



# ENVIRONMENTAL MANAGEMENT PROGRAMME

for

## DEVELOPMENT OF SIX (6) GLAMPING PODS

on

A portion of the Remainder of Portion 101 of the Farm Zwarte  
Jongersfontein No. 489, Jongensfontein, Hessequa Municipal District

In terms of the

National Environmental Management Act (Act No. 107 of 1998, as  
amended) & 2014 Environmental Impact Regulations

**Prepared for Applicant:**

Mayborn Investments 20 (Pty) Ltd

**Date:** 29 August 2024

**Appointed EAP:** Ms Louise-Mari van Zyl

**Assisted by Candidate EAP:** Ms Mariska Byleveld

**Email:** [louise@cape-eaprac.co.za](mailto:louise@cape-eaprac.co.za) / [mariska@cape-eaprac.co.za](mailto:mariska@cape-eaprac.co.za)

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**Case Officer:** Steve Kleinhans

# Cape EAPrac

Cape Environmental Assessment Practitioners

Tel: +27 44 874 0365 PO Box 2070, George 6530  
Fax: +27 44 874 0432 17 Progress Street, George

[www.cape-eaprac.co.za](http://www.cape-eaprac.co.za)



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**APPOINTED ENVIRONMENTAL ASSESSMENT PRACTITIONER:*****Cape EAPrac Environmental Assessment Practitioners***

PO Box 2070

George

6530

Tel: 044-874 0365

**Appointed EAP:** Director **Louise-Mari van Zyl** (MA Geography & Environmental Science [US]); Registered Environmental Assessment Practitioner with the Environmental Assessment Practitioners of South Africa, EAPSA, **Registration Number 2019/1444**. Ms van Zyl has over twenty years' experience as an environmental practitioner.

**Assisted by Candidate EAP:** **Mariska Byleveld** (MSc Geology at the University of the Free State). Registered Candidate Environmental Assessment Practitioner with the Environmental Assessment Practitioners of South Africa, EAPASA, **Registration Number 2023/6593**.

**PURPOSE OF THIS REPORT:**

Environmental Management Programme

**APPLICANT:**

Mayborn Investments 20 (Pty) Ltd

**CAPE EAPRAC REFERENCE NO:**

HES838/05

**SUBMISSION DATE**

29 August 2024

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### In terms of the

National Environmental Management Act (Act No. 107 of 1998, as amended) & 2014  
Environmental Impact Regulations (as amended)

*Submitted for:*

### *Stakeholder Review & Comment*

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### Report Issued by:

***Cape Environmental Assessment Practitioners***

Tel: 044 874 0365

Web: [www.cape-eaprac.co.za](http://www.cape-eaprac.co.za)

PO Box 2070

17 Progress Street

George 6530



## ORDER OF REPORT

### Environmental Management & Maintenance Plan

- Appendix 1 : Locality Plans
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## ENVIRONMENTAL MANAGEMENT PROGRAMME REQUIREMENTS

Appendix 4 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Management Programme (EMPr). The checklist below serves as a summary of how these requirements were incorporated into this EMPr.

Table 1: Checklist in terms of Appendix 4 of Regulation 982 of 2014 EIA Regulations

Requirement	Description
Details and expertise of the EAP who prepared the EMPr; including curriculum vitae.	Ms Louise-Mari van Zyl for Cape Environmental Assessment Practitioners. See Appendix 4.
A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	<u>Section 1</u>
A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that must be avoided, including buffers	Appendix 1
A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all the phases of the development including – (i) Planning and design; (ii) Pre-construction activities; (iii) Construction activities; (iv) Rehabilitation of the environment after construction and where applicable post closure; and (v) Where relevant, operation activities.	<u>Section 4</u> – Environmental Impacts & Mitigations <u>Section 5</u> - Responsibilities <u>Section 6</u> – Pre-Construction Design <u>Section 7</u> – Construction Phase <u>Section 8</u> – Operation Phase
A description and identification of impact management outcomes required for the aspects contemplated above.	<u>Section 4</u>
A description of the proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated above will be achieved and must, where applicable include actions to – (i) Avoid, modify, remedy control or stop any action, activity or process which causes pollution or environmental degradation; (ii) Comply with any prescribed environmental management standards or practises; (iii) Comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.	<u>Section 4</u> <u>Section 6</u> <u>Section 7</u> <u>Section 8</u>
The method of monitoring the implementation of the impact management actions contemplated above.	<u>Section 9</u> <u>Section 11</u>
The frequency of monitoring the implementation of the impact management actions contemplated above.	<u>Section 9</u>



<b>Requirement</b>	<b>Description</b>
An indication of the persons who will be responsible for the implementation of the impact management actions.	<u>Section 5</u>
The time periods within which the impact management actions must be implemented.	Not Applicable
The mechanism for monitoring compliance with the impact management actions.	<u>Section 9</u>
A program for reporting on compliance, taking into account the requirements as prescribed in the Regulations.	<u>Section 9</u>
An environmental awareness plan describing the manner in which – (i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment.	<u>Section 5</u> <u>Section 6</u> <u>Section 7</u> <u>Section 8</u> <u>Section 9</u>
Any specific information that may be required by the competent authority.	Not Applicable.

## ABBREVIATIONS AND ACRONYMS

<b>BSP</b>	Biodiversity Sector Plan - to inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact on biodiversity.
<b>CARA</b>	Conservation of Agricultural Resources Act (Act 43 of 1983) - provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.
<b>CBA</b>	Critical Biodiversity Area - areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan.
<b>DFFE</b>	National Department of Forestry, Fisheries & the Environment – the national authority responsible for the sustainable environmental management and integrated planning.
<b>DEA&amp;DP</b>	Department of Environmental Affairs and Development Planning – the provincial authority for sustainable environmental management and integrated development planning. The competent authority is this case.
<b>DWS</b>	Department of Water & Sanitation Affairs – National authority mandated to enforce the National Water Act (NWA).
<b>EA</b>	Environmental Authorisation – Authorisation obtained on completion of an Environmental Impact Assessment in terms of the National Environmental Management Act (NEMA).
<b>ECA</b>	Environment Conservation Act, 1989 - To provide for the effective protection and controlled utilization of the environment and for matters incidental thereto.
<b>ECO</b>	Ecological Control Officer – independent site agent appointed to observe and enforce the implementation of environmental policies and principles on a development site.
<b>EIA</b>	Environmental Impact Assessment - a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.
<b>EMPr</b>	Environmental Management Programme – an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented and that positive benefits of the projects are enhanced.
<b>GIS</b>	Geographic Information System - system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data.
<b>GPS</b>	Global Positioning System - a radio navigation system that allows land, sea, and airborne users to determine their exact location, velocity, and time 24 hours a day, in all weather conditions, anywhere in the world.
<b>NEMA</b>	National Environmental Management Act (Act 107 of 1998, as amended) – national legislation that provides principles for decision-making on matters that affect the environment.

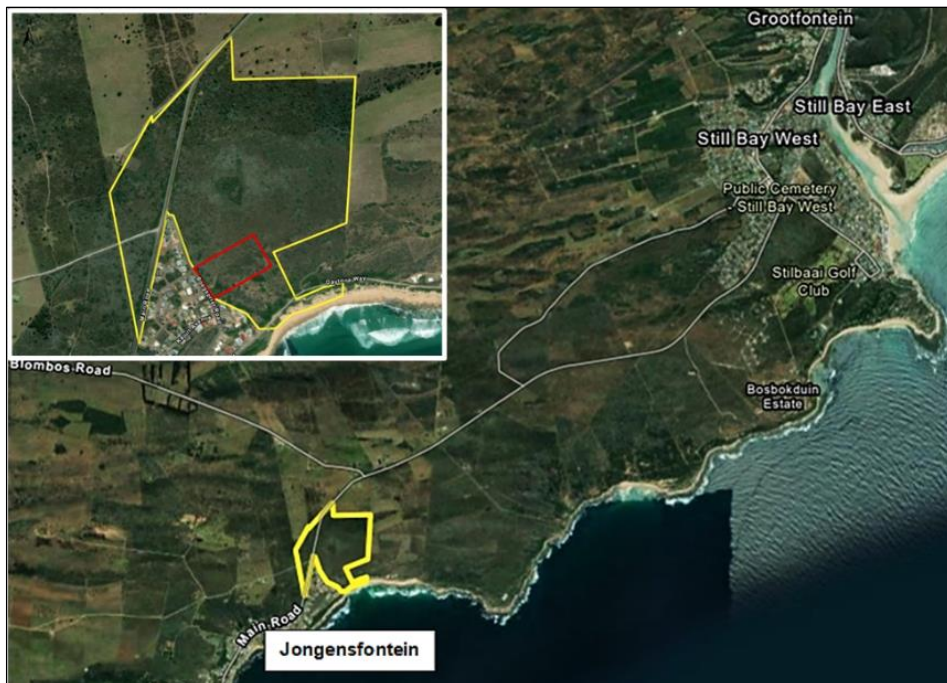
- NEM:BA** National Environmental Management: Biodiversity Act (Act No.10 of 2004) – provides for the management and conservation of South African biodiversity within the framework of NEMA.
- NFA** National Forestry Act (Act No.84 of 1998) - provides for the protection of forests, as well as specific tree species within South Africa.
- NSBA** National Spatial Biodiversity Assessment – aims to assess the state of South Africa’s biodiversity based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors.
- NWA** National Water Act (Act No.36 of 1998) - ensures that South Africa's water resources are protected, used and managed.

## 1. INTRODUCTION

**Cape Environmental Assessment Practitioners (Cape EAPrac)** was appointed by the Proponent, Mayborn Investments 20 (Pty) Ltd to develop an Environmental Management Programme (EMPr) which will be used to promote and ensure environmental monitoring and control during all relevant phases (pre-construction, construction, operational as well as maintenance) associated with the proposed activity.

**Mayborn Investments 20 (Pty) Ltd**, hereafter referred to as the Proponent, intends to develop six (6) glamping pods on a portion of the Remainder of Portion 101 of the Farm Zwarte Jongersfontein, Jongersfontein, Hessequa Municipal District (Figure 1).

The property is approximately 61ha in size and located immediately adjacent to- and bordering the Eastern border of Jongersfontein, a small coastal town approximately 9km south-west of Still Bay via Main Road (Figure 1).



**Figure 1: Location of the approximate study area (±2.24ha) for the proposed six (6) glamping pods (RED) within the greater property (YELLOW) (±61ha) in proximity to Jongersfontein to the West.**

The proposal entails the following **development components** (Figure 2):

- **Six (6)** x one-bedroom **Glamping Pods**, ±26m<sup>2</sup> each, with its own:
  - Deck (±34m<sup>2</sup>)
  - Carport (±18m<sup>2</sup>)
  - Water Tank
  - Underground Sewage Package Plant
  - Limited Lawn Area
- **Internal Access Roads**
  - Main Gravel Road
    - Area: ±848m<sup>2</sup>
    - Width: ±6m
  - Internal Gravel Roads
    - Area: ±699m<sup>2</sup>
    - Width: ±3m



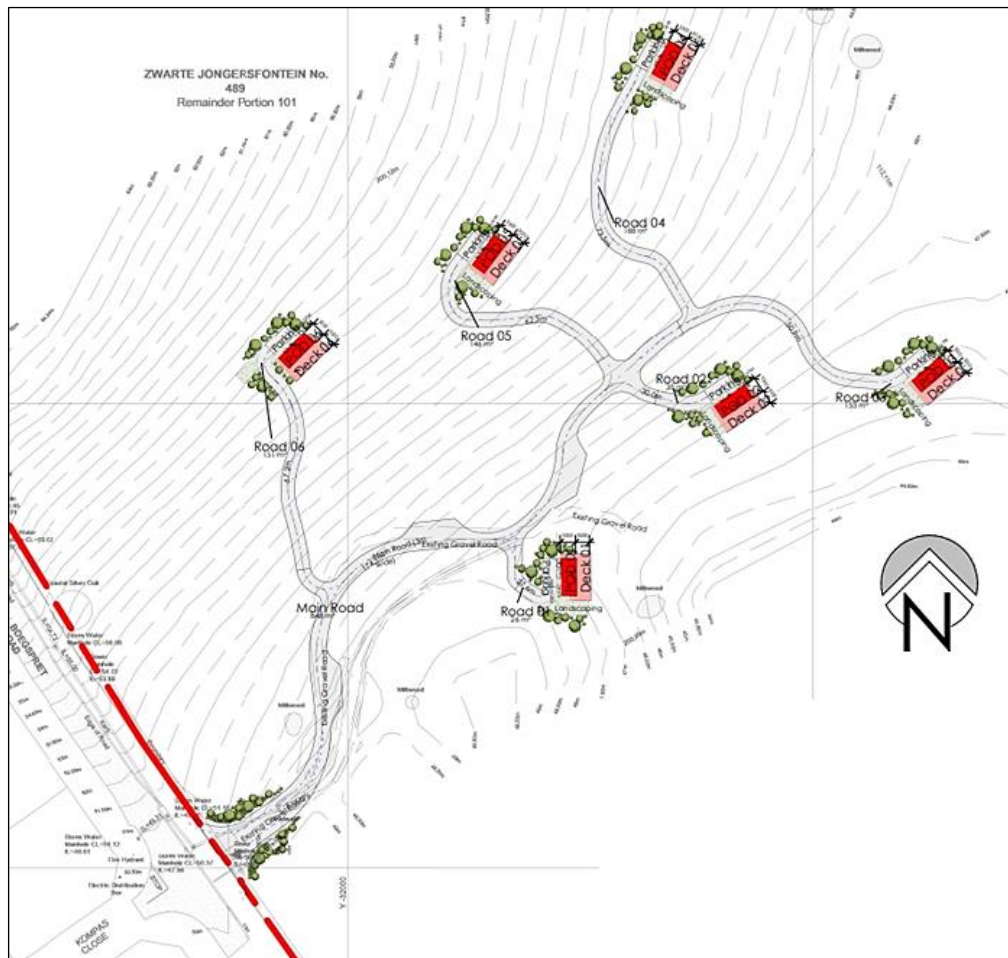


Figure 2: Site Development Plan for glamping pods within an approximate study area of 2.24ha as indicated in Figure 1 (RED).



Figure 3: Approximate overlay of the location of the six pods on the property.

This activity requires an Environmental Authorisation in terms of the National Environmental Management Act (NEMA, Act 107 of 1998), before commencing, as well as for future maintenance and repairs of the structure.

This document provides part of a series of documents that is being circulated for public and stakeholder input as part of the Basic Assessment process, before being provided to the provincial competent authority, the provincial Department of Environmental Affairs & Development Planning (DEA&DP) for decision making.

This EMPr contains **management requirements** and **recommendations** made by *Cape EAPrac*, the appointed specialist as well as in terms of the regulations contained in the **National Environmental Management Act** (NEMA, Act 107 of 1998) and environmental best practice principles.

This EMPr must be updated to include any conditions of the **Environmental Authorisation** (EA) as issued.

### **1.1 PURPOSE OF THE EMPR**

The purpose of this EMPr is to ensure that the environmental impacts and management of the various phases, of the proposed activity, on the receiving environment are managed, mitigated and kept to a minimum (ie. the **outcome** of implementing the EMPr). The EMPr must provide easily understood and clearly defined **actions** that must be implemented during each phase of the proposed activity. The EMPr is a dynamic document that is flexible and responsive to new and changing circumstances.

The document is binding on the Applicant, all contractors and sub-contractors to the site.

It must be included as part of any documents / agreements, as well as contractual documents between the Applicant and any contractors.

Copies of this EMPr must be kept on site and all **senior personnel** are expected to familiarise themselves with the content of this EMPr.

Any changes or deviations to this EMPr must be authorised by the competent authority in the event that any environmental outcomes are amended.

### **1.2 STATUS OF THE EMPR**

It is of utmost importance that this EMPr be read in conjunction with any legally obtained authorisations such as an Environmental Authorisation (EA). This EMPr is viewed as a dynamic document that must be reviewed and updated on a continual basis.

The EMPr is valid for the duration of the project (construction & rehabilitation phase) with each applicable phase corresponding to the identified requirements.

## **2 EMPR PHASING**

### **2.1 PRE-CONSTRUCTION PHASE**

The pre-construction phase refers to the design phase of the project. This will ensure that any requirements and best practise mechanisms are built into the planning / design phase to be developed in the construction and operational phase. In term of this application, the pre-construction can be considered as the site selection and engineering designs and mitigations.

## **2.2 CONSTRUCTION PHASE**

The construction phase refers to the actual construction of the development on the property and includes all earthworks. In terms of this application, this phase relates to the construction of the major and internal access roads and glamping pods with associated infrastructure.

## **2.3 OPERATIONAL PHASE**

The Operation Phase of this project relates to the ongoing management and maintenance required to ensure sustainable development. In terms of this application, this refers to all activities that are undertaken once construction is completed.

The Applicant must ensure that the Operational Phase maintains the underpinning principles 'Duty-of-Care-to-the-Environment' and ideals of sustainable development.

## **2.4 CLOSURE AND DECOMMISSIONING PHASE**

Decommissioning refers to the process of removing the operating assets of any development after completion of the operating life cycle.

Should the need arise in future to remove the structure wholly, the Applicant must consult with the Competent Authority to ensure compliance with legislation applicable at the time.

# **3 LEGISLATIVE REQUIREMENTS**

The project Applicant is required to comply with all necessary legislation and policies applicable to development and management of the development. These include but are not limited to:

## **3.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA, ACT 107 OF 1998 )**

The National Environmental Management Act (**NEMA**, Act 107 of 1998, as amended), makes provision for the identification and assessment of **activities** that are potentially detrimental to the environment and which require authorisation from the competent authority (in this case, the provincial Department of Environmental Affairs & Development Planning (DEA&DP)) based on the findings of an Environmental Impact Assessment (EIA).

**NEMA** embraces the notion of sustainable development as contained in the Constitution of South Africa (Act 106 of 1996) in that everyone has the right:

- to an environment that is not harmful to their health or wellbeing; and
- to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures.

**NEMA** aims to provide for cooperative environmental governance by establishing principles for decision-making on all matters relating to the environment and by means of Environmental Implementation Plans (EIP) and Environmental Management Plans/Programmes (EMPr), of which this EMPr is one.

Principles contained in Section 2 of the NEMA, amongst other things, prescribe that environmental management must:

- In order of priority aim to: avoid, minimise or remedy disturbance of ecosystems and loss of biodiversity;
- Avoid degradation of the environment and avoid jeopardising ecosystem integrity;

- Pursue the best practicable environmental option by means of integrated environmental management;
- Protect the environment as the people's common heritage;
- Control and minimise environmental damage; and
- Pay specific attention to management and planning procedures pertaining to sensitive, vulnerable, highly dynamic or stressed ecosystems.

It is incumbent upon the landowner, to ensure that the abovementioned principles, entrenched in this EMP are upheld and complied with.

### **3.2 ENVIRONMENT CONSERVATION ACT, 1989 (ECA)**

The EIA regulations contained in the Environmental Conservation Act (ECA) have been replaced by NEMA. However, property owners must comply with the draft regulations pertaining to noise as published in the province of Western Cape Provincial Extraordinary Gazette as provision made in section 25 of the ECA), as well as Section 24 of the ECA regarding waste management and Section 20 of the ECA dealing with waste management under Part IV, Control of Environmental Pollution.

### **3.3 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (NEM:BA) (ACT 10 OF 2004)**

This Act controls the management and conservation of South African biodiversity within the framework of NEMA. Amongst others, it deals with the protection of species and ecosystems that warrant national protection, as well as the sustainable use of indigenous biological resources. Sections 52 & 53 of this Act specifically make provision for the protection of critically endangered, endangered, vulnerable and protected ecosystems that have undergone, or have a risk of undergoing, significant degradation of ecological structure, function or composition as a result of human intervention through threatening processes.

The National List of Threatened Ecosystems (Notice 1477 of 2009, Government Gazette No. 32689, 6 November 2009) was gazetted in 2014. The list of threatened terrestrial ecosystems supersedes the information regarding terrestrial ecosystem status in the National Spatial Biodiversity Assessment (NSBA) 2004 & 2011.

The proposed development will lead to a loss of approximately 0.20ha of indigenous vegetation: (a) Hartenbos Dune Thicket within a Fynbos matrix (b) Hartenbos Dune Thicket dominated by plant SCC. It will impact plant SCC, *Agathosma muirii*, as the dominant species, but according to the botanist, common elsewhere on the farm portion and not threatened by the current development.

It may lead to long-term fragmentation, habitat loss, loss of SCC and diversity from inappropriate landscaping.

As per the recommendation from the botanist, the glamping pods are located outside the 200 m buffer from the southern-most boundary where the highest concentration and largest population of plant SCC were found. The glamping pods also avoids milkwood clumps dispersed on the property.

All the impacts assessed are likely to have a Moderately negative significance if no mitigation is applied. However, both construction and operational phase impacts can be improved to minor negative impacts. The botanist confirmed that the proposed development is small enough that all impacts can be mitigated to Minor negative impacts, which is not significantly different from the no-go scenario (status quo). Because of this, the glamping development proposed will not trigger a biodiversity offset.



### **3.4 NATIONAL WASTE MANAGEMENT STRATEGY**

The National Waste Management Strategy presents the South African government's strategy for integrated waste management for South Africa.

It deals among others with: Integrated Waste Management Planning, Waste Information Systems, Waste Minimisation, Recycling, Waste Collection and Transportation, Waste Treatment, Waste Disposal and Implementing Instruments.

It is advisable that an integrated waste management system be adopted, which includes waste minimisation, waste recycling and the proper storage and disposal of waste, which does not impact of the health of the environment and human health.

All waste must be collected and disposed of at a waste facility. No waste material may be left on site once construction/maintenance is completed.

### **3.5 NATIONAL WATER ACT (NWA, ACT 36 OF 1998)**

The National Water Act (NWA) gives effect to the constitutional right of access to water. The Act's overall purpose is to ensure that South Africa's water resources are protected, used and managed in ways which take into account a number of factors, including inter-generational equity, equitable access, redressing the results of past racial and gender discrimination, promoting sustainable and beneficial use, facilitating social and economic development, and providing for water quality and environmental protection.

The NWA makes persons who own, control, occupy or use land responsible for taking measures to prevent pollution of water resources, and empowers Government authorities to take measures to enforce this obligation.

According to the Aquatic Specialist, neither a GA nor WULA is applicable to the proposed activity.

### **3.6 NATIONAL FOREST ACT (ACT 84 OF 1998)**

The NFA provides for the **protection of forests**, as well as **specific tree species**, quoting directly from the Act: "no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated". The Department of Agriculture, Forestry & Fisheries (DAFF) is responsible for the implementation and enforcement of the NFA, which includes **prohibition of damage to indigenous trees in any natural forest without a licence** (Section 7 of the NFA), as well as the prohibition of the cutting, disturbing, damaging destroying or removing **protected trees** without a licence (Section 15 of the NFA).

Milkwood thicket clumps are dispersed on the property.

Although the SDP has been Mitigated to avoid these protected tree species, a Forestry Permit must be obtained should these trees be trimmed or removed.

A Forestry Permit can take 4 – 5 months to obtain once building plans are approved. Applications must therefore be submitted well in advance of when a tree must be trimmed/removed. Potentially the National Forestry Act for trimming/removal of protected tree species.

The purpose of the National Veld and Forest Fire Act is to **prevent and combat veld, forest and mountain fires** throughout the RSA and to provide institutions, methods and practices for achieving this purpose. Institutions include the formations of such bodies as **Fire Protection Associations**

(FPA's) and **Working on Fire**. The Act provides the guidelines and constitution for the implementation of these institutions as well as their functions and requirements.

### **3.7 NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)**

The purpose of the National Heritage Resources Act is to:

- Introduce an integrated and interactive system for the management of the national heritage resources;
- Promote good government at all levels,
- Empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations;
- To lay down general principles for governing heritage resources management throughout South Africa;
- To introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa;
- To establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources at national level;
- To set norms and maintain essential national standards for the management of heritage resources in South Africa and to protect heritage resources of national significance;
- To control the export of nationally significant heritage objects and the import into South Africa of cultural property illegally exported from foreign countries;
- To enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources;
- To provide for the protection and management of conservation-worthy places and areas by local authorities; and
- To provide for matters connected therewith.

### **3.8 OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993)**

The Act provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work.

In terms of this Act, a Health and Safety Officer and Protocol must be implemented on any sites. The appointment of a Health and Safety Officer is the responsibility of the proponent and contractor and is included in this report to ensure due diligence on construction sites. It is the responsibility of the appointed to HSO to conduct any required audits and as such only the appointment of an HSO will be auditable in terms of this document.

## 4 ENVIRONMENTAL IMPACTS & MITIGATIONS

The following aquatic related specialist impact assessments / studies were undertaken for the proposal:

- Aquatic Compliance Statement (Dr James Dabrowski).
- Faunal Compliance Statement (Willem Mathee).
- Botanical/Biodiversity Impact Assessment (Bianke Fouche).
- Agricultural Compliance Statement (Johann Lanz).

The following environmental impacts of the proposed activity were identified and considered during the environmental process, based on which the associated mitigation measures were recommended for implementation (to reduce negative impacts & enhance positive ones):

### Botanical Potential Impacts

- Permanent loss of Terrestrial Biodiversity and Habitats.
- Permanent loss of stands of SCC and Important Plants.
- Long-term fragmentation & habitat loss from landscaping.
- Loss of SCC and Diversity from inappropriate Landscape Management and Use.

### 4.1 MITIGATIONS

Table 2: List of Mitigation Measures & Associated Management Requirements

Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
<b>Mitigations / Recommendations</b>					
Applicant must appoint an ECO to oversee construction.	✓	✓	✓		
Ensure that: <ul style="list-style-type: none"> <li>• construction activities do not impede drainage areas,</li> <li>• construction activities do not cause any flow paths and concentrated surface runoff,</li> <li>• vegetation clearing is conducted parallel with construction progress,</li> <li>• stormwater and runoff generated is discharged in retention areas,</li> <li>• heavy machinery does not compact soil or disturb vegetation outside demarcated areas.</li> </ul>		✓	✓		
Reduce transport of sediment through use of silt fences and/or biodegradable coir logs.		✓	✓		
Revegetate exposed areas once construction has been completed.		✓	✓		
Rainwater harvesting tanks must be installed.		✓	✓	✓	

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Prior to construction: The disturbance footprint of proposed glamping pods should be clearly defined and demarcated to prevent unnecessary damage to the surrounding environment.		✓	✓		
Prior to construction: With the aid of the ECO with botanical experience, install protective barriers around protected, <i>Sideroxylon inerme inerme</i> and other significant stands of SCC to prevent damage from construction activities.		✓	✓		
During construction: Protection and re-use of topsoil.		✓	✓		
Prior to construction: A plant search and rescue must be conducted by ECO with botanical experience.		✓	✓		
During construction: Materials used during construction must be sourced and transported responsibly to minimise the risk new invasive plants.		✓	✓		
During construction: Staff, if suspected may be checked when they leave to ensure no plants have been poached from the natural surrounding environment. Staff should also be told that plants may not be collected outside of the search and rescue operation.		✓	✓		
Post construction: Undertake revegetation of the disturbance envelope outside of the permanent disturbance footprint.		✓	✓		
If more plants are required for successful coverage of disturbed areas, augmentation with sourced plants can be done.		✓	✓		
The rehabilitation of the 2m disturbance footprint with topsoil and plants rescued on the site, must occur as soon as possible after the conclusion of construction.		✓	✓	✓	
If gardens need to be considered, they can be designed to be water wise (avoid erosion) and friendly to wildlife and the greater natural habitat.		✓	✓		
The owner of the property will need to join a Fire Protection Association (FPA).		✓	✓		
Sections that are bare after construction, should be rehabilitated with indigenous thicket species, allowing the property to continue functioning as a potential habitat within an increasingly fragmented landscape.		✓	✓	✓	
An ECO must walk the site prior to vegetation removal / construction to ensure no animals are present in the area.		✓	✓		
<ul style="list-style-type: none"> <li>Plan paths to avoid areas with rare or endangered species, wetlands, or fragile ecosystems. Utilize less sensitive areas where the vegetation is more resilient.</li> <li>Align paths to follow natural contours of the land, reducing erosion and water runoff, which can damage fynbos vegetation.</li> <li>Use rocks, or logs, to deter visitors from stepping off the path and trampling sensitive vegetation. Dense shrubbery may be a fire hazard, and visitors must be made aware of the risk of fire.</li> </ul>		✓	✓	✓	



Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
<ul style="list-style-type: none"> <li>In areas prone to waterlogging, use stepping stones or flat rocks embedded in the soil to provide a stable surface without covering large areas.</li> <li>Allow for natural regrowth of fynbos species along the edges of the path. This helps to integrate the path into the environment over time.</li> </ul>					
Maintain a 4 - 6m fire break along the western boundary of the property (boundary directly adjacent to the residential neighbourhood).		✓		✓	
Allow for a 4m – 6m strip around each glamping pod to be 'bossiekapped' to act as a fire break to prevent potential fires.		✓		✓	
Chemical toilets (1 toilet / 10 persons).		✓	✓		
Waste from chemical toilets must be disposed of regularly by a registered waste contractor.		✓	✓		
No mixing of cement / concrete on bare ground or within the watercourse.		✓	✓		
Instruct workers & contractors properly of the environment (environmental inductions).		✓	✓	✓	
All waste generated on-site must be adequately managed.		✓	✓		
Separation and recycling of different waste materials should be supported.		✓	✓		
<b>Best Practise</b>					
Construction work must take place during normal work hours.		✓	✓	✓	

## 5 RESPONSIBILITIES

This section deals with the responsibilities of various parties during the Construction Phase of any development.

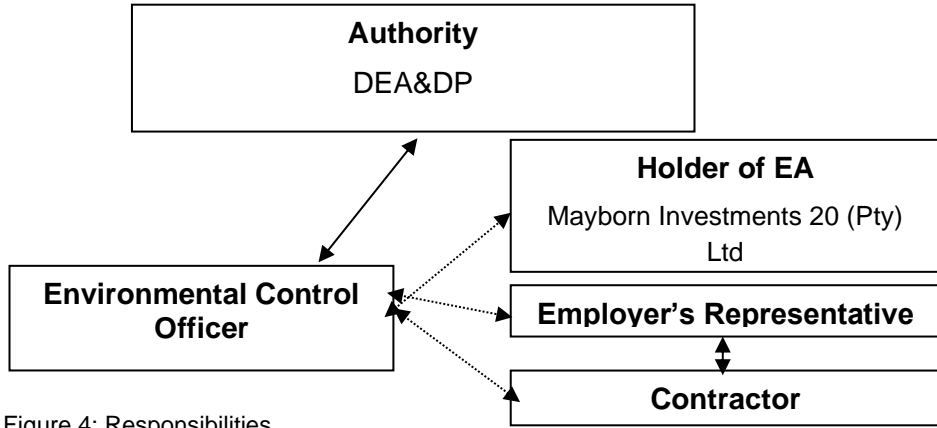


Figure 4: Responsibilities.

## **5.1 HOLDER OF THE EA**

The holder of the EA / property owner is the overseeing entity responsible for ensuring that all activities undertaken on the property comply with the Environmental Authorisation (EA) and associated Environmental Management Programme (EMPr) (& any other approval / licence / permit), as well as the management and maintenance of the open space areas and river habitat.

The responsibilities of the holder of the EA / property owner include, but are not limited to the following:

- Ensure that **all tender documentation** include reference to, and the need for compliance with, the EA and EMPr as well as any other legally binding documentation, which include and are not limited to Approval/s.
- Be conversant with, and ensure that all Contractors, Sub-contractors, Engineers (and future senior site managers / personnel) are made aware of, and understand the conditions and recommendations, contained in the abovementioned documentation;
- Ensure that all Contractors, Sub-contractors and Engineers (during construction activities) are made aware of their 'Duty of Care to the Environment' and that any damage or degradation of the natural environment within the bounds of the property will be not be tolerated and must be dealt with / remedied at the cost of the perpetrator;
- Take remedial and/or disciplinary action in circumstances where persons are found to be in contravention of the abovementioned legally binding documentation.

## **5.2 ENGINEERS AND CONTRACTORS**

The Engineers and Contractors are often the parties responsible for physically carrying out the activities for which majority of the recommendations in this EMPr are intended. Service providers and Contractors include: services, building contractors, 'handy-men' and engineers overseeing the installation and maintenance of services etc. The responsibilities indicated here are also relevant to Sub-Contractors.

The responsibilities of these parties include but are not limited to the following:

- Be conversant and compliant with the EA, the EMPr, and any relevant License, Permit or any legally binding documentation relevant to their operations;
- Have a responsibility to adhering to any conditions and recommendations laid out in above mentioned documentation;
- Prevent actions that may cause harm to the environment;
- Be responsible for any remedial activities in response to an environmental incident within their scope of influence;
- Liaise with the holder of the EA in complying with the EMPr, and in the event that any industry regulated standards are in contradiction with the EMPr or any other authorisations.
- Review and amend to any construction activities to align with the EMPr and Best Practice Principles;
- Ensure compliance of all site personnel and / or visitors to the EMPr and any other authorisations.

## **5.3 ECOLOGICAL CONTROL OFFICER (ECO)**

It is recommended that a suitably qualified Environmental Control Officer (ECO) be appointed to oversee all activities for the duration of the construction phase (i.e. construction activities, rehabilitation) as well as any maintenance work that must be undertaken that will involve

earthworks or machine works. The ECO must have at least 3 years' experience and proven competency as an ECO.

The responsibilities of the ECO include but are not limited to the following:

- Provide environmental induction training to Contractors on site prior to construction activities commencing
- Provide maintenance, update and review of the EMPr if necessary;
- Liaison between the Project Holder of the EA, Contractors, Authorities and other lead stakeholders on all environmental concerns, including the implementation of the EMPr;
- Compilation of Environmental Control Reports (ECR) to ensure compliance with the EA, EMPr and duty of care requirements, where necessary;
- Compilation of the Environmental Audit Report or Environmental Completion Statement, after completion of construction (or as otherwise defined in the Environmental Authorisation), where necessary;
- Ensuring / guiding and monitoring compliance with the EA and EMPr and any legally binding documentation;
- Facilitating consultation with relevant environmental authorities (e.g. DEA&DP, DFFE, CapeNature or Municipality);
- Facilitating the application for any required amendment of the EA/EMPr;
- Provide guidance and interpretation of the EA and EMPr where necessary;
- Issuing site instructions to the contractor for corrective actions required;
- The ECO is required to conduct regular site visits for the duration of the construction period, in order to ensure the Contractor receives the necessary induction and that all procedures are in place. Additional visits may be undertaken in the event of any unforeseen environmental accidents;
- The duration and frequency of these visits may be increased or decreased at the discretion of the ECO;
- Attendance of site meetings if required;
- Maintain a record of environmental incidents (e.g. spills, impacts, legal transgressions etc.) as well as corrective and preventative measures taken. This information must also be included in the ECR;
- Maintain a public complaints register in which all complaints and action taken must be recorded. This information must also be included in the ECR.

#### **5.4 ECO SITE VISIT FREQUENCY**

The following site frequency for ECO site visits has been determined:

- Daily during site clearance and demarcation.
- Every week during the construction of access roads and glamping pods with associated infrastructure.

Ad hoc site visits may be undertaken in the event of any incidents or specific requests from the project holder of the EA or project team.

#### **5.5 ENVIRONMENTAL INDUCTION & TRAINING**

The holder of the EA in consultation with the Contractor shall ensure that adequate environmental awareness training of senior site personnel takes place and that all construction workers receive an

induction presentation on the importance and implications of the EA and EMPr. The presentation shall be conducted, as far as is possible, in the employees' language of choice. The Contractor must provide a translator from their staff for the purpose of translating, if this is deemed necessary.

As a minimum, training must include:

- Explanation of the importance of complying with the EA and EMPr and the employees accountability;
- Discussion of the potential environmental impacts of construction activities;
- The benefits of improved personal performance;
- Employees' roles and responsibilities, including emergency preparedness ;
- Explanation of the mitigation measures that must be implemented when carrying out their activities;
- Explanation of the specifics of this EMPr and its specification (no-go areas, etc.);
- Explanation of the management structure of individuals responsible for matters pertaining to the EMPr.

Where staff turnover is high and with additional appointment of sub-contractors, it may be necessary to undertake additional induction training sessions. The Contractor must keep records of all environmental training sessions, including names, dates and the information presented.

## 6 PRE-CONSTRUCTION DESIGN CONSIDERATIONS

It is recommended that sustainable design considerations are implemented during the planning phase to ensure that the impacts associated with the development are avoided, minimised or managed before construction commences.

<b>6.1 <u>STORMWATER MANAGEMENT PREPARATION</u></b>					
<b>Management Statement</b>			<b>Impacts &amp; Risks Avoided</b>		
To prepare the site to minimise the negative impacts of stormwater			Damage to the environment caused by stormwater runoff		
<b>Management Actions</b>					
a. Rainwater harvesting tanks must be incorporated in the detail design. b. Stormwater Management Measures must be incorporated in the detail design.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site Plans	Once off	Contractor / Engineer	Prior to construction	Audit	Once off

## 7 CONSTRUCTION CONSIDERATIONS

These Construction Phase requirements are aimed at using Best Practise Principles and / or specialist recommendations to manage the impacts on the environment during the construction of the development.

<b>7.1 <u>STORMWATER MANAGEMENT</u></b>					
<b>Management Statement/Outcome</b>			<b>Impacts &amp; Risks Avoided</b>		
To minimise the generation of contaminated stormwater.			Minimise sedimentation, erosion and / or undercutting		
<b>Management Actions</b>					
<p>a. Ensure that:</p> <ul style="list-style-type: none"> <li>o construction activities do not impede drainage areas,</li> <li>o construction activities do not cause any flow paths and concentrated surface runoff,</li> <li>o vegetation clearing is conducted parallel with construction progress,</li> <li>o stormwater and runoff generated is discharged in retention areas,</li> <li>o heavy machinery does not compact soil or disturb vegetation outside demarcated areas.</li> </ul> <p>b. Reduce transport of sediment through use of silt fences and biodegradable coir logs.</p> <p>c. Revegetate exposed areas once construction has been completed.</p>					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Once off	Contractor	Pre implementation	Audit	Once off
<p>Any areas that are identified by the ECO as being prone to erosion must be suitably protected. During construction, the contractor shall protect all areas susceptible to erosion by installing temporary works (e.g., sandbags) and by taking any other measures necessary to prevent stormwater from concentrating in streams and scouring slopes, banks, etc.</p> <p>In areas where construction activities have been completed and where no further disturbance would take place, rehabilitation and re-vegetation should commence as soon as possible. A suitable rehabilitation method statement must be submitted to the ECO for approval.</p>					

<b>7.2 <u>DUST CONTROL</u></b>					
<b>Management Statement/Outcome</b>			<b>Impacts &amp; Risks Avoided</b>		
To ensure there is no health risk or loss of amenity due to emission of dust to the environment.			Ensure land coverage with biomass chips / vegetation / damping to minimise dust		
<b>Management Actions</b>					
a. Implement a dust prevention strategy, developed at the project planning stage					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off
<p>The strategy should include the following amongst others:</p> <ul style="list-style-type: none"> <li>• Speed control to minimise dust on site.</li> <li>• Exposed stockpile materials must be adequately <b>protected</b> against wind (covered) and should be sited taking into consideration the prevailing wind conditions.</li> <li>• Trucks bringing in materials must be covered to prevent dust and small particles escaping and potentially causing damage to people and property.</li> </ul>					
<b>7.3 <u>NOISE</u></b>					
<b>Management Statement/Outcome</b>			<b>Impacts &amp; Risks Avoided</b>		
To ensure nuisance from noise and vibration does not occur.			Nuisance impacts to neighbours and visitors.		
<b>Management Actions</b>					
a. Fit and maintain appropriate mufflers on earth-moving and other vehicles on the site.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance

As required	Initially when vehicle or machinery is introduced to the site and thereafter monthly. As required if complaints registered.	Contractor	During construction and operation	Audit	As required
b. Enclose noisy equipment such as generators and pumps.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	Initially when vehicle or machinery is introduced to the site and thereafter monthly. As required if complaints registered.	Contractor	During construction	Audit	As required
c. Provide noise attenuation screens, where appropriate.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	Initially when vehicle or machinery is introduced to the site and thereafter monthly. As required if complaints registered.	Contractor	During construction	Audit	As required
d. Where an activity is likely to cause a noise nuisance to nearby residents, restrict operating hours to between 7 am and 6 pm weekdays and 7 am to 1 pm Saturday, except where, for practical reasons, the activity is unavoidable.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance



As required	As required if complaints registered.	Contractor	During construction	Audit	As required
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**7.4 TRAFFIC CONTROL**

Management Statement/Outcome	Impacts & Risks Avoided
To manage and minimise the nuisance effect created by construction traffic.	Nuisance Impacts & Risks

**Management Actions**

a. Implement a traffic management strategy during construction.

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Daily	Contractor	During construction	Audit	As required

- Construction related activities should be timed where possible to avoid peak periods.
- No construction workers, apart from security personnel, should be allowed to stay on site overnight.
- Contractors appointed by the developer must ensure that workers are transported to and from the site daily.
- Construction related activities should comply with all relevant building regulations. In this regard activities on site should be restricted to between 07h00 and 18h00 during weekdays and 08h00 and 13h00 on Saturdays. No work should be permitted after 13h00 on Saturdays and on Sundays.
- Temporary access to be rehabilitated once construction is complete.

**7.5 WASTE MANAGEMENT**

Management Statement/Outcome	Impacts & Risks Avoided
To minimise the waste load discharged to the environment.	Improve waste disposal methods during construction. Reduce waste volumes to landfill sites

**Management Actions**

a. Reduce wastes by selecting, in order of preference, avoidance, reduction, reuse and recycling.

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing	Time period	Mechanism for monitoring Compliance	Programme for reporting

		management action			on Compliance
Record of volumes of material removed	As required	Contractor	As required	Audit	Records
b. Maintain a high quality of housekeeping and ensure that materials are not left where they can be washed or blown away to become litter.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Photographic	Weekly	Contractor	As required	Audit	Records
c. Provide bins for construction workers and staff at locations where they consume food.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Photographic	Weekly	Contractor	As required	Audit	Records
d. Conduct ongoing awareness with staff of the need to avoid littering.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Induction	Once off	Contractor	As required	Audit	Attendance register
<b>7.6 STOCKPILE MANAGEMENT</b>					
<b>Management Statement/Outcome</b>			<b>Impacts &amp; Risks Avoided</b>		
To manage soil stockpiles so that dust and sediment in run-off are minimised.			Pollution due to dust and sediment run off		
<b>Management Actions</b>					

<p>a. Minimise the number of stockpiles, and the area and the time stockpiles are exposed.</p> <p>b. No construction materials or topsoil must be stockpiled within the eroded channel. Stockpiles of construction materials must be placed outside of the channel (on as flat an area as possible) and protected (e.g. through use of sandbags and/or tarpaulins) to prevent materials being washed into the channel.</p>					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Photographic	As required	Contractor	As required	Audit	Records
<p>c. Keep topsoil and underburden stockpiles separate.</p>					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	Daily when stripping topsoil	Contractor	Continuously during construction	Audit	Records
<p>d. Ensure that stockpiles and batters are designed with slopes no greater than 2:1 (horizontal/vertical).</p>					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly
<p>e. Stabilise stockpiles and batters that will remain bare for more than 28 days by covering with mulch or anchored fabrics or seeding with sterile grass.</p>					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly

f. Establish sediment controls around unstabilised stockpiles and batters.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly
g. Suppress dust on stockpiles and batters, as circumstances demand.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly
<b>7.7 <u>STORING FUELS &amp; CHEMICALS</u></b>					
<b>Management Statement/Outcome</b>			<b>Impacts &amp; Risks Avoided</b>		
To ensure that fuel and chemical storage is safe, and that any materials that escape do not cause environmental damage.			Avoid hydrocarbon pollution to soil and watercourses / coastal environments		
<b>Management Actions</b>					
a. Minimise fuels and chemicals stored onsite.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records

b. Install bunds and take other precautions to reduce the risk of spills.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
c. Implement a contingency plan to handle spills, so that environmental damage is avoided.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
<b>7.8 <u>MINIMISING EROSION</u></b>					
Management Statement/Outcome			Impacts & Risks Avoided		
To minimise the quantity of soil lost during construction due to land-clearing.			<ul style="list-style-type: none"> <li>Avoid overland flow by capture and store water from roof</li> <li>Avoid siltation by installing silt traps</li> </ul>		
Management Actions					
a. Schedule measures to avoid and reduce erosion by phasing the work program to minimise land disturbance in the planning and design stage.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records

b. Keep the areas of land cleared to a minimum, and the period areas remain cleared to a minimum					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
c. Base control measures to manage erosion on the vulnerability of cleared land to soil loss, paying particular attention to protecting slopes.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
d. Mulch, roughen and seed cleared slopes and stockpiles where no works are planned for more than 28 days, with sterile grasses.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
e. Keep vehicles to well-defined haul roads.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site plan	As required	Contractor	As required	Audit	Final site plan

f. Rehabilitate cleared areas promptly.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual / photographic	As required	Contractor	Continuously during construction	Audit	Final Rehabilitation statement

**7.9 BOTANICAL & BIODIVERSITY MANAGEMENT**

Management Statement/Outcome	Impacts & Risks Avoided
To ensure that degradation to existing botanical/aquatic components are minimised and that any rehabilitation is undertaken with conservation orientated approach.	To minimise the disturbance to existing flora To minimise the introduction and/or spread of weed species

**Management Actions**

- (a) The disturbance footprint of proposed glamping pods should be clearly defined and demarcated to prevent unnecessary damage to the surrounding environment.
- (b) With the aid of the ECO, install protective barriers around protected, Sideroxylon inerme inerme, and other significant stands of SCC to prevent damage from construction activities.
- (c) A plant search and rescue must be conducted with the appointed ECO with botanical knowledge.
- (d) Materials used during construction must be sourced and transported responsibly to minimise the risk new invasive plants.
- (e) Staff, if suspected may be checked when they leave to ensure no plants have been poached from the natural surrounding environment. Staff should also be told that plants may not be collected outside of the search and rescue operation.
- (f) Undertake revegetation of the disturbance envelope outside of the permanent disturbance footprint.
- (g) If more plants are required for successful coverage of disturbed areas, augmentation with sourced plants can be done.
- (h) The rehabilitation of the 2m disturbance footprint with topsoil and plants rescued on the site, must occur as soon as possible after the conclusion of construction.

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	Continuously	Audit	Visual / photographic

<b>7.10 FAUNA MANAGEMENT</b>					
<b>Management Statement/Outcome</b>			<b>Impacts &amp; Risks Avoided</b>		
To ensure that impacts to native faunal species is minimised and / or avoided.			To minimise the impact to fauna		
<b>Management Actions</b>					
a. Prevent unnecessary mortalities of indigenous fauna  b. Sections that are bare after construction, should be rehabilitated with indigenous thicket/fynbos species, allowing the property to continue functioning as a potential habitat within an increasingly fragmented landscape.  c. An ECO must walk the site prior to vegetation removal / construction to ensure no animals are present in the area.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Ad hoc	As required	Contractor	Continuously	Audit	Visual / photographic
<b>7.11 SOCIAL REQUIREMENTS</b>					
<b>Management Statement/Outcome</b>			<b>Impacts &amp; Risks Avoided</b>		
To ensure equitable, fair and safe social interaction on construction sites			Loss of employment opportunities to the region		
<b>Management Actions</b>					
a. It is strongly recommended that the Contractor make use of local labour as far as possible for the construction phase of the project.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Employment records	Ad hoc	Contractor	Ad hoc	Audit	Once off



b. Theft and other crime associated with construction sites is not only a concern for surrounding residents, but also the Developer and the Contractor.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site records	Ad hoc	Contractor	Ad hoc	Audit	Once off

**Targets**

- The contractor should endeavour to source local suppliers.
- The contractor must ensure that suitable procurement policies are in place that supports local economic growth.
- Locally manufactured products must be used as far as possible.

**Site Security**

Theft and other crime associated with construction sites is not only a concern for surrounding residents, but also the developer and the contractor.

Considering this, contractors need to be proactive in order to curtail theft and crime on and resulting from the construction site. It is recommended that the contractor develop a jobsite security plan prior to commencement of construction. This jobsite security plan should take into account protection of the construction site from both internal and external crime elements as well as the protection of surrounding communities from internal crime elements. All incidents of theft or other crime should be reported to the South African Police Service, no matter how seemingly insignificant.

**7.12 METHOD STATEMENTS**

Management Statement/Outcome	Impacts & Risks Avoided
To ensure efficient communication mechanisms in the implementation of environmental performance requirements	Prevention of potential impacts are avoided during construction by means of correct communication

**Management Actions**

- a. Method statements are written submissions by the Contractor to the ECO in response to the requirements of this EMP or to a request by the ECO. The Contractor shall be required to prepare method statements for several specific construction activities and/or environmental management aspects.

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	Ad hoc	Contractor	As required	Audit	Once off

Based on the specifications in this EMP, the following method statements are required as a minimum (more method statements may be requested as required at any time under the direction of the ECO):

- Demarcation of No-Go areas
- Site clearing
- Hazardous substances and their storage.
- Materials requirements & Sourcing.
- Solid waste control system.
- Fire control and emergency procedures
- Petroleum, chemical, harmful and hazardous materials storage, if any.
- Stormwater Management and Water Quality Control.
- Erosion Control.

## 8 OPERATIONAL/MAINTENANCE PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS

The Operational/Maintenance Phase of this EMP refers to the day to day management activities that are required to ensure sustainability and the achievement of the principles and objectives of the development. The requirements are applicable to the proponent, any HOA that is put in place, all employees and all visitors to the property.

<b>8.1 <u>STORMWATER MANAGEMENT</u></b>					
<b>Management Statement/Outcome</b>			<b>Impacts &amp; Risks Avoided</b>		
To ensure management of stormwater during operation phase			<ul style="list-style-type: none"> <li>• To prevent erosion due to stormwater impact</li> </ul>		
<b>Management Actions</b>					
a. No stormwater runoff should be allowed to concentrate onto open spaces and roadways.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Ensure soft landscaping	Ongoing	Developer / HOA	As required	Audit	Audit
<ul style="list-style-type: none"> <li>• Concentration of stormwater runoff will be minimised through the application of landscaping techniques, i.e. by creating grass lined swales, undulations and depressions, vegetation.</li> </ul>					

<b>8.2 <u>BOTANICAL / LANDSCAPING / CYCLING &amp; HIKING PATHS</u></b>					
<b>Management Statement/Outcome</b>			<b>Impacts &amp; Risks Avoided</b>		
To ensure that indigenous vegetation is encouraged within urban areas.			<ul style="list-style-type: none"> <li>• Ongoing spread of alien invasive species.</li> <li>• Ensure protected species are taken into consideration.</li> </ul>		
<b>Management Actions</b>					
<p>(a) If gardens need to be considered, they can be designed to be water wise (avoid erosion) and friendly to wildlife and the greater natural habitat.</p> <p>(b) No garden waste may be dumped in any remaining natural area and must be disposed of in a responsible manner.</p> <p>(c) Make sure not to plant NEMBA listed invasive plants (e.g., kikuyu grass) in your garden.</p> <p>(d) Select locally indigenous plants for gardens, making use of as many of the rescued plant species as possible. Avoid plants that are hybrids and cultivars.</p> <p>(e) Plant during the rainy season (early winter May/June) and add a 10cm thick layer of wood chip to keep in moisture.</p> <p>(f) Reduce or replace lawns with water-wise groundcovers or enlarging shrub beds.</p> <p>(g) Plan paths to avoid areas with rare or endangered species, wetlands, or fragile ecosystems. Utilize less sensitive areas where the vegetation is more resilient.</p> <p>(h) Align paths to follow natural contours of the land, reducing erosion and water runoff, which can damage fynbos vegetation.</p> <p>(i) Use rocks, or logs, to deter visitors from stepping off the path and trampling sensitive vegetation. Dense shrubbery may be a fire hazard, and visitors must be made aware of the risk of fire.</p> <p>(j) In areas prone to waterlogging, use stepping stones or flat rocks embedded in the soil to provide a stable surface without covering large areas.</p> <p>(k) Allow for natural regrowth of fynbos species along the edges of the path. This helps to integrate the path into the environment over time.</p>					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual / photographic	Ongoing	Owner	As required	Audit	Audit
<ul style="list-style-type: none"> <li>• Rehabilitate with appropriate indigenous vegetation to promote soft landscaping.</li> <li>• Replace vegetation if it dies off.</li> </ul>					

## 9 MONITORING

### 9.1 MONITORING

Monitoring is an important tool in determining the effectiveness of management actions by measuring changes in the environment. These could be in the form of fixed-point photography where an area is photographed on a regular / seasonal basis to ascertain changes, monitoring of a particular aspect such as landscape integrity parameters, recordings of animal movement from fixed point etc. The most important aspect of any monitoring programme is **consistency and continuity**. This will ensure a level of scientific accuracy to determine baselines / thresholds and measure changes / deviations, which then drive management reactions.

Any required monitoring reports must be made available to the competent authority as required.

The type and frequency of monitoring must include:

- During construction photographs must be taken from pre identified fixed points and a comprehensive record maintained by the ECO;
- Incident Reports;
- Site meeting minutes.

### 9.2 MONITORING TIMEFRAMES SUMMARY

Table 3: Monitoring Timeframe Summary

MONITORING TIMEFRAMES		
Type	Frequency	Criteria
ECO visits	As per section 5.4	Site photographs / site diary
Record keeping	Monthly	Site photographs, method statements, site meeting minutes (if applicable)
	3 month post construction	Completion Statement
Auditing	One year post construction	Compliance with the EA, EMP, municipal permits. Note that GA compliance is the responsibility of the BGCMA.

### 9.3 ENVIRONMENTAL AUDITS

A final construction phase Completion Statement must be submitted within 3 months of completion of construction / site handover.

This Completion Statement must include the monitoring results as above, where applicable to construction.

An independent Environmental Audit must be undertaken one (1) year post construction.

## 9.4 AUDIT REPORTS FREQUENCIES AND FORMAT

The table below provides a summary of the timeframes for the various Audit Reports specified in the EA.

Table 4: Audit Reports Timeframe Summary

<b>ENVIRONMENTAL AUDIT TIMEFRAMES</b>		
Type	Frequency	Criteria
Construction Audit	One year post construction	Audit on operational aspects of the EA and EMPr
Future audits	Competent Authority to confirm	Compliance with the Environmental Regulations for Audits

In terms of the 2014 EIA Regulations, Audit Reports must be submitted to the registered Interested & Affected Parties within 7 days of submission to the competent authority.

In order to comply with the 2014 EIA Regulations, any audits must be undertaken using the following format:

Table 5: Environmental Audit Requirements

Appendix 7 of Regulation 326 of the 2014 EIA Regulations, as amended contains the required contents of an Environmental Audit Report. The checklist below serves as a summary of how these objectives & requirements were incorporated into this Audit Report.	
<b>Objective</b>	<b>Description</b>
The objective of the environmental audit report is to -	
(a) Report on – (i) the level of compliance with the conditions of the environmental authorisation and the EMPr, and where applicable, the closure plan; and (ii) the extent to which the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan achieve the objectives and outcomes of the EMPr, and closure plan.	
(b) Identify and assess any new impacts and risks as a result of undertaking the activity.	
(c) Evaluate the effectiveness of the EMPr, and where applicable, the closure plan.	
(d) Identify shortcomings in the EMPr, and where applicable, the closure plan.	
(e) Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan.	
<b>Requirement</b>	<b>Description</b>

Appendix 7 of Regulation 326 of the 2014 EIA Regulations, as amended contains the required contents of an Environmental Audit Report. The checklist below serves as a summary of how these objectives & requirements were incorporated into this Audit Report.	
Objective	Description
(1) An Environmental audit report prepared in terms of these Regulations must contain -	
(a) Details of – (i) The independent person who prepared the environmental audit report; and (ii) The expertise of independent person that compiled the environmental audit report.	
(b) A declaration that the independent auditor is independent in a form as may be specified by the competent authority.	
(c) An indication of the scope of, and the purpose for which, the environmental audit report was prepared.	
(d) A description of the methodology adopted in preparing the environmental audit report.	
(e) An indication of the ability of the EMPr, and where applicable the closure plan to – (i) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis; (ii) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) Ensure compliance with the provisions of environmental authorisation, EMPr, and where applicable, the closure plan.	
(f) A description of any assumptions made, and any uncertainties or gaps in knowledge.	
(g) A description of an consultation process that was undertaken during the course of carrying out the environmental audit report.	
(h) A summary and copies of any comments that were received during any consultation process.	
(i) Any other information requested by the competent authority.	

Any other requirements of the EA or any other authorisations must be incorporated into an Audit where necessary.

## 10 DECOMMISSIONING PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS

Not Applicable.

## 11 NON-COMPLIANCE

Any person is liable on conviction of an offence in terms of regulation 49(a) of the National Environmental Laws Second Amendment Act (Act 30 of 2013) to imprisonment for a period not exceeding ten (10) years or to a fine not exceeding R10 million or an amount prescribed in terms of the Adjustment of Fines Act, 1991 (Act No. 101 of 1991).

It is the responsibility of the ECO to report matters of non-compliance to the Employer's Representative or the Holder of the EA if no representative is in place. It is the responsibility of the Holder of the EA, and not the ECO, to report such matters of non-compliance to the competent Authority.

### 11.1 PROCEDURES

The Holder of the EA shall comply with the environmental specifications and requirements of this EMP, any Approval / License issued and Section 28 of NEMA, on an on-going basis and any failure on his part to do so will entitle the authorities to **impose a penalty**<sup>1</sup>.

In the event of non-compliance the following recommended process shall be followed:

- The competent authority shall issue a **Notice of Non-compliance** to the Holder of the EA, stating the nature and magnitude of the contravention.
- The Holder of the EA shall **act to correct the transgression** within the period specified in by the authority.
- The Holder of the EA shall provide the competent authority with a **written statement** describing the actions to be taken to discontinue the non-conformance, the actions taken to mitigate its effects and the expected results of the actions.
- In the case of the Holder of the EA failing to remedy the situation within the predetermined time frame, the competent authority may recommend halting the activity.
- In the case of non-compliance giving rise to physical environmental damage or destruction, the competent authority shall be entitled to undertake or to cause to be undertaken such **remedial works** as may be required to make good such damage at the cost of the Project applicant.
- In the event of a dispute, difference of opinion, etc. between any parties in regard to or arising out of interpretation of the conditions of the EMP, disagreement regarding the implementation or method of implementation of conditions of the EMP, etc. any party shall be entitled to require that the issue be referred to **specialists and / or the competent authority** for determination.
- The competent authority shall at all times have the right to **stop work** and/or certain activities on site in the case of non-compliance or failure to implement remediation measure.

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<sup>1</sup> A penalty may not necessarily be a monetary fine but could also be a stoppage in work time, additional mechanisms to prevent pollution or degradation at the cost of the proponent or even a directive to cease activities from the competent authority.

# RE/101/489 ZWARTE JONGERSFONTEIN

Legend



Map Center: Lon: 21°20'54.6"E  
Lat: 34°25'7.1"S

Scale: 1:36,112

Date created: 2024/23/04

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# RE/101/489 ZWARTE JONGERSFONTEIN

Legend

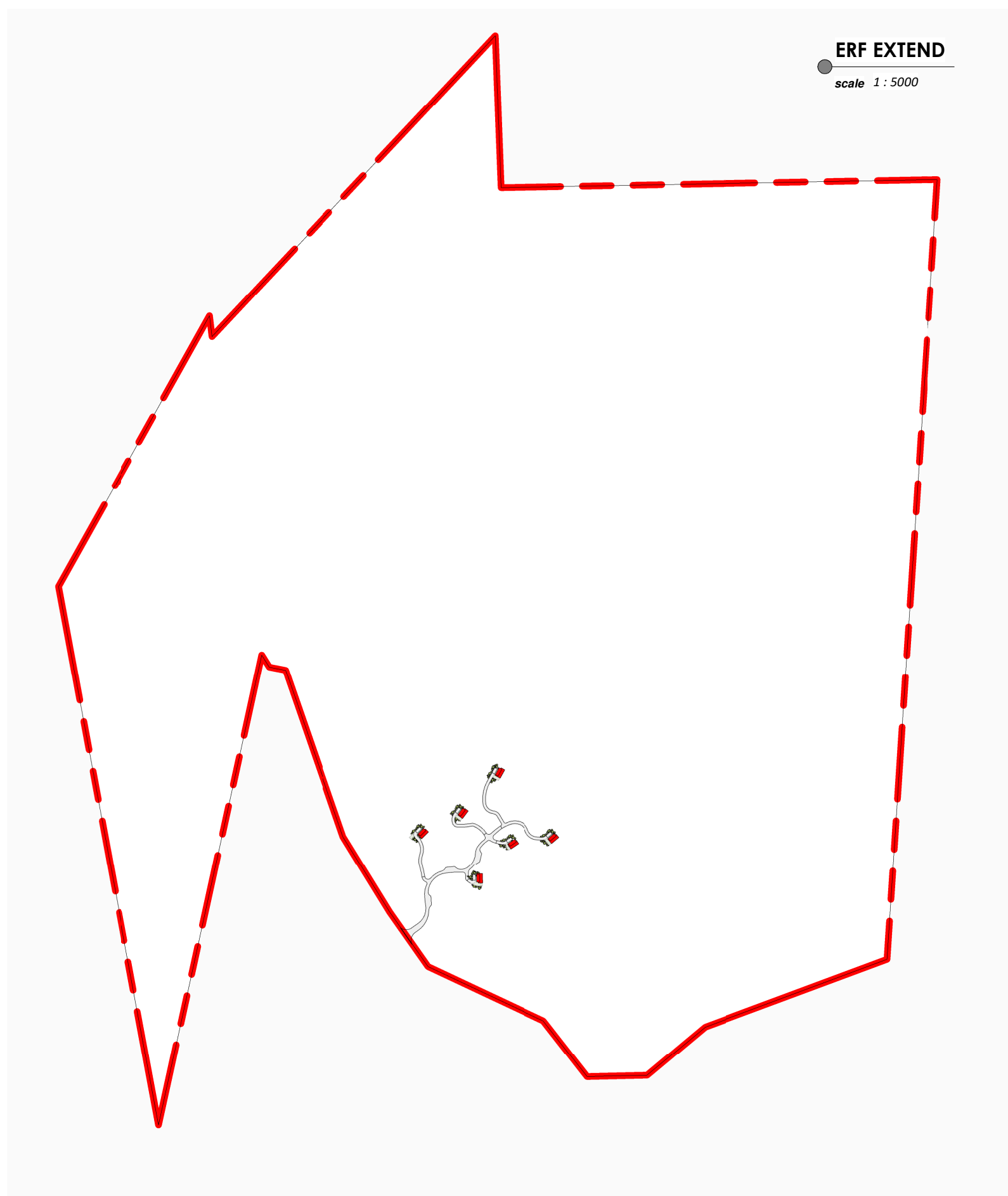


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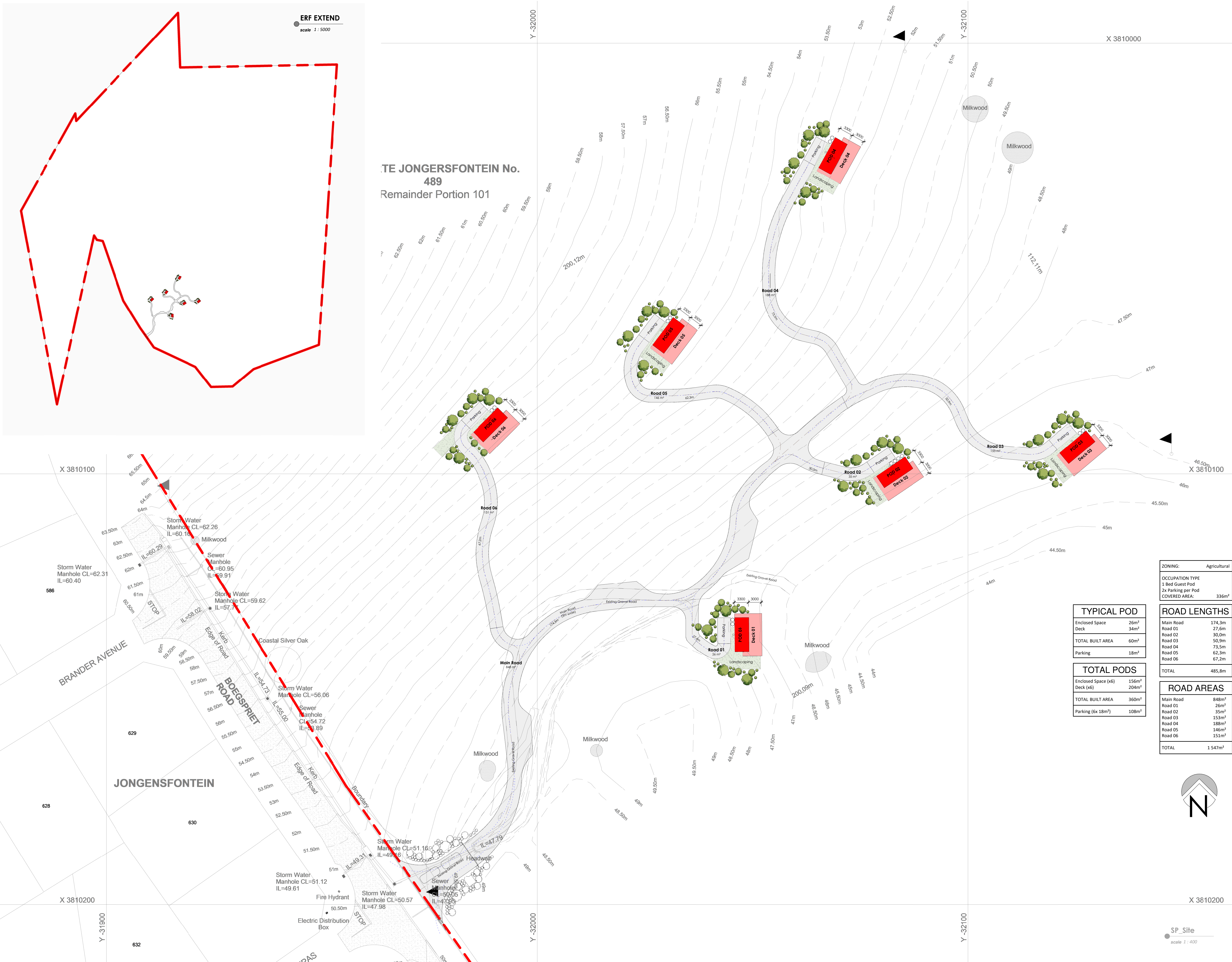
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**Date created:** 2024/23/04





**TE JONGERSFONTEIN No. 489**  
Remainder Portion 101



TYPICAL POD	
Enclosed Space	26m <sup>2</sup>
Deck	34m <sup>2</sup>
TOTAL BUILT AREA	60m <sup>2</sup>
Parking	18m <sup>2</sup>

TOTAL PODS	
Enclosed Space (x6)	156m <sup>2</sup>
Deck (x6)	204m <sup>2</sup>
TOTAL BUILT AREA	360m <sup>2</sup>
Parking (6x 18m <sup>2</sup> )	108m <sup>2</sup>

ZONING:	Agricultural
OCCUPATION TYPE	1 Bed Guest Pod
2x Parking per Pod	COVERED AREA:
	336m <sup>2</sup>

ROAD LENGTHS	
Main Road	174,3m
Road 01	27,6m
Road 02	30,0m
Road 03	50,9m
Road 04	73,5m
Road 05	62,3m
Road 06	67,2m
TOTAL	485,8m

ROAD AREAS	
Main Road	848m <sup>2</sup>
Road 01	26m <sup>2</sup>
Road 02	35m <sup>2</sup>
Road 03	153m <sup>2</sup>
Road 04	188m <sup>2</sup>
Road 05	146m <sup>2</sup>
Road 06	151m <sup>2</sup>
TOTAL	1547m <sup>2</sup>

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**NOTE**

- ALL WORK TO BE IN ACCORDANCE WITH THE NATIONAL BUILDING REGULATIONS AND THE SANS 10400 MINIMUM STANDARDS SPECIFICATIONS.
- CONTRACTOR, SUB-CONTRACTORS & SPECIALIST SUB-CONTRACTORS TO CHECK ALL DIMENSIONS AND LEVELS ON SITE AND ANY DISCREPANCIES REPORTED TO THE ARCHITECTS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION OR MANUFACTURING
- USE FIGURED DIMENSIONS, DO NOT SCALE
- SETTING OUT TO BE DONE FROM THE SURVEYORS PEGS.

**REVISIONS**

suffix	date	description

Municipal Stamp

Design Review Committee Stamp

ARCHITECTURAL | RESPONSIVE | DESIGN

Tel: 082 043 4033 | Email: info@ardstudio.co.za  
5 LOFTY NEL STREET, VOORBAAI, MOSSELBAY, 6500

AB Wolmarans | SACAP Reg. PSAT 26659023

CLIENT

PROJECT  
**ZWARTE JONGERSFONTEIN ERF 489**

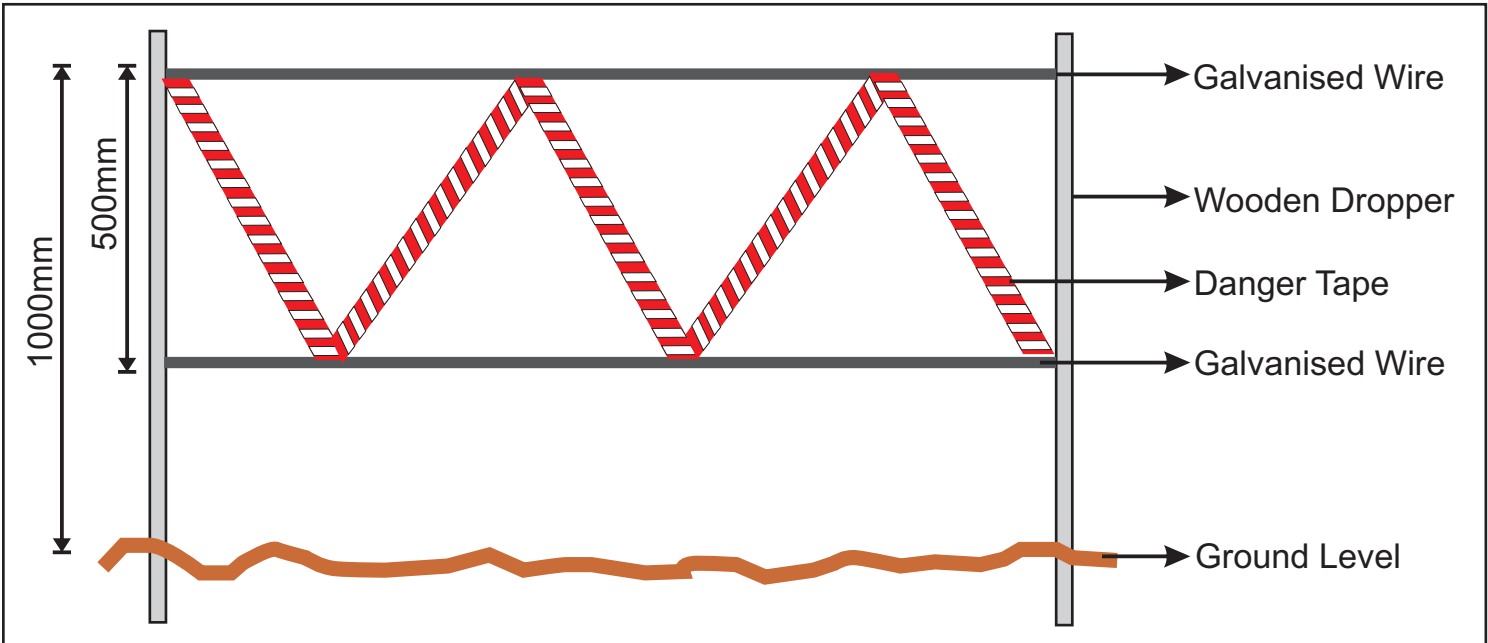
REMAINDER OF PORTION 101  
PROPOSED SDP LAYOUT

FOR INFORMATION

DRAWING TITLE  
SITE DEVELOPMENT PLAN

date	project no 034 ZI489	drawing no SP 000
checker TvdW	drawn WVS	revision



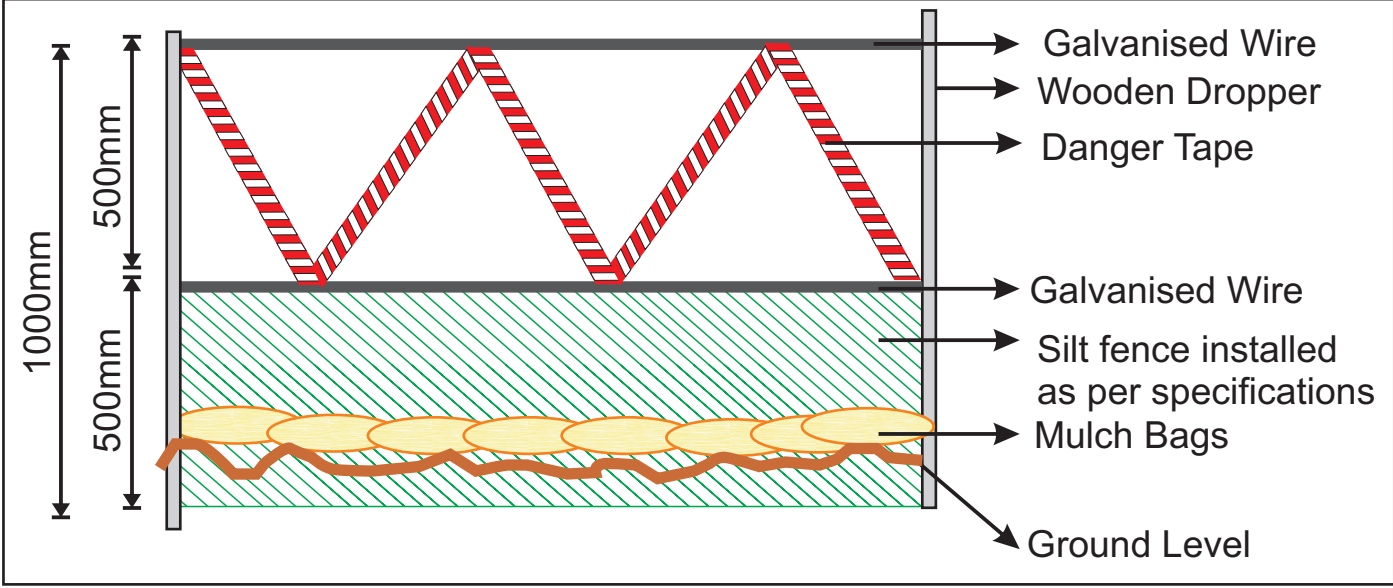


**Plate A:** Showing a cross section of a typical method of demarcation of no-go areas.

Where demarcation is required on a down slope, it can be more cost effective to include the required silt protection mechanisms on the same support structure as the demarcation. This is detailed in **Plate B** below and must be read in conjunction with the details on erosion control included in the previous diagram.

**GENERAL CONSIDERATIONS FOR DEMARCATION OF NO GO AREAS**

- The demarcation must include all areas that are going to be disturbed in the total construction (including all service lines)
- The no -go areas may not be accessed by any person (including lunch, tea breaks etc.). Without the explicit written permission from te ECO.
- Maximum fines will be issued for any non compliance with regards to the no go policy.

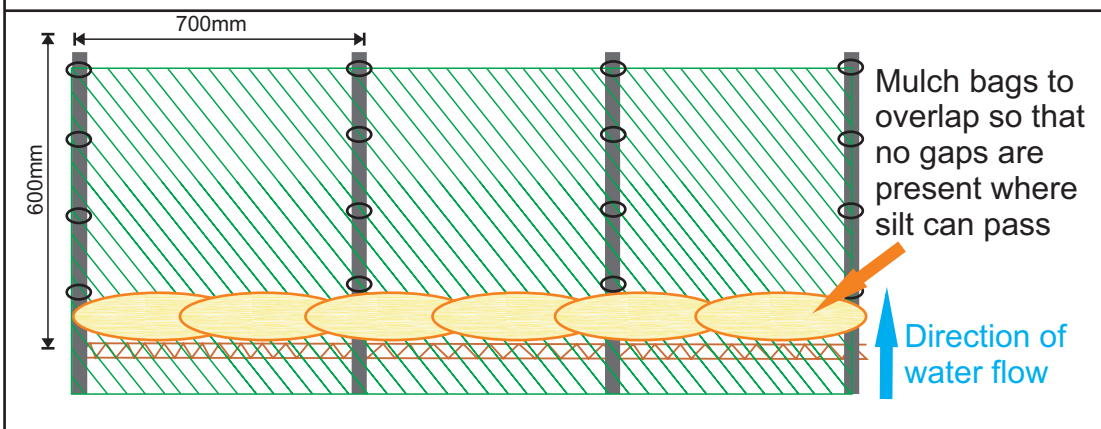


**Figure 1:** Demarcation of No - Go Areas During Construction



Cape Environmental Assessment Practitioners (Pty) Ltd

### Frontal View



The purpose of a silt fence is to create a temporary barrier to maintain sediment on a construction site in order to prevent soil erosion and pollution through sediment and nutrient loading. Silt fences are designed to detain sediment from the disturbed construction area and also prevent sheet erosion by decreasing the velocity of the run off.

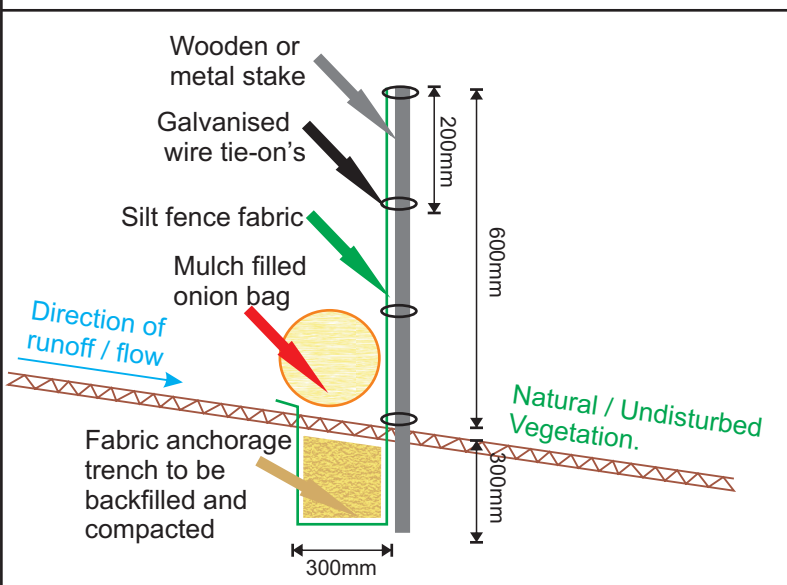
### Technical Specifications

- Silt fence fabric to consist out of 50% shade cloth or a geotextile such as biddim (if biddim is used, it is not necessary to place mulch bags).
- Wooden droppers are suitable for the stakes. If the construction program takes place over an extended time frame it may be necessary to use treated droppers or metal stakes.
- The support stakes should not be placed further than 700mm apart on the down slope side of the fabric.
- The fabric should be secured to the stakes using galvanised wire ties not further than 200mm apart.
- The fabric anchorage trench should be at least 300mm deep.

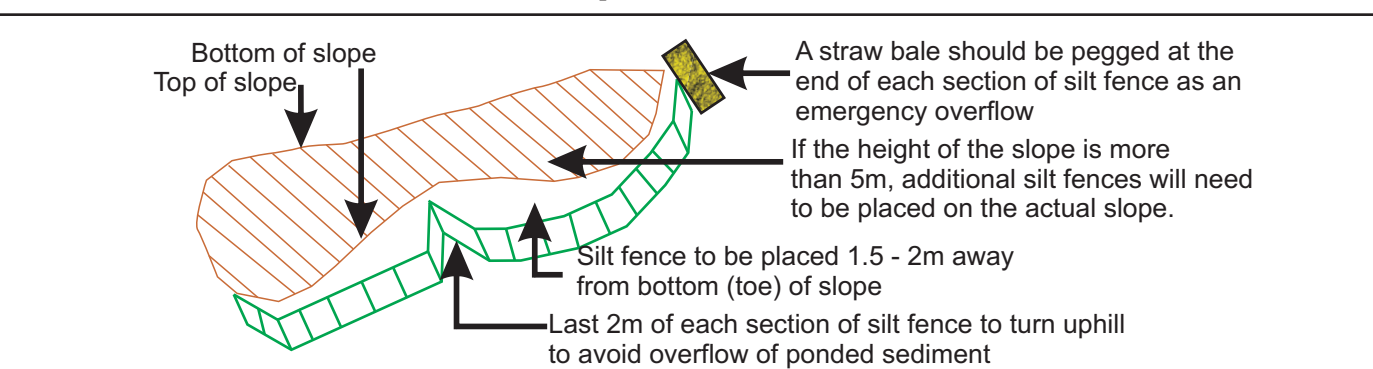
### Planning, Placing and Maintenance

- The silt fence is to be installed on all disturbed slopes where sheet erosion may take place.
- This type of silt fence is not suitable for areas where water is concentrated. i.e. gulleys and storm-water outlets.
- The silt fences should be along the contour lines
- The rows of silt fences should be bowed to prevent erosion and loss of silt on the ends of the fence line.
- Silt fences should be inspected weekly and before every forecast rainfall event. Any damage must be repaired immediately.
- Silt deposits should be cleared after each rainfall event. **CLEARED SILT MUST NOT BE PLACED DOWN SLOPE OF THE FENCE.**

### Cross-section View

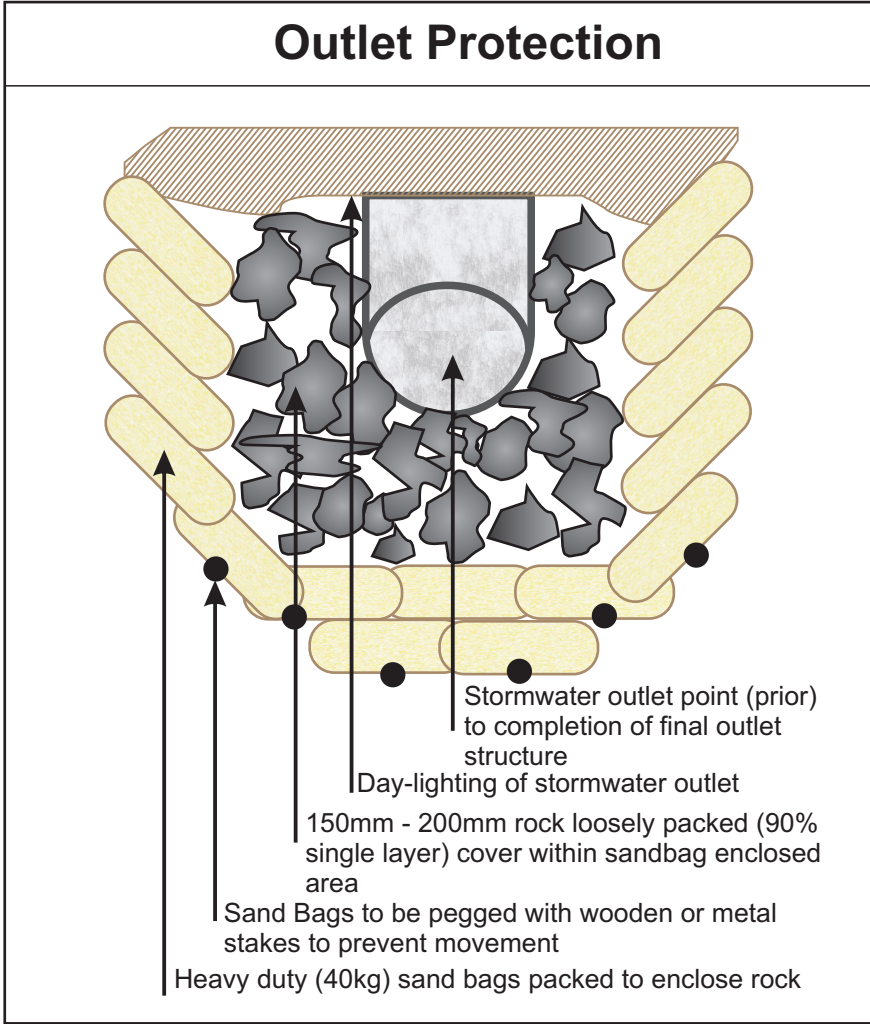
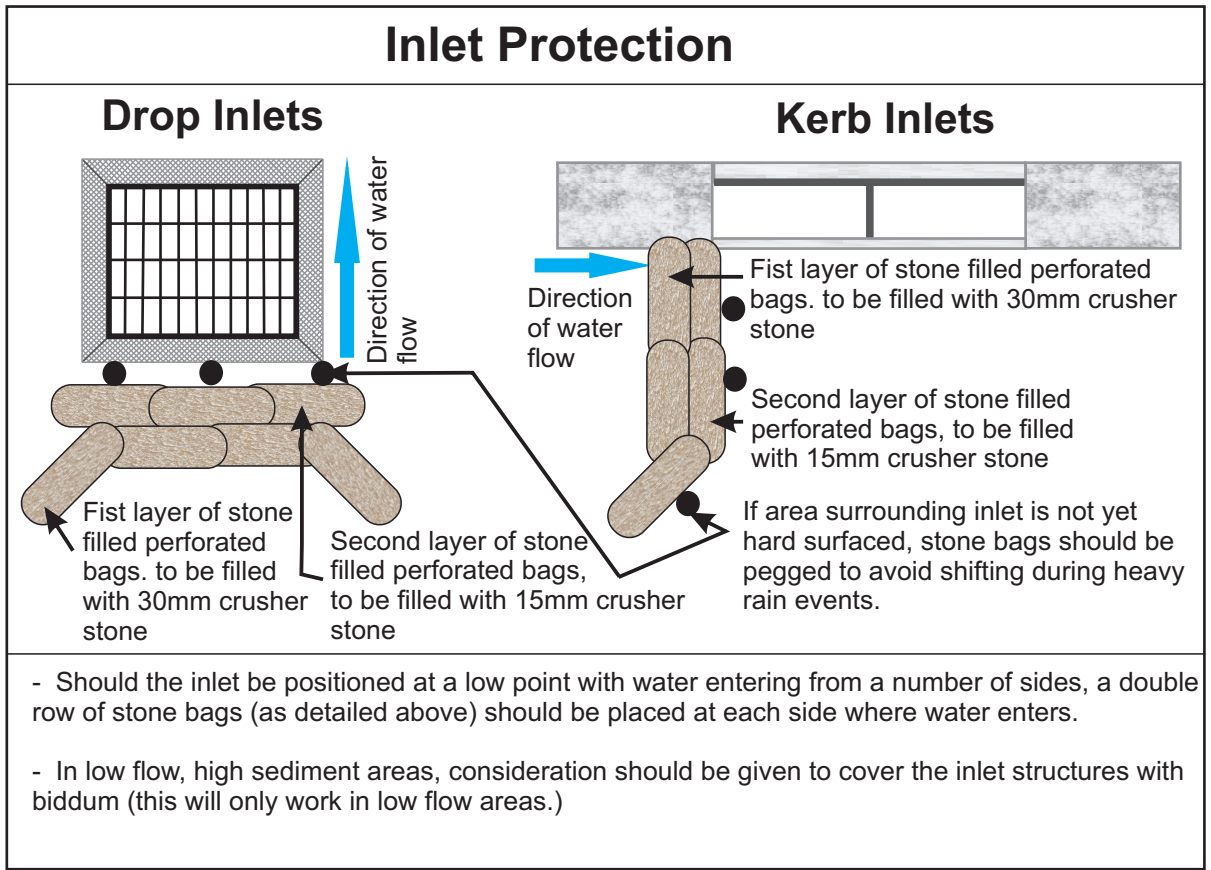


### Top View



**Figure 2: Specifications for Silt Fences**





- The methodology referred to above is effective as a temporary measure to be used during construction and is in no way intended to replace the permanent measures that must be installed. These permanent measures must be constructed as per the engineers specifications.
- Stormwater systems should ideally be constructed during low rainfall periods in order to allow for permanent protection measures to be put in place before the rainy season.
- Consideration should be given to encase the outlet structure with a geo-fabric such as biddum. This should first be clarified with the site engineer to ensure compatibility with the stormwater system.

**Figure 3:** Specifications for Temporary Stormwater Management During Construction

## Key Environmental Considerations for Haul Roads

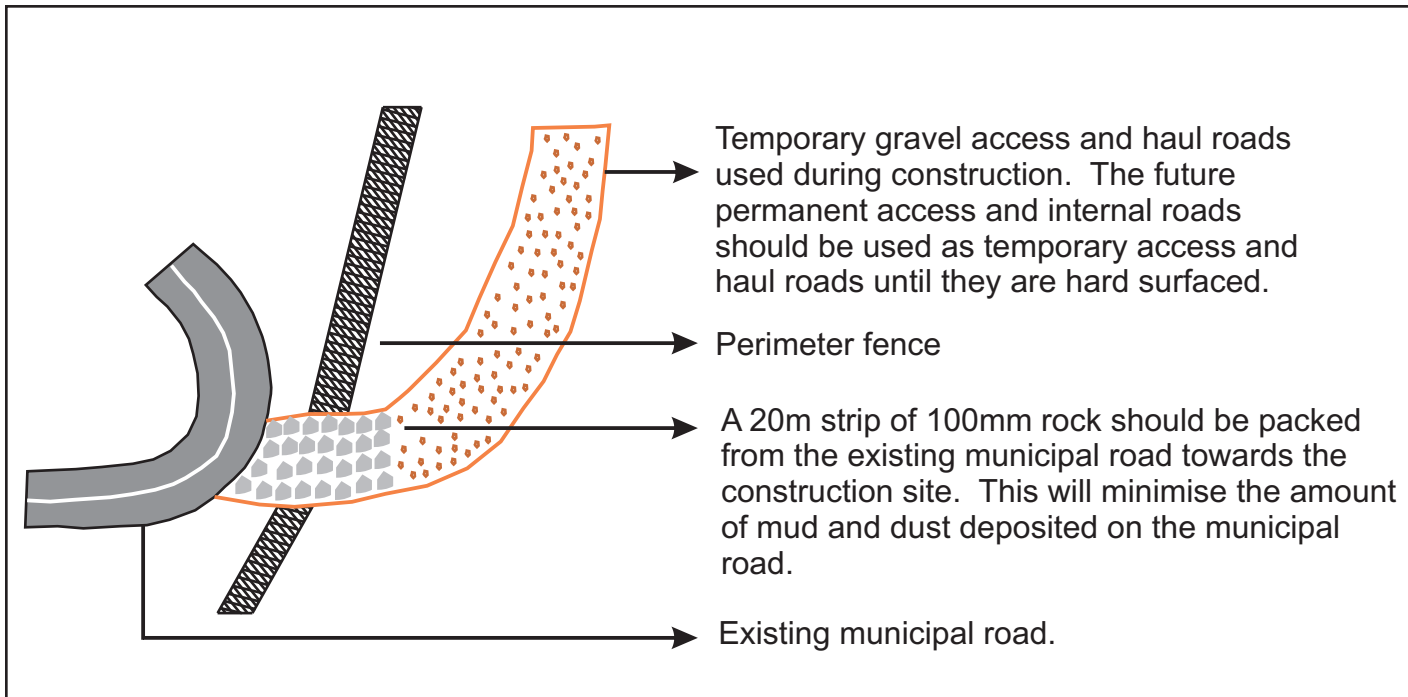
The most important environmental factor to be considered regarding access and haul roads, is the location thereof. Haul roads should be designed to make use of future permanent internal roads and access points.

The haul roads should never be construction in areas that will not be permanently transformed with the development. Nor should they be constructed in any sensitive area.

Another safety and environmental hazard caused by haul road surface is dust problems. Roads should be designed with enough fines to act as binders for the larger particles. However, an excess of fines will result in these particles being released to the atmosphere when repeated stress is applied by the equipment tires. All haul roads that do not have a "sealed" surface, will create dust. The dust problem is mainly dealt with by application of water.

### Minimisation of Dust on Haul Roads

- Every effort to minimize dust pollution on the site must be undertaken.
- Construction vehicles must adhere to speed limits and minimization of haul roads must be implemented. During dry, dusty periods haul roads should be kept dampened to prevent excess dust.
- No potable water may be used for damping haul roads.
- As an alternative, products such as road environment dust suppressants (Reds) would be recommended in order to minimize the use of water for controlling dust pollution. This is to be determined by the ECO during construction as required.



**Figure 4:** Management of Haul and Access Control During Construction



Cape Environmental Assessment  
Practitioners (Pty) Ltd





# Cape EAPrac Company Profile

Cape Environmental Assessment Practitioners (Pty) Ltd was established in March 2008 by Directors **Doug Jeffery** (EAPASA Reg. No 2019/1746) and **Louise-Mari van Zyl** (EAPASA Reg. No. 2019/1444). The full time professional team includes: **Dale Holder** (Senior Environmental Practitioner (EAPASA Reg.No 2019/301)/GIS/ECO), **Siân Holder** (Practitioner/ECO/Environmental Education), **Paul Buchholz** (Environmental Consultant/Professional GIS Practitioner), **Mariska Nicholson** (Intern Environmental Consultant), **Onke Nandipha** (Junior Consultant/ECO), **Charmaine Mudau** (Environmental Consultant/ECO) and **Carin Naudé** (Business Administrator).

The firm implements legislation under the National Environmental Management Act (NEMA), National Environmental Management: Waste Act (NEM:WA) and the National Environmental Management: Air Quality Act (NEM:AQA).

Our main services include:

- Environmental Impact Assessments (EIA's & Basic Assessments)
- Environmental Management Policies & Plans (EMMP's)
- Environmental Control & Monitoring(ECO)
- Environmental Audits
- Environmental Education & Interpretation
- Environmental Constraints Analysis
- Public Participation & Stakeholder Engagement
- Outeniqua Sensitive Coastal Area Permits (OSCA)
- Forestry Applications (for removal/pruning of protected species)
- GIS & Mapping
- Retrospective Damage Assessment (Section 24G)
- Rehabilitation Plans
- Coastal Water Discharge Permits
- Air Quality Licence Applications (AEL's)
- Waste Management Licence Applications (Waste Licence)

## PROJECT EXPERIENCE INCLUDES

Reverse Osmosis Desalination; Sensitive Environmental Management including National Parks/Conservation Areas & World Heritage Sites; Renewable Energy Projects (Solar & Wind); Waste Management License Applications for Waste Disposal Sites, Sewerage Plants & Abattoirs; Waste-to -Energy Projects including Biogas Facilities; Marine Aquaculture; Filling Stations; Air Emission Processes for Sawmills, Brick Works & Processing Plants; ECO responsibilities on Private & State Housing Developments, Provincial & Municipal Roads and Infrastructure, Private, Provincial & Municipal applications for development of infrastructure, housing & commercial components

LIST OF ONGOING **CAPE EAPRAC**  
PROJECTS IS AVAILABLE  
ON REQUEST.  
PLEASE VISIT OUR  
WEBSITE FOR MORE DETAILS



# The Team

## Doug Jeffery - Director

Doug Jeffery obtained a Bsc with majors in Botany and Zoology at the University of Cape Town (UCT) and went on to obtain his MSc in Botany also at UCT. He has worked extensively in the Western-, Southern- and Eastern Cape both as a professional Botanist and co-ordinating EIA processes for over 20 years. He has been registered with the South African Council for Natural Scientific Professions as a Natural Scientist since 1990. He is also registered with the Environmental Assessment Practitioners Association of South Africa.

email: [doug@dougjeff.co.za](mailto:doug@dougjeff.co.za)



## Dale Holder

Senior Practitioner / GIS / ECO

Dale graduated from the Technicon Pretoria in 1999 with a National Diploma in Nature Conservation. He worked as a Socio-Ecologist for SANParks and as Project Manager for the Department of Marine and Coastal Management. He started working as an environmental practitioner in 2002. His focus is currently on Renewable Energy Infrastructure Assessment, but is also involved with other Assessment, Public Participation & Stakeholder Engagement, GIS & Mapping, Biophysical Inventories, Retrospective Damage Assessment, Air Quality License Applications, Waste Management License Applications, Environmental Impact Assessments, Environmental Management Policies and Plans, Environmental Control, Monitoring and Auditing, Environmental Awareness and Training Programs, Environmental Education and Interpretation and Environmental Feasibility Assessments. He is registered as an EAP with the Environmental Assessment Practitioners Association of South Africa.

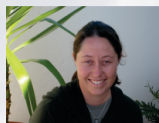
email: [dale@cape-eaprac.co.za](mailto:dale@cape-eaprac.co.za)



## Sian Holder - Consultant / ECO

Sian has a National Diploma in Nature Conservation, a BTech Nature Con (NMMU) and a Masters Degree in Environmental Education (Rhodes University). She worked at Tsitsikamma National Park as an Environmental Education Officer on environmental education programmes for Wilderness Foundation SA. She then served as the Experiential Education Manager and wilderness guide for Wilderness Foundation. She joined the environmental consulting vocation in 2008.

email: [sian@cape-eaprac.co.za](mailto:sian@cape-eaprac.co.za)



## Onke Nandipha - ECO

Onke obtained a BSc in Environmental Sciences (2017) and a BSc Honours in Geography in 2018. He joined Cape EAPrac in July 2019, as an intern, and after gaining experience on various projects, has taken on the responsibility as full time On-Site Environmental Control Officer for a renewable energy development in Kenhardt, Northern Cape. His excellent communication skills in both English and Xhosa, combined with his knowledge and understanding of environmental management makes him a valuable asset on projects where language barriers are a constraint.

email: [onke@cape-eaprac.co.za](mailto:onke@cape-eaprac.co.za)



## Louise-Mari van Zyl

Director / Principal Practitioner

Louise-Mari van Zyl holds a Masters degree in Geography & Environmental Sciences from the University of Stellenbosch. She worked as an Environmental Assessment Practitioner (EAP) since 2002 on projects in the Eastern, Southern, Western & Northern Cape provinces. She is registered as an EAP with the Environmental Assessment Practitioners Association of South Africa.

email: [louise@cape-eaprac.co.za](mailto:louise@cape-eaprac.co.za)



## Carin Naudé

Business Administrator

Carin obtained a BBA degree through UNISA. She gained extensive experience in business management and administration since 1988. She joined Cape EAPrac in June 2008 and is responsible for the day to day administrative functions of the business. Her acquired knowledge and leadership skills enables the rest of the team to function efficiently in their respective fields.

email: [carin@cape-eaprac.co.za](mailto:carin@cape-eaprac.co.za)



## Paul Buchholz

GIS Practitioner / Environmental Consultant

Paul joined Cape EAPrac in September 2022. He holds a MA in Environmental Management from the University Stellenbosch (2009). He is an experienced Geoinformatics and Environmental Specialist who has worked on multidisciplinary environmental and engineering projects in Africa since 2002. Paul is Registered GIS Practitioner with the South African Council for Professional & Technical Surveyors.

email: [paul@cape-eaprac.co.za](mailto:paul@cape-eaprac.co.za)



## Mariska Nicholson

Project Assistant /  
Trainee Environmental Consultant

Mariska joined Cape EAPrac in April 2022. She completed her BSc in Geology in 2016, BSc Honours in 2017 and holds a MSc in Geology from the University of the Free State (2020). After working as a Geologist for two years, she joined our team as Project Assistant and is training to become an Environmental Assessment Practitioner.

email: [mariska@cape-eaprac.co.za](mailto:mariska@cape-eaprac.co.za)



## Charmaine Mudau - ECO

Charmaine Mudau joined Cape EAPrac in September 2022. She holds a BA in Geography and Environmental Management from the University of the Free State (2014) and a BSc Honours in Geography from UNISA (2020). She joined our team as full time On-Site Environmental Control Officer for a renewable energy development in Kenhardt, Northern Cape.

email: [charmaine@cape-eaprac.co.za](mailto:charmaine@cape-eaprac.co.za)







