceae
Bidens pilosa	Hairy Beggarticks	Asteraceae
Cirsium vulgare	Bull Thistle	Asteraceae
Helichrysum	Everlasting-flowers	Asteraceae
Helichrysum luteoalbum	Jersey Cudweed	Asteraceae
Helichrysum odoratissimum	Kooigoed Everlasting	Asteraceae
Helichrysum patulum	Honey Everlasting	Asteraceae
Helminthotheca echioides	bristly oxtongue	Asteraceae
Metalasia acuta	Pointy Blombush	Asteraceae
Nidorella ivifolia	Ivy Vleiweed	Asteraceae
Osteospermum moniliferum	Bietou	Asteraceae
Osteospermum moniliferum moniliferum	Bietou	Asteraceae
Senecio burchellii	Kill Ragwort	Asteraceae
Senecio linifolius	Thread Ragwort	Asteraceae
Sonchus	sow thistles	Asteraceae
Tagetes minuta	wild marigold	Asteraceae
Echium plantagineum	purple viper's-bugloss	Boraginaceae
Rapistrum rugosum	annual bastard cabbage	Brassicaceae
Monopsis unidentata unidentata		Campanulaceae
Gymnosporia buxifolia	Common Spikethorn	Celastraceae
Commelina africana	African Yellow Dayflower	Commelinaceae
Falkia repens	Pink Ear	Convolvulaceae
Bulbostylis		Cyperaceae
Cyperus	flatsedges	Cyperaceae
Cyperus erectus		Cyperaceae
Cyperus polystachyos polystachyos	Manyspike Flatsedge	Cyperaceae
Cyperus sphaerospermus		Cyperaceae
Ficinia bulbosa	Bulbous Sedge	Cyperaceae
Diospyros dichrophylla	Poison Starapple	Ebenaceae
Euclea	Gwarries	Ebenaceae
Acacia cyclops	western coastal wattle	Fabaceae
Acacia saligna	golden wreath wattle	Fabaceae
Indigofera nigromontana	Swartberg Indigo	Fabaceae
Medicago truncatula	barrel medick	Fabaceae
Trifolium angustifolium	Narrow-leaved clover	Fabaceae
Pelargonium alchemilloides	Mantle Storksbill	Geraniaceae
Pelargonium capitatum	rose-scented geranium	Geraniaceae
Pelargonium grossularioides	Coconut Geranium	Geraniaceae
Hypoxis hemerocallidea	African potato	Hypoxidaceae
Hermannia flammula	Blazing Dollsrose	Malvaceae
Hermannia lavandulifolia (VU)		**Malvaceae**
Hermannia saccifera	cumin hermannia	Malvaceae
Hibiscus pusillus	Bladderweed	Malvaceae
Oxalis corniculata	Creeping Woodsorrel	Oxalidaceae
Plantago lanceolata	ribwort plantain	Plantaginaceae
Cenchrus clandestinus	Kikuyu Grass	Poaceae

Cynodon dactylon	Bermuda grass	Poaceae
Eragrostis curvula	African love grass	Poaceae
Eragrostis plana	Fan Love Grass	Poaceae
Megathyrsus maximus	guinea grass	Poaceae
Melinis repens	Natal grass	Poaceae
Paspalum dilatatum	Dallis grass	Poaceae
Paspalum urvillei	Vasey Grass	Poaceae
Poaceae	grasses	Poaceae
Sporobolus africanus	Parramatta Grass	Poaceae
Stenotaphrum secundatum	Saint Augustine grass	Poaceae
Rumex	docks	Polygonaceae
Thesium	Rootthugs	Santalaceae
Selago corymbosa	Stiff Bitterbush	Scrophulariaceae
Datura stramonium	jimsonweed	Solanaceae
Solanum nigrum	Black Nightshade Complex	Solanaceae
Verbena bonariensis	purpletop vervain	Verbenaceae

5.2 Plant species of conservation concern (SCC)

Table 3 below illustrates the various Red List and Orange List categories that SCC can belong to. The Orange List (Victor & Keith, 2005) refers to species that are not on the Red List yet, but that still merit attention to prevent the possibility that they end up on the Red List.

One SCC (on the Red List) was observed on the site, namely *Hermannia lavandulifolia* (Table 4). This species of "dollrose" is a pale grey-green spreading herbaceous shrublet that can grow up to ca. 1 m tall but is more commonly around 30 cm tall. This species is found between Caledon and Plettenberg Bay in the Western Cape only, growing in a variety of renosterveld, fynbos, strandveld, and dune thicket vegetation types. Due to ongoing severe habitat loss due to developments and habitat degradation this species is currently listed as Vulnerable according to SANBI's Red List of South African plants. The approximate occurrence of the species on the site in indicated in the heatmap of Fig. 11, however it is difficult to predict its true distribution on the site due to the fact that flora is only starting to return to the site following the removal of all plants from the site in late 2022. At least five other SCC have been recorded in the landscape surrounding Mossdustria. These species are also listed in Table 4, as their presence on the site cannot be ruled out completely.

Table 3: A summary of the IUCN Red Rist categories used for the Red List of South African Plants (SANBI, 2020), and adapted Orange List categories (Victor & Keith, 2005).

Red / Orange list category	Definition	Class
EX	Extinct	Extinct
CR	Critically Endangered	Red List
EN	Endangered	Red List
VU	Vulnerable	Red List
NT	Near Threatened	Orange List
Declining	Declining taxa	Orange List
Rare	Rare	Red List
Critically Rare	Only one subpopulation	Red List
Rare - Sparse	Widely distributed but rare	Red List
DDD	Data Deficient: well-known but not enough information for assessment	Orange List *
DDT	Data Deficient: taxonomic problems	Data Deficient
DDX	Data Deficient: unknown species	Data Deficient

* Excluding all DDD listed naturalised exotics and invasive species in South Africa

Table 4:The threatened plant species recorded on the site and in the nearby surrounding landscape. Highlighted in green is the species found on the site. Observations made by other people on iNaturalist before the site assessment for the surrounding landscape is available in Appendix 10.3.

Species	SANBI Red List status	Common name	Family	Growth form
Cephalophyllum diversiphyllum	Near Threatened B1ab(ii,iii,iv,v)	Variable starfig	Aizoaceae	Perennial succulent
Trichodiadema occidentale	Vulnerable D2	Ruens Crownfig	Aizoaceae	Perennial succulent
Cullumia carlinoides	Near Threatened B1ab(ii,iii,iv,v)	Limestone Snakethistle	Asteraceae	Perennial
Freesia caryophyllacea	Near Threatened B1ab(i,ii,iii,iv,v)	Fragrant Kammetjie	Iridaceae	Geophyte
Hermannia lavandulifolia	Vulnerable A2c	Dollroses	Malvaceae	Herbaceous perennial
Selago ramosissima	Endangered B1ab(iii)	Bitterbushes	Scrophulariaceae	Herbaceous perennial

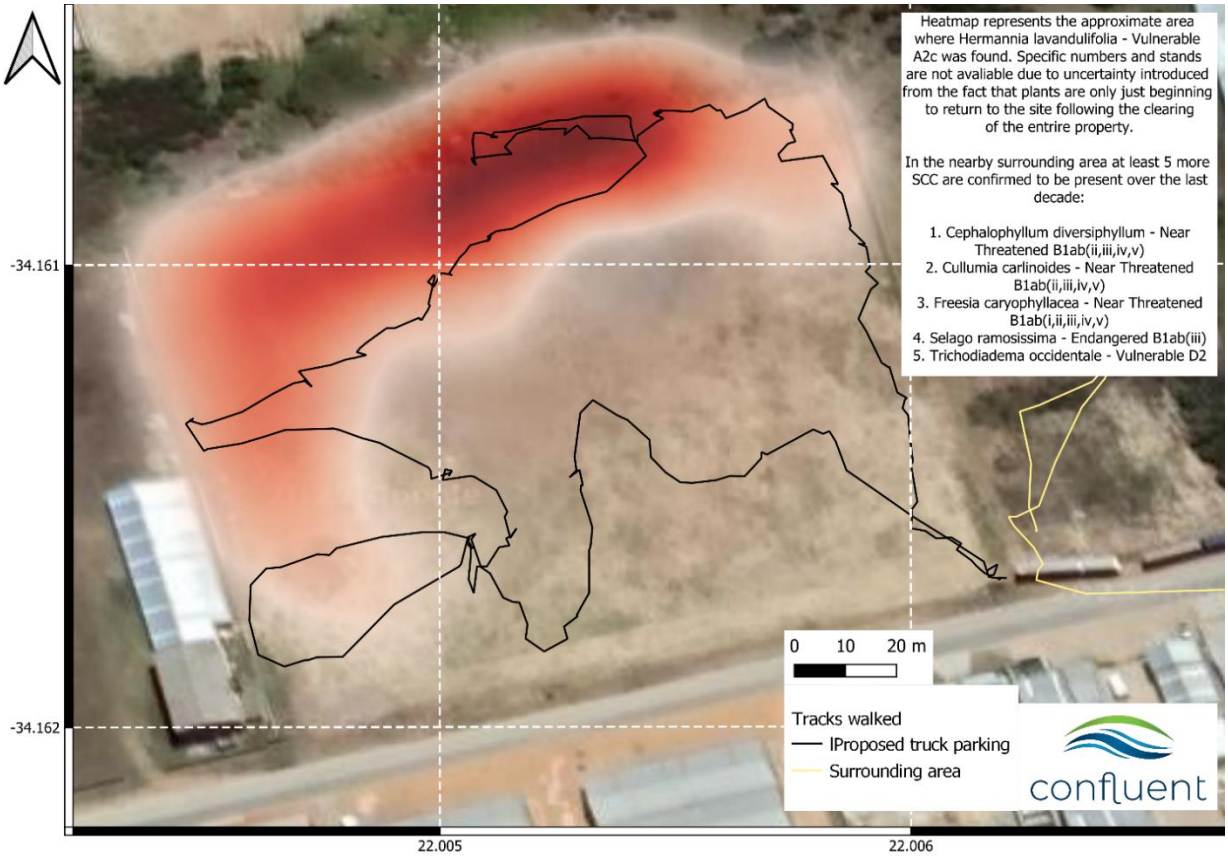

Figure 11: A heatmap showing the approximate locations of *Hermannia lavandulifolia* plants on the proposed development site, as well as the path walked on the site during the site assessment on the 15th of March 2023.

Furthermore, several additional SCC have been recorded nearby the proposed development site by several observers on iNaturalist (Fig. 12 and Table 4). **All SCC in Fig. 12 have a high probability of occurrence on the site, despite the fact that they were not observed during the site visit**. The probability of occurrence for the SCC listed in the screening tool are discussed in the screening tool section of this report. None of the screening tool report SCC (apart from *Hermannia lavandulifolia*) have a probability of occurrence higher than "medium", and most have a low or very low probability of occurrence.

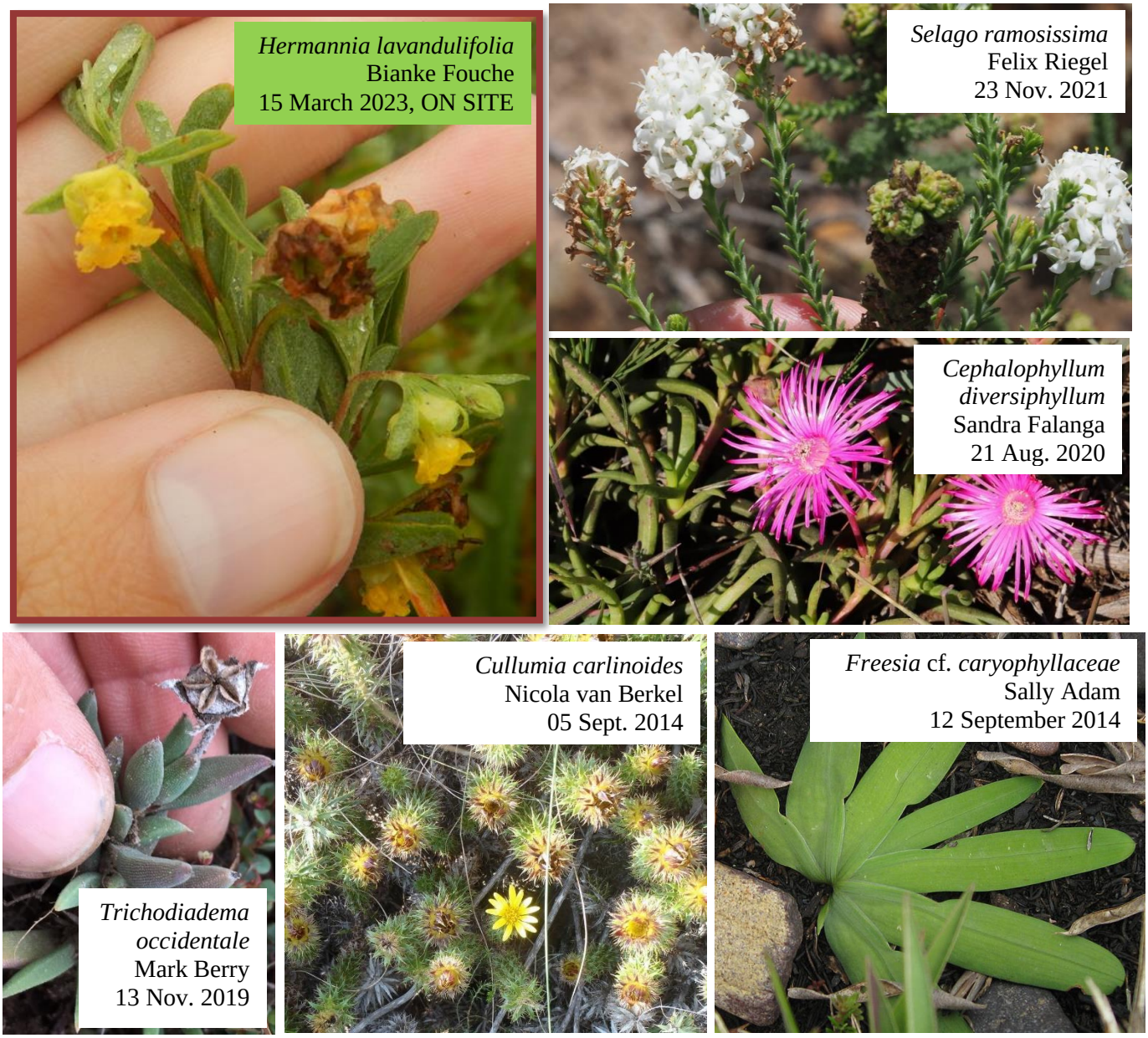

Figure 12: Photos showing the SCC found on the proposed development site (*Hermannia lavandulifolia*), as well as other SCC recorded on iNaturalist very near the proposed development site (see Appendix 10.3).

5.3 Naturalised exotic and invasive alien plants

In total, seven listed Invasive Alien Plants (IAPs) were recorded on the site during the site visit (Fig. 13). The NEMBA category for the listed invasives was 1b, which is described in BOX 2. However, several other rather invasive species that are not NEMBA or CARA listed were also recorded on the site (Table 5), such as:

- *Atriplex semibaccata* can grow into a dense ground cover that retards fires, and displaces native flora, reducing the biodiversity of sites (Bromilow, 2018).
- *Tagetes minuta* was introduced from South America is a competitive weed that can displace native flora where it grows into dense stands.
- *Oxalis corniculata* is from Europe and can act as a host for various plant rust diseases (Bromilow, 2018).

- Wild radish (*Raphinistrum rugosum*) also originated in Europe and is widespread is Southern Africa. It is a competitive weed that often harbours various insect pests (esp. aphids) and diseases (Bromilow, 2018).
- *Paspalum dilatatum* is originally from South America and is difficult to control once established (Bromilow, 2018). It can displace native vegetation and reduce the biodiversity of a site.

Table 5:Introduced and invasive plant species that were found on the site. Orange species are NEMBA and/or CARA listed invasive species, and yellow species can displace native vegetation, reducing biodiversity.

Species	Common name	Family	Growth form	NEMBA category	CARA category
Atriplex semibaccata	Berry saltbush	Amaranthaceae	Perennial		
Centella asiatica	Gotu cola	Apiaceae	Herbaceous perennial		
Foeniculum vulgare	Fennel	Apiaceae	Herbaceous perennial		
Cirsium vulgare	Bull thistle	Asteraceae	Perennial	1b	1
Tagetes minuta	Wild marigold	Asteraceae	Herbaceous perennial		
Echium plantagineum	Purple viper's-bugloss	Boraginaceae	Herbaceous Annual/Biennial	1b	1
Raphinistrum rugosum	Wild radish /Annual bastard cabbage	Brassicaceae	Annual		
Acacia cyclops	Rooikrans	Fabaceae	Tall shrub	1b	2
Acacia saligna	Golden wreath wattle	Fabaceae	Tall shrub	1b	2
Trifolium angustifolium	Narrow-leaved clover	Fabaceae	Herbacoeus perennial		
Oxalis corniculata	Creeping woodsorrel	Oxalidaceae	Herbaceous		
Plantago lanceolata	Ribwort plantain	Plantaginaceae	Perennial		
Cenchrus clandestinus	Kikuyu grass	Poaceae	Graminoid	1b	
Paspalum dilatatum	Dallis grass	Poaceae	Graminoid		
Datura stramonium	Jimsonweed	Solanaceae	Shrub	1b	1
Verbena bonariensis	Purpletop vervain	Verbenaceae	Perennial	1b	

BOX 2: NEMBA categories for listed invasive alien plants (IAPs)

Category 1b

- Species which must be controlled.
- Property owners and organs of state must control the listed invasive species within their properties.
- If an Invasive Species Management Programme has been developed, a person must control the listed invasive species in accordance with such programme.
- Authorised officials must be permitted to enter properties to monitor, assist with or implement the control of listed species.
- Any Category 2 listed species (where permits are applicable) which fall outside of containment and control, revert to Category 1b and must be controlled.
- Any Category 3 listed species which occur within a Protected Area or Riparian (wetland) revert to Category 1b and must be controlled.
- The Minister may require any person to develop a Category 1b Control Plan for one or more Category 1b species occurring on a property.

Figure 13: Photos of the NEMBA and/or CARA listed invasive species that were observed on the site. All photos were taken by Bianke Fouche during the site assessment.

6. SITE ECOLOGICAL IMPORTANCE (SEI)

6.1 SEI assessment

- The proposed development in Mossdustria covering Erven 56 & 57 is mapped as a CBA1 and ONA area by the WC BSP.
- Many of the species that were regenerating on the site are native to the North Langeberg Sandstone Fynbos, which is the vegetation type mapped for the site according to the 2018 updated National Vegetation Map of South Africa.
- Most of the site is currently dominated by graminoids, with some indigenous and endemic species scattered in between.
- The botanical sensitivity of the site, as identified by the protocols, is High because of the presence of *Hermannia lavandulifolia*. **The SEI calculations for the ground truthed vegetation of site is not the same as the protocol defined sensitivity**.
- Given the location of the site, and the past disturbance and infestation by IAPs, the receptor resilience for the site is high, meaning it will **likely remain in a modified state and has little potential for rehabilitation**.
- Furthermore, the land is in the middle of an industrial complex and has little functional integrity as it is already isolated from the larger natural areas outside of Mossdustria.
- *H. lavandulifolia* is a very common and widespread SCC, listed under the IUCN criterion A only, which means that this development will have a insignificant negative effect on the conservation targets of this species. This SCC would likely have been lost from the site over time, even if no development took place, because it is
    - in the middle of an industrial area, and
    - because even though it seems to thrive in slight disturbance, it will not persist in a modified / disturbed area indefinitely.
- The edges of the site have a very low SEI, as these areas are prone to reinvasion by IAPs and experience other negative edge effects, while the SEI for the rest of the site is considered low (see Fig 14 and the reasons used for the SEI calculation in Table 6).
- The interpretation of the SEI result is given in Table 7, i.e., that the habitat will struggle to recover and that activities of a medium to high impact are acceptable on the site.
- Methods for determining the SEI are in the Appendix 10.1.

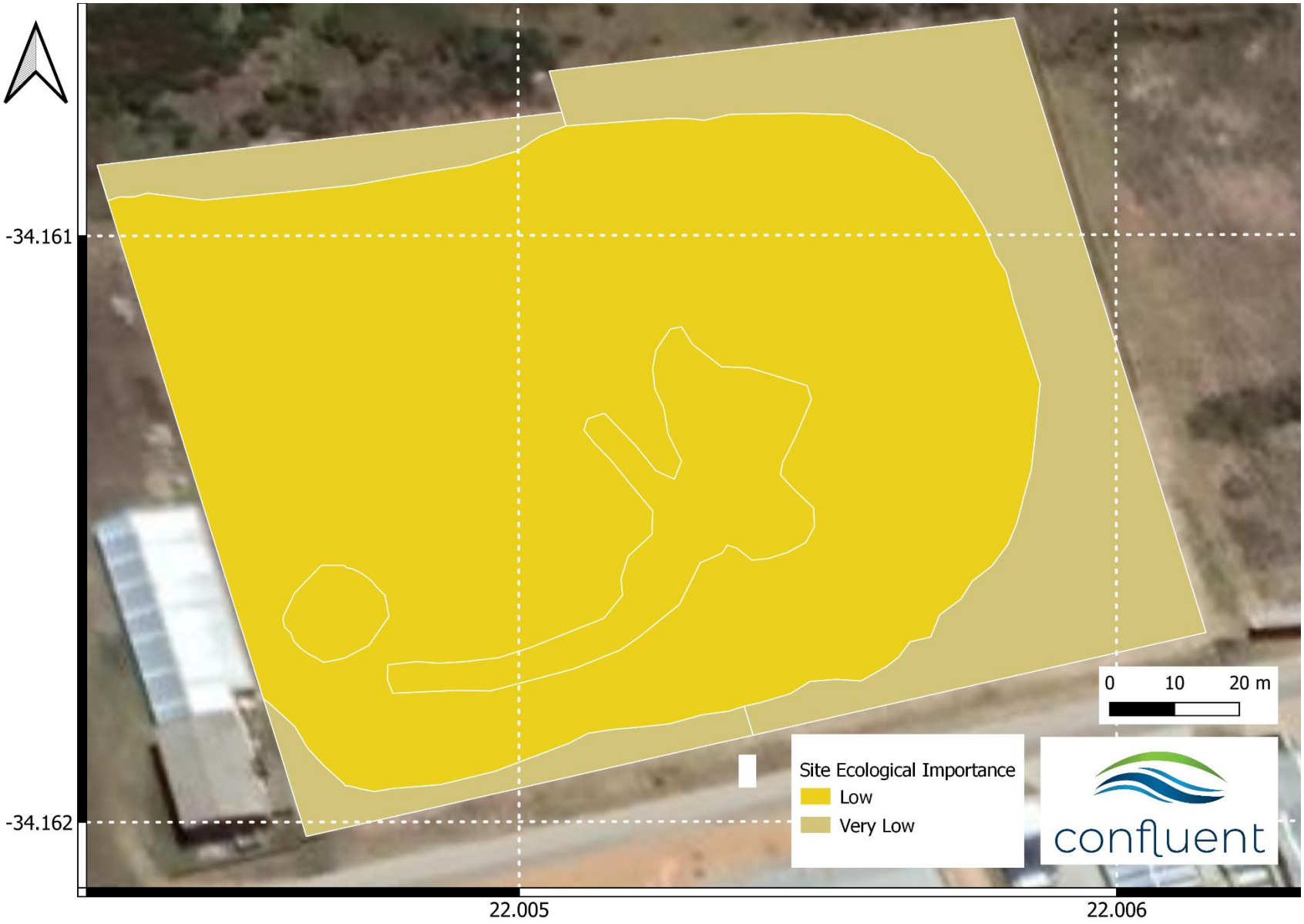

Figure 14: A visual representation of the areas where different SEI categories have been mapped, based on the vegetation observed on the site.

Table 6: The evaluation of the SEI for the various vegetation communities and habitats present within, and surrounding the PAOI.

Vegetation type	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Recovering disturbed bushy elements	**Medium** Confirmed occurrence of VU Hermannia lavandulifolia that is listed under criterion A. > 50% of receptor with natural habitat with poitential to support SCC.	**Low** Small (>1 ha but <5 ha) area, with very low habitat connectivity and several minor and major current negative ecological impacts.	**Medium** Species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.	**Low** BI - Low RR – Medium
Recovering disturbed North Langeberg Sandstone Fynbos	**Medium** Confirmed occurrence of VU Hermannia lavandulifolia that is listed under criterion A. > 50% of receptor with natural habitat with poitential to support SCC.	**Low** Small (>1 ha but <5 ha) area, with very low habitat connectivity and several minor and major current negative ecological impacts.	**Medium** Species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.	**Low** BI - Low RR – Medium
Vegetation at risk of “First wave” Acacia invasion	**Medium** Confirmed occurrence of VU Hermannia lavandulifolia that is listed under criterion A. > 50% of receptor with natural habitat with poitential to support SCC.	**Low** Small (>1 ha but <5 ha) area, with very low habitat connectivity and several minor and major current negative ecological impacts.	**High** Species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, and have a high likelihood of returning once a disturbance or impact has been removed.	**Very Low** BI - Low RR – High

Table 7: Mitigation measures for the site based on the SEI ratings of the various vegetation types present on the site.

Site Ecological Importance (SEI)	Interpretation in relation to the proposed development 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.

7. SITE SENSITIVITY VERIFICATION

7.1 Terrestrial Biodiversity

The terrestrial biodiversity theme for the site has a confirmed Low sensitivity, despite the site having areas that are mapped as a CBA1 areas. The vegetation of the site is not in a natural condition, and has been disturbed multiple times in the past with invasive plants tending to dominate the secondary succession on the site (mostly *Acacia longifolia* and *Acacia cyclops*). Erven 56 and 57 are located in the middle an industrial complex, and do not meet the definition for being CBA1 areas. Furthermore, the site contains no sensitive freshwater or aquatic features. This means that although the site triggered FEPA as a reason for having very high terrestrial biodiversity sensitivity, the proposed development will not affect or interfere with the FEPA objectives for the broader landscape and catchment.

7.2 Botanical diversity

The terrestrial plant theme sensitivity of the site has a confirmed High sensitivity and is not Medium as stated in the screening tool. The "Protocol for the specialist assessment and minimum report content requirements for Environmental Impacts on terrestrial plant species" describes a high sensitivity as:

- Confirmed habitat for SCC.
- SCC listed on the IUCN Red List of Threatened Species or South Africa's National Red List website as CR, EN, or VU.

8. IMPACT ASSESSMENT

The mitigation of potential impacts associated with the development are ranked according to the mitigation hierarchy, which has four distinct categories of mitigation measures (Fig. 15). These can be divided into preventative and remediative mitigation measures. The mitigation hierarchy must be kept in mind during all of the stages of the project lifespan to ensure that the best mitigation measures are put in place for any given activity (Ekstrom et al., 2015). Methods used for the impact assessment are provided in the Appendix 10.2. Depending on the result, impacts are either negligible, minor, moderate, or major, and the impact can either be positive or negative.

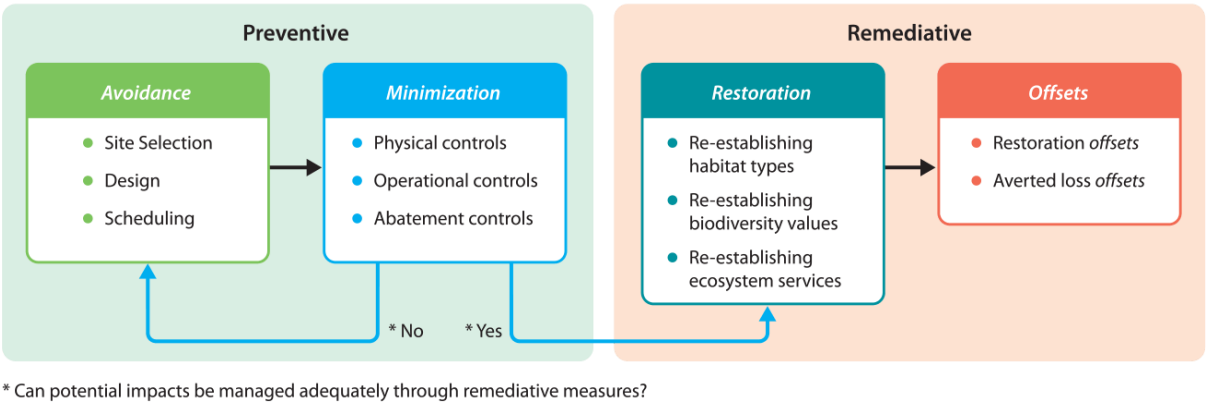

Figure 15: The iterative process of avoiding and minimising the predicted impacts on biodiversity and ecosystem services, as described in (Ekstrom et al., 2015).

8.1 Layout and Design Phase

8.1.1 Recommendation for staff parking spaces.

The driveways and parking areas **for smaller vehicles (not trucks)** could be designed with open pavers (Fig. 16) planted with native graminoids like buffalo grass (*Stenotaphrum secundatum)*, quick grass (*Cynodon dactylon)*, restios, or sedges. Open pacers should be used instead of impermeable material to allow for more water infiltration which will reduce runoff, and to promote the presence of some native species on the site. There are a number of nearby indigenous nurseries that can be contacted to aid in the planning for using open pavers optimally.

Figure 16: An illustration of open pavers that can be incorporated into the design of this project for staff parking areas. This is not appropriate for truck parking areas on the site.

8.1.2 Recommendation to avoid non-native species planted on the site

Gardening and any landscaping for the site must be done with species that are native to the area. Any landscaping should be done with someone that has experience in planning indigenous gardens.

8.2 Construction Phase

An Environmental Control Officer (ECO) must be appointed for the duration of the construction phase and should check on the site at least once a week, as well as after rainfall events. Generic impacts associated with the layout provided are considered.

8.2.1 Impact of habitat loss and degradation

Description: The natural habitat of the proposed development site has already been stripped and cleared completely in late 2022. Some vegetation is returning to the site, but most of it will be lost again during the construction phase of the proposed development. Where undisturbed areas remain, bad planning and execution may lead to construction material and equipment smothering vegetation on the site outside of the PAOI. The impact assessment and scenarios with and without mitigation are illustrated in Table 8. Images of some of the proposed mitigation measures listed are illustrated in Figs. 17 to 19. Mismanagement of construction materials on the site can cause negative impacts to the terrestrial biodiversity of the site and surrounding environment, and this should not happen.

Consequences associated with this impact:

1. Fragmentation of habitats and affected species populations.
2. A general loss of habitat (especially since this site was mapped and planned as part of a CBA1 area).
3. A loss of variation within sensitive habitats due to fragmentation and the loss of habitat patches.
4. A shift towards a negative change in the conservation status of the habitat affected by the development.
5. Increased vulnerability of remaining habitat portions of Mossdustria and elsewhere.
6. A negative disturbance to the processes that are necessary to maintain biodiversity and ecosystem goods and services.
7. Potential health and safety hazards on the site and in the surrounding environment, and the creation of novel habitat that indigenous species cannot survive in, but where exotics and IAPs thrive in. This results from disorganised materials ending up in wrong places and mixing between materials that should not mix. For example, piles of soil from the site mixing with sand sourced elsewhere could lead to an increased likelihood or introducing more IAPs.
8. Water waste and other construction materials washing into areas where it causes unnecessary erosion, clean-up activities, and therefore causes damage to the environment.

Table 8: Construction phase impact - Habitat loss and degradation

Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	1. Clearing of vegetation outside of the two erven is not permitted. The construction site must be planned and designed before construction starts (Fig. 17), so that areas for equipment and material storage are defined and occur on level ground on the site near site offices. 2. Ongoing monitoring and clearing of IAPs on the site. 3. Materials used during construction must be sourced responsibly to minimise the risk of further introductions of new IAPs. No waste dumping or burning is allowed on the site. All material waste is to be collected in bins and transported to a waste disposal facility. 4. Adequate ablution facilities that are regularly cleaned and maintained on the site, with at least one toilet per ten construction staff. 5. Areas for resting and lunch is to be clearly indicated on the site. These areas must contain waste disposal bins that are cleaned on a weekly or bi-weekly basis. 6. Concrete and cement mixing is not to occur near muddy areas. Where mixing of concrete and cement occurs, the area must be bunded or surrounded by an impermeable material to prevent any runoff into the surrounding environment and existing road. 7. Stockpiles of materials and soil must all be covered by a geotextile or plastic covering, which must also be bunded (e.g., sandbags) when the piles are not in use on the site (Fig 18). This will prevent the material from washing away and contaminating the substrate of the site which likely still contains useful seeds and soil organisms. 8. The use of filled sandbags can reduce the intensity of water flow over the site in strategic areas where water flow is anticipated to be altered during construction (Fig. 19).			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Limited	Limited to the site and its immediate surroundings (edge effects)	Limited	Limited to the site and its immediate surroundings (edge effects)
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	Very High	Natural and/ or social functions and/ or processes are majorly altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	**Moderate - negative**		**Moderate - negative**	

Figure 17: Examples of construction fencing that can be used on the site.

Figure 18: An example of a protected stockpile (imagfrom stormwaterhawaii.com).

Figure 19: Examples of silt socks placed perpendicular to the flow of water. These reduce the force of water flow, erosion, and can prevent unwanted sedimentation on the site.

8.2.2 Impact of construction on SCC

Description: The natural habitat of the proposed development site has already been stripped and cleared completely in late 2022. *Hermannia lavandulifolia*, a VU SCC, was recorded as a one of the species in the early successional stages of vegetation regrowth on the site (luckily it seems to thrive in light disturbance). However, these plants will be lost during the construction phase if mitigation measures are not in place to protect this SCC, and to promote a shift to indigenous horticulture and gardening in the Mossel Bay area. SANBI describes *Hermannia* spp. in general as follows :

> *"Hermannias have great horticultural potential, but since they are generally associated with arid areas, the perception is that they only succeed in dry areas. However, it is well known that certain xerophytes thrive if given water with good drainage, so the group of plants is worth cultivating and testing. In the current times of climate change and water scarceness, it is important to cultivate these plants which are naturally adapted to less water. With the higher emphasis on water-wise gardening, plants with a wider ecological tolerance will assume increased importance in horticulture. Many species of Hermannia are cultivated in indigenous nurseries, as they have such excellent horticultural potential. However, they are still unknown to many gardeners, and need more publicity to increase their popularity."* ~ (Sachse, 2007)

The site is especially prone to re-invasion by *Acacia saligna*, which over time could result in the reduction and eventual eradication of *H. lavandulifolia* and other more sensitive and less widespread SCC that might be present on the site, even if the site remains in the state that is currently is in. The impact assessment and scenarios with and without mitigation are illustrated in Table 9.

Consequences associated with this impact:

1. Fragmentation affects SCC sub-populations. This consequence here is minimal as the erven already form part of a larger disturbed area in Mossdustria. It is really the surrounding near-natural landscape with multiple confirmed SCC that is fragmented by Mossdustria and other similar large developments in the area.
2. Reduction in the extent of occurrence of SCC.
3. A general loss of suitable habitat for SCC
4. A loss of genetic variation within affected SCC stands.
5. A shift towards a negative change in the conservation status of the SCC and other indigenous species affected by the development. Even if this effect is negligible given the size of the erven to be developed in relation to the widespread and common *H. lavandulifolia*, the combined effect of this development and the many other developments in the Mossel Bay area and beyond will negatively affect the conservation status of species.
6. A risk of re-invasion of the site by acacias and the consequent permanent loss of *H. lavandulifolia* from even the most minor remaining open spaces on the site.

Table 9: Construction phase impact - Habitat loss and degradation

Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	1. A plant rescue must be undertaken, with rescued plants being in the care of a relevant indigenous flora horticulturalist. The horticulturalist for the site must be in possession of the appropriate permit from CapeNature to move, sell, buy, donate, receive, cultivate, and sell threatened flora. 2. Rescued plants are not to be planted in more natural vegetation surrounding Mossdustria, rather they can be kept and cultivated as a reserve for revegetation in other projects where open spaces need rehabilitation with plants indigenous to the area. 3. The PAOI must be clearly defined using construction netting and/or appropriate fencing, and information boards where necessary. This will prevent impacts on SCC outside of this designated construction area. 4. Materials used during construction must be sourced and transported responsibly to minimise the risk of further introductions of new IAPs and contamination of the site, and especially the areas surrounding the site. 5. All staff are to be briefed and informed about the SCC found on the site **and** the potential of the site to support additional SCC. The brief should include highlighting areas that are marked as "no-go" areas on the site.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	**Moderate - negative**		**Minor - negative**	

8.2.3 Impact of construction vehicles on sensitive habitat surrounding the development site

Description: Construction vehicles may cause pollution and damage to the environment, habitat, and vegetation present in the landscape around the proposed development. Impacts that arise from construction vehicles are fairly straightforward to mitigate and reduce to a negligible negative impact. The impact assessment is in Table 10.

Consequences associated with this impact:

1. Unnecessary creation of muddy areas, substrate damage, and pollution of the environment.
2. Pollution of water, and accumulation of toxic materials in natural and near-natural areas.
3. An overall reduction in biodiversity.

Table 10: Construction phase impact - Vehicles impact on sensitive habitat surrounding the development site.

Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	1. Before the start of construction on the site, durable materials should be used to fence off areas that fall outside of the PAOI disturbance strip and clearly show where construction vehicles are allowed and where parking areas are on the site. 2. Shade cloth used as fencing should be hammered into the ground using wooden pegs, and clear signs for "no-go" areas for vehicles should be placed strategically on the site. 3. For once off deliveries, clear indications on the nearby roads should be put up to guide truck drivers to the construction site, thus avoiding divers getting lost and causing unnecessary disturbance. 4. Weather reports must be checked daily to avoid heavy machinery and activities requiring a lot of water use on the site during rainy weather. 5. Following a rainfall event, all construction on the site must cease temporarily. 6. Sandbags should be available on the site where vehicles are refuelled so that any accidental spills can be contained and stopped quickly. 7. All construction vehicles should be checked for leaks on a daily basis at the start of each day. Vehicles that have leaks must not be allowed to operate on the site until they have been repaired. 8. Staff operating earth moving machinery need to be informed that these vehicles may not operate outside of the PAOI.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Very limited	Limited to specific isolated parts of the site	Very limited	Limited to specific isolated parts of the site
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	**Minor - negative**		**Negligible - negative**	

8.3 Concluding construction works.

The conclusion of any project is an essential, but often overlooked aspect of projects. This relates primarily to the cleaning up of the site once construction has concluded. **All mitigation proposed above are only meaningful if construction is properly concluded**. The site must be cleared of all waste material, rubble, and debris associated with the construction phase at regular intervals during, and at the conclusion of the construction phase. Drainage structures must be checked to ensure that there are no blockages or pollution that is blocking the free flow of water. This will prevent erosion during and after the construction phase.

8.4 Operational Phase

Following the information given for this project, **there will be no open areas left on the site** that will have the potential to recover after the construction phase of the project. This means that there are no operational phase impacts associated with the proposed activity, as there will be no habitat or SCC remaining on the site. Furthermore, the natural vegetation of the site and Mossdustria is fynbos, which is a fire-driven ecosystem, and fire-return intervals in Mossdustria is non-existent. In small habitat parches that are invaded by IAPs (as is the case in most of Mossdustria), edge effects are exacerbated and natural vegetation inevitably disappears (Gill et al., 2014). Therefore, a few recommendations for the operational phase of the project are listed below to ensure that negative impacts will extend beyond the permanent footprint of the proposed development and Mossdustria into the more natural surrounding landscape:

1. Regular effort must be made to keep the site clear of all IAPs, and this is also a requirement by law.
2. Planting of grass and lawns must be avoided on the site apart from in the open pavers that will be used as parking areas for staff on the site. Here only indigenous grass may be planted, and kikuyu grass (*Cenchrus clandestinus*), a listed invasive species, is banned.
3. Dumping of garden refuse or leaving stacks of cleared IAP slash in natural and near-natural vegetation is not allowed. Dumping may only occur in designated areas.
4. General cleanliness and order must be maintained on the site to avoid accidental impacts to the environment. Ensure that there are sufficient bins available on the site, both inside of the offices and on the outside.
5. Regular maintenance of the diesel tanks on the site.
6. Trained staff must manage the filling station and washing bay on the site to avoid pollutants running off into the environment.

8.5 Cumulative impacts

The proposed development forms part of the wider Mossdustria complex, which is an industrial area – The existing hard surfaces and IAP infestations in the Mossdustria complex as a whole can lead to an accumulation of negative effects for the entire Mossdustria ass well and the surrounding landscape. Mitigation of negative impacts on the proposed development site may not have been done or considered in areas adjacent to the Erven 56 and 57, and therefore the proposed development will be different from the ‘development as usual’ that likely was the case for other properties in the complex. Following the proposed mitigation measures laid out as part of the impact assessment, the project will reduce the cumulative negative impacts for the area.

9. CONCLUSIONS

Erven 56 and 57 in Mossdustria is mapped as North Langeberg Sandstone Fynbos, which is not listed as a threatened ecosystem. Most of the proposed development site is transformed and represents a disturbed vegetation type with some fynbos elements remaining. Taking the location of the site into account, i.e., that it is in the middle of an industrial area, and that IAP invasions are present in remaining open spaces of Mossdustria (mainly *Acacia saligna* and *A. cyclops*), the study area has a low conservation importance and a low and very low SEI. However, *Hermannia lavandulifolia* (VU) was found during the site assessment, and numerous other threatened or near threatened species have been observed very close to the Mossdustria complex in the surrounding mostly natural landscape. These species are discussed in section 5.1. *Hermannia lavandulifolia* is a common species that frequently occurs in areas that have previously been disturbed, especially when thicket or fynbos has been removed. The loss of this species on the site has a negligible impact on the overall status of the species.

This means that although the site has a low SEI, indigenous vegetation of the wider mostly natural landscape within which the Mossdustria complex is located is anticipated to have a high sensitivity and conservation importance. If the development complies with the mitigation measures proposed in the impact assessment of this report, then the development of the entirety of the two properties would be acceptable. However, the development can only be approved if an IAP management plan for Mossdustria is in place. The vegetation on the site at present has a low conservation value, and that is unlikely to change as the site is in the middle of an industrial complex.

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APPENDIX

10.1 Site Ecological Importance (SEI) methods

The site ecological importance (SEI) assessment is a function of biodiversity importance (BI) and receptor resilience (RR), which is defined as:

> *"The intrinsic capacity of the receptor (i.e., habitat type in question) to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention."*

The function is as follows: SEI = BI + RR. BI is a function of conservation importance (CI) and habitat functional integrity (FI), so that BI = CI + FI. The definition of CI given by the Species Environmental Assessment Guideline of 2022 is:

> *"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."*

Most features included in CI are provided by the screening tool but needs to be evaluated at a finer scale from the field work assessment. FI is defined as:

> *"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."*

The criteria for defining RR, CI and FI are provided in the Species Environmental Assessment Guidelines of 2022. BI can be derived from a simple matrix of CI and FI, as illustrated in Table 11 below.

Table 11: The matrix that defines the biodiversity importance (BI) of a given habitat type, as identified from a desktop and field assessment.

Biodiversity Importance		**Conservation Importance**				
		Very High	High	Medium	Low	Very Low
FI	Very High	Very High	Very High	High	Medium	Low

	High	Very High	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very Low
	Low	Medium	Medium	Low	Low	Very Low
	Very Low	Medium	Low	Very Low	Very Low	Very Low

SEI can then be derived from a second matrix, as depicted in Table 12. SEI is specific to the proposed development and can therefore only be compared between alternative layouts for the same proposed development, but not between developments.

Table 12: The matrix that defines the site ecological importance (SEI) of a given habitat type, as identified from a desktop and field assessment.

Site Ecological Importance		**Biodiversity Importance**				
		Very High	High	Medium	Low	Very Low
Receptor Resilience	Very High	Very High	Very High	High	Medium	Low
	High	Very High	Very High	High	Medium	Very Low
	Medium	Very High	High	Medium	Low	Very Low
	Low	High	Medium	Low	Very Low	Very Low
	Very Low	Medium	Low	Very Low	Very Low	Very Low

10.2 Impact assessment methods

Individual impacts for the construction and operational phase were identified and rated according to criteria which include their intensity, duration and extent. The ratings were then used to calculate the consequence of the impact which can be either negative or positive as follows:

Consequence *= type x (intensity + duration + extent)*

Where type is either negative (i.e. -1) or positive (i.e. 1). The significance of the impact was then calculated by applying the probability of occurrence to the consequence as follows:

Significance *= consequence x probability*

The criteria and their associated ratings are shown in Table 13.

Table 13: Categorical descriptions for impacts and their associated ratings

Rating	**Intensity**	**Duration**	**Extent**	**Probability**
1	Negligible	Immediate	Very limited	Highly unlikely
2	Very low	Brief	Limited	Rare
3	Low	Short term	Local	Unlikely
4	Moderate	Medium term	Municipal area	Probably
5	High	Long term	Regional	Likely
6	Very high	Ongoing	National	Almost certain
7	Extremely high	Permanent	International	Certain

Categories assigned to the calculated significance ratings are presented in Table 14.

Table 14: Value ranges for significance ratings, where (-) indicates a negative impact and (+) indicates a positive impact

Significance Rating	**Range**

Major (-)	-147	-109
Moderate (-)	-108	-73
Minor (-)	-72	-36
Negligible (-)	-35	-1
Neutral	0	0
Negligible (+)	1	35
Minor (+)	36	72
Moderate (+)	73	108
Major (+)	109	147

Each impact was considered from the perspective of whether losses or gains would be irreversible or result in the irreplaceable loss of biodiversity of ecosystem services. The level of confidence was also determined and rated as low, medium or high (Table 15).

Table 15: Definition of reversibility, irreplaceability and confidence ratings.

Rating	Reversibility	Irreplaceability	Confidence
Low	Permanent modification, no recovery possible.	No irreparable damage and the resource isn't scarce.	Judgement based on intuition.
Medium	Recovery possible with significant intervention.	Irreparable damage but is represented elsewhere.	Based on common sense and general knowledge
High	Recovery likely.	Irreparable damage and is not represented elsewhere.	Substantial data supports the assessment

10.3 Species lists.

Table 16 shows observations of plant species outside of the proposed development site by different observers on iNaturalist in the past. It is clear that there are many SCC and orange listed species present in the landscape surrounding Mossdustria. Observations

Table 16: Observations made by various iNaturalist users of plant species in the environment near Erven 56 and 57 of Mossductria, within the area defined in Fig. 10.

Date	iNat observer	Species	Common name	Family
2021/11/23	Felix Riegel	Arctotis pinnatifida		Asteraceae
2021/11/23	Felix Riegel	Aspalathus	Aspalathuses	Fabaceae
2021/11/23	Felix Riegel	Aspalathus submissa		Fabaceae
2021/11/23	Felix Riegel	Athanasia	Kanniedoods	Asteraceae
2021/11/23	Felix Riegel	Bobartia	Rushirises	Iridaceae
2021/11/23	Felix Riegel	Crassula subulata	Bihair Stonecrop	Crassulaceae
2021/11/23	Felix Riegel	Erica discolor	Discolorous Heath	Ericaceae
2021/11/23	Felix Riegel	Hermannia lavandulifolia		Malvaceae
2021/11/23	Felix Riegel	Moraea unguiculata	White Uintjie	Iridaceae
2021/11/23	Felix Riegel	Satyrium membranaceum	Membrane Satyre	Orchidaceae
2021/11/23	Felix Riegel	Selago ramosissima		Scrophulariaceae
2021/11/23	Felix Riegel	Senecio purpureus	Purple Ragwort	Asteraceae
2020/06/21	Gerrie	*Eriospermum sp.*	Woolseeds	Asparagaceae
2022/08/15	Jakub Jilemick	Cephalophyllum sp.	Starfigs	Aizoaceae
2020/08/20	Jenny Potgieter	*Acrodon bellidiflorus*	Common Tiptoothfig	Aizoaceae
2020/08/20	Jenny Potgieter	*Arctotis acaulis*	Flat African Daisy	Asteraceae
2020/08/20	Jenny Potgieter	*Gazania sp.*	Treasure Flowers	Asteraceae
2020/08/20	Jenny Potgieter	*Gladiolus mutabilis*	Brownies	Iridaceae
2020/08/20	Jenny Potgieter	*Helichrysum teretifolium*	Needle Everlasting	Asteraceae
2020/08/20	Jenny Potgieter	*Monsonia emarginata*	Monsonia	Geraniaceae

2022/03/20	Karen Eichholz	Commelina africana	African Yellow Dayflower	Commelinaceae
2022/03/20	Karen Eichholz	Hypoxis hemerocallidea	African potato	Hypoxidaceae
2023/02/11	Kevin Koen	*Arctotis pinnatifida*		Asteraceae
2022/05/20	Kevin Koen	*Cotula discolor*	Beach Buttons	Asteraceae
2022/05/20	Kevin Koen	*Osteospermum bolusii*		Asteraceae
2022/05/20	Kevin Koen	*Phylica axillaris*	Axil Hardleaf	Rhamnaceae
2022/05/20	Kevin Koen	*Prismatocarpus candolleanus*	Tube Shaftfruit	Campanulaceae
2022/05/20	Kevin Koen	*Protea lanceolata*	Lanceleaf Sugarbush	Proteaceae
2022/05/20	Kevin Koen	*Thesium sp.*	Rootthugs	Santalaceae
2023/02/10	Kevin Koen	*Trachyandra affinis*		Asphodelaceae
2020/10/21	Kevin Koen	*Trifolium arvense arvense*	Haresfoot Clover	Fabaceae
2020/10/21	Kevin Koen	*Trifolium campestre*	hop trefoil	Fabaceae
2020/10/21	Kevin Koen	*Vicia benghalensis*	reddish tufted vetch	Fabaceae
2021/12/16	Kevin Koen	*Wahlenbergia undulata*	African Blue Bell	Campanulaceae
2019/11/13	Mark Berry	*Bobartia robusta*	Giant Rushiris	Iridaceae
2020/06/17	Mark Berry	*Cephalophyllum diversiphyllum*	Variable Starfig	Aizoaceae
2019/11/13	Mark Berry	*Crassula nudicaulis nudicaulis*	Sourfig Stonecrop	Crassulaceae
2019/11/13	Mark Berry	*Delosperma neethlingiae*		Aizoaceae
2019/11/13	Mark Berry	*Euphorbia procumbens*	Snake Milkball	Euphorbiaceae
2019/11/13	Mark Berry	*Indigofera nigromontana*	Swartberg Indigo	Fabaceae
2019/11/14	Mark Berry	*Lampranthus elegans*	Elegant Brightfig	Aizoaceae
2019/11/13	Mark Berry	*Trichodiadema occidentale*	Ruens Crownfig	Aizoaceae
2019/11/13	Mark Berry	*Tritonia crocata*	Blazing star	Iridaceae
2014/09/05	Nicola van Berkel	*Achyranthemum paniculatum*	Sewejaartjie Chafflower	Asteraceae
2014/09/05	Nicola van Berkel	*Acrodon bellidiflorus*	Common Tiptoothfig	Aizoaceae
2014/09/05	Nicola van Berkel	*Aspalathus alopecurus*	Foxtail Capegorse	Fabaceae
2014/09/05	Nicola van Berkel	*Athanasia quinquedentata quinquedentata*		Asteraceae
2014/09/05	Nicola van Berkel	*Berkheya armata*	Giant Capethistle	Asteraceae
2014/09/05	Nicola van Berkel	*Carpobrotus mellei*	Mountain Sourfig	Aizoaceae
2014/09/05	Nicola van Berkel	*Commelina africana Africana*	Common Yellow Dayflower	Commelinaceae
2014/09/05	Nicola van Berkel	*Crassula nudicaulis nudicaulis*	Sourfig Stonecrop	Crassulaceae
2014/09/05	Nicola van Berkel	*Cullumia carlinoides*	Limestone Snakethistle	Asteraceae
2014/09/05	Nicola van Berkel	*Geissorhiza inconspicua*	Hidden Satin	Iridaceae
2014/09/05	Nicola van Berkel	*Lampranthus elegans*	Elegant Brightfig	Aizoaceae
2014/09/05	Nicola van Berkel	*Lobelia tomentosa*	Woolly Lobelia	Campanulaceae
2014/09/05	Nicola van Berkel	*Lotononis umbellata*		Fabaceae
2014/09/05	Nicola van Berkel	*Moraea tricuspidata*	Reed Uintjie	Iridaceae
2014/09/05	Nicola van Berkel	*Oedera genistifolia*	Lesser Perdekaroo	Asteraceae
2014/09/05	Nicola van Berkel	*Pelargonium alchemilloides*	Mantle Storksbill	Geraniaceae
2014/09/05	Nicola van Berkel	*Pseudoselago sp.*	Puffbushes	Scrophulariaceae
2014/09/05	Nicola van Berkel	*Romulea flava viridiflora*	Thinleaf Greenbract Froetang	Iridaceae
2014/09/05	Nicola van Berkel	*Satyrium parviflorum*	Devil Satyre	Orchidaceae
2014/09/05	Nicola van Berkel	*Watsonia laccata*	Coastal Watsonia	Iridaceae
2014/09/12	Sally Adam	*Acrodon bellidiflorus*	Common Tiptoothfig	Aizoaceae
2020/09/18	Sally Adam	*Blepharis integrifolia*	Narrow Lashes	Acanthaceae
2014/09/12	Sally Adam	*Cephalophyllum diversiphyllum*	Variable Starfig	Aizoaceae

2020/09/18	Sally Adam	*Delosperma litorale*	White Trailing Iceplant	Aizoaceae
2020/09/18	Sally Adam	*Delosperma neethlingiae*		Aizoaceae
2020/09/18	Sally Adam	*Ehrharta calycina*	Perennial Veldtgrass	Poaceae
2014/09/12	Sally Adam	*Euphorbia foliosa*		Euphorbiaceae
2020/09/18	Sally Adam	*Ficinia marginata*	Common Annual Clubrush	Cyperaceae
2014/09/12	Sally Adam	*Freesia caryophyllacea*	Fragrant Kammetjie	Iridaceae
2020/09/18	Sally Adam	*Harpochloa falx*	Caterpillar Grass	Poaceae
2020/09/18	Sally Adam	*Heliophila pendula*	Hanging Sunspurge	Brassicaceae
2014/09/12	Sally Adam	*Hermannia saccifera*	cumin hermannia	Malvaceae
2020/09/18	Sally Adam	*Indigofera sp12*	Garden Route Indigo	Fabaceae
2020/09/18	Sally Adam	*Lotononis umbellata*		Fabaceae
2014/09/12	Sally Adam	*Massonia*	Hedgehog Lilies	Asparagaceae
2014/09/12	Sally Adam	*Nemesia bicornis*	Twohorn Lionface	Scrophulariaceae
2020/09/18	Sally Adam	*Pharnaceum*	Spookasems	Molluginaceae
2020/09/18	Sally Adam	*Satyrium parviflorum*	Devil Satyre	Orchidaceae
2014/09/12	Sally Adam	*Tulista minor*	Renoster Fataloe	Asphodelaceae
2020/08/21	Sandra Falanga	*Acacia cyclops*	western coastal wattle	Fabaceae
2020/06/17	Sandra Falanga	*Acrodon bellidiflorus*	Common Tiptoothfig	Aizoaceae
2020/08/21	Sandra Falanga	*Agathosma capensis*	Cape Buchu	Rutaceae
2020/08/21	Sandra Falanga	*Arctotis acaulis*	Flat African Daisy	Asteraceae
2020/08/21	Sandra Falanga	*Arctotis pinnatifida*		Asteraceae
2020/06/17	Sandra Falanga	*Aspalathus alopecurus*	Foxtail Capegorse	Fabaceae
2020/08/21	Sandra Falanga	*Babiana fourcadei*	Langeberg Bobbejaantjie	Iridaceae
2020/08/21	Sandra Falanga	*Bobartia robusta*	Giant Rushiris	Iridaceae
2020/08/21	Sandra Falanga	*Bulbine annua*		Asphodelaceae
2020/08/21	Sandra Falanga	*Cephalophyllum diversiphyllum*	Variable Starfig	Aizoaceae
2020/06/17	Sandra Falanga	*Chaenostoma revolutum*	Fineleaf Skunkbush	Scrophulariaceae
2020/06/17	Sandra Falanga	*Cheilanthes viridis*	Green Cliff Brake	Pteridaceae
2020/08/21	Sandra Falanga	*Chironia baccifera*	Christmas Berry	Gentianaceae
2020/06/17	Sandra Falanga	*Clutia laxa*	Twiggy Clut	Peraceae
2020/08/21	Sandra Falanga	*Crassula ericoides*	Heath Stonecrop	Crassulaceae
2020/06/17	Sandra Falanga	*Crassula nudicaulis nudicaulis*	Sourfig Stonecrop	Crassulaceae
2020/08/21	Sandra Falanga	*Crassula subulate*	Bihair Stonecrop	Crassulaceae
2020/08/21	Sandra Falanga	*Crossyne guttata*	April-fool Parasol	Amaryllidaceae
2020/08/21	Sandra Falanga	*Cullumia carlinoides*	Limestone Snakethistle	Asteraceae
2020/06/17	Sandra Falanga	*Curio archeri*	Toxic Beads	Asteraceae
2020/06/17	Sandra Falanga	*Delosperma neethlingiae*		Aizoaceae
2020/08/21	Sandra Falanga	*Dicerothamnus rhinocerotis*	Renosterbush	Asteraceae
2020/08/21	Sandra Falanga	*Diospyros dichrophylla*	Poison Starapple	Ebenaceae
2020/08/21	Sandra Falanga	*Drimia capensis*	Maerman Squill	Asparagaceae
2020/08/21	Sandra Falanga	*Erica quadrangularis*	Smoke Heath	Ericaceae
2020/08/21	Sandra Falanga	*Erica versicolor*	Twotone Heath	Ericaceae
2020/08/21	Sandra Falanga	*Eriocephalus africanus*	Cape Snow Bush	Asteraceae
2020/08/21	Sandra Falanga	*Eriospermum pubescens*	Hairyheart Woolseed	Asparagaceae
2020/08/21	Sandra Falanga	*Euphorbia procumbens*	Snake Milkball	Euphorbiaceae
2020/06/17	Sandra Falanga	*Gethyllis afra*	Bramakranka	Amaryllidaceae
2020/08/21	Sandra Falanga	*Gnidia nodiflora*	Scruffy Capesaffron	Thymelaeaceae

2020/08/21	Sandra Falanga	*Haemanthus sanguineus*	Smooth Bloodlily	Amaryllidaceae
2020/08/21	Sandra Falanga	*Helichrysum patulum*	Honey Everlasting	Asteraceae
2020/08/21	Sandra Falanga	*Helichrysum teretifolium*	Needle Everlasting	Asteraceae
2020/06/17	Sandra Falanga	*Heliophila subulate*	Common Sunspurge	Brassicaceae
2020/06/17	Sandra Falanga	*Hermannia flammea*		Malvaceae
2020/06/17	Sandra Falanga	*Hermannia flammula*	Blazing Dollsrose	Malvaceae
2020/08/21	Sandra Falanga	*Hermannia lavandulifolia*		Malvaceae
2020/08/21	Sandra Falanga	*Hermannia saccifera*	cumin hermannia	Malvaceae
2020/08/21	Sandra Falanga	*Hermannia salviifolia*		Malvaceae
2020/08/21	Sandra Falanga	*Lampranthus elegans*	Elegant Brightfig	Aizoaceae
2020/08/21	Sandra Falanga	*Leucadendron salignum*	Common Sunshine Conebush	Proteaceae
2020/08/21	Sandra Falanga	*Lysimachia arvensis*	scarlet pimpernel	Primulaceae
2020/06/17	Sandra Falanga	*Metalasia acuta*	Pointy Blombush	Asteraceae
2020/06/17	Sandra Falanga	*Monsonia emarginata*	Monsonia	Geraniaceae
2020/08/21	Sandra Falanga	*Montinia caryophyllacea*	Pepperbush	Montiniaceae
2020/08/21	Sandra Falanga	*Moraea polyanthos*	Manyflower Tulp	Iridaceae
2020/08/21	Sandra Falanga	*Moraea tripetala*	Blue Uintjie	Iridaceae
2020/06/17	Sandra Falanga	*Muraltia ericifolia*	Heathy Purplegorse	Polygalaceae
2020/06/17	Sandra Falanga	*Nemesia floribunda*	Common Lionface	Scrophulariaceae
2020/08/21	Sandra Falanga	*Nidorella ivifolia*	Ivy Vleiweed	Asteraceae
2020/06/17	Sandra Falanga	*Oedera pungens*		Asteraceae
2020/06/17	Sandra Falanga	*Othonna gymnodiscus*	Leafy Babooncabbage	Asteraceae
2020/06/17	Sandra Falanga	*Oxalis ciliaris*	Fringe Sorrel	Oxalidaceae
2020/08/21	Sandra Falanga	*Pelargonium alchemilloides*	Mantle Storksbill	Geraniaceae
2020/06/17	Sandra Falanga	*Pelargonium candicans*	Velvet Storksbill	Geraniaceae
2020/08/21	Sandra Falanga	*Pelargonium dipetalum*	Bunny-ear Storksbill	Geraniaceae
2020/06/17	Sandra Falanga	*Pelargonium luteolum*		Geraniaceae
2020/08/21	Sandra Falanga	*Pelargonium pulverulentum*	Powdered-Leaved Pelargonium	Geraniaceae
2020/08/21	Sandra Falanga	*Pharnaceum sp.*	Spookasems	Molluginaceae
2020/08/21	Sandra Falanga	*Plecostachys serpyllifolia*	petite-licorice	Asteraceae
2020/06/17	Sandra Falanga	*Pseudoselago sp.*	Puffbushes	Scrophulariaceae
2020/08/21	Sandra Falanga	*Romulea flava*	Greenbract Froetang	Iridaceae
2020/08/21	Sandra Falanga	*Romulea rosea*	Rosy sandcrocus	Iridaceae
2020/08/21	Sandra Falanga	*Searsia incisa effusa*		Anacardiaceae
2020/06/17	Sandra Falanga	*Searsia lucida*	Glossy Currantrhus	Anacardiaceae
2020/06/17	Sandra Falanga	*Searsia rosmarinifolia*	Rosemary Currentrhus	Anacardiaceae
2020/06/17	Sandra Falanga	*Selago sp.*	Bitterbushes	Scrophulariaceae
2020/08/21	Sandra Falanga	*Seriphium plumosum*	Bankrupt Bush	Asteraceae
2020/06/17	Sandra Falanga	*Thunbergia capensis*	Cape Clockvine	Acanthaceae
2020/08/21	Sandra Falanga	*Trachyandra ciliata*	Common Capespinach	Asphodelaceae
2020/08/21	Sandra Falanga	*Ursinia nana*	Little Paraseed	Asteraceae
2020/08/21	Sandra Falanga	*Watsonia laccata*	Coastal Watsonia	Iridaceae

10.4 The Biodiversity Spatial Plan land uses recommendations.

The image on the next page illustrates land uses that the WC BSP deems acceptable for the conservation planning mapped categorised that are included in the plan, such as CBAs and ONAs.

LAND USE CATEGORIES		Conservation		Agriculture		Tourism and Recreational Facilities		Rural Accomodation		Urban			Business & Industrial				Infrastructure Installations			
LAND USE SUB-CATEGORIES (Refer to table 4.7 for descriptions)		Proclaimed Protected Areas	Other Nature Areas	Intensive Agriculture	Extensive Agriculture	Low Impact Facilities	High Impact Facilities	Agri-worker Accommodation	Small holdings	Urban Development & Expansion	Community Facilities & Institutions	New Settlements	Rural Business	Non-place-bound industry (low-moderate impact)	Non-place-bound industry (high impact)	Extractive industry (incl. Prospecting)	Linear - roads & rail	Linear - pipelines & canals	Linear - powerlines	Other Utilities
MAP CATEGORY	DESIRED MANAGEMENT OBJECTIVE	Y = Yes: Permissible land uses that are not likely to compromise the biodiversity objective						R = Restricted: Land uses that may compromise the biodiversity objective are only permissible under certain conditions (refer to Table 4.7 for conditions)							N = No: Land uses that will compromise the biodiversity objective and are not permissible						
Protected Area	Must be kept in a natural state, with a management plan focused on maintaining or improving the state of biodiversity.	Land use within proclaimed protected areas are subject to management plan drawn up for that specific protected area.																		
Critical Biodiversity Area 1	Keep natural, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses are appropriate.	Y	Y	N	R	N	N	N	N	N	N	N	N	N	N	N	N	N	R	N
Critical Biodiversity Area 2	Keep natural, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses are appropriate.	Y	Y	N	R	R	N	N	N	N	N	N	N	N	N	N	R	R	R	N
Ecological Support Area 1: Terrestrial	Maintain in a functional, near-natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised.	Y	Y	N	R	R	N	N	N	N	N	N	R	R	N	N	R	R	R	R
Ecological Support Area 1: Aquatic	Maintain in a functional, near-natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised.	Y	Y	N	R	R	N	N	N	N	N	N	N	N	N	N	R	R	R	N
Ecological Support Area 2	Restore and/or manage to minimise impact on ecological infrastructure functioning; especially soil and water-related services.	Y	Y	N	R	R	N	N	R	N	N	N	N	N	N	N	R	R	R	R
ONA: Natural to Near-Natural	Minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning. Offers flexibility in permissible land uses, but some authorisation may still be required for high impact land uses.	Y	Y	R	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
ONA: Degraded	Minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning. Offers flexibility in permissible land uses, but some authorisation may still be required for high impact land uses.	R	R	R	Y	Y	R	R	Y	R	R	R	R	R	R	R	Y	Y	Y	Y
No Natural Remaining	These areas are suitable for development but may still provide limited biodiversity and ecological infrastructure functions and should be managed in a way that minimises impacts on biodiversity and ecological infrastructure.	R	R	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y