

PROPOSED GOEDGELOOF STORAGE FACILITY, ST. FRANCIS BAY, KOUGA MUNICIPALITY, EASTERN CAPE TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

Report Number 593906



Report Prepared by

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December 2023

PROPOSED GOEDGELOOF STORAGE DEVELOPMENT, ST FRANCIS BAY, EASTERN CAPE

TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

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SRK Project Number 593906

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Disclaimer

The opinions expressed in this Report have been based on the information supplied to SRK Consulting (South Africa) (Pty) Ltd (SRK) by Goedgeloof Properties (Pty) Ltd. SRK has exercised all due care in reviewing the supplied information. Whilst SRK has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which SRK had no prior knowledge nor had the opportunity to evaluate.

List of Abbreviations

AIS	Alien Invasive Species
BLMC	Biodiversity Land Management Classes
CBA	Critical Biodiversity Area
CR	Critically Endangered (SANBI National Red List Categories)
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DDT	Data Deficient - Taxonomically Problematic (SANBI National Red List Categories)
ECBCP	Eastern Cape Biodiversity Conservation Plan
ECO	Environmental Control officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EN	Endangered (SANBI National Red List Categories)
GIS	Geographical Information Systems
GPS	Global Positioning System
IUCN	International Union for Conservation of Nature
NFEPA	National Freshwater Ecosystem Priority Areas
NEMBA	National Environmental Management Biodiversity Act (Act 10 of 2004)
NEMPAA	National Environmental Management Protected Areas Act (Act 57 of 2003)
NFA	National Forestry Act (Act 84 of 1998)
NT	Near Threatened (SANBI National Red List Categories)
PNCO	Provincial Nature Conservation Ordinance (Ordinance 19 of 1973)
SANBI	South African National Biodiversity Institute
STEP	Subtropical Thicket Ecosystem Planning
SSC	Species of Special Concern
TOPS	Threatened Or Protected Species (as per NEMBA)
VU	Vulnerable (SANBI National Red List Categories)
WMA	Water Management Area

Definitions

Critical Biodiversity Area (CBA)	Areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan
Critically Endangered (CR)	A species is Critically Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Critically Endangered, indicating that the species is facing an extremely high risk of extinction
Data Deficient – Insufficient Information (DDD)	A species is DDD when there is inadequate information to make an assessment of its risk of extinction, but the species is well defined. Listing of species in this category indicates that more information is required and that future research could show that a threatened classification is appropriate
Data Deficient – Taxonomically Problematic (DDT)	A species is DDT when taxonomic problems hinder the distribution range and habitat from being well defined, so that an assessment of risk of extinction is not possible.
Endangered (EN)	A species is Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Endangered, indicating that the species is facing a very high risk of extinction
Endemic	The ecological state of a species being unique to a defined geographic location, such as an island, nation, country or other defined zone, or habitat type
Ericoid	Generally means that apart from its sclerophyllous leaves, it has short internodes so that the leaves more or less cover the usually slender branchlets
Exotic	Introduced from another country : not native to the place where found
Forb	A herbaceous flowering plant that is not a graminoid (see Graminoid and Herbaceous Plant).
Fynbos	is the name given to the hard leaved (sclerophyllous) shrublands and heathlands found in the coastal plains and mountains of the south western and southern Cape of South Africa
Geophyte	A perennial plant with an underground food storage organ, such as a bulb, tuber, corm, or rhizome.
Graminoid	A herbaceous plant with a grass-like morphology, i.e. elongated culms with long, blade-like leaves (see Herbaceous Plant).
Herbaceous Plant	Plants that have no persistent woody stem above ground (includes forbs and graminoids).
Indigenous	Originating or occurring naturally in a particular place; native
Invasive Alien Species (IAPs)	Plants, animals, pathogens and other organisms that are exotic, non-indigenous or non-native to an ecosystem, and which may cause economic or environmental harm or adversely affect human health.
Least Concern	A species is Least Concern when it has been evaluated against the IUCN criteria and does not qualify for any of the above categories. Species classified as Least Concern are considered at low risk of

	extinction. Widespread and abundant species are typically classified in this category
Matrix (botany)	An integration of two or more vegetation types. A juxtaposition of different species related to differing vegetation types.
Near Threatened (NT)	A species is Near Threatened when available evidence indicates that it nearly meets any of the IUCN criteria for Vulnerable, and is therefore likely to become at risk of extinction in the near future
Renosterveld	
Rocky Outcrop	Visible exposure of bedrock or ancient superficial deposits on the surface of the Earth
Species of Special Concern (SSC)	are species that have a high conservation importance in terms of preserving South Africa's high floristic diversity and include not only threatened species, but also those classified in the categories Extinct in the Wild (EW), Regionally Extinct (RE), Near Threatened (NT), Critically Rare, Rare, Declining and Data Deficient - Insufficient Information (DDD)
Shrubland	Plant community characterised by vegetation dominated by shrubs, often also including grasses, herbs, and geophytes.
Subsurface Flow	The flow of water at a shallow depth beneath the ground surface; it may be influenced by relatively impermeable layers which enlarge lateral flow
Succulent	(of a plant, xerophyte) having thick fleshy leaves or stems adapted to storing water
Vulnerable (VU)	A species is Vulnerable when the best available evidence indicates that it meets at least one of the five IUCN criteria for Vulnerable, indicating that the species is facing a high risk of extinction

1 Project Introduction

1.1 Introduction

The Applicant, Goedgeloof Properties (Pty) Ltd, proposes to construct a warehouse and storage facility on their property, namely portion 250 of the farm Geodgeloof No. 745, located on the outskirts of St. Francis Bay in the Kouga Municipality, Eastern Cape. The industrial area will provide space for light industry and will be zoned appropriately.

In compliance with the 2014 EIA Regulations promulgated in terms of the National Environmental Management Act (Act 36 of 107), a Basic Assessment process has commenced by SRK Consulting (SRK) on behalf of Goedgeloof Properties, in order to assess the potential environmental and social impacts of the proposed warehouse and storage facility development.

The DFFE online screening tool report (dated 20 October 2022) has identified the site to have a VERY HIGH terrestrial biodiversity sensitivity and a MEDIUM plant species sensitivity. The DFFE Screening Report identified the need for a plant species and terrestrial biodiversity impact assessment, in terms of the assessment protocols identified in the Screening Report, namely the Protocol for the Specialist Assessment and minimum report content requirements for environmental impacts on Terrestrial Biodiversity (GN 320, published 20 March 2020) and Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species (GN 1150 published on 30 October 2020). The impact assessment methodology of the Species Impact Assessment Guidelines (SANBI 2020) was utilised to determine the impact of the proposed development on floral species. Furthermore, the report identifies all Protected species as well as Invasive Alien Species (IAS), not included in the assessment protocols, in case any other biodiversity permits are required.

This study assesses the terrestrial biodiversity and flora on site and any potential impacts that may result from the construction and operation of the proposed industrial development. The findings of the Terrestrial Biodiversity Impact Assessment will provide input into the relevant environmental assessment reports and the required vegetation destruction permits, if required.

1.1.1 Applicant Details

Goedgeloof Properties (Pty) Ltd	Contact person: Ms. Philippa Hill
1 Porto Cervo Rd, St. Francis Bay	Tel: 0832340747
Eastern Cape	
6312	Email: mobydicksa@hotmail.com

1.1.2 Specialist Details

Clayton Weatherall-Thomas, from the SRK Gqeberha (formerly Port Elizabeth) office, has been appointed as the independent specialist to undertake the Terrestrial Biodiversity Impact Assessment in terms of applicable legislation and guidelines.

The cv and specialist declaration has been included as Appendix A.

Terrestrial Biodiversity Impact assessor, project manager: Clayton Weatherall-Thomas, MSc, Pr.Sci. Nat. (Ecological Science)
Clayton Weatherall-Thomas is a Senior Environmental Scientist in the Gqeberha office. Clayton has been involved in environmental assessment and management for the past 6 years and botanical and ecological specialist work for the past 12. Clayton has auditing experience, and his environmental management experience includes Environmental Impact Assessments (EIAs), Basic Assessments, Environmental Management

Programmes (EMPrs). Clayton has done botanical, vegetation, ecological and faunal specialist assessments for a wide variety of projects as well.

SRK Consulting	Contact person: Mr Clayton Weatherall-Thomas
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1.2 Statement of SRK Independence

Neither SRK nor any of the author of this report have any material present or contingent interest in the outcome of this report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of SRK.

SRK's fee for completing this report is based on its normal professional daily rates plus reimbursement of incidental expenses. The payment of that professional fee is not contingent upon the outcome of the report.



Figure 1-1: Locality Plan for the proposed development near Humansdorp, Kouga Municipality.

2 Study Scope and Methodology

2.1 Methodology

2.1.1 Terms of Reference

The following terms of reference applies to this study:

- Describe the vegetation in the vicinity of the study area via a desktop study in terms of vegetation types, their ecosystem threat status and Critical Biodiversity Areas in terms of the relevant systematic biodiversity plans and known/recorded flora species of special concern;
- Undertake a survey of the study area in order to ground-truth the findings of the desktop exercise, including the presence of protected plants and other species of special concern;
- Assess the condition of the vegetation in the study area to establish the baseline conditions; and
- Compile a report that meets the requirements of the terrestrial biodiversity and plant species assessment protocols.

2.1.2 Minimum Information Requirements

This report will meet the requirements of the assessment protocols identified in the Screening Report, namely the Protocol for the Specialist Assessment and minimum report content requirements for environmental impacts on Terrestrial Biodiversity (GN 320, published 20 March 2020) and Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species (GN 1150 published on 30 October 2020).

Table 2-1 indicates how this report meets the minimum requirements of a Terrestrial Biodiversity and Plant Species specialist impact assessment.

Table 2-1: Content of specialist report as per the NEMA terrestrial biodiversity protocol (GN 320, 2020)

GN No. 320, 2020	Item	Report Section:
2.1	The assessment must be prepared by a SACNASP registered specialist with expertise in the field of terrestrial biodiversity	Section 1.1.2 and Appendix A
2.2	The assessment must be undertaken on the preferred site and within the proposed development footprint	Section 3.2
2.3.1	A description of the ecological drivers or processes of the system and how the proposed development will impact these	Section 4
2.3.2	Ecological functioning and ecological processes (e.g. fire, migration, pollination, etc.) that operate within the preferred site	Section 4
2.3.3	The ecological corridors that the proposed development would impede including migration and movement of flora and fauna;	Section 4.6.3
2.3.4	the description of any significant terrestrial landscape features (including rare or important flora- faunal associations, presence of strategic water source areas (SWSAs) or freshwater ecosystem priority area (FEPA) sub catchments;	Not applicable-these sections were included in the Aquatic Biodiversity specialist report

GN No. 320, 2020	Item	Report Section:
2.3.5	<p>A description of terrestrial biodiversity and ecosystems on the preferred site, including:</p> <ul style="list-style-type: none"> (a) main vegetation types; (b) threatened ecosystems, including listed ecosystems as well as locally important habitat types identified; (c) ecological connectivity, habitat fragmentation, ecological processes and fine-scale habitats; and (d) species, distribution, important habitats (e.g. feeding grounds, nesting sites, etc.) and movement patterns identified; 	<p>Vegetation types are discussed in Section 4.4</p> <p>Results of the site assessment are included in Section 5.1, 5.2</p>
2.3.6	<p>The assessment must identify any alternative development footprints within the preferred site which would be of a “low” sensitivity as identified by the screening tool and verified through the site sensitivity verification; and</p>	<p>Not applicable -No alternative footprints were provided.</p>
2.3.7.1	<p>The assessment must be based on the results of a site inspection undertaken on the preferred site and must identify:</p> <p>Terrestrial critical biodiversity areas (CBAs), including:</p> <ul style="list-style-type: none"> (a) the reasons why an area has been identified as a CBA; (b) an indication of whether or not the proposed development is consistent with maintaining the CBA in a natural or near natural state or in achieving the goal of rehabilitation; (c) the impact on species composition and structure of vegetation with an indication of the extent of clearing activities in proportion to the remaining extent of the ecosystem type(s); (d) the impact on ecosystem threat status; (e) the impact on explicit subtypes in the vegetation; (f) the impact on overall species and ecosystem diversity of the site; and (g) the impact on any changes to threat status of populations of species of conservation concern in the CBA; 	<p>Section 5: Results of Site Assessment</p> <p>Section 6: Sensitivity Assessment</p> <p>Section 7: Impact Assessment</p>
2.3.7.2.	<p>Terrestrial ecological support areas (ESAs), including:</p> <ul style="list-style-type: none"> (a) the impact on the ecological processes that operate within or across the site; (b) the extent the proposed development will impact on the functionality of the ESA; and (c) loss of ecological connectivity (on site, and in relation to the broader landscape) due to the degradation and severing of ecological corridors or introducing barriers that impede migration and movement of flora and fauna; 	<p>Section 4.5.3</p>
2.3.7.3.	<p>Protected areas as defined by the National Environmental Management: Protected Areas Act, 2004 including-</p> <ul style="list-style-type: none"> (a) an opinion on whether the proposed development aligns with the objectives or purpose of the protected area and the zoning as per the protected area management plan; 	<p>Section 4.5.2</p>
2.3.7.4.	<p>Priority areas for protected area expansion, including-</p> <ul style="list-style-type: none"> (a) the way in which in which the proposed development will compromise or contribute to the expansion of the protected area network; 	<p>Section 4.5.2</p>
2.3.7.5.	<p>SWSAs including:</p> <ul style="list-style-type: none"> (a) the impact(s) on the terrestrial habitat of a SWSA; and (b) the impacts of the proposed development on the SWSA water quality and quantity (e.g. describing potential increased runoff leading to increased sediment load in watercourses); 	<p>Not applicable-these sections were included in the Aquatic Biodiversity specialist report</p>

GN No. 320, 2020	Item	Report Section:
2.3.7.6.	FEPA sub catchments, including- (a) the impacts of the proposed development on habitat condition and species in the FEPA sub catchment	Not applicable-these sections were included in the Aquatic Biodiversity specialist report
2.3.7.7.	Indigenous forests, including: (a) impact on the ecological integrity of the forest; and (b) percentage of natural or near natural indigenous forest area lost and a statement on the implications in relation to the remaining areas.	Section 4.5.7
3.1.1	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae	Section 1 and Appendix A
3.1.2	A signed statement of independence by the specialist	Appendix A
3.1.3	A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment	Section 2.1.3 Section 2.2
3.1.4	Methodology used to undertake the site inspection	Section 2.1.3
3.1.5	A description of the assumptions made, any uncertainties or gaps in knowledge or data	Section 2.2
3.1.6	The location of areas not suitable for development, which are to be avoided during construction and operation where relevant	Section 6
3.1.7	Additional environmental impacts expected from the proposed development	Section 7
3.1.8	Any direct, indirect and cumulative impacts of the proposed development on site	Section 7
3.1.9	The degree to which impacts and risks can be mitigated;	Section 7
3.1.10	The degree to which the impacts and risks can be reversed;	Section 7
3.1.11	The degree to which the impacts and risks can cause loss of irreplaceable resources	Section 7
3.1.12	Proposed impact management actions and impact management outcomes for inclusion in the Environmental Management Programme (EMPr)	Section 7
3.1.13	Motivation must be provided if there were development footprints identified as per paragraph 2.4 above that were identified as having a "low" aquatic biodiversity sensitivity and that were not considered appropriate	No alternative sites were assessed as part of this assessment
3.1.14	Statement on the findings of the specialist assessment, regarding the acceptability or not of the proposed development and if the proposed development should receive approval or not	Section 8
3.1.15	Conditions to which the statement is subjected	Section 8

Table 2-2 Content of specialist report as per the NEMA terrestrial plant species protocol (GN 1150, 2020)

GN No. 320, 2020	Item	Report Section:
2.1	The assessment must be undertaken by a specialist registered with the South African Council for Natural Scientific Professions (SACNASP), within a field of practice relevant to the taxonomic groups ("taxa") for which the assessment is being undertaken.	Section 1.1.2 and Appendix A
2.2	The assessment must be undertaken within the study area.	Section 3.2
2.3	The assessment must be undertaken in accordance with the <i>Species Environmental Assessment Guideline</i> and must:	Section 2.1.5

GN No. 320, 2020	Item	Report Section:
2.3.1	Identify the SCC which were found, observed or are likely to occur within the study area	Section 4.5.1, Section 5.3 and Table 4.2
2.3.2	provide evidence (photographs) of each SCC found or observed within the study area, which must be disseminated by the specialist to a recognized online database facility immediately after the site inspection has been performed (prior to preparing the report contemplated in paragraph 3).	Table 5.1
2.3.3	Identify the distribution, location, viability and detailed description of population size of the SCC identified within the study area	Section 4.5.1 and Table 4.2
2.3.4	Identify the nature and the extent of the potential impact of the proposed development to the population of the SCC located within the study area;	Section 5.3
2.3.5	determine the importance of the conservation of the population of the SCC identified within the study area, based on information available in national and international databases including the IUCN Red List of Threatened Species, South African Red List of Species, and/or other relevant databases	Section 5.3
2.3.6	determine the potential impact of the proposed development on the habitat of the SCC located within the study area	Section 5.3
2.3.7	include a review of relevant literature on the population size of the SCC, the conservation interventions as well as any national or provincial species management plans for the SCC. This review must provide information on the need to conserve the SCC and indicate whether the development is compliant with the applicable species management plans and if not, a motivation for the deviation;	Section 5.3
2.3.8	identify any dynamic ecological processes occurring within the broader landscape, that might be disrupted by the development and result in negative impact on the identified SCC, for example, fires in fire-prone systems	Section 5.1
2.3.9	identify any potential impact on ecological connectivity within the broader landscape, and resulting impacts on the identified SCC and its long term viability	Section 5.1
2.3.10	determine buffer distances as per the <i>Species Environmental Assessment Guidelines</i> used for the population of each SCC	Section 6
2.3.11	Discuss the presence or likelihood of additional SCC including threatened species not identified by the screening tool, Data Deficient	Table 4-2
2.3.12	identify any alternative development footprints within the preferred development site which would be of "low" sensitivity" or "medium" sensitivity as identified by the screening tool and verified through the site sensitivity verification.	Not applicable- no alternative development footprints were provided
3.1.1	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae	Section 1.1.2 and Appendix A
3.1.2	A signed statement of independence by the specialist	Appendix A
3.1.3	A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment	Section 2.1.3 Section 2.2
3.1.4	Methodology used to undertake the site inspection	Section 2.1.3
3.1.5	A description of the assumptions made, any uncertainties or gaps in knowledge or data	Section 2.2
3.1.6	A description of the mean density of observations/number of samples sites per unit area of site inspection observations	Not applicable due to the small size of the development site
3.1.7	Details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported	Section 5.3
3.1.8	The online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area;	Appendix C

GN No. 320, 2020	Item	Report Section:
3.1.9	The location of areas not suitable for development and to be avoided during construction where relevant	Section 6
3.1.10	Discussion on the cumulative impacts	Section 7
3.1.11	Proposed impact management actions and impact management outcomes for inclusion in the Environmental Management Programme (EMPr)	Section 7
3.1.12	Reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not, of the development related to the specific theme considered, and if the development should receive approval or not, related to the specific theme being considered, and any conditions to which the opinion is subjected if relevant	Section 8
3.1.13	Motivation must be provided if there were any development footprints identified as per paragraph 2.3.12 above that were identified as having “low” or “medium” terrestrial plant species sensitivity and were not considered appropriate.	No alternative sites were assessed as part of this assessment

2.1.3 Approach to the Study

The methodology undertaken is as follows:

- The historic vegetation type description is provided by both the national VGMAP2018 and the regional Garden Route Biodiversity Sector Plan (GRBSP);
- The ecological description, conservation status and ecosystem threat status of the site is received from a number of national, regional and local conservation plans, including the Eastern Cape Biodiversity Conservation Plan (ECBCP 2019), GRBSP, National Freshwater Ecosystem Priority Areas (NFEPA), Strategic Water Source Areas (SWSA), Indigenous Forest Patches, South Africa Protected Area Database (SAPAD) and National Protected Area Expansion Strategy;
- The original site visit was conducted by Ms. Caryl Logie, a local amateur botanist, on and 2023. The author of this report did a follow up site visit on 27 March 2023 to map the on-site vegetation and compile a species list. On-site vegetation mapping was done within the context of the regional planning framework and the state of transformation noted;
- The identification and tabulation of Species of Special Concern (SSC) as per the Regional and Threatened species assessment of the International Union of the Conservation of Nature (IUCN) Red List, as well as localised endemics (not currently listed in the above-mentioned legislature) requiring conservation;
- The identification and tabulation of Threatened or Protected plant species according to:
 - The National Environmental Management: Biodiversity Act (NEM:BA)(Act 10 of 2004) Threatened or Protected Species (ToPS) List (GN R. 3012);
 - The National Forestry Act (NFA) (Act 84 of 1998);
 - Relevant provincial nature conservation ordinances;
- The identification and tabulation of Invasive Alien Species (IAS), according to the NEMBA Alien Invasive Species List of 2020 (GN R. 1003)
- An assessment of potential impacts and mitigation measures has been provided; and
- A final summary of recommendations is made based on the findings of this assessment.

The following legislation is applicable and has been considered during the course of this study:

- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004);
- National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003); and
- Nature and Environmental Conservation Ordinance, 1974 (No. 19 of 1974).

Other sources of information used in this study includes (but are not limited to):

- South African Biodiversity Information Facility (SANBI BGIS System);
- PRECIS, Plants of South Africa;

- Threatened Species Programme; and
- Eastern Cape Biodiversity and Conservation Plan (ECBCP).

2.1.4 Project Area of Influence

The Project Area of Influence is defined by the important ecosystem processes and functions that may be affected by the proposed development and its activities. The Species Environmental Assessment Guideline (2020) requires that the EAP and specialists define the taxon-specific Project Area of Influence based on the spatial location of the project (footprint) and the potential extent of the impacts of the anticipated activities of the project.

2.1.5 Site Ecological Importance

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

$$SEI = BI + RR$$

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

$$BI = CI + FI$$

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

Functional integrity (FI) of the receptor (e.g. the vegetation/ fauna community or habitat type) is defined here as the receptors' current ability to maintain the structure and functions that define it, compared to its known or predicted state under ideal conditions. Simply stated, FI is: 'A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.'

Receptor resilience (RR) is defined here as: 'The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.'

The details of the methodology can be further studied in the Species Environmental Assessment Guidelines (SANBI 2020).

2.1.6 Impact Assessment

Potential impacts that the proposed development could have during the construction and operational phases of the activity were investigated. Where possible, mitigation and/or management measures are proposed to limit the impact of the proposed development on terrestrial ecosystems. Rehabilitation or enhancements measures are also recommended where necessary.

In the case of the "No-Go" alternative, no additional construction or clearing of vegetation would occur and the site would remain in its current condition until/unless any other development is approved.

In most cases, the “No-Go” alternative approximates the baseline situation. In the sections assessing specific impacts below, the “No-Go” alternative is only assessed where the baseline descriptions do not fully capture current impacts.

2.2 Study Limitations

Please note that the following assumptions and limitations have been considered in the preparation of the assessment:

- In order to obtain a comprehensive understanding of the dynamics of the floral component of the terrestrial environment, as well as the status of endemic, rare or threatened species in any given area, it is preferable that assessments consider both temporal and spatial scales within the study area. However, due to time and budget constraints, long-term studies are rarely feasible, resulting in most specialist assessments being once off surveys. Therefore, due to the scope of the work presented in this report, a detailed investigation over time and seasons were not possible;
- The assessment is based on information collected during the site visits conducted on 27 March 2023. The site visit took place in the austral Autumn, a period of increased rainfall. This was deemed sufficient for identifying threatened species on site, as flowering of fynbos species is driven by rainfall, particularly at the eastern end of the biome in the Eastern Cape. It is probable that due to the timing of these site visits, certain species that could be flowering at other times of the year could have been overlooked (especially bulbs and forbs). This can influence the quality and accuracy of the data collected; and
- The scope of this study is limited to site-specific impacts within the site boundary, i.e. impacts that may occur as a result of the development. The no-go option is assessed, however impacts of other activities or on other sites are not addressed in this study.

Notwithstanding these limitations, it is our view that this report provides a sufficiently detailed description of habitat systems in the vicinity of the site to enable a prediction of the significance of impacts associated with the activity.

3 Proposed Activities

3.1 Activity Description

The proposed warehouse and storage facility consists of one warehouse of approximately 5 940 m², consisting of 20 units of 297 m² each. A further 18 storage blocks of between 279 m² and 1 333 m², consisting of storage units of 31 m², are proposed as well. Other proposed footprints include

- an electric powerline area and pipeline servitude (combined 0.27 ha);
- a gatehouse (20.1 m²);
- parking (150) and concrete paved driveways; and
- public open space, inclusive of landscaped areas and stormwater retention ponds.

A site layout plan is included as Figure 3-1.

3.2 Activity Location

The Applicant, Goedgelooft Properties, proposes to construct a warehouse and storage facility park on 5.1 ha of the portion 250 of the farm Goedgelooft 745, located on the edge of St. Francis Bay in the Eastern Cape. The development will entail the clearing of approximately 3.8 ha of vegetation.

The site borders an existing industrial area and open space and is less than 1 km away from a low cost residential area. Support services, including road access, water, and electricity supply are existing.

A Locality Plan is included as Figure 1-1 above.





Figure 3-1 Site Layout Plan for the proposed Goedgeloof Storage Facility.

4 Desktop Assessment: Description of the Study Area

4.1 Climate

The climate of St. Francis Bay, the nearest town, receives on average 528 mm of rain per year. The town receives its highest rainfall during August (62 mm) and its lowest rainfall during January (26 mm). The average midday temperatures range between 18.5°C in Winter (July) to 24°C in February (Summer). The coldest time is during July when night time temperatures drop to 8.2°C on average (SA Explorer, 2000-2018). Figure 4-1 portrays the local climate conditions of the area within which the residential development is proposed.

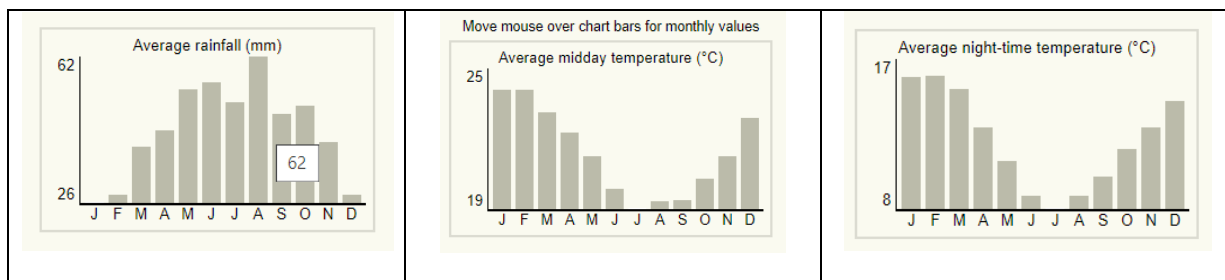


Figure 4-1: Climate conditions of the surrounding area (SA Explorer, 2000-2018)

4.2 Hydrology

The site falls within the Fish to Tsitsikamma Water Management Area (WMA), specifically within the Tsitsikamma Sub-Water Management Area. The quaternary catchment applicable to the development is K90E (see Figure 4-2 below).

The site is not situated near any rivers or documented wetlands. The ephemeral Sand River is found approximately 2.2 km north and the Kromme Estuary is located approximately 3 km away. The Kromme Estuary is permanently open and is considered to be an extension of the sea due to the lack of freshwater inflow. This reduction is a result of the construction of the Impofu and Churchill dams upstream.

4.3 Land Use

The surrounding area is a mixture of developed and undeveloped land. The site neighbours a light industry area, as well as residential development of a low cost and middle to upper income nature. There is no current development on site and it remains dominated by indigenous plant species but it is being utilised for grazing purposes, as well as illegal dumping. A water pipeline servitude transects the site.



Figure 4-2: Hydrology map of the development site.

4.4 Vegetation

4.4.1 National South African Veg Map

According to the National South African Vegetation Map (Mucina & Rutherford, 2018), the study area falls within the *Albany Thicket* Bioregion, within the *Albany Thicket* Biomes.

The main historical vegetation types that occur in the study area is *St. Francis Dune Thicket* (refer to Figure 4-3 for the vegetation map), previously considered an azonal vegetation typed called Algoa Dune Strandveld. This vegetation types are described below. The vegetation type was reclassified in 2018.

St. Francis Dune Thicket

St. Francis Dune Thicket (AT57) is a mosaic of small low (1-3m) thicket bushclumps in a matrix of low asteraceous fynbos (Grobler *et.al.* 2018). The bushclumps, dominated by small trees and woody shrubs, are best developed in fire-protected dune slacks, and the fynbos shrubland occurs on upper dune slopes and crests. It is largely restricted to the Schelmuhoek Formation, in coastal stretches of flat to moderately undulating coastal dunes, from near Tsitsikamma River Mouth to the Sundays River Mouth. The dominant species of the vegetation type are included in Table 4-1.

St. Francis Dune Thicket has a conservation status of Least Concern. Approximately 14% of the vegetation has been transformed due to mining, alien invasions by *Acacia cyclops* and urban sprawl. It is poorly protected and has a conservation target of 19%.

Table 4-1 List of important taxa in *St. Francis Dune Thicket*. (d) dominant, (e) South African endemic, e_i=possibly endemic to the vegetation type.

Growth form	Species
-------------	---------

Tree	Small Trees: <i>Olea capensis</i> , <i>Pterocelastrus tricuspidatus</i> (d), <i>Sideroxylon inerme</i> (d), <i>Tarchonanthus littoralis</i> (d)
Shrub	Succulent Shrub: <i>Cotyledon adscendens</i> , <i>Carpobrotus acinaciformis</i> (e), <i>Cotyledon orbiculata</i> (e), <i>Crassula nudicaulis</i> , <i>Euphorbia mauritanica</i> , <i>Gasteria acinacifolia</i> (e), <i>Portulacaria afra</i> , <i>Zygophyllum morgsana</i> , <i>Aloe africana</i> (d). Low Shrub: <i>Coleonema pulchellum</i> (d), <i>Erica chloroloma</i> (e), <i>Erica glumiflora</i> (d), <i>Erica zeyheriana</i> (e), <i>Eriocephalus africanus</i> var. <i>paniculatus</i> (e), <i>Felicia echinata</i> (e), <i>Morella cordifolia</i> (d), <i>Muraltia spinosa</i> (d), <i>Phyllica ericoides</i> (d), <i>Syncarpha sordescens</i> (d). Tall Shrub: <i>Azima tetraantha</i> (d), <i>Carissa bispinosa</i> (d), <i>Mystroxyton aethiopicum</i> subsp. <i>aethiopicum</i> (e), <i>Cassine peragua</i> , <i>Cussonia thyrsoiflora</i> (d), <i>Euclea racemosa</i> (d), <i>Grewia occidentalis</i> , <i>Gymnosporia buxifolia</i> , <i>Gymnosporia capitata</i> (e), <i>Lycium cinereum</i> , <i>Lycium ferocissimum</i> , <i>Maytenus procumbens</i> , <i>Metalasia muricata</i> (d), <i>Olea exasperata</i> (d), <i>Osteospermum moniliferum</i> (d), <i>Passerina rigida</i> (d), <i>Putterlickia pyracantha</i> (d), <i>Robsonodendron maritimum</i> (e), <i>Searsia crenata</i> (d), <i>Searsia glauca</i> (e), <i>Searsia pterota</i> (e),), <i>Rapanea gilliana</i> (d)
Climber	Woody Succulent Climber: <i>Cynanchum viminalis</i> (e). Woody climber: <i>Asparagus aethiopicus</i> . Herbaceous climber: <i>Cynanchum natalitium</i> (e), <i>Rhoicissus digitata</i> , <i>Solanum africanum</i> (e).
Herb	Herb: <i>Pelargonium suburbanum</i> subsp. <i>suburbanum</i> (e), <i>Agathosma stenopetala</i> (e). <i>Aspalathus cliffortiifolia</i> (et), <i>Aspalathus recurvispina</i> (et), <i>Othonna rufibarbis</i> (et). Geophytic herb: <i>Brunsvigia littoralis</i> (e).
Graminoid	<i>Andropogon eucomus</i> , <i>Cymbopogon pospischilii</i> , <i>Cynodon dactylon</i> (d), <i>Ehrharta calycina</i> , <i>Eustachys paspaloides</i> , <i>Digitaria eriantha</i> , <i>Pentameris heptameris</i> , <i>Pentameris pallida</i> , <i>Restio eleocharis</i> (d), <i>Stenotaphrum secundatum</i> , <i>Thamnochortus cinereus</i> (e), <i>Themeda triandra</i> (d), <i>Tristachya leucothrix</i> , <i>Imperata cylindrica</i> (d)

4.4.2 Regional Garden Route Biodiversity Sector Plan

The Garden Route Biodiversity Sector Plan (GRBSP), a regional conservation plan that includes the project site, identifies St. Francis Strandveld, a dune thicket mosaic with sand fynbos, as occurring in the vicinity of the site.

St. Francis Strandveld consists of patches of low Dune Thicket in dune slacks that contain a mix of resprouting woody species. These patches are found in a matrix of strandveld vegetation, dominated by stunted mix of Fynbos related species. The vegetation type is adapted to burn periodically but cannot be considered to be fire dependent. It can be further divided into four sub-units, namely a) an *Imperata cylindrica*-*Rapanea gilliana*-*Erica fourcadei* community, b) consolidated patches of Dune Thicket (which could be rather considered as a coastal forest mosaic), c) limestone ridges with unique fynbos assemblages, and d) *Ischyrolepis eleocharis*-*Passerina vulgaris* shrubland on calcareous sands.



Figure 4-3: Historical vegetation map of proposed development area (Mucina and Rutherford, 2018).

4.5 Terrestrial Biodiversity & Conservation Value

4.5.1 Species of Special Concern

South Africa uses the internationally endorsed IUCN Red List Categories and Criteria in the Red List of South African plants (SANBI 2020). This scientific system is designed to measure species' risk of extinction. The purpose of this system is to highlight those species that are most urgently in need of conservation action.

Due to its strong focus on determining risk of extinction, the IUCN system does not highlight species that are at low risk of extinction, but may nonetheless be of high conservation importance. Because the Red List of South African plants is used widely in South African conservation practices such as systematic conservation planning or protected area expansion, SANBI (2020) uses an amended system of categories designed to highlight those species that are at low risk of extinction but of conservation concern (Figure 6).

- **Extinct (EX).** A species is Extinct when there is no reasonable doubt that the last individual has died. Species should be classified as Extinct only once exhaustive surveys throughout the species' known range have failed to record an individual.
- **Extinct in the Wild (EW).** A species is Extinct in the Wild when it is known to survive only in cultivation or as a naturalized population (or populations) well outside the past range.
- **Regionally Extinct (RE).** A species is Regionally Extinct when it is extinct within the region assessed (in this case South Africa), but wild populations can still be found in areas outside the region.
- **Critically Endangered, Possibly Extinct (CR PE).** Possibly Extinct is a special tag associated with the category Critically Endangered, indicating species that are highly likely to be extinct, but the exhaustive surveys required for classifying the species as Extinct has not yet been completed. A small chance remains that such species may still be rediscovered.

- **Critically Endangered (CR).** A species is Critically Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Critically Endangered, indicating that the species is facing an extremely high risk of extinction
- **Endangered (EN).** A species is Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Endangered, indicating that the species is facing a very high risk of extinction.
- **Vulnerable (VU).** A species is Vulnerable when the best available evidence indicates that it meets at least one of the five IUCN criteria for Vulnerable, indicating that the species is facing a high risk of extinction.
- **Near Threatened (NT).** A species is Near Threatened when available evidence indicates that it nearly meets any of the IUCN criteria for Vulnerable, and is therefore likely to become at risk of extinction in the near future.
- **Critically Rare.** A species is Critically Rare when it is known to occur at a single site, but is not exposed to any direct or plausible potential threat and does not otherwise qualify for a category of threat according to one of the five IUCN criteria.
- **Rare** A species is Rare when it meets at least one of four South African criteria for rarity, but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to one of the five IUCN criteria. The four criteria are as follows:
 - **Restricted range:** Extent of Occurrence (EOO) <500 km², OR
 - **Habitat specialist:** Species is restricted to a specialized microhabitat so that it has a very small Area of Occupancy (AOO), typically smaller than 20 km², OR
 - **Low densities of individuals:** Species always occurs as single individuals or very small subpopulations (typically fewer than 50 mature individuals) scattered over a wide area, OR
 - **Small global population:** Less than 10 000 mature individuals.
- **Least Concern.** A species is Least Concern when it has been evaluated against the IUCN criteria and does not qualify for any of the above categories. Species classified as Least Concern are considered at low risk of extinction. Widespread and abundant species are typically classified in this category.
- **Data Deficient - Insufficient Information (DDD).** A species is DDD when there is inadequate information to make an assessment of its risk of extinction, but the species is well defined. Listing of species in this category indicates that more information is required and that future research could show that a threatened classification is appropriate.
- **Data Deficient - Taxonomically Problematic (DDT)** A species is DDT when taxonomic problems hinder the distribution range and habitat from being well defined, so that an assessment of risk of extinction is not possible.
- **Not Evaluated (NE).** A species is Not Evaluated when it has not been evaluated against the criteria. The national Red List of South African plants is a comprehensive assessment of all South African indigenous plants, and therefore all species are assessed and given a national Red List status. However, some species included in Plants of southern Africa: an online checklist are species that do not qualify for national listing because they are naturalized exotics, hybrids (natural or cultivated), or synonyms. These species are given the status Not Evaluated and the reasons why they have not been assessed are included in the assessment justification.

Threatened species are species that are facing a high risk of extinction. Any species classified in the IUCN categories Critically Endangered, Endangered or Vulnerable is a threatened species. Species of conservation concern (SCC) are species that have a high conservation importance in terms of preserving South Africa's high floristic diversity and include not only threatened species, but also those classified in the categories Extinct in the Wild (EW), Regionally Extinct (RE), Near Threatened (NT), Critically Rare, Rare, Declining and Data Deficient - Insufficient Information (DDD). All South African plant species have been rated, according to their extinction threat, using criteria that have been adapted by SANBI. The SCCs found on site are discussed in Section 5 of the report.

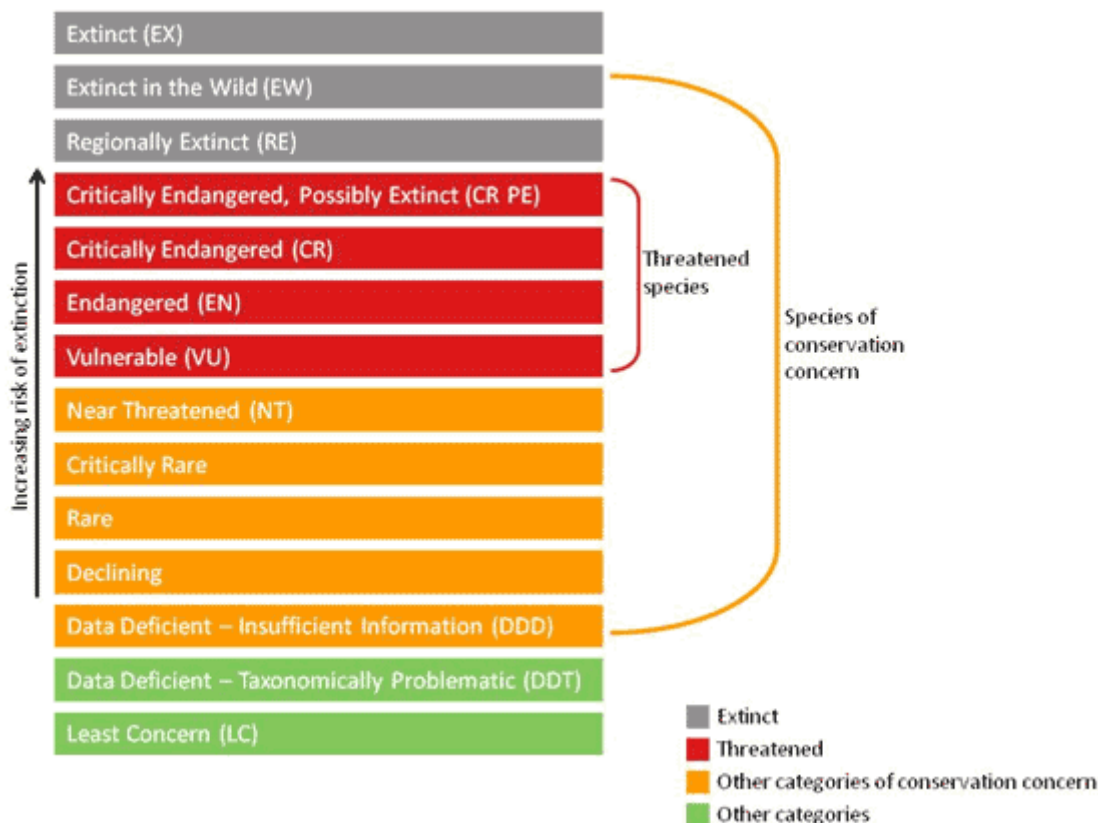


Figure 4-4 South African Red List categories (SANBI 2020).

4.5.2 Protected areas

Protected Areas are the core areas in the network of biodiversity areas and are vital in supporting ecological sustainability and enhancing resilience to climate change.

Protected Areas are areas of land, water or sea that are formally protected by and gazetted in terms of the National Environmental Management: Protected Areas Act (NEMPAA) (Act No. 57 of 2003). These areas are managed mainly for biodiversity conservation, allow for long term security of tenure and are recognized as such by the National Protected Areas Expansion Strategy (NPAES), which seeks to expand Protected Areas in South Africa. The NEMPAA distinguishes between several categories of Protected Areas, namely special nature reserves, national parks, nature reserves, and protected environments. A provincial policy, namely the Eastern Cape Protected Areas Expansion Strategy (ECPAES), identifies priority areas for the expansion of protected areas in the Eastern Cape.

The proposed development site does not neighbour any protected areas, but is approximately 1.8 km away from the Sand River Nature Reserve, and 3.5 m from Irma Booysen Nature Reserve (See Figure 4-6). The site is not situated within any priority area identified in the NPAES or ECPAES.

Table 4-2 List of Species of Conservation Concern (SCC) and their Probability of Occurrence (POO).

FAMILY	SPECIES NAME	COMMON NAME	Threatened status	THREAT CRITERIA	Screening Report POO	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE	REASON
Alliaceae	Sensitive species 308		VU	B1ab(iii,v)+2ab(iii,v)	MEDIUM	sandy soil among rocks near the seashore	LOW	Small site well surveyed, densely vegetated site, unlikely to occur
Amaryllidaceae	Sensitive species 657		EN	B2ab(iii,v)	MEDIUM	Coastal Sands between Great Brak River to Gqeberha	LOW	Charismatic species in flower and leaf, not identified on site
Apiaceae	<i>Centella tridentata</i> (L.f.) Drude ex Domin var. <i>hermanniifolia</i> (Eckl. & Zeyh.) M.T.R.Schub. & B.-E.van Wyk		Rare		MEDIUM	Coastal flats and lower mountain slopes	LOW	No habitat on site
Asteraceae	Sensitive species 78		VU	B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)	MEDIUM	Tertiary sands in coastal habitats and in transition soils between tertiary sands and shale between Oyster Bay and Addo	LOW	Small site well surveyed, not identified
Asteraceae	<i>Syncarpha sordescens</i> (DC.) B.Nord.		VU	B1ab(ii,iii,iv,v)	MEDIUM	Dunes and sandy slopes	LOW	Small site well surveyed
Crassulaceae	<i>Cotyledon adscendens</i> R.A.Dyer		EN	vB1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)	MEDIUM	Thicket vegetation behind coastal dunes within 1 km of the sea	LOW	Charismatic species, not identified after search
Ericaceae	<i>Erica chloroloma</i> Lindl.		VU	B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)	MEDIUM	Coastal dune fynbos.	LOW	No habitat on site, as only recorded nearer to the coast
Ericaceae	<i>Erica glandulosa</i> Thunb. subsp. <i>fourcadei</i> (L.Bolus) E.G.H.Oliv. & I.M.Oliv.		VU	B1ab(ii,iii,iv,v)	MEDIUM	Coastal fynbos	LOW	Small site well surveyed, easy to identify when not flowering
Ericaceae	<i>Erica glumiflora</i> Klotzsch ex Benth.		VU	B1ab(i,ii,iii,iv,v)	MEDIUM	Sandy coastal flats and dunes and low coastal hills.	LOW	No habitat on site, as only recorded near to the coast
Fabaceae	<i>Aspalathus recurvispina</i> R.Dahlgren		CR	B1ab(iii)+2ab(iii); C2a(ii)	MEDIUM	calcrete outcrops in coastal fynbos below 100 m, associated with disturbed areas	LOW	Small site well surveyed
Fabaceae	<i>Aspalathus recurvispina</i> R.Dahlgren		CR	B1ab(iii)+2ab(iii); C2a(ii)	MEDIUM	Coastal fynbos below 100 m.	LOW	No habitat on site, as only recorded near to the coast
Fabaceae	<i>Lebeckia gracilis</i>		EN	A2bc; B1ab(ii,iii,iv,v)	MEDIUM	Coastal fynbos in deep, sandy soil below 300 m.	LOW	Limited deep sands on site
Geraniaceae	Sensitive species 588		VU	B1ab(ii,iii,v)	MEDIUM	Between low scrub and sand dunes on lowland flats in areas with an annual rainfall of 400-800 mm	MEDIUM	Small site well surveyed, but recent brushcutting may have removed aboveground growth for a time
Iridaceae	Sensitive species 448		VU	B1ab(i,ii,iii,iv,v)	MEDIUM	Sandy loam, clay or moderately fertile soils derived from the Witteberg slopes, mostly confined to the coastal plain.	LOW	No habitat within the proposed footprint dominated by Gamtoos Thicket

FAMILY	SPECIES NAME	COMMON NAME	Threatened status	THREAT CRITERIA	Screening Report POO	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE	REASON
Myrsinaceae	<i>Rapanea gilliana</i> (Sond.) Mez		EN	B1ab(ii,iii,iv,v)	MEDIUM	Coastal sand dunes.	CONFIRMED	No habitat on site, as only recorded near to the coast
Orchidaceae	Sensitive species 1032	Coastal Satyr	VU	C2a(i)	MEDIUM	Among bushes in open places on fixed dunes close to the shoreline, 0-150 m.	LOW	Charismatic species, small site well surveyed
Orchidaceae	Sensitive species 1192		EN	A2c; B2ab(i,ii,iii,iv,v)	MEDIUM	Moist, sometimes brackish soils, in dune slacks immediately inland from the shoreline.	LOW	Likely too far from the coast, no brackish soils on site
Orobanchaceae	<i>Hyobanche robusta</i> Schönland		EN	B1ab(ii,iii,v)	MEDIUM	Deep sand dune systems	MEDIUM	Potential habitat on the dune that transects the site
Poaceae	<i>Capeochloa cincta</i> (Nees) N.P.Barker & H.P.Linder subsp. <i>sericea</i> (N.P.Barker) N.P.Barker & H.P.Linder		VU	1ab(i,iii,iv,v)	MEDIUM	Coastal dune, in sandy seeps underlain by rock shelf	LOW	No habitat on site
Rutaceae	<i>Agathosma stenopetala</i> (Steud.) Steud.		VU	B1ab(iii)	Medium	Tertiary sands	LOW	No habitat on site or nearby populations in the vicinity of the study site



Figure 4-5 Location of protected areas in the vicinity of the proposed development site.

4.5.3 Eastern Cape Biodiversity Conservation Plan

The Eastern Cape Biodiversity Conservation Plan (ECBCP) is a broad-scale biodiversity plan. It identifies and maps Critical Biodiversity Areas (CBAs) and priorities for conservation in the province. It also provides land use planning guidelines, recommending biodiversity-friendly activities in priority areas. The ECBCP integrates other existing broad-scale biodiversity plans in the province and fills in the gaps using mainly national data. It has been designed to serve as the basic biodiversity layer in Strategic Environmental Assessments, State of Environment Reports, SDFs, EMFs and Bioregional Plans and contains maps of terrestrial and aquatic CBAs, as well as suggested land use guidelines.

A land management objectives-based approach has been adopted in the ECBCP. This approach rests on the concept of Biodiversity Land Management Classes (BLMCs). Each BLMC sets out the desired ecological state that an area should be kept in to ensure biodiversity persistence.

The site is located within a terrestrial CBA1 and CBA2 according to the ECBCP (refer to Figure 4-6). This requires that the biodiversity be maintained in near natural state with minimal loss of ecosystem integrity. According to Berliner, *et al.* (2007), no transformation of natural habitat should be permitted.

The site is also located in and aquatic ESA 1.

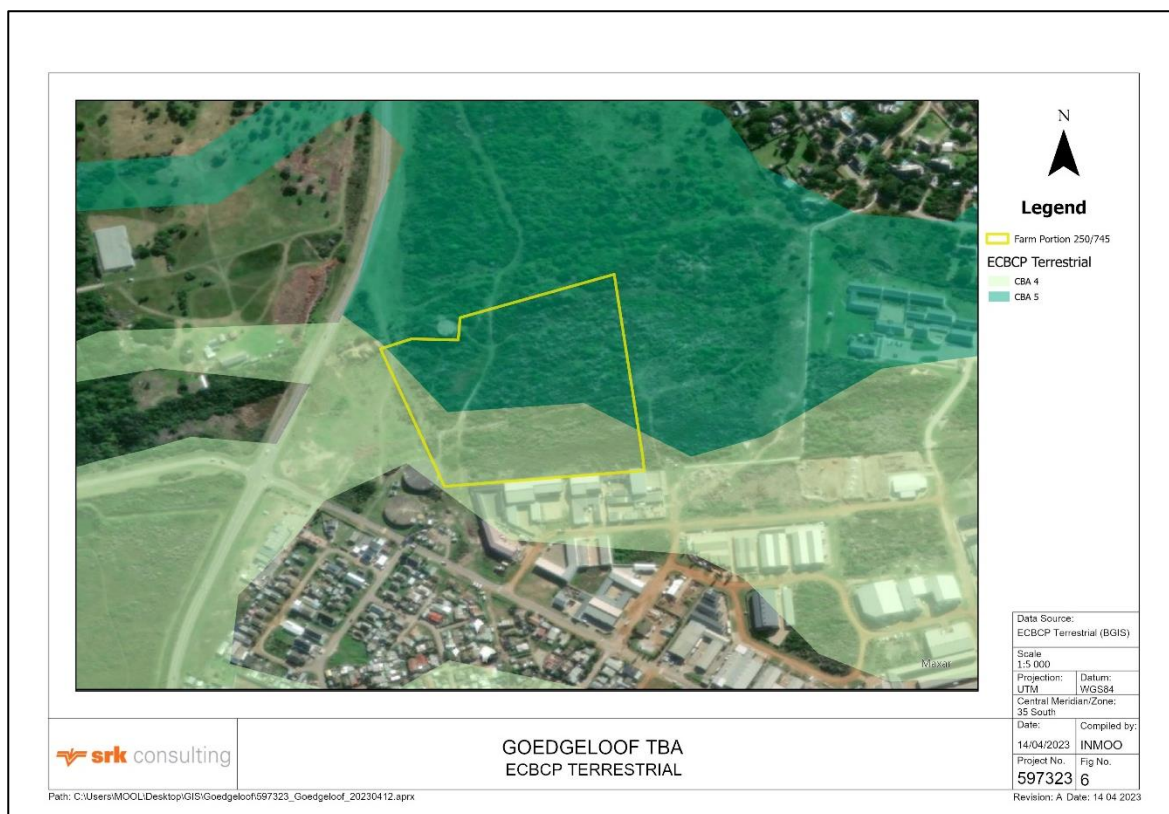


Figure 4-6: ECBCP Terrestrial Critical Biodiversity Area (CBA) map. Legend: dark blue = CBA2

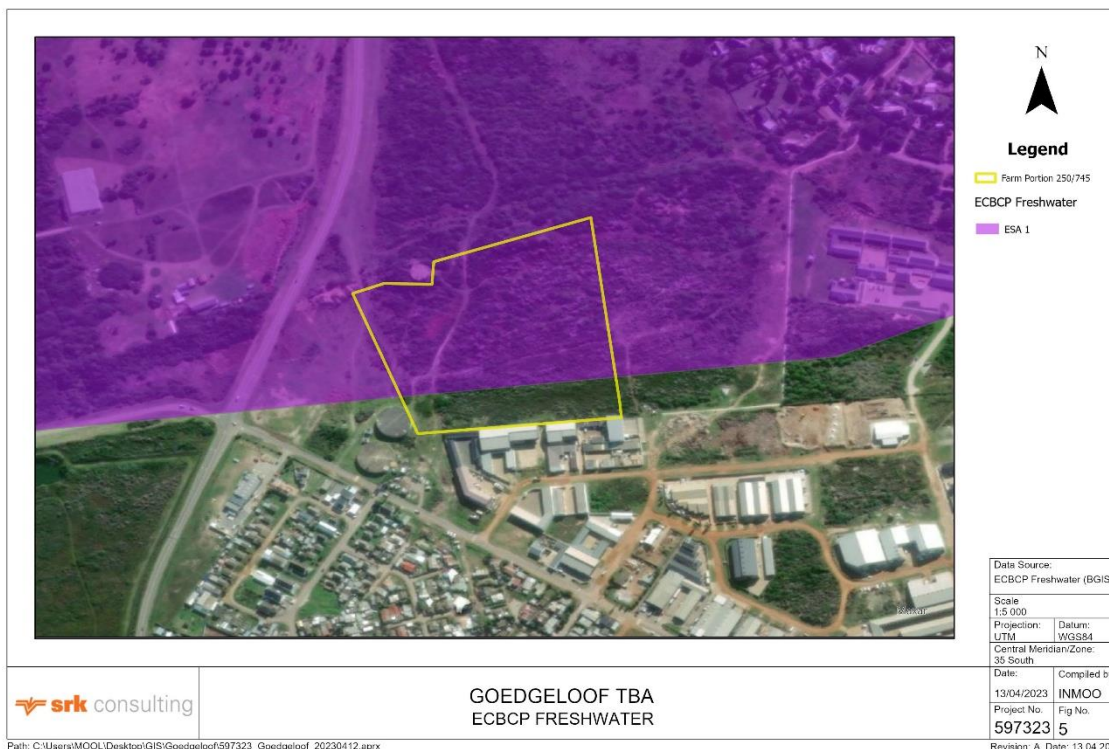


Figure 4-7 ECBCP Aquatic Critical Biodiversity Area (CBA) Map.

4.5.4 Garden Route Biodiversity Spatial Plan

The GRBSP identifies the majority of the project site as a CBA (Figure 4-8). The Management Objective is to maintain natural land, rehabilitate degraded areas to natural or near natural conditions, and for no further degradation.



Figure 4-8 The Garden Route Biodiversity Spatial Plan CBA Map.

4.5.5 National Freshwater Ecosystem Priority Area

The National Freshwater Ecosystem Priority Areas (NFEPA) project is a collaborative effort aimed at identifying Freshwater Ecosystem Priority Areas (FEPAs) to meet national biodiversity goals for freshwater ecosystems, and to develop a basis for enabling effective implementation of measures to protect FEPAs, including free flowing rivers (Nel *et al.* 2011).

NFEPA project identified River FEPAs and associated sub-quaternary catchments, wetland and estuary FEPAs, wetland clusters, as well as Phase 2 FEPA and associated sub-quaternary catchment areas. Fish Sanctuaries (FishSA), together with Fish Migration Areas and Upstream Management Areas, were defined to conserve populations of threatened freshwater fish species in South Africa.

Fish sanctuaries were identified at the scale of sub-quaternary catchments. Five types of conservation areas were identified for each species: Fish Sanctuaries (areas required to meet fish population targets); Fish Migration Corridors (areas required for migration between required habitats, usually between mainstem and tributary habitat); Rehabilitation and Translocation Areas (areas crucial to the survival of the highly threatened fish species they support); and Upstream Management Areas (areas that need to be managed to prevent degradation of downstream Fish Sanctuaries and Fish Migration Corridors).

The site is not located in any priority area identified by NFEPA.

4.5.6 Strategic Water Source Area

Strategic Water Source Areas (SWSAs) are defined as areas of land that either: (a) supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size and so are considered nationally important; or (b) have high groundwater recharge and where the groundwater forms a nationally important resource; or (c) areas that meet both criteria (a) and (b) (Le Maitre et al. 2018). They include transboundary Water Source Areas that extend into Lesotho and Swaziland. A number of river systems in the Eastern Cape, such as the Gamtoos, Keiskamma, Mbashe and the Mzimvubu, are fed by upper catchments which experience a disproportionately high rainfall and are considered “water factories” of South Africa (ECBCP 2019). SWSAs are mapped at a national level and represent areas where 50% of South Africa’s rain falls over less than 8% of the land area. Initiatives aimed at managing these SWSAs for enhanced downstream water quality and quantity are underway. Groundwater Strategic Areas with high rates of recharge were identified as well, and cover 9% of SA.

The project site is not located within any SWSA. It is located within 3.5 km from the Tsitsikamma Surface Water Strategic Area.

4.5.7 Forest Patches

Forest is protected under the National Forest Act, Act 84 of 1998. A permit is required to disturb forest. Patches of forest have been mapped at various scales in South Africa. There are no forest patches within the corridor of the proposed project. However, there are tree species that are protected in terms of the Forest Act, for which permits must be obtained prior to their removal (if required).

5 Results

5.1 Study Area Ecology & Level of Disturbance

The development site is situated next to an existing light industrial area and within 1 km of low cost housing, as well as middle to upper class residential areas. There is a large amount of rubble on site, indicating illegal dumping, and grazing by goats and cattle is clearly evident. A large section of the site has been brushcut, and the Alien Invasive Plants (AIP) rooikranz (*Acacia cyclops*) and Port Jackson Willow (*Acacia saligna*) occurs in medium densities where brushcutting has not occurred recently.







It is not clear if the area is exposed to periodic fires, as required by a dune thicket-fynbos mosaic. Development impacts the burning frequency in different ways. Sites in close proximity to urban development usually only experience fire infrequently to prevent the threat of fire to the surrounding development or burns too regularly as a result of illegal fires to increase the quality of grazing or negligence. Proximity to the development would also result in the loss of many faunal-related ecological processes, such as grazing, pollination and dispersal, but smaller fauna, including insects and birds, would largely persist on site. Where brushcutting hasn’t occurred, the vegetation look moribund or overburnt. Grazing, a minor process in coastal fynbos, would continue as a result of domestic herbivory.

Irrespective of these current disturbances, the vegetation is in good condition, maintaining a relatively high species diversity for a site exposed to many threats. The site is dominated by fynbos shrubs, many of which are endemic to coastal vegetation. Thicket shrubs, including *Rhamnus prunoides* and *Searsia* spp., are found on the flats, whereas thicket shrubs and trees (*Sideroxylon inerme*) are found on the dune ridge that crosses the site in an east-west direction.



Figure 5-1: Current habitat types on site. *Rapanea gilliana*, an Endangered species (red dots) occurs across the site.

Table 5-1: General site photos and disturbances

	
<p>Photo 1: Example of sandy fynbos on site that has recently been brushcut but remains dominated by indigenous species.</p>	<p>Photo 2: Transformed areas dominated by the grasses such as <i>Cynodon dactylon</i>, a few alien species and rubble..</p>
	
<p>Photo 3: The vegetated dune in the north of the site, dominated by <i>Restio eleocharis</i> in the open patches.</p>	<p>Photo 4: Wetland on site dominated by <i>Typha capensis</i>..</p>
	
<p>Photo 5: Small wetland within degraded St. Francis Dune Thicket dominated by <i>Metalasia muricata</i> and woody thicket species.</p>	<p>Photo 6: A resprouting <i>Rapanea gilliana</i>, an Endangered species on site.</p>

5.2 Vegetation Type

As summarised from the above descriptions, according to the National Vegetation Map by Mucina and Rutherford (2018), the proposed site falls within *St. Francis Dune Thicket*, listed as *Least Concern* (conservation target of 19%) (Table 5-1). The site visits conducted on 10 February 2023 confirmed that the vegetation on the development footprint is consistent with this description.

The vegetation is dominated by coastal fynbos shrubs and dwarf shrubs, including *Euclea racemosa*, *Felicia echinata*, *Helichrysum cymosum*, *Osteospermum moniliferum*, *Metalasia muricata*, *Morella cordifolia*, *M. quercifolia*, *Rapanea gilliana*, *Senecio oederiifolius* and *Syncarpha argentea*. Herbs such as *Chaenostoma campanulatum*, *Gazania krebsiana*, *Pelargonium grossularioides* and *G.capitatum*, the geophyte *Hypoxis villosa* and the common succulent *Carpobrotus deliciosus* occur on site. *Cynodon dactylon*, *Imperata cylindrica* and *Restio eleocharis* are the dominant graminoids. A number of tall shrubs, including *Searsia* spp., *Rhamnus prinoides* and *Sideroxylon inerme* occurs on the flats between the fynbos shrubs.

This *St. Francis Dune Thicket* community occurs as three different sub-communities on site. **Brushcut coastal fynbos mosaic** consists of fynbos that has recently been brushcut, but remains dominated by resprouting fynbos and thicket species, including *Rapanea gilliana*. It generally occurs on the shallow calcrete soils on the southern side of the site. Small patches of non-brushcut thicket-fynbos mosaic occurs within this area as well. **Degraded dune fynbos mosaic** occurs in the centre of the site on deeper aeolian sands, although shallow calcrete outcrops and channels occur. The vegetation is dominated by *Metalasia muricata* and woody thicket species. Scattered in this vegetation are **wetlands** that do occur as discrete units but often grade into the surrounding vegetation. These wetlands are dominated by the reed *Typha capensis*, but other sedges and grasses, as well as herbs such as *Apium graveolens*, are common. A large wetland occurs in the east of the site, at the base of the reservoir.

A **vegetated dune community** occurs on the dune that traverses the site on the northern side of the site. It contains many of the same species as the coastal fynbos mosaic, but has a considerably higher cover of woody thicket species, including *Cassine peragua*, *Olea exasperata*, *Gymnosporia buxifolia*, *Psydrax obovata*, *Pterocelastrus tricuspidatus*, *Searsia* spp. and *Sideroxylon inerme*. Open spaces are dominated by *Restio eleocharis* and *Metalasia muricata*.

Table 5-2: Remaining extents of vegetation types (SANBI 2018).

Vegetation Type	Historical (ha)	Transformed (ha)	Remaining (ha)	Conservation Target (ha)	Protected (ha)	% of Remaining required for conservation to achieve target
St. Francis Dune Thicket	4,047	963 (24%)	3,084 (76%)	769 (19%)	65 (1.6%)	17.4 % (704 ha)

A List of plant species identified on the project site is included in Appendix B.

5.3 Species of Conservation Concern

One plant species of conservation concern (SCC) was observed within the study area during the survey. It should be noted that, although not observed during the site visits, certain SCCs (as listed as occurring within *St. Francis Dune Thicket*) could potentially be present on site but could have been overlooked due to the timing of these site visits. Although it is possible that these species also occur within the site boundary, it is unlikely due to the size of the development footprint. All potentially occurring SSC as well as SSC observed on site are included in Table 5-3 below.

Rapanea gilliana, or dwarf Cape Beech, is an Endangered species that occurs in dune fynbos and fynbos mosaics between Sedgfield in the Western Cape and Port Alfred in the Eastern Cape. It grows

in shallow to deep coastal sands and is tolerant of fire (Victor 2006). It is relatively tolerant of disturbance, including brushcutting, as it has the ability to resprout, but will not tolerate transformation.

The species has an EOO of 2940 km² and an Area of Occupancy of 10.95 km² (SANBI 2020). The population consists of approximately 15 small severely fragmented subpopulations (Victor 2006). Current threats are habitat loss as a result of coastal development, alien plant invasions and industrial development in the Coega Special Economic Zone. Where it is found, including the development site, it can be one of the dominant species. It is estimated that there are between 50-100 individuals on site.

The SANBI guidelines for Endangered species (Criterion B, C, D) are that no further loss of habitat should be permitted as the likelihood is high that the species will go extinct if current pressures continue (Raimondo *et al.* 2009). *R. gilliana* remains common in the surrounding intact dune fynbos, and occurs in surrounding protected areas. As the site is located between residential and industrial development exposed to multiple threats, the species is unlikely to persist without intervention.

Two other threatened species are considered to have a MEDIUM possibility of occurring on site. *Hyobanche robusta* occurs in deep coastal sands and only emerges from below ground during its flowering season in July to November. The potential habitat for this species is limited to the vegetated dune community on site.

The vegetation on site is the correct habitat for Vulnerable species 588 and the species has been recorded in the vicinity of the site. However, it is difficult to identify as recent brushcutting has taken place.

A list of SCCs uploaded on the electronic species database iNaturalist is included in Appendix C.

5.4 Protected Species

The following legislation was consulted to determine the conservation value of the vegetation on site:

- National Environmental Management: Biodiversity Act 10 of 2004 – National Environmental Management: Biodiversity Act (NEMBA): List of terrestrial species and freshwater species that are threatened or protected (3 February 2023);
- Provincial Nature and Environmental Conservation Ordinance of 1974 (PNCO); and
- National Forests Act No. 84 of 1998 – List of Protected Trees (published 8 September 2017);

No species listed on the NEMBA ToPS list occur on site.

One tree species, namely the white milkwood (*Sideroxylon inerme* var. *inerme*), listed under the National Forests Act No. 84 of 1998 or NEMBA were identified on site. A number of individuals, including saplings and mature trees, are located within and in close proximity of the proposed boathouse footprint. A permit will be required from the Department of Forestry, Fisheries and Environment: Forestry Directorate for their removal.

Thirteen species are protected under Schedule 4 of the Nature and Environmental Conservation Ordinance of 1974. Most of these are common species with widespread distributions. A permit is required from DEDEAT for their removal and translocation. All protected species are listed in Table 5-3.

Table 5-3: List of Species of Special Concern

FAMILY	SPECIES	NFA	NECO	ToPs
Aizoaceae	<i>Carpobrotus deliciosus</i> (L.Bolus) L.Bolus		Sch 4	
Amaryllidaceae	<i>Scadoxus puniceus</i> (L.) Friis & Nordal		Sch 4	
Apocynaceae	<i>Gomphocarpus</i> sp.		Sch 4	
Orchideaceae	<i>Bonatea speciosa</i> (L.f.) Willd.		Sch 4	
Orchideaceae	<i>Eulophia speciosa</i> (R.Br. ex Lindl.) Bolus		Sch 4	
Rutaceae	<i>Agathosma apiculata</i> E.Mey. ex Bartl. & H.L.Wendl.		Sch 4	
Sapotaceae	<i>Sideroxylon inerme</i> L. subsp. <i>inerme</i>	x		

5.5 Invasive Alien Species

Six alien plant species were recorded within the proposed development site, of which 4 are declared invasive alien species. The dominant invasive species are *Acacia cyclops*, *Acacia saligna* and *Cestrum laevigatum*, all classified as Category 1b, whereas the less common *Ricinus communis* is Category 2. Category 1b species must be removed by the landowner, whereas Category 2 species require a permit if the landowner want to maintain the species on site. Caution must be taken during the construction of the development that these species do not establish in the disturbed areas.

6 Sensitivity Assessment

6.1 Site Ecological Importance

The Site Ecological Importance (SEI) for the project and its related activities was determined using the methodology of the Species Environmental Assessment Guidelines (SANBI 2020), as specified in the Protocols for the assessment of impacts on terrestrial plant species. The results of the SEI methodology are included in Table 6-1.

One vegetation type, namely degraded St. Francis Dune Thicket, is recorded on site. The vegetation type has been divided into three communities, based on dominant plant species and sediment. However, their sensitivity is assessed as a single vegetation type as these sub-communities are a natural aspect of St. Francis Dune Thicket. This habitat type is considered to have a HIGH sensitivity, due to the vegetation remaining dominated by indigenous species, irrespective of disturbance, as well as containing *Rapanea gilliana*, an Endangered plant species. The recommended practice for a High sensitivity site is avoidance mitigation where possible. Minimisation mitigation should be implemented, where changes need to be made to project infrastructure design to reduce the amount of habitat lost and only impacts assessed to have a low impact to be acceptable. Offset mitigation may be required for high impact activities.

The wetlands on site are considered to have a VERY LOW sensitivity, from an SCC perspective, due to the lack of SCCs found in wetlands in this area, as well as their resilience. There is also a strong possibility that the wetlands on site are strongly influenced by anthropogenic activities, including the pipeline that traverses the site.

The SEI methodology requires the buffer areas around threatened species to be rated as VERY HIGH. The recommended buffer area for SCCs are 200 m (Raimondo *et. al.* 2009), however this was deemed to be excessive for the small site, and a 50 m buffer was considered to be adequate to ensure the preservation of the sub population of the SCC on site. This resulted in the majority of the site being considered to have a VERY HIGH sensitivity. The recommendation for the site is that no destructive development activities should be considered.

The sensitivity map for SEI was combined with the identification of Biodiversity Priority Areas, as identified according to the. Conservation and Biodiversity features of the following programmes were identified and combined:

- Garden Route BSP (CBAs, SCCs, EPAs)
- ECBCP (Aquatic and Terrestrial CBAs, EPAs, PAs)

The site is identified as a CBA by both conservation plans. The recommended land use guideline for CBAs is no further loss of natural vegetation. The Sensitivity Map of the site can be seen in Figure 6-1.

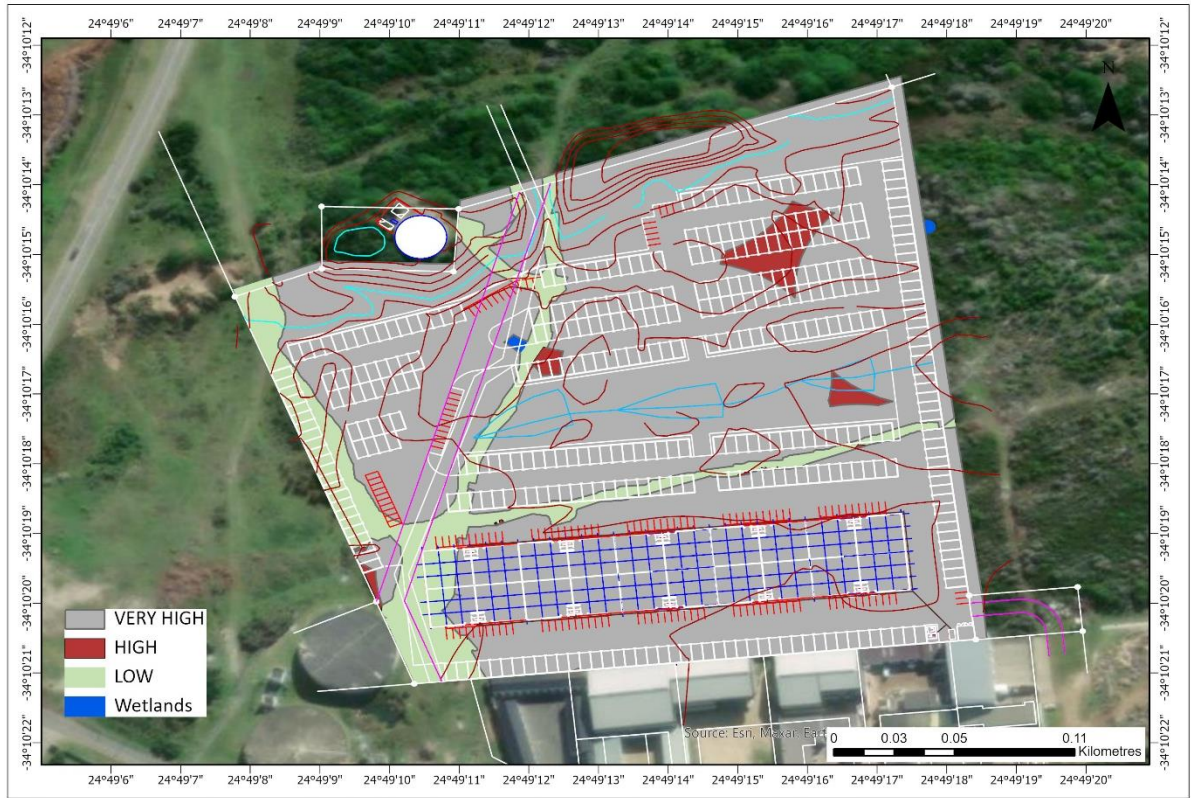


Figure 6-1 Sensitivity Map of the site of the proposed Goedgeloof Warehouse and Storage Facility, illustrating the original proposed layout.

Table 6-1 Site Ecological Importance (SEI) of the proposed development site.

Habitat	Conservation Importance	Functional Integrity	Receptor Resilience	Site Ecological Importance
Degraded St. Francis Dune Thicket	High Confirmed presence of <i>Rapanea gilliana</i> (Category B)	Medium Medium-sized (5-20 ha) of semi-intact vegetation Limited habitat connectivity due to surrounding development Major disturbances include habitat transformation and overgrazing	Low Sand fynbos is able to recover relatively quickly from disturbance (more than 10 years), but there are a number of major current threats that will prevent re-establishment of biodiversity.	High BI= Medium RR= Low
Wetlands	Low No SCCs present <50% intact	Low Small area (<5 ha) Limited connectivity	High Small wetlands with low biodiversity are able to establish relatively easily if correct hydrological conditions return, particularly as multiple similar wetlands occur at distances over which wetland plant and animals can disperse. There is also the possibility that these systems are not entirely natural and would therefore be able to recover easily to this state.	Very Low BI = Low RR= High

7 Impact Assessment

Any development activity in a natural or near-natural system will have an impact on the surrounding environment, usually in a negative way. The purpose of this phase of the study is to identify and assess the significance of the potential impacts caused by the proposed development and to provide a description of the mitigation required so as to limit such impacts on the natural environment.

7.1 Impact Assessment Methodology

The assessment of impacts will be based on the professional judgment of specialists at SRK Consulting, fieldwork, and desktop analysis. The significance of potential impacts that may result from the proposed development will be determined in order to assist the Competent Authority (CA) in making a decision.

A significance rating is allocated to each potential impact, based on consideration of the probability, intensity, extent, duration and possible mitigation of the potential impact. These terms are explained as follows:

- *Extent*: the scale of the impact on a local - national level;
- *Intensity*: the 'severity' of the impact or extent to which ecological and social processes are altered;
- *Duration*: the length of time the impact will last, which may be anything from several days to the entire lifetime of the development;
- *Probability*: the likelihood of the impact occurring;
- *Status*: positive or negative impact;
- *Reversibility*: the ability of the impacted environment to return to its pre-impacted state; and
- *Mitigation*: ways in which an impact can be avoided, minimised or managed to reduce its environmental significance.

Table 7-1: Criteria used to determine the Consequence of the Impact

Rating	Definition of Rating
A. Extent – the area over which the impact will be experienced	
None	
Local	Confined to project or study area or part thereof (e.g. site)
Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic
(Inter) national	Nationally or beyond
B. Intensity – the magnitude of the impact in relation to the sensitivity of the receiving environment	
None	
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way

High	Site-specific and wider natural and/or social functions or processes are severely altered
C. Duration – the time frame for which the impact will be experienced	
None	
Short-term	Up to 2 years
Medium-term	2 to 15 years
Long-term	More than 15 years
D. Probability – the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring
E. Status of impact	
+ ve	Positive (a benefit)
- ve	Negative (a cost)
F. Reversibility - Ability of the impacted environment to return to its pre-impacted state	
High	Reversible within the short-term
Medium	Reversible within the medium to long term
Low	Will never return to pre-impacted state

Each rating is based on observations made during the site visits and on professional judgement. Based on a synthesis of the above criteria, significance of an impact is rated as follows:

- *High significance*: where the impact would influence the decision to authorise the road upgrade regardless of any mitigation measures;
- *Moderate significance*: where the impact should influence the decision to upgrade the road, and where mitigation measures can, and must, be specified to reduce the overall impact;
- *Low significance*: where the impact would not have any influence on the decision to authorise the upgrading of the road;
- *Very Low significance*: the potential impact is very small and should not have any meaningful influence on the decision regarding the proposed activity/development; and
- *Insignificant*: the potential impact is negligible and will not have an influence on the decision regarding the proposed activity/development.

7.2 Potential Impacts

Potential impacts that could arise as a result of the proposed road upgrade and associated activities have been identified and are assessed below.

Construction phase impacts:

- Direct loss of vegetation and habitat;
- Loss of Species of Special Concern (SSC); and
- Spread of alien invasive species.

Operational phase impacts:

- Anthropogenic disturbance to surrounding vegetation and habitat.

7.2.1 Construction Phase Impacts

All impacts identified below are relevant to the construction phase.

Impact 1: Loss of St. Francis Dune Thicket

The loss of vegetation could potentially result in loss of habitat for endemic species as well as the irreversible loss of possible species assemblages within the site boundary. In addition, if rehabilitation of disturbed areas is not adequately conducted, further impacts to areas outside the site boundary could occur due to erosion or fires.

The proposed development is located within a CBA 1 area in terms of the 2019 ECBCP (refer to Figure 4-6). The CBA has been identified for the conservation of the vegetation type, as well as threatened plant and animal species occurring in this habitat type. The loss of the CBA will result in the loss of habitat for these threatened species as well.

The development will result in the permanent loss of approximately 38 460 sqm of lightly degraded indigenous vegetation (*St. Francis Dune Thicket*). A number of small wetlands will be lost as well. The current site layout plan indicates 6 800 sqm has been set aside as Public Open Space (POS), consisting of the vegetated dune in the north of the site, and 5 740 sqm of Private Open Space, consisting of the drainage line on site and containing retention ponds.

The conservation status of the delineated vegetation type (*St. Francis Dune Thicket*) is considered Least Concern. As shown in Table 5-2 above, the historical extent of *St. Francis Dune Thicket* is 4,047 ha. Of this, approximately only 23% has been transformed for cultivation. Approximately 1.6% of the vegetation type is protected in surrounding reserves. According to Mucina and Rutherford (2018) approximately 77% remains, of which 0.86% will be permanently lost for the development of the proposed warehousing and storage facility.

The impact was rated with the following considerations in mind:

- The development falls within a CBA 1 area (as per the 2019 ECBCP);
- The development is situated in the Garden Route Biosphere Reserve;
- Several sections within the site have already been transformed or disturbed by previous construction activities (related to the construction of the adjacent substation);
- *St. Francis Dune Thicket* is a poorly protected ecosystem as less than 2% is protected; and
- The proportion of the vegetation type on site that will be lost through the proposed development (in relation to what remains) is small (less than (1%).

Table 7-2 illustrates the impact rating applicable to the potential impacts on habitat types in the area.

Table 7-2: Significance rating of the Loss of St. Francis Dune Thicket and recommended mitigation measures

	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	+ -	Confidence	Reversibility
Before Management	Local	High	Long term	High	Definite	MEDIUM	-	High	Moderate
Management Measures									
<ul style="list-style-type: none"> • During the construction phase, the construction area (including site camp, laydown areas and access tracks) must be clearly demarcated and all other areas deemed as no-go areas for the duration of construction; • The position of the construction site camp should be on an already disturbed area and should be identified in consultation with the Environmental Control Officer (ECO); • Stripping of topsoil during the site clearing activities at the commencement of construction and appropriate storage for the duration of construction; • Harvesting and collection of any flora, other than that performed under a permit from the Department of Economic Development, Environmental Affairs & Tourism, must be strictly prohibited; • No open fires should be allowed on site outside of designated areas; • A designated smoking area, outside of any areas where the risk of fire is prevalent, must be designated. Smoking shall not be permitted outside of designated smoking area; • The objective of rehabilitation of natural areas must be to re-establish indigenous vegetation (coverage of at least 80% should be attained); • Rehabilitation of disturbed areas must commence immediately after construction has been completed in that area. General rehabilitation measures include: <ul style="list-style-type: none"> ○ Loosen compacted soils within construction footprint which do not form part of the BESS footprint (e.g. access roads, site camp area, stockpile and laydown areas, etc.); ○ Spread stored topsoil over disturbed areas and water regularly until vegetation has sufficiently established; and ○ All area undergoing rehabilitation must be demarcated as no-go areas; • During construction, erosion control measures must be implemented in areas sensitive to erosion such as exposed soil, areas with dispersive soils, etc. These measures include but are not limited to the use of sand bags, hessian sheets, silt fences and/ or replacement of vegetation. 									
After Management	Local	Medium	Long term	Medium	Definite	MEDIUM	-	High	Moderate

Impact 2: Loss of Species of Conservation Concern (SCC)

The proposed construction activities will result in a direct loss of a sub-population of one plant SCC and their habitat. If construction activities are not controlled, further individuals or species could be impacted. However, due to the small footprint, the site can be considered to be comprehensively assessed, and it is unlikely that any more SCCs are present.

At least 100 individuals of *Rapanea gilliana* occur within the development site, and it can be considered one of the dominant species in the sandy fynbos on shallow soils. There is clear evidence of recruitment on site, including vegetative regrowth in areas where brushcutting has taken place. It is doubtful whether the species can be readily translocated as it is a woody shrub species. Furthermore, translocation is not considered a mitigation measure for the loss of SCCs, according to SANBI (2020). Individuals occur across the site, both within the footprint and within areas that have been excluded from development, including the dune in the north of the site and the drainage line.

Besides plant SCCs, the CBAs are habitat for threatened animal species, including the mammalian Vulnerable Species 8 and the avian species African Marsh Harrier (*Circus ranivorus*), Knysna Woodpecker (*Bradypterus sylvaticus*), Denham's bustard (*Neotis denhami*), White-bellied Korhaan (*Eupodotis senegalensis*) and Crowned Eagle (*Stephanoaetus coronatus*). It is however unlikely that

most of these species persist on site, due to the high level of transformation and disturbance in the vicinity.

The significance of the impact for the development is rated as High (-ve) and this cannot be reduced as translocation is not considered a mitigatory management by the Species Environmental Assessment Guidelines (SANBI 2022) for the conservation of SCCs, due to the general low rate of success. Avoidance mitigation should be exercised and no destructive development should take place within Very High SEI. However, as the majority of the site is considered Very High, preventing any viable development, it is recommended that the only mitigation measure would be to conserve an offset area that contains a healthy population of *Rapanea gilliana*.

Table 7-3 illustrates the impact rating applicable to the potential impacts on SSC within the site boundary.

Table 7-3: Significance rating of Loss of SCC and recommended mitigation measures

	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	+-	Confidence	Reversibility
Before Management	Local	High	Long term	High	Definite	HIGH	-	High	High
Management Measures									
<ul style="list-style-type: none"> • Demarcate the areas indicated as Public Open Space and Private Open Space as No Go Areas and manage accordingly; • Apply for relocation and destruction permits for protected species from the relevant authority (DEDEAT); • Identify offset areas of at least an equal extent of the area that will be lost to transformation that contain a viable population of <i>Rapanea gilliana</i>; • Conduct a Search and Rescue exercise before the start of construction, ahead of any clearing of vegetation; • A suitably qualified and experienced individual should oversee the Search and Rescue operation; • Sufficient time for Search and Rescue must be allowed before construction commences; and • Replant rescued SSCs in No Go areas. 									
After Management	Local	Medium	Long term	Low	Definite	MEDIUM	-	High	High

Impact 3: Spread of Invasive Alien Species

A major change in plant communities where development is concerned, is generally the result of invasion of alien weeds and invasive plants. The proposed development will result in an increase in the risk of Invasive Alien Plants (IAPs) establishing in the disturbed sites and spreading to the surrounding areas during and after construction. There is a high potential of the further spread of IAPs on site as a result of construction activities as a number of species are already established on site. Dense stands of *Acacia cyclops* and *A. saligna* occur in the area, and sandy coastal fynbos is has a high invasibility. The seasonally saturated soils around the site would also aid in the propagation and spread of invasive alien species (most specifically invasive *Acacia* species).

One of the current impacts on site is the spread of IAPs. The density of stands will increase in the future, irrespective of whether the development goes ahead, if the site is not managed correctly.

The impact is rated with a High (-ve) significance without mitigation, but can be reduced to Very Low (-ve) if the recommended measures are applied. Table 7-4 illustrates the extent to which this impacts the environment.

Table 7-4: Significance rating of Invasive Alien Species and recommended mitigation measures

	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	+-	Confidence	Reversibility
Before Management	Regional	Medium	Long term	High	Probable	HIGH	-	Medium	High
Management Measures									
<ul style="list-style-type: none"> All invasive alien species cleared for the construction of the storage facility must be collected and disposed of as waste. Care must be taken not to disperse seeds or seed pods in the surrounding environment during the removal thereof; Remove any new alien invasive plant species in the construction footprint as soon as they are detected, preferably by physical removal or by spraying herbicides should physical removal not be feasible (to be conducted in conjunction with the ECO); Monitoring and removing of alien invasive plants should be conducted from the start of the construction phase, during clearing, until rehabilitation has been complete at the end of the liability period; After construction, ongoing control of invasive alien plants must be addressed by the property owner. 									
After Management	Local	Low	Short term	Very Low	Probable	VERY LOW	-	Medium	High

Impact 4: Loss of Ecological Function of Landscape

The site is currently in an acceptable state of ecological function, although it has been negatively impacted by a number of activities, such as overgrazing, invasion by IAS and the illegal dumping of rubble and other waste products. It provides a number of ecological services to the surrounding area, including stormwater control, erosion control, supply of habitat for pollinators, dispersers and other essential invertebrates, and open space.

The proposed development will result in the loss of natural vegetation as well as an increased area of hard surfaces, transforming the water flow dynamics of the site, and increasing the amount of stormwater produced over short periods. There will be an almost complete loss of habitat for useful fauna within the footprint of the development.

The impact is rated with a Low (-ve) significance without mitigation, but can be reduced to Very Low (-ve) if the recommended measures are applied. Table 7-5 illustrates the extent to which this impacts the environment.

Table 7-5: Significance rating of loss of ecological function of the landscape and recommended mitigation measures

	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	+-	Confidence	Reversibility
Before Management	Regional	Low	Long term	Medium	Possible	MEDIUM	-	Medium	Moderate
Management Measures									
<ul style="list-style-type: none"> Manage all Open Space to maintain indigenous vegetation cover; Implement proper stormwater management principles, including the provision of retention ponds; Limit access to Open Space areas, particularly for cattle; Limit large areas of hard surfaces to improve stormwater flow; 									
After Management	Regional	Low	Long term	Medium	Possible	LOW	-	Medium	Moderate

7.2.2 Operational Phase Impacts

All impacts identified below are relevant to the operational phase.

Impact 5: Direct Anthropogenic Disturbance to Ecology of Site

The operation of the warehouse and storage facility development will result in an increase in the number of people utilising the area, increasing disturbance of existing habitat and ecosystem processes. Furthermore, the transformation of the development footprint will cause a number of edge effects on the disturbed and intact vegetation and habitat in its vicinity. This will increase disturbance to the ecological function and species composition, resulting in the compaction of soil, reduction in pollinators and dispersers, collection of plant material such as wood and flowers, and trampling.

The impact is rated with a Medium (-ve) significance without mitigation, but can be reduced to Very Low (-ve) if the recommended measures are applied. Table 7-6 illustrates the extent to which this impacts the environment.

Table 7-6: Significance rating of anthropogenic disturbance to ecology and recommended mitigation measures

	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	+-	Confidence	Reversibility
Before Management	Regional	Medium	Long term	High	Possible	MEDIUM	-	Medium	Moderate
Management Measures									
<ul style="list-style-type: none"> • Limit vehicle access to areas designated for access and parking; • Provide waste bins and animal proof waste handling facilities to prevent litter and attracting pests; • Limit the collection of firewood on site and from the surrounding vegetation; • Discourage pets from entering and hunting in the development site and surrounding landscape; and • Appropriate fire-fighting equipment must be available on site at all times and serviced at regular intervals; 									
After Management	Local	Low	Long term	Low	Possible	VERY LOW	-	Medium	Moderate

7.2.3 Cumulative Impacts

The construction of the warehouse and storage facility will have a moderate cumulative impact on the terrestrial environment, mostly limited to an increase in the disturbance of the vegetation and habitat of the region. The region is situated in a sensitive dune environment with a number of wetlands, and has experienced high rates of habitat transformation due to urban residential development, agriculture and the historic stabilisation of the Oyster Bay Bypass Dunefield. The cumulative loss will be reduced as a result of the relatively small footprint (5 ha) and the moderate degree of intactness of the vegetation type, *St. Francis Dune Thicket*. The vegetation type has experienced a current cumulative loss of 24%, and the proposed development will further increase the loss by almost 1%.

The cumulative impact is rated with a Medium (-ve) significance without mitigation, but can be reduced to Low (-ve) if the recommended measures are applied. Table 7-7 illustrates the extent to which this impacts the environment.

Table 7-7 Significance rating of Cumulative Impacts and recommended mitigation measures

	Spatial Extent	Intensity	Duration	Consequence	Probability	Significance	+-	Confidence	Reversibility
--	----------------	-----------	----------	-------------	-------------	--------------	----	------------	---------------

Before Management	Regional	Medium	Long term	High	Possible	MEDIUM	-	Medium	Moderate
Management Measures									
<ul style="list-style-type: none"> Discussions should take place with appropriate conservation authorities relating to the loss of CBAs and potential replacement in conservation plans with habitat of equal value 									
After Management	Local	Medium	Short-term	Very Low	Possible	LOW	-	Medium	Moderate

8 Conclusion

According to the National Vegetation Map by Mucina and Rutherford (2012), the proposed site falls within *St. Francis Dune Thicket* (FFs 28), listed as Least Concern. The majority of the vegetation on the site is moderately intact and consists of a mosaic of coastal fynbos species and thicket woody shrub and tree species. The site investigation identified 47 indigenous plant species within the site boundary. A number of wetlands are found on site although there is evidence that they may be a result of a number of leaks along a water pipeline that transects the site. The site is situated in a CBA 1 and CBA 2 and is required to meet the conservation targets of the vegetation type and threatened species.

The site is located directly next to an existing light industrial area, and formal low-income and medium-to high- income residential development occurs in the vicinity. Brushcutting has occurred over a large portion of the site, by the vegetation remains dominated by indigenous species. Illegal dumping occurs across the site and there is widespread evidence of grazing by cattle. Six AIS occur with *Acacia cyclops* and *Acacia saligna* being the dominant invasives. It is important that all invasive aliens currently occurring on site (as well as potential future stands which may emerge due to the proposed disturbance on site) must be monitored, controlled and eradicated as per the landowner’s Invasive Species Monitoring, Control and Eradication Plan according to Section 76(2)(a) of NEMBA (Act No. 10 of 2004).

One plant species of special concern (SCC) were observed within the study area during the survey. A viable sub-population of over 100 individuals of *Rapanea gilliana* occur on site. This species has managed to survive the current impacts occurring on site as it is able to resprout after severe disturbance. This species remains relatively common in the area and other populations exist that require conservation for its long-term persistence.

A number of potential impacts relating to loss of indigenous vegetation, loss of protected plant species, proliferation of alien invasive species, risk of vegetation degradation due to anthropogenic disturbance are predicted to occur as a result of the proposed development. Mitigation measures are proposed to lower the significance of these impacts.

The proposed development has been assessed to have a very high negative impact on dune fynbos on site, due to the presence of a sub-population of the Endangered *R. gilliana*, that will not tolerate the level of transformation expected. This species remains reasonably common in the area and offset areas in less threatened areas containing viable populations as well are present. The Species Environmental Assessment Guidelines (SANBI 2022) recommends that no destructive development should occur on a site similar to this. However, it is the recommendation of the specialist that the development can go ahead if all management measures, including offset areas, are implemented and included in the EMP.

Prepared by

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9610-663-1678-WETC-26/05/2023
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Clayton Weatherall-Thomas
Senior Environmental Scientist

Reviewed by

SRK Consulting - Certified Electronic Signature
 
597323/45070/Report
6602-3341-5901-GARR-26/05/2023
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Rob Gardiner Pr Sci Nat
Principal Environmental Scientist, Partner

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

9 References

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Appendix A: Specialist Declaration and CV

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST IN TERMS OF REGULATIONS 12 AND 13 OF THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED.

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

Application for environmental authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amendments to the Environmental Impact Assessment Regulations, 2014. This form is valid as of 6 January 2021.

PROJECT TITLE

The Proposed Development of a new warehouse and storage facility on Portion 250 of Farm 745, Goedgeloof, St Francis Bay, Eastern Cape

SPECIALIST 1	Ecologist		
Contact person:	Clayton Weatherall-Thomas		
Postal address:	PO BOX 21842, Gqeberha		
Postal code:	6000	Cell:	083 401 8091
Telephone:	041 509 4805	Fax:	041 509 4850
E-mail:	cweatherall-thomas@srk.co.za		
Professional affiliation(s) (if any)	SACNASP 128641		

Project Consultant:
Contact person:
Postal address:

Eco Route Environmental Practitioners		
Joclyn Marshall (EAPASA No. 2022/5006)		
PO Box 1252		
SEDGEFIELD 6573	Cell:	072 126 6393
joclyn@ecoroute.co.za	Fax:	

Postal code:

Telephone:

E-mail:

4.2 The SPECIALIST

I, CLAYTON WEATHERAIL-THOMAS, declare that

General declaration:

- I act as the independent Specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority 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 the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by

interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;

- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Amendments to Environmental Impact Assessment Regulations, 2014 as amended.
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

Signature of the environmental assessment practitioner:

SRK

Name of company:

04/12/2023

Date:

Signature of the Commissioner of Oaths:

04/12/2023

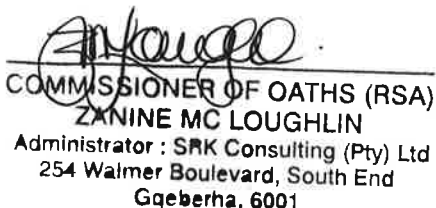
Date:

Administrator.

Designation:

¹ Curriculum Vitae (CV) attached

Official stamp (below).


COMMISSIONER OF OATHS (RSA)
ZANINE MC LOUGHLIN
Administrator : SRK Consulting (Pty) Ltd
254 Walmer Boulevard, South End
Gqeberha, 6001

Annexure 1

CV

[Faint, illegible text, possibly a stamp or signature]

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist



Profession	Senior Environmental Scientist
Education	MSc (Botany), Nelson Mandela Metropolitan University, 2009 BSc (Hons), Botany, Nelson Mandela Metropolitan University, 2006 BSc (Biological Science), Nelson Mandela Metropolitan University, 2005
Registrations/ Affiliations	Pr Sc Nat (Ecological Science) (Reg No, 128641) EAP (Reg No, 2019/681)
Awards	None

Specialisation

Environmental Impact Assessments, Basic Assessments, Environmental Auditing, Mining Permits and Rights, Prospecting Rights, Ecological and Botanical Specialist reports, Rehabilitation Plans

Expertise

Clayton has been involved in environmental assessment and management for the past 6 years and botanical and ecological specialist work for the past 12. Clayton has auditing experience, and his environmental management experience includes Environmental Impact Assessments (EIAs), Basic Assessments, Environmental Management Programmes (EMPrs). Clayton has done botanical, vegetation, ecological and faunal specialist assessments for a wide variety of projects as well.

Employment

2023 - present	SRK Consulting (Pty) Ltd, Senior Environmental Scientist, Gqeberha
2017 - 2022	Algoa Consulting Mining Engineers, Environmental Assessment Practitioner Gqeberha
2012 - 2013	Nelson Mandela Metropolitan Municipality, Conservation Officer, Gqeberha
2011 - 2012	Wildlife and Environmental Society of South Africa (WESSA), Conservation Officer, Gqeberha
2008	Nelson Mandela Metropolitan Municipality, Herbarium Assistant, Gqeberha
2006	Water Research Commission, Botanical and Ecological Specialist, Gqeberha
2004 - 2015	Nelson Mandela Metropolitan Municipality, Student Demonstrator, Gqeberha

Publications

A Journal article on biome boundaries.

Languages

English – read, write, speak
Afrikaans- read, write, speak

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist

Publications

1. Robbert Duker, Richard M. Cowling, Derek R. du Preez, Marius L. van der Vyver, Clayton R. Weatherall-Thomas and Alastair J. Potts (2014) Community-level assessment of freezing tolerance: frost dictates the biome boundary between Albany subtropical thicket and Nama-Karoo in South Africa. *Journal of Biogeography* 42(1): 167-178

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist

Key Experience: **Basic Assessments**

Location: Port Elizabeth, Eastern Cape, South Africa
Project duration/date: 2018
Client: Schoenmakers Mining (Pty) Ltd
Name of Project: Mining permit application for a sand mine
Project Description: Basic Assessment and mining permit application
Job Title and Duties: Environmental Assessment Practitioner
Value of Project: N/A

Location: Hankey, Eastern Cape, South Africa
Project duration/date: 2017
Client: ELC PERM 1 (Pty) Ltd
Name of Project: Loerie Limestone Mine
Project Description: Basic Assessment and mining permit application
Job Title and Duties: Environmental Assessment Practitioner
Value of Project: N/A

Location: Despatch, Eastern Cape, South Africa
Project duration/date: 2017
Client: Sandman Quarries (Pty) Ltd
Name of Project: Sand and stone mine
Project Description: Basic Assessment and mining permit application
Job Title and Duties: Environmental Assessment Practitioner
Value of Project: N/A

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist

Key Experience: Environmental Impact Assessments

Location: Aggeneys, Northern Cape, South Africa
 Project duration/date: 2023-ongoing
 Client: Black Mountain Mining (Pty) LTd
 Name of Project: Aggeneys Expansion ESIA
 Project Description: Environmental Impact Assessment for expansion of village of Aggeneys
 Job Title and Duties: Environmental Assessment Practitioner, project coordinator, Ecological Specialist
 Value of Project: R2 500 000.00

Location: Kinkelbos, Eastern Cape, South Africa
 Project duration/date: 2022
 Client: GG Bradfield
 Name of Project: Establishment of pastures EIA
 Project Description: Scoping Phase and Report for the clearance of indigenous vegetation
 Job Title and Duties: Environmental Assessment Practitioner, project coordinator
 Value of Project: N/A

Location: Empangeni, KwaZulu-Natal, South Africa
 Project duration/date: 2020
 Client: Yu Zhou Enterprise (Pty) Ltd
 Name of Project: Million Streams clay mine and brick plant
 Project Description: Scoping Report for the establishment of a clay mine and brick plant
 Job Title and Duties: Environmental Assessment Practitioner
 Value of Project: N/A

Location: Coega Special Economic Zone, Eastern Cape, South Africa
 Project duration/date: 2020
 Client: Coega Mining (Pty) Ltd
 Name of Project: Sand mine EIA
 Project Description: Environmental Impact Assessment and mining right application, including Ecological specialist assessment
 Job Title and Duties: Environmental Assessment Practitioner
 Value of Project: N/A

Location: Port Elizabeth, Eastern Cape, South Africa
 Project duration/date: 2019
 Client: Driftsands Mining (Pty) Ltd
 Name of Project: Sand mine EIA
 Project Description: Environmental Impact Assessment and mining right application, including Botanical specialist assessment
 Job Title and Duties: Environmental Assessment Practitioner
 Value of Project: N/A

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist

Key Experience: Environmental Impact Assessments

Location: Loerie, Eastern Cape, South Africa
 Project duration/date: 2019
 Client: ELC Perm 2 (Pty) Ltd
 Name of Project: Kleinfontein Kalkmyn EIA
 Project Description: Environmental Impact Assessment and mining right application, including Ecological specialist assessment.
 Job Title and Duties: Environmental Assessment Practitioner
 Value of Project: N/A

Location: Port Elizabeth, Eastern Cape, South Africa
 Project duration/date: 2017
 Client: Lloyds Clay Mine
 Name of Project: Clay Mine Mining Licence Conversion
 Project Description: Environmental Impact Assessment and mining right application
 Job Title and Duties: Environmental Assessment Practitioner
 Value of Project: N/A

Key Experience Environmental Audits

Location: Coega Special Economic Zone, Eastern Cape, South Africa
 Project duration/date: 2022
 Client: Coega Mining (Pty) Ltd
 Name of Project: Annual Environmental Audit
 Project Description: Environmental Assessment Practitioner
 Project Description: EIA for a 27 MW wind farm (including comparative site suitability assessment) and associated infrastructure
 Job Title and Duties: Environmental Assessment Practitioner, project coordinator
 Value of Project: N/A

Location: Coega Special Economic Zone, Eastern Cape, South Africa
 Project duration/date: 2021
 Client: CEMZA
 Name of Project: Construction Phase Closure Audit
 Project Description: Environmental audit
 Job Title and Duties: Environmental Assessment Practitioner
 Value of Project: N/A

Location: Port Elizabeth, Eastern Cape, South Africa
 Project duration/date: 2018
 Client: Glendore Sand
 Name of Project: Mine Closure for a sand mine
 Project Description: Environmental Audit and Mine closure
 Job Title and Duties: Environmental Assessment Practitioner
 Value of Project: N/A

Location: Port Elizabeth, Eastern Cape, South Africa
 Project duration/date: 2018
 Client: Glendore Sand
 Name of Project: Mine Closure for a stone mine
 Project Description: Environmental Audit and mine closure
 Job Title and Duties: Environmental Assessment Practitioner
 Value of Project: N/A

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist

Key Experience

Location: Aggeneys, Northern Cape, South Africa
 Project duration/date: 2023-ongoing
 Client: Black Mountain Mining (Pty) LTd
 Name of Project: Aggeneys Expansion ESIA
 Project Description: Ecological, including fauna and flora, Impact Assessment
 Job Title and Duties: Ecological Specialist
 Value of Project: R150 000.00

Location: Humansdorp, Eastern Cape
 Project duration/date: 2023-ongoing
 Client: Lex Gutsche Investment Trust
 Name of Project: Construction of Gutsche Boathouse
 Project Description: Basic Assessment for the construction of a boathouse on the Kromme Estuary
 Job Title and Duties: Environmental Assessment Practitioner, Project Manager
 Value of Project: R200 000.00

Location: Grahamstown, Eastern Cape, South Africa
 Project duration/date: 2023
 Client: WBHO
 Name of Project: Great Fish River N2 Upgrade
 Project Description: Protected Species survey and biodiversity permits, author
 Job Title and Duties: Botanical specialist
 Value of Project: R40 000.00

Location: St. Francis Bay, Eastern Cape, South Africa
 Project duration/date: 2023
 Client: Goedgeloof Properties
 Name of Project: Goedgeloof Storage Facility
 Project Description: Botanical and Terrestrial Biodiversity Impact Assessment for an EIA for a light industrial development, author
 Job Title and Duties: Ecological Specialist, Author
 Value of Project: R30 000.00

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist

Key Experience

Biodiversity & Ecological Reports

Location: Komga, Eastern Cape, South Africa
 Project duration/date: 2022
 Client: UsibaIP
 Name of Project: Komga Quarry
 Project Description: Terrestrial Biodiversity and Plant Species compliance statement
 Job Title and Duties: Ecological Specialist
 Value of Project: N/A
 Project duration/date: 2022
 Client: CEN Integrated Environmental Management Unit
 Name of Project: Dubula Farm Solar PV Facility
 Project Description: Terrestrial Biodiversity and Plant Species Impact Assessment
 Job Title and Duties: Author
 Value of Project: R32 000.00

Location: Humansdorp, Eastern Cape, South Africa
 Project duration/date: 2022
 Client: Habitat Link Consulting
 Name of Project: Nordex Concrete Tower Facility
 Project Description: Terrestrial Biodiversity and Plant Species Impact Assessment
 Job Title and Duties: Ecological Specialist, Author
 Value of Project: R22 000.00

Location: Greenbushes, Eastern Cape, South Africa
 Project duration/date: 2022
 Client: Habitat Link Consulting
 Name of Project: Greenbushes Solar PV Facility
 Project Description: Terrestrial Biodiversity and Plant Species Compliance Statement
 Job Title and Duties: Ecological Specialist, Author
 Value of Project: R20 000.00

Location: Gqeberha, Eastern Cape, South Africa
 Project duration/date: 2022
 Client: Habitat Link Consulting
 Name of Project: Westering Residential Development
 Project Description: Terrestrial Biodiversity Impact Assessment and Plant Species Compliance Statement
 Job Title and Duties: Ecological Specialist, Co-author
 Value of Project: R25 000.00

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist

Key Experience

Biodiversity & Ecological Reports

Location: Port Elizabeth, Eastern Cape, South Africa
 Project duration/date: 2022
 Client: CEN Integrated Environmental Management Unit
 Name of Project: Little Chelsea Citrus Development
 Project Description: Terrestrial Biodiversity and Plant Species Biodiversity Baseline Assessment
 Job Title and Duties: Author
 Value of Project: R20 000.00

Location: Swthwell, Eastern Cape, South Africa
 Project duration/date: 2022
 Client: Algoa Consulting Mining Engineers
 Name of Project: Swthwell Sand Mine
 Project Description: Terrestrial Biodiversity and Plant Species Compliance Statement
 Job Title and Duties: Author
 Value of Project: R20 000.00

Location: Port Elizabeth, Eastern Cape, South Africa
 Project duration/date: 2022
 Client: CEN Integrated Environmental Management Unit
 Name of Project: Greenbushes Solar PV Facility
 Project Description: Terrestrial Biodiversity and Plant Species Compliance Statement
 Job Title and Duties: Author
 Value of Project: R20 000.00

Location: Greenbushes, Eastern Cape, South Africa
 Project duration/date: 2021
 Client: Setplan
 Name of Project: Kuyga residential development
 Project Description: Botanical and Terrestrial Biodiversity Impact Assessment for an EIA for a residential development, co-author
 Job Title and Duties: Botanical specialist
 Value of Project: N/A

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist

Key Experience

Biodiversity & Ecological Reports

Location: Port Elizabeth and Coega Special Economic Zone, Eastern Cape, South Africa
 Project duration/ date: 2021
 Client: Red Cap Impofu (Pty) Ltd
 Name of Project: Impofu Grid Extension
 Project Description: Terrestrial Biodiversity and Plant Species Impact Assessment for Chatty-Dedisa Grid Extension
 Job Title and Duties: Botanical Specialist, co-author
 Value of Project: N/A

Key Experience

Biodiversity & Ecological Reports

Location: Kirkwood, Eastern Cape, South Africa
 Project duration/date: 2021
 Client: Habitat Link Consulting (Pty) Ltd
 Name of Project: Moses Mabhida Multi-Purpose Sports Hall
 Project Description: Botanical opinion letter for the condition of the vegetation on site
 Job Title and Duties: Botanist
 Value of Project: N/A

Location: Mount Frere, Eastern Cape, South Africa
 Project duration/date: 2021
 Client: Habitat Link Consulting (Pty) Ltd
 Name of Project: Mount Frere Police Station
 Project Description: Botanical opinion letter for the condition of the vegetation on site
 Job Title and Duties: Botanist
 Value of Project: N/A

Location: Kariega, Eastern Cape, South Africa
 Project duration/date: 2020
 Client: Habitat Link Consulting (Pty) Ltd
 Name of Project: Expansion of Kamesh Police Station
 Project Description: Botanical opinion letter for the condition of the vegetation on site
 Job Title and Duties: Botanist
 Value of Project: N/A

Location: Paterson, Eastern Cape, South Africa
 Project duration/date: 2020
 Client: Habitat Link Consulting (Pty) Ltd
 Name of Project: Waggie poultry broiler facility
 Project Description: Botanical opinion letter for the condition of the vegetation on site
 Job Title and Duties: Botanist
 Value of Project: N/A

Location: Riebeek-East, Eastern Cape, South Africa
 Project duration/date: 2020
 Client: Habitat Link Consulting (Pty) Ltd
 Name of Project: Seriso Cultivation
 Project Description: S24G application and establishment of new cultivated areas , Botanical specialist report
 Job Title and Duties: Botanist, co-author
 Value of Project: N/A

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist

Key Experience

Location:
Project duration/ date:
Client:
Name of Project:
Project Description:

Job Title and Duties:
Value of Project:

Biodiversity & Ecological Reports

Port Elizabeth, Eastern Cape, South Africa
2019 – 2020
Lwethuma Environmental Consulting
Malabar Shopping Centre
Terrestrial Biodiversity and Plant and Animal Species Impact Assessment for a commercial development
Ecologist, co-author
N/A

Location:
Project duration/date:
Client:
Name of Project:
Project Description:
Job Title and Duties:
Value of Project:

Coega Special Economic Zone, Port Elizabeth, South Africa
2019
Ngqura Sand (Pty) Ltd
Ngqura Sand Sand Mine Mining Permit
Ecological Impact Assessment
Ecological Specialist
N/A

Location:
Project duration/date:
Client:
Name of Project:
Project Description:
Job Title and Duties:
Value of Project:

Coega Special Economic Zone, Eastern Cape, South Africa
2020
Coega Mining (Pty) Ltd
Coega Mining Sand Mine Mining Right
Ecological Impact Assessment
Ecological Specialist
N/A

Location:
Project duration/date:
Client:
Name of Project:
Project Description:
Job Title and Duties:
Value of Project:

Port Elizabeth, Eastern Cape, South Africa
2019
Driftsands Mining (Pty) Ltd
Driftsands Mining Sand Mine Mining Right
Ecological Impact Assessment
Ecological Specialist
N/A

Location:
Project duration/date:
Client:
Name of Project:
Project Description:
Job Title and Duties:
Value of Project:

Loerie, Eastern Cape, South Africa
2019
ELC Perm 2 (Pty) Ltd
Kleinfontein Kalkmyn Mining Right
Ecological Specialist Assessment
Ecological Specialist
N/A

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist

Key Experience

Location:
Project duration/date:
Client:
Name of Project:
Project Description:
Job Title and Duties:
Value of Project:

Biodiversity & Ecological Reports

King Williams Town, Eastern Cape, South Africa
2019
Algoa Consulting Mining Engineers cc
Mount Coke Quarry
Ecological specialist report for a mining permit application for a hard rock quarry
Ecologist, author
N/A

Location:
Project duration/date:
Client:
Name of Project:
Project Description:
Job Title and Duties:
Value of Project:

Hogsback, Eastern Cape, South Africa
2019
Habitat Link Consulting (Pty) Ltd
Subdivision and residential development
Botanical Specialist assessment for BA
Botanist, author
N/A

Location:
Project duration/date:
Client:
Name of Project:
Project Description:
Job Title and Duties:
Value of Project:

Port Elizabeth, Eastern Cape, South Africa
2019
CEN Environmental Consulting (Pty) Ltd
Florida Heights Residential Development
Botanical Assessment for EIA for residential development
Botanist, author
N/A

Location:
Project duration/date:
Client:
Name of Project:
Project Description:
Job Title and Duties:
Value of Project:

Humansdorp, Eastern Cape, South Africa
2019
Habitat Link Consulting (Pty) Ltd
EIA for Development of Portion 3 of Farm Zwarteboosch 347
Botanical Screening Assessment
Botanist, author
N/A

Location:
Project duration/date:
Client:
Name of Project:
Project Description:
Job Title and Duties:
Value of Project:

Prieska, Northern Cape, South Africa
2018
Algoa Consulting Mining Engineers cc
EIA for Sogea Satom concrete wind tower factory
Botanical Specialist Assessment
Botanist, author
N/A

Location:
Project duration/date:
Client:
Name of Project:
Project Description:
Job Title and Duties:
Value of Project:

Addo, Eastern Cape, South Africa
2018
Habitat Link Consulting (Pty) Ltd
EIA for development of low cost housing in Addo
Botanical Screening Assessment
Botanist, author
N/A

Clayton Richard Weatherall-Thomas

Senior Environmental Scientist

Key Experience

Biodiversity & Ecological Reports

Location:	Hankey, Eastern Cape, South Africa
Project duration/date:	2017
Client:	ELC PERM 1 (Pty) Ltd
Name of Project:	Loerie Limestone Mine
Project Description:	Botanical specialist assessment
Job Title and Duties:	Botanical Specialist
Value of Project:	N/A
Location:	Western Cape, South Africa
Project duration/date:	2017
Client:	Water Research Commission
Name of Project:	Macrophyte health and updated estuary habitat and plant species data for Western Cape estuaries.
Project Description:	Plant species identification for estuaries in the Western Cape
Job Title and Duties:	Botanist, co-author
Value of Project:	N/A
Location:	Kimberley, Northern Cape, South Africa
Project duration/date:	2017
Client:	Boscia Ecological Consulting
Name of Project:	EIA for KimCrush aggregate mine
Project Description:	Ecological Impact Assessment
Job Title and Duties:	Botanist, co-author
Value of Project:	N/A
Location:	Kimberley, Northern Cape, South Africa
Project duration/date:	2017P
Client:	Public Process Consultants
Name of Project:	FreshGro Citrus Development
Project Description:	Botanical Specialist Assessment for development of citrus orchards
Job Title and Duties:	Botanist, co-author
Value of Project:	N/A
Location:	Kirkwood, Eastern Cape, South Africa
Project duration/date:	2015
Client:	
Name of Project:	EIA for KimCrush aggregate mine
Project Description:	Ecological Impact Assessment
Job Title and Duties:	Botanist, co-author
Value of Project:	N/A
Location:	Port Elizabeth, Eastern Cape, South Africa
Project duration/date:	2012
Client:	Jeffares & Green (Pty) Ltd
Name of Project:	Proposed Redhouse-Chelsea Arterial and Walker Drive Extension EIA
Project Description:	Vegetation Impact Assessment
Job Title and Duties:	Botanist, co-author
Value of Project:	N/A

Appendix B: Indigenous Plant Species Observed on Site

Family	SPECIES	Threat status	NFA	NECO	ToPS	AIPs
Aizoaceae	<i>Carpobrotus deliciosus</i> (L.Bolus) L.Bolus	LC				
Amaryllidaceae	<i>Scadoxus puniceus</i> (L.) Friis & Nordal	LC				
Anacardiaceae	<i>Searsia crenata</i> (Thunb.) Moffett	LC				
Anacardiaceae	<i>Searsia glauca</i> (Thunb.) Moffett	LC				
Anacardiaceae	<i>Searsia laevigata</i> (L.) F.A.Barkley	LC				
Asteraceae	<i>Felicia echinata</i> (Thunb.) Nees	LC				
Asteraceae	<i>Gazania krebsiana</i> Less.	LC				
Asteraceae	<i>Helichrysum cymosum</i> (L.) D.Don subsp. <i>cymosum</i>	LC		p		
Asteraceae	<i>Metalasia muricata</i> (L.) D.Don	LC				
Asteraceae	<i>Osteospermum moniliferum</i> L. subsp. <i>rotundatum</i> (DC.) J.C.Manning & Goldblatt	LC				
Asteraceae	<i>Senecio oederiifolius</i> DC.	LC				
Asteraceae	<i>Seriphium</i> sp. (<i>dunensis</i>)					
Asteraceae	<i>Syncarpha argentea</i> (Thunb.) B.Nord.	LC				
Celastraceae	<i>Cassine peragua</i> L. subsp. <i>peragua</i>	LC				
Celastraceae	<i>Gymnosporia buxifolia</i> (L.) Szyszyl.	LC				
Celastraceae	<i>Maytenus procumbens</i> (L.f.) Loes.	LC				
Celastraceae	<i>Pterocelastrus tricuspidatus</i> (Lam.) Walp.	LC				
Ebenaceae	<i>Euclea racemosa</i> Murray subsp. <i>racemosa</i>	LC				
Euphorbiaceae	<i>Gomphocarpus</i> sp.	LC				
Euphorbiaceae	<i>Ricinus communis</i> L.	NE				2
Fabaceae	<i>Acacia saligna</i> (Labill.) H.L.Wendl.	NE				1b
Fabaceae	<i>Acacia cyclops</i> A.Cunn. ex G.Don	NE				1b
Fabaceae	<i>Otholobium bracteolatum</i> (Eckl. & Zeyh.) C.H.Stirt.	LC				
Geraniaceae	<i>Pelargonium capitatum</i> (L.) L'Hér.	LC				
Geraniaceae	<i>Pelargonium grossularioides</i> (L.) L'Her.	LC				
Hypoxidaceae	<i>Hypoxis villosa</i> L.f.	LC				
Lamiaceae	<i>Leonotis leonurus</i> (L.) R.Br.	LC				
Myricaceae	<i>Morella cordifolia</i> (L.) Killick	LC				
Myricaceae	<i>Morella quercifolia</i> (L.) Killick	LC				
Myrsinaceae	<i>Rapanea gilliana</i> (Sond.) Mez	EN				
Myrsinaceae	<i>Rapanea melanophloeos</i> (L.) Mez	LC				
Oleaceae	<i>Olea exasperata</i> Jacq.	LC				
Orchideaceae	<i>Bonatea speciosa</i> (L.f.) Willd.	LC		p		
Orchideaceae	<i>Eulophia speciosa</i> (R.Br. ex Lindl.) Bolus	LC		p		
Phytolaccaceae	<i>Phytolacca octandra</i> L.	NE				*
Poaceae	<i>Cynodon dactylon</i> (L.) Pers.	LC				
Poaceae	<i>Sporobolus virginicus</i> (L.) Kunth	LC				
Polygalaceae	<i>Muraltia squarrosa</i> (L.f.) DC.	LC				
Polygalaceae	<i>Polygala myrtifolia</i> L. var. <i>myrtifolia</i>	LC				
Restionaceae	<i>Restio eleocharis</i> Mast.	LC				
Rhamnaceae	<i>Rhamnus prinoides</i> L'Hér.	LC				
Rhamnaceae	<i>Scutia myrtina</i> (Burm.f.) Kurz	LC				
Rubiaceae	<i>Anthospermum aethiopicum</i> L.	LC				
Rubiaceae	<i>Psyrax obovata</i> (Eckl. & Zeyh.) Bridson	LC				

Family	SPECIES	Threat status	NFA	NECO	ToPS	AIPs
Rubiaceae	<i>Rubia petiolaris</i> DC.	LC				
Rutaceae	<i>Agathosma apiculata</i> E.Mey. ex Bartl. & H.L.Wendl.	LC		P		
Salicaceae	<i>Scolopia zeyheri</i> (Nees) Harv.	LC				
Sapotaceae	<i>Sideroxylon inerme</i> L. subsp. <i>inerme</i>	LC	x			
Scrophulariaceae	<i>Chaenostoma campanulatum</i> Benth.	LC				
Solanaceae	<i>Cestrum laevigatum</i> Schlttdl.	NE				1b
Solanaceae	<i>Physalis peruviana</i> L.	NE				*
Solanaceae	<i>Solanum africanum</i> Mill.	LC				
Thymeleaceae	<i>Passerina rigida</i> Wikstr.	LC				

Appendix C: SCC Observations on iNaturalist

Species name	URL	Unique Record Number
<i>Rapanea gilliana</i>	https://www.inaturalist.org/observations/163798731	163798731