BOTANICAL ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT AT MUISHONDBAAI, STILLBAAI WEST, HESSEQUA MUNICIPALITY, WESTERN CAPE

CAPENSIS

PAUL EMMS

JANUARY 2021

REPORT PREPARED FOR

SHARPLES ENVIRONMENTAL SERVICES

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: 22 January 2021

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 Sharples Environmental Services to provide specialist botanical consulting services for a Botanical Assessment at Erven 4139, 4142, 4143 and 4140 at Muishondbaai, Stillbaai, Hessequa Municipality.

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.
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- Has conducted over 200 specialist botanical studies.

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CONTENTS

1. INTRODUCTION 4
2. TERMS OF REFERENCE 4
2.1. GENERAL 4
2.2. SPECIFIC 5
3. PROTOCOL FOR DETERMINING LEVEL OF REPORTING 5
4. STUDY AREA 6
4.1. LOCALITY 6
4.2. LANDSCAPE AND GEOLOGY 10
5. METHODOLOGY, LIMITATIONS AND ASSUMPTIONS 13
6. VEGETATION DESCRIPTION 14
6.1. NATIONAL VEGETATION TYPE 14
6.2. ECOSYSTEM THREAT STATUS 14
6.3. CONSERVATION PLANS AND PROTECTED AREAS 16
6.4. THE VEGETATION OF THE STUDY AREA 19
7. SENSITIVITY 27
8. CONSTRAINTS ANALYSIS 30
9. IMPACT ASSESSMENT 32
9.1. 'NO GO' OR NO DEVELOPMENT SCENARIO 34
9.2. DIRECT IMPACTS 34
9.3. MITIGATION 37
9.4. INDIRECT IMPACTS 37
9.5. CUMULATIVE IMPACTS 37
10. CONCLUSIONS AND RECOMMENDATIONS 38
11. REFERENCES 39
APPENDIX 1: ASSESSMENT METHODOLOGY 41
(Source: SRK Consulting) 41
APPENDIX 3: CURRICULUM VITAE: PAUL EMMS 47

1. INTRODUCTION

The landowner of Erven 4139, 4142, 4143 and 4140 intends developing a portion of their properties at Muishondbaai in Stillbaai. A Botanical Constraints Analysis was carried out in September 2020 (Emms, 2020) to guide the landowner with regard to the botanical sensitivity of the site. Several other studies (e.g. visual study) were also carried out. The purpose of the constraints analysis was to identify potentially developable versus No-Go areas. This study provides (1) baseline information along with the sensitivity map and development constraints map, and (2) a botanical impact assessment, which takes into account the client's development plan (within the areas identified as potentially developable during the constraints analysis). This reports forms part of the Terrestrial Ecology Assessment in Environmental Authorization (EA) application. In addition, a Terrestrial Plants Species Specialist Assessment Report is provided (Appendix 2) in accordance with new procedures for reporting on identified environmental themes published in October 2020 (Government Gazette No. 43844, 2020). Capensis Ecological Consulting Pty (Ltd) (Capensis) was commissioned by Sharples Environmental Services to carry out the study.

2. TERMS OF REFERENCE

2.1. GENERAL

Most of the requirements for botanical assessments were followed for the constraints analysis. These include 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); and
- Protocol for the Assessment and Reporting of Environmental Impacts on Terrestrial Biodiversity (Government Gazette 43110, 2020). Requirements for Terrestrial Biodiversity Assessment.

- Protocol for the Assessment and Reporting of Environmental Impacts on Terrestrial Biodiversity (Government Gazette 43855, 2020). Terrestrial Plants Species Specialist Assessment Report.

2.2. SPECIFIC

The specific terms of reference followed for this assessment are as follows:

- 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 within the affected areas based on the relevant biodiversity plans, bioregional planning documents and Environmental Management Frameworks.
- Determine the implications that the proposed project has for the relevant fine-scale biodiversity plan (in this case the 2017 Western Cape Biodiversity Spatial 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.

3. PROTOCOL FOR DETERMINING LEVEL OF REPORTING

The sensitivity of the site was predetermined using the Department of Environmental Affairs (DEA) Screening Tool (https://screening.environment.gov.za/screeningtool/). The study area contains areas rated as Very High and Low for terrestrial biodiversity sensitivity (Figure 1). It should be noted that the Very High level of sensitivity would require a Terrestrial Biodiversity Impact Assessment to be submitted as part of the application for Environmental Authorisation (EA). As stated this constraints analysis follows the protocol for the assessment and reporting of environmental impacts on terrestrial biodiversity (Government Gazette 43110, 2020).

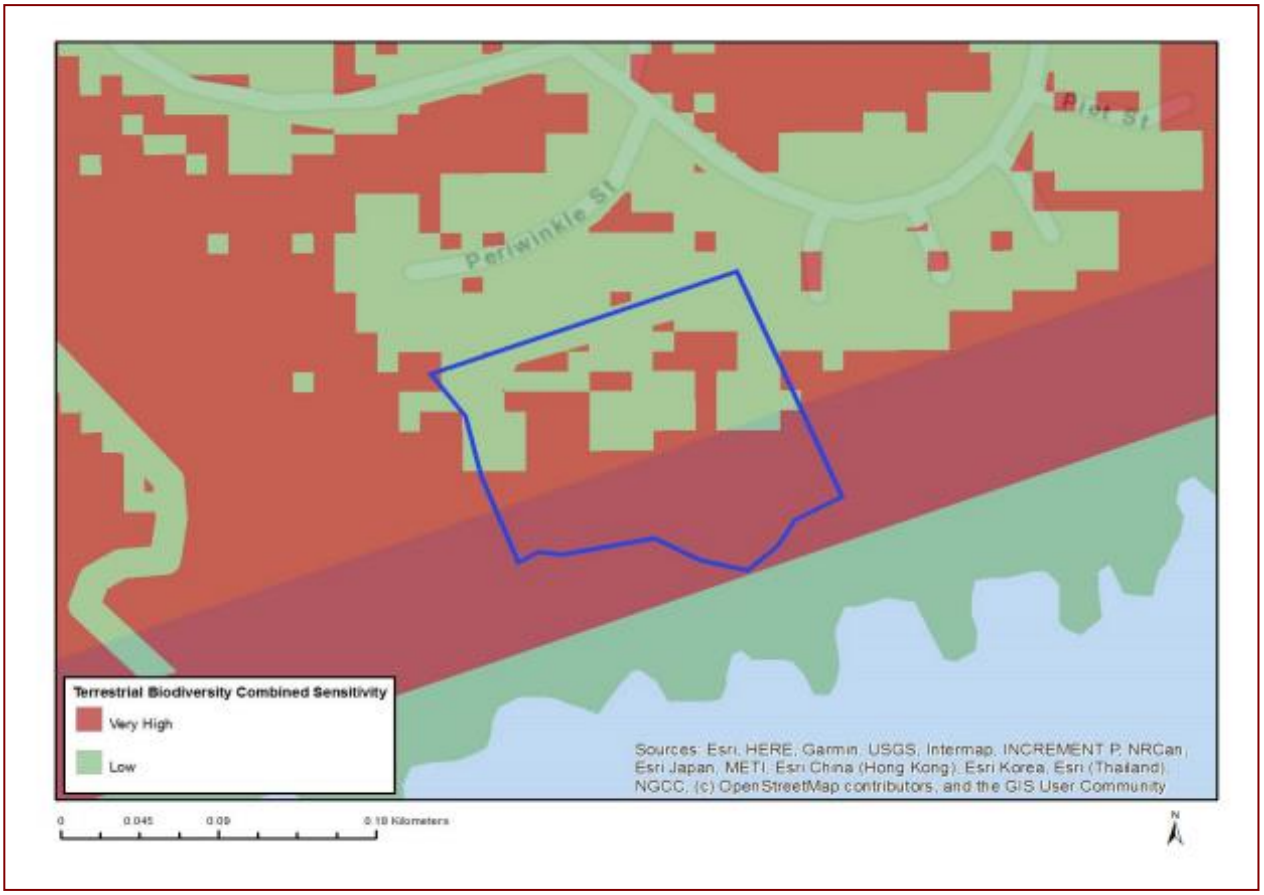

Figure 1. Map of relative terrestrial biodiversity theme sensitivity generated from the DEA Screening Tool (https://screening.environment.gov.za).

4. STUDY AREA

4.1. LOCALITY

The study area is located in Stillbaai within the Hessequa Municipality (Figure 2). The Goukou River divides the town into Stillbaai East and Stilbaai West. The study area or site is located in Stillbaai West at Muishondbaai, which lies immediately adjacent to and south-west of Skulpiesbaai Local Nature Reserve (Figure 3). The study area includes the boundary surrounding the various erven and 'Focus area' where the applicant plans to develop, as shown in Figure 4.

Figure 2. Bing ™ aerial image showing the study area in relation to nearby towns, major roads and rivers (CapeFarm Mapper: Western Cape Department of Agriculture, gis.elsenberg.com).

Figure 3. The study area (red polygon) represented on a 1:50 000 topographic map (CapeFarm Mapper: Western Cape Department of Agriculture, gis.elsenberg.com).

Figure 4. Google Earth ™ aerial image showing the site boundary and focus area where development is planned by the applicant.

4.2. LANDSCAPE AND GEOLOGY

The study area consists of a naturally terraced topography, with an upper platform, which slopes down to a lower but less level platform, with steep near-vertical drop-off that extends to the coastal platform. The two upper levels are indicated in Figure 5 and the steep drop-off is shown in Figure 6. The 5 m contours are shown in Figure 7.

The soils of the site were not analysed. Rebelo et al. (in Mucina and Rutherford, 2006) states that the soils are derived from the Bredasdorp Group limestones and sandstones, and occur "*on younger, unconsolidated lime-rich Strandveld and Waenhuiskrans Formations, which consist of white dune sands with fine shell material and occasionally with calcrete lenses present; in places with an admixture of littoral calcareous or sandstone cobbles*."

Figure 5. The upper platform (left), slope (yellow lines) and lower platform (right) define the Focus area of the site. Only the edge of the steep drop-off (red line) is visible, which extends from the house on the far right down to the coastal platform. The steep drop-off is shown in Figure 6.

Figure 6. The steep drop-off, which falls outside the Focus area.

Figure 7. Aerial image of the study area (red outline) and focus area (yellow outline) with 5 m contour overlay (CapeFarm Mapper: Western Cape Department of Agriculture, gis.elsenberg.com).

5. METHODOLOGY, LIMITATIONS AND ASSUMPTIONS

The study area was visited on the 31st July 2020 and surveyed on foot. Sample waypoint positions were obtained using a Garmin GPSmap 62. Photographs were georeferenced. The following sources have been used to inform this study:

Vegetation map: A product of *The Vegetation of South Africa, Lesotho and Swaziland* (VEGMAP) (Mucina & Rutherford, 2006). The South African National Biodiversity Institute (SANBI) has updated the VEGMAP (2018). These shapefiles were used.

Ecosystem threat status: Informed by (1) National List of Ecosystems that are Threatened and in Need of Protection (Government Gazette, 2011), (2) The Western Cape State of Biodiversity 2017 Report (Turner, 2017), and (3) The National Biodiversity Assessment (2018)(SANBI, 2019).

Biodiversity planning: The 2017 Western Cape Biodiversity Spatial Plan (CapeNature, 2017) GIS (Geographical Information System) shapefiles for the Hessequa Municipality is important for determining the conservation importance of the designated habitat. Ground-truthing is an essential component in terms of determining the habitat condition.

Important species: The presence or absence of threatened (i.e. species of conservation concern) and ecologically important species informs the ecological condition and sensitivity of the site. The latest conservation status of species is checked in the Red List of South African Plants (Raimondo et al. 2009) (www.redlist.sanbi.org).

Previous studies: Previous botanical studies at a local scale, if available, are consulted to provide additional information regarding the botanical attributes of the site.

Site boundary: these and other resource layers were used to define the site boundary and to compile several maps. This information is available on the CapeFarmMapper website (Department of Agriculture: gis.elsenberg.com).

The site visit was carried out during late winter (July) when most geophytes are in leaf but not yet in flower. The spring flowering period for the region is August to October. This presents a limitation since most geophytic species were not yet in flower and were not easily identifiable to species level. However, the survey is considered to be fair since the overall vegetation condition could be determined.

6. VEGETATION DESCRIPTION

6.1. NATIONAL VEGETATION TYPE

The Vegetation of South Africa, Lesotho and Swaziland (VEGMAP) (SANBI 2018), assigns a single vegetation type to the study area (Figure 8), namely Blombos Strandveld. The site visit confirms that this is the only vegetation type present. The landscape and vegetation of the Blombos Strandveld ecosystem is described by Rebelo et al. (in Mucina and Rutherford, 2006):

> *"Flat or slightly undulating coastal landscapes with dense, evergreen, sclerophyllous shrublands and thickets, with a poorly developed undergrowth layer. The thicket vegetation is best developed in dune slacks, where it is well protected from occasional fires that may penetrate the coastal zone from the inland areas and from salt-laden onshore winds that cause stunting (0.5 m tall, dense vegetation) in exposed littoral situations."*

Ecological drivers

The key ecological drivers in strandveld ecosystems according to Cadman *et al*. (2016) include (1) variation in soil type, (2) rainfall, (3) dispersal of berries and seed by frugivorous bird species, (4) fire, (5) drainage patterns and (6) corridors for faunal movement.

6.2. ECOSYSTEM THREAT STATUS

Ecosystem threat status is derived from three sources. These include the following:

1. The National List of Threatened Terrestrial Ecosystems (NLTTE) (Government Gazette, 2011).
2. The Western Cape State of Biodiversity (WCSB) Report (Turner, 2017).
3. The National Biodiversity Assessment (NBA 2018)(SANBI 2019).

Blombos Strandveld is not listed (i.e. Least Threatened) in any of the above sources. The conservation target for the ecosystem is 36% (NBA 2018). It is emphasized, however, that coastal development is one the greatest threats to the ecosystem (Cadman et al, 2016).

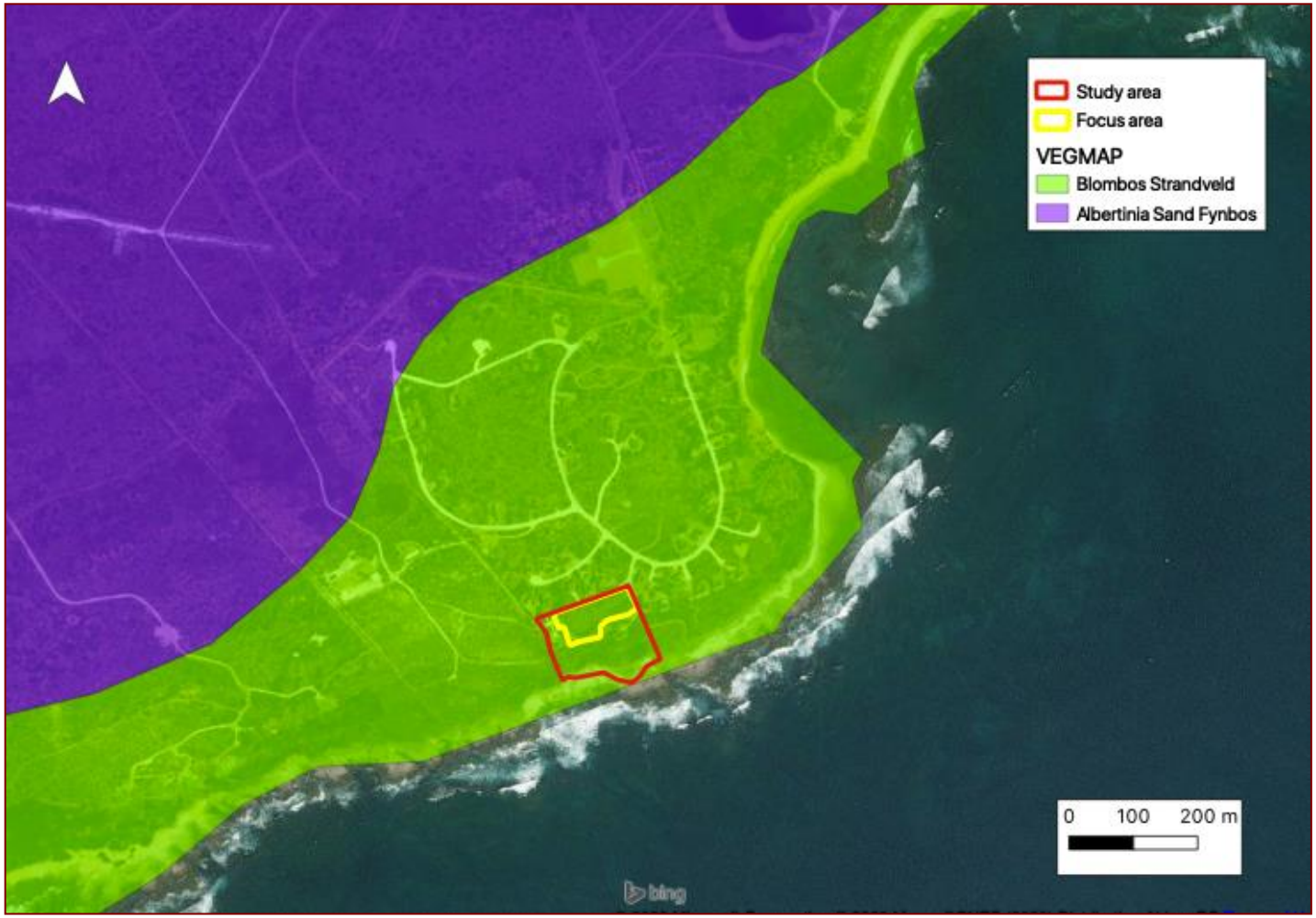

Figure 6. VEGETATION MAP: The study area superimposed on a portion of *The Vegetation Map of South Africa, Lesotho and Swaziland* (SANBI, 2018) overlaid on a Bing ™ aerial image.

6.3. CONSERVATION PLANS AND PROTECTED AREAS

The 2017 WCBSP Handbook (Pool-Stanvliet et al., 2017) distinguishes between the various conservation planning categories. Critical Biodiversity Areas are habitats with high biodiversity and ecological value. Such areas include those that are likely to be in a natural condition (CBA 1) and those that are potentially degraded or represent secondary vegetation (CBA 2). Ecological Support Areas are not essential for meeting biodiversity targets but play an important role in supporting the functioning of Protected Areas or CBAs and are often vital for delivering ecosystem services. A distinction is made between ESAs that are still likely to be functional (i.e. in a natural, near-natural or moderately degraded condition; (ESA 1) and Ecological Support Areas that are severely degraded, or have no natural cover remaining, and therefore require restoration (ESA 2). Other Natural Area (ONA) sites are not currently identified as a priority, but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. Although not prioritised, they are still an important part of the natural ecosystem. Ground-truthing of the assigned CBA and ESA sites are described in the vegetation and sensitivity sections below (Sections 6.4 and 7). The distribution of these sites is shown in Figure 7.

The 2017 WCBSP conservation planning category occupies the following proportions of the study area:

ESA1: 55% of the entire study area and 9% of the of focus area. If the Focus area is considered alone the calculated extent of ESA1 is 30% of this area. Reasons: Coastal corridor. The lower part of the study area that contains milkwood thicket is assigned as ESA1 for the same reason in addition to ‘Wetland’.

The ESA1 ‘Coastal Corridor’ is a highly significant conservation planning category that should not undergo fragmentation. Thus, in considering the development options this needs to be carefully considered. This is discussed in Sections 7 and 8.

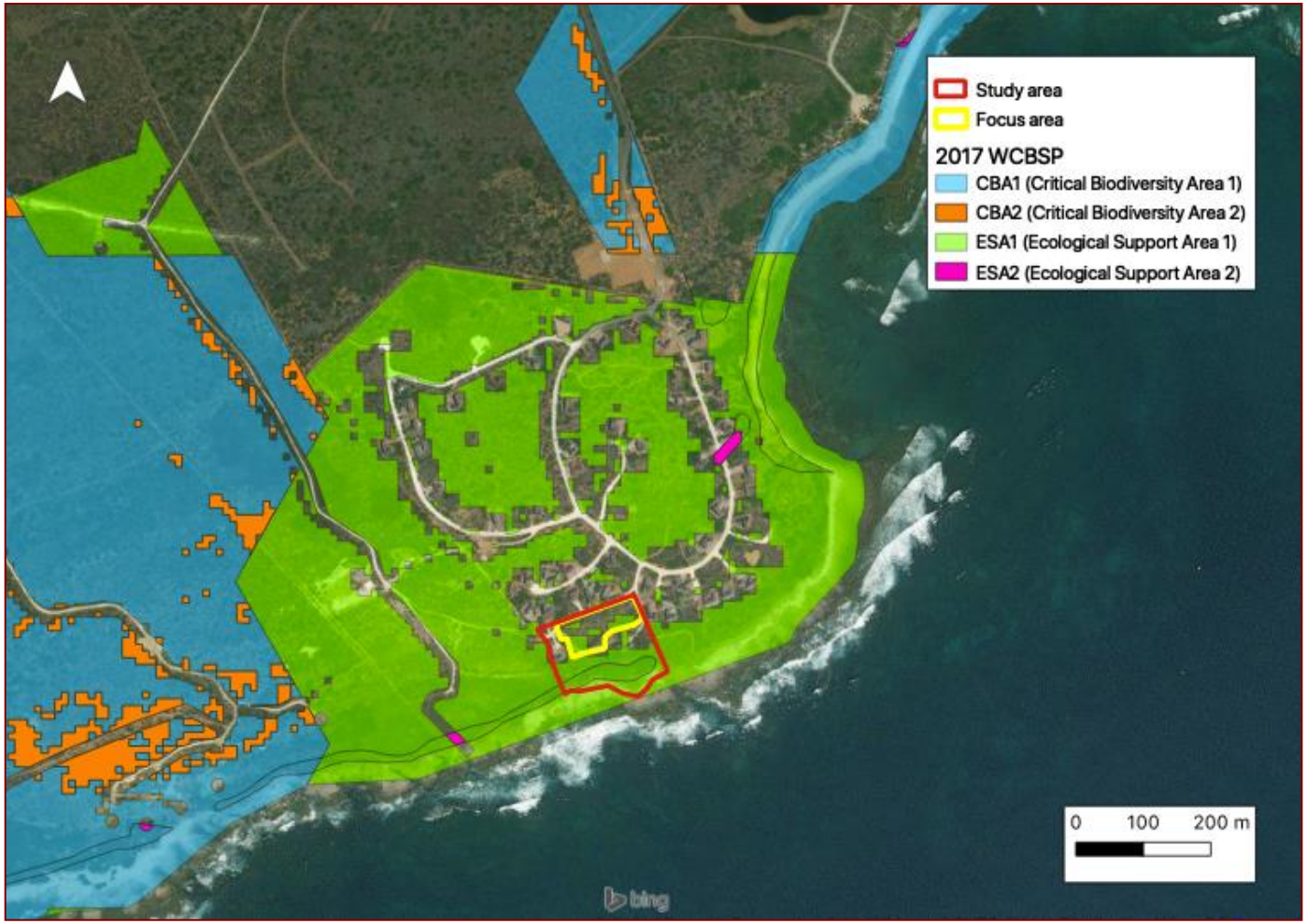

Figure 7A. CONSERVATION PLANNING MAP: The study area in relation 2017 Western Cape Biodiversity Spatial Plan (CapeNature, 2017) overlaid on a Bing aerial™ image.

Figure 7B. CONSERVATION PLANNING MAP (Zoomed-in): The study area in relation 2017 Western Cape Biodiversity Spatial Plan (CapeNature, 2017) overlaid on a Bing™ aerial image.

6.4. THE VEGETATION OF THE STUDY AREA

The vegetation description is described with the aid of survey waypoints (Figure 8). The broad habitats are described according to the habitat condition categories listed in Table 1. The habitats are shown in Figure 9 and include the following:

1. Intact strandveld
2. Semi-intact to Intact strandveld
3. Degraded strandveld
4. Highly degraded strandveld
5. Transformed
6. Intact milkwood thicket
7. Intact seashore vegetation
8. Near-High Water Mark

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.

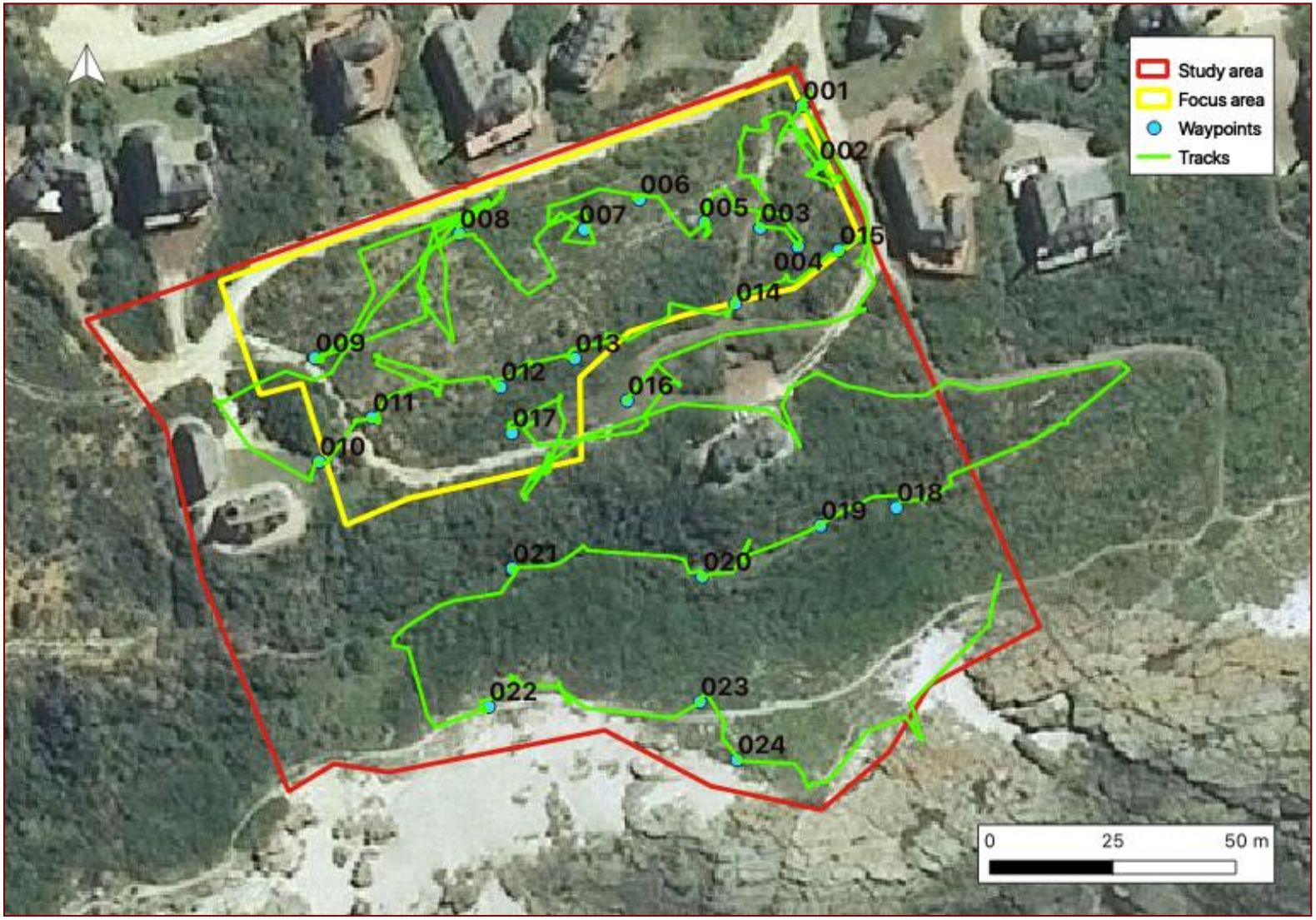

Figure 8. SURVEY MAP: Google Earth™ aerial image showing the study area and focus area with the survey waypoints and tracks.

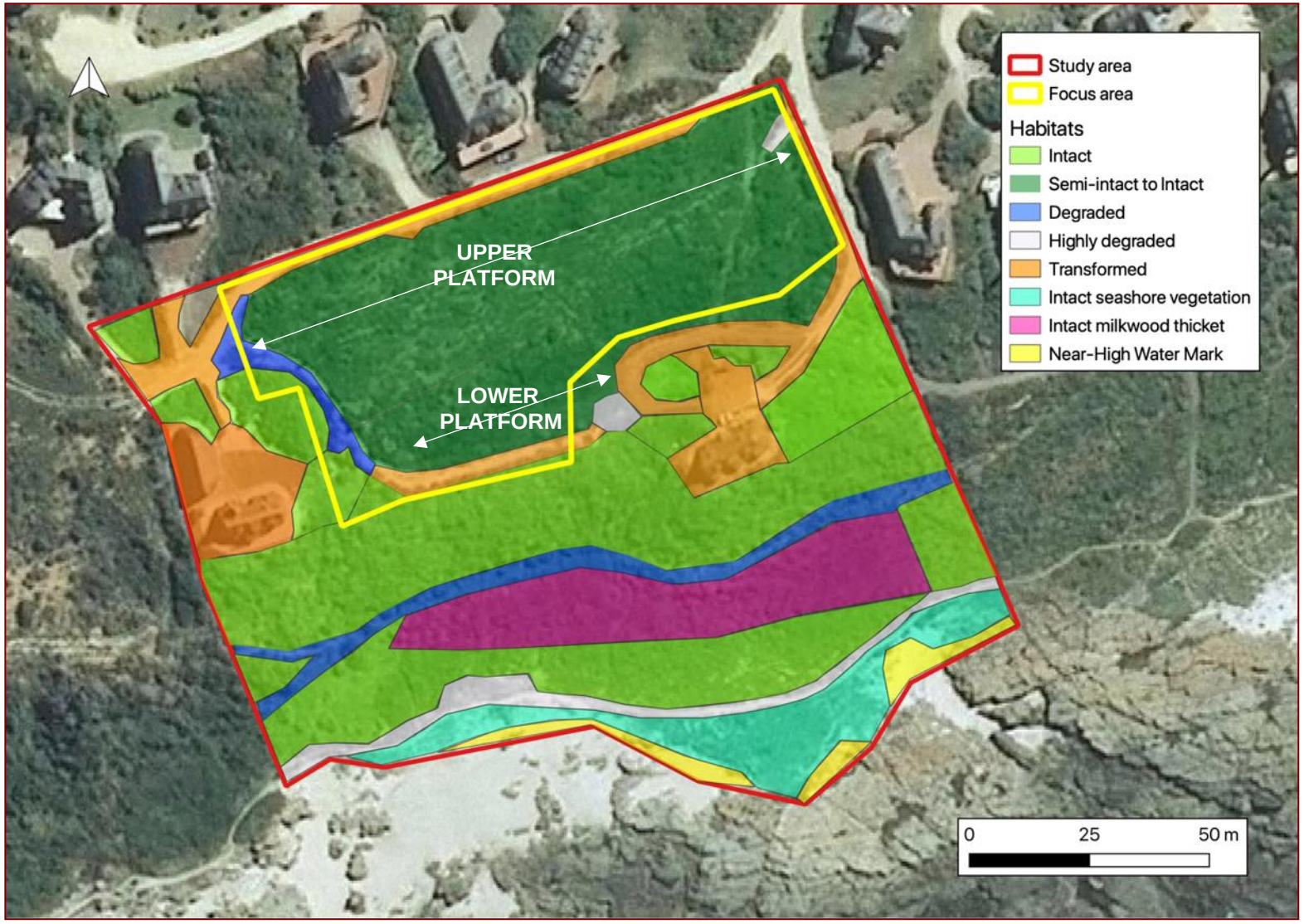

Figure 9. HABITAT MAP: Google Earth™ aerial image showing the study area and focus area with habitat overlay.

Upper platform and lower platform (Focus area)

The upper and lower platform and slope joining the two areas is Semi-intact to Intact and has undergone past disturbance. The overall condition and ecological integrity has not been severely compromised and species diversity is very high. Noting that most of the survey time was spent in the focus area, the species listed below are only a sample at a point in time. More intensive surveys at different times of the year would yield much higher species count for the entire study area. The high species diversity is an important feature discussed further in Section 7.

The vegetation within the focus area comprises a mix of low to medium shrubs with graminoids, succulents and occasional geophytes and trees. The area supports the following species (D = dominant; E = exotic): **Shrubs:** *Helichrysum teretifolium*, *Osteospermum moniliferum* (bitou), *Thesium* spp., *Passerina rigida* (beach gonna), *Metalasia muricata* (strandveld blombos), *Carissa bispinosa* (num num), *Roepera morgsana*, *Tetragonia fruticosa* (sprawling seacoral), *Pelargonium capitatum* (common storksbill), *Searsia crenata* (bluefruit currantrhus), *Searsia glauca* (blue kunirhus), *Seasria laevigata* (dune currantrhus), *Asparagus capensis* (Cape asparagus), *Aizoon* sp., *Manochlamys albicans* (baconbush), *Solanum sisymbriifolium* (red buffalo-bur), *Felicia echinata* (dune Felicia), *Limonium scabrum* (Cape sea-lavender), *Salvia aurea* (bruinsalie), *Maytenus procumbens, Mystroxylon aethiopicum* (kooboo-berry); **Succulents:** *Ruschia macowanii* (beach tentfig), *Drosanthemum floribundum* (pale dewfig), *Carpobrotus edulis* (sour fig), *Euphorbia burmanii* (sweet milkbush), *Aloe arborescens* (krantz aloe) (possibly planted), *Bulbine frutescens* (wild kopieva); **Graminoids:** *Ficinia* cf*. bulbosa*, *Ficinia* sp., *Hellumthia membranacea*, *Cynodon dactylon* (kweek)(D), *Thamnochortus* sp., *Ehrharta villosa*; **Forbs**: cf. *Indigofera* spp.; **Trees:** *Brachylaeana discolor* (coast silver-oak)(sapling; extra limital), *Euclea racemosa* (seegwarrie); **Geophytes**: *Lachenalia bulbifera* (red viooltjie), *Ledebouria* sp., *Massonia pustulata* (hedgehog lily), *Brunsvigia orientalis* (candelabra lily), *Ferraria* sp., *Romulea rosea* (rosy froetang), cf. *Freesia* sp.; **Other:** *Cissampelos capensis* (goats's horn), *Asparagus asparagoides* (bridal asparagus), *Limeum africanum* (common lizardfoot).

Milkwood trees (*Sideroxylon inerme*) (PROTECTED) occur at waypoint 010 (34°24'4.71"S; 21°24'32.04"E) just outside the focus area and next to an existing house, and on the slope between the upper and lower platform at waypoint 013 (34°24'4.03"S; 21°24'34.07"E). Invasive

Myoporum cf*. montanum* (manatoka: NEMBA category 3) also occurs at waypoint 010 next to the abovementioned milkwood.

At waypoint 007 (34°24'3.18"S; 21°24'34.15"E) a small excavated hole was found. The hole contains building rubble and a small pile of rooikrans brush, however, the vegetation has naturally recovered at this point.

Figure 10. View of the upper portion (upper platform) showing Semi-intact to Intact strandveld. Viewed from waypoint 001 (34°24'2.37"S; 21°24'35.88"E) looking west.

Figure 11. The upper platform viewed from waypoint 007 (34°24'3.18"S; 21°24'34.15"E) showing Semi-intact to Intact vegetation. Evidence of regular clearing of invasive rooikrans is visible in the image (dried our brown brush).

Figure 12. The slope connecting the upper and lower platform viewed from waypoint (looking west) showing tall *Passerina rigida* (beach gonna) and sand road at left.

Figure 13. The upper (left) lower (right) platforms showing Semi-intact to Intact vegetation.

Figure 14. Highly degraded area on the lower platform viewed at waypoint 016 (34°24'4.31"S; 21°24'34.49"E) looking west. Note the leaves of the candelabra lily (*Brunsvigia orientalis*) in the foreground (yellow arrow).

Remainder of the Study area

The areas outside the focus area (and discounting roads) that occur on the steep drop-off and lower coastal zone contain intact vegetation. The steep drop-off leads downslope to a mix of strandveld and conspicuous milkwood thicket dominated by dense but low milkwood (Figure 16). This habitat transitions to seashore vegetation and extends to the Near-High Water Mark. Notable species are listed below:

Steep drop off and thicket vegetation (including milkwood thicket): **Shrubs:** *Sideroxylon inerme* (milkwood); *Searsia pterota* (winged currantrhus), *Lycium ferocissimum* (snakeberry honeythorn), *Phylica* sp., *Limonium scarbrum* (Cape sea-lavender); **Succulents:** *Lampranthus diutinus* (ENDANGERED), *Crassula* sp. and *Othonna dentata*.

Seashore vegetation and near seashore: *Chenolea diffusa* (beach soutbos); **Graminoids:** *Sporobolus vriginicus* (seashore dropseed); **Succulents and semi-succulents**: *Plantago crassifolia, Othonna dentata, Disphyma crassifolia* (purple dewplant), **Other perennials:** *Osteospermum fruticosa* (beach rain daisy).

Figure 15. The steep drop-off that extends from the lower platform to the milkwood thicket (out of image) and shoreline.

Figure 16. The lower (southern) portion of the study area showing the milkwood thicket (dark green patches) extending to the shoreline. The milkwood thicket is a wetland ESA1 site. The wetland delineation is not ground-truthed in this study.

7. SENSITIVITY

Sensitivity is defined here as the **'conservation value'** together with the **'degree of resilience to disturbance'**. The conservation value relates to the conservation status (including the ecosystem threat status) and other factors including ecological connectivity, habitat condition, persistence of ecological process and the site's role in supporting biodiversity. The degree of resilience takes into consideration factors such as sensitivity to disturbance and restoration potential. Four sensitivity rating are applied. These are High, Medium, Low and Very Low sensitivity. The sensitivity map is indicated in Figure 17. The ratings categories and rationale for each rating is provided below:

High sensitivity areas

- Coastal ecological corridor. Plant and animal movement and gene flow must be maintained along the coastal corridor. Keeping coastal corridors intact and unfragmented is a non-negotiable.
- Intact vegetation on the steep drop-off and near the shoreline and High Water Mark.
- Highly erosion-prone steep slope that should not be considered for any development. Presence of PROTECTED milkwoods and the ENDANGERED *Lampranthus diutinus*. *Lampranthus diutinus* is range restricted and in decline. The Red List of South African Plants describes the range and population status for the species*: "Aliens are a moderate threat throughout the range but the threat is concentrated around Albertinia Agriculture is particularly threatening around Riversdale and Albertinia. Subpopulations from Resiesbaan and Melkhoutfontein are possibly now extinct due to farming. Coastal Development around Mossel Bay and Still Bay at Rein's Reserve. Rein's Nature reserve has 300 houses proposed for this site* - L. multiseriatus (sic – taken to mean L. diutinus)(*grows within an area proposed for development. This is a severe future potential threat as the property is going through the EIA process at the moment (D. Raimondo 2006)."*
- Valid ESA1 and coastal corridor.

Medium sensitivity areas

- Areas supporting Semi-intact to Intact vegetation with a high species diversity.
- Ecological processes are mostly intact.
- Habitat not within key ecological corridor and has undergone fragmentation. Ecological connectivity exists but is limited in the north-south direction due to existing development.
- Areas with low to medium erosion potential.
- Limited overlap with ESA1.

Low sensitivity areas

- Disturbed areas with limited vegetation cover and high disturbance.
- Habitats with low to moderate restoration potential.
- Areas not within key ecological corridor of supporting important species.

Very low sensitivity areas

- Transformed habitats that cannot be restored (e.g. road and houses).

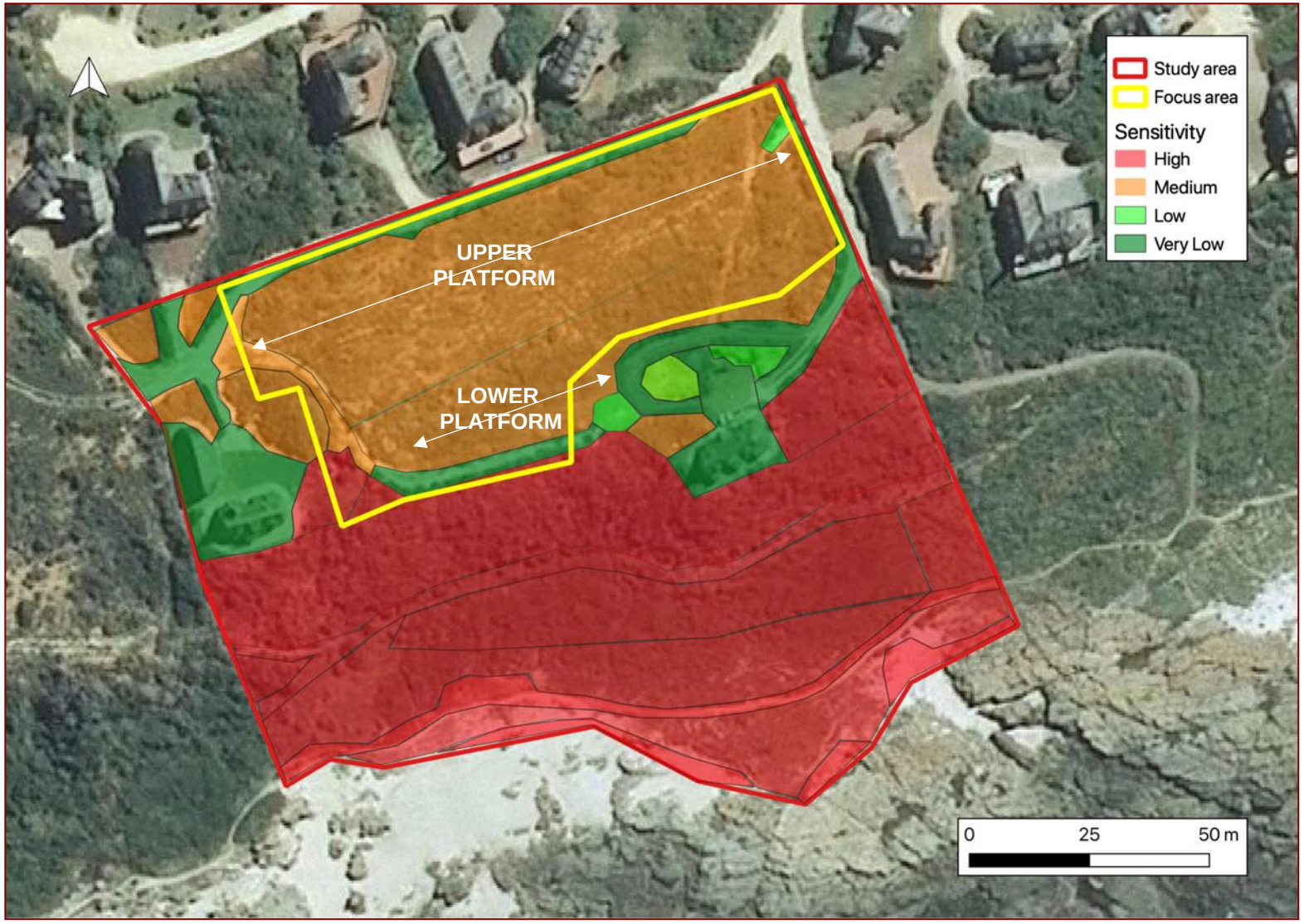

Figure 17. SENSITIVITY MAP: Google Earth™ aerial image showing the study area and focus area with sensitivity overlay.

8. CONSTRAINTS ANALYSIS

The identification of potentially developable and No-Go areas is largely dependent on the habitat sensitivity. However, if it is reasonable to either include or exclude certain areas based on an evaluation of the best interests of the affected environment versus the proposed development activity, then this should be motivated accordingly. In this instance, most of the Medium sensitivity areas within the focus area are assigned as Potentially developable (Figure 18). Edges close to the High sensitivity area are excluded (i.e. buffers) to protect the High sensitivity habitats. It is emphasized that the Potentially developable area does not imply that the whole area can be developed but is intended to guide the development option. Furthermore, in keeping with the development ethos of the Muishondbaai Estate, houses, access roads and driveways should be the only footprints imposed. In this instance, there are existing access roads and no additional access roads should be constructed. No gardens are anticipated since the natural vegetation would need to be kept intact between houses. No set numbers of houses is provided here as this must be determined by the body corporate and competent authority, and, as stated, should be as at density guided by the Skuilpiesbaai development guidelines.

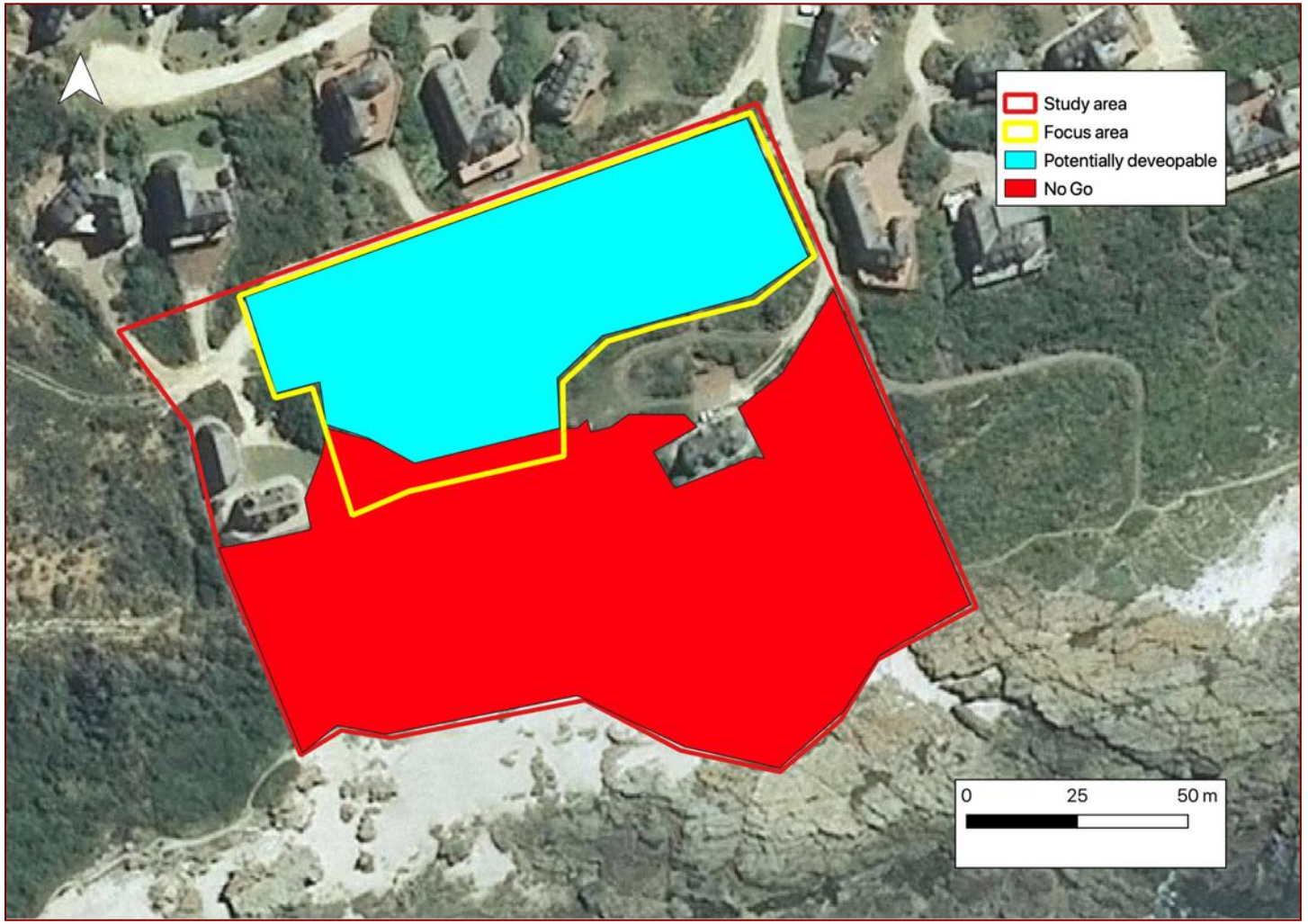

Figure 18. CONSTRAINTS AND OPPORTUNITIES MAP: Google Earth™ aerial image showing the study area and focus area with Potentiality developable versus No Go areas.

9. IMPACT ASSESSMENT

The impact assessment is a measure of the impacts likely to occur on the affected environment, specifically the vegetation, ecological processes, important species and habitats. They are considered for (a) the 'No Go' scenario and (b) the direct, indirect and cumulative impacts of the proposed project. Impacts are assessed for both construction and operational phases. The clients Spatial Development Plans (Proposed Alternative A and Proposed Alternative B) is provided in Figures 19 and 20. Proposed Alternative A, if approved, would include development of Portions 3, 4, 5, 6 and 7. Portions 2 and 8 are existing erven with existing houses. and Proposed Alternative B would, if approved, would include development of 3, 4, 5, 6, 9 and 8. Portions 2 and 7 are the existing erven with existing houses.

Figure 19. Spatial Development Plan: Proposed Alternative A.

Figure 20. Spatial Development Plan: Proposed Alternative B.

9.1. 'NO GO' OR NO DEVELOPMENT SCENARIO

The 'No Go' or no development scenario takes into consideration the impacts associated with the no construction option. It is a prediction of the future state of the affected area in the event of no construction activities taking place and is based on the current and/or anticipated future land use. If no development were to take place the status quo of the vegetation would probably remain unaltered and thus result in a **Neutral** impact.

9.2. DIRECT IMPACTS

Direct impacts are those that would occur as a direct result of the development of the proposed project. The development scenario is assessed for the construction and operational phases of the project according to the following interrelated components:

- Loss of vegetation type – including intact vegetation, ecologically important species and species of conservation concern. Note that a separate report is required for assessment of Species of Conservation Concern (Appendix 2).
- Loss of ecological processes – associated with the loss of intact vegetation, ecologically important species and species of conservation concern.

9.2.1. Construction phase: Loss of vegetation and ecological processes

Proposed Alternative A

Propose Alternative A is aligned along the existing gravel road on the northern boundary and would result in loss of most of the vegetation on the upper platform of the site. The footprint would result in loss of 3 155 m^2 (0.3 ha). Impacts are likely to be **Low Negative** based on the following:

1. Small footprint.
2. Loss of a small area (0.3 ha) of a Least Threatened vegetation type with no Species of Conservation Concern (SCC).
3. No loss of any valid CBAs or ESAs.
4. Alignment along an existing road and allowance for open space to the south, with some persistence of ecological process and retention of natural vegetation.

Proposed Alternative B

Proposed Alternative B includes the same footprint as Proposed Alternative A but with an additional development area (Portions 8 and 9) to the south and extending to the lower platform of the site. Loss of vegetation would amount to 5110 m^2 (0.5 ha). Impacts are likely to be **Medium Negative** for the same reasons as Proposed Alternative A but would result in a higher impact since (a) more vegetation would be lost, (b) and more of the Medium Sensitivity habitat would be lost. A single, juvenile milkwood (*Sideroxylon inerme*) (PROTECTED) is also present in the footprint. Furthermore, a portion of the valid ESA1 would be lost in the vicinity of Portion 9.

T**able 2.** Impact and significance for loss of vegetation type and associated ecological processes during the construction phase.

CRITERIA	**'NO GO' ALTERNATIVE**		**PROPOSED CONSTRUCTION ACTIVITIES PROPOSED ALTERNATIVE A**		**PROPOSED CONSTRUCTION ACTIVITIES PROPOSED ALTERNATIVE B**	
Status of direct impact	Neutral		Negative		Negative	
Loss of vegetation and species	**WITHOUT MITIGATION**	**WITH MITIGATION**	**WITHOUT MITIGATION**	**WITH MITIGATION**	**WITHOUT MITIGATION**	**WITH MITIGATION**
Extent	Local (0)	Local (0)	Local (1)	Local (1)	Local (1)	Local (1)
Duration	None (0)	None (0)	Long-term (3)	Long-term (3)	Long-term (3)	Long-term (3)
Intensity	None (0)	None (0)	Low (1)	Low (1)	Low (2)	Low (2)
Consequence	Not significant (0)	Not significant (0)	Low (5)	Low (5)	Medium (6)	Medium (6)
Probability of occurrence	Probable	Probable	Definite	Definite	Definite	Definite
Confidence	High	High	High	High	High	High
Significance	No impact	No impact	Low	Low	Medium	Medium
Degree to which the impact may cause irreplaceable resources	Low	Low	Low	Low	Low	Low
Degree to which the impact can be reversed	High	High	Irreversible	Irreversible	Irreversible	Irreversible
Nature of the residual impact (post mitigation)	Neutral	Neutral	Negative	Negative	Negative	Negative
Proposed essential	N/A					

mitigation:	

9.2.2. Operational phase: Loss of vegetation and ecological processes

Operational phase impacts would be associated with potential edge effects and may result in disturbance around the edges of the proposed houses and driveways/access roads. Impacts would potentially include the following:

- Trampling of vegetation.
- Cutting of vegetation.
- Accidental introduction of weeds.
- Deliberate planting of extra-limital or exotic species, although this is unlikely since the estate has strict guidelines pertaining to which species can and cannot be planted.

The impact assessment methodology (Appendix 1) scores a significance rating as Low Negative, however, this is more likely to be Very Low Negative.

T**able 3.** Impact and significance for loss of vegetation type and associated ecological processes during the operational phase.

CRITERIA	**'NO GO' ALTERNATIVE**		**PROPOSED CONSTRUCTION ACTIVITIES PROPOSED ALTERNATIVE A**		**PROPOSED CONSTRUCTION ACTIVITIES PROPOSED ALTERNATIVE B**	
Status of direct impact	Neutral		Negative		Negative	
Loss of vegetation and species	**WITHOUT MITIGATION**	**WITH MITIGATION**	**WITHOUT MITIGATION**	**WITH MITIGATION**	**WITHOUT MITIGATION**	**WITH MITIGATION**
Extent	Local (0)	Local (0)	Local (1)	Local (1)	Local (1)	Local (1)
Duration	None (0)	None (0)	Long-term (3)	Long-term (3)	Long-term (3)	Long-term (3)
Intensity	None (0)	None (0)	Low (1)	Low (1)	Low (1)	Low (1)
Consequence	Not significant (0)	Not significant (0)	Low (5)	Low (5)	Low (5)	Low (5)
Probability of occurrence	Probable	Probable	Definite	Definite	Definite	Definite
Confidence	High	High	High	High	High	High
Significance	No impact	No impact	Low	Low	Low	Low
Degree to which the	Low	Low	Low	Low	Low	Low

impact may cause irreplaceable resources						
Degree to which the impact can be reversed	High	High	Irreversible	Irreversible	Irreversible	Irreversible
Nature of the residual impact (post mitigation)	Neutral	Neutral	Negative	Negative	Negative	Negative
Proposed essential mitigation:	Proposed best practice mitigation: Ensure no disturbance to areas outside areas supported for development.					

9.3. MITIGATION

Construction phase

Mitigation options are generally considered in terms of the following mitigation hierarchy: (1) avoidance, (2) minimization, (3) restoration and (4) offsets. In this instance both avoidance and minimization are the two best options to mitigate impacts. However, since the client has proposed two alternatives with a set number of residential erven minimization is not a feasible option. As stated in Section 9.2.1 Proposed Alternative A is more desirable from a botanical perspective. **Since Proposed Alternative B would have a higher impact than Proposed Alternative A it is not supported.**

9.4. INDIRECT IMPACTS

Indirect impacts are those that do not occur as a direct result of the activity on the site but that occur further away. In this case no indirect impacts were identified.

9.5. CUMULATIVE IMPACTS

Cumulative impacts are those impacts linked to increased loss of vegetation type or the ecosystems listed in the National List of Threatened Terrestrial Ecosystems (Government Gazette, 2011). Cumulative impacts are assessed as the overall impact of loss of habitat in relation to loss of the same or similar habitat at a local scale due to past, present and future habitat loss. In the case of the study area the vegetation types is Least Threatened, and since

the loss of vegetation is not extensive at a local scale cumulative impacts would be Very Low Negative.

10. CONCLUSIONS AND RECOMMENDATIONS

The constraints analysis identified potentially developable versus No Go areas and concluded the following:

- Most of the study area and focus area supports either Semi-intact to intact or Intact Blombos Strandveld.
- Species diversity is high for the entire study area, with at least 47 species found within the focus area and at least 57 species record for the entire study area, even though the study was largely confined to the focus area. Important species include PROTECTED milkwood and the ENDANGERED *Lampranthus diutinus*; a species in population decline and threatened by coastal and agricultural development, which occurs near the coast. These species were included in the No Go area except one juvenile milkwood.
- The vegetation makeup, presence of important species (protected and species of conservation concern), proximity to the coast, varied topography, presence of a valid ESA1 coastal corridor allows for several definitive conclusions regarding the site sensitivity.
    - The lower portion of the study area was identified as a definite No Go during the constraints analysis since it is a crucial biodiversity corridor. The assigned ESA1 is a conservation planning area that must be protected from any disturbance and development in perpetuity.
    - The upper portion within focus area falls partially within the ESA1, however, the most important part of the ecological corridor is defined by the steep drop-off. This portion (upper and lower platform) was identified as Potentially developable but not the entire potentially developable area.

Subsequent to the constraints analysis the client provides two layout alternatives, namely Proposed Alternative A and Proposed Alternative B. These two options were assessed in terms of the associated impacts. The findings are as follows:

- Proposed Alternative A would lead to a residual Low Negative Impact.
- Proposed Alternative B would lead to a residual Medium Negative impact.
- Proposed Alternative B is not supported. Thus, Proposed Alternative A is the only supported option.

It is emphasized that no SCC would be impacted at Proposed Alternative A, nor do any SCC occur within the undesirable Proposed Alternative B.

In addition to the above the follow recommendations are proposed:

- No additional access roads should be constructed. Houses can be accessed from narrow and short driveways from existing roads.

11. REFERENCES

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APPENDIX 1: ASSESSMENT METHODOLOGY

(Source: SRK Consulting)

7.3 Impact Rating Methodology

The standard methodology used in EIA to assess and rate impacts based on the methodology and rating criteria is outlined in this section.

The significance of an impact is defined as a combination of the consequence of the impact occurring and the probability that the impact will occur.

The criteria used to determine impact consequence are presented in Table 5 below.

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

Rating	Definition of Rating	Score
A. Extent– the area over which the impact will be experienced		
None		0
Local	Confined to project or study area or part thereof (e.g. site)	1
Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic	2
(Inter) national	Nationally or beyond	3
B. Intensity– the magnitude of the impact in relation to the sensitivity of the receiving environment		
None		0
Low	Natural and/or social functions and processes are negligibly altered	1
Medium	Natural and/or social functions and processes continue albeit in a modified way	2
High	Natural and/or social functions or processes are severely	3

	altered	
C. Duration– the time frame for which the impact will be experienced		
None		0
Short-term	Up to 2 years	1
Medium-term	2 to 15 years	2
Long-term	More than 15 years	3

The combined score of these three criteria corresponds to a Consequence Rating, as set out in Table 6:

Table 2: Method used to determine the Consequence Score

Combined Score (A+B+C)	0 – 2	3 – 4	5	6	7	8 – 9
Consequence Rating	Not significant	Very low	Low	Medium	High	Very high

Once the consequence is derived, the probability of the impact occurring will be considered, using the probability classifications presented in Table 7.

Table 3: Probability Classification

Probability of impact – the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Probable	40% - 70% chance of occurring
Highly probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

The overall significance of the individual impacts will be determined by considering consequence and probability using the rating system prescribed in Table 8.

Table 4: Impact Significance Ratings

Significance Rating	**Consequence**		**Probability**

Significance Rating	**Consequence**		**Probability**
Insignificant	Very Low	&	Improbable
	Very Low	&	Possible
Very Low	Very Low	&	Probable
	Very Low	&	Definite
	Low	&	Improbable
	Low	&	Possible
Low	Low	&	Probable
	Low	&	Definite
	Medium	&	Improbable
	Medium	&	Possible
Medium	Medium	&	Probable
	Medium	&	Definite
	High	&	Improbable
	High	&	Possible
High	High	&	Probable
	High	&	Definite
	Very High	&	Improbable
	Very High	&	Possible
Very High	Very High	&	Probable
	Very High	&	Definite

Finally the impacts will also be considered in terms of their status (positive or negative impact) and the confidence in the ascribed impact significance rating. The prescribed system for considering impacts status and confidence (in assessment) is laid out in Table 9.

Table 5: Impact status and confidence classification

Status of impact	
Indication whether the impact is adverse (negative) or beneficial (positive).	+ ve (positive – a 'benefit')
	– ve (negative – a 'cost')

	Neutral
Confidence of assessment	
The degree of confidence in predictions based on available information, EAP's judgment and/or specialist knowledge.	Low
	Medium
	High

The impact significance rating should be considered by the authority in their decision-making process based on the implications of ratings described below:

- **Insignificant:** the potential impact is negligible and will not have an influence on the decision regarding the proposed activity/development.
- **Very Low:** the potential impact should not have any meaningful influence on the decision regarding the proposed activity/development.
- **Low:** the potential impact may not have any meaningful influence on the decision regarding the proposed activity/development.
- **Medium:** the potential impact should influence the decision regarding the proposed activity/development.
- **High:** the potential impact will affect the decision regarding the proposed activity/development.
- **Very High:** The proposed activity should only be approved under special circumstances.

In the EIA practicable mitigation measures will be recommended and impacts rated in the prescribed way both without and with the assumed effective implementation of mitigation measures.

Mitigation measures are either:

- Essential: must be implemented (as they minimise potentially significant negative impacts) and are non negotiable; and
- Optional: "nice-to-have's" as they do little to minimise a key potentially significant negative impacts and/or improve benefits.

APPENDIX 2: Terrestrial Plants Species Specialist Assessment Report

Introduction

The requirement for assessment and reporting of impacts on terrestrial plant species in accordance with new procedures for reporting on identified environmental themes published in October 2020 (Government Gazette No. 43844, 2020) states: "Where the information gathered from the site sensitivity verification differs from the screening tool designation of "very high" or "high" for terrestrial plant species sensitivity on the screening tool, and it is found to be of a "low" sensitivity, then a Terrestrial Plant Species Compliance Statement must be submitted." The Screening Tool used to derive the plant sensitivity these (https://screening.environment.gov.za) assigned a Medium sensitivity theme for the proposed development footprint or site. The Gazette (Government Gazette No. 43844, 2020) is defined as "the proposed development footprint within the preferred site".

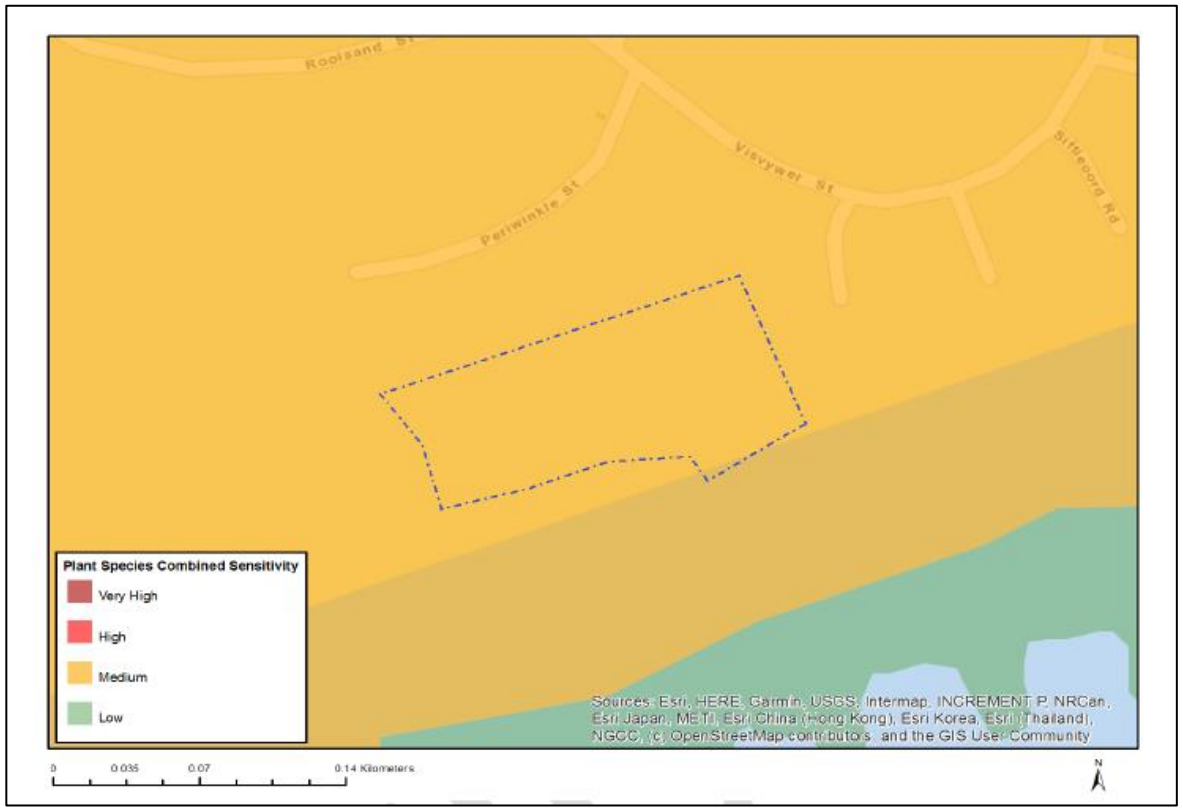

Figure 1. Map of relative plant species theme diversity.

Findings

No Species of Conservation Concern (SCC) were found within the proposed development. This is also stated in the Botanical Assessment Report.

Conclusion

Since no SCC were recorded and the confidence of the findings is High, there would be no impact on an SCC should any development be given the go-ahead. The SCC sensitivity theme for the development footprint is thus Low.

APPENDIX 3: CURRICULUM VITAE: PAUL EMMS

EDUCATION

MSc (Botany) - University of the Western Cape (2014).

BSc: Hons (Botany) – University of the Western Cape (2005).

BSc: Biodiversity and Conservation Biology - University of the Western Cape (2002 – 2004).

National Diploma in Horticulture - Cape Peninsula University of Technology (1998 – 2000).

CAREER HISTORY

April 2019 – present – Director at Capensis

March 2011 – April 2019 – independent botanical specialist and associate at Bergwind Botanical Surveys & Tours CC.

March 2008 - March 2010 - field botanist and botanical specialist - Coastec (Coastal & Environmental Consultants).

January 2006 – December 2007 - Kirstenbosch Scholarship: horticultural research - South African National Biodiversity Institute.

ACCREDITATION

Registered Professional Natural Scientist with the South African Council for Natural Scientific Practitioners (SACNASP). Registration number 400352/14.

EXPERIENCE and SKILLS

Botanical specialist consultant

- Environmental Impact Assessment
- Ecological Constraints Analysis
- Invasive Alien Plant Management Plans
- Vegetation Rehabilitation Plans
- Remediation Plans
- Open Space Management Plans
- Plant Search and Rescue Plans
- Conservation Implementation Management Plans
- Over 200 botanical assessments

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