

# ECOLOGICAL BASELINE ASSESSMENT

## HOPEFIELD CEMETERY EXPANSION


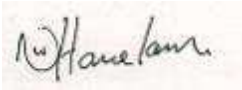
**Prepared for:** Saldanha Bay Municipality  
Private Bag X12  
Vredenburg  
7380  
Tel: 022 701 7000  
Fax: 022 715 1518

**Prepared by:** Eco Impact Legal Consulting (Pty) Ltd  
PO Box 45070  
Claremont  
South Africa  
7735  
Tel: 021 671 1660/9976  
Email: admin@ecoimpact.co.za



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**PROJECT DETAILS**

		<b>Title:</b> Ecological Baseline Assessment Hopefield Cemetery Expansion		
<b>Eco Impact No:</b> Saldanha Bay Municipality Hopefield Cemetery 1/2018		<b>Date:</b> June 2018	<b>Report Status:</b> Final	
<b>Carried Out By:</b> Eco Impact Legal Consulting (Pty) Ltd PO Box 45070 Claremont 7735 Tel: 021 671 1660/9976 Email: admin@ecoimpact.co.za		<b>Client:</b> Saldanha Bay Municipality Private Bag X12 Vredenburg 7380 Tel: 022 701 7000 Fax: 022 715 1518		
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Verification	Capacity	Name	Signature	Date
By Author	Director: Environmental Management; Principle Environmental Assessment Practitioner & Biodiversity Specialist	Nicolaas Hanekom		08 June 2018

## Table of Contents

1.	Background & Competency.....	4
2.	Conditions Relating to this Report.....	4
3.	Scope and Terms of Reference for the Study .....	4
4.	Limitations, Assumptions and Methodology .....	6
5.	Broad Ecological Characteristics of the Site and Surrounds .....	6
5.1	Topography .....	6
5.2	Vegetation at a Regional and National Context.....	6
6.	Observations and Findings Relative to the Terms of Reference .....	9
6.1	In terms of biodiversity pattern, identify or describe, at a community .....	9
	and ecosystem level- .....	9
6.1.1	The main vegetation type and plant communities that occur on, and in the .....	9
	vicinity of the site: .....	9
6.2	In terms of biodiversity pattern, identify or describe, at species level .....	13
6.3	Other pattern issues- .....	14
6.4	The extent of alien plant cover on the site: .....	14
6.5	The condition of the site/s in terms of current or previous land uses: .....	14
6.6	In terms of biodiversity process, identify or describe: .....	14
7.	Ecological Impact Assessment with Associated Mitigation and Rehabilitation Measures to be implemented .....	15
8.	Concluding Remarks and Summary of Impact Mitigation and Rehabilitation Measures Proposed before, during and after the Proposed Activities.....	17
9.	References.....	19
	APPENDIX A: Declaration of Independence .....	21
	THE SPECIALIST.....	21
	APPENDIX B: Impact Assessment Methodology .....	22

## **1. Background & Competency**

This ecological baseline assessment is presented by Eco Impact Legal Consulting (Pty) Ltd (“Eco Impact”).

Eco Impact has been appointed as the independent ecological impact assessment specialist for this project.

Eco Impact is independent and does not have any interest in the business nor receive any payment other than fair remuneration for services rendered as required in terms of the regulations.

Nicolaas Hanekom has 26 years’ experience working as an ecologist for nature conservation organizations. He has extensive field experience and botanical knowledge, some knowledge of wetlands ecology, is knowledgeable of the region in which they are working and exercises sound and unbiased scientific and professional judgment. He is a qualified Environmental Assessment Practitioner and a registered Professional Natural Scientist (Ecologist) with the SACNASP who holds a M. Tech, Nature Conservation from the Cape Peninsula University of Technology. This master’s thesis focussed on the impact of different land uses on the Phytodiversity (“Botany/ plants”) of the West Coast Strandveld in and around Rocherpan Nature Reserve.

Nicolaas has been responsible for many Ecological Baseline Assessment (including botanical) since 2006.

## **2. Conditions Relating to this Report**

The findings, results, observations, conclusions and recommendations given in this report are based on the author’s best scientific and professional knowledge as well as available information. Eco Impact and its staff reserve the right to modify aspects of the report including the recommendations if and when new information may become available from on-going research or further work in this field, as pertaining to this investigation.

This report may not be altered or added to without the prior written consent of the author. This restraint also refers to electronic copies of this report which are supplied as sub portion of other reports, including main reports. Similarly, any recommendations, statements, or conclusions drawn from or based on this report must specifically refer to this report. If such comments form part of a main report for this investigation, the base line report must be included in its entirety as an appendix or separate section to the main report.

## **3. Scope and Terms of Reference for the Study**

Eco Impact Legal Consulting (Pty) Ltd was appointed to conduct an ecological baseline assessment to identify and assess potential impacts that proposed activities may have on any significant terrestrial or aquatic ecosystems of the applicable site and surrounds.

The basic terms of reference (TOR) for this study were the Cape Nature recommended TOR for biodiversity specialists, and are as follows:

- Produce a baseline analysis of the botanical attributes of the study area as a whole.
- This report should clearly indicate any constraints that would need to be taken into account in considering the development proposals further.
- The baseline report must include a map of the identified sensitive areas as well as indications of important constraints on the property. It must also:
- Describe the broad ecological characteristics of the site and its surrounds in terms of any mapped spatial components of ecological processes and/or patchiness, patch size, relative isolation of patches, connectivity, corridors, disturbance regimes, ecotones, buffering viability etc.
- In terms of biodiversity pattern, identify or describe:

*Community and ecosystem level*

- The main vegetation type, its aerial extent and interaction with neighbouring types, soil or topography;
- The types of plant communities that occur in the vicinity of the site
- Threatened or vulnerable ecosystems (*cf. SA vegetation map/National Spatial Biodiversity Assessment, etc.*)

*Species level*

- Red Data Book species of conservation concern (RDBSCC) - (provide location)
- The viability of and estimated population size of the RDBSCC that are present (include degree of confidence in prediction based on availability of information and specialist knowledge, i.e. High = 70-100% confident, Medium 40-70% confident, Low 0-40% confident)
- The likelihood of other RDBSCC species occurring within the vicinity (include degree of confidence)
- Other pattern issues
- Any significant landscape features or rare or important vegetation associations such as seasonal wetlands, alluvium, seeps, quartz patches or salt marshes in the vicinity.
- The extent of alien plant cover of the site, and whether the infestation is the result of prior soil disturbance such as ploughing or quarrying
- The condition of the site in terms of current or previous land uses
- In terms of biodiversity process, identify or describe:
  - The key ecological “drivers” of ecosystems on the site and in the vicinity, such as fire.
  - Any mapped spatial component of an ecological process that may occur at the site or in the vicinity i.e. watercourses, biome boundaries, migration routes etc.
  - Any possible changes in key processes e.g. increase fire frequency or drainage/artificial recharge of aquatic systems.
- Describe what is the significance of the potential impact of the proposed project – with and without mitigation – on biodiversity pattern and process at the site, landscape, and regional

scales.

- Recommend actions that should be taken to prevent or mitigate impacts. Indicated how these should be scheduled to ensure long-term protection, management and restoration of affected ecosystems and biodiversity.
- Indicate limitations and assumptions, particularly in relation to seasonality.

#### **4. Limitations, Assumptions and Methodology**

The site was surveyed during the morning of 11 May 2018, and an additional in season survey was conducted on the 08 August 2018.

The natural vegetation areas and any other prominent environmental features such as watercourses i.e. wetlands, drainage lines etc. if present were delineated and prominent indigenous and alien invasive species were recorded.

Characteristic plant species (if present on the proposed development site) were recorded during the survey as well as any rare, threatened or species of conservation concern or habitats. The GIS based South African National Biodiversity Institute (SANBI) vegetation map for South Africa (Mucina and Rutherford 2010) was consulted, along with the available regional conservation plans (CAPE), and the Western Cape Biodiversity Spatial Plan (2017), and a conclusion was drawn based on this documentation and professional experience in the area. SANBI – Red List of South African Plants website was also referred to if required.

One of the primary assumptions of this study is that sufficient botanical and ecosystem characteristics information could be gathered during the visit to make accurate conclusions regarding the conservation value of the area and potential impact of the development as proposed. Habitats (type, quality, rarity, characteristics) rather than species are used to inform mapping and decision making in this case. If sufficient botanical and/or ecosystem characteristics information could not be gathered during the initial site visit recommendations will be made to ensure adequate assessments are undertaken.

Due to the time of year, small area and current state of the site it is believed that sufficient ecosystem characteristics information could be gathered during the surveys to conduct the assessment.

#### **5. Broad Ecological Characteristics of the Site and Surrounds**

##### **5.1 Topography**

The study site is on a flat sand plain area next to the existing cemetery.

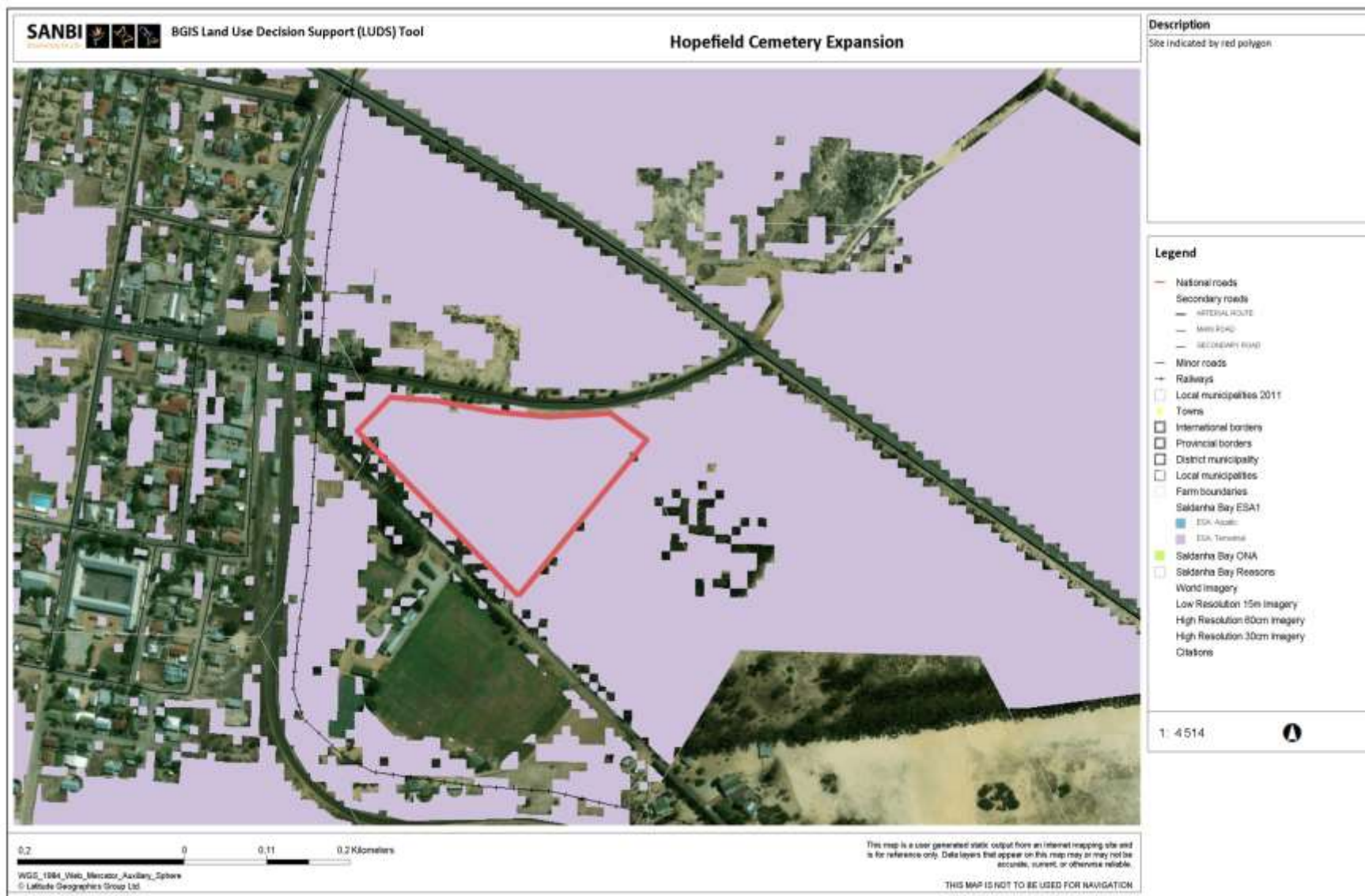
##### **5.2 Vegetation at a Regional and National Context**

The study area is part of the fynbos biome, located within what is now known as the Core Region of the Greater Cape Floristic Region (GCFR; Manning & Goldblatt 2012). The GCFR is

one of only six Floristic Regions in the world, and is the only one largely confined to a single country (the Succulent Karoo component extends into southern Namibia). It is also by far the smallest floristic region, occupying only 0.2% of the world's land surface, and supporting about 11500 plant species, over half of all the plant species in South Africa (on 12% of the land area). At least 70% of all the species in the Cape region do not occur elsewhere, and many have very small home ranges (these are known as narrow endemics).

Many of the lowland habitats are under pressure from agriculture, urbanisation and alien plants, and thus many of the range restricted species are also under severe threat of extinction, as habitat is reduced to extremely small fragments. Data from the nationwide plant Red Listing project indicate that 67% of the threatened plant species in the country occur only in the southwestern Cape, and these total over 1800 species (Raimondo *et al* 2009). It should thus be clear that the Western Cape is a major national and global conservation priority, and is quite unlike anywhere else in the country in terms of the number of threatened plant species.

The Western Cape Biodiversity Spatial Plan (2017) indicates identified Critical Biodiversity Areas (CBAs) which aims to guide sustainable development by providing a synthesis of biodiversity information to decision makers. It serves as the common reference for all multi-sectoral planning procedures, advising which areas can be lost to development, and which areas of critical biodiversity value and their support zones should be protected against any impacts.



**Map 1:** Critical Biodiversity Areas, Ecological Support Areas and NFEPA Wetlands according to the WCBSP (2017) mapping.



## 6. Observations and Findings Relative to the Terms of Reference

### 6.1 In terms of biodiversity pattern, identify or describe, at a community and ecosystem level-

#### 6.1.1 The main vegetation type and plant communities that occur on, and in the vicinity of the site:

The National Vegetation Map of South Africa (2012) identifies the remnants of natural vegetation occurring within the area as Hopefield Sand Fynbos (VU).

**Distribution** Western Cape Province: West Coast lowlands from Aurora to Rondeberg, just south of Yzerfontein, with an outlier in the Strandveld at Kleinberg north of Langebaanweg. Altitude 20–150 m.

**Vegetation & Landscape Features** Coastal sand plains, flat to undulating, and also including localised inland dune fields. Vegetation is a moderately tall, ericoid-leaved shrubland with dense herbaceous stratum of aphyllous hemicryptophytes. This is mostly asteraceous and restioid fynbos, although proteoid fynbos is extensive and ericaceous fynbos occurs in seeps and along watercourses. Hopefield Sand Fynbos has all three typical fynbos elements, but with a paucity (in species richness and density) of Ericaceae. This unit is most diverse in the Hopefield area, where extensive stands of *Leucadendron foedum*, *Leucospermum rodolentum* and *Serruria fucifolia* are dominant.

**Geology & Soils** Deep, acid, tertiary sands, generally grey regic sands, sometimes pale yellow to reddish brown. Land types mainly Hb, Ha and Db.

**Climate** MAP 210–430 mm (mean: 325 mm), peaking from May to August. Mists common in winter. Mean daily maximum and minimum temperatures 28.3°C and 7.1°C for February and July, respectively. Frost incidence 3 or 4 days per year. See also climate diagram for FFd 3 Hopefield Sand Fynbos (Figure 4.57).

**Important Taxa** Tall Shrubs: *Leucadendron foedum* (d), *Leucospermum rodolentum* (d), *Leucadendron pubescens*, *Putterlickia pyracantha*. Low Shrubs: *Diosma hirsuta* (d), *Phylica cephalantha* (d), *Anaxeton asperum*, *Anthospermum spathulatum* subsp. *spathulatum*, *Aspalathus lotoides* subsp. *lagopus*, *A. ternata*, *Erica mammosa*, *E. plumosa*, *Leucadendron cinereum*, *L. salignum*, *Leucospermum hypophyllocarpodendron* subsp. *canaliculatum*, *Metalasia capitata*, *Pharnaceum lanatum*, *Phylica harveyi*, *Serruria decipiens*, *S. fucifolia*, *Trichocephalus stipularis*. Succulent Shrub: *Euphorbia muirii*. Herbs: *Helichrysum tinctum*, *Indigofera procumbens*, *Knowltonia vesicatoria*. Geophytic Herbs: *Geissorhiza purpurascens*, *Lachenalia reflexa*, *Romulea obscura*. Graminoids: *Cannomois parviflora* (d), *Cynodon dactylon* (d), *Ehrharta villosa* var. *villosa* (d), *Elegia tectorum* (d), *Staberoha cernua* (d), *Thamnochortus erectus* (d), *T. punctatus* (d), *Willdenowia incurvata* (d), *Elegia verreauxii*.

**Endemic Taxa** Low Shrubs: *Leucospermum tomentosum* (d), *Relhania rotundifolia*. Herbs: *Heliophila patens*, *Lepidium flexuosum*. Geophytic Herb: *Oxalis suavis*.

**Conservation** Endangered. Target 30%. Very small portion statutorily conserved in the West Coast National Park, with an additional 2% protected in Hopefield and Jakkalsfontein Nature Reserves. Already 40% transformed for cultivation (especially cash crops) and grazing land. Increased occurrence of aliens such as *Acacia saligna*, *A. cyclops* as well as various species of *Pinus* and *Eucalyptus* is of concern. Erosion very low. Local farmers claim that water extraction is drying out rivers, marshes and wetlands.

**References** Boucher (1983, 1987, 1989a, 1996b), Boucher & Rode (1999).

## Observations and Findings within the Study Site:

The following indigenous vegetation species were recorded during the survey conducted on the **11 May 2018** -

- *Aspalathus spinescens*
- *Cissampelos capensis*
- *Ehrharta villosa*
- *Phyllica cephalantha*
- *Putterlickia pyracantha*
- *Searsia laevigata var laevigata*
- *Solanum linnaeanum*
- *Willdenowia incurvata*
- *Kedostris sp.*
- *Brunsvigia orientalis*
- *Willdenowia incurvata*
- *Serruria fucifolia*

The following species, which was not observed during the first survey, were additionally recorded during the survey conducted on the **08 August 2018** -

- *Lachenalia sp*
- *Lobelia sp*
- *Senecio arenarius*
- *Tetragonia fruticose*
- *Zantedeschia aethiopica*
- *Dimorphotheca pluvialis*
- *Gladiolus carinatus*
- *Adenogramma glomerata*

No species of Conservation Concern (SCC) were recorded on site during either of the surveys conducted.

Alien Trees, Weeds and Grasses-

- *Acacia cyclops*

### 6.1.2 Threatened or vulnerable ecosystems:

The CBAs as mapped for the relevant area are shown on Map 1. According to the 2017 Western Cape Biodiversity Spatial Plan the site is mapped as a Terrestrial Ecological Support Area (ESA 1).

The conservation value of the area is however recorded as being low. It is surrounded by an existing cemetery to the east, roads and development to the south and roads to the west and north with no to limited ecological connectivity. Most of the vegetation on site is degraded.



**Photo 1:** Northern section of the site.



**Photo 2:** More disturbed southern section of the site.

### **6.1.3 The types of animal communities (fish, invertebrates, avifauna, mammals, reptiles):**

#### **Fish**

No fish species are present on the site or within close proximity to the site. No freshwater ecosystems occur within the area.

#### **Invertebrates**

##### **Observations and Findings:**

It is expected that the area has a rich and diverse invertebrate life especially within the surrounding area. The proposed development, if restricted to recommended development area, will however not have a significant detrimental impact on the invertebrate species within the area.

#### **Birds (Avifauna)**

Approximately 188 species are known to occur in the bigger area (Hockey et al 2006).

##### **Observations and Findings:**

No bird SCC or their associated habitat were observed on site at the time of the survey.

If recommendations as provided in this report are adhered to it is not expected that the proposed development will have a significant detrimental impact on any bird species of conservation concern or their habitat due to extensive undeveloped areas that will remain adjacent to proposed development areas.

#### **Mammals**

As reported in Smithers (1983) small buck e.g. common duiker, steenbok and grysbok, rodents such as mole rats, field mice and hares, as well as carnivores such as genets, mongoose and caracal are likely to inhabit the area.

Some 68 mammal species are known to occur in the bigger area (Smithers 1983).

##### **Observations and Findings:**

No mammal SCC or their associated habitats were observed on site at the time of the survey.

If recommendations as provided in this report are adhered to it is not expected that the proposed development will have a significant detrimental impact on any mammal species of conservation concern or their habitat due to extensive undeveloped areas that will remain adjacent to proposed development areas.

#### **Amphibians and Reptiles (Herpetofauna)**

With respect to amphibians, Minter et al (2004) state that “habitat loss or modification as a result of agriculture and other forms of human activity remains the most important single

threat to the survival of amphibian populations. The scale of these changes and their relative permanence are the major cause. At greatest risk are species that have limited distributions.”

As reported in Alexander et al (2007) 33 reptile species are likely to inhabit the area.

### **Observations and Findings:**

No reptile or amphibian SCC or their associated habitats were observed on site at the time of the survey.

Before and during clearing activities on site search and rescue of tortoises must be conducted. All tortoises collected must be released on the adjacent natural areas not to be developed upon.

If recommendations as provided in this report are adhered to it is not expected that the proposed development will have a significant detrimental impact on any reptile or amphibian species of conservation concern or their habitat due to extensive undeveloped areas that will remain adjacent to proposed development areas.

**6.2 In terms of biodiversity pattern, identify or describe, at species level- (Show the degree of confidence in predictions based on the availability of information and specialist knowledge, i.e. High 70 -100% confident, Medium 40 - 70% confident, Low 0 - 40% confident. Assess the likelihood of other RDB species, or species of conservation concern, occurring in the vicinity. Reflect this in degree of confidence indicator).**

**6.2.1 The viability of, and estimated population size of the TOPS and RDB species of conservation concern that are present.**

#### **Red Data Listed or species listed under TOPS regulation (Vegetation)**

No species of Conservation Concern (SCC) were recorded on site.

#### **Red Data Listed or species listed under TOPS regulation (Reptiles and Amphibians)**

No amphibian or reptile SCC is known to occur on the proposed development area and no rare or localized species were recorded at the time of the survey.

#### **Red Data Listed or species listed under TOPS regulation (Mammals)**

No mammal SCC is known to occur on the proposed development area and no rare or localized species were recorded at the time of the survey.

#### **Red Data Listed or species listed under TOPS regulation (Avifauna)**

No bird SCC is known to occur on the proposed development area and no rare or localized species were recorded at the time of the survey.

### **6.3 Other pattern issues-**

**Any significant landscape features or rare or important vegetation/faunal associations such as seasonal wetlands, alluvium, seeps, quartz patches or salt marshes in the vicinity:**

As previously mentioned an ESA1 area occurs in the impact area. These areas are not essential for meeting biodiversity targets, but they play an important role in supporting the functioning of PAs or CBAs, and are often vital for delivering ecosystem services.

The botanical sensitivity allocated to the site is low.

### **6.4 The extent of alien plant cover on the site:**

Low density of *Acacia cyclops* was recorded on some of the impacted areas.

### **6.5 The condition of the site/s in terms of current or previous land uses:**

The conservation value of the area is however recorded as being low. It is surrounded by an existing cemetery to the east, roads and development to the south and roads to the west and north with no to limited ecological connectivity. Most of the vegetation on site is degraded.

### **6.6 In terms of biodiversity process, identify or describe:**

#### **6.6.1. The key ecological “drivers” and/or environmental gradients of ecosystems on the site and in the vicinity.**

Key ecological drivers identified on the site and surrounds fire.

#### **6.6.2 Any possible changes in key processes e.g. increased fire frequency or drainage/artificial recharge of aquatic systems.**

No.

#### **6.6.3 The condition and functioning of rivers and wetlands (if present) in terms of possible changes to the channel, flow regime and naturally-occurring riparian vegetation.**

Not applicable

#### **6.6.4 Would the conservation of the site lead to greater viability of the adjacent ecosystem by securing any of the functional factors listed?**

No, not the impacted area.

#### **6.6.5 Does the site or neighbouring properties potentially contribute to meeting regional conservation targets for both biodiversity pattern and ecological processes?**

No.

### 6.6.6 Is this a potential candidate site for conservation stewardship?

No, not the impacted area.

## 7. Ecological Impact Assessment with Associated Mitigation and Rehabilitation Measures to be implemented

(See Appendix B attached for Impact Assessment Methodology used)

### Construction and Operational Phases:

<b>Nature of potential impact:</b> Impact of proposed activities on indigenous vegetation and associated fauna and avifauna habitat		
<b>Discussion:</b> On the proposed development area the indigenous vegetation is of low conservation value and the site is not expected to be an important breeding site or habitat for any fauna or avifauna species of conservation concern.		
<b>Cumulative impacts:</b> Loss of indigenous vegetation and associated fauna and avifauna habitat.		
<b>Mitigation:</b> <ul style="list-style-type: none"> <li>Clearly demarcate the proposed development footprint area and the recommended no-go/no-development area and undertake construction and operational activities (including construction camp) only in demarcated development footprint area. Demarcation method to be approved by an Environmental Control Officer (ECO).</li> <li>No construction related disturbance should be allowed outside the demarcated areas.</li> <li>Implement site specific erosion and storm water runoff management measures to prevent (or if prevention is not possible limit) any erosion from occurring on the development footprint area and surrounds.</li> <li>The landowner/s must adhere to his/her legal obligations to actively eradicate and manage alien vegetation infestations present on the applicable and surrounding properties.</li> </ul>		
<b>Criteria</b>	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	2	1
<b>Duration</b>	5	5
<b>Magnitude</b>	10	2
<b>Probability</b>	5	2
<b>Significance</b>	85 - High	16 - Low
<b>Status</b>	High Negative Significance without Mitigation	Low Negative Significance with Mitigation
<b>Reversibility</b>	100% Reversible	100% Reversible
<b>Irreplaceable loss of resources</b>	2-Partial loss of resources but can be rehabilitated	2 – Partial loss of resources
<b>Degree to which impact can be mitigated</b>	2 – Partly, some loss of indigenous vegetation will occur	

<b>Nature of potential impact:</b> Impact of proposed development activities on surface- and groundwater resources		
<b>Discussion:</b> Construction activities can impact negatively upon the surface and groundwater resources on and adjacent to the site.		

Possible chemicals found on site during construction as well as any hydrocarbon spillages will negatively affect the soil and surface or ground water interacting with it. Should the spills not be cleaned up and surface water infiltrate the ground, pollutants may even affect the groundwater resource.

**Cumulative impacts:**

Loss of fresh water habitat and pollution of surface water resources.

**Mitigation:**

- All construction activities and personnel on site to stay within demarcated construction areas.
- Proper waste bins to be provided to construction staff and all waste to be regularly removed to municipal landfill site.
- If any fuel or hazardous materials is spilled on site it must be treated as according to EMP hazardous spill management requirements.
- The cement mixing area must be within the demarcated area and no seepage of site into the surrounding vegetation may occur.

Criteria	Without Mitigation	With Mitigation
<b>Extent</b>	2	1
<b>Duration</b>	5	1
<b>Magnitude</b>	10	2
<b>Probability</b>	5	2
<b>Significance</b>	85 - High	8 - Low
<b>Status</b>	High Negative Significance without Mitigation	Low Negative Significance with Mitigation
<b>Reversibility</b>	100%	100%
<b>Irreplaceable loss of resources</b>	2-Partial loss of resources but can be rehabilitated	1 – Resource will not be lost
<b>Degree to which impact can be mitigated</b>	1- Completely	

**Nature of potential impact:**

Potential erosion of the site and surrounds

**Discussion:**

Vegetation clearance and hardening of surfaces could lead to an increase in storm water runoff and eventually lead to soil erosion which can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should heavy rains fall.

**Cumulative impacts:**

Exposing soil may lead to erosion of site and surrounds if not mitigated.

**Mitigation:**

- Site specific construction and operational phase storm water management plan must be compiled and implemented to prevent any erosion or significant increase in storm water runoff from occurring and artificially recharging the remaining drainage lines.
- Should any signs of erosion or artificial recharge be observed the municipality must implemented rectification and preventions measures immediately and consult with the appointed ECO before implementing these measures.

Criteria	Without Mitigation	With Mitigation
<b>Extent</b>	3	1
<b>Duration</b>	5	1
<b>Magnitude</b>	6	2



<b>Probability</b>	4	2
<b>Significance</b>	56 - Medium	8 - Low
<b>Status</b>	Medium Negative Significance without Mitigation	Low Negative Significance with Mitigation
<b>Reversibility</b>	100%	100%
<b>Irreplaceable loss of resources</b>	2-Partial loss of resources but can be rehabilitated	1 – Resource will not be lost
<b>Degree to which impact can be mitigated</b>	1 – Can be completely mitigated	

### **Decommissioning/Rehabilitation Phase:**

<b>Nature of potential impact:</b> Potential erosion of the site and surrounds during rehabilitation phase		
<b>Discussion:</b> Rehabilitation (i.e. demolishing developed structures) could lead to soil erosion which can occur due to wind (wind erosion cause dust pollution); and due to overland storm water flow should heavy rains fall.		
<b>Cumulative impacts:</b> Exposing soil may lead to erosion of site and surrounds if not mitigated.		
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>Decommissioned areas must be rehabilitated and planted with indigenous vegetation immediately after built structures have been removed.</li> <li>Engineered contour structures reinstated and maintained.</li> <li>Monitor rehabilitation of area on a 6 monthly basis until effective/successful rehabilitation has been obtained.</li> <li>If erosion is detected implement erosion rectification and preventions measures as guided by an ECO</li> </ul>		
<b>Criteria</b>	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	3	1
<b>Duration</b>	5	1
<b>Magnitude</b>	6	2
<b>Probability</b>	4	2
<b>Significance</b>	56 - Medium	8 - Low
<b>Status</b>	Medium Negative	Low Negative (Acceptable)
<b>Reversibility</b>	100%	100%
<b>Irreplaceable loss of resources</b>	2-Partial loss of resources but can be rehabilitated	1 – Resource will not be lost
<b>Degree to which impact can be mitigated</b>	1 – Can be completely mitigated	

### **8. Concluding Remarks and Summary of Impact Mitigation and Rehabilitation Measures Proposed before, during and after the Proposed Activities**

The botanical sensitivity allocated to the site is low.

It was concluded that from an ecological impact point of view that the proposed development should not have an unacceptable significant negative impact on environmental features of the site and surrounds if specialist recommendations are taken into consideration and effectively implemented.

Summary of recommendations as listed in the report and additional recommendations to be implemented are listed below:

### **Construction, Operational and Rehabilitation phases -**

- The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the construction, operational and decommission/rehabilitation phases.
- Undertake development activities only in identified and specifically demarcated areas as proposed.
  - Demarcate no-go areas before any land clearing occurs under the supervision of an ECO. Demarcation must be clearly visible and effective and no-go area must remain demarcated throughout construction phase.
  - Personnel should be restricted to the construction camp site and immediate construction areas only.
  - Remove and conserve topsoil layer and overburden material for rehabilitation after construction activities have ceased
  - Implement site specific erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the development footprint area and surrounds.
  - Proper waste bins to be provided during construction and operation and all waste to be regularly (at least once a week) removed to municipal landfill site.
  - If any fuel or hazardous materials is spilled on site it must be treated as according to EMP requirements.
  - The cement mixing area must be within a demarcated area and no cement mix runoff water escapes from cement mixing area.
  - The landowner/s must adhere to his/her legal obligations to actively eradicate and manage alien tree infestations present on the applicable and surrounding properties.
  - Site specific construction and operational phase storm water management plan must be compiled and implemented to prevent any erosion or significant increase in storm water runoff from occurring.
  - Should any signs of erosion or artificial recharge be observed the municipality must implemented rectification and preventions measures immediately and consult with the appointed ECO before implementing these measures.
  - Only use vegetation indigenous to the area to rehabilitate impacted/decommissioned areas and implement ongoing monitoring of the rehabilitated areas until successful rehabilitation has taken place.
  - After topsoil has been replaced ongoing monitoring and removal of alien vegetation regrowth must be conducted to ensure effective rehabilitation of indigenous vegetation.
  - Decommissioned areas must be rehabilitated and planted with indigenous vegetation immediately after built structures have been removed.

- Monitor rehabilitation of areas impacted outside of the proposed development areas or decommissioned areas on a 6 monthly basis until effective/successful rehabilitation has been obtained.
- If erosion is detected during or after rehabilitation implement erosion rectification and preventions measures as guided by an ECO

Eco Impact is of the opinion, and based on the survey and desk study done, that the proposed development activities; if designed and implemented according to the recommendations as provided in this report, will not have an unacceptable significantly negative impact on the environmental aspects of the site and surrounds as assessed in this report.

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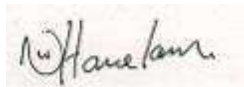
## APPENDIX A: Declaration of Independence

### THE SPECIALIST

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

I **Nicolaas Willem Hanekom**, as the appointed specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent:
  - other than fair remuneration for work performed/to be performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
  - am not independent, but another specialist that meets the general requirements set out in Regulation 13 of GN No. 326 have been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- in terms of the remainder of the general requirements for a specialist, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- have disclosed/will disclose, to the Applicant, the Department and registered interested and affected parties, all material information that have or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application;
- have ensured/will ensure that information containing all relevant facts in respect of the application was/will be distributed or was/will be made available to interested and affected parties and the public and that participation was/will be facilitated in such a manner that all interested and affected parties were/will be provided with a reasonable opportunity to participate and to provide comments;
- have ensured/will ensure that the comments of all interested and affected parties were/will be considered, recorded and submitted to the Department in respect of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations, 2014 (as amended).



Pri.Sci.Nat (Ecological Science) 400274/11

08 June 2018

Signature of the specialist:

Date:

Eco Impact Legal Consulting (Pty) Ltd

Name of company (if applicable):

## **APPENDIX B: Impact Assessment Methodology**

Below is the assessment methodology utilized in determining the significance of the potential impacts on the biophysical environment, and where applicable the possible alternatives. The methodology is broadly consistent with that described in the Department of Environmental Affairs' Guideline Document on the EIA Regulations (1998).

For each potential impact, the significance is determined by specified factors as in Table 1. Significance is described prior to mitigation as well as with the most effective mitigation measure(s) in place.

The mitigation described in the document represents the full range of plausible and pragmatic measures that must be implemented.

Despite the attempts at providing a completely objective and impartial assessment of the environmental implications of proposed activities, the specialist can never completely escape the subjectivity inherent in attempting to define significance.

Recognising this, potential subjectivity in the current process is addressed as follows:

- Be clear about the difficulty of being completely objective in the determination of significance;
- Develop an explicit methodology for assigning significance to impacts and outlining this methodology in detail. Having an explicit methodology not only forces the assessor to come to terms with the various facets contributing toward determination of significance, thereby avoiding arbitrary assignment, but also provides the reader of the report with a clear summary of how the assessor derived the assigned significance; and
- Wherever possible, differentiating between the likely significance of potential environmental impacts as experienced by the various affected parties.

Although these measures may not totally eliminate subjectivity, they do provide an explicit context within which to review the assessment of impacts.

**Table 1: Assessment criteria for the evaluation of impacts**

Criteria		Description	
<b>Nature</b>	a description of what causes the effect, what will be affected, and how it will be affected.		
	<b>Type</b>	<b>Score</b>	<b>Description</b>
<b>Extent (E)</b>	None (No)	1	Footprint
	Site (S)	2	On site or within 100 m of the site
	Local (L)	3	Within a 20 km radius of the centre of the site
	Regional (R)	4	Beyond a 20 km radius of the site
	National (Na)	5	Crossing provincial boundaries or on a national / land wide scale
<b>Duration (D)</b>	Short term (S)	1	0 – 1 years
	Short to medium (S-M)	2	2 – 5 years
	Medium term (M)	3	5 – 15 years
	Long term (L)	4	> 15 years
	Permanent(P)	5	Will not cease
<b>Magnitude (M)</b>	Small (S)	0	will have no effect on the environment
	Minor (Mi)	2	will not result in an impact on processes
	Low (L)	4	will cause a slight impact on processes
	Moderate (Mo)	6	processes continuing but in a modified way
	High (H)	8	processes are altered to the extent that they temporarily cease
	Very high (VH)	10	results in complete destruction of patterns and permanent cessation of processes.
<b>Probability (P)</b> the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned	Very improbable (VP)	1	probably will not happen
	Improbable (I)	2	some possibility, but low likelihood
	Probable (P)	3	distinct possibility
	Highly probable (HP)	4	most likely
	Definite (D)	5	impact will occur regardless of any prevention measures
<b>Significance (S)</b>	Determined through a synthesis of the characteristics described above: <b>S = (E+D+M) x P</b> Significance can be assessed as low, medium or high		
<b>Low: &lt; 30 points:</b>	The impact would not have a direct influence on the decision to develop in the area		
<b>Medium: 30 – 60 points:</b>	The impact could influence the decision to develop in the area unless it is effectively mitigated		
<b>High: &gt; 60 points:</b>	The impact must have an influence on the decision process to develop in the area		
<b>No significance</b>	When no impact will occur or the impact will not affect the environment		
<b>Status</b>	Positive (+)		Negative (-)
<b>The degree to which the impact can be reversed</b>	Completely reversible (R)	90-100%	The impact can be mostly to completely reversed with the implementation of the correct mitigation and rehabilitation measures.
	Partly reversible (PR)	6-89%	The impact can be partly reversed providing that mitigation measures as stipulated in the EMP are implemented and rehabilitation measures are undertaken
	Irreversible (IR)	0-5%	The impact cannot be reversed, regardless of the mitigation or rehabilitation measures taking place
<b>The degree to which the impact may cause irreplaceable loss of resources</b>	Resource will not be lost (R)	1	The resource will not be lost or destroyed provided that mitigation and rehabilitation measures as stipulated in the EMP are implemented
	Resource may be partly destroyed (PR)	2	Partial loss or destruction of the resources will occur even though all management and mitigation measures as stipulated in the EMP are implemented
	Resource cannot be replaced (IR)	3	The resource cannot be replaced no matter which management or mitigation measures are implemented.
<b>The degree to which the impact can be mitigated</b>	Completely mitigatable (CM)	1	The impact can be completely mitigated providing that all management and mitigation measures as stipulated in the EMP are implemented
	Partly mitigatable (PM)	2	The impact cannot be completely mitigated even though all management and mitigation measures as stipulated in the EMP are implemented. Implementation of these measures will provide a measure of mitigatability
	Un-mitigatable (UM)	3	The impact cannot be mitigated no matter which management or mitigation measures are implemented.