# BOTANICAL ASSESSMENT FOR THE PROPOSED REHABILITATION OF THE STEENBRAS WATER TREATMENT PLANT ACCESS ROAD, CITY OF CAPE TOWN

CAPENSIS

PAUL EMMS

FEBRUARY 2026

REPORT PREPARED FOR

ZUTARI

**THE SPECIALIST**

I, Paul Ivor Emms, as the appointed specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent:
    - other than fair remuneration for work performed/to be performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
- in terms of the remainder of the general requirements for a specialist, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- have disclosed/will disclose, to the applicant all material information that have or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application;
- have ensured/will ensure that information containing all relevant facts in respect of the application was/will be distributed or was/will be made available to interested and affected parties and the public and that participation by interested and affected parties was/will be facilitated in such a manner that all interested and affected parties were/will be provided with a reasonable opportunity to participate and to provide comments;
- have ensured/will ensure that the comments of all interested and affected parties were/will be considered, recorded and submitted to the Department in respect of the application;
- have ensured/will ensure the inclusion of inputs and recommendations from the specialist reports in respect of the application, where relevant;
- have kept/will keep a register of all interested and affected parties that participate/d in the public participation process; and
- am aware that a false declaration is an offence in terms of regulation 48 of the 2014 NEMA EIA Regulations.

Note: The terms of reference of the review specialist must be attached.

Signature of the specialist: 

Date: 2 January 2026

**NATIONAL LEGISLATION AND REGULATIONS GOVERNING THIS REPORT**

This is a 'specialist report' and is compiled in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014, as amended.

**APPOINTMENT OF SPECIALIST**

Capensis Ecological Consulting (Pty) Ltd (Capensis) was appointed by Zutari to provide botanical services for the proposed rehabilitation of the Steenbras Water Treatment Plant Access Road, City of Cape Town, Western Cape Province.

**CONDITIONS RELATING TO THIS REPORT**

The content of this report is based on the authors best scientific and professional knowledge as well as available information. Capensis Ecological Consulting (Pty) Ltd reserves the right to modify the report in any way deemed fit should new, relevant or previously unavailable or undisclosed information become known to the author from on-going research or further work in this field, or pertaining to this investigation.

This report must not be altered or added to without the prior written consent of the authors. This also refers to electronic copies of the report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

**DETAILS OF THE SPECIALIST**

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**Expertise**

- Qualifications: ND Horticulture, BSc. (Biodiversity & Conservation Biology), Hons. (Botany), MSc (Botany).
- Botanist with 15 years' experience in the field of botanical surveys.
- Has conducted over 350 specialist botanical studies.

# CONTENTS

# 1. INTRODUCTION

An application is underway for the proposed rehabilitation of the Steenbras Water Treatment Plant Access Road, City of Cape Town. The project description provided by Zutari is as follows: The City of Cape Town (CoCT) proposes the rehabilitation/repair of a damaged section "Slope 1" of the Steenbras Water Treatment Plant (WTP) Access Road on Farm Faure 933, where the slope instability occurred as a result of flood damage. To address the slope damage two slope stabilisation methods have been considered for the repair/rehabilitation of Slope 1: (1) the Anchored gabion wall and (2) Terramesh retaining wall. The purpose of assessing these methods is to determine the most environmentally and technically feasible for the proposed repair of Slope 1.

**Preferred Alternative:** Anchored Gabion Wall. This option involves a gabion wall founded 5 m from the road edge (**Figure 1**). To stabilize the wall on the steep slope, 25 mm to 32 mm steel anchors are to be installed, extending 6 m to 9 m into the underlying rock. Minimal disturbance to the existing road is expected and limited backfill will be required behind the wall. The gabion baskets can either be left exposed with a hand-placed stone finish or be grouted to achieve a solid concrete-like appearance. The wall is expected to be approximately 5 m high based on the ground profile at the time of the investigation. This option is considered because of its natural integration with the surrounding environment and that allows for permeability and vegetation growth over time.

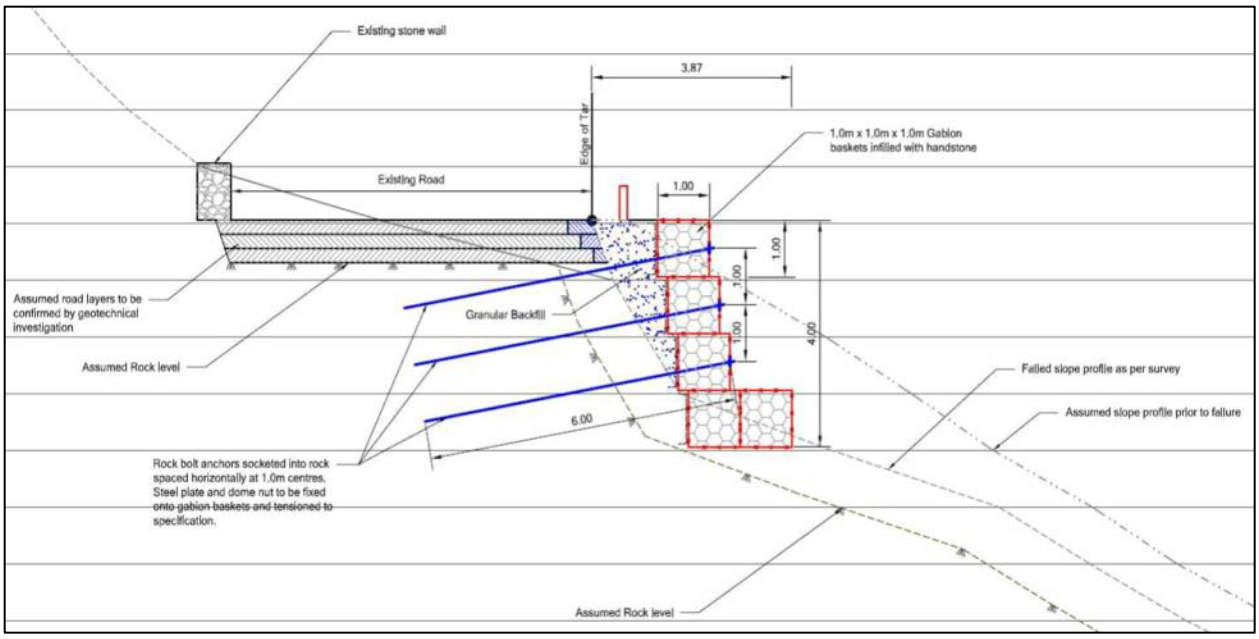


**Figure 1**: Anchored gabion wall concept (Ingerop, 2024)

### Alternative 1: Terramesh Retaining Wall

This option involves using Terramesh baskets to build a retaining structure along the road edge (**Figure 2**). Terramesh baskets typically provide increased stability when compared with traditional gabion baskets due to the welded tail reinforcement. A portion of the existing roadway will need to be demolished to bench the 2 m long reinforcement tail into the slope, requiring lateral support to prevent destabilisation of the road. Excavation will pass through the talus under burden and proper shoring will be necessary. The final height of the Terramesh wall is expected to be between 4 m and 5 m based on the ground profile at the time of the investigation.

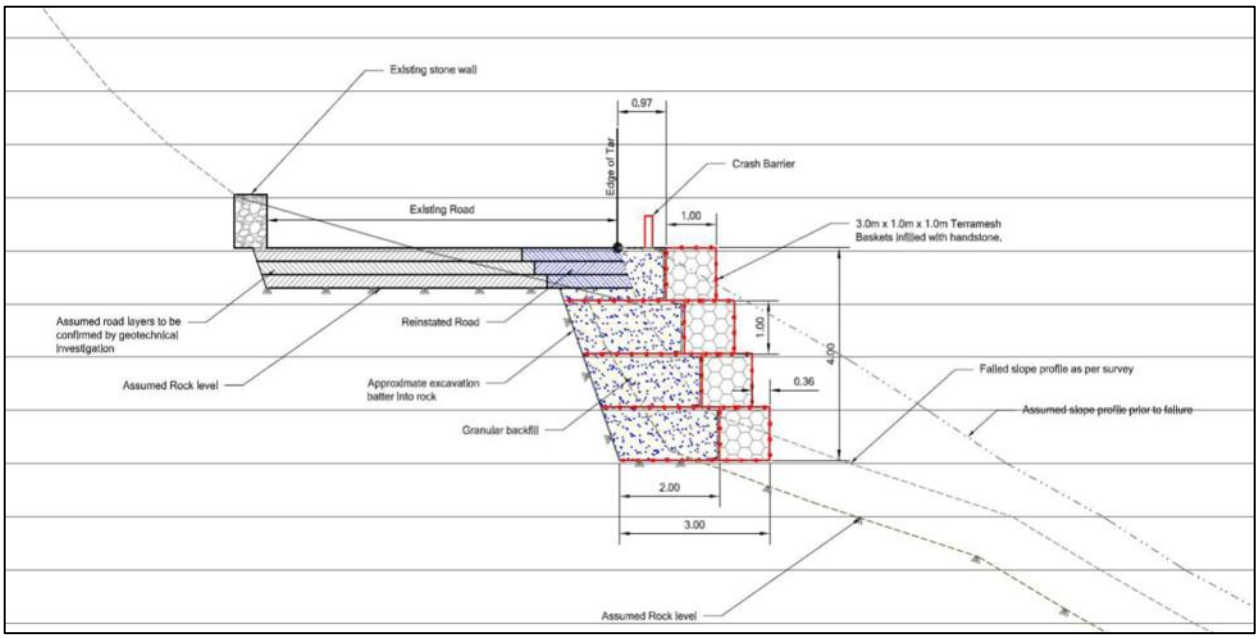


**Figure 2**: Terramesh retaining wall concept (Ingerop, 2024)

Based on the site conditions and constraints, the Anchored gabion wall has been identified as the preferred alternative for the rehabilitation/repair of slope 1. Capensis Ecological Consulting (Pty) Ltd (Capensis) was commissioned by Zutari to carry out the botanical study in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

# 2. TERMS OF REFERENCE

## 2.1. GENERAL

Botanical assessments must follow guidelines set out in the following documents:

- Department of Environmental Affairs and Development Planning (DEA&DP) Guidelines for Involving Biodiversity Specialists in the EIA Process (Brownlie, 2005).
- Ecosystem Guidelines for Environmental Assessment in the Western Cape (Cadman et al., 2016).
- The requirements of CapeNature for providing comments on agricultural, environmental, mine planning and water-use related applications (Turner, 2013).

- Procedures for the assessment and minimum criteria for reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and 44 of the National Environmental Management Act (Government Gazette, 2020).
- Protocol for the Assessment and Reporting of Environmental Impacts on Terrestrial Biodiversity (Government Gazette 43855, 2020). Terrestrial Plants Species Specialist Assessment Report.
- Amendment to the Protocols for the Specialist Assessment Minimum Report Content Requirements for Environmental Impacts and terrestrial Animal and Plant Species in terms of Sections 24(5)a and (h) and 44 of the National Environmental Management Act, 1998. and Reporting of Environmental Impacts on Terrestrial Biodiversity (Government Gazette 49028, 2023).
- Species Environmental Assessment Guideline. Guidelines for the implementation of the Terrestrial Fauna and Terrestrial Flora Species Protocols for environmental impact assessments in South Africa (SANBI, 2022).

## 2.2. SPECIFIC

The specific terms of reference followed for the vegetation and plant species are as follows:

- Conduct a site visit and determine the site's environmental sensitivity, and review the sensitivity identified by the DFFE Screening Tool;
- Identify and describe biodiversity patterns at community and ecosystem level (main vegetation type, plant communities in the vicinity and threatened/vulnerable ecosystems), at species level (threatened Red List species, presence of alien species) and in terms of significant landscape features;
- Assess the local and regional importance of the vegetation communities and plant species.
- Determine the implications that the proposed project has for the 2023 Western Cape Spatial Biodiversity Plan.
- Describe the sensitivity of the site and its environs and map these resources.
- Identify any areas not suitable for construction activities (No-Go Areas) and related buffers that should be observed.

- Describe the direct, indirect and cumulative botanical impacts (both before and after mitigation) and provide an assessment of the significance of the impacts.
- Describe the measures to mitigate any impacts, and an indication of whether or not the measures (if implemented) would change the significance of the impact.

# 3. PROTOCOL FOR DETERMINING LEVEL OF REPORTING

The sensitivity of the site is predetermined by the Department of Forestry, Fisheries and Environment (DFFE) Screening Tool. The study area contains areas rated as Very High terrestrial biodiversity sensitivity (**Figure 3**). A Very High, High or Medium level of sensitivity, if confirmed during the study, requires a Terrestrial Biodiversity Impact Assessment to be submitted as part of the application for Environmental Authorisation (EA). The plant species theme sensitivity is rated as Medium (**Figure 4**). A High and Medium level of sensitivity, if confirmed, requires a Plant Species Specialist Assessment Report. High sensitivity is confirmed for both terrestrial biodiversity and plant species, requiring both botanical assessment and plant species specialist assessment reports.

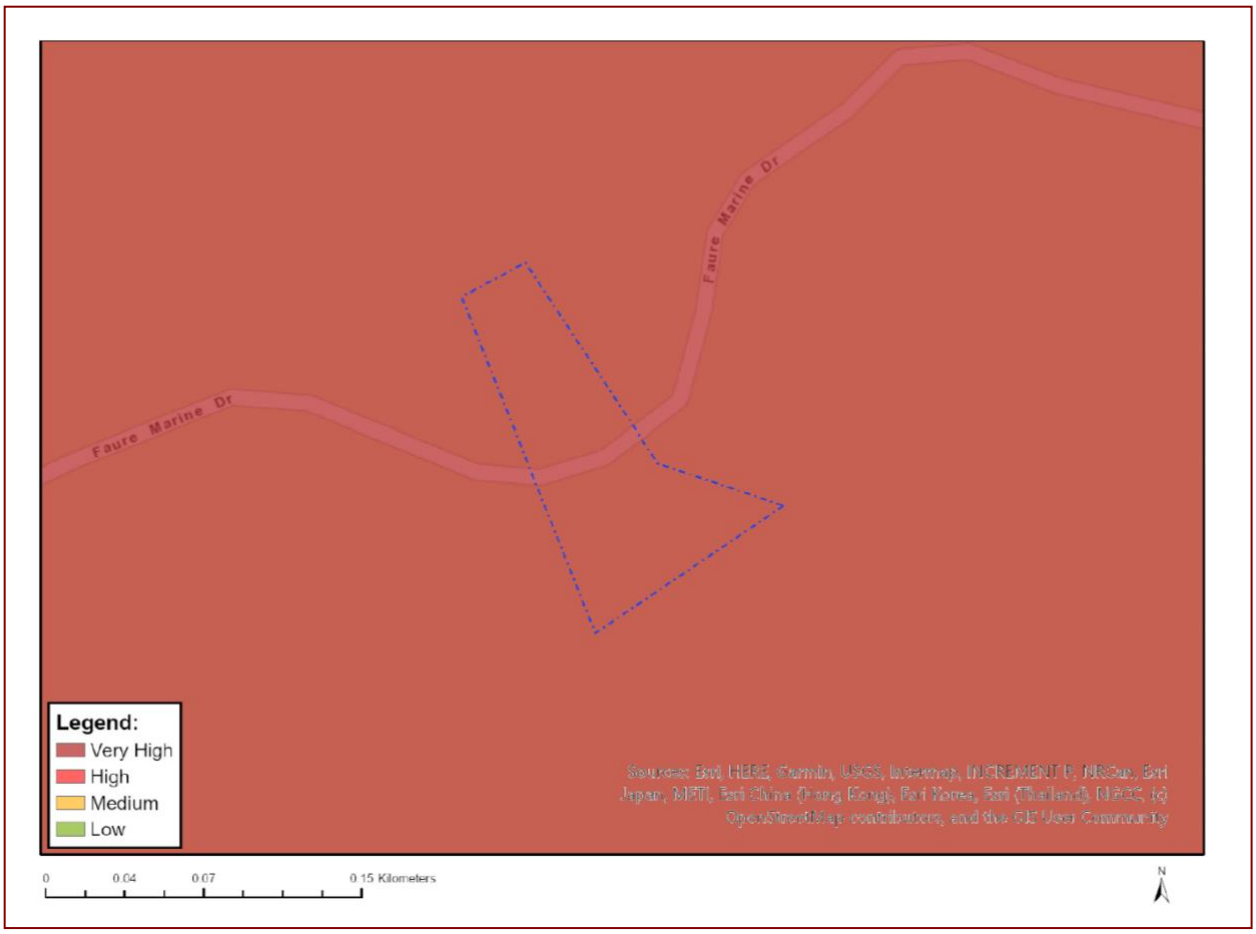


**Figure 3**. Map of relative terrestrial biodiversity theme sensitivity generated from the DFFE Screening Tool.

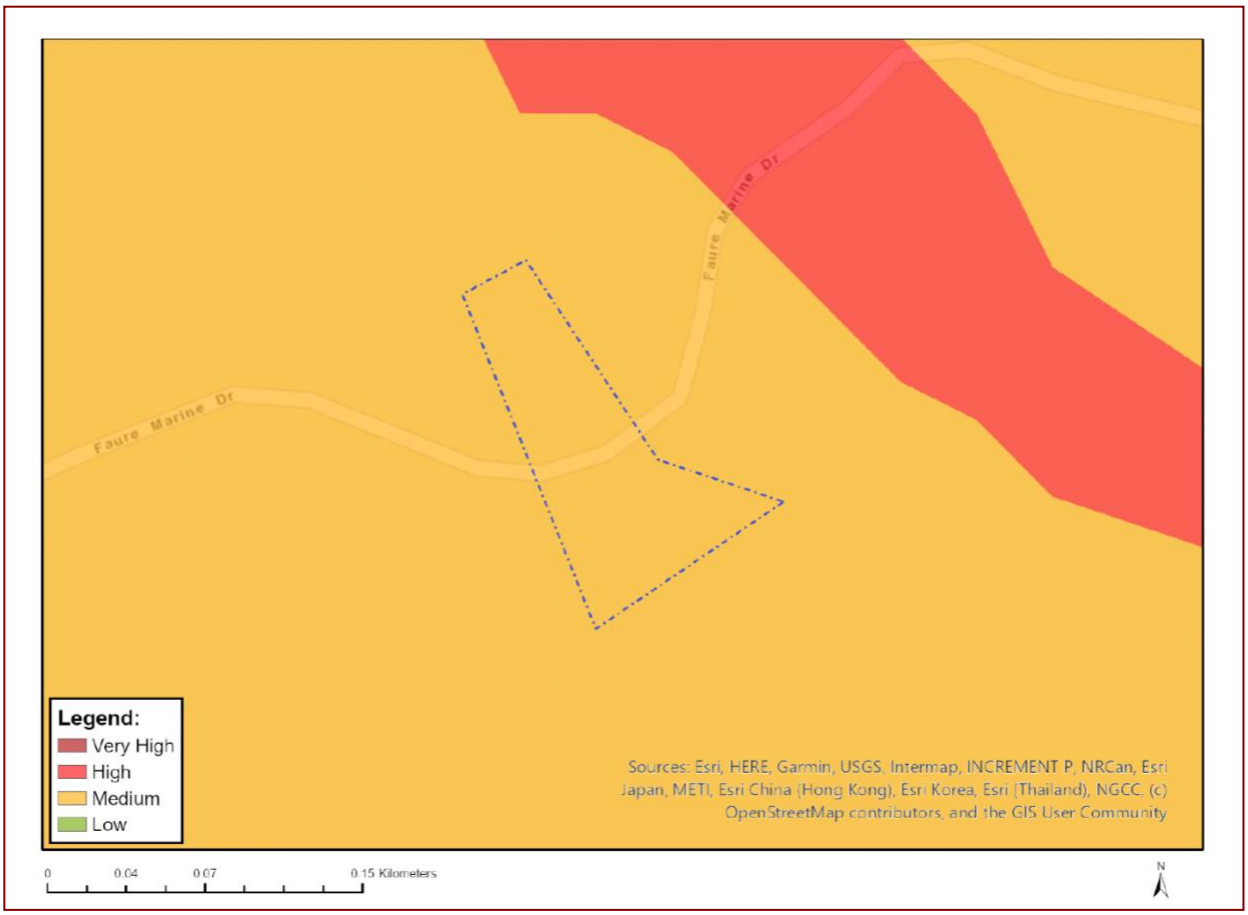


**Figure 4**. Map of relative plant species sensitivity theme sensitivity generated from the DFFE Screening Tool.

# 4. STUDY AREA

## 4.1. LOCALITY

Steenbras Road is located between Steenbras Dam and Clarence Drive (Faure Marine Drive), just south of Gordon's Bay (**Figures 5** and **6**). The road winds up a steep mountainside from Clarence Drive to the Steenbras Water Treatment Works (WTW) (**Figure 7**). The study focus area, indicated in the zoomed-in inset in Figure 5, lies on both sides of Steenbras Road. Most of the proposed construction works would be concentrated on the north side of the road, as indicated in **Figures 1** and **2**.


**Figure 5.** Aerial image showing location of the study area (red outline) in relation to towns, features and roads (Cape Farm Mapper: Western Cape Department of Agriculture, gis.elsenberg.com).


**Figure 6.** Aerial image showing location of the study area (red outline) showing the Steenbras Road (Cape Farm Mapper: Western Cape Department of Agriculture, gis.elsenberg.com).

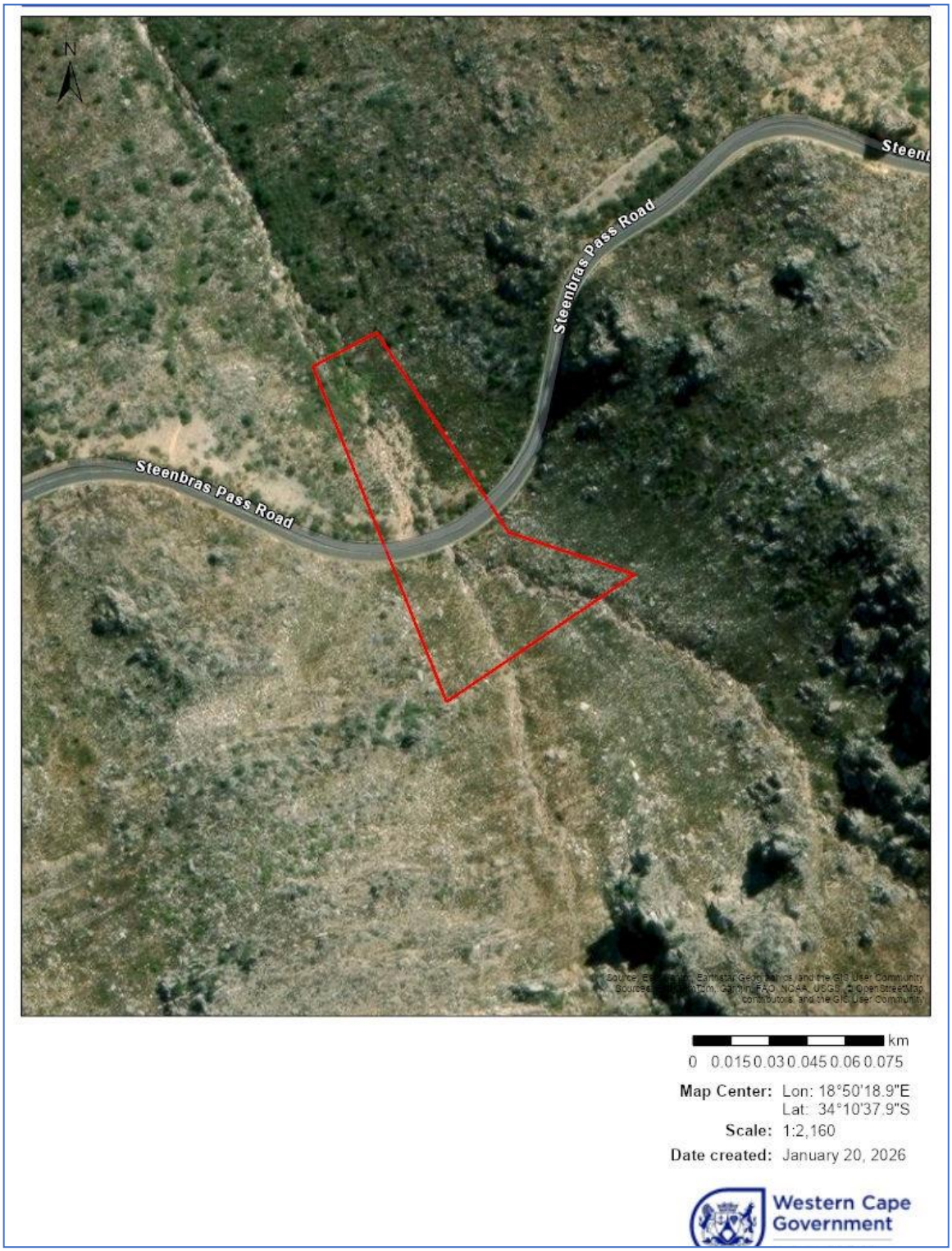


**Figure 7.** Zoomed-in Aerial image showing location of the study focus area (red outline) (Cape Farm Mapper: Western Cape Department of Agriculture, gis.elsenberg.com

## 4.2. LANDSCAPE AND GEOLOGY

The study area is located on a steep, predominantly northwest-facing mountain slope, as shown in **Figure 8**. This erosion-prone slope contains a drainage line, which contributes to the high susceptibility to erosion along this section of Steenbras Road. The soils and substrate consist of acid sands and rock derived from Table Mountain Sandstone (Table Mountain Group) (Mucina & Rutherford 2006).

Soils are characterized by "*acidic lithosol soils derived from Ordovician sandstones of the Table Mountain Group (Cape Supergroup). Deep sandy blankets (whitish, nutrient-poor acidic sand) develop in depressions and on resisting erosion. Land types mainly lc, lb and Gb*" (Rebelo *et al*. in Mucina and Rutherford, 2006).

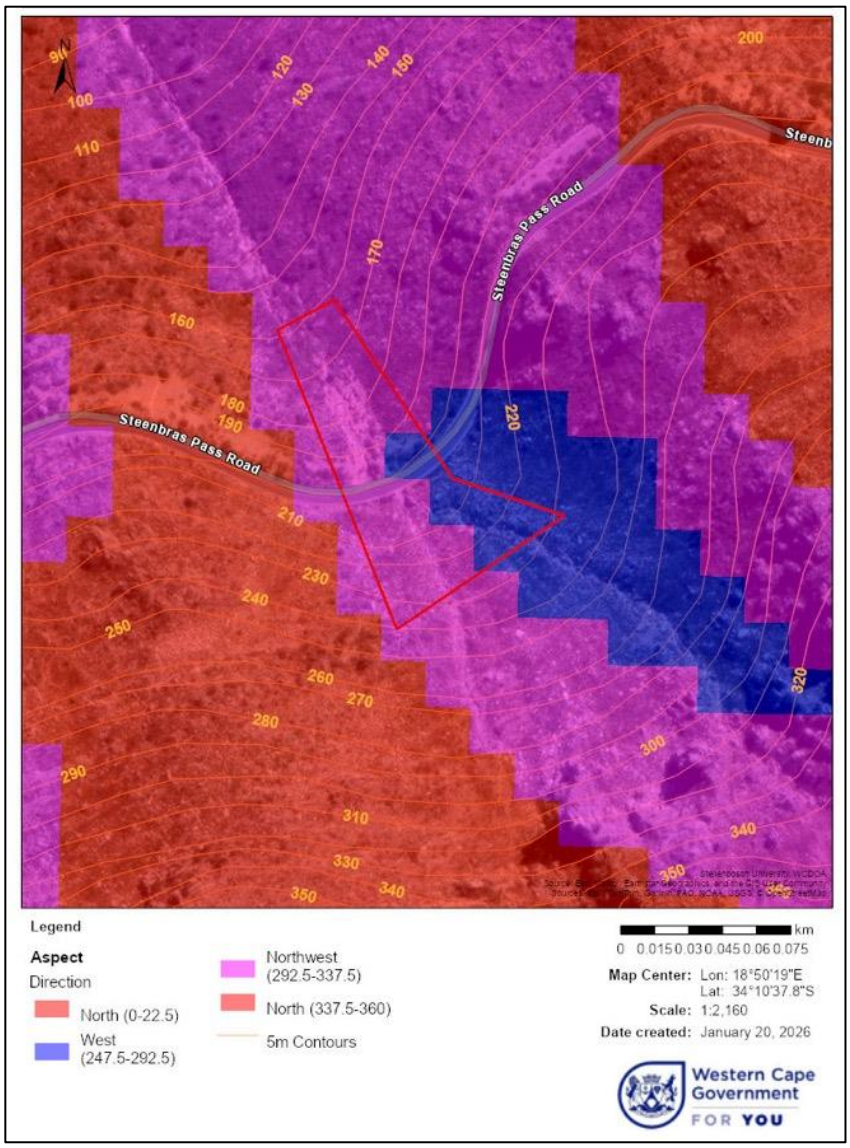


**Figure 8**. Aerial image of the study area (red outline) with 5 m contour overlay (CapeFarm Mapper: Western Cape Department of Agriculture, gis.elsenberg.com).

# 5. METHODOLOGY, LIMITATIONS AND ASSUMPTIONS

*Site visit:* The study area was visited on 25 July 2025. The site was surveyed on foot using a meandering transect method. Sample waypoints and survey tracks were recorded using a Garmin GPSmap 62s and are shown on an aerial image in Section 6.3. Photographs were taken with a Sony Cyber-shot DSC-HX90V camera and geo-referenced using the built-in GPS.

Sources of information The following sources were used to inform this study:

*Vegetation map:* The Vegetation Map of South Africa, Lesotho and Swaziland (Mucina & Rutherford 2006), as updated by SANBI (2024).

*Vegetation description:* Vegetation condition was described according to the categories and definitions provided in **Table 1**.

*Habitat map:* Habitats were mapped in the field using a Samsung Galaxy S22 Ultra with Google Earth and waypoints. These were subsequently refined in QGIS 3.34 and Google Earth Pro.

Ecosystem threat status: Informed by (1) the Revised National List of Threatened Ecosystems (Government Gazette No. 47526, 2022) and (2) the original 2011 list (Government Gazette No. 34809, 2011).

*Biodiversity planning:* Western Cape Biodiversity Spatial Plan (WCBSP) 2023 (CapeNature 2024). Ground-truthing was undertaken to verify habitat condition and the accuracy of the WCBSP.

Species of conservation concern: Conservation status was verified using the Red List of South African Plants (Raimondo et al. 2009; continuously updated at http://redlist.sanbi.org). A sensitive-species list was generated using the National Web-Based Environmental Screening Tool (screening.environment.gov.za). Certain species locations may not be disclosed in terms of the requirements of the Screening Tool. Relevant observations from iNaturalist (www.inaturalist.org) in and around the study area were also considered.

*Sensitivity rating:* Sensitivity is defined here as a combination of conservation value and degree of resilience/vulnerability to disturbance. The Terrestrial Biodiversity Theme sensitivity derived from the National Web-Based Environmental Screening Tool was also consulted.

*Species sensitivity rating:* Follows the Species Environmental Assessment Guideline (SANBI 2020, amended 2022). Recent confirmed records of Critically Endangered (CR), Endangered (EN), or Vulnerable (VU) plant species trigger a High sensitivity rating. In the absence of specific guidance for Near Threatened (NT) species, a conservative Medium rating was applied.

*Previous studies*: Relevant local-scale botanical studies were consulted where available.

*Site boundary:* Supplied by the Environmental Assessment Practitioner (EAP).

*Additional resources:* Aspect, topography and other spatial layers were obtained from the CapeFarmMapper website.

*Limitations and seasonality:* The site visit was conducted in mid-winter, which is considered acceptable for botanical surveys in the region. The optimal survey period for geophytes is August to October. Whiles the timing of the study is limited in detected geophytes in the optimal season, the overall sensitivity could be derived based on the vegetation and detectible species present at the time of the survey.

Additional limitations include:

A single site visit limits the detection of all species, particularly those with different flowering phenologies or that are dependent on post-fire age.

Repeat visits (including multiple visits during spring and at other times of the year) would increase the likelihood of recording additional species.

Some species may be overlooked because subpopulations are small and highly localised.

Site surveys are generally rapid (a few hours only).

Many of these limitations can be mitigated by assigning sensitivity based on habitat integrity and ecosystem threat status. For example, remnant patches of Endangered or Critically Endangered vegetation are typically designated as No-Go areas regardless of whether all SCC were recorded. However, threatened species can occasionally persist in heavily modified habitats, in which case the nature and timing of past disturbance (e.g., frequency of soil ripping and time since last major disturbance) become critical considerations.

**Table 1.** Habitat category descriptions and criteria

| Habitat category | Description |
|---|---|
| Intact vegetation | A true representation of the original vegetation type in terms of structure and species makeup. Minimal soil disturbance. Unlikely to have ever been ploughed. Disturbance may be evident. |
| Semi-intact | Resembles the original vegetation type in terms of structure and species makeup but has lower species diversity than intact vegetation. Dominated by disturbance-resilient species. Soils may have been heavily disturbed in the past. Restoration potential is high. |
| Degraded | Only a few species representative of the original vegetation type are present. The vegetation has undergone heavy disturbance. Restoration potential is either low or moderate. |
| Highly degraded | The original vegetation is usually absent and has been removed in the past. Only a few remnant or pioneer species are present. Soils usually ploughed in the past. Restoration potential is very low. |
| Transformed | No remnant species exist anymore. The landscape is altered irreversibly with no restoration potential. Examples include cultivated farmland and the built environment. |

# 6. VEGETATION DESCRIPTION

## 6.1. NATIONAL VEGETATION TYPE

The national vegetation map (Mucina & Rutherford 2006), as updated by SANBI (2024), assigns a single vegetation type to the study area, namely Kogelberg Sandstone Fynbos (KSF)(**Figure 9**). The landscape and vegetation features of the Kogelberg Sandstone Fynbos appear below as described by Mucina et al. (2006): *"High mountains with steep to gentle slopes, and undulating plains and hills of varied aspect. General appearance of vegetation low, closed shrubland with scattered emergent tall shrubs. Proteoid, ericaceous and restioid fynbos dominate, while asteraceous fynbos is rare. Patches of Cape thicket are common in the northern areas; in the south similar habitats are occupied by scrub fynbos. Numerous seeps and seasonally saturated mountain-plateau wetlands (locally called 'suurvlakte') are very common and support restioid and ericaceous (dominated by Bruniaceae) fynbos".*

**Ecological drivers**

The key ecological drivers in midland fynbos include (1) the natural fire regimes and the interplay of fire and grazing, (2) edaphic conditions and underlying lithology, and (3) drainage and soil gradients (Cadman et al. 2016).

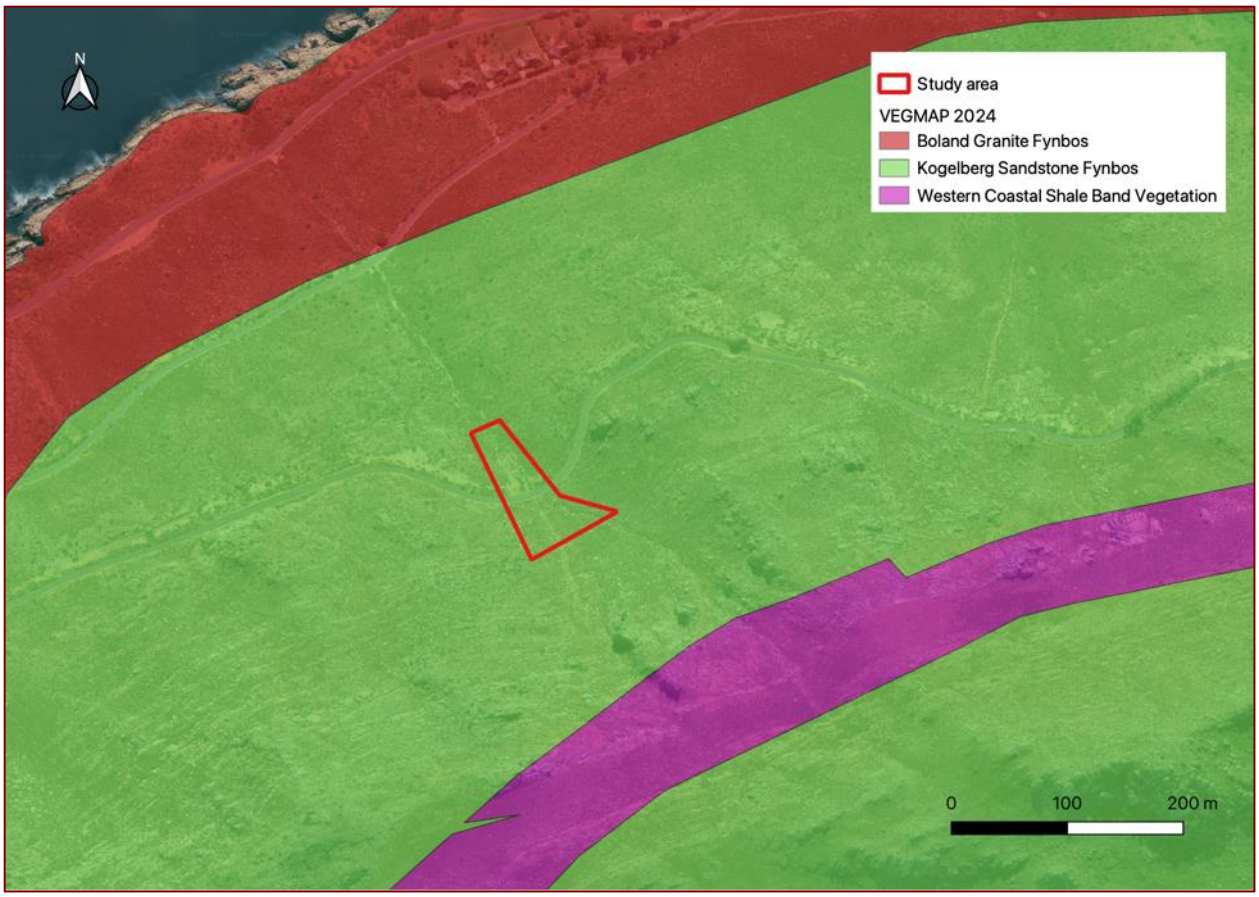


**Figure 9**. NATIONAL VEGETATION MAP: The study area superimposed on a portion of The Vegetation Map of South Africa, Lesotho and Swaziland (SANBI, 2024), overlaid on a Google Earth image.

## 6.2. ECOSYSTEM THREAT STATUS

Ecosystem threat status is derived from The Revised National List of Ecosystems that are Threatened and Need of Protection (RNLETNP)(Government Gazette, 2022). Species information is not provided in the RNLETNP and is thus taken from The National List of Ecosystems that are Threatened and in Need of Protection (Government Gazette, 2011). **Table 2** provides a summary of (a) the original (national) extent of each vegetation type, and (b) the proportion of ecosystem target protected.

**Table 2.** Ecosystem threat status according derived from available information sources

| **Ecosystem threat status** | **The Revised National List of Threatened Terrestrial Ecosystems** |
|---|---|
| Kogelberg Sandstone Fynbos | Critically Endangered |
| Reason | B (Rate of loss of natural habitat) |
| Original area | 91 423 ha |
| Remaining % of ecosystem | 84% |
| Protected area | 74.7% |
| Species of special concern | 99 Threatened species and 176 endemic species. |

*(Government Gazette, 2011).

## 6.3. CONSERVATION PLANS

The Cape Town Biodiversity Spatial Plan (CTBSP)(2025) is aligned with the 2024 Terrestrial Biodiversity Network (BIONET). **Table 3** shows how the BIONET categories align with the 2024 Western Cape Biodiversity Spatial Plan categories. The Western Cape Biodiversity Spatial Plan (WCBSP)(CapeNature, 2024) is linked to the Western Cape Biodiversity Act 6 of 2021 (WCBA), which "identifies a province-wide network of biodiversity priority areas defined as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs)" designed to meet conservation objectives. The WCBSP includes a map composed of multiple layers that "provides the relevant spatial data crucial to advise planning decisions that will result in both sustainable development and the conservation of important biodiversity and ecological infrastructure." The management objectives for each map category is provided in **Table 4**. In the case of the study area 100% of the site is assigned as CBA1: terrestrial (**Figure 10**).

**Table 3.** The 2025 Cape Town Biodiversity Spatial Plan categories and alignment with the 2024 Terrestrial Biodiversity Network 2024 categories.

| BioNet 2024 | CBA Descriptors | MSDF (Map 5B) | PSDF | WCBSP 2023 | National BPA Map | Land Management Objective |
|---|---|---|---|---|---|---|
| PA | Protected Area | Core 1: Protected & Conserved | Core 1 | PA | PA | To be maintained as Protected Areas. |
| CA | Conservation Area | | | | | To be managed and maintained as Conservation Areas or upgraded to Protected Areas where appropriate. |
| CBA 1 | Critical Biodiversity Area 1 (irreplaceable) | Core 1: CBA | | CBA 1 | CBA | To be managed for biodiversity conservation purposes, restored where required and incorporated into the Protected Area network. |
| CBA 2 | Critical Biodiversity Area 2 (optimal) | | | CBA 2 | | To be restored and managed for biodiversity conservation purposes and incorporated into the Protected Area network. |
| ESA 1 | Ecological Support Area 1 | Core 2: ESA | Core 2 | ESA 1 | ESA | To be managed for biodiversity conservation purposes, restored where required. |
| ESA 2 | Ecological Support Area 2 | Buffer 2 | Buffer 2 | ESA 2 | | Current land-use should be maintained, or else restored to a more natural state. |
| ONA | Other Natural Area | Buffer 1 | Buffer 1 | ONA | ONA | As per the CCT District EMF. |
| NNR | No natural habitat remaining | | | NNR | | As per the CCT District EMF. |

**Table 4.** Summary of 2023 WCBSP map categories and their meanings

| Map Category | Definition | Desired Management Objective | Sub-Category |
|---|---|---|---|
| **Protected Area** | Areas proclaimed as protected areas in terms of national or provincial legislation. | Must be kept in a natural state, with a management plan focused on maintaining or improving the state of biodiversity. A biodiversity benchmark. | |
| **Critical Biodiversity Area 1** | Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure. | Maintain in a natural or near- natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity- sensitive land-uses are appropriate. | **River**<br>**Estuary**<br>**Wetland**<br>**Forest**<br>**Terrestrial** |
| **Critical Biodiversity Area 2** | Areas in a degraded or secondary condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure. | Maintain in a functional, natural, or near-natural state, with no further loss of natural habitat. These areas should be rehabilitated. | **Degraded** |
| **Ecological Support Area 1** | Areas that are not essential for meeting biodiversity targets but play an important role in supporting the functioning of PAs or CBAs and are often vital for delivering ecosystem services. | Maintain in a functional, near- natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised. Maintaining and improving protection of areas identified as ESA Water Source and Water Recharge important to secure water resources, particularly in Strategic Water Source Areas (SWSAs). | **Foredune**<br>**Forest**<br>**Climate Adaptation Corridor**<br>**Coastal Resource Protection**<br>**Endangered Ecosystem**<br>**River**<br>**Estuary**<br>**Wetland**<br>**Watercourse Protection**<br>**Water Source Protection**<br>**Water Recharge Protection** |
| **Ecological Support Area 2** | Areas not essential for meeting biodiversity targets but have an important role in supporting the functioning of PAs or CBAs. Often vital for delivering ecosystem services. | Restore and/or manage to minimise impact on ecological infrastructure functioning; especially soil and water-related service. | **Restore from Non-Natural** |
| **Ecological Support Area: Species Specific Overlay** | Terrestrial No Natural Remaining areas that provide a critical support function to a threatened or protected species e.g. cultivated land associated with nesting/roosting sites. | Maintain current land-use or rehabilitate to functional natural area. | **Species Specific** |
| **Other Natural Areas: Natural to Near-Natural** | Areas that have not been identified as a priority in the systematic biodiversity plan but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. They are still an important part of the natural ecosystem. | Minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning. Offers flexibility in permissible land-uses, but authorisation required for high-impact land-uses. | **Natural to Near-Natural**<br>**Degraded** |
| **No Natural Remaining** | Areas that have been modified by human activity to the extent that they are no longer natural nor contribute to biodiversity targets. These areas may still provide limited biodiversity and ecological infrastructure functions, even if not currently prioritised for conservation action. | Manage in a biodiversity- sensitive manner, aiming to maximise ecological functionality. Offers the most flexibility regarding potential land-uses, but authorization/s may still be required for high-impact land-uses. | **No Natural Remaining** |


**Figure 10. CONSERVATION PLANNING MAP:** The study area in relation the Cape Town Biodiversity Spatial Plan (Terrestrial Biodiversity Network 2024 shapefile version) overlaid

## 6.4. THE VEGETATION OF THE STUDY AREA

**Habitat overview**

The vegetation description includes a description of the vegetation condition, dominant species, and species observed during the site visit. The site is divided into two areas: (1) the area upslope and (2) the area downslope of Steenbras Road. Habitat and survey maps are included (**Figures 11** and **12**). These maps show the main habitat categories, locations of Species of Conservation Concern, and sample waypoints referred to in the text below.

**Area upslope of Steenbras Road**

The vegetation on the upslope side of Steenbras Road consists of intact dryland vegetation (Kogelberg Sandstone Fynbos – KSF) and two drainage lines, with some wetland-associated species along a stream on the western drainage line. The wet area and associated wetland species occupy a very narrow habitat, approximately 2–3 m wide at its maximum. A second drainage line, which supports dryland vegetation and is likely only wet during sustained heavy downpours, confluences with the stream drainage line at the road culvert (**Figure 13**).

The vegetation is typical of the KSF communities that occur along Clarence Drive, with an abundance of graminoids (mostly restioids), ericoid shrubs, and larger, waist- to head-high scattered sclerophyllous shrubs and proteoids. Restioids are the most abundant plant group. Dominant species include *Erica serrata*, *Cliffortia carinata*, *Mastersiella digitata*, *Thamnochortus* sp., and *Willdenowia* sp. Species of Conservation Concern include the two proteoids *Leucospermum bolusii* (Vulnerable) and *Serruria elongata* (Near Threatened), and the small shrub *Wimmerella arabidea* (Near Threatened). Species associated with small pools in the stream include *Plecostachys polifolia*, *Erica distorta*, and *Drosera trinervia* (**Figure 14**). Some noteworthy dryland species include *Heeria argentea*, *Protea laurifolia*, and *Saltera sarcocolla*. A full species list is provided in **Table 5**.

A small eroded area with very loose substrate was observed close to the road at waypoint 10 (34°10'38.46"S; 18°50'18.26"E) (**Figure 15**).

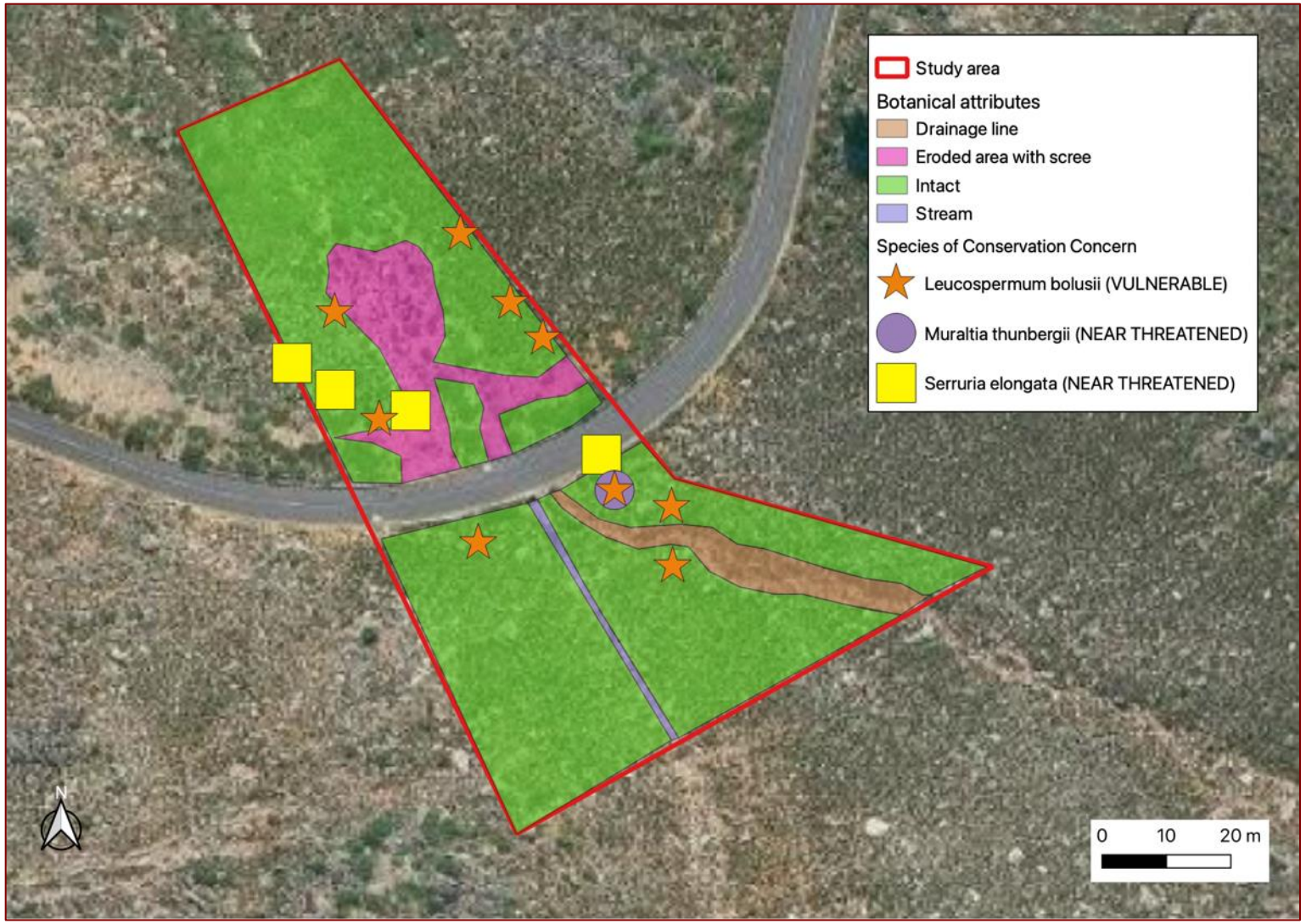


**Figure 11. BROAD HABITAT OVERVIEW MAP:** The study area with habitat types overlaid on a Google Earth aerial image.

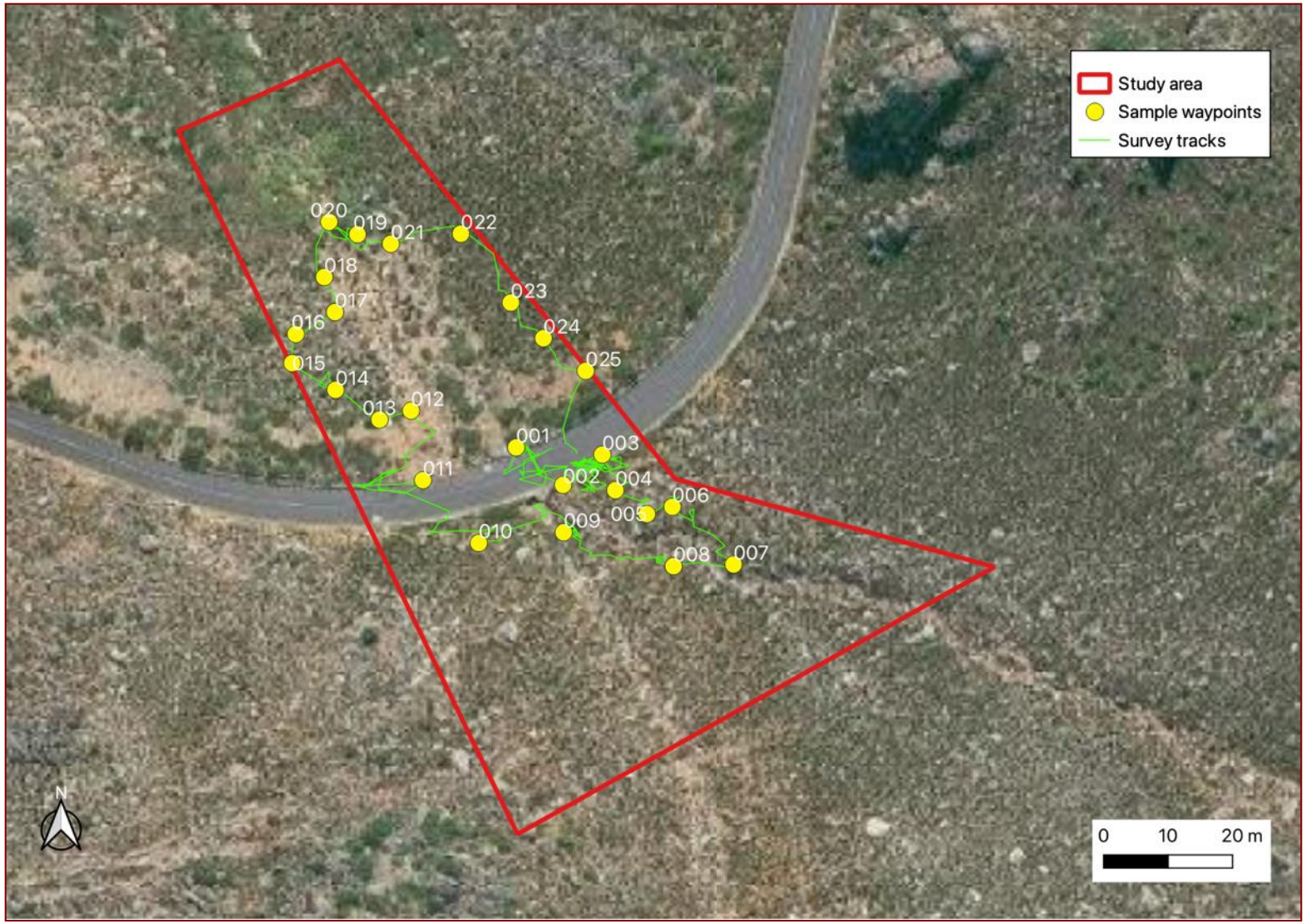


**Figure 12. SURVEY MAP:** The study area with the survey waypoints and tracks overlaid on a Google Earth satellite image.

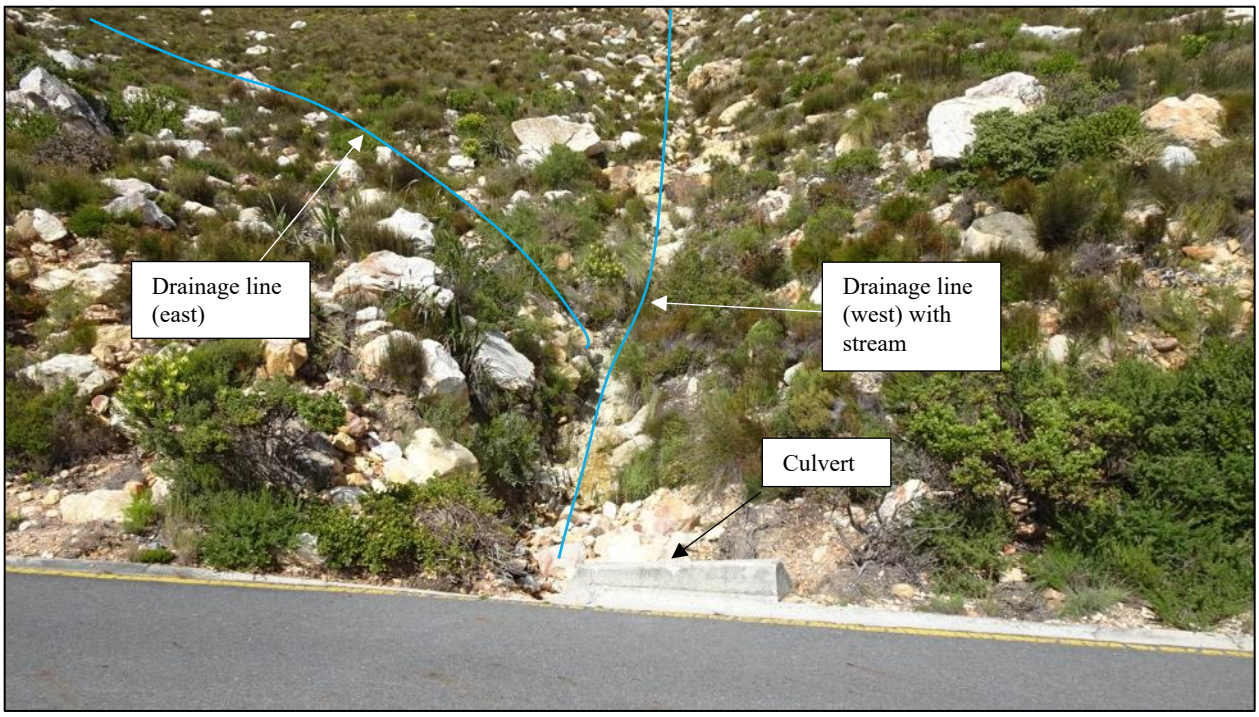


**Figure 13**. The vegetation upslope of the road showing intact vegetation and the two drainage lines.

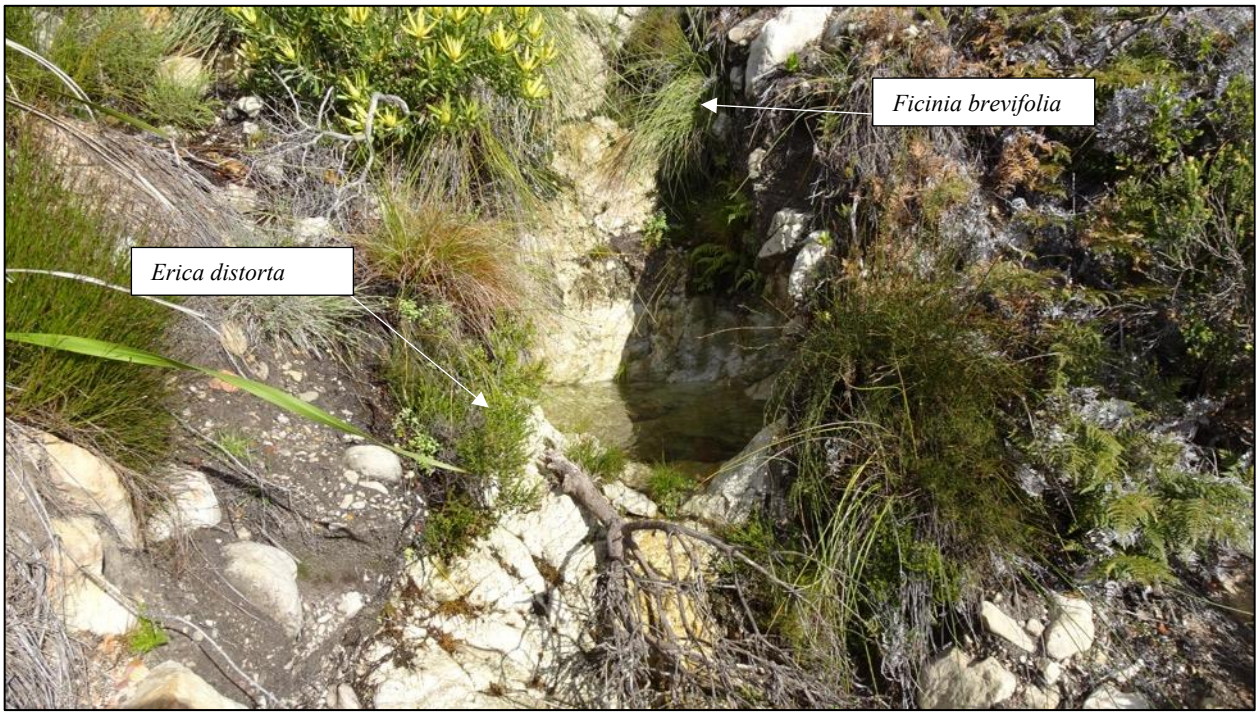


**Figure 14**. Small pool located along the stream with wet-associated species on the edge.

**Figure 15**. Some erosion with very loose substrate just upslope from the road at waypoint 010 (34°10'38.46"S; 18°50'18.26"E).

***Area downslope of Steenbras Road***

The downslope side of the road is heavily eroded from the road edge (upper limit) to approximately 60 m downslope (**Figures 16–22**). Concrete road guard rails and sandbags have been used to support the compromised road edge and areas immediately downslope.

The eroded area contains loose scree and very sparse vegetation cover. Vegetation cover occurs on either side of the erosion zone. This consists of the same vegetation type (Kogelberg Sandstone Fynbos – KSF) as the upslope part of the site, but with a higher incidence of large shrubs and small trees and a generally higher level of disturbance due to the progression of scree down the slope.

As with the upslope area, there are subpopulations of *Leucospermum bolusii* (Vulnerable) and *Serruria elongata* (Near Threatened) (refer to **Figure 11**). Some very old individuals of *Heeria argentea* occur on the lower part of the site, both within and outside the eroded area (**Figure 22**). Several of these individuals are likely to be ancient, possibly several hundred years old.

Another notable feature at the lowest end of the site is the presence of palmiet (*Prionium serratum*) in the drainage line. This indicates daylighting (emergence) of the stream and suggests perennial flow.

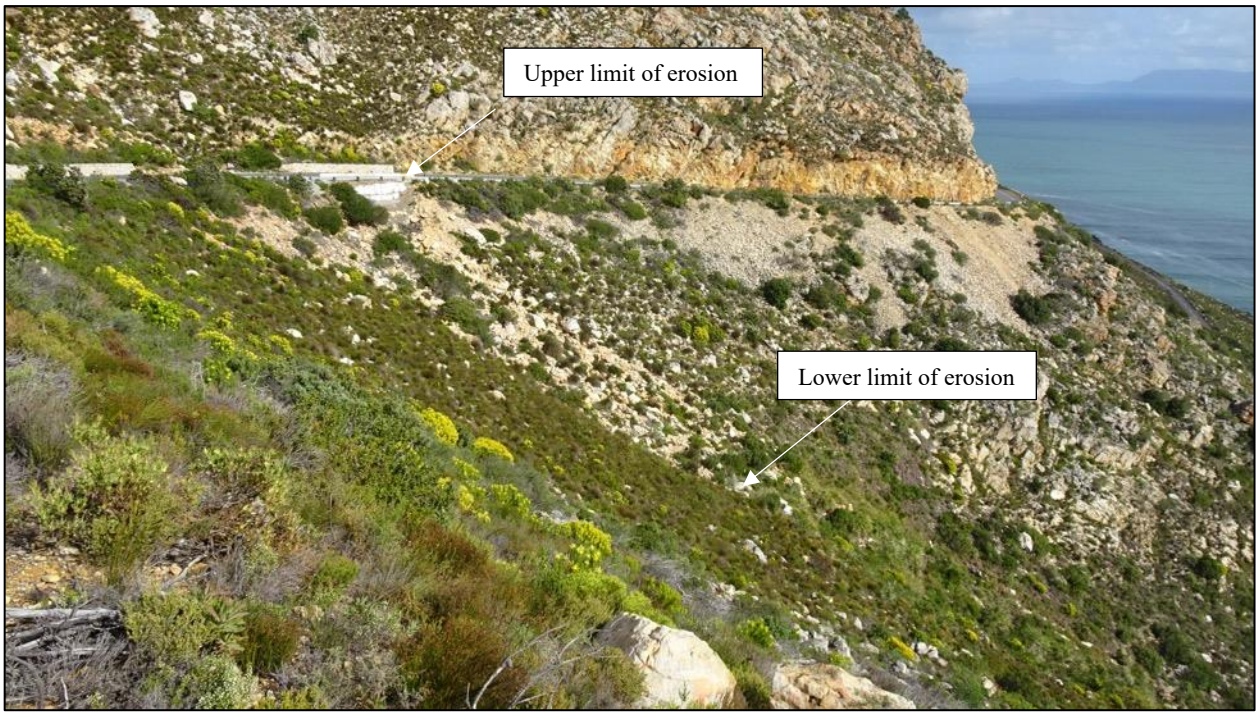


**Figure 16.** The extent of the eroded slope below the road.

**Figure 17.** The upper limit of the erosion zone along the road edge.

**Figure 18**. Looking downslope from the road edge.

**Figure 19.** Sand bags used to temporary repair the built the eroded road edge.

**Figure 20.** Intact vegetation on the left of the image and eroded sparse vegetation on the edge of the eroded areas with some bush clumps.

**Figure 21**. High number of the VULNERABLE *Leucospermum bolusii* at waypoint 014 (34°10'37.53"S; 18°50'17.39"E).

**Figure 22**. Several *Heeria argentea* trees on the lower end of the site at waypoint 018 (34°10'36.84"S; 18°50'17.32"E).

Table 5. List of species observed in broad habitat categories.

| Scientific_name | Dryland | Stream |
|---|---|---|
| Anthospermum aethiopicum | x | |
| Arctotis sp. | x | |
| Bobartia gladiata | x | |
| Campylostachys cernua | x | |
| Centella sp. | x | |
| Cliffortia carinata | x | |
| Clutia alaternoides | x | |
| Cullumia setosa | x | |
| Cyperaceae | | x |
| Dodonaea viscosa | x | |
| Drosera trinervia | | x |
| Elegia sp. 1 | x | |
| Elegia sp. 2 | x | |
| Elegia sp. 3 | x | |
| Elegia stipularis | x | |
| Erica distorta | | x |

| | | |
|---|---|---|
| Erica imbricata | x | |
| Erica labialis | x | |
| Erica pulchella | x | |
| Erica serrata | x | |
| Ficinia brevifolia | | x |
| Ficinia bulbosa | x | |
| Heeria argentea | x | |
| Hypodiscus sp. | x | |
| Hypodiscus argenteus | | x |
| Lachenalia sp. | x | |
| Leucadendron laureolum | x | |
| Leucospermum bolusii | x | |
| Lobelia pinifolia | x | |
| Mastersiella digitata | x | |
| Muraltia thunbergii | x | |
| Olea capensis | x | |
| Oxalis luteola | x | |
| Phylica sp. | x | |
| Pinus canariensis | x | |
| Plecostachys polifolia | | x |
| Prionium serratum | | x |
| Protea laurifolia | x | |
| Pseudopentameris macrantha | x | |
| Restio sp. | x | |
| Saltera sarcocolla | x | |
| Satyrium cf. odoratum | x | |
| Searsia laevigata | x | |
| Searsia lucida | x | |
| Serruria elongata | x | |
| Struthiola ciliata | x | |
| Tetraria sp. | x | |
| Tetraria sp. | x | |
| Thamnochortus sp. | x | |
| Willdenowia sp. | x | |
| Wimmerella arabidea | x | |
| Osteospermum moniliferum | x | |
| Cliffortia ruscifolia | x | |
| Hyparhenia hirta | x | |

| | | |
|---|---|---|
| Phaenocoma prolifera | x | |
| Passerina corymbosa | x | |
| Muraltia heisteria | x | |
| Lanaria lanata | x | |
| Restio capensis | x | |
| Pelargonium cucullatum | x | |
| Capeochloa cincta | | x |
| Penaea mucronata | x | |
| Plecostachys serpyllifolia | | x |
| Maytenus oleoides | x | |
| Osyris compressa | x | |
| Phylica buxifolia | x | |

# 7. SENSITIVITY

**High sensitivity rationale**

The entire site is regarded as being of high sensitivity. This classification applies to both the intact vegetation and the eroded areas for the following reasons:

1. Both the intact and eroded areas form part of a natural ecological system, specifically a Critically Endangered ecosystem type. Drainage lines and naturally eroded scree slopes are integral components of this system. Scree areas provide habitat for fire-protected trees and faunal species and act as ecological linkages between patches of intact vegetation.
2. The entire site is classified as a CBA 1 (Critical Biodiversity Area 1) Terrestrial site in terms of the Western Cape Biodiversity Spatial Plan (2023). In addition, the study area falls within the Kogelberg Biosphere Reserve, an internationally recognised conservation area that supports exceptional levels of biodiversity and is designated as a UNESCO Biosphere Reserve.
3. The site supports populations of Species of Conservation Concern (SCC).

# 8. IMPACT ASSESSEMNT

The impact assessment evaluates the nature and magnitude of impacts likely to result from the proposed development on the receiving environment, specifically the vegetation, ecological processes, habitats, and species of conservation concern. Impacts are assessed for: (a) the **No-Go** alternative; and (b) the direct, indirect, and cumulative impacts of the proposed project. Impacts are considered separately for the **construction** and **operational** phases, and are rated in relation to the site's ecological sensitivity and the anticipated loss or degradation of indigenous vegetation.

The proposed construction design layouts, which include two alternatives. These are both assessed here.

## 8.1. 'NO GO' OR NO DEVELOPMENT SCENARIO

The No-Go alternative (no project / no rehabilitation) assesses the likely future condition of the receiving environment without any construction or operational activities associated with the proposed road rehabilitation. This scenario assumes continuation of the current ecological trends and processes.

Under the No-Go alternative, the impact on botanical resources is rated **High (negative)**. Without slope stabilisation, the road prism and adjacent mountain slope are expected to experience progressive and potentially accelerating erosion. This would result in ongoing loss of vegetation through landslides and the continued downslope movement and deposition of scree material.

## 8.2. DIRECT IMPACTS

Direct impacts are those that would occur as a direct result of the construction of the proposed development. The impacts are assessed for the construction and operational phases of the project according to the following interrelated components. These are assessed separately below (Table 6):

- Loss of vegetation type – including intact vegetation and ecological processes.
- Loss of species – including loss of species of conservation concern (SCC).

***Note that the clients Preferred Alternative and Alternative 1 are assessed as having the same footprint and associated impacts.***

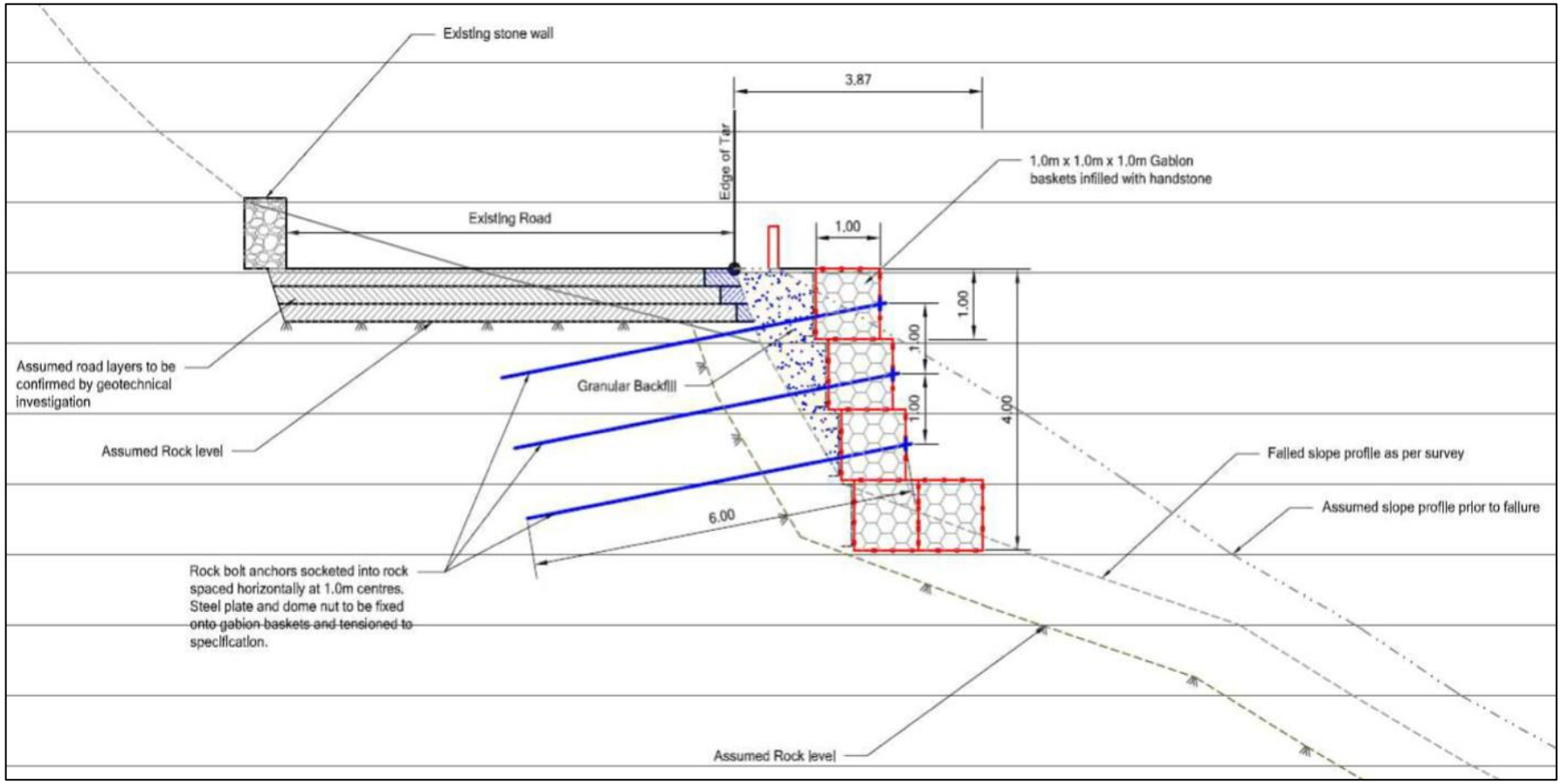


**Figure 22**: PREFERRED ALTERANTIVE: Anchored gabion wall concept (Ingerop, 2024).

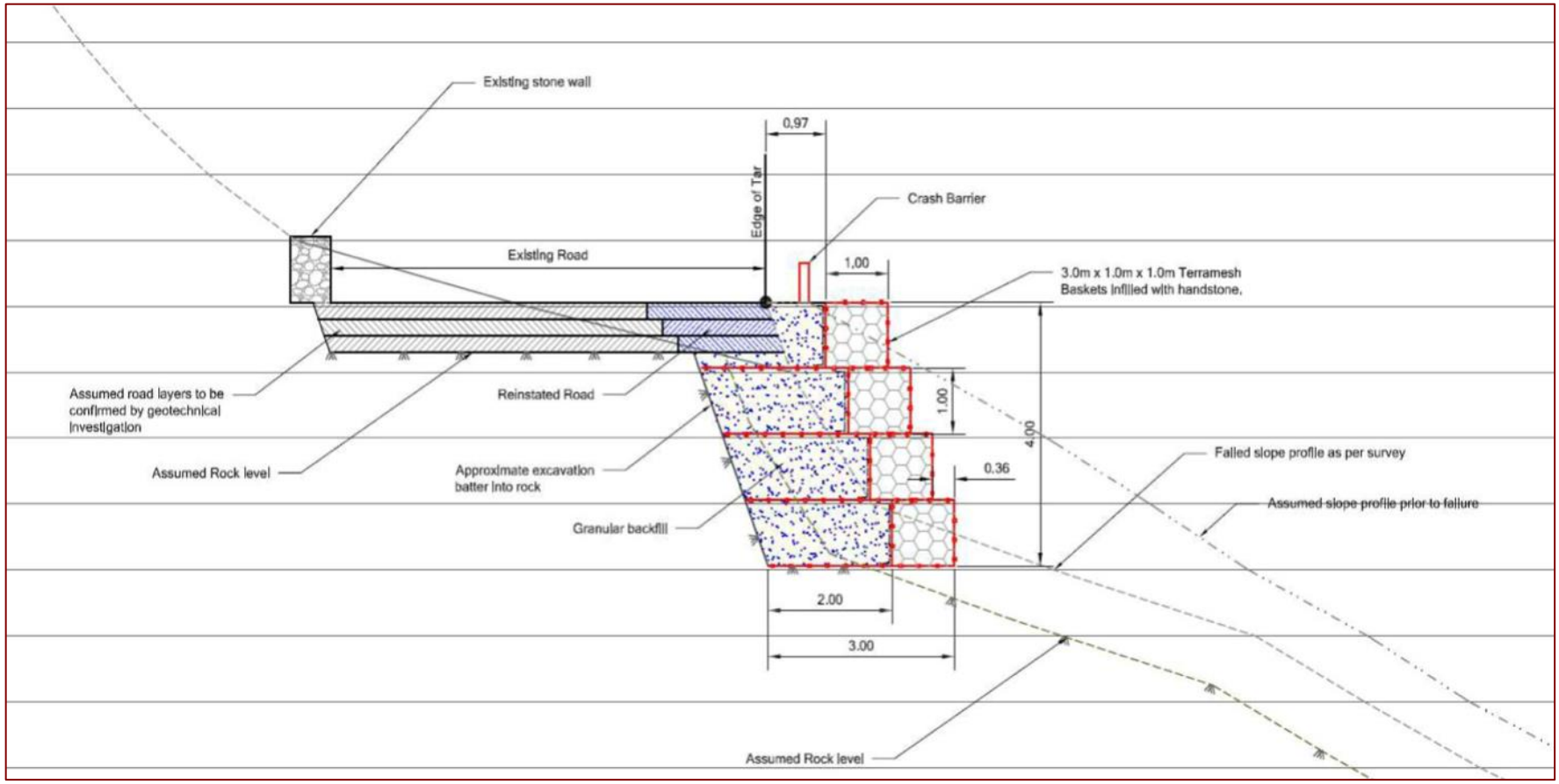


**Figure 23**: ALTERNATIVE 1: Terramesh retaining wall concept (Ingerop, 2024)

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### 8.2.1. Construction phase

**Loss of vegetation and ecological processes**

The majority of vegetation loss is expected to occur during the construction phase, particularly during site preparation and clearance activities. Both the direct loss of vegetation cover and the disruption of associated ecological processes are assessed as resulting in a **low to medium negative impact** before mitigation (**Table 5**).

**Loss of Species of Conservation Concern (SCC)**

The loss of individuals of Species of Conservation Concern is rated as a **low to medium negative impact**. This would primarily involve the unavoidable removal of *Serruria elongata* and *Leucospermum bolusii* individuals downslope of Steenbras Road, with a lower likelihood of loss of the same species upslope. The impact is rated low because both species occur relatively commonly in the surrounding landscape and only a small number of individuals would be affected. See **Appendix 3** for the detailed species assessment.

### 8.2.2. Operational phase

*Loss of vegetation and ecological processes and SCC*

Most of the significant botanical impacts are expected to occur during the construction phase. During the operational phase no further disturbances would be required. The vegetation is expected to recover passively to a limited extent around the retaining wall but would require rehabilitation to ensure that this is optimised (See mitigation section). Impacts area expected to be **Very Low Negative** to **Negligeable** during this phase.

T**able 6.** Impact and significance for loss of 1) vegetation type, and associated ecological processes and 2) SCC during the construction and operational phases

| Ref: | Project phase | Impact | Without mitigation | | | | | | With mitigation | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Nature | Duration | Extent | Intensity | Probability | Significance | Nature | Duration | Extent | Intensity | Probability | Significance |
| 1 | Construction | Loss of vegetation and ecological processes | Negative | Permanent | Limited | Low | Certain / definite | *Moderate - negative | Negative | Permanent | Limited | Low | Certain / definite | *Moderate - negative |
| 2 | Construction | Loss of SCC | Negative | Permanent | Limited | Low | Certain / definite | *Moderate - negative | Negative | Permanent | Limited | Low | Certain / definite | *Moderate - negative |
| 3 | Operation | Loss of vegetation and ecological processes and SCC | Negative | Permanent | Limited | Very low | Likely | Minor - negative | Negative | Permanent | Limited | Very low | Probable | Minor - negative |
| 4 | Construction | No Go option | Negative | On-going | Local | Extremely high | Certain / definite | Major - negative | Negative | On-going | Local | Extremely high | Certain / definite | Major - negative |

*impact rating is more likely to be **Low-Medium Negative**

## 8.4. CUMULATIVE IMPACTS

Cumulative impacts are defined as the total impact on an environmental feature arising from the proposed project in combination with impacts from other existing, approved, or proposed projects in the region. In this instance, the key cumulative botanical impacts relate to: (a) loss of the national vegetation type present on site (KSF).

Although the exact extent of the construction footprint is not known, the proposed project would result in the permanent loss of approximately 1000 $m^2$ (0.1 ha) of KSF, representing 0.0001.% of the remaining national extent (76 795 ha remaining).

On a purely numerical basis, the contribution of the proposed project to cumulative loss as a percentage of the ecosystem is Very Low Negative. However, this percentage-based approach can be misleading when considered in isolation. The impacts on species of conservation concern (SCC), ecological processes, (Critical Biodiversity Areas (CBAs), are not insignificant when viewed cumulatively. Cumulative impacts must therefore be evaluated holistically and not reduced to simple proportional loss of vegetation-type extent.

## 8.5. MITIGATION

Mitigation follows the standard hierarchy:

1. avoidance,
2. minimisation,
3. restoration / rehabilitation, and
4. biodiversity offsets (only as a last resort).

As previously stated, the extent of the project footprint has not yet been finalised. It is, however, safe to assume that loss of vegetation will occur and that some individuals of the aforementioned Species of Conservation Concern (SCC) will be lost. The forecasted loss of individuals is indicated in Appendix 3.

Note that, due to the construction footprint, it will not be possible to avoid certain localities.

Note also that under the No-Go alternative, erosion on the slope is likely to worsen, placing the vegetation and SCC localities that fall outside the construction footprint at increased risk of loss. Loss of vegetation

and SCC individuals may also occur during the construction phase if further erosion is triggered by construction activities.

Mitigation should therefore focus primarily on the following:

Minimisation of the construction footprint to the greatest extent possible;

Avoidance and demarcation of vegetation and SCC localities outside the approved construction footprint;

Prevention of landslides and erosion downslope of the construction area (e.g. silt fences, geotextiles, surface stabilisation, and appropriate stormwater management); and

Rehabilitation of all disturbed areas, including:

careful stripping, stockpiling and reinstatement of topsoil,

implementation of a search-and-rescue prior to the construction, and

ongoing monitoring of rehabilitation success.

These rehabilitation measures should be detailed in a site-specific Rehabilitation Plan to be prepared prior to construction commencement and implemented under supervision of an Environmental Control Officer (ECO).

# 9. CONCLUSIONS AND RECOMMENDATIONS

**Conclusions**

The proposed rehabilitation of the Steenbras Water Treatment Plant access road (Slope 1) is located within Kogelberg Sandstone Fynbos, a vegetation type that forms part of the Kogelberg Biosphere Reserve — an internationally recognised biodiversity hotspot. The entire site is classified as high sensitivity due to:

- its location within a Critically Endangered ecosystem type,
- its designation as a CBA 1 (Critical Biodiversity Area 1) Terrestrial site under the Western Cape Biodiversity Spatial Plan,
- the confirmed presence of Species of Conservation Concern (*Serruria elongata* – Vulnerable, *Leucospermum bolusii* – Near Threatened, *Muraltia thunbergia* – Rare, and others),
- the intact ecological linkages provided by drainage lines and scree slopes, and
- the role of the site in maintaining ecological connectivity and fire-protected refugia within the broader landscape.

The preferred alternative (anchored gabion wall) may represent a relatively low-impact method of slope stabilisation compared to the Terramesh option, as it requires less excavation into the existing road prism and slope. However, construction will result in unavoidable direct loss of vegetation and a small number of SCC individuals, together with indirect risks of erosion and sediment mobilisation if slope stability is not adequately managed.

Under the No-Go alternative (no road rehabilitation), progressive and potentially accelerating slope erosion is expected to continue, leading to ongoing loss of vegetation cover, increased risk to SCC populations, and degradation of the road prism itself. This would likely constitute a **high negative** impact over the medium to long term.

Overall, the proposed rehabilitation is supported, provided that the mitigation measures outlined below are rigorously implemented. With effective mitigation, the residual impact on terrestrial biodiversity and plant species of conservation concern is expected to be reduced to **low to medium negative**.

**Recommendations**

The following mitigation measures should be implemented in strict accordance with the standard mitigation hierarchy (avoidance > minimisation > rehabilitation > offsets):

1. **Minimisation of the construction footprint.** Limit all construction activities (including laydown areas, stockpiles, access tracks, and equipment movement) to the smallest practicable area.
2. **Avoidance and demarcation of vegetation and SCC localities**. Prior to any site disturbance, conduct a final pre-construction walk-down to confirm the location of all mapped SCC individuals and vegetation patches. Demarcate all avoidable SCC localities and intact vegetation outside the approved footprint using highly visible temporary fencing. These areas must be designated as No-Go zones for vehicles, materials, and personnel.
3. **Prevention of landslides and erosion downslope**. Install and maintain appropriate erosion control measures throughout the construction period, including:
    - silt fences, straw bales, or geotextiles at the toe of the slope,
    - temporary stormwater diversion and sediment traps,
    - surface stabilisation (e.g. biodegradable erosion blankets or hydroseeding) on exposed areas,
    - strict control of runoff to prevent concentration of water on the slope. All measures must remain in place until permanent stabilisation is achieved.
4. **Rehabilitation of disturbed areas** A detailed **Rehabilitation Plan** must be prepared prior to construction commencement and approved by the appointed Environmental Control Officer (ECO) and relevant authorities (CapeNature / City of Cape Town). The plan must include, at minimum:
    - careful stripping, temporary stockpiling and reinstatement of topsoil (with appropriate stockpiling height and erosion protection),
    - implementation of a search-and-rescue operation for any translocatable species and SCC individuals that cannot be avoided,
    - active revegetation using locally appropriate indigenous seed (sourced from the immediate area),
    - ongoing monitoring of rehabilitation success (vegetation cover, species richness, erosion stability) for at least two growing seasons post-construction,
    - adaptive management actions in the event of poor establishment or erosion recurrence.

5. **General site management and monitoring**
    - Appoint a suitably experienced Environmental Control Officer (ECO) to monitor compliance throughout the construction phase.
    - Conduct regular photographic monitoring of SCC localities and erosion-prone areas.
    - Ensure all construction personnel are inducted on No-Go zones, SCC locations, and erosion prevention protocols.
    - Prohibit the introduction of alien invasive plant species (including via imported materials or vehicles).
    - Submit compliance monitoring reports to the competent authority and CapeNature as required.

If the above mitigation measure can be adhered to the project is supported from a botanical perspective.

# 10. REFERENCES

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APPENDIX 1: IMPACT ASSESSMENT METHODOLOGY (provided by Zutari)

## Methodology

This section outlines the proposed method for assessing the significance of the potential environmental impacts. For each predicted impact, criteria are ascribed, and these include the intensity (size or degree scale), which also includes the type of impact, being either a positive or negative impact; the duration (temporal scale); and the extent (spatial scale), as well as the probability (likelihood). The methodology is quantitative, whereby professional judgement is used to identify a rating for each criteria based on a seven-point scale (refer to Table 1); and the significance is auto-generated using a spreadsheet through application of the calculations in Figure 1. Specialists can comment where they disagree with the auto-calculated impact significance rating.

**Calculations**

For each predicted impact, certain criteria are applied to establish the likely **significance** of the impact, firstly in the case of no mitigation being applied and then with the most effective mitigation measure(s) in place.

These criteria include the **intensity** *(*size or degree scale), which also includes the **type** of impact, being either a positive or negative impact; the **duration** (temporal scale); and the **extent** (spatial scale). These numerical ratings are used in an equation whereby the **consequence** of the impact can be calculated. Consequence is calculated as follows:

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

To calculate the significance of an impact, the **probability** (or likelihood) of that impact occurring is applied to the consequence.

Figure 1: Calculation of significance

Table 1: Assessment criteria for the evaluation of impacts

| Criteria | Numerical Rating | Category | Description |
|---|---|---|---|
| **Duration** | **1** | **Immediate** | Impact will self-remedy immediately |
| | **2** | **Brief** | Impact will not last longer than 1 year |
| | **3** | **Short term** | Impact will last between 1 and 5 years |
| | **4** | **Medium term** | Impact will last between 5 and 10 years |
| | **5** | **Long term** | Impact will last between 10 and 15 years |
| | **6** | **On-going** | Impact will last between 15 and 20 years |

| Criteria | Numerical Rating | Category | Description |
|---|---|---|---|
| | **7** | **Permanent** | Impact may be permanent, or in excess of 20 years |
| **Extent** | **1** | **Very limited** | Limited to specific isolated parts of the site |
| | **2** | **Limited** | Limited to the site and its immediate surroundings |
| | **3** | **Local** | Extending across the site and to nearby settlements |
| | **4** | **Municipal area** | Impacts felt at a municipal level |
| | **5** | **Regional** | Impacts felt at a regional level |
| | **6** | **National** | Impacts felt at a national level |
| | **7** | **International** | Impacts felt at an international level |
| **Intensity** | **1** | **Negligible** | Natural and/ or social functions and/ or processes are negligibly altered |
| | **2** | **Very low** | Natural and/ or social functions and/ or processes are slightly altered |
| | **3** | **Low** | Natural and/ or social functions and/ or processes are somewhat altered |
| | **4** | **Moderate** | Natural and/ or social functions and/ or processes are moderately altered |
| | **5** | **High** | Natural and/ or social functions and/ or processes are notably altered |
| | **6** | **Very high** | Natural and/ or social functions and/ or processes are majorly altered |
| | **7** | **Extremely high** | Natural and/ or social functions and/ or processes are severely altered |
| **Probability** | **1** | **Highly unlikely / None** | Expected never to happen |
| | **2** | **Rare / improbable** | Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere |
| | **3** | **Unlikely** | Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur |
| | **4** | **Probable** | Has occurred here or elsewhere and could therefore occur |
| | **5** | **Likely** | The impact may occur |
| | **6** | **Almost certain / Highly probable** | It is most likely that the impact will occur |
| | **7** | **Certain / Definite** | There are sound scientific reasons to expect that the impact will definitely occur |

When assessing impacts, broader considerations are also taken into account. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in Table 2, Table 3 and Table 4, respectively.

Table 2: Definition of confidence ratings

| Category | Description |
|---|---|
| **Low** | Judgement is based on intuition |
| **Medium** | Determination is based on common sense and general knowledge |
| **High** | Substantive supportive data exists to verify the assessment |

Table 3: Definition of reversibility ratings

| Category | Description |
|---|---|
| Low | The affected environment will not be able to recover from the impact - permanently modified |
| Medium | The affected environment will only recover from the impact with significant intervention |
| High | The affected environmental will be able to recover from the impact |

**Table 4: Definition of irreplaceability ratings**

| Category | Description |
|---|---|
| Low | The resource is not damaged irreparably or is not scarce |
| Medium | The resource is damaged irreparably but is represented elsewhere |
| High | The resource is irreparably damaged and is not represented elsewhere |

## APPENDIX 2: MINIMUM CONTENT REQUIREMENTS FOR TERRESTRIAL BIODIVERSITY SPECIALIST REPORTS AS PER PROTOCOL FOR THE SPECIALIST ASSESSMENT OF ENVIRONMENTAL IMPACTS ON TERRESTRIAL BIODIVERSITY (GN 320 OF 20 MARCH 2020)

| Protocol ref | **Terrestrial Biodiversity Specialist Assessment Report Content** | **Section / Page** |
|---|---|---|
| 3.1.1. | contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae; | Page ii and Appendix 3 |
| 3.1.2. | a signed statement of independence by the specialist; | Page iii |
| 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 5 |
| 3.1.4. | a description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant; | Section 5 |

| | | |
|---|---|---|
| 3.1.5. | a description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations; | Section 5 |
| 3.1.6. | a location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant); | N/A |
| 3.1.7. | additional environmental impacts expected from the proposed development; | N/A |
| 3.1.8. | any direct, indirect and cumulative impacts of the proposed development; | N/A |
| 3.1.9. | the degree to which impacts and risks can be mitigated; | N/A |
| 3.1.10. | the degree to which the impacts and risks can be reversed; | N/A |
| 3.1.11. | the degree to which the impacts and risks can cause loss of irreplaceable resources; | N/A |
| 3.1.12. | proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr); | N/A |
| 3.1.13. | a motivation must be provided if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a "low" terrestrial biodiversity sensitivity and that were not considered appropriate; | N/A |
| 3.1.14. | a substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and | Section 9 |
| 3.1.15. | any conditions to which this statement is subjected. | N/A |

# APPENDIX 3: PLANT SPECIES SPECIALIST ASSESSMENT

## 1. Introduction

The relative plant species theme sensitivity for the site generated by the web-based Screening Tool (https://screening.environment.gov.za) is rated as Medium (**Figure 1**). An applicant intending to undertake an activity identified by the screening tool as being of Medium sensitivity for terrestrial plant species, must submit a **Plant Species Specialist Assessment Report** if verified (Government Gazette 2020b). Plants listed as Species of Conservation Concern (SCC) have been identified at this site a plant species specialist assessment is provided below.

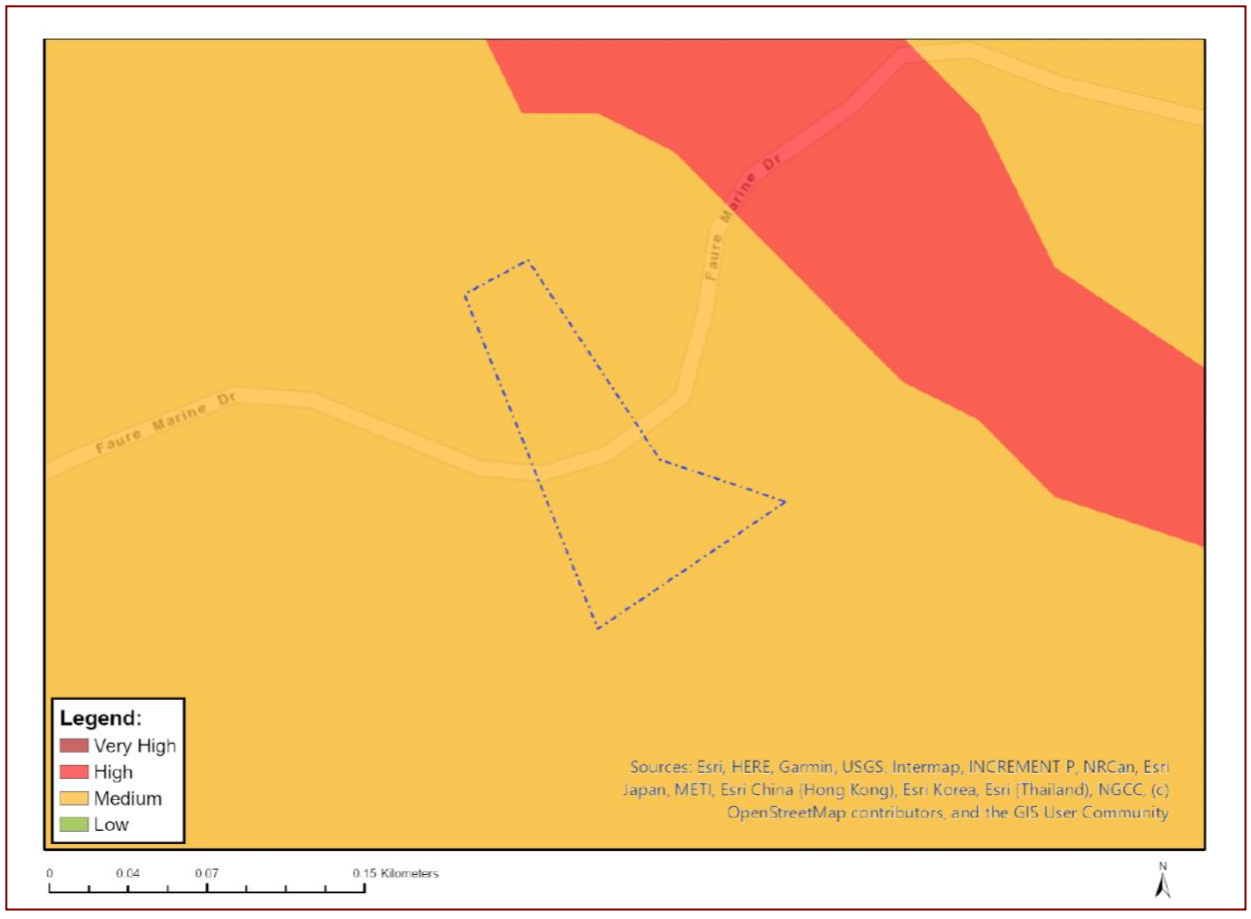


**Figure 1.** Map of relative plant species sensitivity theme sensitivity generated from the DFFE Screening Tool.

## 2. Sensitive species within the study area

Three SCC were identified within the study area. None of these are listed in the DFFE Screening Tool Report but since these include two Near Threatened and one Vulnerable species, they are assessed here. According to the Species Environmental Assessment Guideline (SEAG)(2022) "*Recent occurrence records for all threatened [Critically Endangered (CR), Endangered (CR), Vulnerable (VU) and/or Rare endemic species are included in the high sensitivity level.*"

Since no ratings are assigned for Near Threatened (NT) a conservative Medium rating was assigned for the aforementioned species within the project footprint. The localities of these species is indicated in Figure 2 below. The relevant Red List status information is provided in Table 1 and 2 whereas the predicted list of species is provided in Table 3.

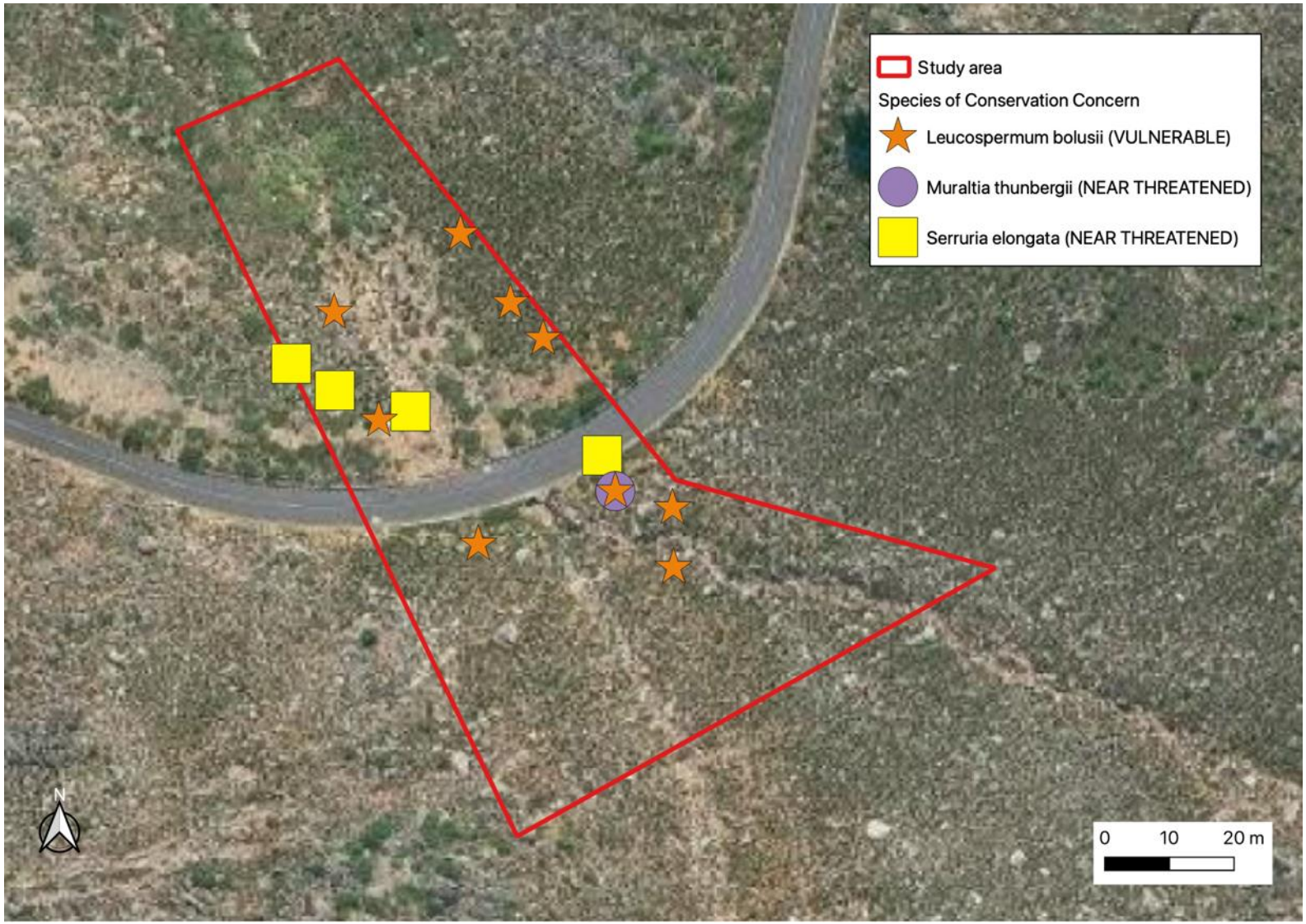


**Figure 2**. Localities of Species of Conservation Concern in the study area.

Table 1. SCC confirmed on the site

| DFFE Sensitivity | Species | Red List status | Link to iNaturalist observation | Viability | Estimated Population Size | Nature and extent of impact on SCC | Known population size* and Occupied Area (km²) | Potential impact of development prior to mitigation |
|---|---|---|---|---|---|---|---|---|
| Not listed | Leucospermum bolusii | VU | https://www.inaturalist.org/observations/336439507 | Viable | 42.17km² | Refer to Table 11 | 42.17 | Refer to Table 11 |
| Not listed | Muraltia thunbergii | NT | https://www.inaturalist.org/observations/336439512 | Viable | No data | Refer to Table 11 | No recent data | Refer to Table 11 |
| Not listed | Serruria elongata | NT | https://www.inaturalist.org/observations/336439490 | Viable | 164.45km² | Refer to Table 11 | 164.45 | Refer to Table 11 |

LT = Least Concern; VU = Vulnerable; EN = Endangered

Table 2. Additional information on the SCC confirmed on the site derived from the Red List of South African Plants website (https://.redlist.sanbi.org)

| Name | Justification | Range | Habitat Description | Threats | Population |
|---|---|---|---|---|---|
| Leucospermum bolusii | Leucospermum bolusii is known from a 12 km range from five locations where it is potentially threatened by too frequent fires, and alien plant and ant invasions. It therefore qualifies for listing as Vulnerable under criterion D. | This species has a limited distribution in the Western Cape Province of South Africa, occurring from Gordon's Bay to Kogel Bay. It has an extent of occurrence of 103 km² | It occurs on steep, gravelly, lower west-facing coastal slopes, at 0-400 m. Mature individuals are killed by fires, and only seeds survive. Seeds are released after ripening, and dispersed by ants to their underground nests, where they are protected | Leucospermum bolusii has lost 25% of its habitat to urban expansion in Gordons Bay in the past. Loss to coastal development has now ceased and the majority of the population occurs within the Kogelberg Biosphere Reserve. Although the Kogelberg is a well-managed reserve, uncontrolled frequent fires are becoming a problem. | Stabe |

| | | | | | |
|---|---|---|---|---|---|
| | | and an area of occupancy of 52 km². | from predation and fire. It is pollinated by insects. | Furthermore invasive alien ants that are already present are likely to be a future threat as they displace indigenous ants. As this species is entirely dependent upon endemic ants for dispersal of seeds this is a plausible future potential threat and requires monitoring. Plants are also potentially vulnerable to alien invasive plant spread (acacias and pines) with both these species already present in low densities. The management of invasive alien plant species within Kogelberg Nature Reserve has to date been excellent but requires ongoing active attention and resources to keep these species from establishing. | |
| Muraltia thunbergii | EOO and AOO <1400 km², 16 locations remain after most of this species' habitat has been transformed by agriculture and urban expansion. At least 36% of known subpopulations are now locally extinct and this species continues to decline due to expanding vineyard and olive cultivation and alien plant invasion. | Darling to Franschhoek and Cape Peninsula. | Low sandy or clay slopes in fynbos or renosterveld. | Threatened by ongoing habitat loss and fragmentation due to urban expansion, particularly on the Cape Flats where more than 36% of known subpopulations are now locally extinct, as well as crop cultivation, which is responsible for most past habitat loss, but is still ongoing around Joostenberg and Franschhoek. Many remaining subpopulations are also declining due to competition from alien invasive plants.. | Decreasing |
| Serruria elongata | Serruria elongata has a restricted distribution range, with an extent of occurrence (EOO) of 7552 km², and an area of occupancy (AOO) of 1508-1516 km². A continuing decline is inferred from increasing competition from alien invasive plants and ants, and ongoing habitat loss, but this species is still abundant within its habitat, and is known from more than 10 locations. | This species is widespread across the mountains and flats of the Cape Floristic Region, South Africa, where it occurs from Du Toit's Kloof to the Agulhas Plain. | It grows in sandstone fynbos on flats and lower slopes, 20-1100 m. Mature individuals are killed by fires, and only seeds survive. Seeds are released after ripening, and dispersed by ants to their underground nests, where they are protected from | About 26% of this species' habitat is already irreversibly modified, and loss continues. The main causes of habitat loss are urban and agricultural expansion, as well as historical loss to commercial timber plantations on the lower slopes of mountains across some parts of its range. Much of this species' habitat is densely infested with alien invasive plants that are outcompeting | Decreasing |

| | | | |
|---|---|---|---|
| | Therefore it nearly meets the thresholds for Vulnerable under criterion B and is listed as Near Threatened. | predation and fire. It is pollinated by insects.. | native species. Clearing efforts are ongoing in protected areas, such as the Agulhas National Park and Kogelberg Nature Reserve, but elsewhere, invasive plants continue to spread and increase in density. Another threat is invasive ant species that are displacing native ant species. Invasive ants do not perform the function of indigenous ants, which is to bury this species' seeds in their nests where they are protected from fire. Large scale ant invasions could lead to population collapse if there is no soil-stored seed bank to regenerate from post fire Land transformation models predicted a population reduction of up to 50% by 2025 (Bomhard et al. 2005), but such drastic population reductions have not yet occurred. |

Table 3. Species predicted to occur within the study aera generated by the DFFE web-based national screening tool

| **DFFE Sensitivity** | **Species** | **Likelihood of occurrence** |
|---|---|---|
| Medium | Lampranthus filicaulis | Low, not observed |
| Medium | Lampranthus glomeratus | Low, not observed |
| Medium | Lampranthus spiniformis | Low, not observed |
| Medium | Antimima aristulata | Low, not observed |
| Medium | Erepsia patula | Low, not observed |
| Medium | Erepsia ramosa | Low, not observed |
| Medium | Ruschia schollii | Low, not observed |
| Medium | Xiphotheca lanceolata | Low, not observed |
| Medium | Psoralea fascicularis | Low, not observed |
| Medium | Liparia calycina | Low, not observed |

| | | |
|---|---|---|
| Medium | Indigofera psoraloides | Low, not observed |
| Medium | Aspalathus acanthiloba | Low, not observed |
| Medium | Aspalathus araneosa | Low, not observed |
| Medium | Aspalathus attenuata | Low, not observed |
| Medium | Aspalathus globosa | Low, not observed |
| Medium | Aspalathus monosperma | Low, not observed |
| Medium | Aspalathus pinea subsp. caudata | Low, not observed |
| Medium | Aspalathus stokoei | Low, not observed |
| Medium | Otholobium rotundifolium | Low, not observed |
| Medium | Lebeckia grandiflora | Low, not observed |
| Medium | Podalyria argentea | Low, not observed |
| Medium | Podalyria sericea | Low, not observed |
| Medium | Agapanthus walshii | Low, not observed |
| Medium | Audouinia capitata | Low, not observed |
| Medium | Berzelia dregeana | Low, not observed |
| Medium | Berzelia ecklonii | Low, not observed |
| Medium | Staavia brownii | Low, not observed |
| Medium | Sorocephalus clavigerus | Low, not observed |
| Medium | Leucadendron coniferum | Low, not observed |
| Medium | Leucadendron lanigerum var. lanigerum | Low, not observed |
| Medium | Leucospermum bolusii | Low, not observed |
| Medium | Leucospermum prostratum | Low, not observed |
| Medium | Protea burchellii | Low, not observed |
| Medium | Protea lacticolor | Low, not observed |
| Medium | Protea longifolia | Low, not observed |
| Medium | Protea stokoei | Low, not observed |

| | | |
|---|---|---|
| Medium | Mimetes arboreus | Low, not observed |
| Medium | Mimetes capitulatus | Low, not observed |
| Medium | Mimetes hirtus | Low, not observed |
| Medium | Mimetes hottentoticus | Low, not observed |
| Medium | Spatalla mollis | Low, not observed |
| Medium | Spatalla prolifera | Low, not observed |
| Medium | Diastella fraterna | Low, not observed |
| Medium | Serruria inconspicua | Low, not observed |
| Medium | Serruria kraussii | Low, not observed |
| Medium | Merciera azurea | Low, not observed |
| Medium | Merciera tenuifolia | Low, not observed |
| Medium | Prismatocarpus cordifolius | Low, not observed |
| Medium | Apodytes geldenhuysii | Low, not observed |
| Medium | Sensitive species 794 | Low, not observed |
| Medium | Sensitive species 344 | Low, not observed |
| Medium | Pentameris longiglumis subsp. gymnocolea | Low, not observed |
| Medium | Pentameris bachmannii | Low, not observed |
| Medium | Pentameris holciformis | Low, not observed |
| Medium | Pentameris pholiuroides | Low, not observed |
| Medium | Ehrharta setacea subsp. uniflora | Low, not observed |
| Medium | Lobostemon hottentoticus | Low, not observed |
| Medium | Echiostachys ecklonianus | Low, not observed |
| Medium | Aristea zeyheri | Low, not observed |
| Medium | Aristea cantharophila | Low, not observed |
| Medium | Klattia stokoei | Low, not observed |
| Medium | Sensitive species 533 | Low, not observed |

| | | |
|---|---|---|
| Medium | Geissorhiza brehmii | Low, not observed |
| Medium | Geissorhiza lithicola | Low, not observed |
| Medium | Geissorhiza setacea | Low, not observed |
| Medium | Geissorhiza erosa | Low, not observed |
| Medium | Ixia sarmentosa | Low, not observed |
| Medium | Sensitive species 560 | Low, not observed |
| Medium | Sensitive species 1 | Low, not observed |
| Medium | Sensitive species 1140 | Low, not observed |
| Medium | Sensitive species 807 | Low, not observed |
| Medium | Sensitive species 863 | Low, not observed |
| Medium | Nivenia levynsiae | Low, not observed |
| Medium | Nivenia stokoei | Low, not observed |
| Medium | Pauridia pygmaea | Low, not observed |
| Medium | Erica brachialis | Low, not observed |
| Medium | Erica lowryensis var. lowryensis | Low, not observed |
| Medium | Erica multiflexuosa | Low, not observed |
| Medium | Erica nana | Low, not observed |
| Medium | Erica patersonii | Low, not observed |
| Medium | Erica pycnantha | Low, not observed |
| Medium | Erica thomae | Low, not observed |
| Medium | Erica pilosiflora subsp. pilosiflora | Low, not observed |
| Medium | Erica banksii subsp. comptonii | Low, not observed |
| Medium | Erica ceraria | Low, not observed |
| Medium | Erica viscaria subsp. gallorum | Low, not observed |
| Medium | Erica petrusiana | Low, not observed |
| Medium | Erica pillansii subsp. fervida | Low, not observed |

| | | |
|---|---|---|
| Medium | Sonderothamnus petraeus | Low, not observed |
| Medium | Sensitive species 222 | Low, not observed |
| Medium | Sensitive species 444 | Low, not observed |
| Medium | Sensitive species 756 | Low, not observed |
| Medium | Adenogramma rigida | Low, not observed |
| Medium | Grubbia rourkei | Low, not observed |
| Medium | Wachendorfia brachyandra | Low, not observed |
| Medium | Centella caespitosa | Low, not observed |
| Medium | Sensitive species 133 | Low, not observed |
| Medium | Sensitive species 105 | Low, not observed |
| Medium | Trianoptiles solitaria | Low, not observed |
| Medium | Ficinia elatior | Low, not observed |
| Medium | Ficinia grandiflora | Low, not observed |
| Medium | Ficinia micrantha | Low, not observed |
| Medium | Ficinia minutiflora | Low, not observed |
| Medium | Ficinia pinguior | Low, not observed |
| Medium | Thamnochortus dumosus | Low, not observed |
| Medium | Anthochortus capensis | Low, not observed |
| Medium | Ceratocaryum persistens | Low, not observed |
| Medium | Restio duthieae | Low, not observed |
| Medium | Restio fusiformis | Low, not observed |
| Medium | Restio harveyi | Low, not observed |
| Medium | Restio pumilis | Low, not observed |
| Medium | Restio papillosus | Low, not observed |
| Medium | Sensitive species 1277 | Low, not observed |
| Medium | Sensitive species 985 | Low, not observed |

| | | |
|---|---|---|
| Medium | Sensitive species 120 | Low, not observed |
| Medium | Sensitive species 384 | Low, not observed |
| Medium | Sensitive species 460 | Low, not observed |
| Medium | Sensitive species 1139 | Low, not observed |
| Medium | Sensitive species 373 | Low, not observed |
| Medium | Evotella rubiginosa | Low, not observed |
| Medium | Gnidia humilis | Low, not observed |
| Medium | Metalasia lichtensteinii | Low, not observed |
| Medium | Syncarpha zeyheri | Low, not observed |
| Medium | Senecio speciosissimus | Low, not observed |
| Medium | Arctotis angustifolia | Low, not observed |
| Medium | Sensitive species 1042 | Low, not observed |
| Medium | Dimorphotheca walliana | Low, not observed |
| Medium | Osmitopsis parvifolia | Low, not observed |
| Medium | Agathosma hookeri | Low, not observed |
| Medium | Euchaetis schlechteri | Low, not observed |
| Medium | Cliffortia heterophylla | Low, not observed |
| Medium | Cliffortia marginata | Low, not observed |
| Medium | Cliffortia viridis | Low, not observed |
| Medium | Cliffortia prionota | Low, not observed |
| Medium | Cliffortia recurvata | Low, not observed |
| Medium | Muraltia aspalatha | Low, not observed |
| Medium | Sensitive species 262 | Low, not observed |
| Medium | Sensitive species 1265 | Low, not observed |
| Medium | Sensitive species 616 | Low, not observed |
| Medium | Capelio caledonica | Low, not observed |

| | | |
|---|---|---|
| Medium | Skiatophytum skiatophytoides | Low, not observed |
| Medium | Lampranthus glaucus | Low, not observed |
| Medium | Xiphotheca reflexa | Low, not observed |
| Medium | Aspalathus lebeckioides | Low, not observed |
| Medium | Sensitive species 599 | Low, not observed |
| Medium | Elegia squamosa | Low, not observed |
| Medium | Restio paludosus | Low, not observed |
| Medium | Restio rigoratus | Low, not observed |
| Medium | Pachites bodkinii | Low, not observed |
| Medium | Lachnaea grandiflora | Low, not observed |
| Very High | Erica amidae | Low, not observed |

## 3. Site ecological importance (SEI)(derived from SANBI 2022 guidelines)

The Species Environmental Assessment Guidelines (SANBI, 2022) requires that the Site Ecological Importance (SEI) is calculated for each habitat on site, and provides the methodology for this calculation. The SEI is assessed separately for each biodiversity theme and is assessed below specifically for the Plant species theme.

The Site Ecological Importance (SEI) is calculated as a function of the Biodiversity Importance (BI) and Receptor Resilience (RR) of the receptor site (SEI = BI + RR). The Biodiversity Importance (BI) is a calculated by determining the Conservation Importance (CI) and Functional Integrity (FI) whereby BI = CI + FI.

An assessment of habitat, is provided below (Table 4) specifically for the Plant Species Theme.

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

**BI = CI + FI**

**Definitions of the functions used to calculate EI appear below along with the tables of criteria:**

Conservation importance (CI) is defined 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.'*

**Table 4.** Fulfilling criteria and categories for Conservation Importance.

| Conservation importance | Fulfilling criteria |
|---|---|
| Very high | Confirmed or highly likely occurrence of CR, EN, VU or Extremely Rare or Critically Rare species that have a global EOO of < 10 km$^2$. |
| | Any area of natural habitat[25] of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent[26]) of natural habitat of EN ecosystem type. |
| | Globally significant populations of congregatory species (> 10% of global population). |
| High | Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km$^2$. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A. If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining. |
| | Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (> 0.1%) of natural habitat of VU ecosystem type. |
| | Presence of Rare species. |
| | Globally significant populations of congregatory species (> 1% but < 10% of global population). |
| Medium | Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals. |
| | Any area of natural habitat of threatened ecosystem type with status of VU. |
| | Presence of range-restricted species. |
| | > 50% of receptor contains natural habitat with potential to support SCC. |
| Low | No confirmed or highly likely populations of SCC. |
| | No confirmed or highly likely populations of range-restricted species. |
| | < 50% of receptor contains natural habitat with limited potential to support SCC. |
| Very low | No confirmed and highly unlikely populations of SCC. |
| | No confirmed and highly unlikely populations of range-restricted species. |
| | No natural habitat remaining. |

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.'*

**Table 5.** Fulfilling criteria and categories for Functional Integrity.

| Functional integrity | Fulfilling criteria |
|---|---|
| Very high | Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types. |
| | High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. |
| | No or minimal current negative ecological impacts with no signs of major past disturbance (e.g. ploughing). |
| High | Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types. |
| | Good habitat connectivity with potentially functional ecological corridors and a regularly used road network between intact habitat patches. |
| | Only minor current negative ecological impacts (e.g., few livestock utilizing area) with no signs of major past disturbance (e.g., ploughing) and good rehabilitation potential. |
| Medium | Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type or > 20 ha for VU ecosystem types. |
| | Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches. |
| | Mostly minor current negative ecological impacts with some major impacts (e.g. established population of alien and invasive flora) and a few signs of minor past disturbance. Moderate rehabilitation potential. |
| Low | Small (> 1 ha but < 5 ha) area. |
| | Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy used road network surrounds the area. Low rehabilitation potential. |
| | Several minor and major current negative ecological impacts. |
| Very low | Very small (< 1 ha) area. |
| | No habitat connectivity except for flying species or flora with wind-dispersed seeds. |

| | |
|---|---|
| | Several major current negative ecological impacts. |

Receptor resilience (RR) is defined here as:

*'The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.'*

**Table 6.** Fulfilling criteria and categories for Receptor Resilience.

| Resilience | Fulfilling criteria |
|---|---|
| Very high | Habitat that can recover rapidly (~ less than 5 years) to restore > 75%[28] of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a very high likelihood of returning to a site once the disturbance or impact has been removed. |
| High | Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed. |
| Medium | Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed. |
| Low | Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a low likelihood of returning to a site once the disturbance or impact has been removed. |
| Very low | Habitat that is unable to recover from major impacts, or species that are unlikely to remain at a site even when a disturbance or impact is occurring, or species that are unlikely to return to a site once the disturbance or impact has been removed. |

## SEI Calculation for Development Footprint

**Biodiversity Importance** is calculated using the matrix in Table 7.

**Table 7.** Calculation matrix for deriving Biodiversity Importance (BI)

| Biodiversity importance | | Conservation importance | | | | |
|---|---|---|---|---|---|---|
| | | Very high | High | Medium | Low | Very low |
| Functional integrity | Very high | Very high | Very high | High | Medium | Low |
| | High | Very high | High | Medium | Medium | Low |
| | Medium | High | Medium | Medium | Low | Very low |
| | Low | Medium | Medium | Low | Low | Very low |
| | Very low | Medium | Low | Very low | Very low | Very low |

**SEI** is calculated using the matrix in Table 8 and for this site habitat categories is Very High (Table 10). The recommended mitigation for a site with an SEI of Very High staed in the Species Environmental Assessment Guidelines is avoidance.

**Table 8.** Calculation matrix for deriving Site Ecological Importance (SEI)

| Site ecological importance | | Biodiversity importance | | | | |
|---|---|---|---|---|---|---|
| | | Very high | High | Medium | Low | Very low |
| Receptor resilience | Very low | Very high | Very high | High | Medium | Low |
| | Low | Very high | Very high | High | Medium | Very low |
| | Medium | Very high | High | Medium | Low | Very low |
| | High | High | Medium | Low | Very low | Very low |
| | Very high | Medium | Low | Very low | Very low | Very low |

**Table 9.** Guidelines for interpreting SEI in the context of the proposed development activities.

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

**Table 10.** Site ecological importance for SCC habitat

| Habitat | Conservation Importance | Functional Integrity | Biodiversity Importance | Receptor resilience | Site Ecological Importance | Mitigation |
|---|---|---|---|---|---|---|
| Kogelberg Sandstone Fynbos (Kogelberg Biosphere Reserve) | High | High | VH | Medium | Very high | Avoidance |

## 4. Impacts and Mitigation

As previously stated, the extent of the project footprint has not yet been finalised. It is, however, safe to assume that some individuals of the aforementioned Species of Conservation Concern (SCC) would be lost. The forecasted loss of individuals is indicated in **Table 11** below. The waypoints corresponding to the localities in Table 11 are shown in Figure 3.

Note that, due to the construction footprint, it will not be possible to avoid certain localities.

Note also that under the No-Go option, erosion on the slope is likely to worsen, placing the localities that fall outside the construction footprint at increased risk of loss. Loss of individuals may also occur during the construction phase **if** further erosion is triggered by construction activities.

Mitigation should therefore focus primarily on:

1. avoidance and demarcation of SCC localities,
2. prevention of landslides and erosion downslope of the construction area, and
3. rehabilitation

For comprehensive mitigation measures refer to the main body of this report.

**Table 11.** Impact scenario for loss of species and mitigation

| **Waypoint** | **Locality** | **Species and estimated numbers** | **Likelihood of loss** | **Mitigation** |
|---|---|---|---|---|
| 003 (34°10'37.92"S; 18°50'19.01"E) | South side (upslope) of road | Serurria elongata (2 individuals) | Low | Cannot be avoided |
| 004 (34°10'38.14"S; 18°50'19.09"E) | South side (upslope) of road | Leucospermum bolusii 5 individulas)<br>Muraltia thunbergia (5 individulas) | High | Cannot be avoided |
| 010 (34°10'38.46"S; 18°50'18.26"E) | South side (upslope) of road | Leucospermum bolusii (10 individulas) | Low | Strict avoidance. Demarcate with temporary fence. Protect slope form falling debris progressing downslope of construction area. |
| 012 (34°10'37.65"S; 18°50'17.85"E) | North side (downslope) of road | Serurria elongata (1 individual) | High | Cannot be avoided |
| 013 (34°10'37.71"S: 18°50'17.66"E) | North side (downslope) of road | Leucospermum bolusii (10 individuals) | High | Cannot be avoided |
| 014 (34°10'37.53"S; 18°50'17.39"E) | North side (downslope) of road | Leucospermum bolusii (10 individuals) | High | Cannot be avoided |
| 015 (34°10'37.37"S; 18°50'17.13"E) | North side (downslope) of road | Leucospermum bolusii (3 individuals) | Low | Strict avoidance. Demarcate with temporary fence. Protect slope form falling debris progressing downslope of construction area. |

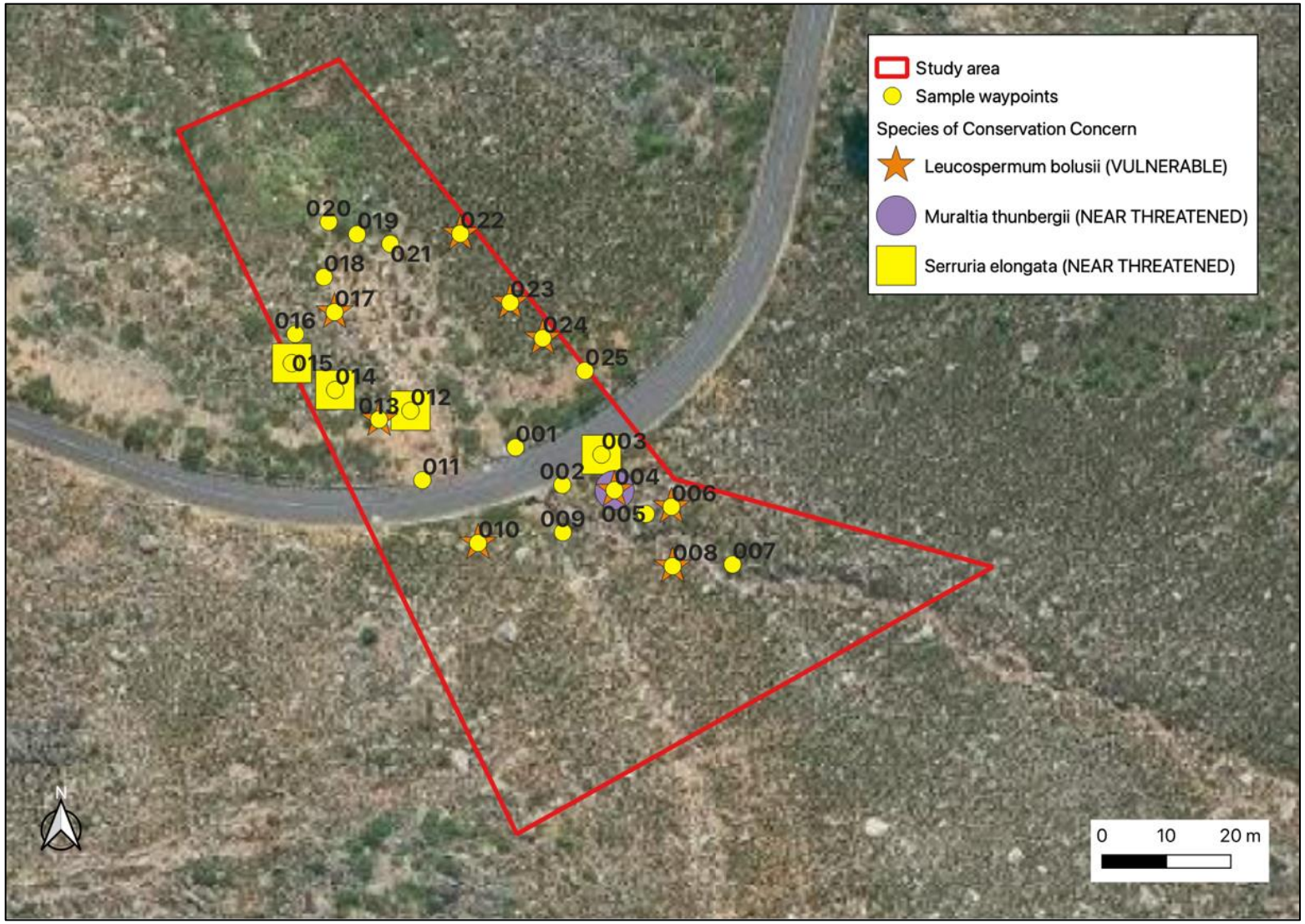


**Figure 3**. Localities of Species of Conservation Concern in the study area with waypoint numbers.

## 5. Conclusions

The proposed development is supported with the proviso of proposed mitigation.

Additional information required for this report is provided below:

- The methodology used to compile this species assessment report is provided in the main body of this report.

## 6. Content of report requirement and relevant sections

| | | Section or page of report |
|---|---|---|
| 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. | Page ii and Appendix 3 |
| 2.2 | The assessment must be undertaken within the study area. | It was |
| 2.3 | The assessment must be undertaken in accordance with the *Species Environmental Assessment Guideline* and must: | |
| 2.3.1 | Identify the SCC which were found, observed or are likely to occur within the study area; | Tables 1 and 2 in Appendix 3 |
| 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). | Tables 1 and 2 in Appendix 4 |
| 2.3.3 | identify the distribution, location, viability and detailed description of population size of the SCC identified within the study area. | Table 2 and 3 in Appendix 4 |
| 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 9 |
| 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. | Table 3 in Appendix 4 |
| 2.3.6 | determine the potential impact of the proposed development on the habitat of the SCC located within the study area. | Table 3 in Appendix 4 |
| 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 | Table 3 in Appendix 4 |

| | | |
|---|---|---|
| | motivation for the deviation; | |
| 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. | N/A |
| 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. | N/A |
| 2.3.10 | determine buffer distances as per the *Species Environmental Assessment Guidelines* used for the population of each SCC; and | Section 4 of Appendix 4 |
| 2.3.11 | discuss the presence or likelihood of additional SCC including threatened species not identified by the screening tool, *Data Deficient or Near Threatened Species, as well as any undescribed species; and* | Table 1 of Appendix 4. |
| 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. | N/A |