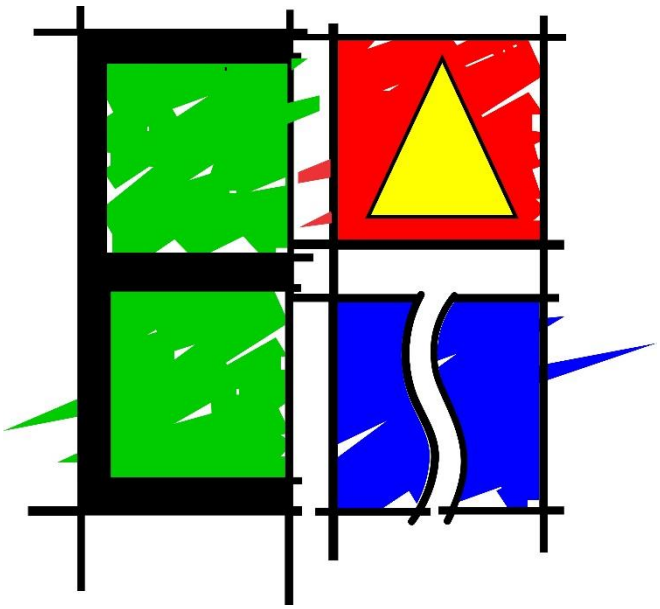
Erf 984 and 1134, Parsons Vlei – Terrestrial Biodiversity Assessment



Report Prepared by:
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EAS Project Number: 1726

26 August 2020

Erf 984 and 1134, Parsons Vlei – Terrestrial Biodiversity Assessment

For:

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Abbreviations

CARA	Conservation of Agricultural Resources Act 43 of 1983
CBA	Critical Biodiversity Area
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
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 107 of 1998
NFA	National Forests Act
NEMBA	National Environmental Management: Biodiversity Act 10 of 2004
NFA	National Forest 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

Glossary

Contiguous:	Sharing a common border; touching
Corridors:	Have important functions as strips of a particular type of 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 "stepping stones" that link fragmented ecosystems by ensuring that certain ecological processes are maintained within and between groups of habitat fragments.
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.
Ecological Processes:	Ecological processes typically only function well where natural vegetation remains, and in particular 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.
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.
Ecosystem:	All of the organisms of a particular habitat, such as a lake or forest, together with the physical environment in which they live.
Endangered:	Endangered terrestrial ecosystems have lost significant amounts (more than **60 % lost**) of their original natural habitat, so their functioning is compromised.
Endemic:	A plant or animal species, or a vegetation type, which is naturally restricted to a particular defined region. It is often confused with indigenous, which means 'native, occurring naturally in a defined area'.
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.
Exotic:	Non-indigenous; introduced from elsewhere, may also be a *weed* or alien *invasive* species. Exotic species may be invasive or non-invasive.
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 has to 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
Fragmentation (habitat):	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.
Indigenous:	Native; occurring naturally in a defined area.
Least threatened terrestrial ecosystems:	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).
Riparian:	Pertaining to, situated on or associated with a river bank.
River corridors:	River corridors perform a number of 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.
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/ Drainage line:	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:	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.
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.
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.

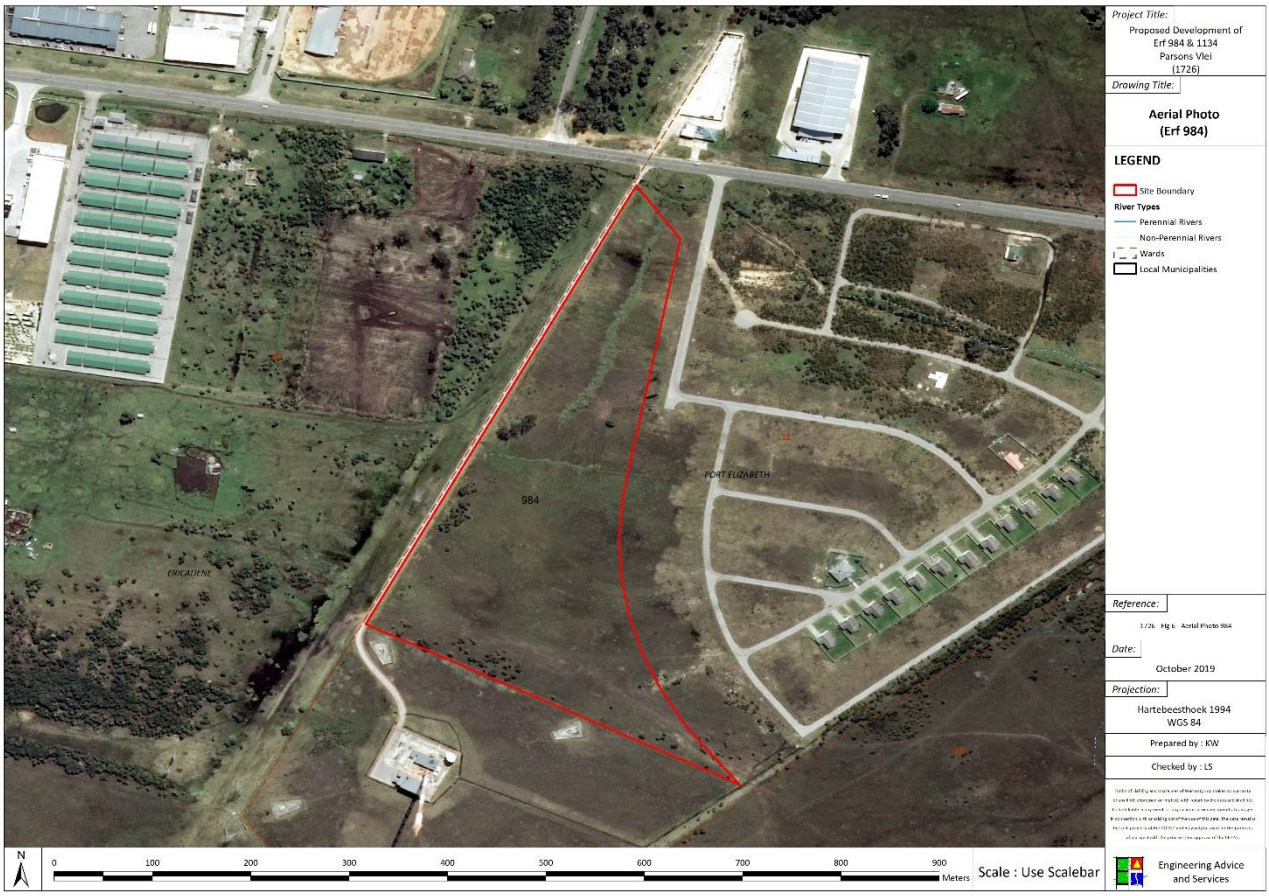
1 Introduction & Background

Engineering Advice and Services were commissioned by Lurco Trading (Pty) Ltd undertake a Basic Assessment for the Proposed Development of Erf 984 and 1134 Parsonsvlei, for the purposes of establishing an industrial park. The site is situated in the Nelson Mandela Bay Municipality south of Old Cape Road. Lucro Trading (Pty) Ltd is the registered owner of both properties that are remaining portions of the subdivision of Erf 351 Parsonsvlei with current erf numbers in terms of the approved general plan for extension 10. Further to this, a Terrestrial Biodiversity Assessment of the current ecological status of the sites has been conducted by Mr Jamie Pote and Mr Kurt Wicht.

1.1 Project Description

Lucro Trading (Pty) Ltd is in the process of submitting an application for Development of Erven 984 and 1134, Parsonsvlei, Port Elizabeth currently zoned for Industrial Zone 2 and proposed reapplication of rezoning to Business Zone 1, respectively, in terms of the Port Elizabeth Zoning Scheme Regulations. The applicant intends to develop Erf 984 Parsonsvlei which is approximately 7.29 Ha for warehousing, storage and related facilities, and Erf 1134 Parsonsvlei which is 3.31 Ha for medium density residential development.

The following two figures are illustrations of Erf 984 and Erf 1134 respectively.



1.2 Methodology and Approach

The proposed methodology and approach is outlined below:

- Conduct a comprehensive desktop study and identify potential risks relating to vegetation, flora and fauna of the site and surrounding area. This will include the relevant Regional Planning frameworks,
- Conduct a Screening Tool to comply with the protocol for specialist assessment and minimum report content requirements for the environmental impacts on terrestrial biodiversity (Government Gazette 43110, 20 March 2020), superseding the Appendix 6 NEMA requirements. This report thus meets the criteria to fulfil a Specialist Assessment Report as the proposed development is located within an area rated as very high as per the DEA Screening Tool Terrestrial Biodiversity Theme because the site is within a Critical Biodiversity Area and within a vulnerable ecosystem.
- Conduct a detailed site visit to assess the following:
    - Detailed field survey of vegetation, flora and habitats and record any fauna present:
    - Compile 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, etc.
    - 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, a draft detailed Assessment Report (for public review and comment) and should any comments be raised these will be addressed in a Final Assessment Report. This report is for the Draft BAR which will go for public consultation following which a Final BAR will be issued. The draft and final detailed reports will address 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;
- A habitat sensitivity map will be compiled, indicting the sensitivities as described above;
- A map indicating buffers (if required) in order to accommodate Regional Planning and OSMP requirements;
- 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.

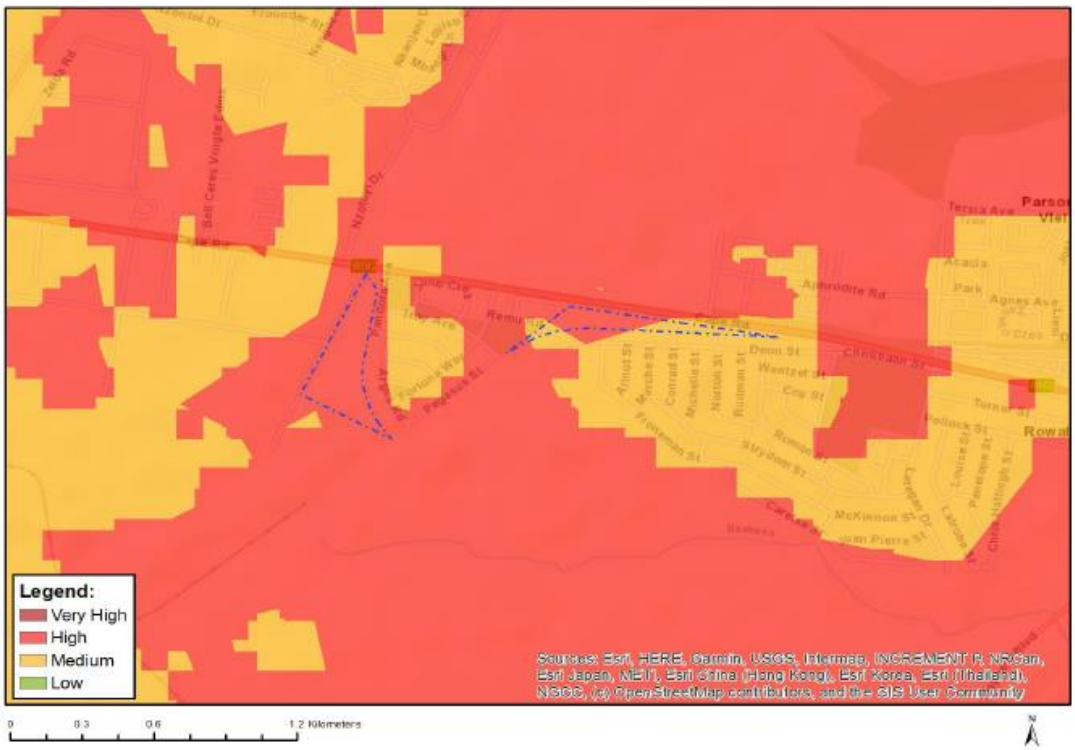
1.3 Screening Tool

The protocol for specialist assessment and minimum report content requirements for the environmental impacts on terrestrial biodiversity (Government Gazette 43110, 20 March 2020), superseding the Appendix 6 NEMA requirements, was also adhered to. The sites are rated as having a very high sensitivity in the Terrestrial Biodiversity Theme according to the DEA Screening Tool. This report thus meets the criteria to fulfil a Specialist Assessment Report as the proposed development is located within an area rated as very high for the Terrestrial Biodiversity Theme.

In terms 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 NEMA, gazetted on 30 October 2020, relating to requirements relating specifically to the Terrestrial Plant and Animal themes, the proclamation notes that 'the requirements of these protocols will apply from the date of publication, except where the applicant provides proof to the competent authority that the specialist assessment affected by these protocols had been commissioned by the date of the publication of these protocols in the Government gazette, in which case Appendix 6 of the Environmental Impact Assessment Regulations, 2014, as amended will apply to such applications'. **In this regard and with reference to the appointment letter provided in Appendix F, these protocols have not been adopted in full, as the appointment was before commencement of the regulations. Specific comment regarding the species identified in the tool are provided in Section 2: Species of Special Concern.**

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Agriculture Theme		x		
Animal Species Theme		x		
Aquatic Biodiversity Theme				x
Archaeological and Cultural Heritage Theme				x
Civil Aviation Theme		x		
Defence Theme			x	
Palaeontology Theme		x		
Plant Species Theme			x	
Terrestrial Biodiversity Theme	x			

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



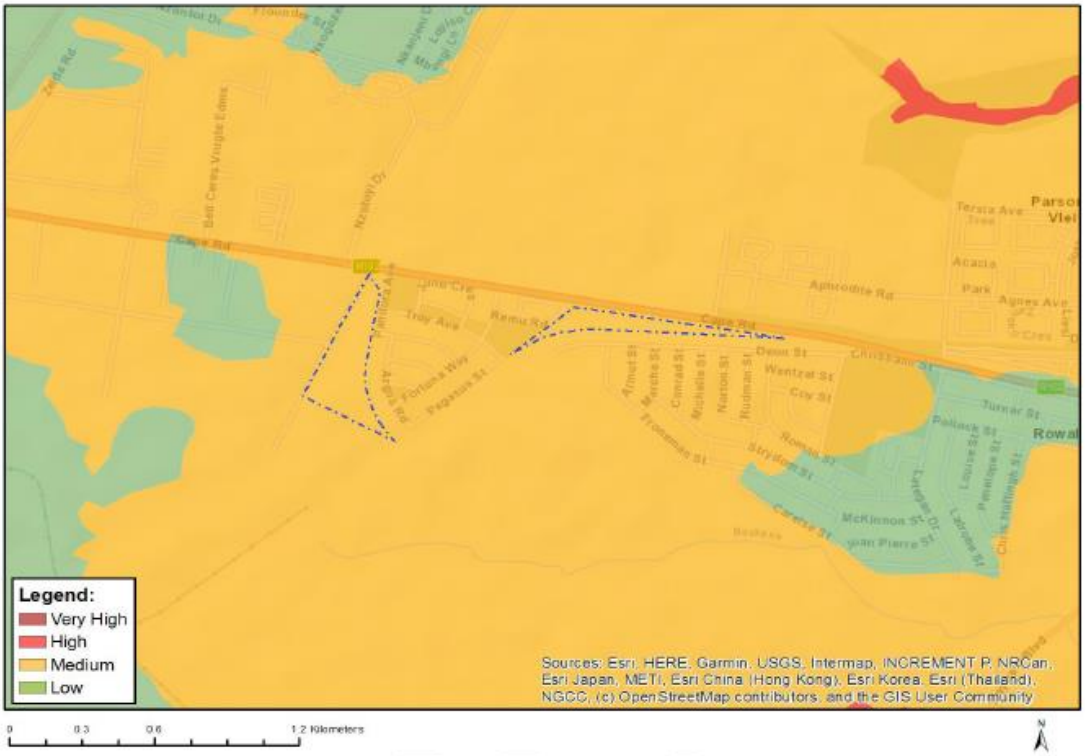
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Circus maurus
High	Aves-Bradypterus sylvaticus
High	Aves-Campethera notata
High	Aves-Neotis denhami
High	Aves-Tyto capensis
High	Aves-Circus ranivorus
Medium	Mammalia-Chlorotalpa duthieae
Medium	Invertebrate-Aneuryphymus montanus
Medium	Reptilia-Tetradactylus fitzsimonsi

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



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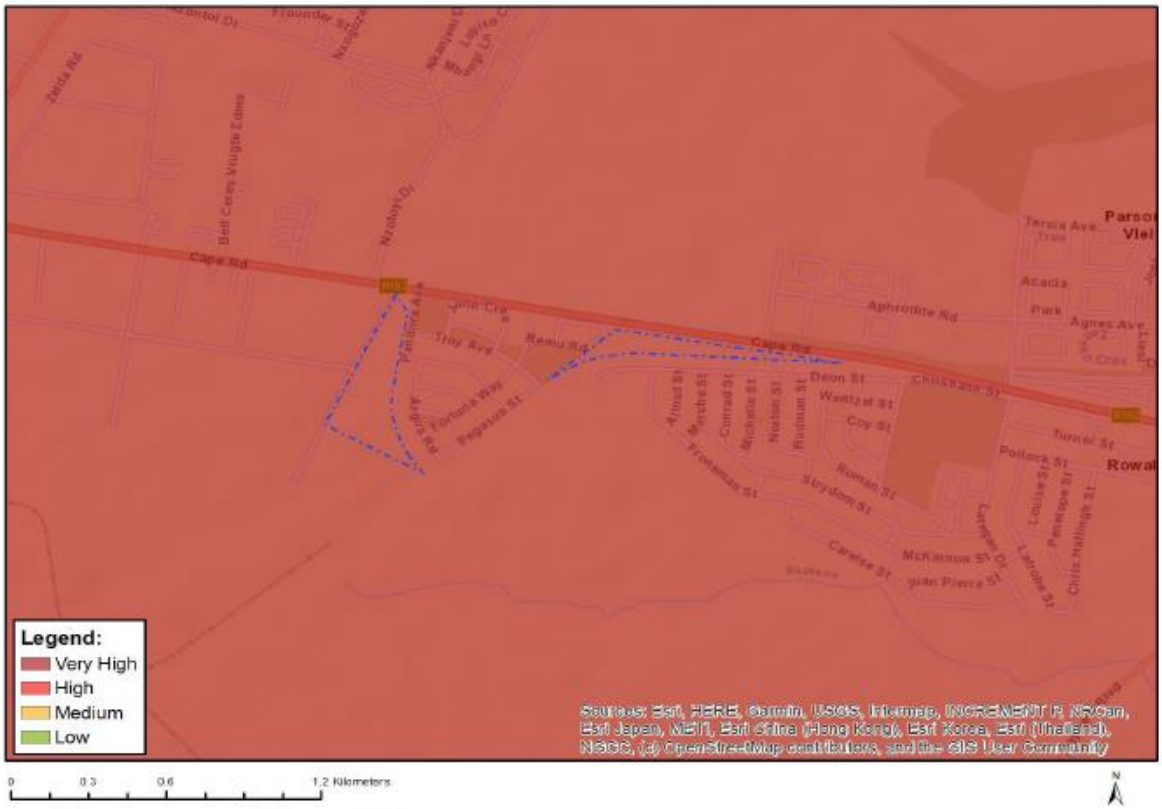
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Sensitive species 1252
Medium	Argyrolobium crassifolium
Medium	Aspalathus recurvispina
Medium	Sensitive species 991
Medium	Lotononis acuminata
Medium	Selago rotundifolia
Medium	Erica chloroloma
Medium	Erica zeyheriana
Medium	Gymnosporia elliptica
Medium	Sensitive species 588
Medium	Sensitive species 657
Medium	Sensitive species 670
Medium	Centella tridentata var. hermanniifolia
Medium	Rapanea gilliana
Medium	Holothrix longicornu

Medium	Agathosma gonaquensis
Medium	Agathosma stenopetala
Medium	Corpuscularia lehmannii
Medium	Ellisochloa papposa
Medium	Caputia scaposa var. addoensis
Medium	Aristea nana
Medium	Sensitive species 448
Medium	Bobartia macrocarpa
Medium	Erica glumiflora
Medium	Sensitive species 654
Medium	Disperis woodii

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Critical Biodiversity Area 1
Very High	Vulnerable ecosystem

An initial scoping of the site was done and this specialist assessment and report is being done in order to meet the specialist report requirements for the animal, plant and terrestrial biodiversity theme which is rated between *medium* and *very high,* in the DEA Screening tool.

1.4 Legislation Framework

In terms of the National Environmental Management Act 107 of 1998 (NEMA) Environmental Impact Assessment (EIA) Regulations 2014 (as amended, 07 April 2017), the following Listing notices have bearing on this report:

Listing Notice 1, GN R. 327:

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) Purposes undertaken in accordance with a maintenance management plan.

Listing Notice 3, GN R. 324:

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 province:

(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;

~~(iii) Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; or~~

~~(iv) On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.~~

Other relevant legislation includes the following:

- NEMA: Environmental management principles set out in NEMA, and other Specific Environmental Management Acts (SEMA's) should guide decision making throughout the project life cycle to reflect the objective of sustainable development. One of the most important and relevant principles is that disturbance of ecosystems, loss of biodiversity, pollution and degradation of environment and sites that constitute the nation's cultural heritage should be avoided, minimised or as a last option remedied. This is supported by the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) as it relates to loss of biodiversity.
- Liability for any environmental damage, pollution, or ecological degradation: Arising from any and 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.
- 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.

- National Forests Act 84 of 1998 with Amendments: Lists Protected trees, requiring permits for removal Department of Agriculture, Forestry and Fisheries). Section (3)(a) of the National Forests Act stipulate that '*natural forests must not be destroyed save in exceptional circumstances where, in the opinion of the Minister, a proposed new land use is preferable in terms of its economic, social or environmental benefits*'.
- Conservation of Agricultural Resources Act 43 of 1993: Lists Alien invasive species requiring removal.
- Eastern 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 EMPr 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.

1.5 Systematic Planning Frameworks

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

- Vegetation Types and Conservation Status
- Critically Endangered and Endangered Ecosystems (NBA)
- Vulnerable Ecosystems
- Critical Biodiversity Areas (ECBCP 2007)
- Ecological Support Areas (None)
- Protected Areas and Protected Area Buffers (SAPAD 2019)
- Strategic Water Source Area (SWSA)
- River and Wetland Freshwater Ecosystem Priority Areas (FEPAs)
- 100 m buffer of Rivers and Wetlands
- Surrounding Land Uses

Table 1: Summary of -Biodiversity features.

Feature	Description	Implications/Comment
Affected Vegetation Types (VEGMAP 2012)	Algoa Sandstone Fynbos	Critically Endangered
Sub-Tropical Ecosystem Planning (STEP)	None	N/A
Critically Endangered and Endangered Ecosystems	Algoa Sandstone Fynbos	Critically Endangered
Vulnerable Ecosystems	None	N/A
Affected Vegetation Types (Regional)	Rowallan Park Grassy Fynbos	The vegetation type is Vulnerable, the vegetation on site is confirmed to be primarily secondary in nature and not of the vegetation type indicated. Highly invaded. A small remnant, degraded portion is present along the

Feature	Description	Implications/Comment
		southern boundary of Erf 984, with negligible ecological value.
Critical Biodiversity Areas (ECBCP 2007)	CBA 2	CBA 2 areas are not recommended for high density type development. ECBCP2019 excludes the Nelson Mandela Bay area, having its own bioregional plan.
Critical Biodiversity Areas (Nelson Mandela Bay Bioregional Plan)	CBA and riverine corridor	A small section of the west boundary of Erf 1134 is identified in the gazetted NMB Bioregional Plan as a Critical Biodiversity Area associated with a degraded ephemeral drainage line of the Baakens River, mostly serving stormwater management from surrounding hardened surface runoff.
Protected Areas (SAPAD 2019)	No protected areas in the vicinity	Construction will **not** take place within a nature reserve/protected area, or within the 5 km buffers of any nature reserve/protected area.
Marine/Coastal areas	None	N/A
Within 100 m of River, watercourse or Wetland	Baakens River approximately 400 m to the south of Erf 984.	Proposed development may have indirect impacts to the watercourse during rainfall events due to runoff.
Surrounding Land Uses	Residential erven/Open Space	Area to the north, east and west is predominantly surrounded by land either developed or in process of being developed. Area to the south is currently undeveloped.
Ecological Support Areas	None	A very small section of the west boundary of Erf 1134 is identified in the gazetted NMB Bioregional Plan as a Riverine corridor along the drainage line. It is advised that this be left as open space.

***NOTE**: Refer to Figure 1 to* Figure 8

1.5.1 Vegetation of Southern Africa

The primary vegetation unit affected by the proposed development (Mucina & Rutherford, 2012) is Algoa Sandstone Fynbos which has a *Critically Endangered* Conservation Status.

Algoa Sandstone Fynbos

Distribution Eastern Cape Province: Coastal flats at Port Elizabeth from Van Stadens River in the west to Southdene-Summerstrand in the east, located mostly some kilometres from the coast and close to the coast at only Maitland River Mouth and urbanised Summerstrand. Altitude 20–300 m.
Vegetation & Landscape Features Flat to slightly undulating plain supporting grassy shrubland (mainly graminoid fynbos). Grasses become dominant especially in wet habitats. In the south this fynbos unit borders on AT 9 Albany Coastal

Belt and AZs 1 Algoa Dune Strandveld and forms transitional mosaics with both. It also borders on patches of FOz 6 Southern Coastal Forest in this area.

Geology & Soils Acidic lithosol soils derived from Ordovician sandstones of the Table Mountain Group (Cape Supergroup). Land types mainly Db and Ha.

Climate MAP 560–890 mm (mean: 680 mm), evenly throughout the year, with a slight peak in March and October. Mean daily maximum and minimum temperatures 25.2°C and 7.6°C for February and July, respectively. Frost incidence about 3 days per year.

Important Taxa Tall Shrubs: *Protea eximia, P. neriifolia, P. repens. Low Shrubs: Agathosma hirta, A. ovata, Erica zeyheriana, Euryops ericifolius, Helichrysum appendiculatum, H. teretifolium, Leucadendron salignum, L. spissifolium subsp. phillipsii, Leucospermum cuneiforme, Protea cynaroides, P. foliosa, Tephrosia capensis.* Succulent Herb*: Crassula pellucida subsp. marginalis.* Graminoids*: Andropogon eucomus, Brachiaria serrata, Cymbopogon pospischilii, Cynodon dactylon, Digitaria eriantha, Ehrharta calycina, Eustachys paspaloides, Ischyrolepis capensis, Pentaschistis heptamera, P. pallida, Thamnochortus cinereus, Themeda triandra, Tristachya leucothrix*.

Endemic Taxa (Wetlands) Low Shrubs: *Agathosma gonaquensis, Cyclopia pubescens, Erica etheliae.* Geophytic Herb: *Holothrix longicornu.*

Conservation Critically Endangered. Target 23%. About 2% conserved in the Van Stadens Wild Flower Reserve, The Island Nature Reserve as well as in several private nature reserves. More than 50% transformed (cultivation, urban sprawl of the Nelson Mandela Metropolitan Area). Several Australian Acacia species occur as invasive aliens, but only to a limited extent. Erosion moderate and very low.

1.5.2 Sub-Tropical Ecosystem Planning (STEP)

No Sub-Tropical Ecosystem Planning vegetation units are present within the site.

1.5.3 Eastern Cape Biodiversity Conservation Plan (ECBCP)

Critical Biodiversity Areas (CBAs) are terrestrial and aquatic features in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning (SANBI 2007). These form the key output of the conservation plan. They are used to guide protected area selection and should remain in their natural state as far as possible.

As indicated in Figure 3, the Eastern Cape Biodiversity Conservation Plan (ECBCP, 2007), the proposed site falls within an area designated a CBA 2 status.

Implications: Areas having a CBA 1 or 2 and intact natural vegetation are generally deemed not suited for high density type developments, however since the vast majority of the site is not intact but rather degraded or transformed and the future land use planned for the surrounding areas is mixed use, development may be possible.

1.5.4 Protected Areas (SAPAD 2019)

No Protected Areas or National Parks are in close proximity (5 km or 10 km) to the site.

1.5.5 Implications of Systematic Planning Frameworks

The development of the sites are unlikely to have a significant impact on the vegetation units due to:

- The retention of open space areas within Erf 1134 to accommodate higher sensitivity ecological process areas.
- The low occurrence of protected trees and other flora on both sites.
- The two sites being generally surrounded by areas being rezoned for high density/industrial development;
- Current degradation of the two sites and surroundings due to alien infestation.
- The implementation of a sound Environmental Management Programme during construction and operation.
- The implementation of a formalized rehabilitation and landscaping plan, utilising indigenous species and a water-wise approach.

Loss of vegetation cover (habitat) and species (flora and fauna) will be localised to the two development footprints and have a minimal impact (including cumulative impact) at a local, regional, and national level as the sites are largely devoid of conservation worthy vegetation due to its transformed state.

The impact of the proposed development, within an area already disturbed from historical agricultural use is unlikely to have any significant negative ecological process impacts at a national, regional, and local level if all environmental management programmes are followed and adhered to. The implementation of best practice guidelines and implementation of the recommendations of the EMPr will be effective management to minimise any negative consequences.

1.5.6 Regional Planning Maps

The maps below illustrate the Regional Planning context discussed above.

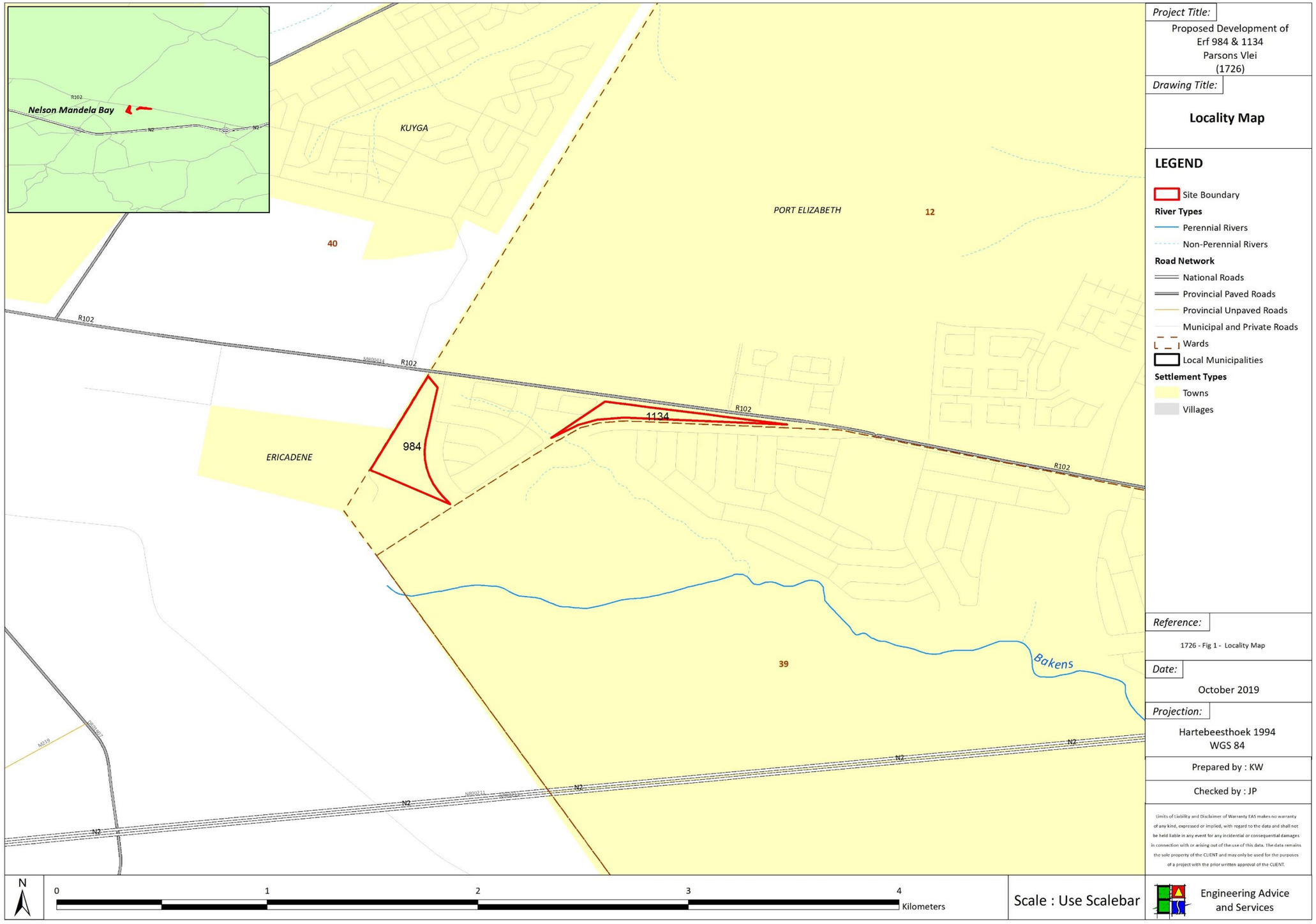


Figure 1: Locality Map.

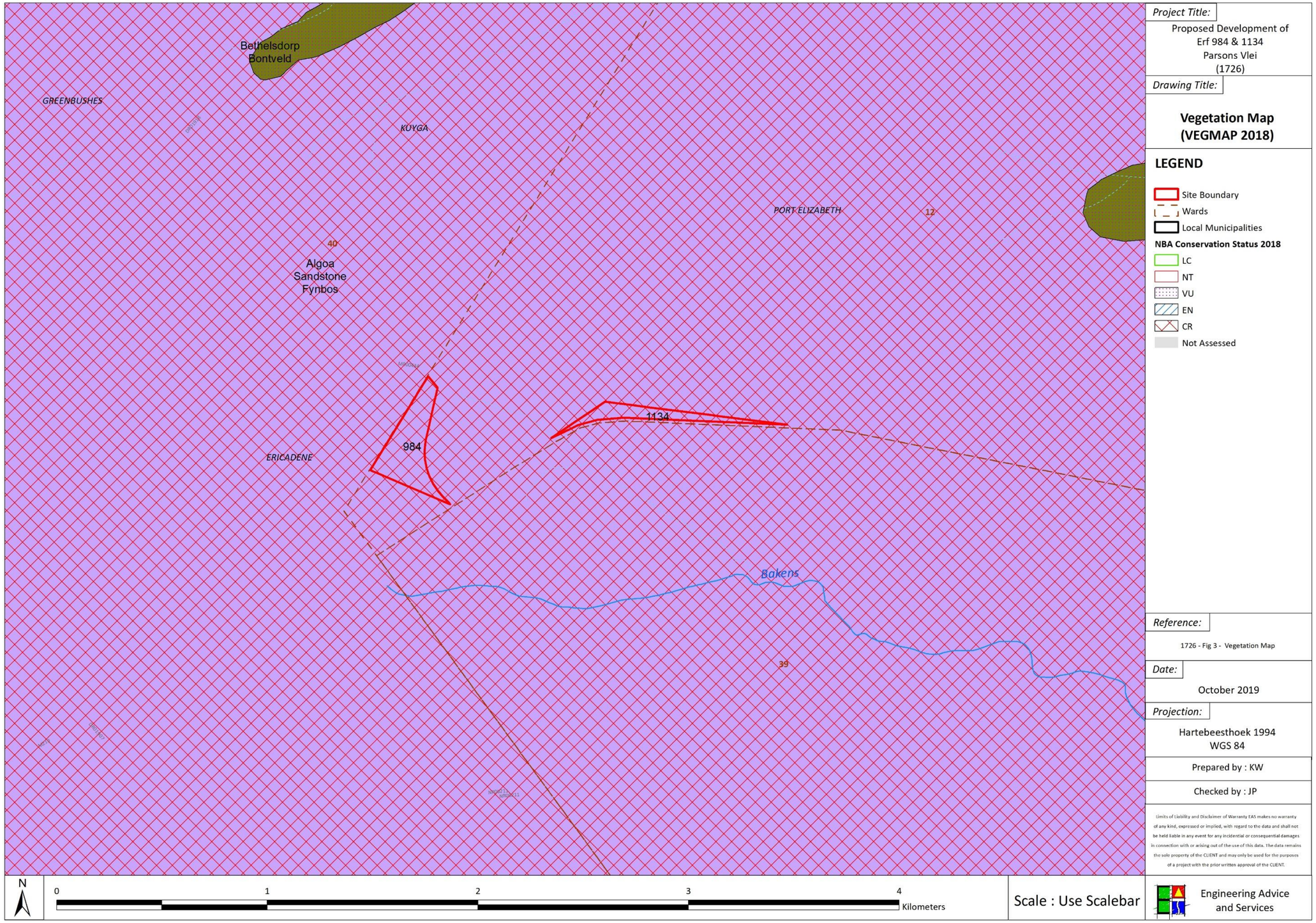


Figure 2: Vegetation Map 2018

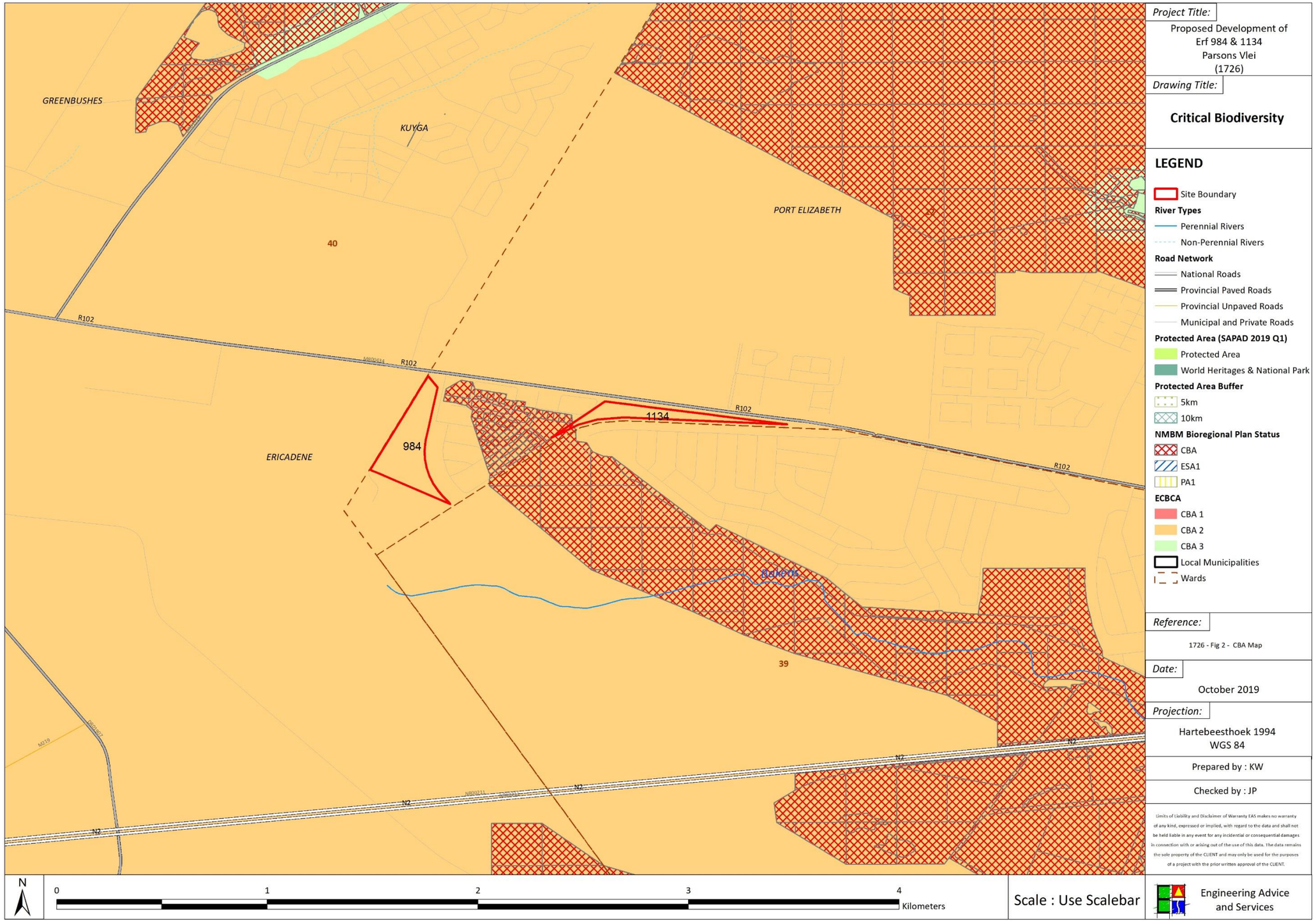


Figure 3: Critical Biodiversity Areas, as per Eastern Cape Biodiversity Conservation Plan (ECBCP, 2007).

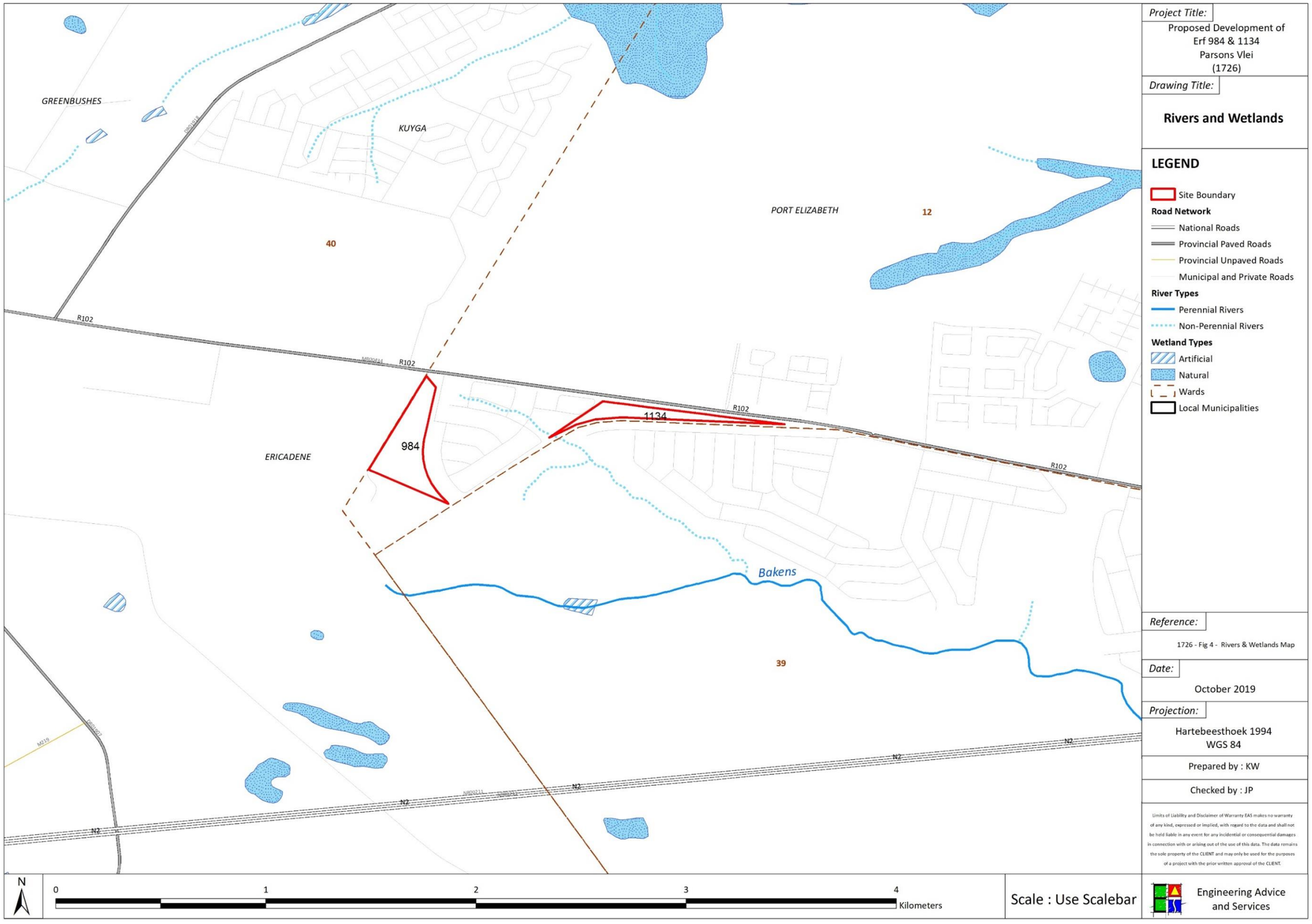


Figure 4: Rivers and Wetlands

Figure 5: Aerial photo of Erf 984

Figure 6: Aerial photo of Erf 1134

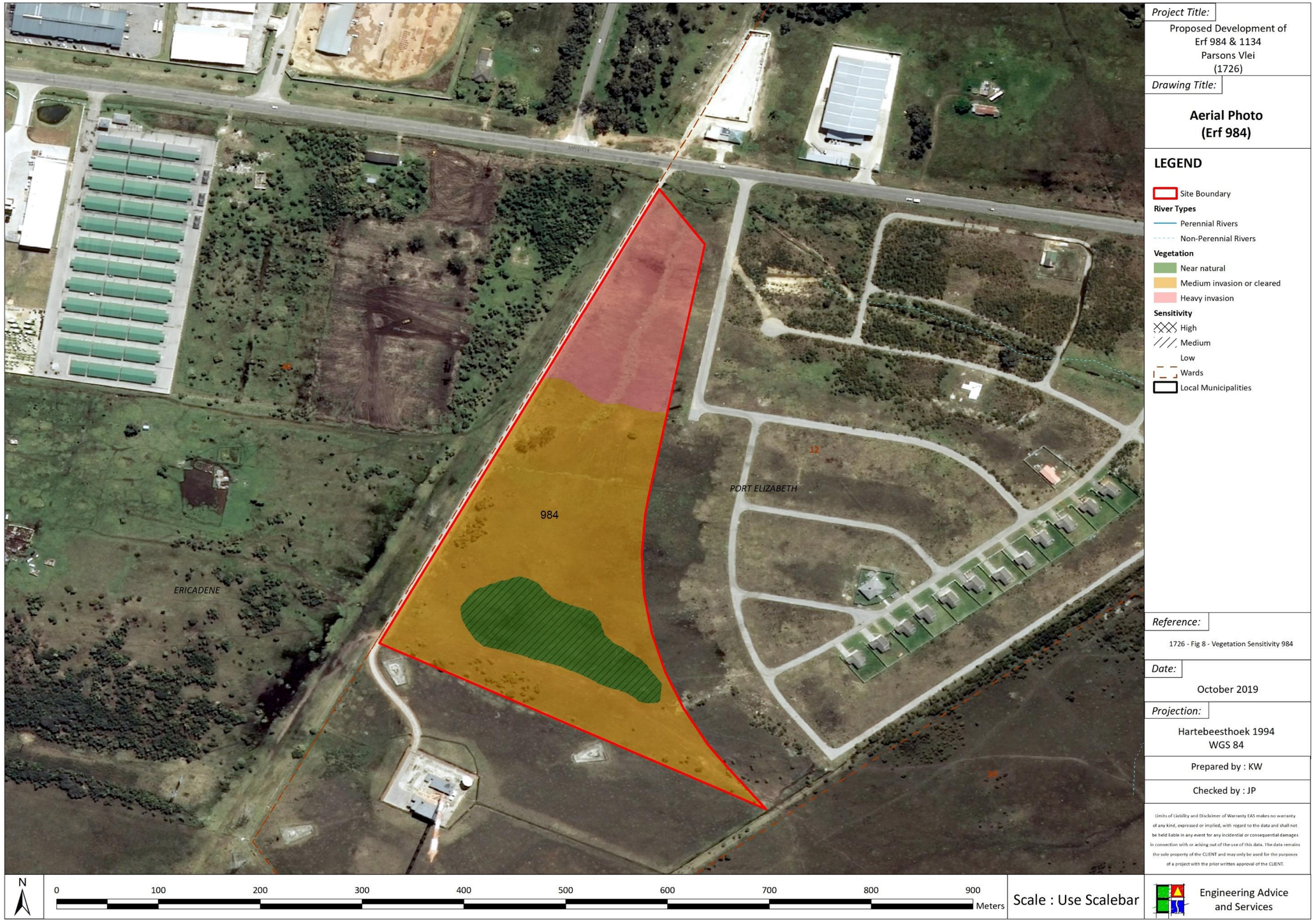


Figure 7: Vegetation sensitivity map of Erf 984

Figure 8: Vegetation sensitivity map of Erf 1134

2 Description of the Terrestrial Environment

2.1 Site Locality

Erf 984 and 1134 sites are vacant land portions, situated along Old Cape Road in Parsons Vlei, both erven are surrounded by land currently being developed to the north, east and west. The area to the south is currently undeveloped.

2.2 Topography and Drainage

The land is fairly level in a basin shape which does result in a perched water table in places, with wetland or pan characteristics. Some rocky outcrops are present which act as fire refugia, and can be habitat to certain specialised 'fire sensitive' species not generally found in the surrounding grassy fynbos matrix.

2.3 Vegetation and Flora

A preliminary mapping of the vegetation and provisional sensitivity is provided in Figure 7 and Figure 8. One vegetation unit is indicated to be represented within the general area that will be affected by the proposed development. The vegetation unit is described in different sources as being Algoa Sandstone Fynbos (Vegetation of Southern Africa 2012). Whilst the vegetation units are described as flat to slightly undulating plain supporting grassy shrubland (mainly graminoid fynbos). Grasses become dominant especially in wet habitats. Acacia saligna (Port Jackson Willow) was scattered throughout the site at varying densities from low to dense. Other sporadic species in the area include Hakea sericea. Currently large portions of the site are heavily invaded by Port Jackson Willow, which has had long term impacts, despite ongoing clearing, on the vegetation. Areas of grassy fynbos where invasion has been dense have been transformed to a secondary grassy vegetation, without the distinct fynbos characteristics. If the sites are left in their current state without any rehabilitation measures, further invasion by alien species would occur leading to further degradation of the sites. If ongoing maintenance and monitoring of alien vegetation occur on the sites the natural vegetation could return over time.

Erf 984

Erf 984

Erf 984

Erf 984

Erf 1134

Erf 1134

Erf 1134

Erf 1134

Erf 984 can be described an open erf having large portions of the site that are heavily invaded by Port Jackson Willow, which has had long term impacts, despite ongoing clearing, on the vegetation and its biodiversity. Areas of grassy fynbos where invasion has been dense have been transformed to a secondary grassy vegetation, without the distinct fynbos characteristics. There is a pocket within the site that has degraded semi-intact natural vegetation with more distinctive fynbos species which are characteristic of Algoa Sandstone Fynbos, however if left in its current state, informal cattle grazing and alien vegetation will likely cause further deterioration of the small semi-intact pocket of natural vegetation. Compared to the more intact vegetation found on surrounding erven this small pocket which was identified is significantly degraded. The likelihood of finding any species of special concern within the site is moderate to low. The site also potentially provides habitat to small animals such as tortoises, mongoose and small reptiles, mostly transient from surrounding areas.

Erf 1134 is a narrow erf with Old Cape Rd to the north and a residential development to the south. The erf is not totally fragmented from open space with a small section to the southwest falling with an ecological corridor, and is thus classified as a CBA according to the NMBMBP. It is recommended that this small section is left as open space and not developed in order to retain the ecological corridor and watercourse buffer. The vegetation on site has low biodiversity, predominantly covered in grassy vegetation and scattered alien vegetation. There was clear evidence of recent alien vegetation clearing on the site during the site visit. No pockets of vegetation clearly representing Algoa Sandstone Fynbos were evident due to the degradation of the site in the past either from disturbance or alien vegetation. The likelihood of finding any flora species of special concern within the site is low.

It is recommended that a flora and fauna search and rescue is conducted by suitably qualified specialists before any construction commences in order to mitigate loss of any species of special concern, should they occur.

2.3.1 Flora

A flora species list for the vegetation unit is provided in Appendix D. Due to limited sampling time, presence or absence of all species cannot be confirmed without detailed seasonal site visits during different seasons.

2.3.2 Species of Special Concern occurring in the region

Table 2 provides a preliminary list of species protected in term of the PNCO and NFA as well as the sensitive species listed by the DEA Screening Tool that could be present within the site, for which permits will be required should they occur and require removal.

Table 2: Flora Species of Special Concern known to occur in the vicinity of the site.

Botanical Name	Family	Status	Growth Form	Presence
Agathosma gonaquensis	RUTACEAE	End, PNCO	Low Shrubs	Not Recorded
Agathosma hirta	RUTACEAE	PNCO	Low Shrubs	Not Recorded
Agathosma ovata	RUTACEAE	PNCO	Low Shrubs	Not Recorded
Agathosma stenopetala	RUTACEAE	End, PNCO		Not Recorded
Argyrolobium crassifolium	FABACEAE		Low Shrubs	Not Recorded
Aristea nana	IRIDACEAE	PNCO	Low Shrubs	Not Recorded
Aspalathus recurvispina	FABACEAE		Low Shrubs	Not Recorded
Bobartia macrocarpa	IRIDACEAE	PNCO	Geophytic Herb	Present
Caputia scaposa var. addoensis	ASTERACEAE	End	Low Succulent	Not Recorded
Centella tridentata var. hermanniifolia	APIACEAE		Low Shrubs	Not Recorded
Corpuscularia lehmannii	AIZOACEAE		Succulent	Not Recorded
Disperis woodii	ORCHIDACEAE	PNCO	Geophytic Herb	Not Recorded
Ellisochloa papposa	POACEAE		Graminoid	Not Recorded
Erica chloroloma	ERICACEAE	PNCO	Low Shrubs	Not Recorded
Erica etheliae	ERICACEAE	End, PNCO	Low Shrubs	Not Recorded
Erica glumiflora	ERICACEAE	PNCO	Low Shrubs	Not Recorded
Erica zeyheriana	ERICACEAE	PNCO	Low Shrubs	Not Recorded
Gymnosporia elliptica	CELASTRACEAE	End	Low Shrubs	Not Recorded
Holothrix longicornu	ORCHIDACEAE	End, PNCO	Geophytic Herb	Not Recorded
Ischyrolepis capensis	RESTIONACEAE	PNCO	Graminoids	Present
Leucadendron salignum	PROTEACEAE	PNCO	Low Shrubs	Present
Leucadendron spissifolium subsp. phillipsii	PROTEACEAE	PNCO	Low Shrubs	Not Recorded
Leucospermum cuneiforme	PROTEACEAE	PNCO	Low Shrubs	Present
Lotononis acuminata	FABACEAE		Legume	Not Recorded
Protea cynaroides	PROTEACEAE	PNCO	Low Shrubs	Not Recorded
Protea eximia	PROTEACEAE	PNCO	Tall Shrubs	Not Recorded
Protea foliosa	PROTEACEAE	PNCO	Low Shrubs	Not Recorded
Protea neriifolia	PROTEACEAE	PNCO	Tall Shrubs	Not Recorded
Protea repens	PROTEACEAE	PNCO	Tall Shrubs	Not Recorded
Rapanea gilliana	MYRSINACEAE		Small tree	Not Recorded
Selago rotundifolia	SCROPHULARIACEAE	PNCO	Low Shrubs	Not Recorded
Sensitive species 1252				Not Recorded
Sensitive species 448				Not Recorded
Sensitive species 588				Not Recorded
Sensitive species 654				Not Recorded
Sensitive species 657				Not Recorded

Botanical Name	Family	Status	Growth Form	Presence
Sensitive species 670				Not Recorded
Sensitive species 991				Not Recorded
Thamnochortus cinereus	RESTIONACEAE	PNCO	Graminoids	Not Recorded

**PNCO – Provincial Nature Conservation Ordinance (19 of 1974); NFA – National Forests Act; End – Endemic.

Due to limited sampling time, presence or absence of all species cannot be confirmed without detailed seasonal site visits. Furthermore, due to the limited footprint of the site, located in predominantly disturbed areas, the risk of any Critically Endangered or Endangered species being present is Low to Moderate. A detailed species list of any species that could potentially occur on the site is attached as Appendix D.

The plant Species of Special Concern listed above require permits if any individuals are to be removed, translocated or pruned according to the relevant legislation including the National Forests Act (NFA) and the Provincial Nature Conservation Ordinance (PNCO):

- Permits from the relevant authority (Department of Economic Development, Environmental Affairs and Tourism) are required for the removal, translocation or destruction of all plants listed as protected; and all faunal species, in terms of the Provincial Nature and Conservation Ordinance (No. 19 of 1974). ***A number of protected species were present on Erf 984 within the proposed development footprint; however, none were identified on Erf 1134. It is recommended that permits from the relevant department are obtained, and a rapid flora Search and Rescue is conducted by a botanical/horticultural specialist before construction commences.***
- No permits from the relevant authority (The Department of Forestry, Fisheries and the Environment (DFFE)) are required for the damage, destruction or removal of all trees listed as protected in terms of the National Forests Act (1998). **No trees protected in terms of the National Forest Act (NFA) were present on site.**

2.3.3 Alien Invasive species

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 river banks and wetlands.

A list of species and their respective NEMBA status occurring within the vicinity of the site is provided in Table 3. A number of serious and problematic invasives were noted to be present in the disturbed areas around the outer edges of the site, adjacent to existing developed areas.

Table 3: Alien Invasive plants and common weeds present and respective NEMBA classifications.

Botanical Name	Common name	Family	Status*	Extent
Acacia mearnsii	Black Wattle	Fabaceae	NEMBA, Cat 2	Scattered Clumps to dense patches
Acacia saligna	Port Jackson Willow	Fabaceae	NEMBA, Cat 1b	Scattered Clumps to dense patches
Hakea sericea	Silky Hakea	Proteaceae	NEMBA, Cat 1b	Few

* **NEMBA:** Alien and Invasive Species as per National Environmental Management: Biodiversity Act (10 of 2004; NEMBA): Draft Alien and Invasive Species Lists (GN R598 and GN R599 of 2014 (category 1, 2 or 3).

2.4 Fauna

The habitats and microhabitats present on the project sites are not unique and are widespread in the general area, hence the local impact associated with the footprint would be of low significance if mitigation measures are adhered to. The sites are unlikely to provide significant faunal habitat due to the surrounding developments and human activities.

Mammals

Several mammal species are likely to be found in the wider area and may be transient to the sites. Should they be present, they are likely to be mobile species that would move away from disturbance and with intact habitat available in the immediate surrounds would unlikely be negatively affected by the development of the two sites.

Small mammals within the habitat are generally mobile and likely to be transient to the area. They will most likely vacate the area once construction commences. As with all construction sites there is a latent risk that there will be some accidental mortalities. 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 however a rapid faunal search and rescue may be required in order to relocate any slow moving animals such as tortoises which were observed during the site visit.

Mammals identified in the DEA Screening tool as having a medium sensitivity include the *Chlorotalpa duthieae* (Duthies Golden Mole). This species was not identified on site and is unlikely to occur due to the underlying rocky substrate and shallow soils.

Avifauna and Bats

The overall impacts of the development on birds and bats, other than displacement during site clearing, is likely to be of low to moderate significance, since there is extensive intact habitat available in the wider area. The proposed activity is unlikely to pose any significant risk to bats.

Aves identified in the DEA screening tool as having a high sensitivity which may occur within the site include *Circus maurus* (Black harrier), *Bradypterus sylvaticus* (Knysna scrub warbler)*, Campethera notata* (Knysna woodpecker)*, Neotis denhami* (Denham's Bustard)*, Tyto capensis* (African grass owl) *and Circus ranivorus* (African marsh harrier). None of these species were observed on site during the site assessment nor are likely to be significantly affected by the proposed development of the site.

Reptiles

Reptiles such as lizards are less mobile compared to mammals, and some mortalities could arise. It is recommended that a faunal search and rescue be undertaken before clearing commences. Should any reptiles be found during construction, a reptile handler should also be on called.

Reptiles identified in the DEA Screening tool as having a medium sensitivity include the *Tetradactylus fitzsimonsi* (Eastern Long-tailed Seps). This species was not observed on site during the site assessment.

Amphibians

No amphibians are likely to be present that will be significantly affected, as the habitat that will be directly affected is generally not suitable to be habitat of amphibians.

Invertebrates

Invertebrate species noted to have an elevated conservation status are unlikely to be present within the site. Baboon Spiders and Scorpions are likely present and should form part of the faunal search and rescue, being ToPS protected.

Invertebrates identified in the DEA Screening tool as having a medium sensitivity include the *Aneuryphymus montanus* (Yellow-winged Agile Grasshopper). This species was not observed on site during the site assessment.

A faunal search and rescue by a qualified reptile handler is recommended before commencement in order to capture and relocate any transient reptiles and small mammals that may be on the site during the site clearing period.

2.4.1 Permit Requirements

Permits from the relevant authority (Department of Economic Development, Environmental Affairs and Tourism) are required for the removal, translocation or destruction of protected faunal or flora species, in terms of the Provincial Nature and Environment Conservation Ordinance (No. 19 of 1974).

3 Impact Assessment

3.1 Assessment of the significance of the potential impacts

3.1.1 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).
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	• *(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.

3.1.2 Significance Rating

		Duration				
		Permanent	**Long term**	**Medium term**	**Short term**	**Very short term**
	High Intensity					
Extent	**National**	High	High	High	High	Medium
	Regional	High	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	Medium
	Local	Medium	Medium	Medium	Medium	Low
	Site specific	Medium	Medium	Medium	Low	Low

Furthermore, the following must be considered:

1) Impacts should be described both before and after the proposed mitigation and management measures have been implemented.
2) All impacts should be evaluated for both the construction, operation and decommissioning phases of the project, where relevant.
3) The impact evaluation should take into consideration the cumulative effects associated with this and other facilities which are either developed or in the process of being developed in the region, if relevant.
4) Management actions: Where negative impacts are identified, specialists must specify practical mitigation objectives (i.e. ways of avoiding or reducing negative impacts). Where no mitigation is feasible, this should be stated and the reasons given. Where positive impacts are identified, management actions to enhance the benefit must also be recommended.

3.2 Identification of potential impacts

3.2.1 Possible impacts on biodiversity during construction and operations

Construction and operations can result in a range of negative impacts on terrestrial, marine and other aquatic ecosystems if not properly managed. Table 4 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 are summarised in Table 4, where **SB** = Significance BEFORE mitigation and **SA** = Significance AFTER mitigation. No significant ancillary linear infrastructure, such as roads, conveyors, power lines, pipelines and railways, which can impact on biodiversity and ecosystem services are expected other than minor access roads.

3.2.2 Summary of actions, activities, or processes that have sufficiently significant impacts to require mitigation

The main impacts as a result of the proposed activity include the following:

1. Permanent or temporary loss of vegetation cover as a result of site clearing. Site clearing before construction will result in the blanket clearing of vegetation within the affected footprint.
2. Loss of species of special concern during pre-construction site clearing activities. Numerous species of special concern are present within the affected area, which will be destroyed during site preparation.
3. Susceptibility of some areas to erosion as a result 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.
4. Susceptibility of post construction disturbed areas to invasion by exotic and alien species. 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.
5. Disturbances to ecological processes. Activity may result in disturbances to ecological processes.
6. Loss of Faunal Habitat: Activity will result in the loss of habitat for faunal species.
7. Loss of faunal SSC due to construction activities: Activities associated with bush clearing, killing of perceived dangerous fauna, may lead to increased mortalities among faunal species.

3.2.3 Potential cumulative impacts

No potential cumulative impacts are expected as a result of the proposed development of the site, due to the disturbed state of the sites.

Table 4: Summary indicating significance of potential impacts (**SB = Significance BEFORE Mitigation; SA = Significance AFTER Mitigation**)

Impact	Comment	Extent	Duration	Intensity	Probability	SB	SA
Vegetation	Permanent or temporary loss of vegetation cover as a result of site clearing	Site	Long	High	Definite	Moderate (-ve)	Low (-ve)
Flora	Loss of species of special concern during pre-construction site clearing activities	Site	Long	High	Definite	Moderate (-ve)	Low (-ve)
Alien species	Susceptibility of post construction disturbed areas to invasion by exotic and alien species	Site	Med	Moderate	Probable	High (-ve)	Low (-ve)
Erosion	Susceptibility of some areas to erosion as a result of construction related disturbances	Site	Med	Low	Probable	Moderate (-ve)	Low (-ve)
Ecological Processes	Disturbances to ecological processes	Site	Short	Moderate	Probable	Moderate (-ve)	Low (-ve)
Faunal Habitat	Activity will result in the loss of habitat for faunal species	Site	Long	High	Definite	High (-ve)	Moderate (-ve)
Faunal Species	Activities associated with bush clearing and ploughing, killing of perceived dangerous fauna, may lead to increased mortalities among faunal species	Site	Long	Moderate	Probable	Moderate (-ve)	Low (-ve)
OVERALL						**Moderate (-ve)**	**Low (-ve)**

3.3 Mitigation and Management

The following mitigation measures are recommended:

Impact	Mitigation Measures
Vegetation	Blanket clearing of vegetation must be limited to the development footprint, and the area to be cleared must be demarcated before any clearing commences. No clearing outside of planting area and infrastructure to take place. Final siting of footprints should be undertaken in consultation with respective specialists, including a botanist. All recommended open space areas, specifically within Erf 1134 need to be clearly demarcated as "No Go" areas during construction.
Flora	Respective permits must be obtained timeously (1 – 2 months) before bush clearing commences and a flora search and rescue plan must be implemented. Rescued plants should be replanted into a nearby disturbed area of similar habitat. Permits from DEDEAT must be kept on site and in the possession of the flora search and rescue team at all times. Once flora search and rescue is complete, a certificate of clearance must be issued by the botanist and copies supplied to DEDEAT
Alien species	Alien trees must be removed from the site as per NEMBA requirements. A suitable weed management strategy to be implemented in construction and operation phases. After clearing is completed, an appropriate cover crop should be planted where any weeds or exotic species are removed from disturbed areas, should construction not commence immediately.
Erosion	Suitable measures must be implemented in areas that are susceptible to erosion, including but not limited to gabions and runoff diversion berms (if necessary). Areas must be rehabilitated and a suitable cover crop planted once construction is completed. If orchard establishment does not occur soon after preparation of the site, a suitable cover crop to be established as a temporary measure.
Ecological Processes	Blanket clearing of vegetation must be limited to the development footprint, and the area to be cleared must be demarcated before any clearing commences. No clearing outside of planting area and infrastructure to take place. Watercourse buffer (32 m) to be retained as "No Go" area along watercourse situated Southwest of Erf 1134.
Faunal Habitat	Blanket clearing of vegetation must be limited to the development footprint, and the area to be cleared must be demarcated before any clearing commences Watercourse buffer (32 m) to be retained as a "No Go" area along watercourse situated Southwest of Erf 1134.
Faunal Species	Permits from DEDEAT must be kept on site and in the possession of the fauna search and rescue team at all times. Faunal search and rescue to be undertaken before bush clearing by a competent person, especially for reptiles and amphibians. Once fauna search and rescue is complete, a certificate of clearance must be issued by the faunal specialist and copies supplied to DEDEAT.

3.4 Vegetation and Flora Clearing and Relocation Plan

The following flora relocation plan is recommended:

1. Once the final construction plan has been determined the botanist will be consulted in order to finalise the plant relocation and vegetation clearing plan.
2. Areas to be cleared of vegetation will be clearly demarcated before clearing commences.
3. Flora search and rescue is to be conducted before vegetation clearing takes place.
4. Plants to be rescued should include both species of special concern requiring removal for relocation as well as species that would be suitable for use in rehabilitation and that are amenable to transplanting.

5. Areas should only be stripped of vegetation as and when required and in particular once species of special concern have been relocated for that area.
6. Once site boundaries are demarcated, 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.
7. Depending on growth form this material should be appropriately removed from its locality and immediately relocated where it may be required elsewhere or into adjacent areas of similar habitat that will not be disturbed by construction.
8. Small trees and shrubs (<1 m in height), where possible will be rescued and planted temporarily in potting bags/nursery for later use.
9. Arboreal species (orchids), if identified, will be collected attached to the substrate (i.e. branch) they are growing on and stored (hung) in a moist, lightly shaded area for later relocation or relocated immediately into a similar environment.
10. Wherever possible, any seed-bearing material will be collected immediately and stored for later use, particularly species that occur in low numbers or those that will be well-suited for rehabilitation.
11. Protected plant species will be removed from the site prior to development taking place. A suitable timeframe must be allowed before construction commences (1 month) to undertake the plant rescue and relocation operation. Search and Rescue is best undertaken during Spring/Summer.
12. Should site construction occur in a phased manner, then clearing activities should take place also in a phased manner, ahead of construction work.
13. Rescued plants will be replanted directly into a suitable adjacent area, and will include some non-protected succulent species that will help support the protected species.
14. Succulent species can be temporarily stored for no more than 2 weeks in a suitable area before replanting. The contractor will be responsible for periodic watering of the replanted flora until such time as they become acclimatised and some rain occurs.

4 Conclusions

In summary, the site is located on the western outskirts of Nelson Mandela Bay, surrounded by an area that comprises of historical farms which have been subdivided into erven and small holdings for residential and mixed-use development, with low to moderate levels of transformation and some dense stands of alien infestation interspersed with pockets of intact and semi-intact vegetation (primarily Grassy Fynbos).

The vegetation type has a locally limited distribution within the western Algoa Bay basin and is highly transformed from urbanisation and other land transformation and is thus threatened. A few remnant patches are found scattered around Nelson Mandela Bay, limited to several erven and farm portions. These remnant pockets also serve as habitat for a number of species of conservation concern (flora and fauna).

The proposed development would result in the transformation of a small patch of semi-intact but significantly degraded natural vegetation of limited conservation value, which is significantly degraded in comparison to more intact vegetation representative of the vegetation unit occurring on surrounding erven. The majority of the site is densely invaded with alien tree species with minimal representation of indigenous vegetation. This would result in a negligible and insignificant cumulative loss of the vegetation types and the risk to any indigenous species of conservation concern is also low, due to the limited extent and degraded nature of the patch of intact vegetation, having only a few representative specimens of species typical to the vegetation unit and most being commonly occurring species (such as *Metalasia* sp.). There are several range-restricted species of conservation concern that are known to occur in the surrounding area and the vegetation types however, none were observed on site. The site assessment has physically screened no presence of

these species, and other possible species not identified in the screening tool. Other species including Geophytes may be present but cannot be confirmed due to limited seasonal sampling.

A "No Go" Area / Open Space zone should be retained on the Southwest corner of Erf 1134 in order to retain the ecological corridor of the watercourse. This area is also identified as a Critically Biodiversity Area according to the Nelson Mandela Bay Municipality Bioregional Plan. Due to this the area has a high sensitivity.

Under status quo conditions, it is likely that alien infestation will continue and progress and frequent fires would exacerbate. Removal of alien species from the site are also likely to reduce the spread of seeds into the surrounding area in the long term, which will have a positive impact.

Due to the limited size of the two sites, risks to faunal species are likely to be low.

- It is likely that the mammal species identified to be of conservation concern would likely be transient visitors. A search and rescue should be conducted before commencement to relocate any small mammals into a nearby area of similar suitable habitat.
- Reptile species, although unconfirmed, may be present, but are also likely transient and confined to the intact Grassy Fynbos. A search and rescue should be conducted before commencement to relocate any reptiles into a nearby area of similar suitable habitat.
- Amphibians are likely to be restricted to the wetlands which are artificial dams and thus not natural systems. A search and rescue should be conducted before commencement to relocate any amphibians into a nearby area of similar suitable habitat.
- Bird species listed as being of conservation concern are potentially present as transient visitors (i.e., flying over, nesting or foraging) and thus the proposed activity is unlikely to pose any significant risk. Bird species may be temporarily displaced during construction, because of the development but will adapt accordingly and similar suitable habitat is present in the surrounding landscape.

A small corner to the Southwest of Erf 1134 is however designated as being a Critical Biodiversity Area in terms of the Nelson Mandela Bay Metropolitan Bioregional Plan.

4.1 Summary of Findings

- Low sensitivity areas include areas with dense or moderate alien invasion which has been recently cleared.
- Moderate sensitivity areas include a small pocket with degraded semi-intact / near natural areas, of limited conservation value.
- High sensitivity areas are areas that surround water courses which are classified as Critical Biodiversity Areas and form part of the natural ecological corridors which should be retained according to the Nelson Mandela Bay Metropolitan Bioregional Plan.
- No go areas include the Southwest corner of Erf 1134 which is required to be retained in order to preserve the ecological corridors which are classified as Critical Biodiversity Areas according to the Nelson Mandela Bay Metropolitan Bioregional Plan.
- The overall impact on terrestrial biodiversity before mitigation measure are implemented is classified as moderate negative due to the sensitivity of the site - Critically Endangered vegetation type (Algoa Sandstone Fynbos)
- If all mitigation measures are implemented and a sound EMPr is compiled and adhered to the overall impact that the development will have on terrestrial biodiversity will be low negative.

4.2 Recommendations

Erf 984

- It is the conclusion of this terrestrial biodiversity and species assessment that the proposed clearing of vegetation on the full site **will not** have a significant impact on conservation of the vegetation unit and loss of habitat for species of conservation concern. The overall impact is limited by the size of the sites, which constitutes a small overall proportion of the vegetation unit and distribution range of respective species both with an elevated conservation status.
- If the small semi-intact pocket of natural vegetation is left in its current state, informal cattle grazing and alien vegetation will likely cause further deterioration. The semi-intact pocket of vegetation within Erf 984 is significantly degraded in comparison to the more intact vegetation found on surrounding erven and is **not worthy** of conservation and delineating as a "No Go Area".
- The implementation of additional management actions relating to flora and fauna (including a pre-clearing fauna and flora search and rescue), as well as post-construction rehabilitation of any temporarily disturbed areas could reduce biodiversity impacts.

Erf 1134

- An approach that balances development of a portion of the site with retention of natural areas has been implemented as a result of the "No Go Area" on Erf 1134 to maximise conservation and ecological connectivity, despite the fact the area is moderately-densely invaded with alien invasive species.
- The area identified is classified with a high sensitivity within Figure 8 because a small section to the southwest falls within an ecological corridor, and is thus classified as a CBA according to the NMBMBP.
- A comprehensive rehabilitation plan (including alien management plan) and Environmental Management Programme (EMPr) is to be implemented.
- The implementation of additional management actions relating to flora and fauna (including a pre-clearing fauna and flora search and rescue), as well as post-construction rehabilitation of any temporarily disturbed areas could reduce biodiversity impacts.

5 Appendix A: Environmental Management Programme

This Environmental Management Programme (EMPr) contains guidelines, operating procedures and rehabilitation control requirements, which will be binding on the holder of the environmental authorisation after approval of the EMPr.

The impacts identified and listed in Table 1 of the previous chapter will be managed / controlled as set out under mitigating measures and as detailed in this part for the more significant impacts during the operational phase.

5.1 Biodiversity Requirements

Protection of Flora and Fauna

- Search and rescue operations for Red List Species ***must*** be undertaken before the commencement of site clearing activities.
- Indigenous vegetation encountered on the sites are to be conserved and left intact as far as possible.
- 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 land owner 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.
- 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 my 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.
- Rehabilitation of vegetation of the site ***must*** be done as described in the Rehabilitation Plans.

Fires

- 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 land owners/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.

Soil Aspects

- 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.

Dust

- 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.

5.1.1 Infrastructural Requirements

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 are 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 are 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.

5.1.2 Final Rehabilitation

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 visibility of the development, revegetation of the 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 separately during construction. The topsoil and subsoil removed from the initial cut will be 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.

Botanical name	Common name
Aristida diffusa	Iron grass
Ehrharta calycina	Common veld grass
Melica decumbens	Staggers grass

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 works are complete 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

5.1.3 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.

5.1.4 Closure objectives and their extent of alignment to the pre-construction environment

Closure Objectives

The closure of the site will involve removal of all debris and rehabilitation of areas not rehabilitated during the operational phases of the project. This will comprise the scarification of compacted areas, reshaping of areas, topsoiling and regenerating all prepared surfaces.

6 Appendix B: References

- Acocks, J. P. H. 1988. *Veld Types of South Africa*. Memoirs of the Botanical Survey of South Africa, No 57. Botanical Research Institute, Department of Agriculture and Water Supply, South Africa.
- Batten, H., and Bokelmann, H. 2001. *Eastern Cape: South African Wild Flower Guide 11*. The Botanical Society of South Africa. pp 306.
- Berliner D. & Desmet P. 2007. *Eastern Cape Biodiversity Conservation Plan: Technical Report.* Department of Water Affairs and Forestry Project No 2005-012, Pretoria. 1 August 2007
- Bromilow, C. 2001. *Problem Plants of South Africa*. A Guide to the Identification and Control of More than 300 Invasive Plants and Other Weeds. Briza Publications. pp 258
- Bruton, M. N., and Gess, F. W. 1988. *Towards and Environmental Plan for the Eastern Cape*. Conference proceedings from Rhodes University. Grocott and Sherry, Grahamstown.
- Coastal and Environmental Services. 1997. Strategic Environmental Assessment of the Coega IDZ: Terrestrial Ecology Specialist Report. Coastal and Environmental Services, Grahamstown.
- Fuggle, R. F. and Rabie, M. A. 2003. *Environmental Management in South Africa*. Juta & Co, Johannesburg.
- Gledhill, E. 1981. *Veldblomme van Oos-Kaapland*. The Department of Nature and Environmental Conservation of the Cape Province Administration. Galvin and Sales, Cape Town.
- Golding, J. (Ed.) 2002. *Southern African Plant Red Data Lists*. Southern African Botanical Diversity Network Report No 14.
- Henderson, L. 2001. *Alien Weeds and Invasive Plants*. Plant Protection Research Institute Handbook No 12. Agricultural Research Council. pp 300.
- Hilton-Taylor, C. 1996. *Red Data List of Southern African Plants*. National Botanical Institute..
- Köpke, D. 1988. *The Climate of the Eastern Cape*. In: Bruton, M. N., and Gess, F. W. (Eds). Towards and Environmental Plan for the Eastern Cape. Conference proceedings from Rhodes University. Grocott and Sherry, Grahamstown.
- Low, A. B., and Rebelo, A. 1988. *Vegetation of South Africa, Lesotho and Swaziland. A Companion to the Vegetation Map of South Africa, Lesotho and Swaziland*. Department of Environmental Affairs and Tourism, Pretoria.
- Pienaar, K. 2000. *The South African What Flower is That*? Struik Publishers (Pty) Ltd. Cape Town.
- Rouget, M., Reyers, B., Jonas, Z., Desmet, P., Driver, A., Maze, K., Egoh, B. & Cowling, R.M. 2004. *South African National Spatial Biodiversity Assessment 2004: Technical Report. Volume 1: Terrestrial Component.* Pretoria: South African National Biodiversity Institute.
- Stirton, C. H. 1987. *Plant Invaders: Beautiful, but Dangerous*. The Department of Nature and Environmental Conservation of the Cape Province Administration. Galvin and Sales, Cape Town.
- Vlok, J.H. and Euston-Brown, D. 2002. The Patterns within, and the Ecological Processes that sustain, the Subtropical Thicket vegetation in the planning domain for the Subtropical Thicket Ecosystem Planning (STEP) Project. Terrestrial Ecology Research Unit, University of Port Elizabeth. Report 40.
- Weather Bureau. 1988. Climate of South Africa - Climate statistics up to 1984 (WB40). Government Printer, Pretoria.

7 Appendix C: Photographic Record of the site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-33,93325, 25,44326, 233,8m, 272°
10/04/2019 14:02:15


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-33,93325, 25,44319, 234,8m, 89°
10/04/2019 14:01:59


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-33,93212, 25,45059, 231,2m, 40°
10/04/2019 14:47:58


-33,93213, 25,45061, 230,4m, 295°
10/04/2019 14:47:54


-33,9323, 25,45116, 222,6m, 212°
10/04/2019 14:47:10


-33,93226, 25,45195, 224,2m, 290°
10/04/2019 14:46:15


-33,93221, 25,45202, 225,6m, 128°
10/04/2019 14:45:47


-33,93221, 25,4519, 231,3m, 62°
10/04/2019 14:45:11


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8 Appendix D: Flora and Fauna Species List

FLORA				
Botanical Name	**Family Name**	**Status***	**Pres/Abs**	**Growth Form**
Agathosma gonaquensis	RUTACEAE	End, PNCO		Low Shrubs
Agathosma hirta	RUTACEAE	PNCO		Low Shrubs
Agathosma ovata	RUTACEAE	PNCO		Low Shrubs
Andropogon eucomus	POACEAE			Graminoids
Brachiaria serrata	POACEAE			Graminoids
Crassula pellucida subsp. marginalis	CRASSULACEAE			Succulent Herb
Cyclopia pubescens	FABACEAE	End,		Low Shrubs
Cymbopogon pospischilii	POACEAE			Graminoids
Cynodon dactylon	POACEAE			Graminoids
Digitaria eriantha	POACEAE			Graminoids
Ehrharta calycina	POACEAE			Graminoids
Erica etheliae	ERICACEAE	End, PNCO		Low Shrubs
Erica zeyheriana	ERICACEAE	PNCO		Low Shrubs
Euryops ericifolius	ASTERACEAE			Low Shrubs
Eustachys paspaloides	POACEAE			Graminoids
Helichrysum appendiculatum	ASTERACEAE			Low Shrubs
Helichrysum teretifolium	ASTERACEAE			Low Shrubs
Holothrix longicornu	ORCHIDACEAE	End, PNCO		Geophytic Herb
Ischyrolepis capensis	RESTIONACEAE	PNCO		Graminoids
Leucadendron salignum	PROTEACEAE	PNCO		Low Shrubs
Leucadendron spissifolium subsp. phillipsii	PROTEACEAE	PNCO		Low Shrubs
Leucospermum cuneiforme	PROTEACEAE	PNCO		Low Shrubs
Pentaschistis heptamera	POACEAE			Graminoids
Pentaschistis pallida	POACEAE			Graminoids
Protea cynaroides	PROTEACEAE	PNCO		Low Shrubs
Protea eximia	PROTEACEAE	PNCO		Tall Shrubs
Protea foliosa	PROTEACEAE	PNCO		Low Shrubs
Protea neriifolia	PROTEACEAE	PNCO		Tall Shrubs
Protea repens	PROTEACEAE	PNCO		Tall Shrubs
Tephrosia capensis	FABACEAE			Low Shrubs
Thamnochortus cinereus	RESTIONACEAE	PNCO		Graminoids
Themeda triandra	POACEAE			Graminoids
Tristachya leucothrix	POACEAE			Graminoids
Sensitive species 1252				
Argyrolobium crassifolium	FABACEAE			Low Shrubs
Aspalathus recurvispina	FABACEAE			Low Shrubs
Sensitive species 991				
Lotononis acuminata	FABACEAE			Legume
Selago rotundifolia	SCROPHULARIACEAE	PNCO		Low Shrubs
Erica chloroloma	ERICACEAE	PNCO		Low Shrubs
Gymnosporia elliptica	CELASTRACEAE	End		Low Shrubs
Sensitive species 588				
Sensitive species 657				
Sensitive species 670				
Centella tridentata var. hermanniifolia	APIACEAE			Low Shrubs
Rapanea gilliana	MYRSINACEAE			Small tree
Agathosma stenopetala	RUTACEAE	End, PNCO		

Corpuscularia lehmannii	AIZOACEAE			Succulent
Ellisochloa papposa	POACEAE			Graminoid
Caputia scaposa var. addoensis	ASTERACEAE	End		Low Succulent
Aristea nana	IRIDACEAE	PNCO		Low Shrubs
Sensitive species 448				
Bobartia macrocarpa	IRIDACEAE	PNCO		Geophytic Herb
Erica glumiflora	ERICACEAE	PNCO		Low Shrubs
Sensitive species 654				
Disperis woodii	ORCHIDACEAE	PNCO		Geophytic Herb

*PNCO – Provincial Nature Conservation Ordinance (19 of 1974); NFA – National Forests Act; End - Endemic

FAUNA			
Scientific Name	**Family**	**Status**	**Common Name**
Mammals			
Antidorcas marsupialis	BOVIDAE	Least Concern (2016)	Springbok
Philantomba monticola	BOVIDAE	Vulnerable (2016)	Blue Duiker
Raphicerus melanotis	BOVIDAE	Least Concern (2016)	Cape Grysbok
Tragelaphus scriptus	BOVIDAE	Least Concern	Bushbuck
Chlorocebus pygerythrus	CERCOPITHECIDAE	Least Concern (2016)	Vervet Monkey
Equus zebra zebra	EQUIDAE	Least Concern (2016)	Cape Mountain Zebra
Cynictis penicillata	HERPESTIDAE	Least Concern (2016)	Yellow Mongoose
Herpestes pulverulentus	HERPESTIDAE	Least Concern (2016)	Cape Gray Mongoose
Lepus saxatilis	LEPORIDAE	Least Concern	Scrub Hare
Desmodillus auricularis	MURIDAE	Least Concern (2016)	Cape Short-tailed Gerbil
Mastomys natalensis	MURIDAE	Least Concern (2016)	Natal Mastomys
Mus (Nannomys) minutoides	MURIDAE	Least Concern	Southern African Pygmy Mouse
Otomys irroratus	MURIDAE	Least Concern (2016)	Southern African Vlei Rat
Otomys saundersiae	MURIDAE	Least Concern	Saunders' Vlei Rat
Otomys unisulcatus	MURIDAE	Least Concern (2016)	Karoo Bush Rat
Rattus rattus	MURIDAE	Least Concern	Roof Rat
Rhabdomys pumilio	MURIDAE	Least Concern (2016)	Xeric Four-striped Grass Rat
Mellivora capensis	MUSTELIDAE	Least Concern (2016)	Honey Badger
Procavia capensis	PROCAVIIDAE	Least Concern (2016)	Cape Rock Hyrax
Myosorex varius	SORICIDAE	Least Concern (2016)	Forest Shrew
Chlorotalpa duthieae	CHRYSOCHLORIDAE	Vulnerable	Duthies Golden Mole
REPTILES			
Agama atra	AGAMIDAE	Least Concern	Southern Rock Agama
Bradypodion taeniabronchum	CHAMAELEONIDAE	Endangered	Elandsberg Dwarf Chameleon
Bradypodion ventrale	CHAMAELEONIDAE	Least Concern	Eastern Cape Dwarf Chameleon
Dasypeltis scabra	COLUBRIDAE	Least Concern	Rhombic Egg-eater
Dispholidus typus typus	COLUBRIDAE	Least Concern	Boomslang
Philothamnus hoplogaster	COLUBRIDAE	Least Concern	South Eastern Green Snake
Chamaesaura anguina anguina	CORDYLIDAE	Least Concern	Cape Grass Lizard
Cordylus cordylus	CORDYLIDAE	Least Concern	Cape Girdled Lizard
Pseudocordylus microlepidotus microlepidotus	CORDYLIDAE	Least Concern	Cape Crag Lizard

Pseudocordylus microlepidotus subsp. ?	CORDYLIDAE		Cape Crag Lizard (subsp. ?)
Hemachatus haemachatus	ELAPIDAE	Least Concern	Rinkhals
Hemidactylus mabouia	GEKKONIDAE	Least Concern	Common Tropical House Gecko
Pachydactylus maculatus	GEKKONIDAE	Least Concern	Spotted Gecko
Nucras lalandii	LACERTIDAE	Least Concern	Delalande's Sandveld Lizard
Tropidosaura gularis	LACERTIDAE	Least Concern	Cape Mountain Lizard
Boaedon capensis	LAMPROPHIIDAE	Least Concern	Brown House Snake
Duberria lutrix lutrix	LAMPROPHIIDAE	Least Concern	South African Slug-eater
Homoroselaps lacteus	LAMPROPHIIDAE	Least Concern	Spotted Harlequin Snake
Lamprophis aurora	LAMPROPHIIDAE	Least Concern	Aurora House Snake
Lamprophis fuscus	LAMPROPHIIDAE	Least Concern	Yellow-bellied House Snake
Lycodonomorphus inornatus	LAMPROPHIIDAE	Least Concern	Olive House Snake
Lycodonomorphus rufulus	LAMPROPHIIDAE	Least Concern	Brown Water Snake
Lycophidion capense capense	LAMPROPHIIDAE	Least Concern	Cape Wolf Snake
Psammophis notostictus	LAMPROPHIIDAE	Least Concern	Karoo Sand Snake
Psammophylax rhombeatus	LAMPROPHIIDAE	Least Concern	Spotted Grass Snake
Pseudaspis cana	LAMPROPHIIDAE	Least Concern	Mole Snake
Acontias orientalis	SCINCIDAE	Least Concern	Eastern Legless Skink
Scelotes anguineus	SCINCIDAE	Least Concern	Algoa Dwarf Burrowing Skink
Trachylepis varia sensu lato	SCINCIDAE	Least Concern	Common Variable Skink Complex
Chersina angulata	TESTUDINIDAE	Least Concern	Angulate Tortoise
Homopus areolatus	TESTUDINIDAE	Least Concern	Parrot-beaked Tortoise
Rhinotyphlops lalandei	TYPHLOPIDAE	Least Concern	Delalande's Beaked Blind Snake
Bitis arietans arietans	VIPERIDAE	Least Concern	Puff Adder
Tetradactylus fitzsimonsi	GERRHOSAURIDAE	Vulnerable	Eastern Long-tailed Seps
AMPHIBIANS			
Breviceps adspersus	BREVICEPITIDAE	Least Concern	Bushveld Rain Frog
Sclerophrys capensis	BUFONIDAE	Least Concern	Raucous Toad
Sclerophrys pardalis	BUFONIDAE	Least Concern	Eastern Leopard Toad
Hyperolius marmoratus	HYPEROLIIDAE	Least Concern	Painted Reed Frog
Hyperolius marmoratus verrucosus	HYPEROLIIDAE	Least Concern	Painted Reed Frog
Kassina senegalensis	HYPEROLIIDAE	Least Concern	Bubbling Kassina
Semnodactylus wealii	HYPEROLIIDAE	Least Concern	Rattling Frog
Phrynobatrachus natalensis	PHRYNOBATRACHIDAE	Least Concern	Snoring Puddle Frog
Xenopus laevis	PIPIDAE	Least Concern	Common Platanna
Cacosternum boettgeri	PYXICEPHALIDAE	Least Concern	Common Caco
Cacosternum nanum	PYXICEPHALIDAE	Least Concern	Bronze Caco
Pyxicephalus adspersus	PYXICEPHALIDAE	Near Threatened	Giant Bull Frog
Strongylopus fasciatus	PYXICEPHALIDAE	Least Concern	Striped Stream Frog
Strongylopus grayii	PYXICEPHALIDAE	Least Concern	Clicking Stream Frog
Tomopterna delalandii	PYXICEPHALIDAE	Least Concern	Cape Sand Frog

9 Appendix E: Terrestrial Biodiversity Protocol

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 of "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 following aspects:	
	2.3.1. a description of the ecological drivers or processes of the system and how the proposed development will 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 listed ecosystems as well as locally important habitat types identified; (c) ecological connectivity, habitat fragmentation, ecological processes and fine scale habitats; and (d) species, distribution, important habitats (e.g. feeding grounds, nesting sites, etc.) and movement patterns identified;	√
	2.3.6. the assessment must identify any alternative development footprints within the preferred site which would be of a "low" sensitivity as identified by the screening tool and verified through the site sensitivity verification; and	√
	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 the remaining extent of the ecosystem type(s); (d) the impact on ecosystem threat status; (e) the impact on explicit subtypes in the vegetation; (f) the impact on overall species and ecosystem diversity of the site; and (g) the impact on any changes to threat status of populations of species of conservation concern in the CBA;	√
	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 network;	√
	2.3.7.5. SWSAs including: (a) the impact(s) on the terrestrial habitat of a SWSA; and (b) the impacts of the proposed development on the SWSA water quality and quantity (e.g. describing potential increased runoff leading to increased sediment load in 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 (b) percentage of natural or near natural indigenous forest area lost and a statement on the implications in relation to the remaining areas	N/A
	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. a description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling 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 loss 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;	N/A
	3.1.14. a substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and	√
	3.1.15. 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.	√

10 Appendix F: Letter of Appointment Confirmation

To Engineering Advice and Services

PREPARATION AND SUBMISSION OF A BASIC ASSESSMENT APPLICATION FOR THE INTENDED DEVELOPMENT OF ERVEN 984 & 1134 PARSONSVLEI

I hereby accept your proposal to undertake the abovementioned work provisionally estimated for a total of **R** including preparation of the BA documentation as well as some specialist input, disbursements and VAT.

The above fee excludes an application fee of R 2 000.00, which is to be paid by the applicant on submission of the application form to DEDEAT.

The cost for additional studies that may be required by the department, unknown at this stage, but may be highlighted during the assessment, is not included.

Payment will be made at the following work stages: 30 % payment on appointment, 40 % on completion of draft BAR and 30 % before submission of Final BAR.

Name: CLAUDE P. VAN ROOSBROEK for LURCO TRADING 128 (PTY) LTD.
Company

Signed: Date: MONDAY 7 OCTOBER 2019.

Vat Reg No:

11 Appendix G: Specialist CV and Professional Registration

Name of firm	Engineering Advice & Services (Pty) Ltd
Name of staff	Kurt Russel Wicht
ID Number	9601035340088
Profession	Environmental Consultant
Years with firm	2nd year
Nationality	South African
Membership to Professional Societies	

KEY QUALIFICATIONS

Mr Kurt Wicht completed a BSc in Environmental Science at the Nelson Mandela University majoring in Botany and Geography (2019). He is currently employed at EAS as an Environmental Consultant, conducting Ecological Assessment Reports, Screening Reports, Environmental Management Plans, Flora Search and Rescues, GIS mapping and ECO auditing. Kurt has worked on several gravel road maintenance jobs throughout the Eastern Cape including contracts in Senqu, Kouga and Kou Kamma, Baviaans and Elundini Local Municipalities, where he carried out ECO auditing and report writing, GIS mapping and screening and licensing of Borrow Pits. This process included the Public Participation Process as well as the Basic Assessment and Mine Plans.

He is highly capable of working in a team of professionals or in an individual capacity.

EDUCATION

BSc (Environmental Sciences)	Nelson Mandela University	2019

Botany
Applied Marine Botany
Plant Physiology
Plant Ecophysiology
Plant Ecology and Environmental Management

Geography
GIS3
Photogrammetry and Remote Sensing
Environmental Management
Geomorphology

EMPLOYMENT RECORD

2019 (Jan) – present	Engineering Advice & Services	Environmental Consultant

LANGUAGES

	Speak	**Read**	**Write**
English	Excellent	Excellent	Excellent
Afrikaans	Good	Excellent	Excellent

PROJECT EXPERIENCE

BOTANICAL AND ECOLOGICAL ASSESSMENT REPORTS

▪ NMU Access Roads (1606)	2019
▪ Walmer ERF 559 (1618)	2019
▪ Banna Ba Pifhu (1593)	2019
▪ Kranshoek (1626)	2019
▪ South End Precinct (1503)	2019
▪ Khayalethu School (1613)	2019
▪ Emerald Sky (1609)	2019
▪ Clarkbury Road (1549)	2019
▪ Wind Relic (1600)	2019
▪ Buffalo City (1607)	2019
▪ St Georges Hospital (1185-19)	2019
▪ Amalinda (1185-21)	2019
▪ Ingquza Hill (1262) – Species lists	2019
▪ Mbizana (1262) – Species lists	2019
▪ IOX Cable (1587)	2019
▪ Wanhoop (1274)	2019
▪ Boschkraal (1520)	2019
▪ Gonubie (1688)	2019
▪ Cookhouse Bridge (1710)	2019
▪ Mthatha Retail development (1725)	2019
▪ Parsonsvlei erf 984 & 1134 (1726)	2019
▪ Vermaak Boerdery Hydro Pump (1730)	2019
▪ Bidfood (1734)	2019
▪ Chelsea Farm (1251)	2019
▪ Eggland (1752)	2020

FLORA AND FAUNA SEARCH AND RESCUE

▪ Flora Search and Rescue for Fairwest Village in NMB (1470)	2019
▪ Flora Search and Rescue for Utopia (1480)	2019
▪ NMU West End Student Residence Phase 1&2 (1714)	2019
▪ NMU West End Student Residence Phase 3&4 (1714)	2020

ENVIRONMENTAL SCREENING PROJECTS

▪ Zeekoe (1266-164)	2019
▪ Jan Marais Nature Reserve (1671)	2019
▪ Emalahleni & Intsika Yethu LM (1532)	2019
▪ Redhouse (1660)	2019

▪ SAWS Radar Mast (1185-23)	2019
▪ Erf 2463 Kabega (1249)	2019
▪ Erf 2000, Walmer (1185-24)	2020
▪ Heatherbank (1777)	2020

RELOCATION PLANS, PERMITS AND IMPLEMENTATION

▪ Fairwest Village (1470)	2019
▪ Utopia (1480)	2019
▪ NMU West End Student Residence (1714)	2019
▪ Baakens River Park (1782)	2020

ECO AUDIT AND REPORTS

▪ Sakhisizwe (1484) – Species lists, Audit report and GIS Mapping	2019
▪ Elundini (1495) – Species lists, Audit report and GIS Mapping	2019
▪ Senqu (1482) – Species lists, Audit, Audit report and GIS Mapping	2019
▪ Kouga Kou-Kamma Baviaans (1473) – Species lists, Audit, Audit report and GIS Mapping	2019
▪ Cofimvaba (1532) – Species lists	2019
▪ Eco Pullets (1332) – Audit, Audit report	2019
▪ MGM trust (1168) – Audit, Audit report	2019
▪ Hitgeheim Farm (1180) – Audit, Audit report	2019
▪ Fairwest Village (1470) – Audit, Audit report	2019
▪ Utopia (1480) – Audit, Audit report	2019
▪ Kabega (1439)	2019
▪ NMU West End Student Residence (1714)	2019
▪ Coega Aquaculture (1722)	2019
▪ Thembani Bedford Waste Facility – Annual Audit Report (1765)	2020

GIS Mine Plans

▪ Ndlambe (1483) – Mine Plans	2019
▪ Makana (1600) – Mine Plans	2020
▪ Blue Crane Route (1647) – Mine Plans	2020
▪ Buffalo City Metropolitan Municipality (1607) -Mine Plans	2020

24G

▪ Eggland (1752) – 24G report	2020

WULA Applications

▪ Online WULA applications (1600)	2020

Name	JAMIE ROBERT CLAUDE POTE
ID Number	740515 5152 089
Profession	Registered Ecological Scientist
Nationality	South African
Membership to Professional Societies	The South African Council for Natural Scientific Professions (SACNASP): Pr. Sci. Nat.: 115233 International Association for Impact Assessment South Africa (IAIAsa Member Number 5045)

KEY QUALIFICATIONS

Jamie Pote has a Bachelors Degree in (Honours) in Botany and Environmental Science and a Bachelors Degree with Honours in Botany and is a registered Ecological Scientist and Environmental Scientist (Pr.Sci.Nat.). He has 16 years extensive professional experience in a wide range of Botanical and Ecological Specialist Assessments in South Africa (Eastern, Western & Northern Cape, Gauteng and Limpopo), Sub-Saharan and Central Africa (Namibia, Mozambique, Democratic Republic of Congo, Republic of Congo and Ghana) in the Infrastructure (including Wind Energy Facilities), Mining and Development Sectors. He also has experience in conducting Environmental Impact Assessment, Section 24 G, and Mining Permit (Borrow Pit) EMP applications, as well as developing GIS and other tools for Environmental related work. Jamie is furthermore familiar with and has been part of professional teams conducting Environmental Impact Assessment (EIA) and Environmental and Social Impacts Assessment (ESIA) in Sub-Saharan Africa, as well as being familiar with the International Finance Corporation's Performance Standards on Social & Environmental Sustainability including but not limited to IFC PS 6 (Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management).

He has broad ecological experience in a wide range of habitats and ecosystems in Southern, West and Central Africa and has been involved in all stages of project development from inception, through planning and environmental application and authorization (BAR and EMP) to implementation and compliance monitoring (ECO auditing) as an ecologist and as an Environmental Assessment Practitioner. Jamie has a well-deserved reputation for providing quality professional services. His strategy incorporates using proven methodologies with a highly responsive approach to sound environmental management, including developing adaptive methodologies and approaches with available technologies. He is highly capable of working within a team of qualified professionals or in an individual capacity.

EDUCATION

BSc	Rhodes University (Botany and Environmental Science)	2001
BSc (Hons)	Rhodes University (Botany)	2002

EMPLOYMENT RECORD

2003 – 2014	Self Employed Consultant	Specialist Environmental Consultant (Ecology)
2014 -2020 (May)	Engineering Advice & Services	Environmental Unit Manager
2020 – Present	Self Employed Consultant	Biodiversity Consultant

LANGUAGES

	Speak	**Read**	**Write**
English	Excellent	Excellent	Excellent
Afrikaans	Good	Excellent	Excellent

PROJECT EXPERIENCE

INFRASTRUCTURE DEVELOPMENT PROJECTS

- Botanical Assessment for PE Airport Extention in NMB 2006
- Botanical Assessment for Kidd's Beach Desalination Plant in BCM, Eastern Cape 2006
- Botanical Assessment and GIS mapping for golf course realignment for East London Golf Course in BCM, Eastern Cape 2007
- Botanical Assessment for Radar Mast construction for South African Weather Service - BCM and NMB 2008
- Botanical Assessment for Jansenville Cemetery in Eastern Cape 2009
- Botanical Assessment for Kouga Dam wall upgrade in Eastern Cape 2012
- Botanical Assessment for Zachtevlei Dam (Lady Grey) 2017
- Botanical Assessment for Gcebula River bridge (Peddie) 2017
- Ecological Assessment for Amalinda crossing, Buffalo City 2019
- Ecological Assessment for Cookhouse Bridge rehabilitation and temporary deviation 2019
- Ecological Assessment for Nelson Mandela University Access Road, NMB 2019
- Ecological Assessment for Vermaak Boerdery Hydro Turbine (Cookhouse) 2020

BASIC ASSESSMENT APPLICATION PROJECTS (DEDEAT)

- Basic Assessment Application for Citrus expansion on farm 960, Patensie (AIN du Preez Boerdery) 2014
- 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 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 South-End Precinct Mixed Use Development, Nelson Mandela Bay 2018
- Basic Assessment Application for Nelson Mandela University Access Road, NMB 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 Parsonsvlei Erf 984 & 1134 Parsonsvlei 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

ENVIRONMENTAL SCREENING PROJECTS

- 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
- Environmental Screening Report for Proposed Fairwest Social Housing project, Fairview, NMB 2016
- Environmental Screening Report for Development of Little Chelsea No 25, NMB 2016
- 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 Khayalethu School, Buffalo City 2018
- Environmental Screening Report for Proposed Life Hospital parking expansion, NMB 2019
- Environmental Screening Report for Erf 984 & 1134 development, Parsonsvlei, NMB 2019

ROAD AND RAILWAY INFRASTRUCTURE PROJECTS

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

WIND FARM AND PHOTOVOLTAIC INFRASTRUCTURE PROJECTS

- Botanical Assessment for Electrawinds Windfarm Coega in NMB 2010
- Botanical Assessment and Open Space Management Plan for Mainstream Windfarm Phase 2 in Eastern Cape 2010
- Ecological Assessment for Inca Energy Windfarm in Northern Cape 2011
- Ecological Assessment for Universal Windfarm in NMB 2011
- Ecological Assessment for Broadlands Photovoltaic Farm in the Eastern Cape 2011
- Ecological Assessment for Windcurrent Wind Farm in Eastern Cape 2012

MINING PROJECTS

- Biophysical Assessment for Humansdorp Quarry in Eastern Cape 2006
- Botanical Assessment, Rehab Plan & Maps for Quarry-Cathcart & Somerset East in Eastern Cape 2006
- Botanical Assessment, Rehab Plan & Maps for Quarry - Despatch Quarry in NMB 2006
- GIS Mapping & Botanical Assessment and Rehab Plan for Quarry - JBay Crushers in Eastern Cape 2006
- Botanical Assessment, EMP and Rehabilitation Plan for Polokwane Silicon Smelter in Limpopo 2006
- Application for Mining Permit for Bruce Howarth Quarry in Eastern Cape 2006
- Botanical Assessment for Scoping Report and Detailed Botanical Assessment and Rehab Plan for Elitheni Coal Mine in Eastern Cape 2007
- Botanical Assessment, Rehab Plan & Maps for Borrow Pit - Oyster Bay in Eastern Cape 2007
- Botanical Assessment, Rehab Plan & Maps for Borrow Pit - Bathurst/GHT in Eastern Cape 2007
- Botanical Assessment, Rehab Plan & Maps for Borrow Pit – Jeffreys Bay in Eastern Cape 2007
- Botanical Assessment, Rehab Plan & Maps for Borrow Pit - Storms river/Kareedouw in Eastern Cape 2007
- Botanical Assessment for Zwartenbosch Quarry in Eastern Cape 2008
- Botanical description & map production for Quarry - Rudman Quarry in Eastern Cape 2008
- Botanical Basic Assessment, Rehab Plan & Maps for Borrow Pit - Rocklands/Patensie in Eastern Cape 2008
- Botanical Assessment & Maps for Sandman Sand Gravel Mine in Eastern Cape 2008
- Botanical Assessment & GIS maps for Shamwari Borrow Pit in Eastern Cape 2008
- Detailed Botanical Assessment, EMP and Rehab Plan for Kalakundi Copper/Cobalt Mine in Democratic Republic of Congo 2008

- Botanical Assessment, Rehab Plan & Maps for Borrow Pit Humansdorp/Oyster Bay in Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Cala in Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Camdeboo in Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Somerset East in Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Nkonkobe in Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Ndlambe in Eastern Cape 2008
- Botanical Assessment, Rehab Plan & Maps for AWRM - Blue Crane Route in Eastern Cape 2008
- Botanical Assessment, EMP and Rehabilitation Plan for AWRM - Cathcart in Eastern Cape 2008
- Botanical Assessment, GIS maps and Rehab Plan for Mthatha Prospecting in Eastern Cape 2008
- Regional Botanical Map for mining prospecting permit for Welkom Regional mapping in 2008
- Ecological Assessment and Mining and Rehabilitation Plan for Baghana Mining in Ghana 2010
- Ecological Assessment for Bochum Borrow Pits in Limpopo 2013
- Ecological Assessment and Mining and Rehabilitation Plan for Greater Soutpansberg Mining Project in Limpopo (3 proposed Mines) 2013
- Ecological Assessment for Thulwe Road Borrow Pits in Limpopo 2013

MINING PERMIT/ENVIRONMENTAL MANAGEMENT PROGRAMME APPLICATIONS (DMR)

- 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)
- 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 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 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 24 Borrow Pits in 6 districts within the Eastern Cape– (SANRAL) 2018
- Mining BAR/EMP's for Blue Crane Route LM Borrow Pits – (DoT) 2019

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

ENVIRONMENTAL MANAGEMENT, ENVIRONMENTAL CONTROL OFFICER, AUDITING AND MONITORING PROJECTS

- Flora Relocation Plan and Permit application for Wildemans Plaas, in NMB 2006
- EMP submission and ECO for Seaview Garden Estate in NMB 2010
- EMP and ECO for Sinati Golf Estate EMP in BCM, Eastern Cape 2009
- ECO audits for NMB Road surfacing in NMB (multiple contacts) 2011
- ECO for Mainstream Windfarm wind monitoring mast installation in Eastern Cape 2010
- Final EMP submission for Seaview Garden Estate in NMB 2012
- EMP and ECO for Utopia Estate in NMB 2013
- ECO for Riversbend Citrus Farm in NMB 2014
- ECO for Alfred Nzo DM Road resurfacing - DR08071, DR08649, DR08092, DR08418, DR08452, DR08015, DR08085, DR08639 & DR08073 in Eastern Cape - MSBA 2014
- ECO Audits for Koukamma Flood Damage Road Repairs – Hatch Goba 2014
- ECO for DRPW IRM Road Maintenance projects in Amahlathi Municipality 2015
- ECO for DRPW IRM Road Maintenance projects in Makana/Ndlambe Municipality 2015
- ECO for DRPW IRM Road Maintenance projects in Mbashe/Mqume Municipality 2015
- ECO for DRPW IRM Road Maintenance projects in Port St Johns, Mbizana, Ingquza Hill LMs 2015
- 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 in Mbashe LM 2016
- ECO for SANRAL RRP Road Maintenance projects in Nkonkobe LM 2016
- ECO for SANRAL RRP Road Maintenance projects in Mbizana LM 2016
- ECO for SANRAL RRP Road Maintenance projects in Senqu LM 2016
- ECO for SANRAL RRP Road Maintenance projects in Elundini LM 2016
- ECO and Environmental Management for closure of Bushmans River Landfill site 2016
- 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 in Mbizana LM 2017
- ECO for DRPW IRM Road Maintenance projects in Raymond Mahlaba LM 2018
- ECO for DRPW IRM Road Maintenance projects in Inkwanca (Enoch Mgijima) LM 2018
- ECO for DRPW IRM Road Maintenance projects in Baviaans LM 2019
- ECO for DRPW IRM Road Maintenance projects in Senqu LM 2019
- ECO for DRPW IRM Road Maintenance projects in Kouga/Koukamma LM 2019
- ECO for DRPW IRM Road Maintenance projects in Sakhisizwe/Engcobo LM 2019
- ECO for DRPW IRM Road Maintenance projects in Elundini LM 2019
- ECO for DRPW IRM Road Maintenance projects in Emalahleni/Intsika Yethu LM 2019
- ECO for Construction of Fairwest Village Housing Project 2019
- ECO for Construction of Utopia Estate 2019
- ECO for Construction of NMU West End Student Residences Phases 1 & 3 2019

SPECIALISED ECOLOGICAL REPORTS

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

FLORA AND FAUNA RELOCATION PLANS, PERMITS AND IMPLEMENTATION

- Flora Relocation for Disco Poultry Farm in NMB 2010
- Flora Relocation for Mainstream Windfarm in Eastern Cape 2010
- Flora Search and Rescue Plan for Red Cap Wind Farm in Eastern Cape 2012
- Flora and Fauna Search and Rescue for Mainstream Windfarm in Eastern Cape 2013
- Flora Search and Rescue for Steytlerville Bulk Water Supply in Eastern Cape (Phase 1, 2 & 3) 2013
- Flora and Fauna Search and Rescue for OTGC Tank Farm, Coega IDZ in NMB 2013
- Flora and Fauna Search and Rescue for Jeffreys Bay School in Eastern Cape 2013
- Flora and Fauna Search and Rescue for Riversbend Citrus Farm in NMB 2014
- Flora Search and Rescue for Steytlerville Bulk Water Supply & WTW in Eastern Cape (Phase 4) 2015
- Flora Search and Rescue for Steytlerville Bulk Water Supply in 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 Citrus expansion on Hitgeheim Farm (Farm 960), Sunland, Eastern Cape 2017
- 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 2019

ENVIRONMENTAL MANAGEMENT PLANS

- Floral Survey for Mbotyi Conservation Assessment in Eastern Cape 2005
- Identifying and Assessment on Aquatic Weeds for Pumba Private Game Reserve in Eastern Cape 2005
- Biodiversity & Ecological Processes for Bathurst-Commonage in Eastern Cape 2006
- EMP for Kromensee EMP (Jeffries Bay) in Eastern Cape 2006
- Baseline Botanical Study, Vegetation mapping and EMP for Local Nature Reserve for Plettenberg Bay Lookout LNA in Western Cape 2009
- Basic Botanical Assessment for Kromensee EMP (Jeffries Bay) in Eastern Cape 2010
- Wetland Management Plan for NMB Portnet in NMB 2010

BUSINESS AND INDUSTRIAL DEVELOPMENT PROJECTS

- Botanical Assessment for Kenton Petrol Station in Eastern Cape 2005
- Botanical Assessment and RoD amendments for Colchester - Petrol Station in NMB 2005

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

HOUSING DEVELOPMENT PROJECTS

- Botanical Assessment for Bridgemead – Malabar PE in NMB 2004
- Botanical Basic Assessment for Trailees Wetland Assessment in Eastern Cape 2005
- Botanical Assessment and Rehab Plan for Arlington Racecourse - PE in NMB 2005
- Botanical Assessment for Smart Stone in NMB 2005
- Botanical Assessment for Peninsular Farm (Port Alfred) in Eastern Cape 2005
- Botanical Assessment for Mount Pleasant - Bathurst in Eastern Cape 2005
- Botanical Assessment and RoD amendments for Colchester Erven 1617 & 1618 (Riverside) in NMB 2005
- Basic Botanical Assessment for Parsonsvlei 3/4 in Eastern Cape 2005
- Botanical Assessment for Gonubie Portion 809/9 in BCM, Eastern Cape 2006
- Botanical Assessment for Glengariff Farm 723 in BCM, Eastern Cape 2006
- Botanical Assessment for Gonubie Portion 809/10 in BCM, Eastern Cape 2006
- Botanical Assessment for Gonubie Portion 809/4 & 5 in BCM, Eastern Cape 2006
- Botanical Assessment for Plettenberg bay - Ladywood 438/1&3 in Western Cape 2006
- Botanical Assessment and Rehab Plan for Winterstrand Desalination Plant in BCM 2006
- Botanical Assessment for Bosch Hoogte in NMB 2006
- Botanical Assessment for Plettenberg bay Farm 444/38 in Western Cape 2006
- Botanical Assessment for Plettenberg Bay - 444/27 in Western Cape 2006
- Botanical Assessment for Leisure Homes in BCM, Eastern Cape 2006
- Botanical Assessment for Plettenberg Bay - 438/24 in Western Cape 2007
- Botanical Assessment for Plettenberg Bay - Olive Hills 438/7 in Western Cape 2007
- Vegetation Assessment for Kwanokuthula RDP housing project in Western Cape 2008
- Site screening assessment for Greenbushes Site screening in NMB 2008
- Botanical Assessment for Fairfax development in Eastern Cape 2008
- Botanical Assessment for Plettenberg Bay Brakkloof 50&51 in Western Cape 2008
- Botanical Assessment, GIS mapping for Theescombe Erf 325 in NMB 2008
- Site Screening for Mount Road in NMB 2008
- Botanical Assessment for Greenbushes Farm 40 Swinburne 404 in NMB 2008
- Botanical Assessment for Greenbushes 130 in NMB 2008
- Botanical Assessment for Greenbushes Kuyga no. 10 in NMB 2008
- Botanical Assessment for Kouga RDP Housing in Eastern Cape 2009
- Botanical Assessment for Fairview Erf 1226 (Wonderwonings) in NMB 2009
- Species List Compilation for Zeeloeirivier Humansdorp in Eastern Cape 2009
- Botanical Assessment for Woodlands Golf Estate (Farm 858) in BCM, Eastern Cape 2009
- Botanical Assessment for Plettenberg Bay - 438/4 in Western Cape 2009
- Botanical Assessment for The Crags 288/03 in Western Cape 2010
- Revision of Ecological Assessment for Fairview Housing - revision in NMB 2010
- Botanical Assessment, EMP and Open Space Management Plan for Hornlee Housing Development in Western Cape 2010
- Botanical Assessment for Little Ladywood in Western Cape 2010
- Botanical Assessment and Open Space Management Plan for Motherwell NU31 in NMB 2010
- Botanical Assessment and Open Space Management Plan for Plett 443/07 in Western Cape 2010
- Botanical Assessment for Willow Tree Farm in NMB 2010

- Flora Search and Rescue Plan for Kwanobuhle Housing in Western Cape 2011
- Ecological Assessment for Ethembeni Housing in NMB 2012
- Ecological Assessment for Pelana Housing in Limpopo 2012
- Ecological Assessment for Lebowakgoma Housing in Limpopo 2013
- Ecological Assessment for Giyani Development in Limpopo 2013
- Ecological Assessment for Palmietfontein Development in Limpopo 2013
- Ecological Assessment for Seshego Development in Limpopo 2013
- Botanical Assessment for Sheerness Road in BCM, Eastern Cape 2013
- Ecological Assessment for Hankey Housing, Kouga District Municipality 2015
- Ecological Assessment for erf 14, Kabega, Port Elizabeth 2017
- Ecological Assessment for Fairwest Rental Housing, Port Elizabeth 2017
- Ecological Assessment for Erf 599 Walmer Mixed Use Development, Nelson Mandela Bay 2019

POWERLINE INFRASTRUCTURE PROJECTS

- Botanical Assessment for Steynsburg - Teebus 132 kV powerline in Eastern Cape 2004
- Botanical Assessment for Eskom132kV Dedisa Grassridge Power line-Coega in NMB 2006
- Botanical Assessment for Eskom Power line – Tyalara-Wilo in Eastern Cape 2006
- Species of Special Concern Mapping Transmission Line for San Souci to Nivens Drift 132kV powerline in NMB 2009
- Botanical Assessment for Eskom Powerline - Albany-Kowie in Eastern Cape 2009
- Botanical Assessment for Dedisa-Grassridge Powerline in Eastern Cape 2010
- Ecological Assessment for Grahamstown-Kowie Powerline in Eastern Cape 2010
- Ecological Assessment for Dieprivier Karreedouw 132kV Powerline in Eastern Cape 2012
- Flora and Fauna search and Rescue plan for Van Stadens Windfarm Powerline in NMB 2012
- Rehabilitation Plan and Auditing for Grassridge-Poseidon Powerline Rehab in Eastern Cape 2013
- Eskom Solar one Ecological Walkdown: Nieuwehoop 400 kV powerline 2015
- Ecological Assessment: Dieprivier-Karreedouw 132kV Powerline realignment in Kouga LM 2016
- Eskom Ecological Walkdown: Dieprivier-Karreedouw 132 kV Powerline in Kouga LM 2016

PIPELINE INFRASTRUCTURE PROJECTS

- Detailed Botanical Assessment for Port Alfred water pipeline in Eastern Cape 2004
- Botanical & Floristic Report for Hankey pipeline in Eastern Cape 2006
- Environmental Risk Assessment for Elands River pipeline in Eastern Cape 2007
- Detailed Botanical Assessment for Motherwell Pipeline in NMB 2007
- Detailed Botanical Assessment, GIS maps for Erasmuskloof Pipeline in Eastern Cape 2007
- Map Production for Russell Rd Stormwater in NMB 2008
- Basic Botanical Assessment for Albany Pipeline in Eastern Cape 2008
- Species of Special Concern Mapping for Seaview Pipeline in NMB 2009
- Species of Special Concern Mapping for Chelsea Bulk Water Pipeline in NMB 2009
- Basic Botanical Assessment for Wanhoop farm pipeline in Eastern Cape 2010
- Basic Botanical Assessment for Chatty Sewer in NMB 2010
- Detailed Ecological Assessment for Suikerbos Pipeline in Gauteng 2012
- Ecological Assessment for Steytlerville Bulk Water Supply in Eastern Cape (Phase 4) 2013
- Ecological Assessment for Steytlerville Bulk Water Supply in Eastern Cape (Phase 5) 2013
- Ecological Assessment for Wanhoop-Willowmore Bulk Water Supply in Eastern Cape 2016
- Ecological Assessment for Butterworth Emergency Bulk Water Supply Scheme 2017
- Ecological Assessment for Karringmelkspruit Emergency Bulk Water Supply (Lady Grey) 2017
- Botanical Assessment for Ngqamakhwe Regional Water Supply Scheme (Phase 3) 2018

AGRICULTURAL PROJECTS

- Botanical Assessment and Flora Relocation Plan for Wildemans Plaas, in NMB 2006

- Botanical Assessment and Open Space Management Plan for Kudukloof in NMB 2010
- Botanical Assessment and Open Space Management Plan for Landros Veeplaats in NMB 2010
- Ecological Assessment for Tzaneen Chicken Farm in Limpopo 2013
- Ecological Assessment for Doornkraal Pivot (Hankey) in Eastern Cape 2014
- Ecological Assessment for Citrus expansion on Farm 960, Patensie 2014
- Ecological Assessment for Citrus expansion on Hitgeheim Farm, Sunland, Eastern Cape 2015

GOLF ESTATE AND RESORT DEVELOPMENT PROJECTS

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

MIXED USE DEVELOPMENT PROJECTS

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

ECO-ESTATE DEVELOPMENT PROJECTS

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

GIS AND IT DEVELOPMENT

- Development of GIS databases and mapping tools for Manifold GIS software 2008
- Landsat Image classification and analysis (Congo Agriculture) 2010

- Development of *iAuditor* Environmental Audit templates (DRPW audits) 2014

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.

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).

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 fields(s) of practice (Schedule 1 of the Act)

Ecological Science (Professional Natural Scientist)

Effective **20 July 2016** Expires **31 March 2022**

Chairperson

Chief Executive Officer

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