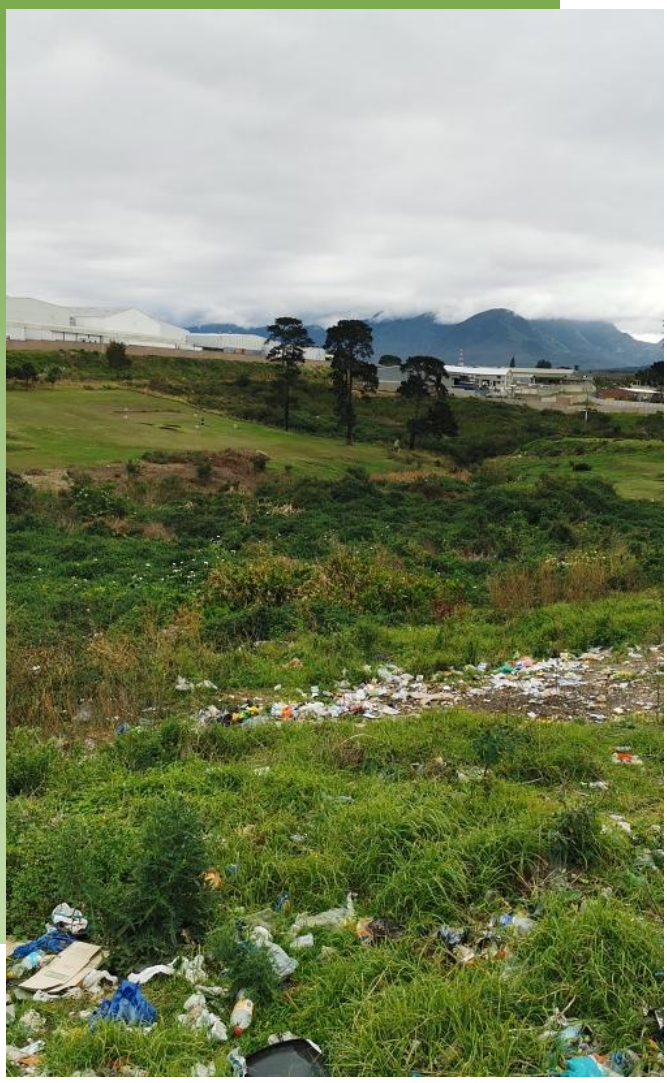

Terrestrial Biodiversity Assessment

Rosemoor Stormwater

Date: 23/03/2026
Version: Draft
Author: J. Pote

Terrestrial Biodiversity Assessment

Rosemoor Stormwater

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Compiled for: **Sharples Environmental Services**

Date of report: **23/03/2026**

Draft Report

Revisions

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First Draft	2026/03/23	Jamie Pote
Revisions/Comments		
Final Draft		
IAP comments		
Final Version		

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1 Introduction & Background

1.1 Background

Sharples Environmental Services cc (SES) has been appointed by Lyners Engineers on behalf of the George Municipality (applicant), to conduct the Environmental Impact Assessment process for the proposed upgrading of stormwater infrastructure of Rosemoor, George, Western Cape (Figure 1). As part of this application, a Terrestrial Biodiversity, Plant & Animal Specialist Assessment is required. This report has been updated to include additional infrastructure added to the layout in 2026.

Figure 1: Site locality.

1.2 Purpose of Report

The "*Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of sections 24 (5) (a) and (h) and 44 of the Act, when applying for Environmental Authorisation*", as published on 20 March, 2020 in National Gazette, No. 43110 in terms of NEMA (Act 107 of 1998) sections 24(5)(a), (h) and 44, lists protocols and minimum report requirements for environmental impacts on terrestrial biodiversity and provides the criteria for the assessment and reporting of impacts on terrestrial biodiversity for activities requiring environmental authorisation. The assessment and minimum reporting requirements of this protocol are associated with a level of environmental sensitivity identified by the National web based Environmental Screening Tool. Prior to commencing with a specialist assessment, the current use of the land and the environmental sensitivity of the site under consideration, identified by the screening tool, must be confirmed by undertaking a **site sensitivity verification**, which must include the following.

1. The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.

2. The site sensitivity verification must be undertaken through the use of:
   a. a desk top analysis, using satellite imagery.
   b. a preliminary on -site inspection; and
   c. any other available and relevant information.
3. The outcome of the site sensitivity verification must be recorded in the form of a report that:
   a. confirms or disputes the current use of the land and environmental sensitivity as identified by the screening tool.
   b. contains a motivation and evidence of either the verified or different use of the land and environmental sensitivity; and
   c. is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

The National Web Based Screening Tool was used to generate the potential environmental sensitivity of the site which has then been compared to various online and other databases and information sources in order to verify and confirm the validity of the screening tool findings. This was further supported with on-site observations and analysis of most recent aerial photography.
This terrestrial biodiversity site verification has been undertaken as per the requirements of the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation (GN 320, 20 March 2020).

1.3 Activity Description

The red polygons above (highlighted by red circles) show the areas where stormwater infrastructure outlets will be upgraded outside of the road reserve and in close proximity to watercourses (Figure 2). An additional pipeline was added to the layout in 2026 (Figure 4), and the report has been updated to reflect the additional section.

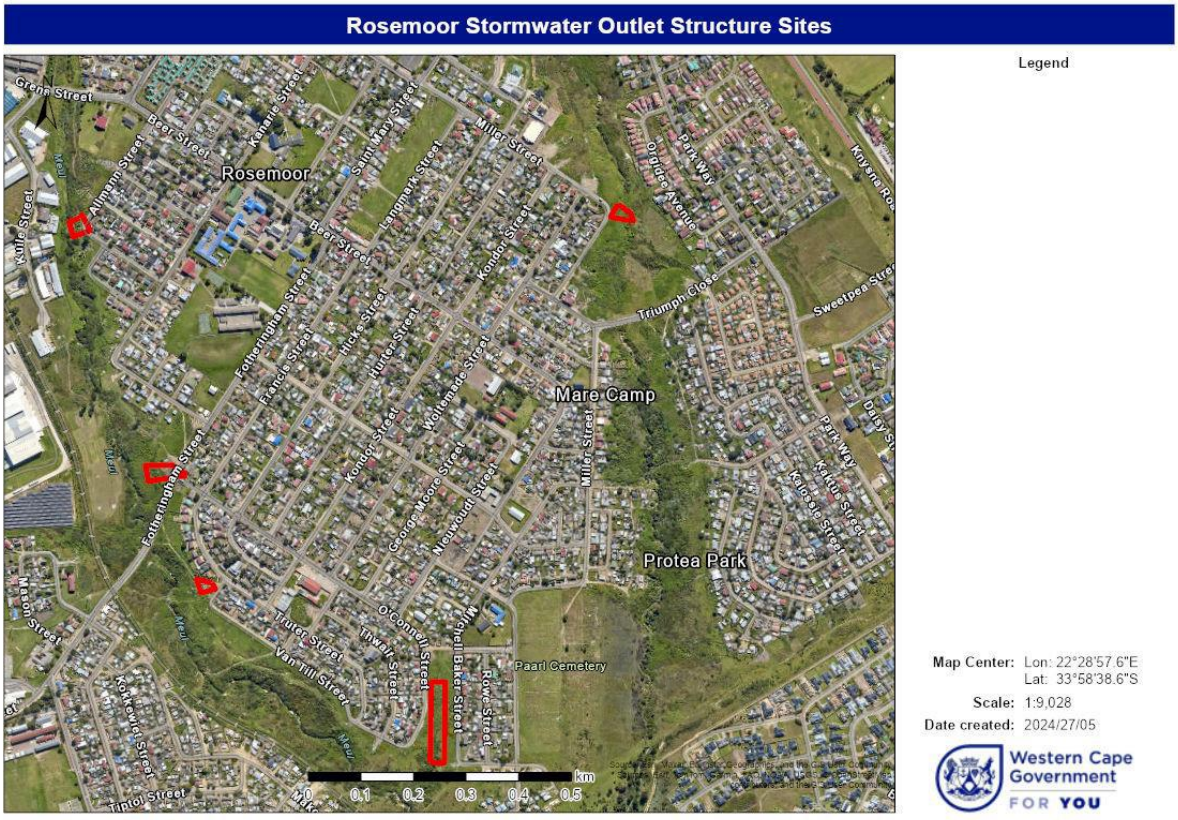

Figure 2: Rosemoor Stormwater Structure Sites.

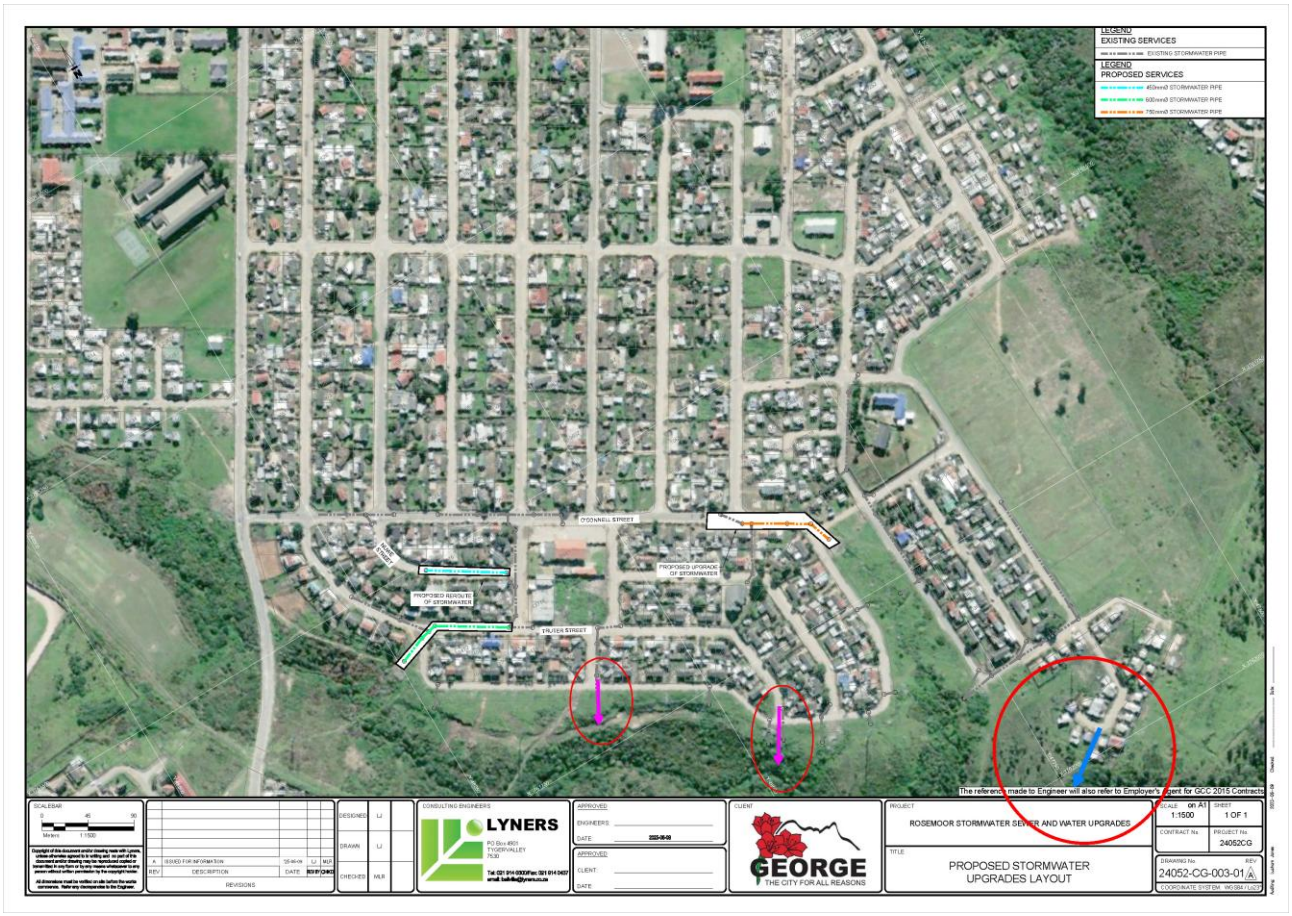

Figure 3: Rosemoor Stormwater Structure Sites.

Figure 4: Rosemoor Stormwater Structure Sites (additional).

1.4 Methodology and Approach

The proposed methodology and approach followed in this assessment are outlined below:

- Conduct a comprehensive desktop study and identify potential risks relating to vegetation and flora of the site and surrounding area, for a Terrestrial Biodiversity Assessment Report. This will include the relevant Regional Planning and legislated frameworks, which will also be represented in a series of associated maps.
- Conduct a detailed site visit to assess the following:
  - Detailed field survey of vegetation, flora and habitats present.
  - Comprehensive species list, highlighting species that are of special concern, threatened, Red Data species and species requiring permits for destruction/relocation in terms of NEMBA and the Provincial Nature Conservation Ordinance No. 19 of 1974.
  - Detailed mapping of the various habitat units and assessment of habitat integrity, ecological sensitivity, levels of degradation and transformation, alien invasion and Species of Conservation Concern, the outcome being a detailed sensitivity map ranked into high, medium or low classes.
- Reporting will be comprised of a preliminary summary, with identification of anticipated impacts and risks for any scoping phase report (where applicable), a draft detailed Assessment Report (for public review and comment) and a Final Assessment Report for submission. The draft and final detailed reports will include the following:
  - Indicate any assumptions made and gaps in available information. Assessment of all the vegetation types and habitat units within the relevant Regional Planning Frameworks.
  - A detailed species list highlighting the various Species of Conservation Concern categories (endemic, threatened, Red Data species and other protected species requiring permits for destruction/relocation and invasive/exotic weeds).
  - Description and assessment of the habitat units and site sensitivities ranked into high, medium or low classes based on sensitivity and conservation importance. A standard methodology has been developed based on other projects in the specific area.
  - Assessment of Impacts and Mitigation Measure, as well as specific measure that may be required for alternative development plans.
  - A comprehensive EMPr for inclusion in the reports and EMP with specific management actions for construction and Operation.
  - A habitat sensitivity map will be compiled, indicting the sensitivities as described above.
  - A map indicating buffers (if required) to accommodate Regional Planning and any other requirements.

This terrestrial biodiversity compliance statement has been undertaken as per the requirements of the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation (GN 320, 20 March 2020).

1.5 Data sources and references

Data sources that were utilised for this report include the following:

- National (DFFE) Web Based Screening Tool – to generate the sites potential environmental sensitivity.
- National Vegetation Map 2018 (NVM, 2018), Mucina & Rutherford (2006) and National Biodiversity Assessment or Red Listed Ecosystems (NBA/RLE, 2022) – description of vegetation types, species (including endemic) and most recent vegetation unit conservation status.
- National and Regional Legislation including Provincial Nature Conservation Ordinance (P.N.C.O). NEM:BA Threatened or Protected Species (ToPS).

- Botanical Database of Southern Africa (BODATSA) and New Plants of Southern Africa (POSA) – lists of plant species and potential species of concern found in the general area (SANBI.)
- International Union for Conservation of Nature (IUCN) - Red List of Threatened Species.
- Animal Demography Unit Virtual Museum (VM) – potential faunal species.
- Global Biodiversity Information Facility (GBIF) – potential flora & faunal species distributions.
- National Red Books and Lists - mammals, reptiles, frogs, dragonflies & butterflies.
- National Freshwater Ecosystem Priority Areas assessment (NFEPA, 2011) - important catchments.
- National Protected Areas Expansion Strategy (NPAES, 2018) and South Africa Protected Area database (2020) – protected area information.
- SANBI BGIS – All other biodiversity GIS datasets.
- Western Cape Biodiversity Spatial Plan (2017).
- Aerial Imagery – Google Earth, ESRI, Chief Surveyor General (http://csg.dla.gov.za).
- Cadastral and other topographical country data - Chief Surveyor General (http://csg.dla.gov.za).
- Other sources may include peer-reviewed journals, regional and local assessments, and studies in the general location of the project and its area of influence, landscape prioritization schemes (Key Biodiversity Areas), systematic conservation planning assessments and plans (as above), and any pertinent masters and doctoral theses, among others.

This terrestrial biodiversity assessment has been undertaken as per the requirements of the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation (GN 320, 20 March 2020).

1.5.1 Site visit

A site inspection was conducted on **24 July 2024**, during mid-winter and a follow up site visit (early autumn) for additional infrastructure. The site falls within a temperate climate with rainfall occurring throughout the year but is often higher in winter, hence for the purposes of this report, a single site visit is deemed to be adequate, specifically due to the disturbed nature of the site.

1.5.2 Assumptions, Uncertainties and Gaps in Knowledge

The findings and recommendations of this report may be susceptible to the following uncertainties and limitation:

- No assessment has been made of aquatic aspects relating to any wetlands, pans, and rivers/seeps and/or estuaries or marine ecosystems outside of the scope of a terrestrial biodiversity report. Refer to separate reporting.
- Any botanical surveys based upon a limited sampling time-period, may not reflect the actual species composition of the site due to seasonal variations in flowering times. Additionally, the composition of fire adapted vegetation may vary depending on level of maturity or time since last burn. As far as possible, site collected data has been supplemented with desktop and database-centred distribution data.
- As far as possible, site collected data has been supplemented with desktop and database-centred distribution data as well as previous studies undertaken in the area.

2 Policy

2.1 Legislation Framework

In terms of NEMA EIA Regulations (07 April 2014, as amended), the following is applicable[1]:

- In terms of section 52 of NEMBA *(Activity (a)(i))*, the vegetation unit Garden Route Granite Fynbos, has a **Critically Endangered** status as per National Biodiversity Assessment (2022).
- In terms of the Western Cape Biodiversity Spatial Plan (WCBSP, 2017), designated Critical Biodiversity Area 1 & 2 and Ecological Support Area 2 overlaps partially with the site.

Listing Notice 1:

Activity 12: The development of—
(xii) infrastructure or structures with a physical footprint of 100 square metres or more.
where such development occurs—
(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse: —
excluding—
(dd) where such development occurs within an urban area; or
(ee) where such development occurs within existing roads or road reserves.

The proposed activity is located within an urban area; hence the activity is not applicable.

Activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.
but excluding where such infilling, depositing, dredging, excavation, removal or moving—
~~i. will occur behind a development setback.~~

The proposed activity will exceed the excavation of more than 10 cubic meters from within 32m of a watercourse, hence will be triggered.

Activity 27: The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—
(i) the undertaking of a linear activity; or
(ii) ~~maintenance purposes undertaken in accordance with a maintenance management plan.~~

The proposed activity will potentially exceed clearing of more than 1 Ha of indigenous vegetation resulting from construction of the discharge points.

Listing Notice 2:

None are applicable.

Listing Notice 3:

Activity 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.
(a) In Eastern Cape, Free State, Gauteng, Limpopo, North-West and Western Cape provinces:
i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or ~~prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004~~.
ii. Within critical biodiversity areas identified in bioregional plans.

1 *The listed activities itemized are only those with Biodiversity relevance to this report and is not a complete list.*

The proposed activity will potentially exceed clearing of more than 300m² of indigenous vegetation from within designated Critical Biodiversity Areas as well as designated Critically Endangered vegetation, resulting from construction of the discharge points.

Activity 14: The development of—
(ii) infrastructure or structures with a physical footprint of 10 m² or more, where such development occurs—
(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse
(f) In Western Cape:
i. Outside urban areas, in:
(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.

The proposed activity will include structures of more than 10m² within 32m of a watercourse within designated Critical Biodiversity Area and Ecological Support Areas, however, is situated within an urban area.

In terms of the EIA Listing Notices, listing notice 1 & 3, the activity is trigged as indicated above, thus requiring a Basic Assessment process. This Terrestrial Biodiversity Assessment will primarily deal with the activities triggering listed activities 12 (LN 1) and 14 (LN 3), depending on requirements for clearing of indigenous vegetation.

Other potentially relevant legislation, which will be evaluated as required, includes the following:

- Liability for any environmental damage, pollution, or ecological degradation: Arising from all -related activities occurring inside or outside the area to which the permission/right/permit relates is the responsibility of the rights holder. The National Water Act and NEMA both oblige any person to take all reasonable measures to prevent pollution or degradation from occurring, continuing, or reoccurring (polluter pays principle). Where a person/company fails to take such measures, a relevant authority may direct specific measures to be taken and, failing that, may carry out such measures and recover costs from the person responsible.
- Public participation: Public consultation and participation processes prior to granting licences or authorisations can be an effective way of ensuring that the range of ways in which the activities impact on the environment, social and economic conditions are addressed, and considered when the administrative discretion to grant or refuse the licence is made.
- Constitution of Republic of South Africa (1996): Section 24(a) of the Constitution states that everyone has the right *'to an environment that is not harmful to their health or well-being'*. Construction activities must comply with South African constitutional law by conducting their activities with due diligence and care for the rights of others.
- Western Cape Nature and Environmental Conservation Ordinance 19 of 1974: Lists Protected species, requiring permits for removal (Department of Economic Development, Environmental Affairs and Tourism).
- Water Use Authorisations: The National Water Act (No. 36 of 1998): Requires that provision is made both in terms of water quantity and quality for 'the reserve', namely, to meet the ecological requirements of freshwater systems and basic human needs of downstream communities. It is essential in preparing an EMP that any impacts on water resources be they surface water or groundwater resources, and/ or impacts on water quality or flow, are carefully assessed, and evaluated against both the reserve requirement and information on biodiversity priorities. This information will be required in applications for water use licenses or permits and/or in relation to waste disposal authorisations.
- Conservation of Agricultural Resources Act 43 of 1993: Lists Alien invasive species requiring removal.

2.2 Systematic Planning Frameworks

A screening of Systematic Planning Framework for the region has been undertaken (summarised in Table 1), that included the following features:

- National Environmental Screening Tool
- Critically Endangered, Endangered and Vulnerable Ecosystems
- Critical Biodiversity and Ecological Support Areas
- River and Wetland Freshwater Ecosystem Priority Areas (FEPAs) and buffers
- Protected Areas (and buffers) and National Protected Area Expansion Strategy areas (NPAES).
- Critical Habitat for listed endemic or protected species.

Table 1: Summary of Regional Planning Biodiversity features.

FEATURE[2]	DESCRIPTION	IMPLICATIONS/COMMENT
National Environmental Screening Tool (Terrestrial Biodiversity)	Very High Terrestrial Biodiversity Low, Medium & High Plant & Animal Species sensitivities Very High Aquatic sensitivity	CBA 1 & 2, ESA 2, Critically Endangered ecosystem, SWSA & SANParks Buffer Several Plant & Animal Species flagged by the screening tool. CBA 1, SWSA & Wetlands
National Vegetation Map (NVM, 2018)	Garden Route Granite Fynbos	Critically Endangered
Critically Endangered and Endangered Ecosystems (NBA 2018)	Garden Route Granite Fynbos	Assessment to determine risks.
Vulnerable Ecosystems (NBA)	None	N/A
Western Cape Biodiversity Spatial Plan (2017)	Critical Biodiversity Area 1 & 2, Ecological Support Area 1	Assessment to determine risks.
Protected Areas (SAPAD)	None	N/A
Protected Areas (WC BSP)	None	N/A
NPAES (Draft 2018)	None	N/A
NPAES (2010)	None	N/A
Strategic Water Source Areas (SWSA)	Outeniqua SWSA	Impacts to site may have risks to downstream water sources.
Freshwater Ecosystem Priority Areas (FEPA's)	None	N/A
Regional Hotspots & Regions of Endemism	Cape Floristic Region Hotspot	Specific activity and site unlikely to pose any risk to broader biodiversity hotspot.
Important Bird Areas (IBA's)	None	N/A
Key Biodiversity Areas (KBA's)	None	N/A
Marine/Coastal areas	None	N/A
RAMSAR sites	None	N/A
Within 32 m of Watercourse	Stormwater discharge points will be within 32m of watercourses	May have impacts to watercourses and/or associated flora and fauna.
Within 100 m of River	None.	N/A
Estuary	None	N/A

[2] Refer to Figure 9 to Figure 13.

FEATURE[2]	DESCRIPTION	IMPLICATIONS/COMMENT
Within 500 m of Wetland	Valley Bottom Wetlands are associated with the watercourses in the area.	May have impacts to watercourse and/or associated flora and fauna.
Forest	None	N/A
Surrounding Land Uses	Surrounding land primarily used for urban dwellings.	Site and surrounding area are transformed and/or with scattered secondary vegetation elements.
Critical Habitat for listed endemic/ protected species	No specific populations of threatened species were identified within the footprint and the affected footprint is largely disturbed or comprised of secondary vegetation. There are several red listed species in the surrounding area and vegetation units that are known to have limited distributions, however none were recorded within the footprint.	

2.2.1 National Environmental Screening Tool

The DEA Screening Tool indicates the following, summarised in Table 1:

- Terrestrial Biodiversity is Very High (Figure 5).
- Plant species sensitivity is Low &Moderate (Figure 6).
- Animal Species sensitivity is High (Figure 7).
- Aquatic Sensitivity is Very High (Figure 8).

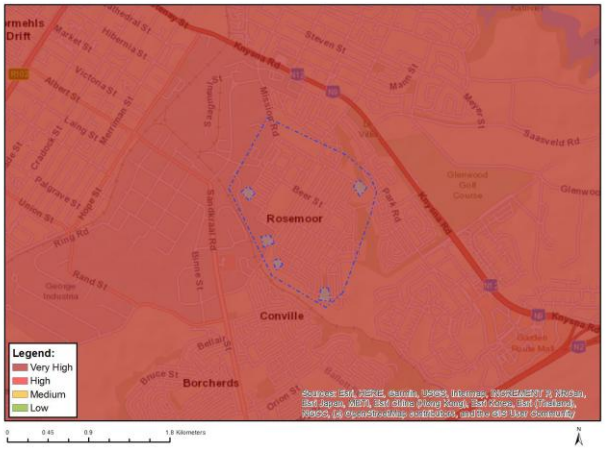

Figure 5: Terrestrial Biodiversity Sensitivity

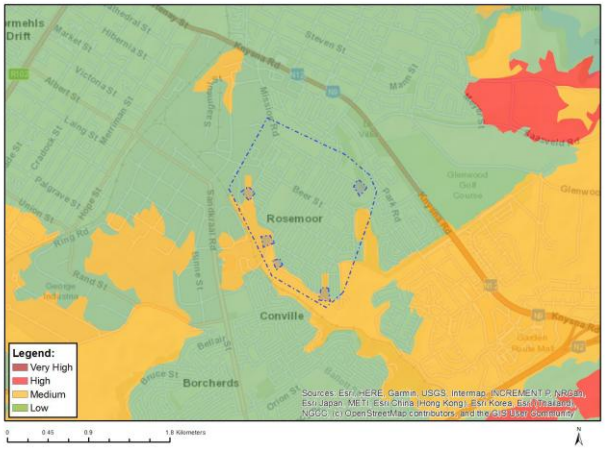

Figure 6: Plant Species Sensitivity

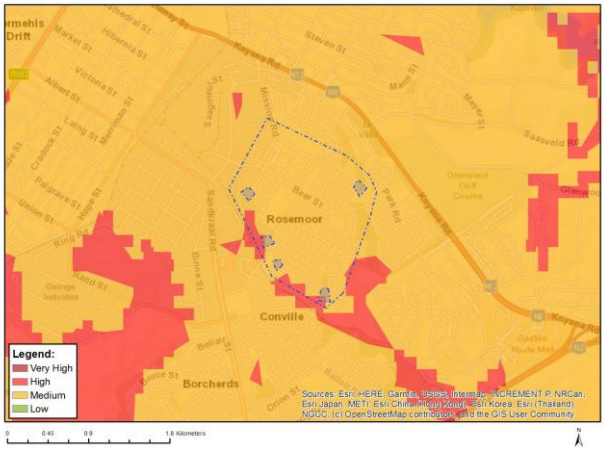

Figure 7: Animal Species Sensitivity

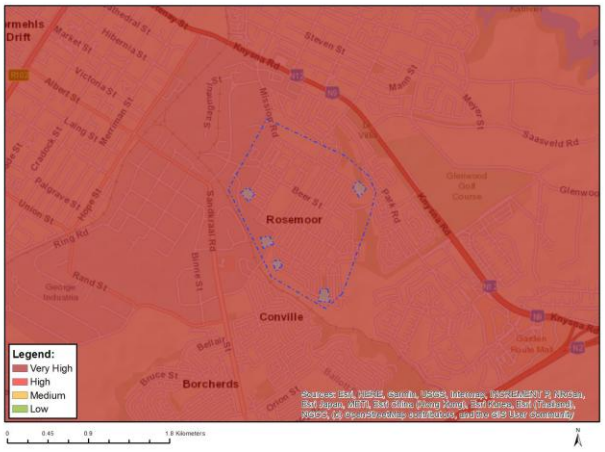

Figure 8: Aquatic Sensitivity

Table 2: Summary of Screening tool designations.

Terrestrial Sensitivity	**Feature(s) in proximity**
Very High	CBA 1: Terrestrial, CBA 2: Terrestrial, SWSA (SW Outeniqua) & Garden Route Granite Fynbos (Critically Endangered)
High	None
Medium	None
Low	Present
Plant Sensitivity	
Very High	None
High	None
Medium	*Lampranthus pauciflorus, Leucospermum glabrum, Diosma passerinoides, Sensitive species 1024, 1032, 800 & 500.*
Low	Present
Animal Sensitivity	
Very High	None
High	*Circus ranivorus* & *Bradypterus sylvaticus* (Birds)
Medium	*Afrixalus knysnae* (Amphibian), *Chlorotalpa duthieae*, Sensitive species 8 (Mammal) & *Aneuryphymus montanus* (Insects)
Low	Present
Aquatic Sensitivity	
Very High	CBA 1: Aquatic, SWSA (SW Outeniqua) & Wetlands - Eastern Fynbos-Renosterveld Bioregion (Valley-bottom wetlands)
High	None
Medium	None
Low	None

2.2.2 Vegetation of Southern Africa

The National Vegetation Type (NBA, 2018, Figure 9) indicated for the site and surrounding area are Garden Route Granite Fynbos, having a *Critically Endangered* status, as per National Biodiversity Red Listed Ecosystems Assessment (NBA/RLE, 2022).

Garden Route Granite Fynbos (FFg 5)

VT 46 Coastal Renosterbosveld (70%) (Acocks 1953). South Coast Renosterveld (22%) (Moll & Bossi 1983). LR 2 Afromontane Forest (67%) (Low & Rebelo 1996). BHU 100 Knysna Afromontane Forest (64%), BHU 28 Blanco Fynbos/Renosterveld Mosaic (36%) (Cowling et al. 1999b, Cowling & Heijnis 2001).

Distribution: Western Cape Province: Garden Route. Three main blocks south of the Outeniqua Mountains on the coastal plain from Botterberg west of Brandwaghoogte (south of Robinson Pass) to Groot Brak River; the largest block from Groot Brak River to Woodfield near the Wilderness (with a few strips along the coast from Bothastrand to the Wilderness); lastly, north of the lakes from Woodville to Hoogekraal Pass, west of Karatara.

Altitude: 0–300 m.

Vegetation & Landscape Features: Moderately undulating plains and undulating hills on the coastal forelands. Dense proteoid and ericoid shrubby grassland. Proteoid and graminoid fynbos are dominant with ericaceous fynbos in seeps. In the west, most remnants of this type are dominated by proteas. Eastwards graminoid and ericaceous fynbos are dominant on the flat plateaus, with proteas confined to the steep slopes.

Geology & Soils: George Batholith of the Cape Granite Suite. Deep, prismacutanic- and pedocutanic-dominated soils typical of Db land types (mainly).

Climate: MAP 350–880 mm (mean: 600 mm), with a slight low in early winter. Mean daily maximum and minimum temperatures 27.8°C and 6.8°C for January–February and July, respectively. Frost incidence 2 or 3 days per year.

Important Taxa: Tall Shrubs: *Passerina corymbosa* (d), *Cliffortia serpyllifolia*, *Protea coronata, P. lanceolata, P. neriifolia.* Low Shrubs: *Erica discolor variant 'speciosa'* (d), *E. peltata* (d), *Phylica confusa* (d), *Syncarpha paniculata* (d), *Agathosma ovata, Anthospermum prostratum, Aspalathus asparagoides, Cliffortia falcata, Cullumia bisulca, Erica canaliculata, E. diaphana, E. formosa, Eriocephalus africanus, Hermannia angularis, Leucadendron salignum, Lobelia tomentosa, Metalasia pungens, Mimetes cucullatus, Pelargonium fruticosum, Relhania calycina*. Succulent Shrub: *Lampranthus sociorum*. Semiparasitic Shrubs: *Osyris compressa, Thesium virgatum.* Semiparasitic Epiphytic Shrub: *Viscum capense*. Geophytic Herb: *Schizaea pectinata*. Graminoids: *Tetraria cuspidata* (d), *Brachiaria serrata, Eragrostis capensis, Ficinia nigrescens, Heteropogon contortus, Pentaschistis eriostoma, Restio triticeus, Themeda triandra*.

Conservation: Critically Endangered (2022). Target 23%. Only about 1% conserved in the proposed Garden Route National Park. About 70% has been transformed for, cultivation (56%), pine plantations (7%) and by urban development (6%). Remnants are largely confined to isolated pockets on steeper slopes.

Erosion: Moderate and High. Very few patches of this type remain in a pristine condition as most of it has been converted to pasture by liming, bush-cutting and frequent burning, and augmented with pasture grasses. Western remnants suggest that proteoid fynbos might have been dominant historically. It is easily converted to graminoid fynbos by regular fires and augmentation with pasture grasses.

References: Drews (1980b), Hoare et al. (2000).

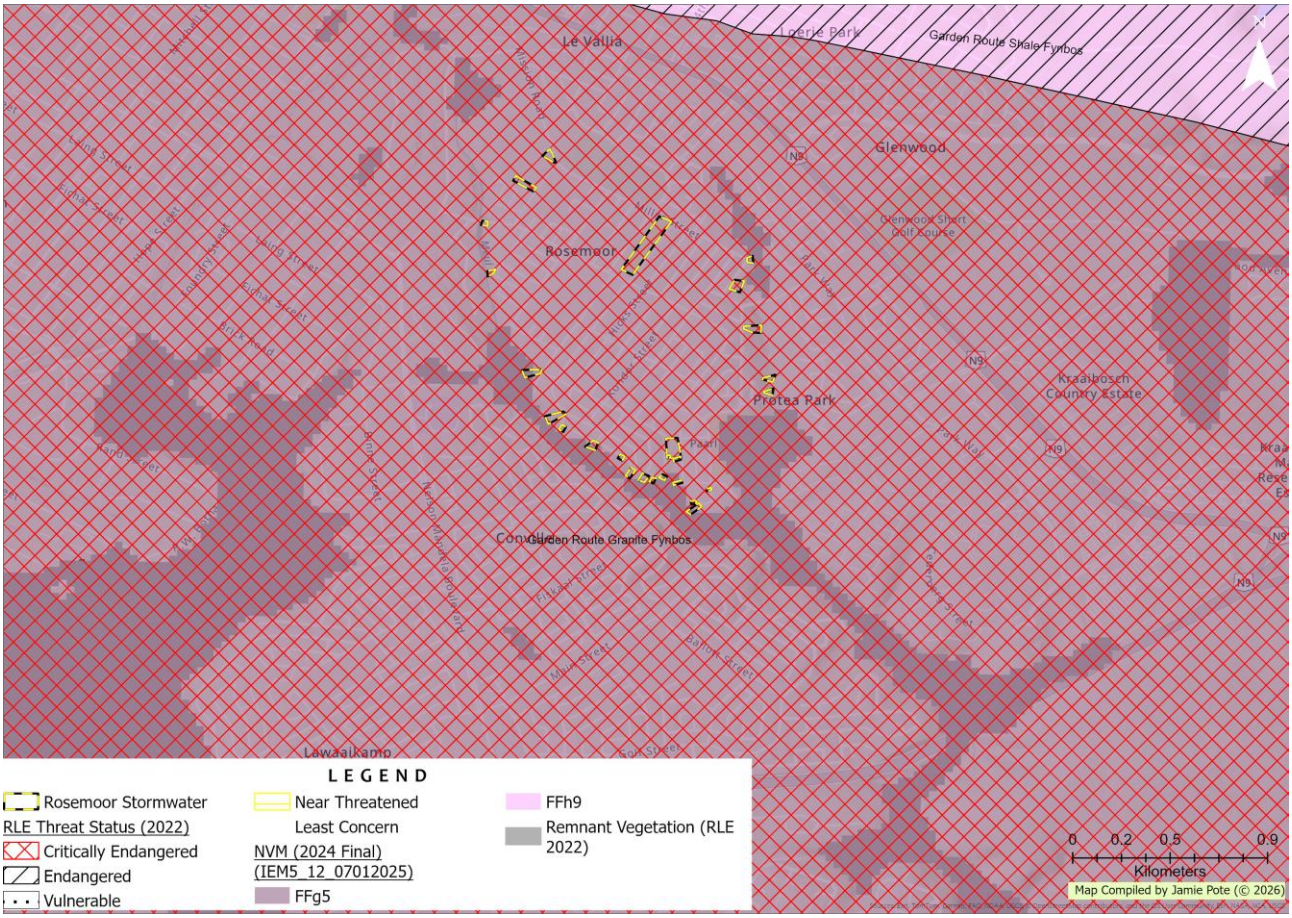

Figure 9: National Biodiversity Assessment Vegetation Type and Conservation Status (NBA, 2018). Darker shaded areas indicative of remnant vegetation.

2.2.3 Western Cape Biodiversity Spatial Plan (WCBSP, 2023) – Terrestrial

The Western Cape Biodiversity Spatial Plan (2017, Figure 10) indicates that most of the proposed stormwater structure footprints fall within transformed roads and road reserves, with predominantly the discharge points falling within areas designated CBA 1 & 2 and ESA 2, which are associated with the watercourses and surrounding vegetation that are undeveloped within the urban area.

The Biodiversity Spatial Plan indicates areas of land as well as aquatic features which must to be safeguarded in their natural state if biodiversity is to persist and ecosystems are to continue functioning. Land in this category is referred to as a Critical Biodiversity Area. CBAs incorporate:

I. areas that need to be safeguarded in order to meet national biodiversity thresholds.
II. areas required to ensure the continued existence and functioning of species and ecosystems, including the delivery of ecosystem services; and/or
III. important locations for biodiversity features or rare species.

Ecological Support Areas (ESAs) are supporting zones required to prevent the degradation of Critical Biodiversity Areas and Protected Areas. An ESA may be an ecological process area that connects and therefore sustains Critical Biodiversity Areas or a terrestrial feature. None are present withi the site or immediate vicinity. Defining criteria and recommended activities are summarised in Table 3 below.

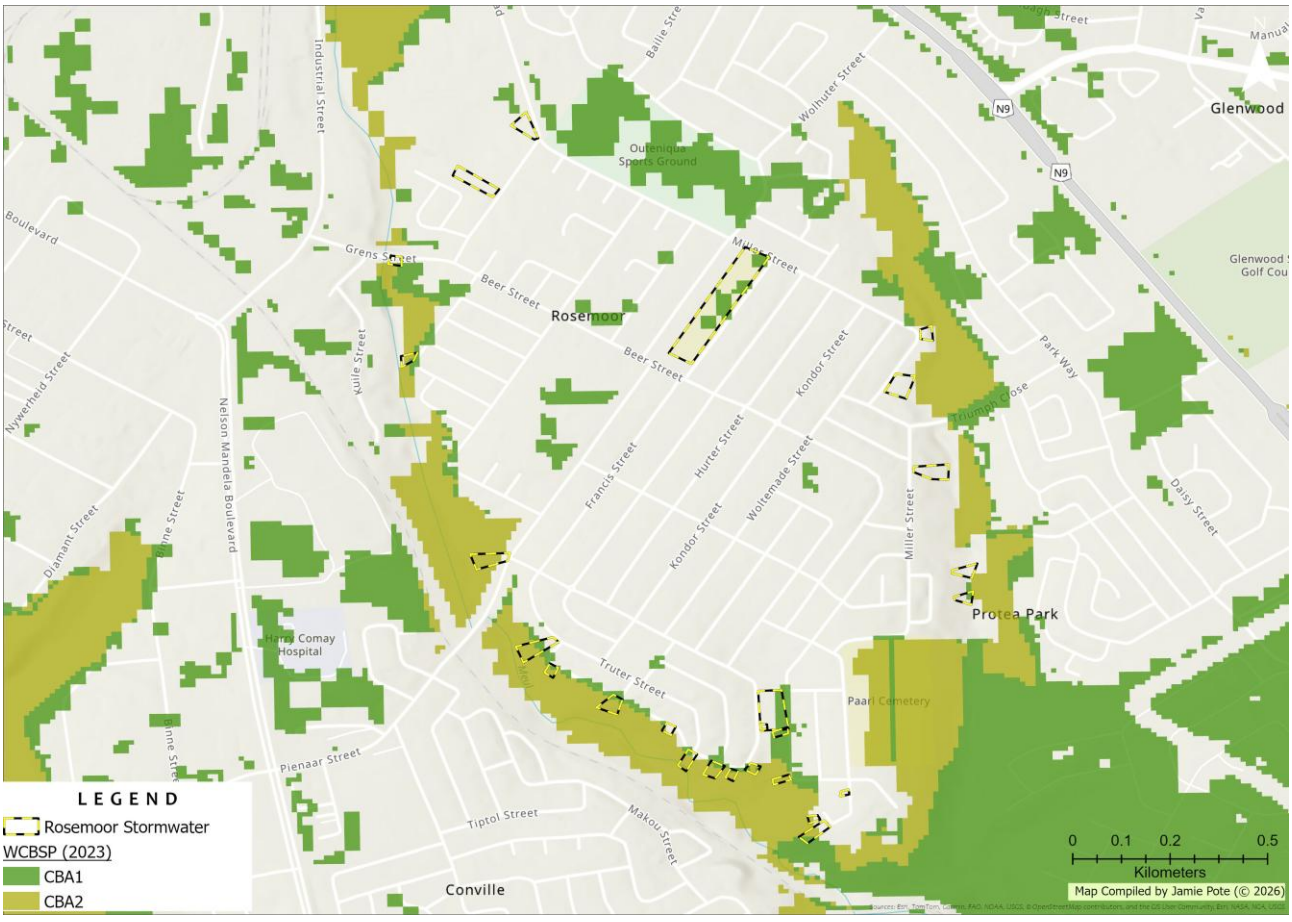

Figure 10:Western Cape Biodiversity Spatial Plan (WCBSP, 2023) –The site does overlap with some designated CBA 1 and CBA 2 areas.

Table 3: Criteria defining Critical Biodiversity Areas (Source: WC BSP, 2023)

CBA MAP CATEGORY:	DEFINING CRITERIA
Protected Areas (Not Present)	Areas that are proclaimed as protected areas under national or provincial legislation.

CBA MAP CATEGORY:	DEFINING CRITERIA
	Must be kept in a natural state, with a management plan focused on maintaining or improving the state of biodiversity. A benchmark for biodiversity.
Critical Biodiversity Areas 1 (CBA) (Present)	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.
Critical Biodiversity Areas 1 (CBA 2) (Present)	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.
Ecological Support Areas 1 (ESA 1) (Not Present)	Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PA's or CBA's 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.
Ecological Support Areas 2 (ESA 2) (Not Present)	Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PA's or CBA's and are often vital for delivering ecosystem services. Restore and/or manage to minimise impact on ecological infrastructure functioning; especially soil and water-related services.
Other Natural Areas (ONA) (Present)	Areas that have not been identified as a priority in the current systematic biodiversity plan but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. Although they have not been prioritised for biodiversity, 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 some authorisation may still be required for high-impact land uses.
No Natural Area Remaining (NNAR) (Present)	Areas that have been modified by human activity to the extent that they are no longer natural, and do not contribute to biodiversity targets. These areas may still provide limited biodiversity and ecological infrastructure functions, even if they are never prioritised for conservation action. Manage in a biodiversity-sensitive manner, aiming to maximise ecological functionality. Offers the most flexibility regarding potential land uses, but some authorisation may still be required for high impact land uses.

2.2.4 Protected areas

The South Africa Protected Areas Database (SAPAD) database, a comprehensive database of various protected area categories, is updated on a quarterly basis, and provides a comprehensive source of all national and private nature reserves, world heritage sites and other formal legally protected conservation areas situated within South Africa (Figure 11).

When projects are located in legally protected and internationally recognized areas, clients should ensure that project activities are consistent with any national land use, resource use, and management criteria (including Protected Area Management Plans, National Biodiversity Strategy and Action Plans (NBSAP's), or similar documents).

The proposed site does not overlap with any SAPAD designated Protected Areas and is unlikely to have any impacts of significance to any species or processes associated with any nearby Protected Areas. Nearest Protected Areas within 10 km of the site include Blydskap Private Nature Reserve (4.6 km SE), Cape Floral Kingdom Protected Areas (4.6 km NW), Garden Route National Park (4.2 km NE), George Private Nature Reserve (3.8 km SE), Katrivier Nature Reserve (1.6 km N), Van Kervel Nature Reserve (2.6 km NW), Kwelanga Private Nature Reserve (6.4 km S), Kleinbaai Private Nature Reserve (6 km SE), Kaaimans River Gorge Private Nature Reserve (5.7 km NE). The watercourses associated with the proposed stormwater infrastructure are subsidiaries of the Meul River, which flows in a southerly direction and passes along the southern boundary of the George Private Nature Reserve.

The site is not within or in proximity to any designated NPAES areas, where any impacts may arise.

Activities that improve water quality discharge are likely to have a positive indirect impact in the downstream areas including protected areas.

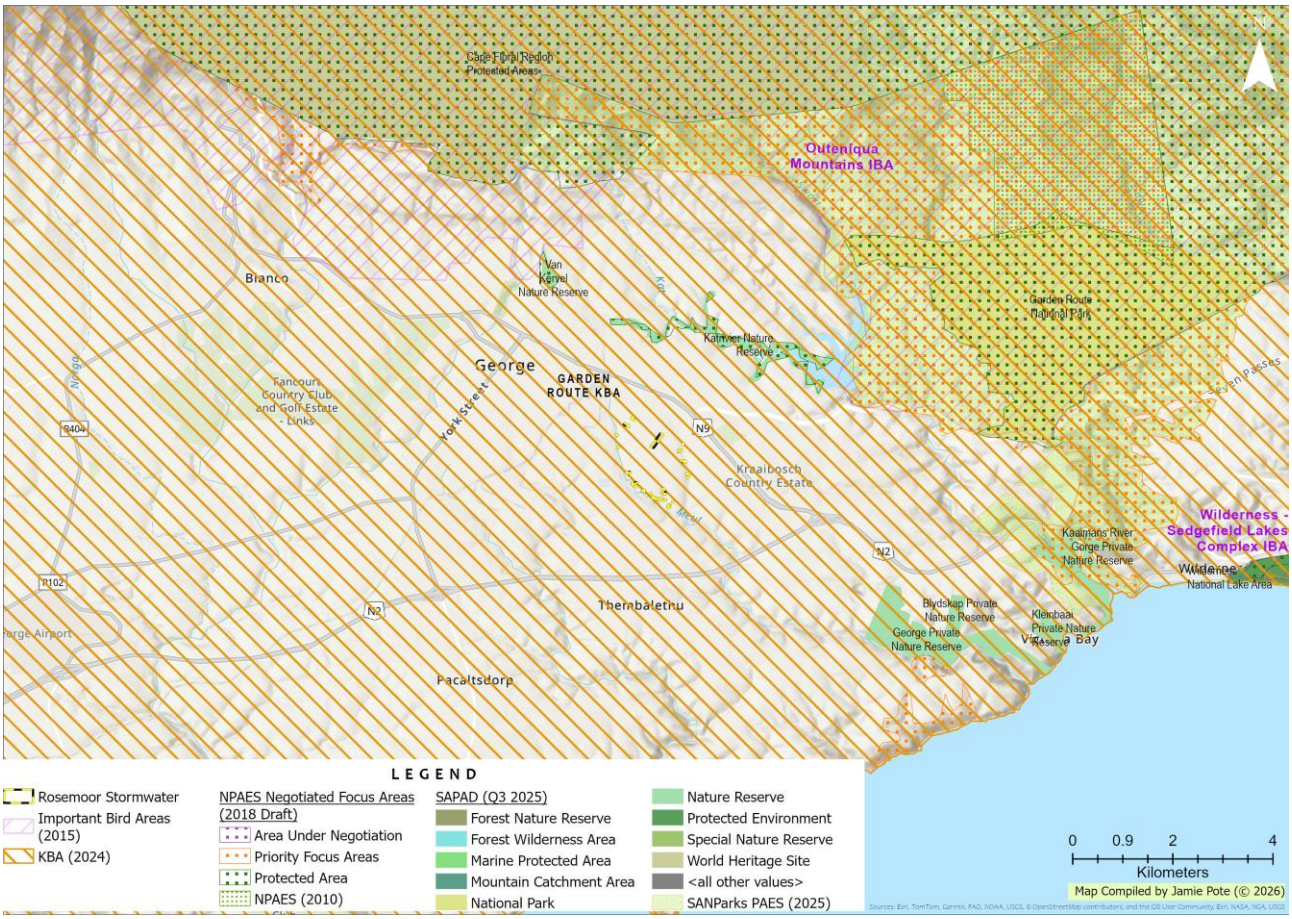

Figure 11: Protected Areas.

2.2.5 Key Biodiversity Areas

The site is situated within the Garden Route KBA, which covers and extensive area within eh eastern and western cape provinces. Subsequently, while 132 potential triggers (habitat and species) are flagged within the KBA, most are localised and thus only applicable to a small area within the boundary of the designated KBA area which includes terrestrial, marine, freshwater habitat and species. The specific triggers that are relevant to this site are addressed in the respective sections pertaining to the vegetation unit and species of conservation concern.

2.2.6 Important Bird Areas

The site is not situated within or near nay designated Important Bird Area (Figure 11). The nearest IBA is the Outeniqua mountains IBA situated just over 3 km to the north and east. While the surrounding area may have transient bird species visitors that are associated with the IBA, it is unlikely that the specific activity, within an urban and significantly transformed and degraded area is likely to have any impact of significance to such occurrences.

2.2.7 Garden Route Biodiversity Sector Plan (2010)

The Garden Route BSP (GRBSP, 2007, Figure 12) identified the vegetation as being Grassy Fynbos (associated with the slopes) and Rivers & Floodplain (associated with the watercourses). The Garden Route BSP further indicates that portions of the site partially intersect with designated Critical Biodiversity Area along the watercourses and possibly representing historically intact or remnant vegetation. The Garden Route BSP is largely integrated with and/or superseded by the Western Cape BSP and National Vegetation Map, which is also updated to represent changing land use, but indicates that the later plans are broadly aligned with the earlier GRBSP.

Figure 12: Garden Route Biodiversity Sector Plan (2007) vegetation designation and CBA/ESA status.

2.2.8 Rivers, Watercourses and Wetlands

The site is situated within along roads within an urban area, on slopes that drain into the adjacent slightly incised watercourses. The slopes directly adjacent to the watercourses are generally undeveloped and have vegetation cover. The condition and status of the vegetation cover, including riparian vegetation, is included in the vegetation description section below. The non-perennial watercourses associated with

the Rosemoor area drain in a southerly direction into the Meul River, which flows southwards to the coast.

Wetlands potentially comprise Valley bottom wetlands that are associated with the local watercourses. Aquatic assessment is outside the scope of this assessment but will consider aspects that relate to terrestrial processes and species.

Formalisation of stormwater infrastructure implemented correctly is likely to reduce erosion along riverbanks and ease localised flooding. Within the urban context, any wetlands in the vicinity of the discharge points are likely already significantly modified and/or affected by stormwater flows and are thus unlikely to be affected above baseline levels.

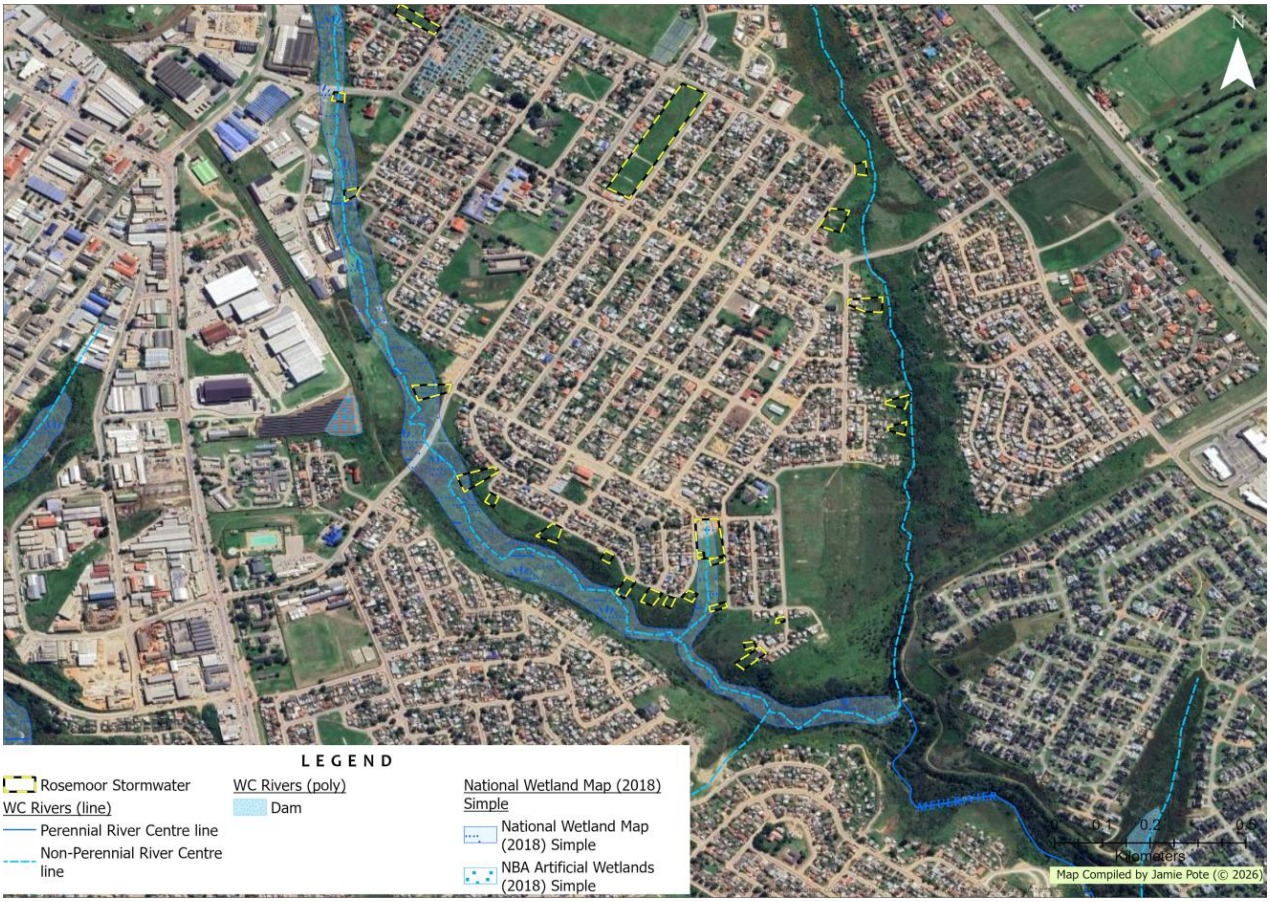

Figure 13: Rivers. Wetlands and Estuaries associated with the site.

3 Biodiversity Risk Identification and Assessment

3.1 Baseline Biodiversity Description

The site is located within a transformed developed urban area on slopes adjacent to somewhat incised watercourses, draining in a southerly direction. The only remaining vegetation cover is comprised of a narrow band of vegetation along eh banks of the watercourses, as well as some grassed and landscaped gardens within the suburbs (Figure 15 to Figure 42). .

The site is comprised predominantly of transformed areas which include the dwellings, surfaced roads, sidewalks, landscaped gardens ana few grassed open space areas (Figure 43). The areas having '*natural*'

vegetation cover are generally confined to the undeveloped areas surrounding the watercourses. The discharge points associated with the proposed stormwater infrastructure are generally located within these areas, typically discharging into the watercourses.

Three different main habitats can be differentiated within the vegetated area:

1. Transformed – Includes hardened surfaces such as paved roads, sidewalks, landscaped gardens and grassed areas including parks and road verges (*Figure* 15 to *Figure* 20).
2. Vegetated Areas– significantly degraded 'natural' vegetation composed predominantly of ruderal weeds, shrubs small trees and grasses (*Figure* 21 to *Figure* 30).
3. Watercourse – Watercourses are significantly degraded (*Figure* 31 to *Figure* 42).

Figure 15 to *Figure* 42 provide a general overview of the site.

Figure 14: Aerial photo of the site.

Transformed

Transformed areas (*Figure* 15 to *Figure* 20) are comprised of hardened surfaces such as paved roads, sidewalks, landscaped gardens and grassed areas including grassy parks and road verges. No indigenous terrestrial vegetation is present in these areas, other than planted trees on sidewalks and road verges that include predominantly exotic species.

Figure 15: Typical urban street.

Figure 16: Typical urban street.

Figure 17: Typical urban street.

Figure 18: Typical urban street.

Figure 19: Grassed open space area.

Figure 20: Grassed open space area.

Open areas are generally subject to mowing and vegetated with grasses including exotic Kikuyu grass (*Cenchrus clandestinus*, previously *Pennisetum clandestinum*) and Kweek (*Cynodon dactylon*) as well as several creeping ruderal weeds including *Arctotheca prostrata* (Prostrate Cape Milkweed).

Vegetated Areas

Vegetated areas (*Figure* 21 to *Figure* 30) along the slopes adjacent to watercourses are significantly disturbed and vegetation cover is comprised primarily of exotic Kikuyu grass (*Cenchrus clandestinus*, previously *Pennisetum clandestinum*) and *Senecio angulatus* (Cape Ivy) as groundcovers, with a range of ruderal and invasive weed species including herbs and shrubs *Ricinus communis* (Castor Oil plant), Bugweed (*Solanum mauritianum*), *Canna indica*, Inkberry (*Cestrum laevigatum*), *Lantana camara, Nidorella ivifolia, Amaranthus* spp. (Amaranth), *Verbena bonariensis*, *Iris pseudacorus*, *Cirsium vulgare* (Thistle), *Senna didymobotrya* (Peanut-Butter Cassia), *Phytolacca octandra* (Inkweed), *Urtica urens* (Nettle) and *Vinca major* (Periwinkle) and *Rubus* sp. (Bramble). Common trees include *Sambucus nigra* (European Black Elderberry) and *Acacia mearnsii* (Black Wattle), as well as *Leptospermum scoparium* (Broom tree), *Sesbania punicea* (Sesbania), *Acacia melanoxylon* (Blackwood), and *Melia azedarach* (Syringa). Clumps of *Cortaderia selloana* (Pampas Grass) is also common along the water courses. A wide range of garden escapees are also present, likely coming from dumped garden waste, mostly non-indigenous species.

Remnant elements include *Arctotheca prostrata* (Prostrate Cape Milkweed), *Carpobrotus deliciosus* (Sourfig), Wild Dagga (*Leonotis leonurus*), Arum lily (*Zantedeschia aethiopica*), *Senecio angulatus* and *Searsia rehmanniana*. While *Senecio angulatus* is an indigenous species, it can become invasive in disturbed areas and the creeping vine-like growth from allows it to effectively smother other vegetation.

The percentage of natural vegetation within this habitat is likely between 5 and 10 % comprising a few scratted elements. The vegetation present is not representative of the Critically Endangered

Figure 21: Typical vegetated watercourse bank (Kikuyu).

Figure 22: Typical vegetated watercourse bank (Kikuyu).

Figure 23: Typical vegetated watercourse bank (Kikuyu).

Figure 24: Typical vegetated watercourse bank (Kikuyu).

Figure 25: Typical vegetated area (Kikuyu).

Figure 26: Typical vegetated area (Kikuyu).

Figure 27: Typical vegetated area (Kikuyu).

Figure 28: Typical vegetated area (Cape Ivy).

Figure 29: Typical vegetated area (Kikuyu).


Figure 30: Typical vegetated area (Kikuyu).

Watercourses

Watercourses (*Figure* 31 to *Figure* 42) are significantly disturbed and/or modified with vegetation also comprised predominantly of exotic and invasive species. Cover is primarily also exotic Kikuyu grass (*Cenchrus clandestinus*, previously *Pennisetum clandestinum*) and *Senecio angulatus* (Cape Ivy), as well as *Cortaderia selloana* (Pampas Grass) and *Sambucus nigra* (European Black Elderberry) trees and the reed *Arundo donax* (Giant Reed). Riparian vegetation is not easily distinguished from surrounding vegetation due to the proliferation of weeds that are common to both habitats.

Remnant indigenous elements are occasional and include Arum lily (*Zantedeschia aethiopica*), clumps of *Typha capensis* (Bulrushes), occasional indigenous reeds (*Phragmites australis*) and occasional tufts of remnant sedges, including *Juncus effusus*, *Cyperus polystachyos and Cyperus textilis.*


Figure 31: Watercourse bridge crossing.


Figure 32: Discharge point at watercourse crossing.


Figure 33: Typical Watercourse.


Figure 34: Typical Watercourse.

Figure 35: Typical Watercourse.

Figure 36: Typical Watercourse.

Figure 37: Typical Watercourse.

Figure 38: Typical Watercourse.

Figure 39: Typical discharge point.

Figure 40: Eroded and polluted watercourse.

Figure 41: Eroded and polluted watercourse.

Figure 42: Eroded and polluted watercourse.

The proposed development is unlikely to have any significant impact on any 'intact' or natural indigenous vegetation of any significant ecological value. The respective vegetation or habitats coverages are indicated in Table 4 below

Table 4: Approximate footprint coverage areas of habitat in hectares.

HABITAT	SENSITIIVTY	AREA (HECTARES)
Watercourse	Moderate	~ 0.7
Vegetated Areas	Low	~ 1.0
Transformed/Hardened	Low	~ 1.8
TOTAL		**~ 3.5**

Figure 43: Mapped vegetation of the site (Overview).

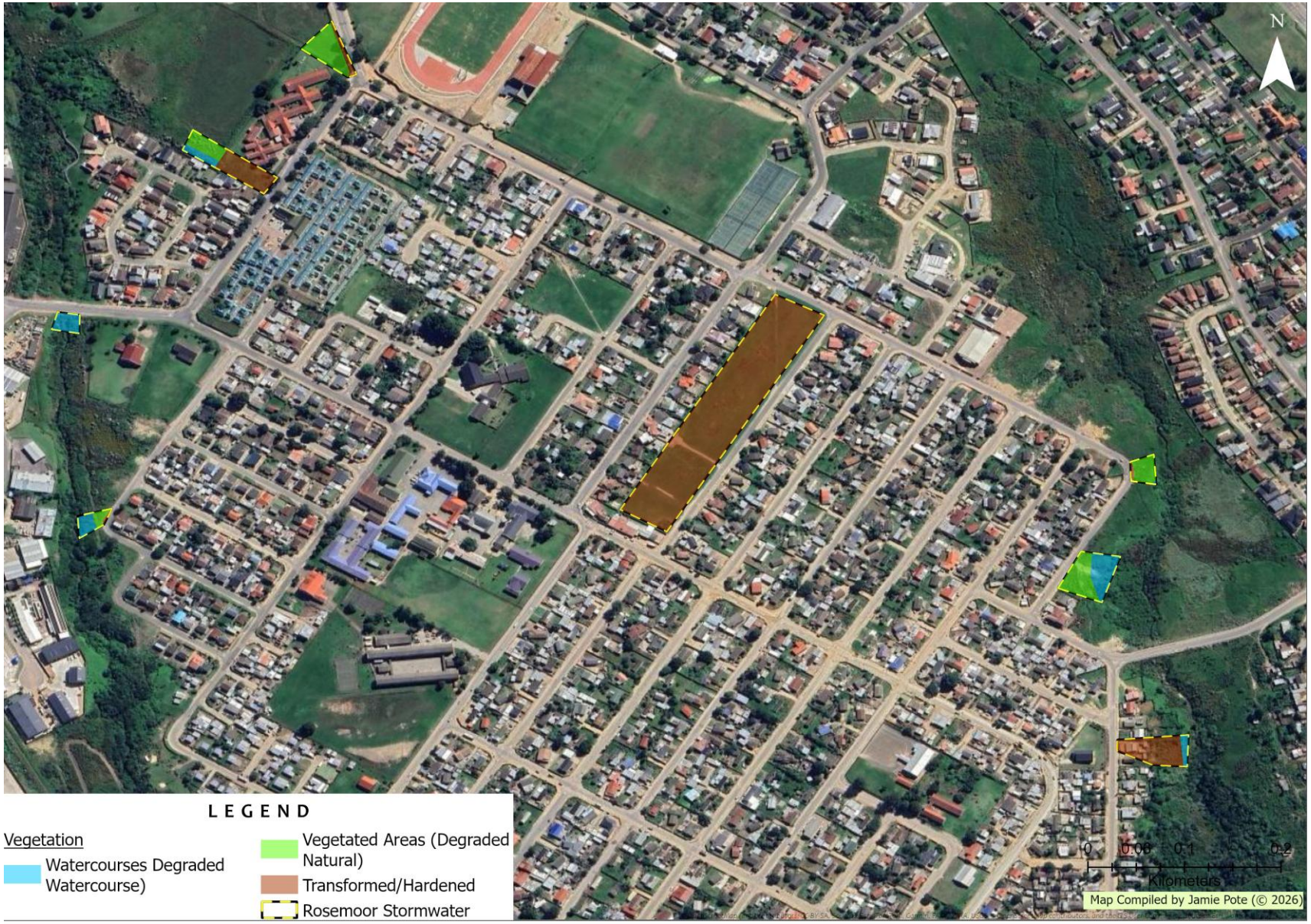

Figure 44: Mapped vegetation of the site (North portion).

Figure 45: Mapped vegetation of the site (South portion).

3.1.1 Present Ecological State

In summary, the following general observations can be noted regarding the site:

- The area in and around the site is completely transformed and or degraded as a result of urban development and associated processes including dumping of refuse and garden waste and other pollution sources, with the occasional remnant scattered indigenous species. No elements of species typical to Garden Route Granite Fynbos were observed within vegetated areas along the watercourses
- Alien invasion is high to very high, comprising most of the vegetation along the watercourses and surrounding vegetated areas.
- Ecological processes are thus primarily significantly modified, as natural and indigenous vegetation elements are largely absent from within the site.
- Fauna species include mainly species typical of urbanised and transformed areas, perhaps having the occasional visit from less common species that typically occur in natural areas that are in transit through urban area or are acclimated to the urbanised environment.

3.1.2 Vegetation and Ecological Processes and Corridors

Landscapes corridors are a combination of Critical Biodiversity Areas (areas required to meet conservation targets) and Ecological Support Areas that link habitats, as well as linking inland mountains to the coastline (and therefore beyond municipal boundaries). Rivers and their associated riparian or riverbank habitats often provide the basis for many of these large-scale (landscape level) ecological processes.

Critical Biodiversity Areas (CBA) are generally regarded as being critical for meeting conservation objectives for vegetation units in an optimal manner. Where a vegetation unit is not under threat (i.e. Least Concern status), there is some flexibility, ito alternatives; however, as conservation status increases (a vegetation unit is under threat due to high levels of transformation), alternative options to meet conservation targets are significantly reduced. CBA 1 areas are generally natural or near natural, whereas CBA 2 are degraded and/or transformed areas where restoration would be required and/or recommended.

Ecological Support Areas (ESA) are supporting zones or areas which must be safeguarded as they are needed to prevent degradation of Critical Biodiversity Areas and formal Protected Areas. Although many ESA's consist of natural veld, there are areas of land - partially or wholly transformed or degraded -that have been classified as ESA even though they are no longer in a natural state. Although these areas are heavily degraded or transformed, they still play an important role in supporting ecological processes. This is particularly the case with riparian areas, some key catchment areas, and key pieces of corridors. ESA 1 areas are generally natural or near natural, whereas ESA 2 are degraded and/or transformed areas where restoration would be required and/or recommended. An ESA that is vegetated but not natural or near natural can still serve to retain some connectivity and support ecological processes, but in a significantly reduced manner. For example, trees in an apple orchard will provide perches for some birds and grassy groundcover will still allow for movement of some small animals such as rodents and reptiles. Certain species are significantly more at risk, as they may not be able to adapt to a modified environment, whereas others may not be affected.

While the site falls within a broader important ecologically connected area along the watercourses, the specific site is significantly transformed and surrounded by developed erven and paved roads. Remnant vegetation along watercourse is significantly degraded and transformed and thus provides limited

'natural' ecological value in its current state. It will serve limited connectivity support but does not and is not likely to support any substantial populations of at-risk species of conservation concern that are not adaptable to modified environments, nor provide ecological services and processes typically associated with the Critically Endangered Garden Route Granite Fynbos that occurs in the broader area. The watercourse corridors will however serve as broad level artificial habitat corridors for general movement faunal species around the broader area, but since no flora species typical of the unit are present, flora related ecological processes (such as pollination and seed dispersal) would be absent. The proposed activity, having a negligible footprint within significantly modified habitat, is thus unlikely to significantly impact or disturb these processes nor likely to alter current species composition from current baseline levels.

3.1.3 Flora & Fauna

No endemic and range restricted species were recorded to be present. Several species are known from the surrounding area, but unlikely to be affected by the proposed activity.

Red Listed, Endemic and Protected Flora

The site falls within the general distribution range of several endemic species and other species with a highly localised distribution, some of which are Critically Endangered, Endangered, Vulnerable or Rare. Some of these species are also only from a single or a few populations.

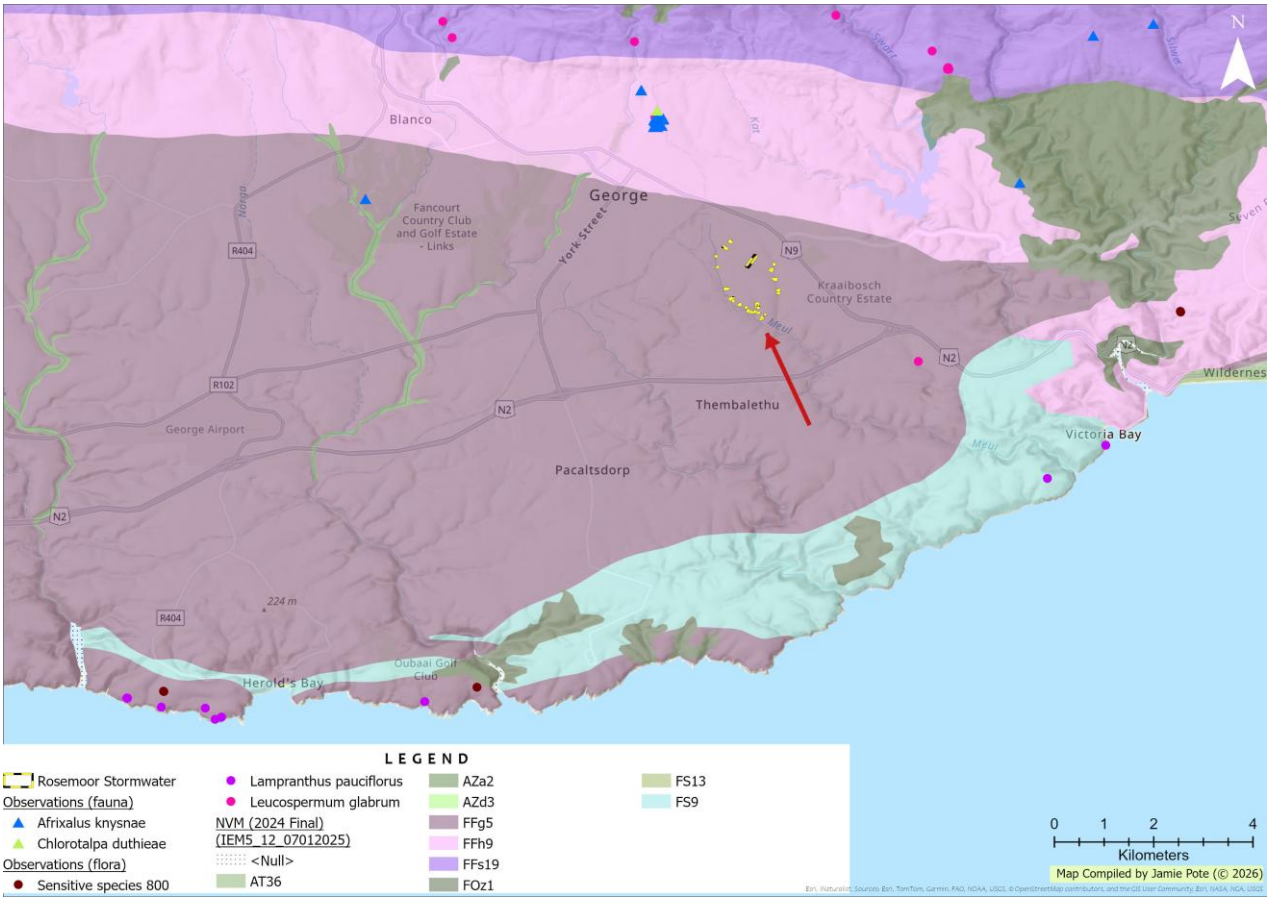

Figure 46: Distribution records of flora and fauna Species of Conservation Concern (GBIF, 26 July 2024) with known records in the vicinity of the site. NOTE some distribution records may have an offset for biosecurity purposes and/or accuracy errors but will non the less give an indication of general locality.

Table 5: Flora Species of Special Concern

SCIENTIFIC NAME	STATUS[3]	COMMENT/PRESENCE
Diosma passerinoides	NEST (M), Vu	Total population size estimated to be <5 000 mature individuals, based on records of 18 out of 25 subpopulations where species is indicated to be rare, uncommon, or only a few plants present, and with survey data of seven subpopulations indicating that the largest subpopulation consists of no more than 500 mature individuals. These populations are declining due to a number of different threats such as invasive alien plants, habit degradation in the form grazing and habitat loss due to protea cultivation. Not recorded on site and no known localities in close proximity that suggest high likelihood of a local occurrence.
Lampranthus pauciflorus	NEST (M), En	EOO 1270 km², four known locations remain after most of this species' habitat has been transformed for coastal development. Habitat loss continues, especially around Plettenberg Bay, Mossel Bay and Knysna. Not recorded on site and no known localities in close proximity that suggest high likelihood of a local occurrence.
Leucospermum glabrum	NEST (M), En	Somewhat widespread distribution including a population in the northern areas of George. A restricted endemic with an extent of occurrence (EOO) ranging between 1620 and 1642 km², and an area of occupancy (AOO) of between 152 and 156 km². This species occurs as scattered small subpopulations with the total population not exceeding 2500 mature individuals, and each subpopulation having fewer than 250 plants. The mountains where this species occurs have been extensively surveyed. Road verges and significantly disturbed watercourses do not provide suitable habitat for this species. Not recorded on site, which is not typical of preferred habitat.
Sensitive species 1024	NEST (M), En	A range-restricted and very rare species known from four small, severely fragmented subpopulations. It has an extent of occurrence (EOO) of 971 km². The population consists of 2 500 mature individuals, and the largest subpopulation has less than 200 plants. Not recorded on site and no known localities in close proximity that suggest high likelihood of a local occurrence.
Sensitive species 1032	NEST (M), Vu	Somewhat widespread distribution including a population in the northern areas of George. Not recorded on site but found in surrounding area. Road verges and significantly disturbed watercourses do not provide suitable habitat for this species.
Sensitive species 500	NEST (M), En	Somewhat widespread distribution. Not recorded on site and no known localities in close proximity that suggest high likelihood of a local occurrence.
Sensitive species 800	NEST (M), Vu	Formerly a very common species, now remaining mostly as small, isolated subpopulations on fragments of natural vegetation within its lowland distribution range. Not recorded on site and no known localities in close proximity that suggest high likelihood of a local occurrence.

As per Table 5, no Endangered or Critically Endangered flora species were confirmed to be present nor are known to be present in the affected area. Most likely species that do occur in the broader surrounding area include *Leucospermum glabrum* & Sensitive species 1032, however none were observed on the site. The species *Diosma passerinoides, Lampranthus pauciflorus, Sensitive species 1024, Sensitive species 500 & Sensitive species 800* have records in a much broader are and no records indicate a local presence.

Site observations also confirmed none being present, also confirmed to not be the typical habitat for several of the species, hence the footprint does not provide suitable habitat for these species.

3 **PNCO** - Provincial Nature Conservation Ordinance (1974); **NFA** - National Forests Act of (1998); ToPS – Threatened or Protected Species; **IUCN:** CR - Critically - Endangered, En - Endangered, Vu - Vulnerable; LC - Least Concern.

Red Listed and Protected Fauna

As per Table 6, no Endangered or Critically fauna species were found to be present nor are known to be present in close proximity to the affected area or are likely to be directly affected by the proposed activity. The site falls within the general distribution range of a single faunal SCC as indicated in Table 6 below, however none are confirmed to be present. Since the project footprint is relatively small, is situated directly adjacent to urban and disturbed areas and also surrounded by extensive outlying areas of natural habitat, any disturbance or displacement associated with increased activity or habitat destruction as a direct result of the activity is unlikely to pose a significant negative impact faunal species and in particular the species of special concern.

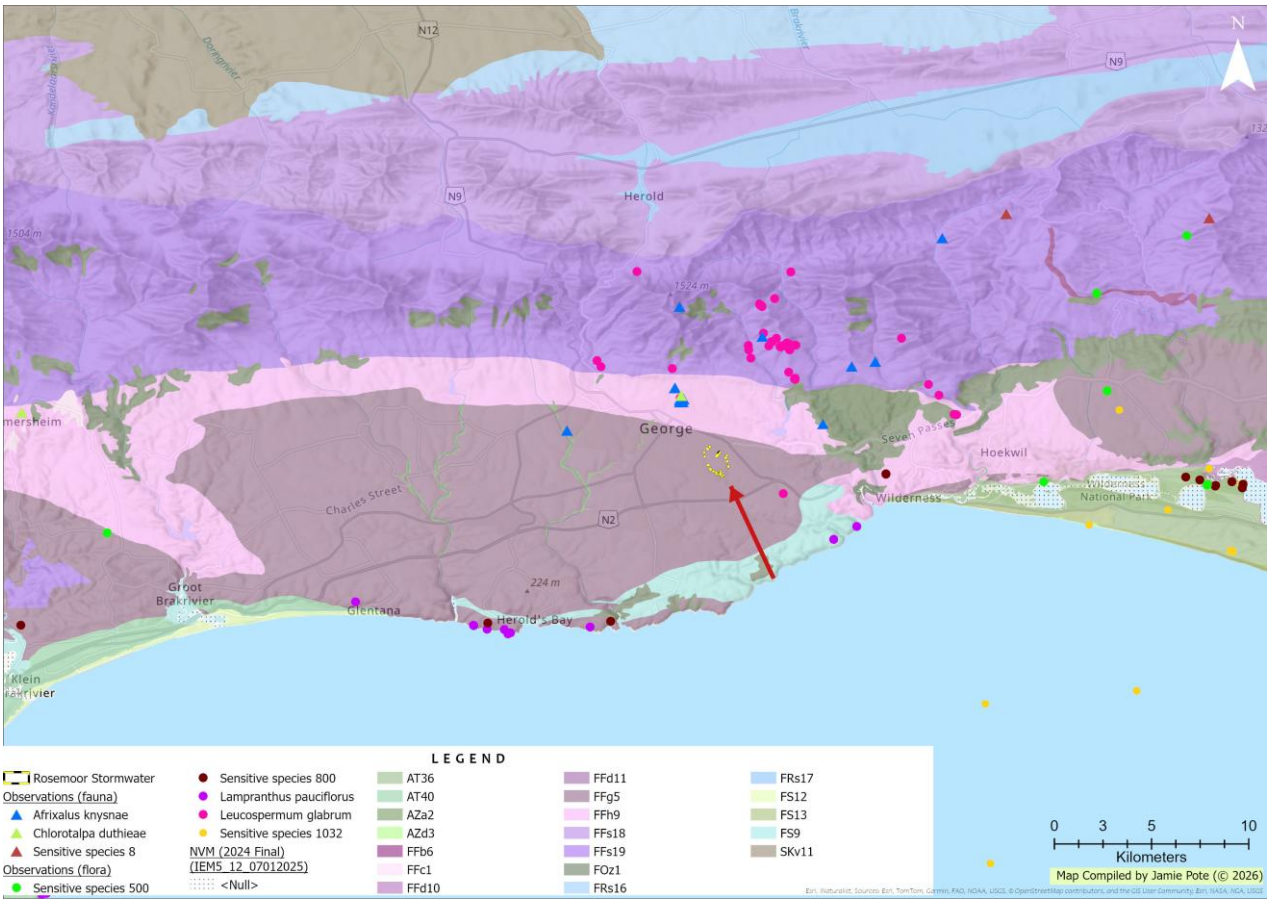

Figure 47: Distribution records of flora and fauna Species of Conservation Concern (GBIF, 26 July 2024) with known records from the broader area. NOTE some distribution records may have an offset for biosecurity purposes but will non the less give an indication of general locality (i.e. locality records in the sea).

Table 6: Fauna Species of Special Concern (SCC)

SCIENTIFIC NAME	COMMON NAME	STATUS[4]	COMMENT/PRESENCE
Mammals			
Chlorotalpa duthieae	Duthies Golden Mole	NEST (M), Vu	Known form the broader area, no evidence of any Golden Moles on site, which is primarily a landscaped garden and largely surrounded by compacted material.
Sensitive species 8		NEST (M), Vu	Not recorded on site but records indicate a presence in the surrounding area. May be a transient visitor in developed areas, but not likely to be affected above baseline levels due

4 **PNCO -** Provincial Nature Conservation Ordinance (1974); ToPS – Threatened or Protected Species, **IUCN:** Cr - Critically - Endangered, En - Endangered, Vu - Vulnerable; LC - Least Concern.

SCIENTIFIC NAME	COMMON NAME	STATUS[4]	COMMENT/PRESENCE
			to the proposed activity within a densely populated part of an urban area.
Birds			
Bradypterus sylvaticus	Knysna warbler	NEST (H)	Unlikely to be affected above baseline levels by the proposed activity in an already transformed footprint.
Circus ranivorus	African Marsh Harrier	NEST (H)	
Reptiles			
None			
Amphibians			
Afrixalus knysnae	*Knysna Spiny Reed Frog*	NEST (M), En	Unlikely to be present nor affected by the proposed temporary activity in a transformed footprint. While aquatic and other suitable habitat is in principle present, it is not deemed suitable due to the high levels of pollution in the watercourse and also the disturbed nature of the surrounding vegetation Not recorded.
Invertebrates			
Aneuryphymus montanus	Yellow-winged Agile Grasshopper	NEST (M), Vu	No records from vicinity and not recorded on site. Unlikely to be present nor affected by the proposed temporary activity in a transformed landscape. Not recorded.

Records indicate that the species *Chlorotalpa duthieae*, Sensitive species & *Afrixalus knysnae* have been recorded in the wider area, however none are likely to occur on the site. There is no evidence of any Golden Moles being present and while aquatic habitat is present, it is not deemed suitable due to the high levels of pollution in the watercourse and also the disturbed nature of the vegetation.

The birds *Bradypterus sylvaticus* & *Circus ranivorus*, as well as the insect *Aneuryphymus montanus*, while likely occurring in the surrounding area where natural vegetation is intact and more extensive, are unlikely to be affected by the proposed activity which will have a small and highly localised footprint. Improved stormwater management is also likely to improve overall aquatic health after construction.

Site observations also confirmed none being present, also confirmed to not be the typical habitat for several of the species, hence the footprint does not provide suitable habitat for these species.

No fauna PNCO permits are anticipated to be required but are recommended as a precaution as small species such as lizards, geckos and snakes may be present in the rocky landscaped areas.

Alien Invasive Species

On 18 September 2020, the Minister of Environmental Affairs published the Alien and Invasive Species Regulations ("the Regulations") which came into effect on the 18 October 2020 in a bid to curb the negative effects of IAPs. The Regulations call on landowners and sellers of land alike to assist the Department of Environmental Affairs to conserve our indigenous fauna and flora and to foster sustainable use of our land. Non-adherence to the Regulations by a landowner or a seller of land can result in a criminal offence punishable by a fine of up to R 5 million (R 10 million in case of a second offence) and/or a period of imprisonment of up to 10 years.

- Category 1a and 1b listed invasive species must be controlled and eradicated.
- Category 2 plants may only be grown if a permit is obtained, and the property owner ensures that the invasive species do not spread beyond his or her property.
- The growing of Category 3 species is subject to various exemptions and prohibitions.

Some invasive plants are categorised differently in different provinces. *For example*: the Spanish Broom plant is categorised as a category 1b (harmful) invasive plant in Eastern Cape and Western Cape, but it is a category 3 (less harmful) invasive plant in the other seven provinces.

Invasive alien plants have a significant negative impact on the environment by causing direct habitat destruction, increasing the risk and intensity of wildfires, and reducing surface and sub-surface water. Landowners are under legal obligation to control alien plants occurring on their properties. Alien Invasive Plants require removal according to the Conservation of Agricultural Resources Act 43 of 1983 (CARA) and the National Environmental Management: Biodiversity Act (10 of 2004; NEMBA): Alien and Invasive Species Lists (GN R598 and GN R599 of 2014). Alien control programs are long-term management projects and a clearing plan, which includes follow up actions for rehabilitation of the cleared area, is essential. This will save time, money, and significant effort. Collective management and planning with neighbours allow for more cost-effective clearing and maintenance considering aliens seeds as easily dispersed across boundaries by wind or water courses. All clearing actions should be monitored and documented to keep track of which areas are due for follow-up clearing. A general rule of thumb is to first target lightly infested areas before tackling densely invaded areas and prioritize sensitive areas such as riverbanks and wetlands. Alien grasses are among the worst invaders in lowland ecosystems adjacent to farms but are often the most difficult to detect and control.

Several exotic invasive and other weed species were noted within the site and surrounding area. Proliferation of weedy and exotic species often indicate disturbance especially during or after construction. A list of species is included in Table 7. During construction it is highly likely that species currently not on site could be introduced through the construction process. A weed management programme is recommended after construction to counter the weed proliferation that would be expected after construction.

Table 7: Alien (exotic) invasive and other weed species and status.

SCIENTIFIC NAME	COMMON NAME	FAMILY	STATUS[5]	PRESENCE
Acacia mearnsii	Black Wattle	Fabaceae	CARA 1b	Present, common
Acacia melanoxylon	Blackwood	Fabaceae	CARA 2	Present, common
Canna indica	Indian shot	Cannaceae	CARA 1b[6]	Present, common
Cenchrus clandestinus	Kikuyu grass	Poaceae	CARA 1b	Present, common
Cestrum (Pennisetum) laevigatum	*Inkberry*	Solanaceae	CARA 1b	Present, dominant.
Cirsium vulgare	Scotch thistle	Asteraceae	CARA 1b	Present, common
Cortaderia selloana	Pampas grass	Poaceae	CARA 1b	Present, common
Iris pseudacorus	Yellow flag	Iridaceae	CARA 1a	Present, occasional
Lantana camara	Lantana	Verbenaceae	CARA 1b	Present, occasional
Leptospermum scoparium	Australian myrtle (Tea tree)	Asteraceae	CARA 1b	Present, common
Melia azedarach	Syringa	Meliaceae	CARA 1b	Present, common
Phragmites australis	*Spanish Reed*	Poaceae	CARA 1b	Present, common.
Phytolacca americana	Pokeweed	Phytolaccaceae	CARA 2	Present, occasional
Ricinus communis	Castor Oil Plant	Euphorbiaceae	CARA 2	Present, common
Rubus cuneifolius	Bramble	Rosaceae	CARA 1b	Present, common
Sambucus nigra	European elder	Adoxaceae	CARA 1b	Present, common
Senna didymobotrya	Peanut butter Cassia	Fabaceae	CARA 1b	Present, occasional
Sesbania punicea	Sesbania	Fabaceae	CARA 1b	Present, occasional
Solanum mauritianum	Bugweed	Solanaceae	CARA 1b	Present, common
Solanum sisymbriifolium	Wild tomato	Solanaceae	CARA 1b	Present, occasional
Urtica urens	Nettle	Urticaceae	Weed	Present, occasional
Verbena bonariensis	Wild verbena	Verbenaceae	CARA 1b	Present, occasional
Vinca major	Greater periwinkle	Apocynaceae	CARA 1b	Present, occasional

[5] CARA - Conservation of Agricultural Resources Act (1993); National List of Invasive Species in Terms Sections 70(1), 71(3) and 71A (2016); Weed – an exotic ruderal weed species, not indigenous but not a declared invasive species.
[6] 1b in protected areas and wetlands, not listed elsewhere.

Eradication protocol

The act required the removal of these species, being the responsibility of the landowner/contractor. Several other common weed species are also present which should also be managed as part of post construction management,

Specific eradication and management procedures must be stipulated in the EMP as to the methods to be implemented to remove and control the various alien invasive species as they tend to require species specific techniques. A management plan should be incorporated into the EMP, and a detailed action plan compiled and implemented by the ECO.

3.1.4 Aquatic Habitat

Aquatic systems do not function in isolation and in terms of ecological processes, the aquatic systems are intricately linked to the terrestrial system. In this case the riverine and riparian community that drains the surrounding urban landscape forms an integral link between upstream and downstream communities and as a corridor for various faunal especially avifaunal species. Based on the flora species composition, this is largely an artificial ecological landscape, and while it may support an associated faunal assemblage, the proposed activity is unlikely to significantly alter the associated composition and processes above current baseline levels.

3.1.5 Terrestrial Vegetation Sensitivity Assessment

An overall vulnerability assessment of proposed activity, incorporating key vegetation and ecological indicators was undertaken and includes the following key criteria:

- relative levels of *intactness* in terms of overall loss of indigenous vegetation cover.
- presence, diversity, and abundance of *species of special concern* (weighted in favour of local endemic species).
- extent of *invasion* (severity and overall ecological impact), as well as the degree to which successful rehabilitation could take place.
- overall degradation incorporating above factors.
- relative importance of the vegetation communities relative to regional conservation status - indicated as vulnerability of the area because of loss.

Intactness

Three basic classes are differentiated as follows:

- **Low**: > 75 % of original vegetation has been removed or lost; and/or no species of special concern present that are critically endangered, endangered, or endemic with highly localised distribution.
- **Moderate**: 25 - 75 % of original vegetation has been removed/lost; and or presence of species of special concern but not having high conservation status or high levels of endemicity or highly localised distributions.
- **High**: < 25 % of original vegetation has been removed or lost; and or presence of species with a highly endemicity and or high conservation status (endangered or critically endangered).

Intactness for the site is **Very Low**.

Alien Invasion

Three classes are differentiated as follows:

- **Low**: no or few scattered individuals.

- **Moderate:** individual clumps of invasives present but cover less than 50% or original area.
- **High:** dense, impenetrable stands of invasives present, or cover > 50 % of area with substantial loss functioning. Rehabilitation will most likely require specialised techniques over an extended period (> 5 years).

Alien invasion for the site is **Very High**.

Degradation

Overall Degradation is determined from the above alien invasion and intactness scores, according to the following matrix:

INTACTNESS	INVASION		
	LOW	MODERATE	HIGH
High	Pristine	Near Pristine	Moderately Degraded
Moderate	Near Pristine	Moderately Degraded	**Severely Degraded**
Low	Moderately Degraded	Severely Degraded	**Transformed**

Degradation for the site is **Very High** (Transformed and/or Severely Degraded)

Overall Sensitivity score

Overall vulnerability (or Sensitivity) of the vegetation within the site is calculated according to the following matrix which combines degradation and overall conservation status of the vegetation units of the site.

DEGRADATION	CONSERVATION STATUS			
	LEAST CONCERN	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED
Severely degraded/ Transformed	Very Low/Low	Low	Moderate	Moderate - High
Moderately degraded	Low	Moderate	High	High
Ecologically Pristine or near Pristine (no such areas identified)	Moderate	Moderate - High	High	Very High (No-Go area)

Table 8: Summary of discharge point habitat.

STREET	DISCHARGE POINT	COMMENT
Mission Rd/Miller St	Mission Rd/Miller St	Low sensitivity. Discharge point should terminate on edge of watercourse and measures implemented for erosion management. No issues.
Attakwa St	Attakwa St	Low sensitivity. Discharge point should terminate on edge of watercourse and measures implemented for erosion management. No issues.
Grens St	Grens St	Low sensitivity/Proposed stormwater will flow along an existing but significantly modified and eroded watercourse. Measures should be implemented to manage water flow and also recreate natural habitat where possible.
Allman St	Allmann/Widom St	Low sensitivity. Discharge point should terminate on edge of watercourse and measures implemented for erosion management. No issues.
Pienaar St/Fotheringham St	Pienaar St/Fotheringham St	Low sensitivity. Discharge point should terminate on edge of watercourse and measures implemented for erosion management. No issues.
Truter St	Truter/Van Till St	Low sensitivity. Discharge point should terminate on edge of watercourse and measures implemented for erosion management. No issues.

STREET	DISCHARGE POINT	COMMENT
Van Till St/Aansluit St	Van Till St	Low sensitivity. Within transformed/Secondary Vegetation.
Van Till St/Thwaite St	Van Till St	Low sensitivity. Within transformed/Secondary Vegetation.
O'Connell ST/Mitchell Baker St	O'Connell ST/Mitchell Baker St	Low sensitivity/Proposed stormwater will flow along an existing but significantly modified and eroded watercourse. Measures should be implemented to manage water flow and also recreate natural habitat where possible.
Spandiel Cir (N)	Spandiel Cir (N)	Low sensitivity. Within transformed/Secondary Vegetation.
Spandiel Cir (S)	Spandiel Cir (S)	Low sensitivity. Within transformed/Secondary Vegetation.
Miller St/Mcgregor St	Miller St	Low sensitivity. Within transformed/Secondary Vegetation.
Miller St	Miller St	Low sensitivity. Within transformed/Secondary Vegetation.
Miller St	Miller St	Low sensitivity. Within transformed/Secondary Vegetation.
Site Camp (Langmark St)	Site Camp (Langmark St)	Low sensitivity. Within transformed/Secondary Vegetation.

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Habitat Sensitivity

- Almost the entire vegetated and transformed area (i.e. the roads) are designated a LOW sensitivity, where exotic and invasive species comprise most of the vegetation cover, the remainder being hardened surfaces (i.e. roads and sidewalks).
- MODERATE sensitivity portions are designated where Watercourses and riparian vegetation, although primarily exotic species) is present, due to underlying ecological importance of watercourses. However, as a caveat, it should be noted that the watercourses are significantly modified. Since the primary objective is to better manage stormwater discharge in tot e watercourses, the overall impact of the stormwater discharge features is not significantly negative within the broader context of the site and surrounds.
- No VERY HIGH sensitivity areas are identified but limited to the terrestrial environment and excludes aquatic processes, which is outside of the scope of this terrestrial assessment.

3.1.6 No-Go Areas

No-go areas are not identified within the site. Caution to be exercised in proximity to planted Cycads.

3.1.7 Potential Development Footprints

The remainder of the site outside of the identified no-go areas above is considered to be developable.

Figure 48: Vegetation Sensitivity of proposed site (Overview).

Figure 49: Vegetation Sensitivity of proposed site (North portion).

Figure 50: Vegetation Sensitivity of proposed site (South portion).

3.2 Risks and Potential Impacts to Biodiversity

3.2.1 Summary of actions, activities, or processes that require mitigation.

The main impacts associated with the unauthorised activity include the following and are described in Table 9:

1. Permanent or temporary loss of indigenous vegetation cover.
2. Loss of flora Species of Conservation Concern.
3. Susceptibility of post construction disturbed areas to invasion by exotic and alien invasive species.
4. Susceptibility of some areas to wind and water erosion associated with uncontrolled stormwater runoff.
5. Disturbances to ecological processes.
6. Aquatic and Riparian processes.
7. Loss of faunal Species of Conservation Concern.
8. Loss of Faunal Habitat and processes.

3.2.2 Potential Terrestrial Biodiversity Impacts (Indirect)

No significant indirect impacts are anticipated.

3.2.3 Potential Terrestrial Biodiversity Impacts (Direct)

Overall impacts to terrestrial biodiversity are likely to be nominal, with loss resulting from removal of small footprints within the vegetated areas. As indicated in Figure 48 to Figure 50, the proposed activity will require clearing of some vegetation along the watercourses in order to construct the stormwater discharge points.

Table 9: Potential Impacts to Terrestrial Biodiversity.

IMPACT	Nature of Impact
Vegetation	Permanent or temporary loss of indigenous vegetation cover because of site clearing. Site clearing before construction will result in the blanket clearing of vegetation within the affected footprint.
Flora Species[7]	Loss of flora Species of Conservation Concern during pre-construction site clearing activities. Several special of concern are known from surrounding areas, which could be destroyed during site preparation, none of which were confirmed to be present.
Alien Invasive Species	Susceptibility of post construction disturbed areas to invasion by exotic and alien invasive species and removal of exotic and alien invasive species during construction. Post construction disturbed areas having no vegetation cover are often susceptible to invasion by weedy and alien species, which can not only become invasive but also prevent natural flora from becoming established.
Erosion	Susceptibility of some areas to erosion because of construction related disturbances. Removal of vegetation cover and soil disturbance may result in some areas being susceptible to soil erosion after completion of the activity.
Ecological Processes	Disturbances to ecological processes: Activity may result in disturbances to ecological processes.

[7] Subject to findings of follow-up species survey.

IMPACT	Nature of Impact
Aquatic and Riparian processes	Aquatic and Riparian processes: None present/affected
Faunal Species	Loss of faunal SCC due to construction activities: Activities associated with bush clearing, killing of perceived dangerous fauna, may lead to increased mortalities among faunal species.
Faunal Habitat	Loss of Faunal Habitat: Activity may result in the loss of habitat for faunal species, which could result in disturbance and displacement of faunal species.
Faunal Processes	Impacts to faunal processes because of the activity

3.3 Assessment of Risks and Impacts to Biodiversity

3.3.1 Criteria of assigning significance to potential impacts

The following methodology is to be applied in the specialist studies for the assessment of potential impacts.

CRITERIA	EXPLANATION
Nature of impact	Review the type of effect that a proposed activity will have on the environment and should include "what will be affected and how?"
Extent	Indicate whether the impact will be: • *(S) local* and limited to the immediate area of development (the site). • (L) limited to within 5 km of the development: or • (R) whether the impact may be realized regionally, nationally or even internationally.
Duration	Review the lifetime of the impact, as being: • (V) very short term (0 - 1 years), • *(S) short term* (1 - 5 years), • (M) medium (5 - 15 years), • *(L) long term* (>15 years but where the impacts will cease after the operation of the site), or • (P) permanent.
Intensity	Establish whether the impact is destructive or innocuous and should be described as either: • *(L) low* (where no environmental functions and processes are affected) • *(M) medium* (where the environment continues to function but in a modified manner) or • *(H) high* (where environmental functions and processes are altered such that they temporarily or permanently cease), including loss of critical endangered ecosystem and or critically endangered species (population).
Probability	Consider the likelihood of the impact occurring and should be described as: • *(I) improbable* (low likelihood) • *(P) probable* (distinct possibility) • (H) highly probable (most likely) or • *(D) definite* (impact will occur regardless of prevention measures).
Status of the impact	Description as to whether the impact will be positive (a benefit), negative (a cost), or neutral.
Degree of confidence	The degree of confidence in the predictions, based on the availability of information and specialist knowledge. This should be assessed as high, medium, or low.
Significance	• (*VL*) *Very Low:* Considered to be negligible.

CRITERIA	EXPLANATION
	• *(L) Low:* Where the impact will not have an influence on the decision or require to be significantly accommodated in the project design • *(M) Medium*: Where it could have an influence on the environment which will require modification of the project design or alternative mitigation. • *(H) High*: Where it could have a 'no-go' implication for the project unless mitigation or re-design is practically achievable. • *(VH) Very High*: Confirmed No-Go area, no mitigation feasible, redesign and avoidance are required, where activity will have a significant permanent and irreversible impact on a critically endangered ecosystem or species population.

3.3.2 Significance Rating

INTENSITY		DURATION: PERMANENT	LONG TERM	MEDIUM TERM	SHORT TERM	VERY SHORT TERM
HIGH INTENSITY						
EXTENT	National	Very High	Very High	High	High	Medium
	Regional	Very High[8]	High	High	High	Medium
	Local	High	High	Medium	Medium	Medium
	Site specific	Medium	Medium	Medium	Medium	Medium
MEDIUM INTENSITY						
EXTENT	National	High	High	High	Medium	Medium
	Regional	High	High	High	Medium	Medium
	Local	Medium	Medium	Medium	Medium	Medium
	Site specific	Medium	Medium	Medium	Medium	Low
LOW INTENSITY						
EXTENT	National	Medium	Medium	Medium	Medium	Medium
	Regional	Medium	Medium	Medium	Medium	Low
	Local	Medium	Medium	Medium	Low	Very Low
	Site specific	Low	Low	Low	Very Low	Very Low

3.3.3 Assessment of Terrestrial Biodiversity Impacts

Operations can result in a range of negative impacts on terrestrial, marine and other aquatic ecosystems if not effectively managed. Table 9 describes impacts that may potentially occur in the site (as per DEDEAT guidelines) as well indicating the relevant EMP section. The predicted significance of these during the construction phase are summarised in Table 10 and during the operational phase are summarised in Table 11.

Table 10 : Construction Phase Assessment (Refer to Sections 3.3.1 & 3.3.2 for methodology).

Nature of impact	Extent	Duration	Intensity	Probability	Status of the impact	Degree of confidence	Significance (before)	Significance (after)
Vegetation	S	S	L	D	-ve	H	L	VL
Flora Species	S	S	L	P	-ve	M	L	VL
Alien Invasive Species	S	M	L	H	-ve	H	L	VL

[8] Considered a regional impact if activity will result in significant permanent and irreversible loss to a critically endangered species population or ecosystem (vegetation type)

Nature of impact	Extent	Duration	Intensity	Probability	Status of the impact	Degree of confidence	Significance (before)	Significance (after)
Erosion	S	M	L	P	-ve	M	L	VL
Ecological Processes	S	S	L	P	-ve	H	L	VL
Aquatic & Riparian Processes	S	V	L	P	-ve	M	M	L
Faunal Species	S	V	L	P	-ve	M	L	VL
Faunal Habitat	S	V	L	D	-ve	H	L	VL
Faunal Processes	S	V	L	P	-ve	H	L	VL

Table 11: Operational Phase Assessment (Refer to Sections 3.3.1 & 3.3.2 for methodology).

Nature of impact	Extent	Duration	Intensity	Probability	Status of the impact	Degree of confidence	Significance (before)	Significance (after)
Vegetation	S	S	L	D	-ve	H	L	VL
Flora Species	S	S	L	P	-ve	M	L	VL
Alien Invasive Species	S	M	L	H	-ve	H	L	VL
Erosion	S	M	L	P	-ve	M	L	VL
Ecological Processes	S	S	L	P	-ve	H	L	VL
Aquatic & Riparian Processes	S	V	L	P	-ve	M	L	VL
Faunal Species	S	V	L	P	-ve	M	L	VL
Faunal Habitat	S	V	L	D	-ve	H	L	VL
Faunal Processes	S	V	L	P	-ve	H	L	VL

Impacts to Aquatic & Riparian Processes are expected to be medium before mitigation and Low after mitigation. All other impacts are assessed to be of low significance before mitigation and can be reduced to very low (or insignificant) with the implementation of the mitigation measures.

3.3.4 Potential Terrestrial Biodiversity Impacts (Cumulative)

No cumulative impacts are expected because of the development of the site providing recommendation and mitigation measures are adhered to, due to the limited disturbance area.

3.3.5 Terrestrial Biodiversity Impact Reversibility

In general, most impacts will have a high reversibility in the affected habitat, as well as transformed or degraded areas, except where hardening of surfaces or removal of topsoil may occur.

3.3.6 Impacts and Risks to Irreplaceable Biodiversity Resources

Risks to Irreplaceable Biodiversity Resources is low to very low.

3.3.7 Residual Risks and Uncertainties

No residual risks or uncertainties are anticipated.

3.4 Findings, Outcomes and Recommendations

3.4.1 Summary of Findings

- The vegetation on site is generally highly modified, degraded, transformed and/or comprising vegetation cover with little evidence of remnant natural vegetation (Garden Route Granite Fynbos).
- No Sensitive plant or Animal species identified as per the National Environmental Screening Tool were found to be present or likely to be present. The general vegetation cover along the remnant watercourses is primarily comprised of kikuyu grass (non-indigenous) and a wide range of invasive and weed herbaceous, shrub and tree species.
- Although areas are designated CBA 1, CBA 2 and ESA 2, these designations do not have remnant Garden Route Granite Fynbos vegetation. In terms of species composition. While the vegetated areas may provide habitat for faunal species, these are mostly species that are adapted to an urbanised environment.
- Almost the entire vegetated and transformed area (i.e. the roads) are designated a LOW sensitivity, where exotic and invasive species comprise most of the vegetation cover, the remainder being hardened surfaces (i.e. roads and sidewalks).
- MODERATE sensitivity portions are designated where Watercourses and riparian vegetation, although primarily exotic species) is present, due to underlying ecological importance of watercourses. However, as a caveat, it should be noted that the watercourses are significantly modified. Since the primary objective is to better manage stormwater discharge in tot e watercourses, the overall impact of the stormwater discharge features is not significantly negative within the broader context of the site and surrounds.
- No VERY HIGH sensitivity areas are identified but limited to the terrestrial environment and excludes aquatic processes, which is outside of the scope of this terrestrial assessment.
- No No-go areas are identified within the site footprint.
- No significant direct, indirect or cumulative impacts are anticipated.

3.4.2 Recommendations & Mitigation Measures

- The proposed activity is unlikely to pose any significant risk to natural ecological processes, vegetarian or plant and animal species of conservation concern due to the limited footprint and significantly degraded and/or transformed nature of the site(s).
- No PNCO protected species were recorded within any of the proposed Stormwater outlet footprints. PNCO (Provincial Nature Conservation Ordinance) permits are not likely to be required for any naturally occurring indigenous species.

Table 12 lists specific mitigation measures that must be implemented and adhered to. These must be considered to be conditions of authorisation.

Table 12: Specific Mitigation Measures and Recommendations

IMPACT	MITIGATION MEASURES
Vegetation	• No clearing outside of development footprint to take place. • Areas surrounding the footprints should be revegetated on completion of construction.
Flora Species	• A flora search and rescue is unlikely to be required and no protected flora were found to be present within a natural context.
Alien Invasive Species	• A suitable weed management strategy to be implemented in and around the site post construction, which is likely to result in proliferation of weeds in disturbed areas on completion.

IMPACT	MITIGATION MEASURES
Erosion	• Suitable measures must be implemented at all discharge points to protected against erosion. • Areas must be rehabilitated, and a suitable indigenous grass seed mix planted where natural vegetation re-establishment does not occur.
Aquatic and Riparian processes	• Adequate measures to be implemented for erosion and stormwater management and/or dispersion at stormwater discharge points. • Where possible, design of discharge points should accommodate measures to trap and reduce discharge of solid waste into watercourses (paper, plastic, etc), that would allow for easier ongoing cleanup.
Faunal Processes	• The habitats and microhabitats present on the project site are not unique and are widespread in the general area, hence the local impact associated with the footprint above current baseline levels would be of low significance if mitigation measures are adhered to.
Faunal Species	• Small mammals within the habitat on and around the affected area are generally mobile and likely to be transient to the area. Specific measures are made to reduce this risk. The risk of species of special concern is low, and it is unlikely that there will be any impact to populations of such species because of the activity. • A faunal search and rescue is unlikely to be required and no protected species are likely to be affected but is recommended as a precautionary measure. • No animals are to be harmed, trapped or killed during the course of operations other than where rescue is required and only undertaken by an expert. .

3.5 Site Preparation and Vegetation Clearing Plan

No flora relocation is likely to be required before commencement, and flora permits are unlikely to be required.

No fauna relocation is likely to be required before commencement, and permits were unlikely to be required for any species of conservation concern, but recommended as a precautionary measure for any small rodents and reptiles may occur, and since fauna are mobile, they may be transient to the area.

3.6 Open Space Management/Conservation Plan

None are applicable for this project.

3.7 Maintenance Management Plan

Ongoing maintenance is likely to be required in the long-term, which could include ongoing repairs to stormwater discharge points. All measures of this report, including the EMPr should be adhered for any maintenance requirements. Any excavated areas must be stabilised and rehabilitated as per the measures indicated in this report.

4 Organizational Capacity and Competency

Successful Implementation will be in part be dependent on the organisational capacity and competency of the applicant and any implementing agents. The following aspects are likely to pose risk to the successful mitigation of the project:

- Budget constraints – budget allocated for environmental management tends to be inadequate for construction projects.
- Organisational Structure – implementing agents may or may not have adequate capacity and competency to ensure appropriate and adequate environmental management.

5 Emergency Preparedness and Response

Emergency Preparedness Plan must be included in the EMPr and should address specific measures relating to the following emergency risks:

- Fire management and response.
- Spill management and incident response.
- Waste management and incident response.
- Response to emergency site shutdown, including labour and protest actions.

6 Stakeholder Engagement

Possible Stakeholders relating to Biodiversity could include the following key groups:

- Neighbouring Property Owners
- Local Regional and National Conservation Authorities

No Stakeholder Engagement was conducted specifically by the Specialist. Stakeholder Engagement will be undertaken by the EAP as part of the environment application public participatory process. Any comments raised relating to Biodiversity will be addressed by the specialist in the final report.

7 Monitoring and Review

Key monitoring activities should include the following:

1. Pre-construction
   a) Ensure flora permits are in place timeously (PNCO only) – allow at least 1 or 2 months before commencement.
   b) Environmental Awareness and training (EAT) – Ensure all labour are informed and plant operators are aware of risks, issues, do's and don'ts and no-go areas.
2. Bush clearing
   a) Ensure working plant has no oil or hydraulic leaks
   b) Check delineated footprints area not exceeded.
3. Construction
   a) Regular checks on trenches for trapped animals and possible drowning risks
   b) Regular checks of fences for snares
4. Rehabilitation
   a) Check quality of topsoil and weed free.
   b) Check for weed regrowth and manage timeously (before seed is set)
5. Operation monitoring
   a) Weed management on ongoing basis.
   b) Erosion to be addressed on ongoing basis

8 Appendices

8.1 Appendix A: References

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- United Nations Environment Programme (UNEP), *World Database on Protected Areas*, Protected Planet: http://www.protectedplanet.net
- World Resources Institute (WRI): https://www.wri.org

8.2 Appendix B: Abbreviations & Glossary

8.2.1 Abbreviations

CARA	Conservation of Agricultural Resources Act, Act 43 of 1983
CBA	Critical Biodiversity Area
DEA	Department of Environmental Affairs (*now DFFE, see below*)
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DFFE	The Department of Environmental Affairs was renamed the Department of Forestry, Fisheries & the Environment (DFFE) in April 2021, incorporating the forestry and fisheries functions from the previous Department of Agriculture, Forestry and Fisheries.
DEMC	Desired Ecological Management Class
DWS	Department of Water Affairs and Sanitation
DWAF	Department of Water Affairs and Forestry (former department name)
EA	Environmental Authorisation
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMC	Ecological Management Class
EMP	Environmental Management Plan
EMPr	Environmental Management Programme report
ER	Environmental Representative
ESS	Ecosystem Services
IAP's	Interested and Affected Parties
IEM	Integrated Environmental Management
LM	Local Municipality
masl	meters above sea level
NBA	National Biodiversity Assessment
NEMA	National Environmental Management Act, Act 107 of 1998
NFA	National Forests Act
NEM:BA	National Environmental Management: Biodiversity Act 10 of 2004
NFA	National Forest Act, Act 84 of 1998
PEMC	Present Ecological Management Class
PES	Present Ecological State
PNCO	Provincial Nature and Environment Conservation Ordinance (No. 19 of 1974).
RDL	Red Data List
RHS	Right Hand Side
RoD	Record of Decision
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
SoER	State of the Environment Report
SSC	Species of Special Concern
ToPS	Threatened of Protected Species
ToR	Terms of Reference
+ve	Positive
-ve	Negative

8.2.2 Glossary

Alien Invasive Species (AIS)	An alien species whose introduction and/or spread threaten biological diversity (Convention on Biological Diversity). Note: "*Alien invasive species*" is considered to be equivalent to "*invasive alien species*". An alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity (*IUCN*).
Best Environmental Practice	The application of the most appropriate combination of environmental control measures and strategies (Stockholm Convention).
Best Management Practice	Established techniques or methodologies that, through experience and research, have proven to lead to a desired result (BBOP).
Biodiversity	Biological diversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.
Biodiversity Offset	Measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure and ecosystem function and people's use and cultural values associated with biodiversity (BBOP).
Bioremediation	The use of organisms such as plants or microorganisms to aid in removing hazardous substances from an area. Any process that uses microorganisms, fungi, green plants, or their enzymes to return the natural environment altered by contaminants to its original condition.
Boundary	Landscape patches have a boundary between them which can be defined or fuzzy (Sanderson and Harris, 2000). The zone composed of the edges of adjacent ecosystems is the boundary.
Catchment	In relation to a watercourse or watercourses or part of a watercourse, means the area from which any rainfall will drain into the watercourse or watercourses or part of a watercourse, through surface flow to a common point or common points.
Connectivity	The measure of how connected or spatially continuous a corridor, network, or matrix is. For example, a forested landscape (the matrix) with fewer gaps in forest cover (open patches) will have higher connectivity.
Corridors	Have important functions as strips of a landscape differing from adjacent land on both sides. Habitat, ecosystems or undeveloped areas that physically connect habitat patches. Smaller, intervening patches of surviving habitat can also serve as "steppingstones" that link fragmented ecosystems by ensuring that certain ecological processes are maintained within and between groups of habitat fragments.
Critically Endangered (CR)	A category on the IUCN Red List of Threatened Species which indicates a taxon is considered to be facing an extremely high risk of extinction in the wild (*IUCN*).
Cultural Ecosystem Services	The non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experience, including, e.g. knowledge systems, social relations, and aesthetic values (Millennium Ecosystem Assessment).
Cumulative Impacts	The total impact arising from the project (under the control of the developer), other activities (that may be under the control of others, including other developers, local communities, government) and other background pressures

	and trends which may be unregulated. The project's impact is therefore one part of the total cumulative impact on the environment. The analysis of a project's incremental impacts combined with the effects of other projects can often give a more accurate understanding of the likely results of the project's presence than just considering its impacts in isolation (BBOP).
Data Deficient (DD)	A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat(*IUCN*).
Degraded Habitat/Land	Land that has been impacted upon by human activities (including introduction of invasive alien plants, light to moderate overgrazing, accelerated soil erosion, dumping of waste), but still retains a degree of its original structure and species composition (although some species loss would have occurred) and where ecological processes still occur (albeit in an altered way). Degraded land is capable of being restored to a near-natural state with appropriate ecological management.
Disturbance	An event that significantly alters the pattern of variation in the structure or function of a system, while fragmentation is the breaking up of a habitat, ecosystem, or land-use type into smaller parcels. Disturbance is generally considered a natural process.
Ecological Function	How each of the elements in the landscape interacts based on its life cycle events [Producers, Consumers, Decomposers Transformers]. Includes the capacity of natural processes and components to provide goods and services that satisfy human needs, either directly or indirectly.
Ecological Pattern	The contents and internal order of the landscape, or its spatial (and temporal) components. May be homogenous or heterogenous. Result from the ecological processes that produce them.
Ecological Process	Includes *Physical processes* [Climate (precipitation, insolation), hydrology, geomorphology]; *Biological processes* [Photosynthesis, respiration, reproduction]; *Ecological processes* [Competition, predator-prey interactions, environmental gradients, life histories]
Ecological Processes	Ecological processes typically only function well where natural vegetation remains, and where the remaining vegetation is well-connected with other nearby patches of natural vegetation. Loss and fragmentation of natural habitat severely threatens the integrity of ecological processes. Where basic processes are intact, ecosystems are likely to recover more easily from disturbances or inappropriate actions if the actions themselves are not permanent. Conversely, the more interference there has been with basic processes, the greater the severity (and longevity) of effects. Natural processes are complex and interdependent, and it is not possible to predict all the consequences of loss of biodiversity or ecosystem integrity. When a region's natural or historic level of diversity and integrity is maintained, higher levels of system productivity are supported in the long run and the overall effects of disturbances may be dampened.
Ecological Structure	The composition, or configuration, and the proportion of different patches across the landscape. Relates to species diversity, the greater the diversity, the more complex the structure. A description of the organisms and physical features of environment including nutrients and climatic conditions.
Ecosystem	All the organisms of a habitat, such as a lake or forest, together with the physical environment in which they live. A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

Ecosystem Services	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. Supporting Ecosystem services are those that are necessary for the maintenance of all other ecosystem services. Some examples include biomass production, production of atmospheric oxygen, soil formation and retention, nutrient cycling, water cycling, and provisioning of habitat.
Ecosystem Status	Ecosystem status of terrestrial ecosystems is based on the degree of habitat loss that has occurred in each ecosystem, relative to two thresholds: one for maintaining healthy ecosystem functioning, and one for conserving the majority of species associated with the ecosystem. As natural habitat is lost in an ecosystem, its functioning is increasingly compromised, leading eventually to the collapse of the ecosystem and to loss of species associated with that ecosystem (Millennium Ecosystem Assessment).
Ecotone	The transitional zone between two communities. Ecotones can arise naturally, such as a lakeshore, or can be human created, such as a cleared agricultural field from a forest. The ecotonal community retains characteristics of each bordering community and often contains species not found in the adjacent communities. Classic examples of ecotones include fencerows; forest to marshlands transitions; forest to grassland transitions; or land-water interfaces such as riparian zones in forests. Characteristics of ecotones include vegetational sharpness, physiognomic change, and occurrence of a spatial community mosaic, many exotic species, ecotonal species, spatial mass effect, and species richness higher or lower than either side of the ecotone.
Edge	The portion of an ecosystem near its perimeter, where influences of the adjacent patches can cause an environmental difference between the interior of the patch and its edge. This edge effect includes a distinctive species composition or abundance in the outer part of the landscape patch. For example, when a landscape is a mosaic of perceptibly different types, such as a forest adjacent to a grassland, the edge is the location where the two types adjoin. In a continuous landscape, such as a forest giving way to open woodland, the exact edge location is fuzzy and is sometimes determined by a local gradient exceeding a threshold, as an example, the point where the tree cover falls below thirty-five percent.
Emergent Tree	Trees that grow above the top of the canopy
Endangered (En)	Endangered terrestrial ecosystems have lost significant amounts (more than 60 % lost) of their original natural habitat, so their functioning is compromised. A taxon (species) is Endangered when the best available evidence indicates that it meets any of the criteria for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild (*IUCN*).
Endemic	A plant or animal species, or a vegetation type, which is naturally restricted to a defined region or limited geographical area. Many endemic species have widespread distributions and are common and thus are not considered to be under any threat. They are however noted to be unique to a region, which can include South Africa, a specific province or a bioregion, vegetation type, or a localised area. In cases where it is highly localised or known only from a few or a few localities, and is under threat, it may be red listed either in terms of the South Africa Threatened Species Programme, NEMBA Threatened or Protected Species (ToPS) or the IUCN Red List of Threated Species.
Environment	The external circumstances, conditions and objects that affect the existence and development of an individual, organism or group. These circumstances include biophysical, social, economic, historical and cultural aspects.
Estuary	a partially or fully enclosed body of water - (a) which is open to the sea permanently or periodically; and

	(b) within which the sea water can be diluted, to an extent that is measurable, with fresh water drained from land.
Evolutionary Processes	The process by which genetic changes have taken place and continue to take place in populations of plants and animals over successive generations in response to environmental changes. Evolutionary Processes includes the mechanisms that produce the biodiversity of life and include Mutation and Migration (Gene Flow), Genetic Drift, Natural Selection, Common Descent, Speciation, Sexual Selection, and Biogeography. Disruptions to evolutionary processes can prevent ecosystems and species from adapting to environmental change over time. Significant fragmentation is considered to be an important disrupter of evolutionary processes. Series of actions which enable new species to evolve in response to changing Biodiversity is maintained by ecological processes at the micro-scale (such as in pollination and nutrient cycling via microbial action) through to the mega-scale (natural events e.g. fire, flood; migration of species along river valleys or coastal areas, quality and quantity of water feeding rivers and estuaries; marine sand movement and the seasonal mountain-to-coast migration of birds that pollinate plants).
Exotic	Non-indigenous; introduced from elsewhere, may also be a *weed* or alien *invasive* species. Exotic species may be invasive or non-invasive.
Fragmentation (Habitat Fragmentation)	The 'breaking apart' of continuous habitat into distinct pieces. Causes land transformation, an important current process in landscapes as more and more development occurs.
Habitat	The home of a plant or animal species. Generally, those features of an area inhabited by animal or plant which are essential to its survival.
Habitat Banking	A market where credits from actions with beneficial biodiversity outcomes can be purchased to offset the debit from environmental damage. Credits can be produced in advance of, and without ex-ante links to, the debits they compensate for, and stored over time (IEEP).
IFC PS6	International Finance Corporation Performance Standard 6 – A standard guiding biodiversity conservation and sustainable management of living natural resources for projects financed by the International Finance Corporation (IFC)
Indicator	Information based on measured data used to represent an attribute, characteristic, or property of a system.
Indicator species	A species whose status provides information on the overall condition of the ecosystem and of other species in that ecosystem. They reflect the quality and changes in environmental conditions as well as aspects of community composition.
Indigenous	Native; occurring naturally in a defined area.
Indigenous Species (Native species)	A species that has been observed in the form of a naturally occurring and self-sustaining population in historical times (*Bern Convention 1979*). A species or lower taxon living within its natural range (past or present) including the area which it can reach and occupy using its natural dispersal systems (*modified after the Convention on Biological Diversity*)
Indirect Impact	Impacts triggered in response to the presence of a project, rather than being directly caused by the project's own operations (BBOP)
Instream habitat	Includes the physical structure of a watercourse and the associated vegetation in relation to the bed of the watercourse;
Intact Habitat / Vegetation	Land that has not been significantly impacted upon by man's activities. These are ecosystems that are in a near-pristine condition in terms of structure, species composition and functioning of ecological processes.
Intrinsic Value	The inherent worth of something, independent of its value to anyone or anything else.

Keystone Species	Species whose influence on ecosystem function and diversity are disproportionate to their numerical abundance. Although all species interact, the interactions of some species are more profound and far-reaching than others, such that their elimination from an ecosystem often triggers cascades of direct and indirect changes on more than a single trophic level, leading eventually to losses of habitats and extirpation of other species in the food web.
Landscape	An area of land that contains a mosaic of ecosystems, including human-dominated ecosystems (Millennium Ecosystem Assessment).
Landscape Approach	Dealing with large-scale processes in an integrated and multidisciplinary manner, combining natural resources management with environmental and livelihood considerations (FAO).
Landscape connectivity	The degree to which the landscape facilitates or impedes movement among resource patches.
Least threatened / Least Concern (LC)	These ecosystems have lost only a small proportion (more than 80 % remains) of their original natural habitat and are largely intact (although they may be degraded to varying degrees, for example by invasive alien species, overgrazing, or overharvesting from the wild). A taxon (species) is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category (*IUCN*).
Matrix	The "*background ecological system*" of a landscape with a high degree of connectivity.
Natural Forest (Indigenous Forest)	The definition of "*natural forest*" in the National Forests Act of 1998 (NFA) Section 2(1)(xx) is as follows: 'A natural forest means a group of indigenous trees. • whose crowns are largely contiguous. • or which have been declared by the Minister to be a natural forest under section 7(2)? This definition should be read in conjunction with Section 2(1)(x) which states that 'Forest' includes: • A natural forest, a woodland, and a plantation • The forest-produce in it; and • The ecosystems which it makes up. The legal definition must be supported by a technical definition, as demonstrated by a court case in the Umzimkulu magisterial district, relating to the illegal felling of Yellowwood (Podocarpus latifolius) and other species in the Gonqogonqo forest. From scientific definitions (also see Appendix B) we can define natural forest as: • A generally multi-layered vegetation unit • Dominated by trees that are largely evergreen or semi-deciduous. • The combined tree strata have overlapping crowns, and crown cover is >75% • Grasses in the herbaceous stratum (if present) are generally rare. • Fire does not normally play a major role in forest function and dynamics except at the fringes. • The species of all plant growth forms must be typical of natural forest (check for indicator species) • The forest must be one of the national forest types
Near Threatened (NT)	A taxon (species) is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable

	now, but is close to qualifying for or is likely to qualify for a threatened category in the near future (*IUCN*).
Patch	A term fundamental to landscape ecology, is defined as a relatively homogeneous area that differs from its surroundings. Patches are the basic unit of the landscape that change and fluctuate, a process called patch dynamics. Patches have a definite shape and spatial configuration and can be described compositionally by internal variables such as number of trees, number of tree species, height of trees, or other similar measurements.
Protected Area	A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.
Range restricted species	Species with a geographically restricted area of distribution. Note: Within the IFC PS6, restricted range refers to a limited extent of occurrence (EOO): • For terrestrial vertebrates and plants, restricted-range species are defined as those species that have an EOO less than 50,000 square kilometres (km2).
Refugia	A location which supports an isolated or relict population of a once more widespread species. This isolation can be due to climatic changes, geography, or human activities such as deforestation and overhunting.
Rehabilitation	Measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/ or minimised. Rehabilitation emphasizes the reparation of ecosystem processes, productivity and services, whereas the goals of restoration also include the re-establishment of the pre-existing biotic integrity in terms of species composition and community structure (BBOP).
Resilience	The capacity of a natural system to recover from disturbance (OECD).
Restoration	The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. An ecosystem has recovered when it contains sufficient biotic and abiotic resources to continue its development without further assistance or subsidy. It would sustain itself structurally and functionally, demonstrate resilience to normal ranges of environmental stress and disturbance, and interact with contiguous ecosystems in terms of biotic and abiotic flows and cultural interactions (IFC).
Riparian	Pertaining to, situated on or associated with the banks of a watercourse, usually a river or stream.
Riparian Habitat	Includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.
River Corridors	River corridors perform several ecological functions such as modulating stream flow, storing water, removing harmful materials from water, and providing habitat for aquatic and terrestrial plants and animals. These corridors also have vegetation and soil characteristics distinctly different from surrounding uplands and support higher levels of species diversity, species densities, and rates of biological productivity than most other landscape elements. Rivers provide for migration and exchange between inland and coastal biotas.
Sustainable Development	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED).
Terrestrial	Occurring on, or inhabiting, land.
Threatened Species	Umbrella term for any species categorised as Critically Endangered, Endangered or Vulnerable by the IUCN Red List of Threatened Species (*IUCN*). Any species that

	is likely to become extinct within the foreseeable future throughout all or part of its range and whose survival is unlikely if the factors causing numerical decline or habitat degradation continue to operate (EU).
Traditional Ecological Knowledge	Knowledge, innovations and practices of indigenous and local communities around the world. Developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation. It tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds. Traditional knowledge is mainly of a practical nature, particularly in such fields as agriculture, fisheries, health, horticulture, and forestry (CBD).
Transformation	In ecology, transformation refers to adverse changes to biodiversity, typically habitats or ecosystems, through processes such as cultivation, forestry, drainage of wetlands, urban development or invasion by alien plants or animals. Transformation results in habitat fragmentation – the breaking up of a continuous habitat, ecosystem, or land-use type into smaller fragments.
Transformed Habitat/Land	Land that has been significantly impacted upon as a result of human interferences/disturbances (such as cultivation, urban development, mining, landscaping, severe overgrazing), and where the original structure, species composition and functioning of ecological processes have been irreversibly altered. Transformed habitats are not capable of being restored to their original states.
Tributary	A small stream or river flowing into a larger one.
Untransformed Habitat/Land	Land that has not been significantly impacted upon by man's activities. These are ecosystems that are in a near-pristine condition in terms of structure, species composition and functioning of ecological processes.
Vulnerable (Vu)	Vulnerable terrestrial ecosystems have lost some (more than 60 % remains) of their original natural habitat and their functioning will be compromised if they continue to lose natural habitat. A taxon (species) is Vulnerable when the best available evidence indicates that it meets any of the criteria for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild (*IUCN*).
Watercourse	Natural or man-made channel through or along which water may flow. A river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake or dam into which, or from which, water flows. and a reference to a watercourse includes, where relevant, its bed and banks;
Weed	An indigenous or non-indigenous plant that grows and reproduces aggressively, usually a ruderal pioneer of disturbed areas. Weeds may be unwanted because they are unsightly, or they limit the growth of other plants by blocking light or using up nutrients from the soil. They can also harbour and spread plant pathogens. Weeds are generally known to proliferate through the production of large quantities of seed.
Wetlands	A collective term used to describe lands that are sometimes or always covered by shallow water or have saturated soils, and where plants adapted for life in wet conditions usually grow.

8.3 Appendix C: Biodiversity Environmental Management Plan

Specific measures relating to management of Biodiversity Impacts that must be included in the project Environmental Management Programme (EMPr). This Environmental Management Plan (EMP) contains guidelines, operating procedures and rehabilitation control requirements, which will be binding on the holder of the environmental authorisation after approval of the EMP. The impacts identified and listed in Section 3.3 will be managed / controlled as set out under mitigating measures and as detailed in this section, which provides general management guidelines, which may or may not be appropriate, depending on the specific circumstances.

8.3.1 Protection of Flora and Fauna

The following actions must be implemented at construction phase, where deemed necessary.

- Search and rescue operations for Species of Conservation Concern *must* be undertaken before the commencement of site clearing activities.
- Indigenous vegetation encountered on the sites that are to be conserved and left intact.
- It is important that clearing activities are kept to the minimum and take place in a phased manner. This allows animal species to move into safe areas and prevents wind and water erosion of the cleared areas.
- Stripped vegetation *should* be temporarily stored during operations and to be used later to stabilise slopes. This excludes exotic invasive species.
- No animals are to be harmed or killed during the course of operations.
- Workers are NOT allowed to collect any flora or snare any faunal species. All flora and fauna remain the property of the landowner and *must* not be disturbed, upset or used without their expressed consent.
- It is the responsibility of the Contractor to provide sufficient fuel for cooking and heated as needed by the staff.
- No domestic animals are permitted on the sites.
- Trees and shrubs that are directly affected by the operations may be felled or cleared but only by the expressed written permission of the ECO.
- Rehabilitation of vegetation of the site *must* be done as described in the Rehabilitation Plans.

Flora Search and Rescue

The following flora relocation plan is recommended, where deemed necessary:

- Once the final layout has been determined the botanist will be consulted in order to finalise the plant relocation and vegetation clearing plan.
- Respective permits to be obtained.
- Flora search and rescue is to be conducted before vegetation clearing takes place.
- Areas should only be stripped of vegetation as and when required and once species of special concern have been relocated for that area.
- Once site clearing is to commence, the area to be cleared of vegetation will be surveyed by the vegetation and plant search and rescue team clearing under the supervision of the botanist to identify and remove species suitable for rescue and commence removal of plants.
- These species are to be replanted immediately in a suitable area of similar vegetation, where future development is unlikely to occur, or within a nearby protected area.

Fauna Search and Rescue

The following fauna relocation plan is recommended for inclusion in the EMP and Fauna removal permit applications, where deemed necessary:

- An on-foot search, conducted by a professional reptile handler/team, is to be carried out to search for reptiles within every possible habitat.

- Once caught, each reptile will be placed into transport containers suited for that individual reptile.
- The transport containers must be kept cool to decrease stress for the reptiles.
- The reptiles will be relocated as soon as possible after they have been caught.
- Professional equipment will be used to ensure limited harm to the reptiles and to prevent the team members from being bitten by venomous snakes.
- Nooses should not be used as they cause injury to lizards.
- Safety procedures will be in place for the release of the reptiles.
- Amphibians should be caught by hand and net.
- Amphibians must be placed into transport containers with damp substrates to avoid dehydration.
- Tadpoles may be collected, placed into water containers and released as soon as possible, where required.
- During release, the tadpoles will be allowed to acclimatize to the new water in terms of temperature, pH etc.
- Small mammals will be caught with nets and by hand. They will then be transported in carry cages and released as soon as possible.
- No immobilizers or tranquilizers will be used on the mammals.

8.3.2 Alien and Invasive Plan Management Plan

The following mitigation measures have been identified in order to ensure that the introduction and spread of alien invasive vegetation is minimised, where deemed necessary:

- Alien species must be removed from the site as per the National Environmental Management: Biodiversity Act (No. 10 of 2004) requirements.
- A suitable weed management strategy must be implemented in the construction phase and carried through the operational phase.
- Weeds and alien species *must* be cleared by hand before the rehabilitation phase of the areas. Removal of alien plants are to be done according to the Working for Water Guidelines.
- The Contractor is responsible for the removal of alien species within all areas disturbed during construction activities. Disturbed areas include (but are not limited to) access roads, construction camps, site areas and temporary storage areas.
- In consultation with relevant authorities, the Engineer may order the removal of alien plants (when necessary). Areas within the confines of the site are to be included.
- All alien plant material (including brushwood and seeds) should be removed from site and disposed of at a registered waste disposal site. Should brushwood be utilised for soil stabilization or mulching, it must be seed free.
- After clearing is completed, an appropriate cover crop may be required, should natural re-establishment of grasses not take place in a timely manner.

8.3.3 Fires

The following mitigation measures have been identified in order to minimise fire risks, where deemed necessary:

- The Contractor must ensure that an emergency preparedness plan is in place in order to fight accidental fires or veld fires, should they occur. The adjacent landowners/users/managers *should* also be informed or otherwise involved.
- Enclosed areas for food preparation should be provided and the Contractor *must* strictly prohibit the use of open fires for cooking and heating purposes.
- The use of branches of trees and shrubs for fire-making *must* be strictly prohibited.
- The Contractor *should* take all reasonable and active steps to avoid increasing the risk of fire through their activities on-site. No fires may be lit except at places approved by the ECO.

- The Contractor *must* ensure that the basic fire-fighting equipment is to the satisfaction of the Local Emergency Services.
- The Contractor *must* supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other relevant areas with tested and approved fire-fighting equipment.
- Fires and "hot work" *must* be restricted to demarcated areas.
- A braai facility may be considered at the discretion of the Contractor and in consultation with the ECO. The area *must* be away from flammable stores. All events must be under management's supervision and a fire extinguisher *will* be immediately available. "Low-smoke" fuels must be used (e.g. charcoal) and smoke control regulations, if applicable, must be considered.
- The Contractor *must* take precautions when working with welding or grinding equipment near potential sources of combustion. Such precautions include having a suitable, tested and approved fire extinguisher immediately at hand and the use of welding curtains.

8.3.4 Soil Aspects

The following mitigation measures have been identified in order to minimise soil loss, where deemed necessary:

- Sufficient topsoil must be stored for later use during decommissioning, particularly from outcrop areas.
- Topsoil shall be removed from all areas where physical disturbance of the surface will occur.
- All available topsoil shall be removed after consultation with the botanist and horticulturalist prior to commencement of any operations.
- The removed topsoil shall be stored on high ground within the site footprint outside the 1:50 flood level within demarcated areas.
- Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of roads.
- The stockpiled topsoil shall be protected from being blown away or being eroded. The application of a suitable grass seed/runner mix will facilitate this and reduce the minimise weeds.

8.3.5 Dust

The following mitigation measures have been identified in order to minimise dust, where deemed necessary:

- To manage complaints relation to impacts on the nearby communities, a dust register *will* be developed.
- If required, water spray vehicles *will* be used to control wind cause by strong winds during activities on the works.
- No over-watering of the site or road surfaces.
- Wind screens *should* be used to reduce wind and dust in open areas.

8.3.6 Infrastructural Requirements

The following mitigation measures have been identified in order to minimise impacts of infrastructure requirements, where deemed necessary:

Topsoil

- Topsoil shall be removed from all areas where physical disturbance of the surface will occur.
- All available topsoil shall be removed after consultation with the Regional Manager prior to commencement of any operations.

- The removed topsoil shall be stored on high ground within the footprint outside the 1:50 flood level within demarcated areas (Appendix 1)
- Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of roads.
- The stockpiled topsoil shall be protected from being blown away or being eroded. The use of a suitable grass seed/runner mix will facilitate soil protection and minimise weeds/weed growth.

Stormwater and Erosion Control

- Stormwater Management Plans *must* be developed for the site and should include the following:
  - The management of stormwater during construction.
  - The installation of stormwater and erosion control infrastructure.
  - The management of infrastructure after completion of construction.
- Temporary drainage works may be required to prevent stormwater to prevent silt laden surface water from draining into river systems in proximity to the site. Stormwater *must* be prevented from entering or running off site.
- To ensure that site is not subjected to excessive erosion and capable of drainage runoff with minimum risk of scour, their slopes *should* be profiled at a maximum 1:3 gradient.
- Diversion channels *should* be constructed ahead of the open cuts, and above emplacement areas and stockpiles to intercept clean runoff and divert it around disturbed areas into the natural drainage system downstream of the site.
- Rehabilitation is necessary to control erosion and sedimentation of all eroded areas (where works will take place).
- Existing vegetation *must* be retained as far as possible to minimise erosion problems.
- It is importation that the rehabilitation of site is planned and completed in such a way that the runoff water will not cause erosion.
- Visual inspections *will* be done on a regular basis with regard to the stability of water control structure, erosion and siltation.
- Sediment-laden runoff from cleared areas *must* be prevented from entering rivers and streams.
- No river or surface water may be affected by silt emanating from the site.

Site Office / Camp Sites

- No site offices or camp sites will be constructed on the site under current operating conditions, existing structures will be used.

Operating Procedures in the Site

- Construction shall only take place within the approved demarcated site.
- Construction may be limited to the areas indicated by the Regional Manager on assessment of the application.
- The holder of the environmental authorisation shall ensure that operations take place only in the demarcated areas as described in this report.
- Watering to minimise the effect of dust generation should be carried out as frequently as necessary. Noise should also be kept within reason.
- No workers will be allowed to damage or collect any indigenous plant or snare any animal.
- Grass and vegetation of the immediate environment or adapted grass / vegetation will be re-established on completion of construction activities, where applicable.
- No firewood to be collected on site and the lighting of fires must be prohibited.
- Cognisance is to be taken of the potential for endangered species occurring in the area. It is considered unlikely, however, that these species will be affected by the proposed activity, or the access road.

Excavations

Whenever any excavation is undertaken, the following procedures shall be adhered to:

- Topsoil shall be handled as described in this EMP.
- Excavations shall take place only within the approved demarcated site.
- Excavations must follow the contour lines where possible.
- The construction site will not be left in any way to deteriorate into an unacceptable state.
- The excavated area must serve as a final depositing area for waste rock and overburden during the rehabilitation process.
- Once excavations have been filled with overburden, rocks and coarse natural materials and profiled with acceptable contours (including erosion control measures), the previous stored topsoil shall be returned to its original depth over the area.
- The area shall be fertilised, if necessary, to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally occurring flora.

Rehabilitation of Processing and Excavation Areas

- On completion of construction, the surface of the processing areas especially if compacted due to hauling and dumping operations shall be scarified to a depth of at least 200 mm and graded to an even surface condition and the previously stored topsoil will be returned to its original depth over the area.
- The area shall be fertilised, if necessary, to allow vegetation to establish rapidly. The site shall be seeded with suitable grasses and local indigenous seed mix.
- Excavations may be used for the dumping of construction wastes. This *shall* be done in such a way as to aid rehabilitation.
- Waste (non-biodegradable refuse) will not be permitted to be deposited in the excavations.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the activity, be corrected and the area be seeded with a vegetation seed mix to his or her satisfaction. This *must* be done in conjunction with the ECO.
- Final rehabilitation *must* comply with the requirements mention in the Rehabilitation Plan.

8.3.7 Rehabilitation Plan

The following mitigation measures have been identified in order to maximise rehabilitation success, where deemed necessary.

Rehabilitation Objective

The overall objective of the rehabilitation plan is to minimize adverse environmental impacts associated with the activity whilst maximizing the future utilization of the property. Significant aspects to be borne in mind in this regard is, revegetation of undeveloped footprint and stability and environmental risk. The depression and immediate area of the working must also be free of alien vegetation. Additional broad rehabilitation strategies / objectives include the following:

- Rehabilitating the worked-out areas to take place concurrently within prescribed framework established in the EMP.
- All infrastructure, equipment, plant and other items used during the construction period will be removed from the site.
- Waste material of any description, including scrap, rubble and tyres, will be removed entirely from the site and disposed of at a recognised landfill facility. It will not be permitted to be buried or burned on site.
- Final rehabilitation shall be completed within a period specified by the Regional Manager.

Topsoil and Subsoil Replacement

Topsoil and subsoil will be stripped and stockpiled separately and only used in rehabilitation work towards the end of the operation. This is in contract to the gravel activity where rehabilitation and topsoil replacement was earmarked at the completion of each phase.
Stripped overburden will be backfilled into the worked-out areas where needed. Stripped topsoil will be spread over the re-profiled areas to an adequate depth to encourage plant regrowth. The vegetative cover will be stripped with the thin topsoil layer to provide organic matter to the relayed material and to ensure that the seed store contained in the topsoil is not diminished. Reseeding may be required should the stockpiles stand for too long and be considered barren from a seed bank point of view. Stockpiles should ideally be stored for no longer than a year.
The topsoil and overburden will be keyed into the reprofiled surfaces to ensure that they are not eroded or washed away. The topsoiled surface will be left fairly rough to enhance seedling establishment, reduce water runoff and increase infiltration.

Revegetation

All prepared surfaces will be seeded with suitable grass species to provide an initial ground cover and stabilize the soil surface. The following grass seed that is commonly available and suitable.

Botanical name	Common name	Approx seed mixture /Ha
Cynodon dactylon	Kweek	12 kg/ Ha
Eragrostis curvula	Weeping Love Grass	6 kg/ Ha
Eragrostis tef	Teff	2 kg/ Ha
Digitaria eriantha	Smuts Grass	4 kg/ Ha
Other indigenous veld grasses can be added to the seed mix		± 4 kg/Ha

The overall revegetation plan will, therefore, be as follows:

- Ameliorate the aesthetic impact of the site.
- Stabilise disturbed soil and rock faces.
- Minimize surface erosion and consequent siltation of natural water course located on site.
- Control wind-blown dust problems.
- Enhance the physical properties of the soil.
- Re-establish nutrient cycling.
- Re-establish a stable ecological system.

Every effort must be made to avoid unnecessary disturbance of the natural vegetation during operations.

Drainage and Erosion Control

To control the drainage and erosion at site the following procedures will be adopted:

- Areas where construction is completed should be rehabilitated immediately.
- Areas to be disturbed in future activities will be kept as small as possible (i.e. conducting the operations in phases), thereby limiting the scale of erosion.
- Slopes will be profiled to ensure that they are not subjected to excessive erosion but capable of drainage runoff with minimum risk of scour (maximum 1:3 gradient).
- All existing disturbed areas will be re-vegetated to control erosion and sedimentation.
- Existing vegetation will be retained as far as possible to minimize erosion problems.

Visual Impacts Amelioration

The overall visual impact of the proposed activities will be minimised by the following mitigating measures:

- Confining the footprint to an area as small as possible
- Re-topsoiling and vegetating all disturbed areas.

8.3.8 Monitoring and Reporting

Adequate management, maintenance and monitoring will be carried out annually by the applicant to ensure successful rehabilitation of the property until a closure certificate is obtained.
To minimise adverse environmental impacts associated with operations it is intended to adopt a progressive rehabilitation programme, which will entail carrying out the proposed rehabilitation procedures concurrently with activity.

8.3.9 Closure objectives and extent of alignment to pre-construction environment

Closure Objectives

The closure of the site will involve removal of all debris and rehabilitation of areas disturbed during the construction phase of the project. This will comprise the scarification of compacted areas, reshaping of areas, topsoiling and rehabilitating all prepared surfaces.

8.4 Appendix D: General Impact Rating Scale

To ensure a direct comparison between various specialist studies, six standard rating scales are defined and used to assess and quantify the identified impacts. This is necessary since impacts have several parameters that need to be assessed.
These scales are:

1. The Severity/ Benefit Scale, which assesses the importance of the impact from a purely technical perspective.
2. The Spatial Impact Scale, which assesses the extent or magnitude of the impact (the area that will be affected by the impact).
3. The Temporal Impact Scale, which assesses how long the impact will be felt. Some impacts are of a short duration, whereas others are permanent.
4. The Degree of Certainty Scale, which provides a measure of how confident the author feels about their prediction.
5. The Likelihood Scale, which provides an indication of the risk or chance of an impact taking place.
6. The Environmental Significance Scale, which assesses the importance of the impact in the overall context of the affected system or party.

To ensure integration of social and ecological impacts, to facilitate specialist assessment of impact significance, and to reduce reliance on value judgments, the severity of the impact within the scientific field in which it takes place (e.g. vegetation, fauna etc.) was assessed first. Thereafter, each impact was assessed within the context of time and space, and the probability of the impact occurring was quantified using the degree of certainty scale.
The impact was then assessed in the context of the whole environment to establish the "environmental significance" of the impact to the flora and vegetation.
The scales are described in detail below.

8.4.1 The Severity/ Beneficial Scale

The *severity scale* was used to scientifically evaluate how severe negative impacts would be, or how beneficial positive impacts would be on an affected system (for ecological impacts) or an affected party. This methodology attempts to remove any value judgments from the assessment, although it relies on the professional judgment of the specialist.

NEGATIVE IMPACT	POSITIVE IMPACT
Very severe An irreversible and permanent change to the affected system(s)) which cannot be mitigated. For example, change in topography resulting from a quarry.	Very Beneficiary A permanent and very substantial benefit to the affected system(s) with no alternative to achieve this benefit.
Severe Long-term impacts on the affected system(s) that could be mitigated. However, this mitigation would be difficult, expensive or time consuming or some combination of these.	Beneficial A long-term impact and substantial benefit to the affected system(s). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these.
Moderately severe Medium- to long-term impact on the affected system(s) that could be mitigated.	Moderately beneficial A medium- to long-term impact of real benefit to the affected system(s) Other ways of optimising are equally difficult, expensive and time

NEGATIVE IMPACT	POSITIVE IMPACT
	consuming (or a combination of these), as achieving them in this way.
Slight Medium- to short term impacts on the affected system(s) Mitigation is very easy, cheap, less time consuming or not necessary.	Slightly beneficial A short- to medium-term impact and negligible benefit to the affected system(s) Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these.
No effect The system(s) is not affected by the proposed development.	Do not know/Cannot know In certain cases, it may not be possible to determine the severity of the impact.

The severity of impacts can be evaluated with and without mitigation order to demonstrate how serious the impact is when nothing is done about it. For beneficial impacts, optimisation means anything that can enhance the benefits. However, mitigation or optimisation must be practical, technically feasible and economically viable.

8.4.2 Spatial and Temporal Scales

Two additional factors were considered when assessing the impacts, namely the relationship of the impact to Spatial and Temporal Scales.
The *spatial scale* (shown in italics) defines the impact at the following scales.

SPATIAL SCALE	EXPLANATION
Localised	at a localised scale (i.e. few hectares in extent). The specific area to which this scale refers is defined for the impact to which it refers.
Study Area	the site, some effects to surrounding area (*~10 km*)
District	the site, some effects to wider surrounding area (*~100 km*)
Regional	the site, some effects to surrounding area (*+250 km*)
National	Impacts will affect at a country level
International	Impacts extend beyond country boundary

The *temporal scale* (shown in italics) defines the impact at the following scales.

TEMPORAL SCALE	EXPLANATION
Short Term	Less than 5 years. Many construction phase impacts will be of a short duration
Medium Term	Between 5 and 20 years
Long Term	Between 20 and 40 years, and from a human perspective essentially permanent.
Permanent	Over 40 years and resulting in a permanent and lasting change.

8.4.3 The Degree of Certainty and the Likelihood Scale

It is also for each specialist to state the degree of certainty, or the confidence attached to their prediction of significance. For this reason, a 'degree of certainty' scale (shown in bold) must be used.

DEGREE	DESCRIPTION
Definite:	More than 90% sure of fact. To use this one will need to substantial supportive data.
Probable:	Between 70% and 90% sure of fact.
Possible:	Between 40% and 70% sure of fact.
Unsure:	Less than 40% sure of fact.

The risk or likelihood (shown in normal font) of impacts being manifested differs. There is no doubt that some impacts would occur, but certain other (usually secondary data) impacts are not as likely and may or may not result. Although these impacts maybe severe, the likelihood of them occurring may affect their overall significance and must therefore be considered. It is therefore necessary for the author to state his estimate of the likelihood of an impact occurring, using the following likelihood scale:

DEGREE	DESCRIPTION
Very unlikely	The chance of these impacts occurring is extremely slim, e.g. natural forces destroying a dam wall.
Unlikely	The risk of these impacts occurring is slight.
May occur	The risk of these impacts is more likely, although it is not definite.
Very Likely	Slight chance that this impact will not occur.
Definite	There is no chance that this impact will not occur.

8.4.4 The Environmental Significance Scale

The environmental significance scale is an attempt to evaluate the significance of an impact, the severity or benefit of which has already been assessed. This evaluation needs to be assessed in the relevant context, as an impact can either be ecological or social, or both. Since the severity of impacts with and without mitigation will already have been assessed, significance was only evaluated after mitigation. In many cases, this mitigation will take place, as it has been incorporated into project design. A six-point significance scale is applied as follows:

SIGNIFICANCE	DESCRIPTION
Very High (6)	Impacts considered to have a major and permanent change to natural environment and are rate as VERY HIGH, usually resulting to severe or very severe/ beneficial to highly beneficial effects.
High (5)	Long term change and are rated as HIGH resulting to severe or moderately severe effects/ beneficial to moderately beneficial.
Moderate (4)	Medium to long-term effects. Impacts are rated as MODERATE with moderately severe or moderately beneficial effects.
Low (3)	Medium to short term effects. Impacts are rated as MODERATE resulting in moderately severe or moderately beneficial effects.
Insignificant (2)	Short term effects are present. Impacts are rated as SLIGHT resulting in SLIGHTLY BENEFICIAL effects. Residual effects are present but are of no consequence.
No Significance (1)	No primary or secondary effects, resulting in NO SIGNIFICANT impact.
Do not Know (0)	Not possible to determine the significance of impacts

8.4.5 Absence of Data

In certain instances, an assessment must be produced in the absence of all the relevant and necessary data, due to paucity or lack of scientific information on the study area. It is more important to identify all the likely environmental impacts than to precisely evaluate the more obvious impacts. It is important to be on the conservative side in reporting likely environmental impacts. Because assessing impacts with a lack of data is more dependent on scientific judgment, the rating on the certainty scale cannot be too high. It is for these reasons that a degree of certainty scale has been provided, as well as the categories DON'T KNOW or CAN'T KNOW.

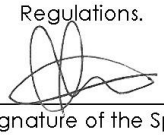
8.5 Appendix E: Declaration, Specialist Profile and Registration

DECLARATION OF THE SPECIALIST

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

I Mr Jamie Pote....., as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

- In terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
  - am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.



2025/04/05

Signature of the Specialist: Date:

N/A

Name of company (if applicable):

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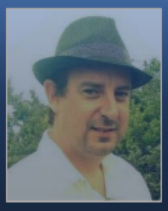

Jamie Pote

SENIOR ECOLOGIST AND ENVIRONMENTAL SCIENTIST

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Bluesky-SA

ABOUT ME

16 years broad professional experience in Biodiversity, Ecological and Vegetation Assessments on over 220 projects in southern, western and central Africa. Senior Environmental Consultant and EAP on over 50 projects in the mining, infrastructure, housing and agricultural sectors. Environmental monitoring and auditing on over 50 civil infrastructure and construction projects. Have managed all aspects of projects from inception through to implementation. GIS mapping and analytics.

EDUCATION

Bachelor of Science
Rhodes University
2001 (Botany & Environmental Science)

Bachelor of Science (Honours)
Rhodes University
2002 (Botany)

Professional Natural Scientist
SACNASP
2016

SERVICES

Terrestrial Biodiversity/Ecological Assessments
Environmental & Ecological Risk-Assessments
Bioremediation, Restoration & Rehabilitation Plans
Environmental Management Plans & Programmes
GIS Mapping & Analysis & Web maps
Alien Invasive Management (Terrestrial)
Environmental Auditing & Monitoring (ECO)
Flora Search & Rescue & Relocation
Independent Environmental & Ecological review
Permit and License applications
Environmental & Mining Applications

EXPERIENCE AND CLIENTS

Key Sectors

- *Wind, Solar Energy Facilities*
- *Infrastructure and Housing*
- *Agriculture and Forestry*
- *Mining and Industrial*

Key Projects

- *Over 220 independent Biodiversity/Ecological Assessments throughout southern, western and central Africa.*
- *Mining applications and construction auditing on over 40 projects and more than 300 gravel borrow pits for the Eastern Cape Department of Roads and Public Works, Department of Transport and the South African National Roads Agency (SANRAL) throughout the Eastern Cape.*
- *South-End Precinct Mixed Use Development for Mandela Bay Development Agency - Environmental application, Ecological assessments and Construction monitoring.*
- *Coega Development Corporation IDZ projects – Ecological assessments, Flora search & rescue and Construction monitoring.*
- *Environmental applications, construction monitoring and auditing for a wide range of projects, including infrastructure and housing for various clients including the Department of Transport and SANRAL.*
- *Various agricultural expansion and infrastructure projects.*
- *Various wind and solar energy and associated infrastructure projects.*
- *Numerous infrastructure projects including electrical, water and roads.*
- Various Environmental Management and Rehabilitation Plans.

SACNASP
South African Council for Natural Scientific Professions

herewith certifies that

Jamie Robert Claude Pote

Registration Number: 115233

is a registered scientist

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

Ecological Science (Professional Natural Scientist)

Effective **20 July 2016** Expires **31 March 2026**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

Mr Jamie Pote (BSc (Hons) PR. Sci. Nat.

PROJECT EXPERIENCE

PERFORMANCE STANDARD BIODIVERSITY AND CRITICAL HABITAT ASSESSMENTS (IFC PS6)

- DBSA Environmental & Social Safeguards Standards 9: Biodiversity Conservation and Sustainable Management Assessment: The Ilitha Fibre Project, Ethekwini 2021
- Critical Habitat & Biodiversity Assessment - Roggeveld Wind Energy Project 2020
- Biodiversity Assessment for Kalukundi Copper/Cobalt Mine, Democratic Republic of Congo 2008

TERRESTRIAL BIODIVERSITY ASSESSMENTS AND COMPLIANCE STATEMENTS

- Terrestrial Biodiversity Assessment (Addo BSD Offices) 2021
- Terrestrial Biodiversity Assessment (Blaauwater Farms) 2021
- Terrestrial Biodiversity Assessment (Buffelshoek Farm, Loerie) 2021
- Terrestrial Biodiversity & Aquatic Assessment & Review (Falcon Ridge Dam) 2021
- Terrestrial Biodiversity Assessment (Gubenxa Valley Deciduous Fruit) 2021
- Terrestrial Biodiversity Assessment (Little Chelsea Mixed-use) 2021
- Terrestrial Biodiversity Compliance Statement (Maidenhead Farm) 2021
- Terrestrial Biodiversity Review, Mulilo Total Hydra Storage Project Grid Interconnection 2021
- Terrestrial Biodiversity Compliance Statement (Lahlangubo River Bridge) 2021
- Terrestrial Biodiversity Assessment (Mbashe access roads - 3 sites) 2021
- Terrestrial Biodiversity Assessment (Burlington Farm Citrus Development, Cookhouse) 2020
- Terrestrial Biodiversity Compliance Statement: CHDM Cluster 9 Phase 3D Pipeline 2020
- Terrestrial Biodiversity Review, Mulilo Total Hydra Storage Project BESS 2020
- Terrestrial Biodiversity Assessment (Mbashe housing projects, Dutywa & Willowvale) 2020
- Terrestrial Biodiversity Assessment (Helpmekaar Dam, Tarkastad) 2020
- Terrestrial Biodiversity Assessment (Herbertsdale pipeline, Mossel Bay) 2020
- Terrestrial Biodiversity Assessment (Keurbooms Erf 155, Keurboomstrand) 2020
- Terrestrial Biodiversity Assessment (Lowmar Hydroelectric Project, Cradock) 2020
- Terrestrial Biodiversity Assessment (Mossel Bay Gas Power Plant) 2020
- Terrestrial Biodiversity Assessment (Erf 1820, Mthatha) 2020
- Terrestrial Biodiversity Assessment (Newlyn Manganese Terminal, Coega SEZ) 2020
- Terrestrial Biodiversity Assessment Thornhill Phase 2 Sanitation Link 2020

ENERGY PROJECTS (WIND FARM AND PHOTOVOLTAIC INFRASTRUCTURE)

- Preliminary Biodiversity Screening for Chrisdelina Ranch Agricultural Project, Kizenga District 2020
- Preliminary Biodiversity Screening and GIS mapping for Balekani Photovoltaic Solar Project 2020
- Preliminary Biodiversity Screening and GIS mapping for Sihhoye Photovoltaic Solar Project 2020
- Preliminary Biodiversity Screening and GIS mapping Mpaka Photovoltaic Solar Project 2020
- Preliminary Biodiversity Screening and GIS mapping for Chiwelwa Hydroelectric project 2020
- Ecological Assessment for Vermaak Boerdery Hydro Turbine (Cookhouse), Eastern Cape 2020
- Ecological Assessment for Windcurrent Wind Farm, Eastern Cape 2012
- Ecological Assessment for Universal Windfarm, NMB 2011
- Ecological Assessment for Inca Energy Windfarm, Northern Cape 2011
- Ecological Assessment for Broadlands Photovoltaic Farm, Eastern Cape 2011
- Botanical Assessment for Electrawinds Windfarm Coega, NMB 2010
- Botanical Assessment and Open Space Management Plan for Mainstream WEF Phase 2, Eastern Cape 2010

SPECIALISED ECOLOGICAL REPORTS AND REVIEWS

- Rebels Vlei Riparian delineation 2021

- Buck Kraal Dam Rehabilitation Plan Review 2020
- Rehabilitation Plan for Hitgeheim Farm (Farm 960), Sunland, Eastern Cape 2017
- Green Star Rating Ecological Assessment for SANRAL office, Bay West City, NMBM 2015
- Section 24G Assessment and Rehabilitation Plan for Bingo Farm, Eastern Cape 2014
- Mapping and Ecological services for Congo Agriculture, Republic of Congo 2013
- Rehabilitation Plan for Nieu Bethesda, Eastern Cape 2011
- Mapping of pipeline for Kenton Water Board, Eastern Cape 2010
- Rehabilitation Plan for N2 Upgrade - Coega to Colchester, NMB 2010
- Representative for landowner group for Seaview burial Park, NMB 2010
- Botanical Sensitivity Analysis for LSDF, Greenbushes-Hunters Retreat, NMB 2008
- Forestry Rehabilitation Assessment Report for Amahlathi Forest Rehabilitation, Eastern Cape 2007
- Botanical & Riparian Assessment for Orange River Weirs-Boegoeberg, Douglas Dam and Sendelingsdrif, Northern Cape 2006
- Botanical Assessment for State of the Environment Report for Chris Hani District Municipality SoER, Eastern Cape 2003

ROAD AND RAILWAY INFRASTRUCTURE PROJECTS

- Ecological Assessment for CDC IDZ Mn Terminal, conveyor and railway line, NMB 2013
- Ecological Assessment Review for Penhoek Road widening, Eastern Cape 2012
- Ecological Assessment for R61 road widening, Eastern Cape 2012
- Botanical Assessment for Chelsea RD - Walker Drive Ext., NMB 2010
- Botanical Assessment for Motherwell - Blue Water Bay Road, NMB 2010
- Ecological Assessment for Port St John Road, Eastern Cape 2010
- Botanical Basic Assessment for Bholani Village Rd, Port St Johns, Eastern Cape 2009
- Botanical Report, EMP and Rehab Plan for Coega-Colchester N2 Upgrade, NMB 2009
- Botanical Assessment for Manganese Conveyor Screening Report, NMB 2008
- Ecological Assessment for Road Layout for Whiskey Creek- Kenton, Eastern Cape 2006

MINING PROJECTS

- Ecological Assessment for Bochum Borrow Pits, Limpopo 2013
- Ecological Assessment and Mining and Rehabilitation Plan for Greater Soutpansberg Mining Project, Limpopo (3 proposed Mines) 2013
- Ecological Assessment for Thulwe Road Borrow Pits, Limpopo 2013
- Ecological Assessment and Mining and Rehabilitation Plan for Baghana Mining, Ghana 2010
- Botanical Assessment for Zwartenbosch Quarry, Eastern Cape 2008
- Botanical description & map production for Quarry - Rudman Quarry, Eastern Cape 2008
- Botanical Basic Assessment, Rehab Plan & Maps for Borrow Pit - Rocklands/Patensie, Eastern Cape 2008
- Botanical Assessment & Maps for Sandman Sand Gravel Mine, Eastern Cape 2008
- Botanical Assessment & GIS maps for Shamwari Borrow Pit, Eastern Cape 2008
- Detailed Botanical Assessment, EMP and Rehab Plan for Kalukundi Copper/Cobalt Mine, Democratic Republic of Congo 2008
- Botanical Assessment, Rehab Plan & Maps for Borrow Pit Humansdorp/Oyster Bay, Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Cala, Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Camdeboo, Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Somerset East, Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Nkonkobe, Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Ndlambe, Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Blue Crane Route, Eastern Cape 2008

- Botanical Assessment, EMP and Rehabilitation Plan for AWRM - Cathcart, Eastern Cape 2008
- Botanical Assessment, GIS maps and Rehab Plan for Mthatha Prospecting, Eastern Cape 2008
- Regional Botanical Map for mining prospecting permit, Welkom 2008
- Botanical Assessment for Scoping Report and Detailed Botanical Assessment and Rehab Plan for Elitheni Coal Mine, Eastern Cape 2007
- Botanical Assessment, Rehab Plan & Maps for Borrow Pit - Oyster Bay, Eastern Cape 2007
- Botanical Assessment, Rehab Plan & Maps for Borrow Pit - Bathurst/GHT, Eastern Cape 2007
- Botanical Assessment, Rehab Plan & Maps for Borrow Pit – Jeffreys Bay, Eastern Cape 2007
- Botanical Assessment, Rehab Plan & Maps for Borrow Pit - Storms River/Kareedouw, Eastern Cape 2007
- Biophysical Assessment for Humansdorp Quarry, Eastern Cape 2006
- Botanical Assessment, Rehab Plan & Maps for Quarry-Cathcart & Somerset East, Eastern Cape 2006
- Botanical Assessment, Rehab Plan & Maps for Quarry - Despatch Quarry, NMB 2006
- GIS Mapping & Botanical Assessment and Rehab Plan for Quarry - JBay Crushers, Eastern Cape 2006
- Botanical Assessment, EMP and Rehabilitation Plan for Polokwane Silicon Smelter, Limpopo 2006
- Application for Mining Permit for Bruce Howarth Quarry, Eastern Cape 2006

POWERLINE INFRASTRUCTURE PROJECTS

- Ecological Assessment: Dieprivier-Karreedouw 132kV Powerline realignment, Kouga LM 2016
- Eskom Ecological Walkdown: Dieprivier-Karreedouw 132 kV Powerline, Kouga LM 2016
- Eskom Solar one Ecological Walkdown: Nieuwehoop 400 kV powerline 2015
- Rehabilitation Plan and Auditing for Grassridge-Poseidon Powerline Rehab, Eastern Cape 2013
- Ecological Assessment for Dieprivier Karreedouw 132kV Powerline, Eastern Cape 2012
- Flora and Fauna search and Rescue plan for Van Stadens Windfarm Powerline, NMB 2012
- Botanical Assessment for Dedisa-Grassridge Powerline, Eastern Cape 2010
- Ecological Assessment for Grahamstown-Kowie Powerline, Eastern Cape 2010
- Species of Special Concern Mapping Transmission Line for San Souci to Nivens Drift 132kV powerline, NMB 2009
- Botanical Assessment for Eskom Powerline - Albany-Kowie, Eastern Cape 2009
- Botanical Assessment for Eskom 132 kV Dedisa Grassridge Power line-Coega, NMB 2006
- Botanical Assessment for Eskom Power line – Tyalara-Wilo, Eastern Cape 2006
- Botanical Assessment for Steynsburg - Teebus 132 kV powerline, Eastern Cape 2004

PIPELINE INFRASTRUCTURE PROJECTS

- Terrestrial Biodiversity Assessment for Thornhill Phase 2 Sanitation Link, Ndlambe, Eastern Cape 2020
- Botanical Assessment for Ngqamakhwe Regional Water Supply Scheme (Phase 3) 2018
- Ecological Assessment for Butterworth Emergency Bulk Water Supply Scheme 2017
- Ecological Assessment for Karringmelkspruit Emergency Bulk Water Supply (Lady Grey) 2017
- Ecological Assessment for Wanhoop-Willowmore Bulk Water Supply, Eastern Cape 2016
- Ecological Assessment for Steytlerville Bulk Water Supply, Eastern Cape (Phase 4) 2013
- Ecological Assessment for Steytlerville Bulk Water Supply, Eastern Cape (Phase 5) 2013
- Detailed Ecological Assessment for Suikerbos Pipeline, Gauteng 2012
- Basic Botanical Assessment for Wanhoop farm pipeline, Eastern Cape 2010
- Basic Botanical Assessment for Chatty Sewer, NMB 2010
- Species of Special Concern Mapping for Seaview Pipeline, NMB 2009
- Species of Special Concern Mapping for Chelsea Bulk Water Pipeline, NMB 2009
- Map Production for Russell Rd Stormwater, NMB 2008
- Basic Botanical Assessment for Albany Pipeline, Eastern Cape 2008
- Environmental Risk Assessment for Elands River pipeline, Eastern Cape 2007

- Detailed Botanical Assessment for Motherwell Pipeline, NMB 2007
- Detailed Botanical Assessment, GIS maps for Erasmuskloof Pipeline, Eastern Cape 2007
- Botanical & Floristic Report for Hankey pipeline, Eastern Cape 2006
- Detailed Botanical Assessment for Port Alfred water pipeline, Eastern Cape 2004

GENERAL INFRASTRUCTURE DEVELOPMENT PROJECTS

- Ecological Assessment for Amalinda crossing, BCM, Eastern Cape 2019
- Ecological Assessment for Cookhouse Bridge rehabilitation and temporary deviation, Eastern Cape 2019
- Ecological Assessment for Nelson Mandela University Access Road, NMB 2019
- Botanical Assessment for Zachtevlei Dam (Lady Grey), Eastern Cape 2017
- Botanical Assessment for Gcebula River bridge (Peddie), Eastern Cape 2017
- Botanical Assessment for Kouga Dam wall upgrade, Eastern Cape 2012
- Botanical Assessment for Jansenville Cemetery, Eastern Cape 2009
- Botanical Assessment for Radar Mast construction for South African Weather Service – BCM & NMB 2008
- Botanical Assessment and GIS mapping for golf course realignment for East London Golf Course, BCM, Eastern Cape 2007
- Botanical Assessment for PE Airport Extention, NMB 2006
- Botanical Assessment for Kidd's Beach Desalination Plant, BCM, Eastern Cape 2006

HOUSING DEVELOPMENT PROJECTS

- Terrestrial Biodiversity Assessment for Erf 1820 Mthatha, KSDM, Eastern Cape 2020
- Ecological Assessment for Erf 599 Walmer Mixed Use Development, Nelson Mandela Bay 2019
- Ecological Assessment Portion 21-23 and 41 of Farm 807, Gonubie, Buffalo City 2019
- Ecological Assessment for Emerald Sky Housing Project, BCMM 2019
- Ecological Assessment for Erf 14, Kabega, Port Elizabeth 2017
- Ecological Assessment for Fairwest Rental Housing, Port Elizabeth 2017
- Ecological Assessment for Hankey Housing, Kouga District Municipality 2015
- Ecological Assessment for Lebowakgoma Housing, Limpopo 2013
- Ecological Assessment for Giyani Development, Limpopo 2013
- Ecological Assessment for Palmietfontein Development, Limpopo 2013
- Ecological Assessment for Seshego Development, Limpopo 2013
- Botanical Assessment for Sheerness Road, BCM, Eastern Cape 2013
- Ecological Assessment for Ethembeni Housing, NMB 2012
- Ecological Assessment for Pelana Housing, Limpopo 2012
- Flora Search and Rescue Plan for Kwanobuhle Housing, Western Cape 2011
- Botanical Assessment for The Crags 288/03, Western Cape 2010
- Ecological Assessment Revision Report for Fairview Housing, NMB 2010
- Botanical Assessment, EMP and Open Space Management Plan for Hornlee Housing Development, Western Cape 2010
- Botanical Assessment for Little Ladywood, Western Cape 2010
- Botanical Assessment and Open Space Management Plan for Motherwell NU31, NMB 2010
- Botanical Assessment and Open Space Management Plan for Plett 443/07, Western Cape 2010
- Botanical Assessment for Willow Tree Farm, NMB 2010
- Botanical Assessment for Kouga RDP Housing, Eastern Cape 2009
- Botanical Assessment for Fairview Erf 1226 (Wonderwonings), NMB 2009
- Species List Compilation for Zeekoerivier Humansdorp, Eastern Cape 2009
- Botanical Assessment for Woodlands Golf Estate (Farm 858), BCM, Eastern Cape 2009

- Botanical Assessment for Plettenberg Bay - 438/4, Western Cape 2009
- Vegetation Assessment for Kwanokuthula RDP housing project, Western Cape 2008
- Site screening assessment for Greenbushes Site screening, NMB 2008
- Botanical Assessment for Fairfax development, Eastern Cape 2008
- Botanical Assessment for Plettenberg Bay Brakkloof 50&51, Western Cape 2008
- Botanical Assessment, GIS mapping for Theescombe Erf 325, NMB 2008
- Site Screening for Mount Road, NMB 2008
- Botanical Assessment for Greenbushes Farm 40 Swinburne 404, NMB 2008
- Botanical Assessment for Greenbushes 130, NMB 2008
- Botanical Assessment for Greenbushes Kuyga no. 10, NMB 2008
- Botanical Assessment for Plettenberg Bay - 438/24, Western Cape 2007
- Botanical Assessment for Plettenberg Bay - Olive Hills 438/7, Western Cape 2007
- Botanical Assessment for Gonubie Portion 809/9, BCM, Eastern Cape 2006
- Botanical Assessment for Glengariff Farm 723, BCM, Eastern Cape 2006
- Botanical Assessment for Gonubie Portion 809/10, BCM, Eastern Cape 2006
- Botanical Assessment for Gonubie Portion 809/4 & 5, BCM, Eastern Cape 2006
- Botanical Assessment for Plettenberg bay - Ladywood 438/1&3, Western Cape 2006
- Botanical Assessment and Rehab Plan for Winterstrand Desalination Plant, BCM 2006
- Botanical Assessment for Bosch Hoogte, NMB 2006
- Botanical Assessment for Plettenberg bay Farm 444/38, Western Cape 2006
- Botanical Assessment for Plettenberg Bay - 444/27, Western Cape 2006
- Botanical Assessment for Leisure Homes, BCM, Eastern Cape 2006
- Botanical Basic Assessment for Trailees Wetland Assessment, Eastern Cape 2005
- Botanical Assessment and Rehab Plan for Arlington Racecourse - PE, NMB 2005
- Botanical Assessment for Smart Stone, NMB 2005
- Botanical Assessment for Peninsular Farm (Port Alfred), Eastern Cape 2005
- Botanical Assessment for Mount Pleasant - Bathurst, Eastern Cape 2005
- Botanical Assessment and RoD amendments for Colchester Erven 1617 & 1618 (Riverside), NMB 2005
- Basic Botanical Assessment for Parsonsvlei 3/4, Eastern Cape 2005
- Botanical Assessment for Bridgemead – Malabar PE, NMB 2004

AGRICULTURAL PROJECTS

- Ecological Assessment for Vermaak Boerdery Hydro Turbine (Cookhouse)2020 2020
- Thornhill Eggland Specialist Ecological Assessment 2020
- Ecological Assessment for Citrus expansion on Hitgeheim Farm, Sunland, Eastern Cape 2015
- Ecological Assessment for Citrus expansion on farm 960, Patensie (AIN du Preez Boerdery) 2014
- Ecological Assessment for Doornkraal Pivot (Hankey), Eastern Cape 2014
- Ecological Assessment for Tzaneen Chicken Farm, Limpopo 2013
- Botanical Assessment and Open Space Management Plan for Kudukloof, NMB 2010
- Botanical Assessment and Open Space Management Plan for Landros Veeplaats, NMB 2010
- Botanical Assessment and Flora Relocation Plan for Wildemans Plaas, NMB 2006

GOLF ESTATE AND RESORT DEVELOPMENT PROJECTS

- Species List& Comments Report for Kidds Beach Golf Course, BCM, Eastern Cape 2009
- Botanical Assessment for Plettenberg Bay -Farm 288/03, Western Cape 2009
- Botanical Assessment for Rockcliff Golf Course, BCM, Eastern Cape 2008
- Botanical Assessment for Rockcliff Resort Development, BCM, Eastern Cape 2007
- Botanical Assessment, EMP and Rehabilitation Plan for Tiffendel Ski Resort, Eastern Cape 2006

MIXED USE DEVELOPMENT PROJECTS

- Ecological Assessment for South-End Precinct Mixed Use Development, Nelson Mandela Bay 2018
- Botanical Assessment, EMP and Open Space Management Plan for Bay West City, NMB 2010
- Botanical Assessment, GIS maps, Open Space and Rehab Plans for Fairview Erf 1082, NMB 2009
- Botanical Assessment and GIS maps for Utopia Estate PE, NMB 2008
- Botanical Assessment and GIS mapping for Madiba Bay Leisure Park, NMB 2007
- Botanical Assessment and GIS mapping for Madiba Bay Leisure Park, NMB 2007
- Botanical Basic Assessment for Cuyler Manor (Farm 320), Uitenhage, NMB 2007

BUSINESS AND INDUSTRIAL DEVELOPMENT PROJECTS

- Ecological Assessment for Parsonsvlei Erf 984 & 1134 Parsonsvlei, NMB 2020
- Mthatha Retails and Service Center 2020
- Ecological Assessment for Walmer Erf 11667 - Bidfood Warehousing Development, NMB 2020
- Ecological Assessment for Portion 87 of the Farm Little Chelsea No 10, NMB 2020
- Ecological Assessment for Bay West City ENGEN Service Station, NMB 2015
- Ecological Assessment for Green Star grading for SANRAL, NMB 2014
- Ecological Assessment for OTGC Tank Farm, NMB 2012
- Botanical Assessment and Open Space Management Plan for Petro SA Refinery, Coega IDZ, NMB 2010
- Botanical Assessment for Bluewater Bay Erf 805, NMB 2009
- Ecological Assessment for Bay West City, NMB 2007
- Botanical Assessment for Kenton Petrol Station, Eastern Cape 2005
- Botanical Assessment and RoD amendments for Colchester Petrol Station, NMB 2005

ECO-ESTATE DEVELOPMENT PROJECTS

- Botanical Re-Assessment of Swanlake Eco Estate, Aston Bay, Eastern Cape 2018
- Detailed Botanical Assessment and Open Space Management Plan for Olive Hills, Western Cape 2010
- Botanical Assessment and EMP for Zwartenbosch Road, Eastern Cape 2010
- Botanical Assessment - Poultry Farm for Coega Kammaskloof Farm 191, NMB 2008
- Botanical Assessment - Housing development for Coega Ridge, NMB 2008
- Botanical Assessment, Rehabilitation Plan, EMP and GIS maps for Amanzi Estate, NMB, 2008
- Botanical Assessment for Roydon Game farm, Queenstown, Eastern Cape 2007
- Botanical Assessment for Winterstrand Estate (Farm 1008), BCM, Eastern Cape 2007
- Botanical Assessment for Homeleigh Farm 820, BCM, Eastern Cape 2007
- Botanical Basic Assessment, Rehab Plan & Maps for Candlewood, Tsitsikamma, Western Cape 2007
- Botanical Assessment, EMP and Rehab Plan for Carpe Diem Eco development, Eastern Cape 2007
- Botanical Assessment, EMP and Rehabilitation Plan for Seaview Eco-estate, NMB 2006
- Botanical Assessment for Kidd's Beach portion 1076, BCM, Eastern Cape 2006
- Botanical Assessment for Palm Springs, Kidds Beach East London, BCM, Eastern Cape 2006
- Botanical Assessment for Nahoon Farm 29082, BCM, Eastern Cape 2006
- Botanical Assessment for Rosehill Farm, Eastern Cape 2005
- Botanical Assessment for Resolution Game Farm, Eastern Cape 2005
- Botanical Assessment for Gonubie Portion 809/11, BCM, Eastern Cape 2005
- Botanical Assessment for Kidd's Beach portion 1075, BCM, Eastern Cape 2005

FLORA AND FAUNA RELOCATION PLANS, PERMITS AND IMPLEMENTATION

- Flora Search and Rescue for Nelson Mandela University Phase 2 & 3 Residences, Eastern Cape 2020

- Flora Search and Rescue for Fairwest Housing Estate, Nelson Mandela Bay, Eastern Cape 2019
- Flora Search and Rescue for Utopia Estate, Nelson Mandela Bay, Eastern Cape 2019
- Flora Search and Rescue for Citrus expansion on Boschkraal Citrus Farm, Sunland, Eastern Cape 2018
- Flora Search and Rescue for Wanhoop pipeline, Willowmore, Eastern Cape 2018
- Flora Search and Rescue for Wilgekloof pipeline, Willowmore, Eastern Cape 2018
- Flora Search and Rescue for Citrus expansion on Hitgeheim Farm (Farm 960), Sunland, Eastern Cape 2017
- Flora Search and Rescue for Steytlerville Bulk Water Supply, Eastern Cape (Phase 5) 2016
- Flora Search and Rescue for Citrus expansion on Farm 960, Patensie (AIN du Preez Boerdery) 2016
- Flora Search and Rescue for Steytlerville Bulk Water Supply & WTW, Eastern Cape (Phase 4) 2015
- Flora and Fauna Search and Rescue for Riversbend Citrus Farm, NMB 2014
- Flora and Fauna Search and Rescue for Mainstream Windfarm, Eastern Cape 2013
- Flora Search and Rescue for Steytlerville Bulk Water Supply, Eastern Cape (Phase 1, 2 & 3) 2013
- Flora and Fauna Search and Rescue for OTGC Tank Farm, Coega IDZ, NMB 2013
- Flora and Fauna Search and Rescue for Jeffreys Bay School, Eastern Cape 2013
- Flora Search and Rescue Plan for Red Cap Wind Farm, Eastern Cape 2012
- Flora Relocation for Disco Poultry Farm, NMB 2010
- Flora Relocation for Mainstream Windfarm, Eastern Cape 2010

ENVIRONMENTAL MANAGEMENT PLANS

- Final Environmental Management Programme (EMPr) and Maintenance Management Plan for South End Precinct Mixed Use Zone, Nelson Mandala Bay Municipality 2020
- Final Environmental Management Programme (EMPr) for Coega Land-Based Aquaculture Development Zone (ADZ), Coega Industrial Development Zone (IDZ), Nelson Mandela Bay Municipality 2019
- Basic Botanical Assessment for Kromensee EMP (Jeffries Bay), Eastern Cape 2010
- Wetland Management Plan for NMB Portnet, NMB 2010
- Baseline Botanical Study, Vegetation mapping and EMP for Local Nature Reserve for Plettenberg Bay Lookout LNA, Western Cape 2009
- Biodiversity & Ecological Processes for Bathurst-Commonage, Eastern Cape 2006
- EMP for Kromensee EMP (Jeffries Bay), Eastern Cape 2006
- Floral Survey for Mbotyi Conservation Assessment, Eastern Cape 2005
- Identifying and Assessment on Aquatic Weeds for Pumba Private Game Reserve, Eastern Cape 2005

BASIC ASSESSMENT APPLICATION PROJECTS (DEDEAT)

- Basic Assessment Application for Parsonsvlei Erf 984 & 1134 Parsonsvlei 2020
- Construction of Deviation and Rehabilitation of Bridge along DR02481 road 2020
- Basic Assessment Application for Vermaak Boerdery Hydro Turbine (Cookhouse) 2020
- Basic Assessment Application for Walmer Erf 11667 Bidfood Warehousing Development 2020
- Basic Assessment Application for Portion 87 of the Farm Little Chelsea No 10 2020
- Basic Assessment Application for Nelson Mandela University Access Road, NMB 2019
- Basic Assessment, WULA and Borrow Pit/Quarry Mining Application, Clarkebury Rd, Idutywa 2019

- Basic Assessment Application for Erf 599 Walmer Mixed Use Development, Nelson Mandela Bay 2019
- Basic Assessment Application for Cookhouse Bridge rehabilitation and temporary deviation 2019
- Basic Assessment Application for Erf 14 Kabega, NMBM 2017
- Basic Assessment Application for Hankey Housing, Kouga District Municipality 2017
- Basic Assessment Application for Fairwest Rental Housing, Nelson Mandela Bay 2017
- Basic Assessment Application for Citrus expansion on Hitgeheim Farm, Sunland, Eastern Cape 2015

- Basic Assessment Application for Hankey Housing, Kouga District Municipality 2015
- Basic Assessment Application for Citrus expansion on farm 960, Patensie (AIN du Preez Boerdery) 2014
- Basic Assessment Application for South-End Precinct Mixed Use Development, Nelson Mandela Bay 2018

MINING PERMIT/ENVIRONMENTAL MANAGEMENT PROGRAMME APPLICATIONS (DMR)

- Mining BAR/EMP's for Blue Crane Route & Camdeboo LM 12 Borrow Pits – (DoT) 2019
- Mining BAR/EMP's for Elundini LM 6 Borrow Pits (DoT)
- Mining BAR/EMP's for Baviaans LM 6 Borrow Pits (DoT)
- Mining BAR/EMP's for Kouga & Koukamma LM 12 Borrow Pits (DoT)
- Mining BAR/EMP's for Sakhisizwe & Engcobo LM 12 Borrow Pits (DoT)
- Mining BAR/EMP's for Senqu LM 12 Borrow Pits (DoT)
- Mining BAR/EMP's for 24 Borrow Pits in 6 districts within the Eastern Cape– (SANRAL) 2018
- Mining BAR/EMP's for Ingquza Hill LM Borrow Pits – (SANRAL) 2017
- Mining BAR/EMP's for Baviaans LM Borrow Pits – (DRPW) 2017
- Mining BAR/EMP's for Senqu LM Borrow Pits – (DRPW) 2017
- Mining BAR/EMP's for Kouga/Koukamma LM Borrow Pits – (DRPW) 2017
- Mining BAR/EMP's for Inkwanca (Enoch Mgijima) LM Borrow Pits – (DRPW) 2017
- Mining BAR/EMP's for Kouga/Koukamma LM Borrow Pits – (DRPW) 2017
- Mining BAR/EMP's for Sakhisizwe/Engcobo LM Borrow Pits – (DRPW) 2017
- Mining BAR/EMP's for Raymond Mahlaba LM Borrow Pits – (DRPW) 2017
- Mining BAR/EMP's for Camdeboo LM Borrow Pits – (DRPW) 2017
- Mining BAR/EMP's for Elundini LM Borrow Pits – (DRPW) 2017
- Mining BAR/EMP's for Emalahleni/Intsika Yethu LM Borrow Pits – (DRPW) 2017
- Mining BAR/EMP's for Nkonkobe LM Borrow Pits – (SANRAL) 2016
- Mining BAR/EMP's for Mbhashe LM Borrow Pits – (SANRAL) 2016
- Mining BAR/EMP's for Mbizana LM Borrow Pits – (SANRAL) 2016
- Mining BAR/EMP's for Senqu LM Borrow Pits – (SANRAL) 2016
- Mining BAR/EMP's for Elundini LM Borrow Pits – (SANRAL) 2016
- Mining BAR/EMP's for Emalahleni LM Borrow Pits – (SANRAL) 2016
- Mining BAR/EMP's for Emalahleni LM Borrow Pits – (DRPW) 2016
- Mining BAR/EMP's for Ikwezi/Baviaans LM Borrow Pits – (DRPW) 2016
- Mining BAR/EMP's for Chris Hani DM Borrow Pits - MR00716 (Tarkastad) (DRPW) 2015
- Mining BAR/EMP's for Chris Hani DM Borrow Pits – Intsika Yethu and Emalahleni (DRPW) 2015
- Mining BAR/EMP's for Joe Gqabi DM Borrow Pits – Senqu (DRPW) 2015
- Mining BAR/EMP's for Makana/Ndlambe LM Borrow Pits – Sarah Baartman (DRPW) 2015
- Mining BAR/EMP's for Amahlathi LM Borrow Pits – Amatole (DRPW) 2015
- Mining BAR/EMP's for Mbashe/Mqume LM Borrow Pits – Amatole (DRPW) 2015
- Mining BAR/EMP's for Sundays River Valley LM Borrow Pits – Sarah Baartman (DRPW) 2015
- Mining BAR/EMP's for Kouga LM Borrow Pits – Sarah Baartman (DRPW) 2015
- Mining BAR/EMP's for Chris Hani DM Borrow Pits - MR00716 (DRPW) 2014
- Mining BAR/EMP's for Chris Hani DM Borrow Pits - DR02581 (DRPW) 2014
- Mining BAR/EMP's for Chris Hani DM Borrow Pits - DR08041, DR08247, DR08248 & DR08504 (DRPW) 2014
- Mining BAR/EMP's for Chris Hani DM Borrow Pits - DR08599, DR08601 & DR08570 (DRPW) 2014
- Mining BAR/EMP's for Chris Hani DM Borrow Pits - DR08235, DR08551 & DR08038 (DRPW) 2014
- Mining BAR/EMP's for Alfred Nzo DM Borrow Pits - DR08092, DR08093 & DR08649 (DRPW) 2014
- Mining BAR/EMP's for Alfred Nzo DM Borrow Pits - DR08090, DR08412, DR08425, DR08129, DR08109, DR08106, DR08104 & DR08099 – Matatiele (DRPW) 2014

ENVIRONMENTAL COMPLIANCE AUDITING

- Environmental Compliance Audit (Habata Boerdery) 2021
- Environmental Compliance Audit (Sontule Farm) 2021

ENVIRONMENTAL MANAGEMENT, AUDITING, COMPLIANCE AND MONITORING PROJECTS

- Environmental Auditing Services Pre-construction and Construction (Rocky Coast Farm) 2021
- Environmental Auditing Services (Middledrift Breeder Facility) 2021
- Coega Aquaculture Development Zone Environmental Compliance and Monitoring for Construction (24 Months) 2020
- Construction of NMU West End Student Residences Phases 1 & 3 Environmental Control Office (30 Months) 2020
- Environmental Auditing and construction monitoring for construction of Phase 1 River Park (South End Precinct) 2020
- Waste Management License audit for Bedford Recycling project 2020
- Auditing for Construction of Fairwest Village Housing Project 2019
- Auditing for Construction of Utopia Estate monthly auditing 2019
- ECO for DRPW IRM Road Maintenance projects, Baviaans LM 2019
- ECO for DRPW IRM Road Maintenance projects, Senqu LM 2019
- ECO for DRPW IRM Road Maintenance projects, Kouga/Koukamma LM 2019
- ECO for DRPW IRM Road Maintenance projects, Sakhisizwe/Engcobo LM 2019
- ECO for DRPW IRM Road Maintenance projects, Elundini LM 2019
- ECO for DRPW IRM Road Maintenance projects, Emalahleni/Intsika Yethu LM 2019
- ECO for Construction of Fairwest Village Housing Project 2019
- ECO for Construction of Utopia Estate Mixed Use Project 2019
- ECO for Construction of NMU West End Student Residences Phases 1 & 3 2019
- ECO for Construction of Eco-Pullets pullet rearing facility, Paterson 2018
- ECO for DRPW IRM Road Maintenance projects, Raymond Mahlaba LM 2018
- ECO for DRPW IRM Road Maintenance projects, Inkwanca (Enoch Mgijima) LM 2018
- ECO for Citrus expansion on Farm 960, Patensie (AIN du Preez Boerdery) 2017
- ECO for Citrus expansion on Hitgeheim Farm (Farm 960), Sunland, Eastern Cape 2017
- DEO for improvement of national route R67 section 5 from Whittlesea (km 0.00) to Swart Kei river (km 15.40) – Murray & Roberts 2017
- ECO for SANRAL RRP Road Maintenance projects, Mbizana LM 2017
- ECO and Botanical Specialist for the special maintenance of national route R61 Section 2 from Elinus Farm (km 42.2) to N10 (km 85.0) (SANRAL) 2016
- Environmental Control Officer (ECO): Construction of NSRI Slipway - Port Elizabeth Harbour 2016
- ECO for SANRAL RRP Road Maintenance projects, Mbashe LM 2016
- ECO for SANRAL RRP Road Maintenance projects, Nkonkobe LM 2016
- ECO for SANRAL RRP Road Maintenance projects, Mbizana LM 2016
- ECO for SANRAL RRP Road Maintenance projects, Senqu LM 2016
- ECO for SANRAL RRP Road Maintenance projects, Elundini LM 2016
- ECO and Environmental Management for closure of Bushmans River Landfill site 2016
- ECO for DRPW IRM Road Maintenance projects, Amahlathi Municipality 2015
- ECO for DRPW IRM Road Maintenance projects, Makana/Ndlambe Municipality 2015
- ECO for DRPW IRM Road Maintenance projects, Mbashe/Mqume Municipality 2015
- ECO for DRPW IRM Road Maintenance projects, Port St Johns, Mbizana, Ingquza Hill LM's 2015
- ECO for Riversbend Citrus Farm, NMB 2014
- ECO for Alfred Nzo DM Road resurfacing - DR08071, DR08649, DR08092, DR08418, DR08452, DR08015, DR08085, DR08639 & DR08073, Eastern Cape - MSBA 2014

- ECO Audits for Koukamma Flood Damage Road Repairs – Hatch Goba 2014
- EMP and ECO for Utopia Estate, NMB 2013
- Final EMPr submission for Seaview Garden Estate, NMB 2012
- ECO audits for NMB Road surfacing, NMB (multiple contacts) 2011
- EMPr submission and ECO for Seaview Garden Estate, NMB 2010
- ECO for Mainstream Windfarm wind monitoring mast installation, Eastern Cape 2010
- EMP and ECO for Sinati Golf Estate EMP, BCM, Eastern Cape 2009
- Flora Relocation Plan and Permit application for Wildemans Plaas, NMB 2006

ENVIRONMENTAL SCREENING PROJECTS

- Somerset East Stormwater Environmental Screening Report 2021
- Woodlands Diary Road Upgrade Environmental Screening Report, Kouga LM 2021
- Risk Assessment and Screening for proposed Heatherbank access road, NMB 2020
- Environmental Screening Report for Proposed Life Hospital parking expansion, NMB 2019
- Environmental Screening Report for Erf 984 & 1134 development, Parsonsvlei, NMB 2019
- Environmental Screening Report for proposed Khayalethu School, Buffalo City 2018
- Environmental Screening Report for Proposed Housing Development of Erf 8700, Kabega Park, NMB 2017
- Environmental Screening Report for Proposed Housing Development of Erf 14, Kabega Park, NMB 2017
- Environmental Screening Report for Proposed Fairwest Social Housing project, Fairview, NMB 2016
- Environmental Screening Report for Development of Little Chelsea No 25, NMB 2016
- Terrestrial Vegetation Risk Assessment for proposed Skietnek Citrus Farm development (Kirkwood) 2015
- Preliminary Environmental Risk Assessment: NSRI Slipway Port Elizabeth 2015
- Environmental Screening Report for Proposed Development of a Dwelling on Erf 899, Theescombe 2015
- Environmental Screening Report for Proposed Development on Erf 559, Walmer, Port Elizabeth 2015
- Environmental Screening Report for Proposed Housing Scheme Development of Erf 8709, Wells Estate 2015
- Environmental Screening Report for Development of Portion 10 of Little Chelsea No 87, NMB 2015

SECTION 24G APPLICATIONS

- 12 000 ML Dam constructed on farm 960, Patensie (MGM Trust) 2015
- Illegal clearing of 20 Ha of lands on Hitgeheim Farm, Sunland, Eastern Cape 2015

CONFERENCES AND PUBLICATIONS

- Pote, J., Shackleton, C.M., Cocks, M. & Lubke, R. 2006. *Fuelwood harvesting and selection in Valley Thicket*, South Africa. Journal of Arid Environments, 67: 270-287.
- Pote, J., Cocks, M., Dold, T., Lubke, R.A. and Shackleton, C. 2004. *The homegarden cultivation of indigenous medicinal plants in the Eastern Cape*. Indigenous Plant Use Forum, 5 - 8 July 2004, Augsburg Agricultural School, Clanwilliam, Western Cape.
- Pote, J. & Lubke, R.A. 2003. *The selection of indigenous species suitable for use as fuelwood and building materials as a replacement of invasive species that are currently used by the under-privileged in the Grahamstown commonage.* Working for Water Inaugural Research Symposium 19 - 21 August 2003, Kirstenbosch. Poster presentation.
- Pote, J. & Lubke, R.A. 2003. *The screening of indigenous pioneer species for use as a substitute cover crop for rehabilitation after removal of woody alien species by WfW in the grassy fynbos biome in the Eastern Cape*. Working for Water Inaugural Research Symposium 19 - 21 August 2003, Kirstenbosch, South Africa.

OTHER RESEARCH EXPERIENCE

- Resource assessment of bark stripped trees in indigenous forests in Weza/Kokstad area (June 2000; Dr C. Geldenhuis & Mr. M. Kaplin).
- Working for Water research project for indigenous trees for woodlots (December 2000/January 2001; Prof R.A. Lubke, Rhodes University).
- Project coordinator and leader of the REFYN project – A BP conservation gold award: Conservation and Restoration of Grassy-Fynbos. A multidisciplinary project focusing on management, restoration and public awareness/education (2001 – 2002).
- Conservation Project Management Training Workshops: Royal Geographical Society, London 2001 – Fieldwork Techniques, Habitat Assessment, Biological Surveys, Project Planning, Public Relations and Communications, Risk Assessment, Conservation Education
- Selection and availability of wood in Crossroads village, Eastern Cape, South Africa. Honours Research Project 2002. Supervisors: Prof. R.A. Lubke & Prof. C. Shackleton.
- Floral Morphology, Pollination and Reproduction in Cyphia (LOBELIACEAE). Honours Research Project 2002. Supervisor: Mr. P. Phillipson.
- Forestry resource assessment of bark-stripped species in Amatola District (December 2002; Prof R.A. Lubke).
- Homegarden Cultivation of Medicinal Plants in the Amathole area. Postgraduate Research Project (2003-2005; Prof R.A. Lubke, Prof C.M. Shackleton and Ms C.M., Cocks).

8.6 Appendix F: Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity

SCOPE

The protocol (*Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation* (GN 320, 20 March 2020)) provides the criteria for the assessment and reporting of impacts on terrestrial biodiversity for activities requiring environmental authorisation.

The protocol (*Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of sections 24(5)(a) and (h) and 44 of NEMA, gazetted on 30 October 2020*), provides the criteria for the assessment and reporting of impacts on plant and animal species for activities requiring environmental authorisation.

These protocols replace the requirements of Appendix 6 of the Environmental Impact Assessment Regulation[9].

The assessment and minimum reporting requirements of this protocol are associated with a level of environmental sensitivity identified by the national web based environmental screening tool (https://screening.environment.gov.za/screeningtool). The requirements for terrestrial biodiversity are for landscapes or sites which support various levels of biodiversity. The relevant terrestrial biodiversity data in the screening tool has been provided by the South African National Biodiversity Institute[10].

SITE SENSITIVITY VERIFICATION AND MINIMUM REPORT CONTENT REQUIREMENTS

Prior to commencing with a specialist assessment, the current use of the land and the potential environmental sensitivity of the site under consideration as identified by the screening tool must be confirmed by undertaking a site sensitivity verification.

2.1. The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.

2.2. The site sensitivity verification must be undertaken through the use of:

(a) a desk top analysis, using satellite imagery,

(b) a preliminary on-site inspection; and

(c) any other available and relevant information.

2.3. The outcome of the site sensitivity verification must be recorded in the form of a report that:

(a) confirms or disputes the current use of the land and environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;

(b) contains a motivation and evidence (e.g., photographs) of either the verified or different use of the land and environmental sensitivity; and

(c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

[9] The Environmental Impact Assessment Regulations, as promulgated in terms of Section 24 (5) of the National Environmental Management Act, 1998 (Act 107 of 1998).

[10] The biodiversity dataset has been provided by the South African National Biodiversity Institute (for details of the dataset, click on the options button to the right of the various biodiversity layers on ther screening tool).

TERRESTRIAL BIODIVERSITY SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS

	ASSESSMENT AND REPORTING OF IMPACTS ON TERRESTRIAL BIODIVERSITY	
1	General Information	
1.1	An applicant intending to undertake an activity identified in the scope of this protocol, on a site identified on the screening tool as being "very high sensitivity" for terrestrial biodiversity, must submit a Terrestrial Biodiversity Specialist Assessment.	✓
1.2	An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being 'low sensitivity' for terrestrial biodiversity, must submit a Terrestrial Biodiversity Compliance Statement.	✓
1.3	However, where the information gathered from the site sensitivity verification differs from the designation of 'very high' terrestrial biodiversity sensitivity on the screening tool and it is found to be of a 'low' sensitivity, then a Terrestrial Biodiversity Compliance Statement must be submitted.	✓
1.4	Similarly, where the information gathered from the site sensitivity verification differs from that identified as having a 'low' terrestrial biodiversity sensitivity on the screening tool, a Terrestrial Biodiversity Specialist Assessment must be conducted.	✓
1.5	If any part of the proposed development footprint falls within an area of 'very high' sensitivity, the assessment and reporting requirements prescribed for the 'very high' sensitivity apply to the entire footprint, excluding linear activities for which impacts on terrestrial biodiversity are temporary and the land in the opinion of the terrestrial biodiversity specialist, based on the mitigation and remedial measures, can be returned to the current state within two years of the completion of the construction phase, in which case a compliance statement applies. Development footprint in the context of this protocol means the area on which the proposed development will take place and includes any are that will be disturbed.	✓
	VERY HIGH SENSITIVITY RATING for terrestrial biodiversity features	
2	Terrestrial Biodiversity Specialist Assessment	
2.1	The assessment must be prepared by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP) with expertise in the field of terrestrial biodiversity.	
2.2	The assessment must be undertaken on the preferred site and within the proposed development footprint.	
2.3	The assessment must provide a baseline description of the site which includes, as a minimum, the blowing aspects:	
2.3.1	a description of the ecological drivers or processes of the system and how the proposed development with impact these;	
2.3.2	ecological functioning and ecological processes (e.g. fire, migration, pollination, etc.) that operate within the preferred site;	
2.3.3	the ecological corridors that the proposed development would impede including migration and movement of flora and fauna;	
2.3.4	the description of any significant terrestrial landscape features (including rare or important flora-faunal associations, presence of strategic water source areas (SWSAs) or freshwater ecosystem priority area (FEPA) sub catchments);	
2.3.5	a description of terrestrial biodiversity and ecosystems on the preferred site, including:	
(a)	main vegetation types;	
(b)	threatened ecosystems, including fisted ecosystems as well as locally important habitat types identified;	

	ASSESSMENT AND REPORTING OF IMPACTS ON TERRESTRIAL BIODIVERSITY	
(c)	ecological connectivity, habitat fragmentation, ecological processes and fine- scale habitats; and	
(d)	species, distribution, important habitats (e.g. feeding grounds, nesting sites, etc.) and movement patterns identified;	
2.3.6	the assessment must identify any alternative development footprints within the preferred site which would be of 'low' sensitivity as identified by the screening tool and verified through the site sensitivity verification; and	
2.3.7	the assessment must be based on the results of a site inspection undertaken on the preferred site and must identify:	
2.3.7.1	terrestrial critical biodiversity areas (CBAs), including:	
(a)	the reasons why an area has been identified as a CBA;	
(b)	an indication of whether or not the proposed development is consistent with maintaining the CBA in a natural or near natural state or in achieving the goal of rehabilitation;	
(c)	the impact on species composition and structure of vegetation with an indication of the extent of clearing activities in proportion to remaining extent of the ecosystem type(s);	
(d)	the impact on ecosystem threat status;	
(e)	the impact on explicit subtypes in the vegetation;	
(f)	the impact on overall species and ecosystem diversity of the site; and	
(g)	the impact on any changes to threat status of populations of species of conservation concern in the CBA;	
2.3.7.2	terrestrial ecological support areas (ESAs), including:	
(a)	the impact on the ecological processes that operate within or across the site;	
(b)	the extent the proposed development will impact on the functionality of the ESA; and	
(c)	loss of ecological connectivity (on site, and in relation to the broader landscape) due to the degradation and severing of ecological corridors or introducing barriers that impede migration | and movement of flora and fauna;	
2.3.7.3	protected areas as defined by the National Environmental Management: Protected Areas Act, 2004 including	
(a)	an opinion on whether the proposed development aligns with the objectives or purpose of the protected area and the zoning as per the protected area management plan;	
2.3.7.4	priority areas for protected area expansion, including-	
(a)	the way in which in which the proposed development will compromise or contribute to the expansion of the protected area I network;	
2.3.7.5	SWSAs (strategic water source areas) including:	
(a)	the impact(s) on the terrestrial habitat of SWSA; and	
(b)	the impacts of the proposed development on the SWSA water quality and quantity (e.g. describing potential increased runoff leading to increased sediment load in water courses),	
2.3.7.6	FEPA sub catchments, including-	
(a)	the impacts of the proposed development on habitat condition and species in the FEPA sub catchment;	
2.3.7.7	indigenous forests, including:	
(a)	impact on the ecological integrity of the forest and	

	ASSESSMENT AND REPORTING OF IMPACTS ON TERRESTRIAL BIODIVERSITY	
(b)	percentage of natural or near natural indigenous forest area lost and a statement on the implications in relation to the remaining areas.	
2.4	The findings of the assessment must be written up in a Terrestrial Biodiversity Specialist Assessment Report	
3.	Terrestrial Biodiversity Specialist Assessment Report	
3.1	The Terrestrial Biodiversity Specialist Assessment Report must contain, as a minimum, the following information:	
3.1.1	contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	
3.1.2	a signed statement of independence by the specialist;	
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,	
3.1.4	description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modeling used, where relevant;	
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;	
3.1.6	a location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	
3.1.7	additional environmental impacts expected from the proposed development;	
3.1.8	any direct, indirect and cumulative impacts of the proposed development;	
3.1.9	the degree to which impacts and risks can be mitigated;	
3.1.10	the degree to which the impacts and risks can be reversed;	
3.1.11	the degree to which the impacts and risks can cause toss of irreplaceable resources;	
3.1.12	proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr),	
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,	
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 a not; and	
1.1.15	any conditions to which this statement is subjected.	
3.2	The findings of the Terrestrial Biodiversity Specialist Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr where relevant.	
3.3	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	
	LOW SENSITIVITY RATING – for terrestrial biodiversity features	
4	Terrestrial Biodiversity Compliance Statement	⌄
4.1	The compliance statement must be prepared by a specialist registered with the SACNASP and having expertise in the field of ecological sciences.	✓
4.2	The compliance statement must:	⌄
4.2.1	be applicable to the preferred site and proposed development footprint;	✓
4.2.2	confirm that the site is of 'low' sensitivity for terrestrial biodiversity; and	✓

	ASSESSMENT AND REPORTING OF IMPACTS ON TERRESTRIAL BIODIVERSITY	
4.2.3	indicate whether or not the proposed development will have any impact on the biodiversity feature.	✓
4.3	The compliance statement must contain, as a minimum, the following information:	✓
4.3.1	the contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	✓
4.3.2	a signed statement of independence by the specialist;	✓
4.3.3	a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	✓
4.3.4	a baseline profile description of biodiversity and ecosystems of the site;	✓
4.3.5	the methodology used to verify the sensitivities of the terrestrial biodiversity features on the site, including equipment and modeling used, where relevant;	✓
4.3.6	in the case of a linear activity, confirmation from the terrestrial biodiversity specialist that, in their opinion, based on the mitigation and remedial measures propped, the land can be returned to the current state within two years of completion of the construction phase;	✓
4.3.7	where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr;	✓
4.3.8	a description of the assumptions made and any uncertainties or gaps in knowledge or data; and	✓
4.3.9	any conditions to which this statement is subjected.	EAP
4.4	A signed copy of the compliance statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	EAP

ANIMAL SPECIES SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS

	ASSESSMENT AND REPORTING OF IMPACTS ON TERRESTRIAL BIODIVERSITY	
1	General Information	
1.1	An applicant intending to undertake an activity identified in the scope of this protocol, on a site identified by the screening tool as being of "very high" or "high" sensitivity for terrestrial animal species must submit a Terrestrial Animal Species Specialist Assessment Report.	✓
1.2	An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of "medium sensitivity" for terrestrial animal species must submit either a Terrestrial Animal Species Specialist Assessment Report or a Terrestrial Animal Species Compliance Statement, depending on the outcome of a site inspection undertaken in accordance with paragraph 4.	✓
1.3	An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of "low" sensitivity for terrestrial animal species must submit a Terrestrial Animal Species Compliance Statement.	✓
1.4	Where the information gathered from the site sensitivity verification differs from the screening tool designation of "very high" or "high", for terrestrial animal species sensitivity and it is found to be of a "low" sensitivity, then a Terrestrial Animal Species Compliance Statement must be submitted.	✓
1.5	Where the information gathered from the site sensitivity verification differs from the screening tool designation of "low" terrestrial animal species sensitivity and it is found to be of a "very high" or "high" terrestrial animal species sensitivity, a Terrestrial Animal Species Specialist Assessment must be conducted.	✓
1.6	If any part of the development falls within an area of confirmed "very high" or "high" sensitivity, the assessment and reporting requirements prescribed for the "very high"	✓

	ASSESSMENT AND REPORTING OF IMPACTS ON TERRESTRIAL BIODIVERSITY	
	or "high" sensitivity, apply to the entire development footprint. Development footprint in the context of this protocol means, the area on which the proposed development will take place and includes the area that will be disturbed or impacted.	
1.7	The Terrestrial Animal Species Specialist Assessment and the Terrestrial Animal Species Compliance Statement must be undertaken within the study area.	✓
1.8	Where the nature of the activity is not expected to have an impact on species of conservation concern (SCC) beyond the boundary of the preferred site, the study area means the proposed development footprint within the preferred site.	✓
1.9	Where the nature of the activity is expected to have an impact on SCC beyond the boundary of the preferred site, the project areas of influence (PAOI) must be determined by the specialist in accordance with Species Environmental Assessment Guideline11, and the study area must include the PAOI, as determined.	✓
	VERY HIGH AND HIGH SENSITIVITY RATING for terrestrial animal species	
2	Terrestrial Animal Species Specialist Assessment	
	VERY HIGH SENSITIVITY RATING Critical habitat for range-restricted species12 of conservation concern, that have a global range of less than 10 km2. SCC listed on the IUCN Red List of Threatened Species13 or on South Africa's National Red List website14 as Critically Endangered, Endangered or Vulnerable according to the IUCN Red List 3.1. Categories and Criteria or listed as Nationally Rare. Species aggregations that represent ≥1% of the global population size of a species, over a season, and during one or more key stages of its life cycle. The number of mature individuals that ranks the site among the largest 10 aggregations known for the species. These areas are irreplaceable for SCC.	✓
4.6	Where SCC are found on site or have been confirmed to be likely present, a Terrestrial Animal Species Specialist Assessment must be submitted in accordance with the requirements specified for "very high" and "high" sensitivity in this protocol.	✓
4.7	Similarly, where no SCC are found on site during the site inspection or the presence is confirmed to be unlikely, a Terrestrial Animal Species Compliance Statement must be submitted.	✓
5	**LOW SENSITIVITY RATING – for terrestrial animal species**	
	Terrestrial Animal Species Compliance Statement Areas where no natural habitat remains. Natural areas where there is no suspected occurrence of SCC.	
5.1	The compliance statement must be prepared by a SACNASP registered specialist under one of the two fields of practice (Zoological Science or Ecological Science).	✓
5.2	The compliance statement must:	✓
5.2.1	be applicable to the study area;	✓
5.2.2	confirm that the study area, is of "low" sensitivity for terrestrial animal species; and	✓

11 Available at https://bgis.sanbi.org/
12 Species with a geographically restricted area of distribution.
13 https://www.iucnredlist.org/
14 This category includes the categories Extremely Rare, Critically Rare and Rare

	ASSESSMENT AND REPORTING OF IMPACTS ON TERRESTRIAL BIODIVERSITY	
5.2.3	indicate whether or not the proposed development will have any impact on SCC.	✓
5.3	The compliance statement15 must contain, as a minimum, the following information:	✓
5.3.1	contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the compliance statement including a curriculum vitae;	✓
5.3.2	a signed statement of independence by the specialist;	✓
5.3.3	a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	✓
5.3.4	a description of the methodology used to undertake the site survey and prepare the compliance statement, including equipment and modelling used where relevant;	✓
5.3.5	the mean density of observations/ number of samples sites per unit area15.	✓
5.3.6	where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMPr;	✓
5.3.7	a description of the assumptions made and any uncertainties or gaps in knowledge or data; and	✓
5.3.8	any conditions to which the compliance statement is subjected.	✓
6.	A signed copy of the Terrestrial Animal Species Compliance Statement must be appended to the Basic Assessment Report or the Environmental Impact Assessment Report.	✓

PLANT SPECIES SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS

	ASSESSMENT AND REPORTING OF IMPACTS ON TERRESTRIAL BIODIVERSITY	
1	**General Information**	
1.1	An applicant intending to undertake an activity identified in the scope of this protocol, on a site identified by the screening tool as being of "*very high*" or "*high*" sensitivity for terrestrial plant species must submit a **Terrestrial Plant Species Specialist Assessment Report**.	✓
1.2	An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of "*medium sensitivity*" for terrestrial plant species must submit **either a Terrestrial Plant Species Specialist Assessment Report or a Terrestrial Plant Species Compliance Statement,** depending on the outcome of a site inspection undertaken in accordance with paragraph 4.	✓
1.3	An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of "*low*" sensitivity for terrestrial plant species must submit a **Terrestrial Plant Species Compliance Statement.**	✓
1.4	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 and it is found to be of a "*low*" sensitivity, then a **Terrestrial Plant Species Compliance Statement** must be submitted.	✓
1.5	Where the information gathered from the site sensitivity verification differs from the screening tool designation of "*low*" terrestrial plant species sensitivity and it is found to be of a "*very high*" or "*high*" terrestrial plant species sensitivity, a **Terrestrial Plant Species Specialist Assessment** must be conducted.	✓
1.6	If any part of the development falls within an area of confirmed "*very high*" or "*high*" sensitivity, the assessment and reporting requirements prescribed for the "*very high*" or "*high*" sensitivity, apply to the entire development footprint. Development footprint in the context of this protocol means, the area on which the proposed development will take place and includes the area that will be disturbed or impacted.	✓
1.7	The **Terrestrial Plant Species Specialist Assessment** and the **Terrestrial Plant Species**	✓

15 An example of a what is contained in a Compliance Statement for Animal Species Impact Assessment can be found in the Species Environmental Impact Assessment Guideline

	ASSESSMENT AND REPORTING OF IMPACTS ON TERRESTRIAL BIODIVERSITY	
	Compliance Statement must be undertaken within the *study area*.	
1.8	Where the nature of the activity **is not** expected to have an impact on species of conservation concern (SCC) beyond the boundary of the preferred site, the study area means the proposed development footprint within the preferred site.	✓
1.9	Where the nature of the activity **is** expected to have an impact on SCC beyond the boundary of the preferred site, the *project areas of influence* (PAOI) must be determined by the specialist in accordance with *Species Environmental Assessment Guideline*[16], and the study area must include the PAOI, as determined.	✓
	VERY HIGH AND HIGH SENSITIVITY RATING for terrestrial plant species	
2	**Terrestrial Plant Species Specialist Assessment**	
	VERY HIGH SENSITIVITY RATING 1. Critical habitat for range-restricted species[17] of conservation concern, that have a global range of less than 10 km^2. 2. SCC listed on the IUCN Red List of Threatened Species[18] or on South Africa's National Red List website[19] as Critically Endangered, Endangered or Vulnerable according to the IUCN Red List 3.1. Categories and Criteria or listed as Nationally Rare. 3. Species aggregations that represent ≥1% of the global population size of a species, over a season, and during one or more key stages of its life cycle. 4. The number of mature individuals that ranks the site among the largest 10 aggregations known for the species. These areas are irreplaceable for SCC. HIGH SENSITIVITY RATING 1. Confirmed habitat for SCC. 2. SCC, listed on the IUCN Red List of Threatened Species or South Africa's National Red List website as Critically Endangered, Endangered or Vulnerable, according to the IUCN Red List 3.1. Categories and Criteria and under the national category of Rare. These areas are unsuitable for development due to a very likely impact on SCC.	✓
2.3.12	identify any alternative development footprints within the preferred site which would be of "*low*" or "*medium*" sensitivity as identified by the screening tool and verified through the site sensitivity verification.	✓
2.4	The findings of the assessment must be written up in a **Terrestrial Plant Species Specialist Assessment Report**.	✓
3	**Terrestrial Plant Species Specialist Assessment Report**	✓
3.1.13	a motivation must be provided if there were any development footprints identified as per paragraph 2.3.12 above that were identified as having "*low*" or "*medium*" terrestrial plant species sensitivity and were not considered appropriate.	✓
4	**MEDIUM SENSITIVITY SPECIES OF CONSERVATION CONCERN CONFIRMATION**	
	MEDIUM SENSITIVITY RATING – for terrestrial plant species:	
	1. Suspected habitat for SCC based either on there being records for this species collected in the past, prior to 2002, or being a natural area included in a habitat suitability model[20]. 2. SCC listed on the IUCN Red List of Threatened Species or South Africa's National Red List website as Critically Endangered, Endangered or Vulnerable according to the IUCN Red List 3.1. Categories and Criteria and under the national category of Rare.	✓

[16] Available at https://bgis.sanbi.org/
[17] Species with a geographically restricted area of distribution.
[18] https://www.iucnredlist.org/
[19] This category includes the categories Extremely Rare, Critically Rare and Rare
[20] The methodology by which habitat suitability models have been developed are explained within the Species Environmental Assessment Guideline.

	ASSESSMENT AND REPORTING OF IMPACTS ON TERRESTRIAL BIODIVERSITY	
4.6	Where SCC are found on site or have been confirmed to be likely present, a **Terrestrial Plant Species Specialist Assessment** must be submitted in accordance with the requirements specified for "*very high*" and "*high*" sensitivity in this protocol.	✓
4.7	Similarly, where no SCC are found on site during the site inspection or the presence is confirmed to be unlikely, a **Terrestrial Plant Species Compliance Statement** must be submitted.	✓
5	**LOW SENSITIVITY RATING – for terrestrial plant species**	
	Terrestrial Plant Species Compliance Statement 1. Areas where no natural habitat remains. 2. Natural areas where there is no suspected occurrence of SCC.	✓
5.1	The compliance statement must be prepared by a SACNASP registered specialist under one of the two fields of practice (Botanical Science or Ecological Science).	✓
5.2	The compliance statement must:	✓
5.2.1	be applicable to the study area;	✓
5.2.2	confirm that the study area, is of "*low*" sensitivity for terrestrial plant species; and	✓
5.2.3	indicate whether or not the proposed development will have any impact on SCC.	✓
5.3	The compliance statement[21] must contain, as a minimum, the following information:	✓
5.3.1	contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the compliance statement including a curriculum vitae;	✓
5.3.2	a signed statement of independence by the specialist;	✓
5.3.3	a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	✓
5.3.4	a description of the methodology used to undertake the site survey and prepare the compliance statement, including equipment and modelling used where relevant;	✓
5.3.5	where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMPr;	✓
5.3.6	a description of the assumptions made and any uncertainties or gaps in knowledge or data;	✓
5.3.7	the mean density of observations/ number of samples sites per unit area[22]; and	✓
5.3.8	any conditions to which the compliance statement is subjected.	✓
6	A signed copy of the **Terrestrial Plant Species Compliance Statement** must be appended to the Basic Assessment Report or the Environmental Impact Assessment Report.	✓

[21] An example of a what is contained in a Compliance Statement for Plant Species Impact Assessment can be found in the Species Environmental Impact Assessment Guideline

[22] Refer to the Species Environmental Assessment Guideline

8.7 Site Sensitivity Verification Report

8.7.1 Background

Sharples Environmental Services cc (SES) has been appointed by Lyners Engineers on behalf of the George Municipality (applicant), to conduct the Environmental Impact Assessment process for the proposed upgrading of stormwater infrastructure of Rosemoor, George, Western Cape (Figure 51). As part of this application, a Terrestrial Biodiversity, Plant & Animal Specialist Assessment is required. assessment is required to support the necessary environmental applications.

Figure 51: Site locality.

8.7.2 Activity Location and Description

The site is situated within a transformed developed suburb, that is drained by a network of vegetated watercourses. The development proposal construction of stormwater discharge points within the vegetated areas adjacent to the watercourses in order to facilitate improved and controlled stormwater discharge.

8.7.3 Purpose of Report

The "*Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of sections 24 (5) (a) and (h) and 44 of the Act, when applying for Environmental Authorisation*", as published on 20 March, 2020 in National Gazette, No. 43110 in terms of NEMA (Act 107 of 1998) sections 24(5)(a), (h) and 44, lists protocols and minimum report requirements for environmental impacts on terrestrial biodiversity and provides the criteria for the assessment and reporting of impacts on terrestrial biodiversity for activities requiring environmental authorisation. The assessment and minimum reporting requirements of this protocol are associated with a level of environmental sensitivity identified by the National web based Environmental Screening Tool. Prior to

commencing with a specialist assessment, the current use of the land and the environmental sensitivity of the site under consideration, identified by the screening tool, must be confirmed by undertaking a **site sensitivity verification**, which must include the following.

4. The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.
5. The site sensitivity verification must be undertaken through the use of:
    a. a desk top analysis, using satellite imagery.
    b. a preliminary on -site inspection; and
    c. any other available and relevant information.
6. The outcome of the site sensitivity verification must be recorded in the form of a report that:
    a. confirms or disputes the current use of the land and environmental sensitivity as identified by the screening tool.
    b. contains a motivation and evidence of either the verified or different use of the land and environmental sensitivity; and
    c. is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

The National Web Based Screening Tool was used to generate the potential environmental sensitivity of the site which has then been compared to various online and other databases and information sources in order to verify and confirm the validity of the screening tool findings. This was further supported with on-site observations and analysis of most recent aerial photography.

This terrestrial biodiversity site verification has been undertaken as per the requirements of the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation (GN 320, 20 March 2020).

8.7.4 Data sources and references

Data sources that were utilised for this report include the following:

- National (DFFE) Web Based Screening Tool – to generate the sites potential environmental sensitivity.
- National Vegetation Map 2018 (NVM, 2018), Mucina & Rutherford (2006) and National Biodiversity Assessment or Red Listed Ecosystems (NBA/RLE, 2022) – description of vegetation types, species (including endemic) and most recent vegetation unit conservation status.
- National and Regional Legislation including Provincial Nature Conservation Ordinance (P.N.C.O). NEM:BA Threatened or Protected Species (ToPS).
- Botanical Database of Southern Africa (BODATSA) and New Plants of Southern Africa (POSA) – lists of plant species and potential species of concern found in the general area (SANBI.)
- International Union for Conservation of Nature (IUCN) - Red List of Threatened Species.
- Animal Demography Unit Virtual Museum (VM) – potential faunal species.
- Global Biodiversity Information Facility (GBIF) – potential flora & faunal species.
- National Red Books and Lists - mammals, reptiles, frogs, dragonflies & butterflies.
- National Freshwater Ecosystem Priority Areas assessment (NFEPA, 2011) - important catchments.
- National Protected Areas Expansion Strategy (NPAES, 2018) and South Africa Protected Area database (2020) – protected area information.
- SANBI BGIS – All other biodiversity GIS datasets.
- Western Cape Biodiversity Spatial Plan (2017).
- Aerial Imagery – Google Earth, ESRI, Chief Surveyor General (http://csg.dla.gov.za).
- Cadastral and other topographical country data - Chief Surveyor General (http://csg.dla.gov.za).

- Other sources may include peer-reviewed journals, regional and local assessments, and studies in the general location of the project and its area of influence, landscape prioritization schemes (Key Biodiversity Areas), systematic conservation planning assessments and plans (as above), and any pertinent masters and doctoral theses, among others.

This terrestrial biodiversity assessment has been undertaken as per the requirements of the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation (GN 320, 20 March 2020).

8.7.5 Site visit

A site inspection was conducted on **23 July 2024**, during mid-winter and a follow up site visit (early autumn) for additional infrastructure. The site falls within a temperate climate with rainfall occurring throughout the year but is often higher in winter, hence for the purposes of this report, a single site visit is deemed to be adequate, specifically due to the disturbed nature of the site.

8.7.6 Assumptions, Uncertainties and Gaps in Knowledge

The findings and recommendations of this report may be susceptible to the following uncertainties and limitation:

- No assessment has been made of aquatic aspects relating to any wetlands, pans, and/or rivers/seep ecosystems outside of the scope of a terrestrial biodiversity report. Refer to separate reporting.
- Any botanical surveys based upon a limited sampling time-period, may not reflect the actual species composition of the site due to seasonal variations in flowering times. Additionally, the composition of fire adapted vegetation may vary depending on level of maturity or time since last burn. As far as possible, site collected data has been supplemented with desktop and database-centred distribution data.
- As far as possible, site collected data has been supplemented with desktop and database-centred distribution data as well as previous studies undertaken in the area.

8.7.7 National Environmental Screening Tool

The DEA Screening Tool indicates the following, summarised in Table 1:

- Terrestrial Biodiversity is Very High (Figure 52).
- Plant species sensitivity is Low & Moderate (Figure 53).
- Animal Species sensitivity is High (Figure 54).
- Aquatic Sensitivity is Very High (Figure 55).

Table 13: Summary of Screening tool designations.

Terrestrial Sensitivity	**Feature(s) in proximity**
Very High	CBA 1: Terrestrial, CBA 2: Terrestrial, SWSA (SW Outeniqua) & Garden Route Granite Fynbos (Critically Endangered)
High	None
Medium	None
Low	Present
Plant Sensitivity	
Very High	None
High	None
Medium	*Lampranthus pauciflorus, Leucospermum glabrum, Diosma passerinoides, Sensitive species 1024, 1032, 800 & 500.*

Low	Present
Animal Sensitivity	
Very High	None
High	*Circus ranivorus* & *Bradypterus sylvaticus* (Birds)
Medium	*Afrixalus knysnae* (Amphibian), *Chlorotalpa duthieae*, Sensitive species 8 (Mammal) & *Aneuryphymus montanus* (Insects)
Low	Present
Aquatic Sensitivity	
Very High	CBA 1: Aquatic, SWSA (SW Outeniqua) & Wetlands - Eastern Fynbos-Renosterveld Bioregion (Valley-bottom)
High	None
Medium	None
Low	None

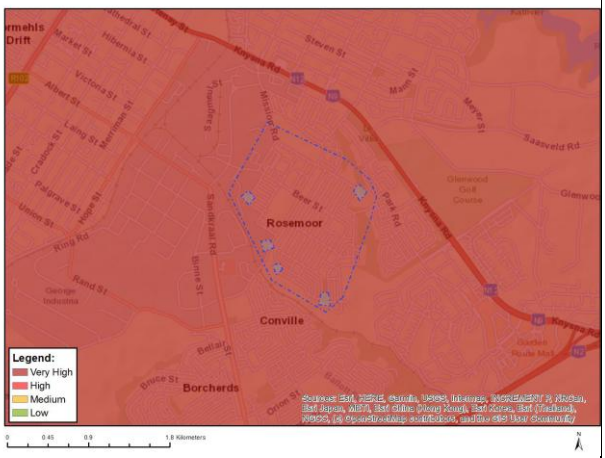

Figure 52: Terrestrial Biodiversity Sensitivity

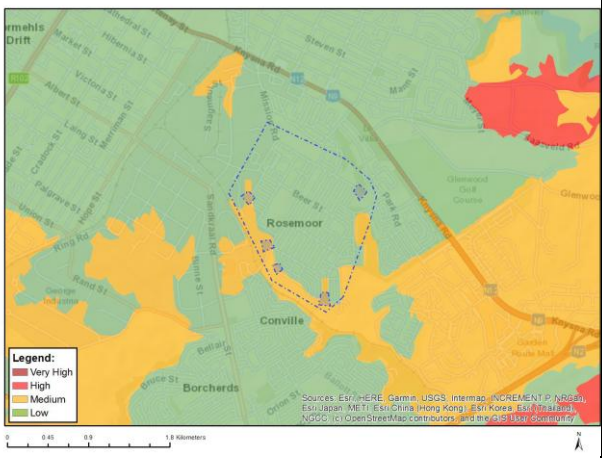

Figure 53: Plant Species Sensitivity

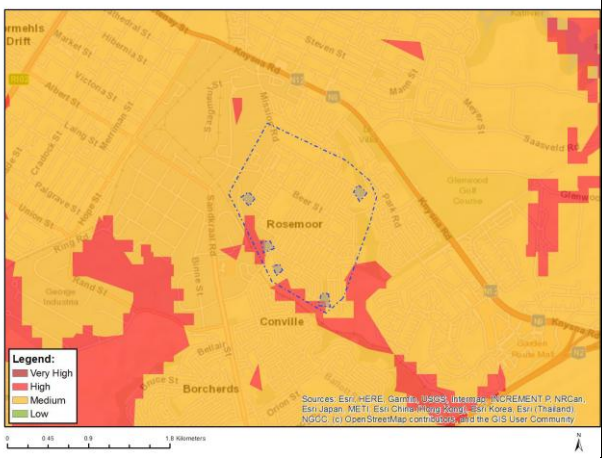

Figure 54: Animal Species Sensitivity

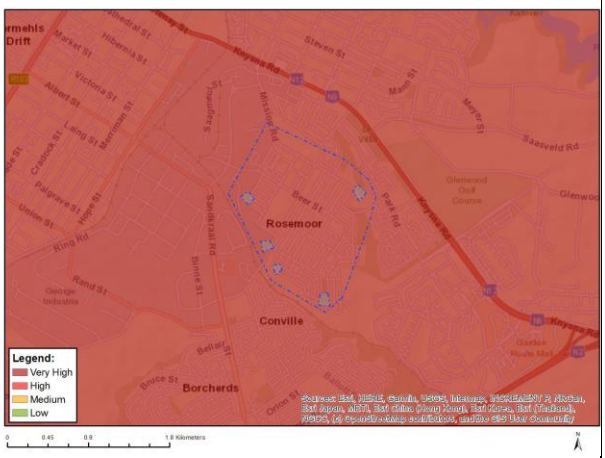

Figure 55: Aquatic Sensitivity

The site assessment will also physically screen for the presence of the listed, and other possible species and/or sensitivities that are not identified in the screening tool in addition to those that are flagged. Not all features are directly affected, but being in proximity, the risks associated with the activity will be investigated further and addressed in the report.

The following is deduced from the DFFE National Environmental Screening Tool:

- The terrestrial biodiversity theme is Very-High due to the proposed stormwater discharge points being within or on the edge of designated CBA 1, 2 & ESA areas. The Very High sensitivity designation

is disputed as the entire site is situated on the edge of an urban area with little to no natural vegetation remaining. Vegetation cover is largely comprised of exotic species, and while it will serve limited ecological function, the specific proposed activity, if implemented responsibly and following the recommended mitigation and management actions, can be considered low risk.

- Several flora (plant) species regarded as being of concern are flagged as potentially being present (Medium sensitivity) and are assessed further in the report, however none were found to be present during the site visit and are furthermore due to the transformed nature of the site, it is not deemed to be suitable habitat for any functional species population. The Medium sensitivity designation is thus disputed as the site, which is situated on the edge of an urban area, is within a developed landscape and has hardened surfaces (roads and sidewalks) and/or landscaped gardens with little to no remnant natural vegetation, that will have limited ecological function.
- Several fauna (animal) species regarded as being of concern are flagged as potentially being present (High sensitivity) and are assessed further in the report. Due to the limited size of the site and transformed nature of the surrounding landscape, the site would not be deemed to be viable for any species population. The Medium/High sensitivity designation is thus disputed as the site, which is situated on the edge of an urban area, is within a developed landscape and has hardened surfaces (roads and sidewalks) with little to no remnant natural vegetation that have limited ecological function nor provide suitable habitat other than for temporarily transient fauna species (i.e. such as perching in a tree). The watercourses and riparian vegetation are likely highly polluted and thus not suited to the amphibian species.
- The aquatic sensitivity is Very High due to falling within designated CBA 1: Aquatic, SWSA (SW Outeniqua) & Wetlands - Eastern Fynbos-Renosterveld Bioregion (Valley-bottom). While the site does have a network of watercourses, these are largely modified, being within an urban context, subject to unmanaged stormwater discharge and also having significantly modified (or exotic) vegetation cover. The proposed stormwater infrastructure is thus likely to improve aquatic functioning in the long-term.
- The impacts are assessed further in the relevant report sections in the accompanying report.

8.7.8 Findings, Outcomes and Recommendations

Terrestrial Biodiversity

Site verification of the Terrestrial Biodiversity sensitivities is summarised in Table 14 and depicted in *Figure 56*, where CBA is green and ESA is light blue/yellow. The CBA and ESA designation are primarily associated with feature adjacent to the site and/or outside of the proposed development/activity footprint.

Table 14: Terrestrial Biodiversity Features flagged in the National Environmental Screening Tool.

Feature		COMMENT
Critical Biodiversity Area 1	CBA 1	**Dispute** – the site is within an urban area and is vegetation cover is significantly altered where little to no natural vegetation remains, and since any vegetation restoration implies that vegetation would be in a secondary context and thus would strictly speaking not be CBA 1 but CBA 2.
Critical Biodiversity Area 2	CBA 2	**Partially Agree** – In principle it would be possible to restore indigenous vegetation, however the likelihood in the short term is not considered to be high, without significant cost. A part of this process would be to formalise and improve stormwater

Feature		COMMENT
		runoff and discharge into the watercourses, so the proposed activity could indirectly improve overall localised ecological functioning.
Ecological Support Areas	ESA 2	**Partially Agree** – the site does provide some ecological connectivity and supports ecological processes, be-it in a significantly altered or modified form. In light of the modified nature, the proposed activity is not seen to exceed current baseline disturbance levels.

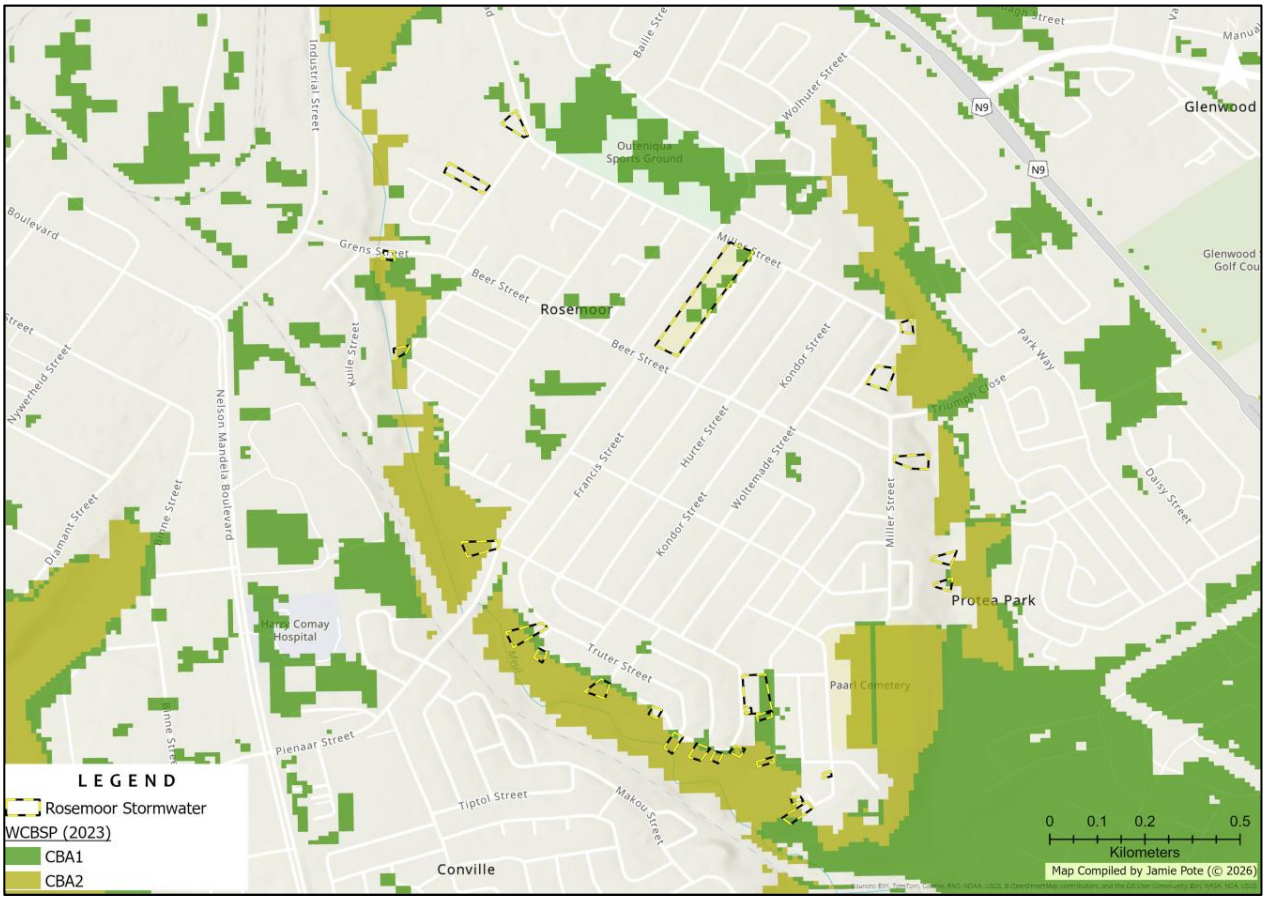

Figure 56: Western Cape Biodiversity Spatial Plan (2017). The site does overlap with some designated CBA 1, CBA 2 and ESA 2 areas.

A CBA 1 designation implies natural vegetation is present, whereas CBA 2 implies restoration is required. In light of the significant lack of indigenous species and high levels of disturbance and/or alien invasion, the correct CBA/ESA designations would need ot be ESA 2 and possibly CBA 2. It is questionable if the broader vegetated areas along the watercourses would ever achieve a state that would support conservation (i.e. CBA), without significant changes to municipal management and well as resident behaviour, well outside the scope if this assessment; however, they do serve a somewhat role in supporting local ecological processes and connectivity, and with some rehabilitation (which includes construction and improvement of stormwater discharge), this is likely to improve.

Ecological processes should be considered within a landscape level and since the ecological areas are within a significantly modified and fragmented urban landscape, the minor impacts of the proposed stormwater infrastructure discharge points will have a negligible impact.

Plant Species (Flora)

National Environmental Screening Tool flagged several flora species. Almost the entire site is situated within a significantly altered and degraded landscape, where little natural vegetation remains. No significant pockets of natural vegetation were found that might provide suitable habitat for these species and it is confirmed that no species of conservation concern having an elevated status and/or limited distribution range as flagged in the screening tool are present.

The SSVR thus disputes the flagged flora ('plant') species of conservation concern and medium plant species designations.

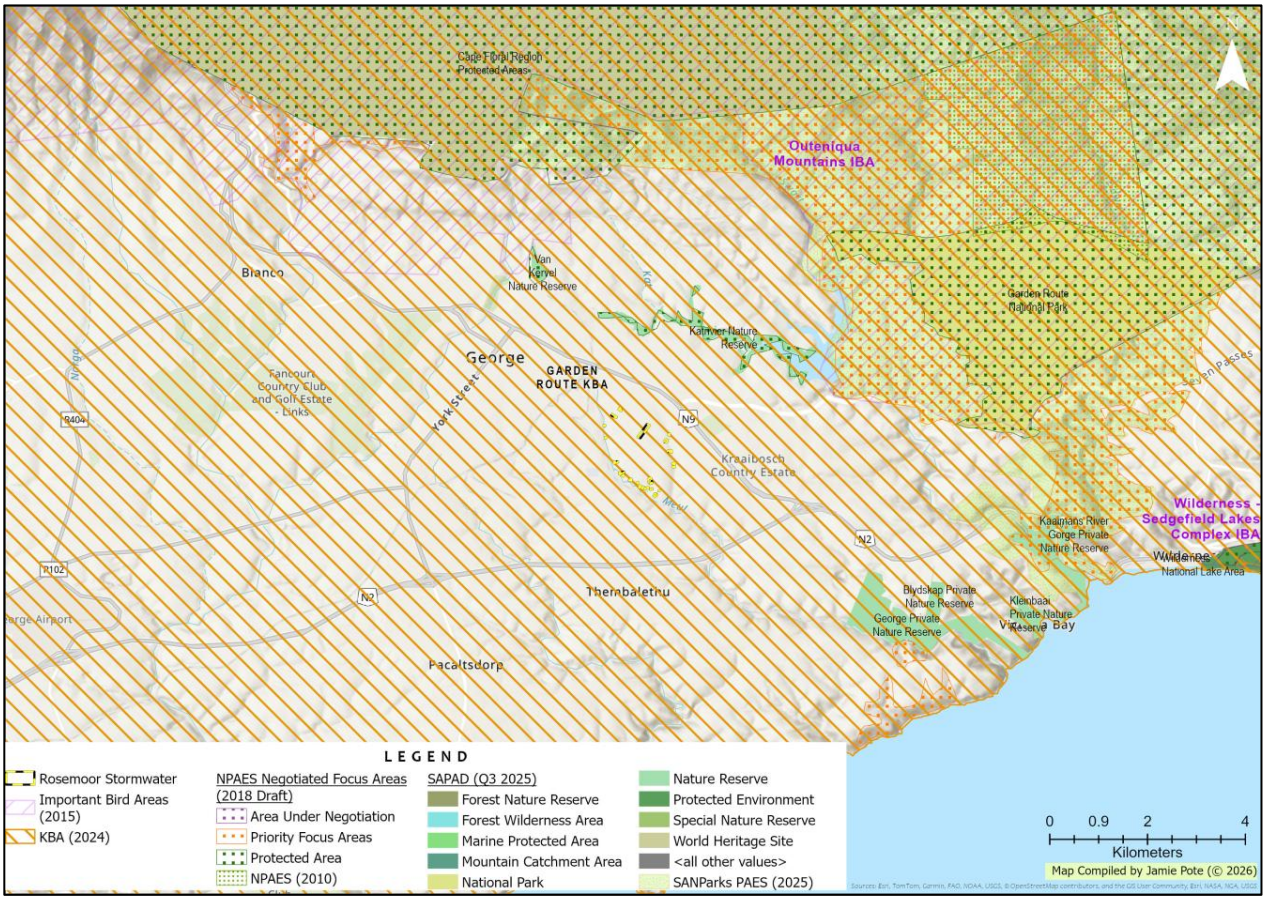

Figure 57: Protected Areas and NPAES in vicinity.

Animal Species (Fauna)

National Environmental Screening Tool flagged several fauna species. Almost the entire site is situated within a significantly altered and degraded landscape, where little natural vegetation remains. No significant pockets of natural vegetation were found that might provide suitable habitat for these species and it is confirmed that no species of conservation concern having an elevated status and/or limited distribution range as flagged in the screening tool are present.

The SSVR thus disputes the flagged fauna ('animal') species of conservation concern designations and High animal species designations.

Aquatic

Wetland and River features are present in the broader area, including the watercourses within the urban area. Aquatic aspects are beyond the scope of this Terrestrial Biodiversity assessment but is given consideration in terms of terrestrial processes that may be influenced by the terrestrial vegetation. Based on the terrestrial vegetation composition, the watercourse would be deemed to be significantly modified, having little to no remnant natural vegetation and a high proliferation of weed and invasive alien species. The very high aquatic sensitivity it thus questionable, but outside the scope of this terrestrial assessment which does not include any water quality analysis.

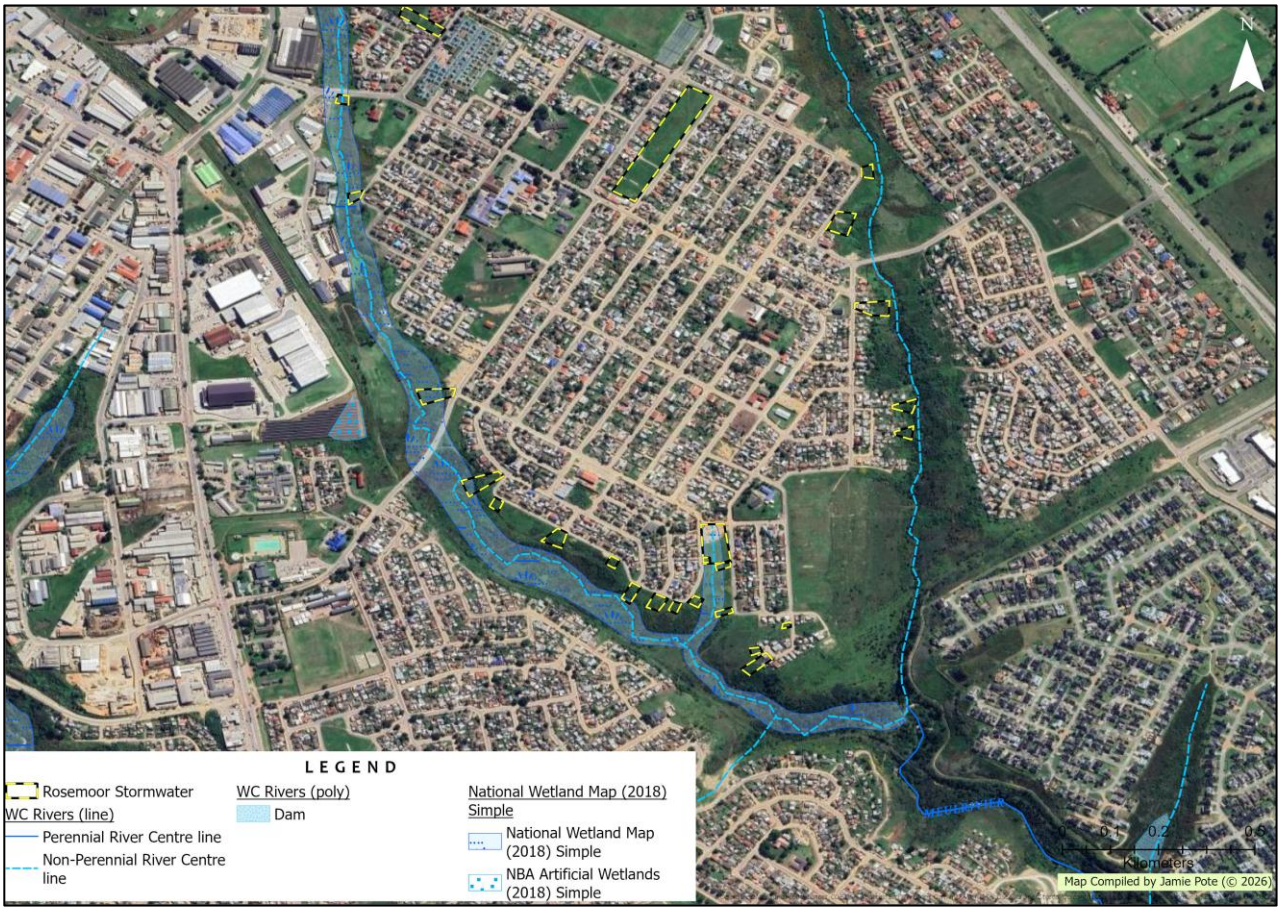

Figure 58: Rivers, FEPAs & SWSA's.

8.7.9 Conclusions

The site verification thus confirms that the site does not fall within a terrestrial biodiversity screening tool designated CBA area, as there is no evidence of any ecologically significant remaining naturel vegetation as the site is almost entirely transformed as the footprint is within a degraded, transformed urban landscape, which will have limited and modified ecological function. In principle, the proposed improvement of stormwater discharge infrastructure could result in an overall improvement to the ecological function of the area.

It further disputes that any of the screening tool flagged flora or fauna species of conservation concern are likely to be affected by the proposed activity within a degraded, modified and transformed landscape.

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