ENVIRONMENTAL MANAGEMENT PROGRAMME

for

HARTENBOS GARDEN ESTATE

on

Erf 3122 Hartenbos Heuwels, Hartenbos

In terms of the

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

Prepared for Applicant:

HARTENBOS
Garden Estate
Natuur-Landgoed

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Report Reference: **MOS495/10**
Department Reference: **16/3/3/2/D6/18/0002/22**
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PURPOSE OF THIS REPORT:

Environmental Management Programme

APPLICANT:

Hartenbos Hills PropCo (Pty) Ltd

CAPE EAPRAC REFERENCE NO:

MOS495/09

SUBMISSION DATE

18 October 2023

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

Submitted for:

Stakeholder Review & Comment

Report Issued by:

Cape Environmental Assessment Practitioners

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ORDER OF REPORT

Environmental Management Plan

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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.	Louise-Mari van Zyl from Cape Environmental Assessment Practitioners. See Cover Page. Appendix 4.
A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	Section 1
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.	Section 4 – Environmental Impacts & Mitigations Section 5 - Responsibilities Section 6 – Pre-Construction Design Section 7 – Construction Phase Section 8 – Operation Phase
A description and identification of impact management outcomes required for the aspects contemplated above.	Section 4
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.	Section 4 Section 6 Section 7 Section 8
The method of monitoring the implementation of the impact management actions contemplated above.	Section 9 Section 11
The frequency of monitoring the implementation of the impact management actions contemplated above.	Section 9

Requirement	Description
An indication of the persons who will be responsible for the implementation of the impact management actions.	Section 5
The time periods within which the impact management actions must be implemented.	Not Applicable
The mechanism for monitoring compliance with the impact management actions.	Section 9
A program for reporting on compliance, taking into account the requirements as prescribed in the Regulations.	Section 9
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.	Section 5 Section 6 Section 7 Section 8 Section 9
Any specific information that may be required by the competent authority.	Not Applicable.

ABBREVIATIONS AND ACRONYMS

BSP 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.

CARA 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.

CBA Critical Biodiversity Area - areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan.

DFFE National Department of Forestry, Fisheries & the Environment – the national authority responsible for the sustainable environmental management and integrated planning.

DEA&DP Department of Environmental Affairs and Development Planning – the provincial authority for sustainable environmental management and integrated development planning. The competent authority is this case.

DWS Department of Water & Sanitation Affairs – National authority mandated to enforce the National Water Act (NWA).

EA Environmental Authorisation – Authorisation obtained on completion of an Environmental Impact Assessment in terms of the National Environmental Management Act (NEMA).

ECA Environment Conservation Act, 1989 - To provide for the effective protection and controlled utilization of the environment and for matters incidental thereto.

ECO Ecological Control Officer – independent site agent appointed to observe and enforce the implementation of environmental policies and principles on a development site.

EIA 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.

EMPr 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.

GIS Geographic Information System - system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data.

GPS 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.

NEMA 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) is appointed by the Applicant, Hartenbos Hills PropCo (Pty) Ltd to develop an Environmental Management Programme (EMPr) which will be used to promote and ensure environmental monitoring and control during all phases (construction, operation and possible decommissioning) associated with the development of the Hartenbos Garden Estate development proposed on a Portion of Erf 3122, Hartenbos Heuwels in the Mossel Bay Municipal District.

This activity requires an Environmental Authorisation in terms of the National Environmental Management Act (NEMA, Act 107 of 1998) before commencing. This document provides part of a series of documents that is being circulated for public and stakeholder input as part of the Environmental Impact Assessment (EIA) process, before being provided to the provincial competent authority, the provincial Department of Environmental Affairs & Development Planning (DEA&DP) for decision making.

The study site is the property of the **Afrikaanse Taal & Kultuur Vereniging (ATKV),** but is in the process of being **transferred** to the Applicant who is duly authorised to conduct the Scoping & Impact Assessment application process.

Erf 3122 is the remaining, undeveloped portion of the original Hartenbos Township Development and represents **Township Extension 4 as per approved General Plan**. As such the property falls **within the designated urban edge** of Hartenbos and is earmarked for residential development in accordance with the 2017, as well as the updated June 2022 Spatial Development Framework (SDF), of the Mossel Bay Municipality.

The subject property is situated west of the N2 freeway approximately 2,5km from the central business district (CBD) of Hartenbos Town which developed between Louis Fourie Road and the Indian Ocean. Surrounding land uses include the following:

- **Mossel Bay municipal conservation area** surrounds the property along most of its boundaries to the south, west, north and partially the east as well
    - This conservation area forms a natural boundary/buffer between the township / urban edge of Hartenbos and the remaining agricultural areas further to the West;
- The existing **Hartenbos Heuwels residential neighbourhood** lies to the east with fragmented open space areas,
- The **2019 approved Renosterbos Lifestyle Development on Erf 1799** (approximately 37ha) borders the property directly to the south (currently under construction with a 2022 amendment for densification and changes to the approved site plan under consideration);
- A large **Utility Zone** property borders the property on the East (indicated in Red in Figure 1);
- A **Community Zone** property borders the property to the East (indicated in Blue in Figure 1);
- The **NumNum Residential Estate**, **railway line** and **Aalwyndal small holdings** are located further to the south;
- The medium density **Sonskynvallei housing node** and **mining activities** are located to the north-west of the site (separated by the Municipal Conservation Area).

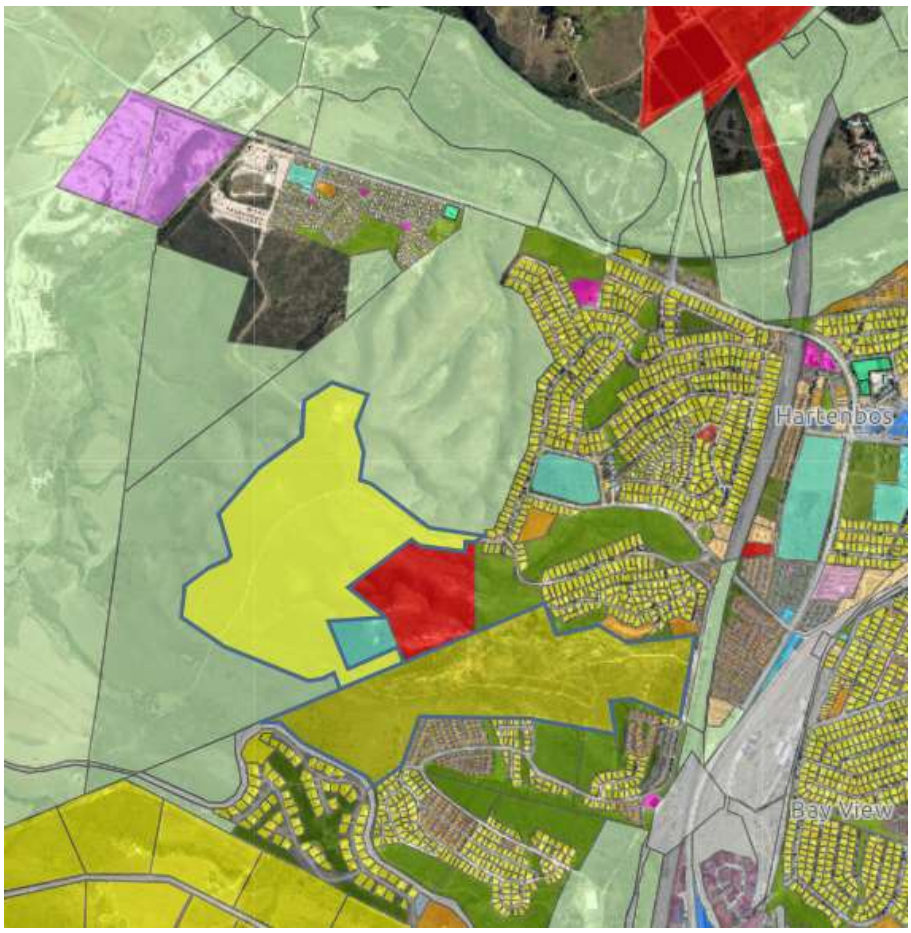

Figure 1: Location Plan indicating existing zonings of the site and surrounding areas (Mossel Bay GIS 2022).

Figure 2: Area Location Plan (Google Imagery 2022).

Figure 3: Aerial of the site indicating the undeveloped and developed landscape context of the property.

Applicable information about the site is summarised as follows. The site will be transferred from the ATKV to the Applicant upon completion of approval processes.

Table 2: Property information summary table.

Description	Erf 3122 Hartenbos
Location	West of Kammiebos Avenue Hartenbosheuwels
Extent	60,5190ha
Registered owner	DIE AFRIKAANSE TAAL-EN KULTUURVERENINGING Offer to purchase: Hartenbos Hills Propoco (Pty) Ltd
Title Deed	T 24075/1995 (Copy of Title Deed attached)
Existing zoning	Agriculture Zone
Restrictive Conditions	None in Title Existing pipeline servitude and servitude area
Planning Legislation	Mossel Bay Municipality: Integrated Zoning Scheme By-Law Mossel Bay Municipality: By-Law on Municipal Land Use Planning, 2019

The proposed development is for a **secure, lifestyle estate** with provision for a collection of single residential opportunities, private amenities for residents and their visitors, services, village apartments and assisted living quarters. The development area is separated from the greater Hartenbos Heuwels residential area by a large internal conservation area and includes a butterfly reserve.

There are multiple accesses to the subject property via the existing road network. One is taken directly from **Kameeldoring Avenue**, which links with **Louis Fourie Road (R102)** via **Boekenhout Avenue**. Louis Fourie Road will be upgraded as part of the municipal arterial upgrade to include a 60m long designated left turning lane into Boekenhout Avenue to alleviate congestion at this intersection. An alternative access to the subject property is taken via **Geelhout Avenue and Waboom Street** which end at the **R102 and R328 intersection** whicll will be signalised.

Services will be linked to the already existing municipal services of the area namely water pipelines, sewage pipelines and electricity that runs along Buitekant Street. The Hessequa Municipality has confirmed service capacity and availability.

The proposed development in its preferred alternative state at assessment level, compromises the following components:

Table 3: Summary of the preferred Alternative 3 as the development proposal.

ALTERNATIVE 3 (PREFERRED ALTERNATIVE)
1.1 PORTIONS 1-258:
The proposed residential component of the development which will be zoned Single Residential Zone I (SRZI) is in extent the largest urban land use within the development. A total of +/-**258 single residential erven** *(previously 280 erven)* are proposed as part of the development on erven varying in size from **200m² to 747m²** in extent.
These residential erven include a combination of:
· **18** Garden Houses (200m² erven) *(previously 40 houses)*
· **112** smaller residential erven (<350m²) and
· **149** larger residential erven (350m²->600m²).
1.1 PORTIONS 259-261:
A total of **+/-54 apartments (3x18) varying** from **1 bedroom to 3 bedrooms** are proposed on the individual portions as part of the proposed development on the subject property. These three portions will be developed in phases 2, 3 and 4 respectively.
In order to facilitate the proposed terrace apartments (flats) on the proposed portions, the portions will have to be rezoned to General Residential Zone III (GRZIII).
1.1 PORTION 271:
The intention is to utilize Portion 271 for **communal facilities** which comprise, but is not limited to, a **restaurant and sport and recreation centre** with parking and will be zoned **Private Open Space Zone II** (OSZII) with Consent Use
1.1 PORTIONS 272-277
This portion which will be zoned **General Residential Zone III** (GRZIII) with Consent Use as **'Retirement Resort"** represents a variety of land uses measures **±3,267 ha** in extent and comprises the main focal point of the proposed development with the **communal amenities** and **specialized services** *(previously 2.43ha). This area increased in size because of the requirement to reduce all the structures on this area from three (3) to two (2) storey height.*

The precinct will include the following:
• Clubhouse
• Recreation Centre
• Village Apartments
• Health Care
• Clubhouse
• Approximately 230 parking bays (basement and ground floor level) *(previously 248 parkings)*
Ground floor:
• Entrance foyer and courtyard
• Homeowners Association / Managing Agent offices
• Sales Office
• Restaurant
• Kitchen
• Lounge & Game Room
• Library
• Convenient store
• Hair and nail salon
• Cinema room
• Slop Room
• Outside braai area
• Public toilets
• Nurse's room
First floor
Provision is made on the first floor of the buildings for a total of approximately 20 **one bedroom assisted living** and **comprehensive care centre** units respectively. These single rooms will vary in size from 28m² to 45m².
Recreation Centre:
Provision is made in a separate building behind the clubhouse building for **indoor gym** with **rehabilitation facilities and pool area** as well as a **multifunctional hal**l. The proposed building also includes **ablution facilities** and **storerooms** and measure ±440m² in extent. The indoor sports facilities include but not limited to a **gymnasium, aerobic area, indoor pool and other associated facilities**, while the **multifunctional hall** will be a **communal facility** which can be used for any purpose from **social gatherings, church services and dances**. The proposed building will lead out onto an **outdoor recreation area** which will be landscaped and will function as a **central courtyard** on the site and which is earmarked for **outside play and recreation purposes**.
Village Apartments:
The proposed village apartments comprise **eight (8) double storey (ground floor, plus first floor) buildings** grouped around the central courtyard (outside recreation area) within the Village Precinct and on the abutting Portions 273-277). *Previously five (5) three storey buildings.*

An estimated **152 village apartment units** (previous 144 units) are proposed within these buildings on the proposed Portions and comprise a combination of **1, 2 and 3 bedroom units** which will vary in size from ±40m² to ±100m². Apart from the bedrooms provision is also made for a bathroom and open plan kitchen and lounge area as well as balconies. The required **parking bays** for the proposed apartments are provided for in the proposed **basements of each of the buildings** as well as on **ground level** within the Village Precinct. These parking areas have direct access from the proposed internal private road network. These apartment buildings are all linked with each other as well as with the communal and health care facilities within the Village Precinct by formal walkways. These apartments will provide an alternative residential option for those who require smaller units in close proximity to the communal and health care facilities within the development.

Health Care:

Although this development will not be an exclusive retirement development, provision is made in the development for **specialized facilities** normally associated with retirement resort. The proposed **health care units** and **comprehensive care units** will accommodate those **members of the public** who needs **health care on a continuous basis within an area where they can be monitored and cared for.**

Approximately **26 comprehensive care units** are proposed inside a two (2) storey (ground floor, plus first floor) health care centre building on the Village Precinct. *Previously 34 units.*

This building will be located immediately north of the proposed clubhouse and will be linked thereto with covered walkways. The proposed health care apartments which are proposed on all three floors comprise a bedroom and a bathroom. These rooms will be accessed from a covered walkway which leads to the staircase and lift shaft. This building will function exclusively as a health care facility and will provide a accessible service to residents of the development.

In addition to the comprehensive care apartments the health care building will also make provision for other facilities directly associated with such care which include but not limited to the following:

- Reception,
- Communal dining and lounge area in the proposed courtyard,
- Doctor's rooms,
- Consulting rooms,
- Nurse's room,
- Private gardens,
- Satellite kitchen,
- Public toilets,
- Slop room,
- Staff room, and
- Administrative office.

In addition,+/-**20 one bedroom assisted living units** which will function collectively with the health care centre are proposed on the first floor of the proposed clubhouse building. These units with associated storage areas will be linked with the abutting health care building and facility immediately to the north thereof with covered walkways on all three levels as clearly depicted on the attached plans.

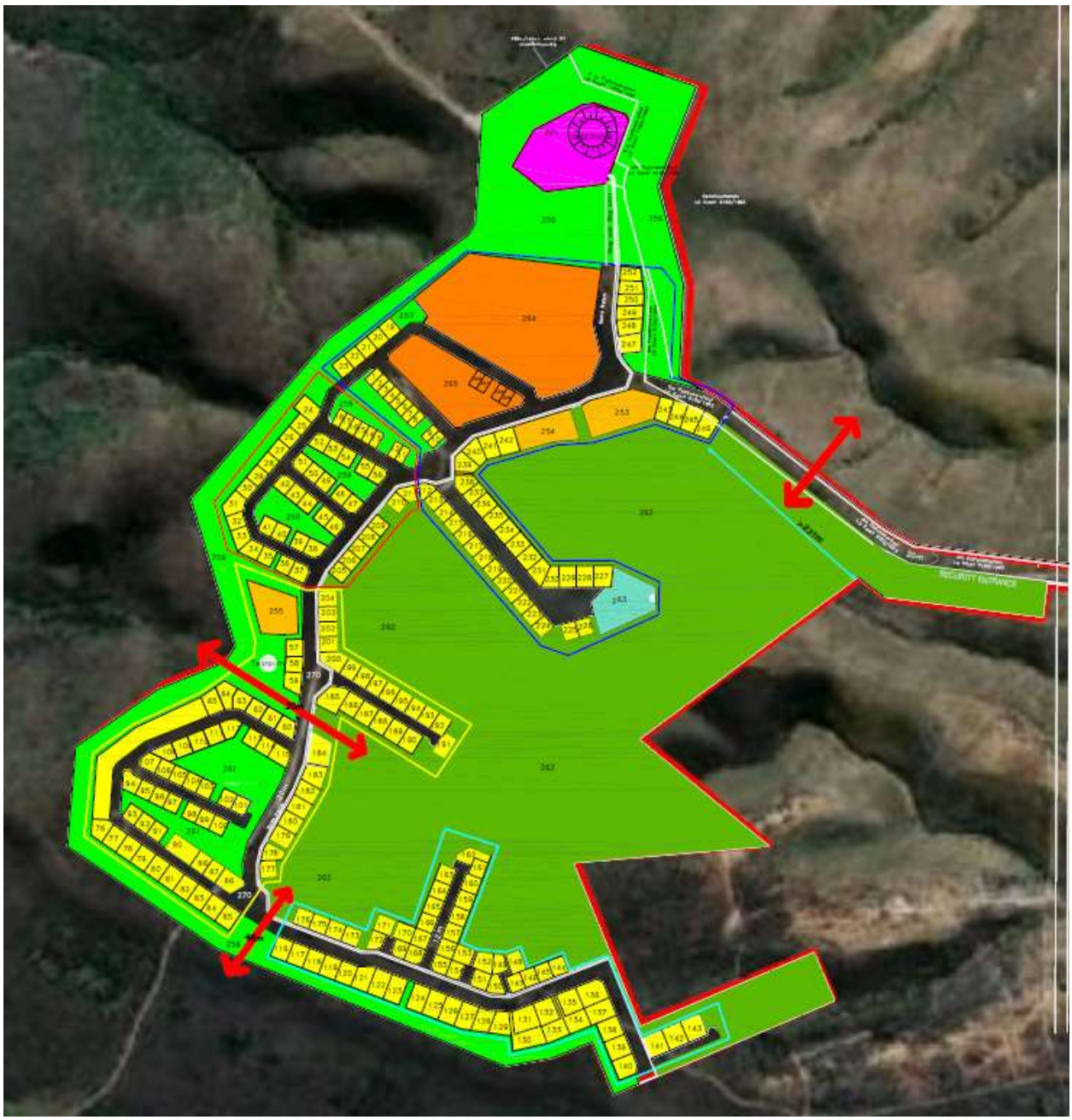

Figure 4: Preferred Site Development Plan (Alternative 3).

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 best practice principles. The EMPr should 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 residential development 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 provide clearly defined **actions** that must be implemented during each phase of the development of the proposal. The EMPr is a dynamic document that is flexible and responsive to new and changing circumstances.

- The document is **binding** on the Applicant, future Managing Agent, all contractors and sub-contractors and visitors to the site.

- It must be **included as part of any tender 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.
- Substantial **changes or deviations** to this EMPr must be authorised by the competent authority.

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), Water Use License (WULA) and Planning Approval once issued.

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 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.

Specialist input to the planning and design stage resulted in the development of a development envelope that is deemed acceptable to all participating specialist subject to implementation of the mitigation measures contained in this EMPr as well as any conditions of approval(s).

2.2 CONSTRUCTION PHASE

The construction phase refers to the actual construction of the development on the property, and includes all earthworks and installation of bulk services (water, sewerage, roads, stormwater, electricity etc.). In terms of this application, this phase relates to the construction of the civil engineering services and infrastructure.

The construction phase of the development will be monitored by an appointed Environmental Control Officer (ECO) who must ensure compliance with this EMPr as well as the Environmental Authorisation (EA).

2.3 OPERATIONAL PHASE

The Operation Phase of this project relates to the ongoing management required to ensure sustainable development within the development within the context of remaining natural areas bordering the property to the West, as well as the Butterfly Reserve to the North and the internal Conservation Areas separating the development footprint from Hartenbos Heuwels.

In terms of this application, this refers to all activities that are undertaken once the site is handed over for residential use. Construction of houses undertaken during the operational phases must still apply the principles provided in terms of the Construction Phase of this EMPr.

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

Long-term monitoring and compliance with invasive alien vegetation clearing, butterfly habitat status, ecological burning, stormwater management and the daily usage of the internal conservation areas must be recorded by the Applicant/Managing Agent, as well as an appointed ECO for the duration of the operational phase.

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.

The development is for a residential estate which by its nature has a long lifespan, as such it is not possible to provide a specific decommissioning timeframe. However, in the event that this does take place, the legislation applicable at that time must be applied. As a minimum the following should be considered:

- Correct demolition and removal of building structures.

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 EMPr 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.

In addition to the management of ecosystems, this Act makes provision for the management and control of alien invasive vegetation. This includes the listing of invasive species that are a threat to natural ecosystems. These species must be strictly controlled and / or eradicated. The property has been significantly transformed due to grazing practises but does not contain many alien vegetation species. Only indigenous vegetation should be permitted for landscaping by the proposed HOA and future landowners.

The vegetation type on the site has been identified as Hartenbos Dune Thicket (2018) which is classified as Least Concern.

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.

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.

A Water Use License Application (WULA) has been applied for proximity of sewage pump stations to on-site wetlands and watercourses to ensure that possible pollution of water resources do not take place. Design and location of the pump stations have been informed by aquatic specialists in consultation with the project engineers. It is of paramount importance that water quality of any water discharge remain of good quality.

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).

3.7 NATIONAL VELD AND FOREST FIRE ACT (ACT 101 OF 1998)

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.

All landowners are required in terms of this Act to prepare and maintain **firebreaks** on the boundary of their property and any adjoining land. Only the Minister may exempt a landowner from providing firebreaks.

The rationale for the National Veld and Forest Fire Act is that veldfires are natural – they have been part of life for millions of years. We use controlled fires to manage grazing and habitats, and to help prevent uncontrolled wildfires.

The purpose of the National Veld and Forest Fire Act, Act No. 101 of 1998, as amended by the National Fire Laws Amendment Act, is to prevent and combat veld, forest and mountain fires throughout South Africa. The Act **applies to the open countryside beyond the urban limit** and puts in place a range of requirements. It is often used to describe land that is not developed or built upon, such as farmland, forests, or wilderness areas.

In the case of Hartenbos Garden Estate the Act applies to the interface between the development site and the neighbouring Municipal Conservation Area to the West of the property. A fire break has specifically been incorporated into the preferred alternative between the proposed housing development and the neighbouring municipal conservation area to ensure compliance with the Act.

3.8 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.

Heritage Western Cape, in response to the integrated HIA will provide final comment on the application. The integrated HIA confirmed that the preferred alternative accommodates the known archaeological sites.

3.9 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.

3.10 SANS 10400 APPLICATION OF THE NATIONAL BUILDING REGULATIONS

The application of the National Building Regulations contains performance parameters relating to fire safety, sanitation systems, moisture penetration, structural safety, serviceability and durability. It also takes into account how the above can be established to reflect social expectations in a manner which supports sustainable development objectives.

3.11 NATIONAL BUILDING REGULATIONS

The National Building Regulations and Building Standards Act as amended must be complied with. This act addresses, inter alia:

- Specifications for draftsmen, plans, documents and diagrams;
- Approval by local authorities;
- Appeal procedures;
- Prohibition or conditions with regard to erection of buildings in certain conditions;
- Demolition of buildings;
- Access to building control officers;
- Regulations and directives; and
- Liability.

4 ENVIRONMENTAL IMPACTS & MITIGATIONS

In light of the outcome of the Screening Tool, the following specialist impact assessments / studies were undertaken for the proposal:

- Terrestrial Biodiversity Assessment
- Botanical Assessment
- Faunal Assessment
- Aquatic Assessment
- Visual Assessment
- Integrated Heritage Assessment
- Social Assessment

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme		X		
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme		X		
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

The project team and specialist input has identified the following as potential issues/concerns/impacts to date. The public participation process will help identify any additional potential concerns, risks and impacts (both positive and negative) that may arise from this development proposal.

- Fire risk (the site is situated within a high fire risk area and Hartenbos Heuwels have experienced damaging wild fires in recent years);
- Additional traffic and particularly the potential impact of increased traffic on intersections onto arterial roads during both construction and operational phases;
- Environmental impact associated with the proposed development, most notably biodiversity (ecological patterns and processes), landscape connectivity and impact on habitat/species diversity;
- Management of invasive alien vegetation within undeveloped areas (also linked to fire risk);

- Long-term management of the conservation areas within the development boundaries;
- Benefit of creating additional employment opportunities through construction and operational components as well as income generation through rates & taxes;
- The visual impact of the proposed development on ridgeline in particular;
- Historical decisions on previous applications to be considered.

Table 4: Potential impacts/risks associated with the proposed development as broken up into specific disciplines.

Possible Constraints	Specialist Input
Ecological	Active alien clearing is however required for the transformed areas (most notably the ridgeline and watercourses) in order to ensure that the environment will also benefit from the proposed development. Alien clearing is dealt with as part of this EMPr. Fire management is raised as a concern although it is unlikely to be a major risk factor to development nodes themselves, however the area is known for wild fires and therefore a detailed Fire Management is dealt with as part of this EMPr.
Fire Management	Proximity of frail care to areas that will require ecological burning. Controlled fires must not be compromised once the area is occupied. Neighbouring areas to the west are conservation areas that must be burned and smoke from such fires may pose a nuisance to residents. A fire break is provided between the property boundary and the closest houses to ensure compliance with the Fire Act.
Freshwater	The site contains a number of on-site watercourses. Unnecessary encroachment of development onto these features is unwanted. Aquatic buffers on all major drainage lines and smaller tributaries have been recommended to minimise potential impacts. Active alien clearing along all affected watercourses must be implemented as a mitigation measure to help improve the aquatic environment that will be affected by this proposal. Stormwater management (for both quantity and quality) is important and has been assessed in terms of the detailed stormwater management plan.
Heritage	Context of the site and visual issues connected with landscape character. Potential archaeological and palaeontological requirement incorporated into integrated heritage impact assessment.
Social	Meeting housing demand specifically for secure (gated) developments as people relocating to the area come from areas deemed to be high-risk and are used to high levels of security. Employment opportunities during construction and operational phase. Skills transfer and training is important to optimise benefit to previously disadvantaged and lower income groups.
Traffic	Access through Hartenbos Heuwels and intersections onto Louis Fourie and R108/R386. Detail the responsibility of upgrading of these intersections (either Municipality ito Arterial Management Plan for their greater mobility study) or responsibility of the

	Applicant. Must consider construction traffic through residential areas of Hartenbos Heuwels (routes identified as coming via Boekenhout Avenue).
Butterfly	Species identified in proximity to the municipal reservoir have conservation value and their habitat must not be compromised. Alternative 2 accommodates this requirement. Alien clearing and appropriate fire regimes are important which must not be deviated from once the development is occupied. The reserve will not be fenced-in with the Estate to ensure that it can act as a corridor linking neighbouring remaining natural areas.
Visual	Ridgeline development must be managed and mitigated throught the appropriate setback, architectural guidelines and appropriate landscaping as per Alternative 3.
Open Space	The management of open spaces within the development, along with faunal fencing requirements and controlled ecological burning must be considered. Corridor connectivity with neighbouring open space areas addressed through the faunal and biodiversity impact assessments.

The potential impacts of the proposed development were identified and assessed by various specialists in compliance with the Environmental Regulations and approved Plan of Study for EIR. Further details on the significance and ratings of these impacts are provided in the EIR and in the specialist reports.

Various technical studies were conducted to consider the availability of services associated with the proposed development and these specialists were tasked to consult with the relevant local and provincial authorities on the availability of services (capacity and supply) as well as proposed infrastructure requirements.

Below table is a summary of the main conclusions of each specialist discipline only:

BOTANICAL	Confirmation that the development footprint is contained within the area deemed to have low botanical sensitivity which will result in an overall low botanical impact. The preferred alternative is supported by the specialist.
BIODIVERSITY	Confirmation that the preferred development will result in overall low negative impacts with the preferred alternative allowing for improved ecological functioning through continuous invasive alien clearing, ecological burning, implementation of dedicated faunal gates linking to the neighbouring municipal conservation area, as well as protection of the butterfly reserve area. The preferred alternative is supported by the specialist.
FAUNA	Confirmation that the preferred development alternative will have an overall medium to low impact level and significance for specialist of special concern and faunal habitat. The preferred alternative is supported by the specialist.
FRESHWATER	With mitigation the specialist is of the opinion that the impacts associated with the proposed development is likely to pose a low negative risk to water sources and resources in the property and could in fact the considered under General Authorisation. The implementation of sewer infrastructure within the regulation area is the only reason for the WULA being undertaken.

	The preferred alternative is supported by the specialist subject to implementation of mitigation measures.
INTEGRATED HERITAGE (incl of Archaeology and Palaeontology)	The integrated heritage assessment satisfies the requirements of Section 38 of the National Heritage Resources Act. The specialist recommends that HWC endorses the proposed development.
VISUAL	The specialist deems the proposed development to have a medium negative impact on the receiving visual landscape. The preferred alternative is however acceptable with mitigation measures and can be considered for authorisation.
SOCIAL	The spectrum of socio-economic impacts associated with the proposed development range from medium positive to low negative. The specialist recommends that the development be approved with mitigation.
TRAFFIC	The development proposal is acceptable from a traffic perspective with allowances for both signalling and slip lane improvements as per the Louis Fourie Road Master Plan.
ELECTRICAL	The development can link to the existing 11kVA electrical line that travers the site.
CIVIL	The development can be accommodated through the Municipal bulk services both in terms of network and capacity.

4.1 MITIGATIONS

The following mitigation measures are summarised according to each of the specialist themes:

Recommended mitigation measures for BOTANICAL:

(1) The mitigation measures necessary would be the relocation of *geophytes from the development footprint prior to site clearing of each phase. Ideally the bulbs must be lifted when they are dormant (summer) but that would mean traversing the entire area of the proposed development in the preceding winter and marking every occurrence of these plants. A more practical approach would be to unearth the bulbs during the construction phase and to then relocate and plant them soon after removal. (**Note: A clearing permit as well as a permit for removal of and relocation of geophytic plants would be required from Cape Nature.)***

(2) The setting aside / demarcation of the butterfly conservation area prior to construction commencing in the area i.e. Phase 1 with no unauthorised access into this area during construction.

(3) All construction activities must take place within the footprint of the development. Areas outside the development footprint (except for access roads) MUST be avoided. Any areas within the development footprint that will not be used as development later must be rehabilitated with natural vegetation native to the area.

(4) Preferably undertake clearing of vegetation during the dry season.

(5) Keep vegetation low along the fire breaks but not completely eradicated.

(6) Only clear vegetation where absolutely necessary.

(7) The butterfly reserve must be included in the management of the development. It must be the responsibility of the Applicant / Managing Agent to ensure continuous alien clearing and controlled ecological burns are carried out in this area.

(8) A butterfly survey within the butterfly must be carried out by a suitably qualified specialist once construction of Phase 1 is complete. Depending on the findings of the survey (compared to the findings from this Impact Assessment) the specialist must make recommendations for any repeat surveys to monitor the health with the identified butterfly species.

Recommended mitigation measures FAUNA:

(1) Butterfly reserve must be clearly demarcated and considered a no-go area.

(2) Clearing of natural vegetation outside the permitted development footprint must be prevented or to be kept to a minimum where necessary.

(3) The smallest possible working corridor, particularly along sensitive habitats, must be used.

(4) No off-road driving may be allowed by construction vehicles.

(5) All temporary/permanent fences to be erected must be of sufficient low height and mesh size to allow fauna (small rodents, antelope, etc.) to move freely through and to not act as a barrier to dispersal.

(6) Any drainage/water run-off trenches required to be built alongside roads must be shallow and broad with low-angle sides (<30 degrees) so as not to trap fossorial invertebrates (e.g. dung beetles) and small vertebrates (e.g. snakes, tortoises).

(7) Alien vegetation found on the project area must be removed by an alien plant clearing team during the construction phase; invasive alien plants are seen as a significant threat to faunal SCC (e.g. butterflies (Mecenero et al., 2013).

(8) Buffer zones of ~ 50m must be used around drainage and watercourses.

(9) A 5m buffer zone must be considered for any development close to the proposed butterfly reserve (the fenced acts as said buffer in Alternative 3).

(10) Ongoing clearance of alien vegetation across the project area and rehabilitation to encourage natural vegetation to regenerate on the areas disturbed during construction and to restore and increase natural habitat for faunal SCC.

(11) Fixtures on external lights to cover the light bulb and direct the light to where it is needed.

(12) Use timers and sensors to control when external lights are on and to make lights motion activated.

(13) Use coloured lights, such as long wavelength amber and red lights. Yellow illumination lights have also been shown to attract less moth specimens (Verovnik et al., 2015). Deichmann et al. (2021) recommend filtered amber LED lamps with no blue and minimal green light content to be used for outdoor lighted areas.

(14) An outdoor lighting to be developed in conjunction with the final landscaping plan to include an overall reduction of nocturnal lighting. These additional plans to be incorporated into the EMP prior to finale approval thereof.

(15) Speed bumps must be installed on all internal roads and speed limits and animal crossing warning signs must be erected, visible and enforced by the Applicant/Managing Agent.

(16) Bird flappers on overhead electrical lines for Denham's Bustard.

(17) The faunal gated areas must not have direct lights shining on them and the crossing areas (where animals must cross the road to make use of the faunal gates) must be clearly marked and preferably have distinctive paving to alert drivers at all times that they must drive slowly in these areas, especially at night time when nocturnal animals may make use of the faunal gates.

Recommended mitigation measures AQUATIC:

(1) The loss of habitat through dumping of waste, inappropriate placement of stockpiles and trampling by construction personnel and machinery can be minimised by ensuring that the open space areas that encompass seeps and watercourses within the area are adequately

demarcated and fenced off from the development edge prior to the start of construction. Temporary fencing must be removed ed when construction in the vicinity of the open space areas has been completed.

(2) Ensure that construction within the 50 m buffer area of watercourses and wetlands, does not take place during wet periods. In the Hartenbos region, historical rainfall records show that rainfall peaks in the spring (October/November) and again in autumn (April) with the lowest rainfall between December and February. While limiting construction within any watercourse or wetland buffer between December and January will reduce the risk of runoff into watercourses and wetlands from newly cleared areas and stockpiles, rainfall does occur beyond this period. Therefore, potential rainfall needs to be continuously monitored and additional measures implemented to either prevent or remediate any damage if necessary.
(3) Ensure that all stockpiled materials are stored at least 50 m away from wetlands and watercourses.
(4) Ensure that all stockpiles are covered when not in use and thus protected from wind to prevent spread of material.
(5) Ensure that stockpile areas are adequately bunded such that there is no runoff from these areas into freshwater ecosystems, particularly where the terrain is steep.
(6) Ensure that washing of vehicles and machinery take place well away from wetlands and watercourses (at least 50 m). All machinery must be regularly checked for leaks.
(7) The provision of adequate ablution facilities for construction workers to avoid contamination of wetland habitats through human waste. No workers may go into the defined No-Go areas (the conservation area) unless for dedicated stormwater work;
(8) Ensure that any disturbance created through construction related activities is identified by the ECO and effectively remediated through rehabilitation of the habitat.
(9) A Construction Phase Environmental Management Programme (CEMP) must be compiled and its implementation enforced during the construction phase through regular inspection by an ECO with experience of freshwater ecosystems/or in consultation with a suitably qualified freshwater specialist.
(10) Construction phase stormwater management to prevent contaminated runoff entering the wetlands and watercourses;
(11) Final stormwater designs to be approved by a suitably qualified aquatic specialist prior to implementation.
(12) Implemented stormwater design to be inspected by a suitably qualified aquatic specialist prior to commencement of top structures on each phase;
(13) Freshwater specialist must be consulted with the External Audit for each phase to verify the effectiveness of the stormwater system as implemented.

Recommended mitigation measures: SOCIAL

- The developer and or contractors cannot be held responsible for the off-site, after-hours behaviour of all construction employees. However, the contractors appointed by the developer and individual homeowners must ensure that all workers employed on the project are informed at the outset of the construction phase that any construction workers found guilty of theft will be dismissed and charged.
- No construction workers, with the exception of security personnel, must be allowed to stay on site overnight.
- Building contractors appointed by the developer and or private homeowners must ensure that workers are transported to and from the site on a daily basis.
- Construction related activities must comply with all relevant building regulations. In this regard activities on site must be restricted to between 07h00 and 18h00 during weekdays and 08h00 and 13h00 on Saturdays. No work should be permitted after 13h00 on Saturdays, Sundays and Public Holidays.
- The recommendations of the Traffic Impact Assessment (TIA) must be implemented.

- The movement of heavy construction related traffic along access roads must be planned to avoid the morning and afternoon traffic peaks.
- Drivers must be made aware of the potential risk posed to pedestrians and other road users along access roads.
- All drivers must ensure that the applicable speed limit along access routes is enforced.
- Any abnormal loads must be timed to avoid morning and afternoon peak traffic hours.
- Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.
- All vehicles must be road-worthy, and drivers must be qualified, made aware of the potential road safety issues, and need for strict speed limits.
- Site clearing must be phased in order to minimise the exposed and reduce generation of dust, specifically during the dry, summer months.
- The developer must inform the local authorities, local community leaders, organizations and councillors of the project and the potential job opportunities for local builders and contractors.
- The developer must establish a database of local service companies in the area, specifically SMME's owned and run by HDI's. These companies must be notified of the tender process and invited to bid for project related work.
- The recommendations of the VIA must be implemented.

Recommended mitigation measures: VISUAL

BUILDINGS ON SLOPES

- Where a building is supported on columns on the downslope of the erf, the area underneath will need to be stabilised with a stone pitching. Low shrubs must be planted on the edge of the area to afford some screening of the void.
- Erven on the top edge of the steep slopes e.g., the drainage line and the plateau, must accommodate single storey buildings only. The row behind can accommodate double storey units.
- The design of buildings on steeper slopes must be shown in sections in the Architectural Guidelines. This will ensure that only one storey and not two storey structures are constructed above the road level on the down-slope side of the road.
- All cut and fill soil surfaces must be adequately protected from erosion either by vegetation or a combination of block retaining walls and vegetation or rock cladding.

COLOURS FOR ROOFS AND BUILDINGS TO INFORM ARCHITECTURAL GUIDELINES

- Avoid bright reflective or contrasting colours for roofs and buildings.
- Tones and tints of selected complementary colours that fit the setting and vegetation should be considered.
- Subdued and complimentary natural shades and tints blend easily into a landscape setting.

ROADS AND PATHWAYS

- Roads and pathways must be paved with a durable brick of brown/sand colour. The light brown colour is similar to the exposed earth in the area. The light colour will also not generate high surface temperatures as an asphalt or dark surface would.
- The cut and fill slopes must not be steeper than 1:2.5 vertical to horizontal as this allows vegetation to establish more easily. This will also reduce erosion of the soil.

LANDSCAPING

- Tree planting must be done in accordance with a landscaping plan and trees to be planted must be as large as is possible to be obtained from a nursey supplier to assist in immediate visual screening.
- Landscaping must commence in conjunction with construction within areas that will not be affected by construction.
- All buffer zones on the edge of the boundary to be restored to endemic fynbos and Renosterveld with the exception of areas to be screened where more appropriate vegetation may be required.
- Vegetation within the boundary of the security fence servitude shall only be trimmed and not cleared or stripped.

LIGHTING

- External lights will increase the visual impact of the project at night therefore attention must be given to their selection for the specific function.
- All lighting therefore must be carefully considered with regard to the extent of illumination, the intensity and colour of lights and the luminaire and the height of the light pole especially along the borders of development with remaining natural areas.
- It is recommended that lighting is designed by a lighting engineer in collaboration with the landscape architect for the project. The aspects of the lighting plan must include the following:
    - Light fittings must have shields to eliminate sight of the light source.
    - Light poles must not exceed 3m in height.
    - Down lighting of areas is preferred to up lighting.
    - Any perimeter lights are to be directed downwards and inwards to the development (avoiding direction into remnant natural areas).
    - Emitted light colour must be a softer light than sodium (yellow) or mercury halide (blue-white). The light colour should also be chosen with knowledge of what colour will attract insects. It is important that a colour type and spread of light will not cause insects to be attracted to it and in so doing deplete the insect diversity of the region. For this purpose, an entomologist familiar with the effect of light frequencies on insects must be consulted when the lighting plan is compiled in conjunction with the final landscaping plan.
    - The use of flood lights to illuminate structures, large areas or features must not be allowed. Rather incorporate concealed lights to shine downwards. Darker areas on the building elevations will provide a less visually noticeable structure.
    - No light fittings may spill light upwards or be directed upwards from a distance towards the area or building to be illuminated.
    - The lighting plan must strive to maximise the light energy use. This should include a hierarchy of light function. The function will determine the best light type to use. Some may be switched on only when needed by motion sensors.
    - Security lights must not flood the area with light continuously but must be activated by a motion sensor.

5 RESPONSIBILITIES

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

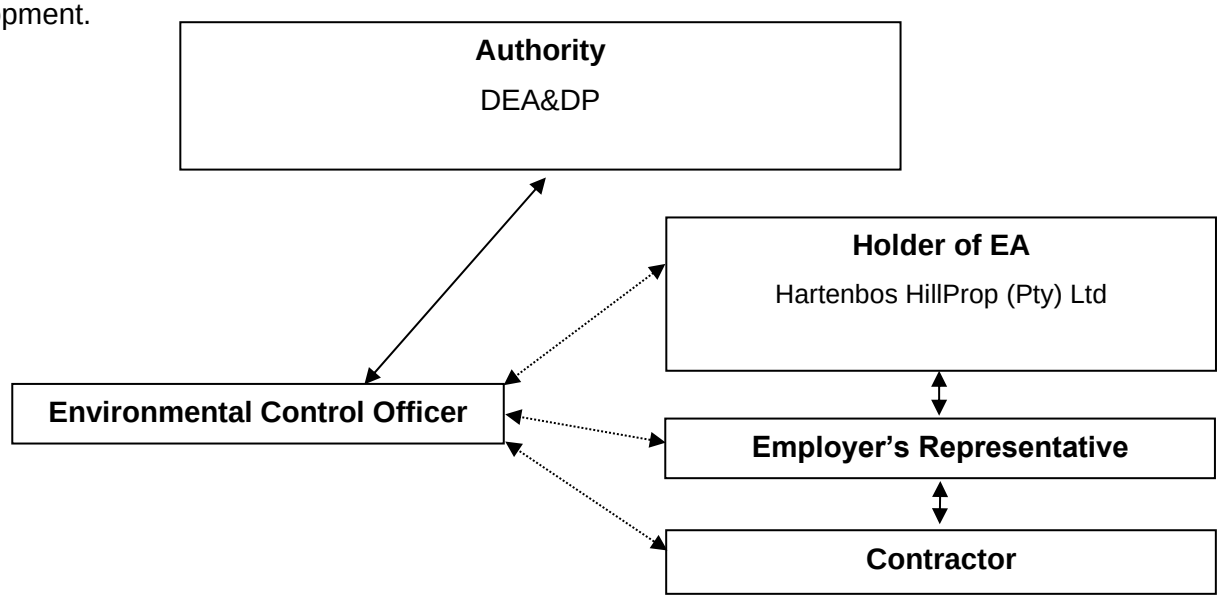

Figure 5: Responsibilities

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 (protected vegetation.

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:
  - the Municipal Approval/s (, service agreements & building plans etc.);
  - WULA
- 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, Engineers (during construction activities), as well as all future visitors and service providers (during operation) are made aware of their 'Duty of Care to the Environment' and that any damage or degradation of the natural environmental 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, CONTRACTORS & SERVICE PROVIDERS

The Engineers, Contractors and Service Providers 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, services, road works). The ECO must have a minimum of a tertiary level qualification in the natural sciences field. 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 environmental authorisation, permit or licence;
- 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:

- Twice a week during initial site clearing, demarcation activities (per phase);
- Weekly during bulk earthworks and bulk services including roads, stormwater services and pump stations;
- Bi-weekly during construction of units/structures/houses;
- 6 months post construction and site handover per phase in order to inform the Completion Statement.

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 in order to ensure that the impacts associated with the development are avoided, minimised or managed before construction commences.

6.1 STORMWATER MANAGEMENT PREPARATION

Management Statement	Impacts & Risks Avoided
To prepare the site to minimise the negative impacts of stormwater	Damage to the environment caused by stormwater runoff

Management Actions

a. Apply the principles of Low Impact Development (LID) in the design of the drainage systems. Final design of the stormwater system must take place prior to construction to ensure timeous implementation.

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	Architect / Engineer	Prior to construction	Audit	Once off

6.2 WATER RESOURCE PROTECTION

Management Statement	Impacts & Risks Avoided
To minimise the use of scarce water resources by improving consumption methods	Unsustainable or wasteful use of water for construction and operation purposes

Management Actions

a. Rainwater harvesting must be incorporated into the designs of single residential units. All rainwater tanks must be shown on building plans.

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	Architect	Prior to construction	Audit	Once off

a. Water efficiency must be incorporated into the design of all units.

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	Architect	Prior to construction	Audit	Once off

Dual Flush Toilets

Conservative estimates have shown that a saving of more than 22 000 liters per household can be achieved annually with the installation of dual flush toilets (Aquanotion, 2008). All households and ablution facilities should be fitted with dual flush systems.

Low flow shower heads

The installation of low flow shower heads can not only reduce water consumption by up to 50%, but also the energy required for water heating by up to 50% (Eartheasy, 2008).

It has been estimated that a saving of up to 57 000 liters of water per annum per household can be achieved through the installation of low flow shower heads. Low flow shower heads make use of either aerators or pulse systems to reduce the flow without compromising the quality of the shower. The choice of shower head is up to the individual owner, but must have a flow of less than seven liters per minute.

Low flow Taps

Low flow tap use aerators to reduce the flow of the water. These are either built into the faucet or added as an aftermarket product. The faucets in bathrooms should have a peak flow of less than 10 liters per minute.

It is not necessary to install aerators in kitchen sinks as they are seldom run without a plug. All bathroom basins must be fitted with low flow faucets.

Washing machines

It is recommended that all washing machines that are to be installed in houses and shared facilities should be front loading washing machines as opposed to top loading washing machines. Apart from much lower energy and water requirements, front loader washing machines have a number of advantages that make them a better environmental choice:

- **Less wear and tear on washed materials** – Washed materials therefore last longer and result in a net resource saving;
- **Faster drying times** - Because of the horizontal axis and faster spin speeds, more water is removed and the materials dry faster which results in energy saving if a clothes dryer is used.;
- **Quieter operation** – Therefore less noise pollution; and
- **Less detergent** - Far less is required compared to top loaders. Fewer chemicals therefore reach treatment plants and ultimately waterways.

Geyser and pipe insulation

Apart from the savings in terms of energy as detailed below, insulating geysers and pipes save water, as shorter periods of running the tap to get hot water are required.

All structures should have insulation on geysers and all hot water pipes.

Swimming Pools

Incorrectly designed and maintained swimming pools are a significant part of the senseless waste of water resources. A typical uncovered pool can lose between 1,2 and 1,8m of water a year to evaporation. Chemicals can also evaporate into the air, requiring the ongoing use of more than is necessary. The following considerations must be implemented on any properties that intend building swimming pools (PracticalEnvironmentalist, 2008):

- Pool covers must be used to prevent water evaporation, loss of chemicals, loss of water heat and as security against drowning of people or animals. The covers reduce the amount of make-up water by between 30 and 50 percent and reduce chemical consumption by between 35 and 60 percent. The covers further retain as much as 70 percent of the water heat.
- Pools painted with dark colours absorb heat and increase the water temperature naturally without the use of a pool heater.

- Pool water heaters should not be run all year and should be kept at lower temperatures in order to be more energy efficient. Ideally no pool heaters should be used.
- Well maintained pool equipment is more efficient and lasts longer.
- Operate pool filters and automated pool cleaners outside of peak energy use times. In winter, this equipment can be used less frequently without affecting the clarity of the pool.
- Create a windbreak around the pool using indigenous plants. This prevents the wind from increasing evaporation on the surface of the water. It also creates habitat for birds and can act as a natural barrier to decrease the visual impact of a fence;
- Chemical pools are discouraged and consideration should rather be given to salt water or natural pools;
- Backwash water (applicable to both chemical and salt water pools) may not be discharged onto the ground, but must be collected in a tank and removed from site. It is possible to discharge the backwash water into a grey water system if one is in place.
- In addition, it must be noted that a swimming pool forms part of a building footprint.

Waterwise Landscaping

Waterwise landscaping principles must be incorporated into the detailed landscaping plans. The following principles apply to waterwise gardening:

- Grow water-wise plants – generally the best suited plants are those indigenous to the area, as they seldom need additional watering;
- Group plants according to their water needs – this avoids wasting water on plants that don't need it;
- Consider the quality and type of the lawn. Lawns use unacceptable amounts of water, so consider reducing lawn areas to a minimum. Use tougher, low-water lawn types such as Buffalo (coastal areas) or Kweek (inland) rather than Kikuyu.
- Maintain the garden – remove unwanted plants, plant more perennials than summer annuals, as they have deeper root systems and so need less watering.
- Improve the soil and mulch. Soil water-holding capacity is improved by higher organic matter content. Mulching (covering the soil with a thick layer of bark, compost, straw etc.) keeps the soil much more moist.
- Plant in the right season – For winter rainfall areas this is in autumn and early winter so the plants have a chance to develop their root systems before the dry season. In summer rainfall areas it is spring and early summer for the same reason.
- Water correctly – avoid watering during the heat of the day or in windy conditions.
- The best irrigation system is drip irrigation – it uses 25% of water used by normal irrigation systems with the same effect, and can even be placed under lawns.

Grey Water

Grey water is the water that comes from the bath, shower, basins, laundry and the kitchen sink. It is not to be confused with Black water, which is sewage that comes from the toilet. Black water is toxic and requires very specific methods of treatment in order to be safe for re-use. Grey water, however, can easily be recycled and re-used for a variety of uses. These include:

- Irrigation of gardens;
- Water for flushing toilets;
- Any outdoor use;
- Dampening dusty areas or roads.

Grey water systems require precise methods to clean the water. There are various companies and organisations that can assist with implementing a grey water system.

6.3 ENERGY RESOURCE PROTECTION

Management Statement	Impacts & Risks Avoided

To minimise the use of energy resources by improving consumption methods	Excessive and unnecessary energy consumption

Management Actions

a. Incorporate energy efficiency into the design of all units.

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Energy saving checklist	Once off	Owner	Ad hoc	Audit	Once off

Solar heating water systems

Solar heated water systems are an innovative way of producing hot water without putting additional pressure on gas or municipal power supply. There are many different types available on the market, and home owners should consider all their requirements (number of people using facility, location of house, angles of roof) before making a choice.

Energy Efficient Lighting

In terms of Best Practice, it is required that energy saving lighting fixtures be used throughout the entire development. It is therefore specified that Light Emitting Diode (LED) or Compact Fluorescent (CF) lighting be used as opposed to incandescent lighting. This is required for all internal and external lighting, including street lighting. Proximity switches should be used in areas where lighting for pedestrians is required.

NO external High Pressure Sodium (HPS) or Metal Halide (MH) spot or floodlights should be installed.

CF lighting uses quantities of mercury in the bulbs and tubes which pose serious environmental hazards. The mercury from one CF bulb can pollute many thousand litres of water if not treated correctly (Eden District Municipality, 2011). CF lighting (energy saving bulbs and tubes) must be correctly disposed of at registered Hazardous waste sites. Companies like Pick n Pay and Woolworths offer facilities to collect CF bulbs for recycling and disposal. The following should be considered when handling CF bulbs (eHow Home, 2011):

Disposing of Burnt Out Bulbs

- Seal the bulb inside two plastic bags, or one thick freezer bag, before disposal.
- Find the nearest recycling station that handles hazardous materials. Check with your city's municipal office to see if there is a recycling program in your town.
- Take the bulbs to the recycling station. Ask the people there about the process of giving them your bulbs and follow all their instructions.
- Tell everyone you know who is using energy efficient bulbs how to properly dispose of them as the use of these bulbs is growing.

If a Bulb Breaks

- Open a window and leave the room. Let no one inside for at least 15 minutes.

- Collect the fragments and powder with stiff paper or cardboard. Wear disposable rubber gloves. Do not use a vacuum cleaner.
- Clean the entire area with a wet wipe or wet paper towel. Use adhesive tape to collect excess powder.
- Seal all pieces and cleanup materials in a plastic bag. Follow the above procedures on disposal or recycling. Wash your hands completely afterward.
- Dispose of the vacuum bag in the same manner the next time you vacuum the area. If it's a canister vacuum, wipe it completely clean.

Energy Efficient Appliances

Energy efficient appliances are becoming widely available. Follow the Energy Guide labels on appliances to help selection of correct models. Any appliance that has to heat up water or air will use more energy, as will an appliance that boasts additional extras such as ice making, dispensing and auto defrosting on fridges or heat drying on dishwashers.

Solar Cooling Systems

Where required by homeowners, the home owner should consider the use of solar cooling systems such as absorption or adsorption chillers as opposed to conventional air conditioning units.

Evaporative Cooling Systems

Consideration should be given to evaporative cooling systems as these cut down considerably on energy usage for appliances such as air conditioners. Furthermore, the system ensures that fresh air circulates within housing units, which improves on environmental health risks.

Fresh air is drawn from outside the house (the hotter the better) and passes through moistened pads which cools it down and filters it before flowing through outlets in the house.

There are certain parameters required for evaporative cooling systems, which should be thoroughly investigated prior to installation.

Geyser and pipe insulation

Apart from the savings in terms of energy as detailed below, insulating geysers and pipes save water, as shorter periods of running the tap to get hot water are required.

All structures should have insulation on geysers and all hot water pipes.

6.4 DEMARCATION OF WORK AND NO-GO AREAS

Management Statement	Impacts & Risks Avoided
To clearly define the work area and avoid impacting on non-works areas.	Negative construction impacts on natural and rehabilitated areas

Management Actions

a. Clearly identify and demarcate the development area, area of works and spoiling areas as well as all Conservation Areas that must be demarcated as No-Go areas.

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

b. Fuel and chemicals may only be stored in a designated work 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
Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off
c. Provide on-site sanitation and rest areas for personnel.					
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

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.

7.1 SITE CLEARANCE PLAN

Site clearance must be undertaken in a systematic manner within the demarcated areas according to phases to minimise the impacts of construction on the site.

Figure 6: Phase Plan starting north working in a southern direction.

The following table provides a methodology to implementing site clearance according to this EMPr and the EA.

Table 5: Site Clearance Methodology

No	Action	Scheduling
1	**Survey** approved layout on site per phase.	Prior to construction
2	**Establish site camp** and **material stockpile sites** (incl. waste disposal area, portable toilets etc. The construction camp and necessary ablution facilities meant for construction workers must not be in any of the delineated watercourses or wetland areas (including 20m buffer).	Prior to construction.
3	**Demarcate work areas** using correct demarcation methods.	Prior to construction.
4	Demarcate **protected areas as no-go areas**.	Prior to construction.
5	**Erosion control measures** must be put in place prior to any construction activities that would result in soil being exposed.	Prior to construction.
6	Weather forecasts from the South African Weather Bureau of up to three days in advance must be monitored on a daily basis to avoid exposing soil, works or materials during a storm event. This must be considered in conjunction with tide tables for beach construction work.	Construction
7	Commence with mechanical vegetation clearing within the demarcated work areas only.	Construction
8	Vegetation clearing should occur **in parallel with the construction progress** to minimise erosion and/or run-off. Large tracts of bare soil will either cause dust pollution or quickly erode and then cause sedimentation in the lower portions of the catchment.	Construction

9	Any biomass from the clearing activities must be stockpiled within the development footprint at an area / areas approved by the ECO. It is recommended that the biomass must be **chipped in situ** and stockpiled within designated areas within the footprint. Alternatively it must be removed and taken to an approved disposal site for biomass. NO DUMPING IS ALLOWED.	Construction
10	Any cleared areas that will not be immediately constructed or planted, must be covered with the wood chips or other mulch to prevent wind erosion.	Construction

7.2 STORMWATER MANAGEMENT (CONSTRUCTION)

Management Statement	Impacts & Risks Avoided
To minimise the generation of contaminated stormwater.	Minimise sedimentation, erosion and / or undercutting of the coastal interface

Management Actions

a. Minimise the quantity of stormwater entering cleared areas and lower lying watercourses in the designated internal Conservation 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
Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off

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 necessary temporary and permanent drainage works as soon as possible and by taking any other measures necessary to prevent stormwater from concentrating in streams and scouring slopes, banks, etc.

Any erosion channels developed during construction on steep slopes must be backfilled, compacted and restored to an acceptable condition.

Stabilisation of cleared areas to prevent and control erosion and/or sedimentation shall be actively managed. Consideration and provision shall be made for the following methods (or combination thereof): brushcut packing, mulch or chip cover, straw stabilising, watering, planting/sodding, soil binders and anti-erosion compounds, mechanical cover or packing structures (including the use of geofabric, log/pole fencing, etc.). Traffic and movement over stabilised areas shall be restricted and controlled, and damage to stabilised areas shall be repaired and maintained.

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.

7.3 DUST CONTROL

Management Statement	Impacts & Risks Avoided
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

Management Actions

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

The strategy should include the following amongst others:

- Speed control to minimise dust on site.
- During dry, dusty periods haul roads should be kept dampened to prevent excess dust. No potable water or seawater may be used for damping haul roads.
- Exposed stockpile materials must be adequately **protected** against wind (covered), and should be sited taking into consideration the prevailing wind conditions.
- Trucks bringing in materials must be covered to prevent dust and small particles escaping and potentially causing damage to people and property.

7.4 NOISE & VIBRATION

Management Statement	Impacts & Risks Avoided
To ensure nuisance from noise and vibration does not occur.	Nuisance impacts to neighbours and visitors.

Management Actions

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

7.5 TRAFFIC CONTROL

Management Statement	Impacts & Risks Avoided
To manage and minimise the nuisance effect created by construction traffic.	The development entrance access will be via an existing residential road network and construction traffic is likely to affect users..

Management Actions

a. Implement a traffic management strategy during construction to alleviate unnecessary congestion through Hartenbos Heuwels residential area. Optimise the use of Boekenhout Avenue in preference to alternative routes. Develop in phases to reduce construction traffic.

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 holiday periods.
- No construction workers, with the exception of security personnel, should be allowed to stay on site overnight.
- Building contractors appointed by the developer must ensure that workers are transported to and from the site on a daily basis.
- Develop in phases to reduce the traffic load through Hartenbos Heuwels residential area.
- Implement traffic control during construction periods to alleviate possible congestion especially during peak hours.
- 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.

7.6 WASTE MANAGEMENT

Management Statement	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 management action	Time period	Mechanism for monitoring Compliance	Programme for reporting 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

7.7 STOCK PILE MANAGEMENT

Management Statement	Impacts & Risks Avoided
To manage soil stockpiles so that dust and sediment in run-off are minimised.	Pollution due to dust and sediment run off

Management Actions

a. Minimise the number of stockpiles, and the area and the time stockpiles are exposed.

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

b. Keep topsoil and underburden stockpiles separate.

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

c. Locate stockpiles away from drainage lines, at least 10 metres away from natural waterways and where they will be least susceptible to wind erosion.

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

d. Ensure that stockpiles and batters are designed with slopes no greater than 2:1 (horizontal/vertical).					
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
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.					
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

7.8 STORING FUELS & CHEMICALS

Management Statement	Impacts & Risks Avoided
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

Management Actions

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

7.9 CEMENT BATCHING

Management Statement	Impacts & Risks Avoided

Cement powder has a high alkaline pH that may contaminate and adversely affect both soil pH and water pH negatively. A rapid change in pH can have consequences on the functioning of soil and water organisms as well as on the botanical component.	Minimises negative impacts to vegetation and soils on areas that will not be hard surfaced.

Management Actions

a. All concrete batching must take place on an area that is to be hard surfaced as part of the development.

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. Concrete mixing areas must have bund walls or a settling pond in order to prevent cement run off. Once the settling ponds dry out, the concrete must be removed and dispatched to a suitable disposal 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
Method statement	As required	Contractor	As required	Audit	Method statement records

c. When using Readymix concrete, care must be taken to prevent spills from the trucks while offloading. This form of batching is preferable for large constructions as no on site batching is required and there is a lesser likelihood of accidental spills and run off. Trucks may not be washed out on 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
Method statement	As required	Contractor	As required	Audit	Method statement records

7.10 MINIMISING EROSION

Management Statement	Impacts & Risks Avoided

To minimise the quantity of soil lost during construction due to land-clearing.	• Avoid overland flow by capture and store water from roof • Avoid siltation by installing silt traps

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 of time 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

7.11 REHABILITATION & BOTANICAL MANAGEMENT

Management Statement	Impacts & Risks Avoided
To ensure that degradation to existing botanical 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. Retain the existing sensitive areas within the development as No-Go areas. These must be demarcated to avoid damage 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	As required	Contractor / Owner	Continuously	Audit	Visual / photographic
b. Rehabilitation and landscaping may only make use of indigenous vegetation.					
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 / Owner	Continuously	Audit	Visual / photographic

7.12 FAUNA MANAGEMENT

Management Statement	Impacts & Risks Avoided
To ensure that impacts to native faunal species is minimised and / or avoided.	To minimise the impact to fauna

Management Actions

a. Prevent unnecessary mortalities of indigenous fauna.					
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

7.13 SOCIAL REQUIREMENTS

Management Statement	Impacts & Risks Avoided
To ensure equitable, fair and safe social interaction on construction sites	Loss of employment opportunities to the region

Management Actions

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 target should be to have the majority of semi-skilled labour local to the Hessequa Municipal area, particularly from Melkhoutfontein / Still Bay.
- An average total of 80% or higher should be maintained for the Southern Cape region.
- The contractor should endeavour to source local suppliers that are BEE compliant.
- 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.

7.14 HERITAGE REQUIREMENTS

Management Statement	Impacts & Risks Avoided
To minimise the impacts of development, operation and maintenance of the Project on the heritage values in the Project area.	Ensure heritage impacts are minimised, and impacts outside of the approved disturbance area are avoided.
Management Actions	

a. No disturbance of heritage values outside of the approved disturbance 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
Site records	Ad hoc	Contractor	Ad hoc	Audit	Once off

- Should any heritage remains of potential cultural value be exposed during excavations, these must be immediately reported to the ECO and the Provincial Heritage Resource Authority of the Western Cape, namely Heritage Western Cape in terms of the national Heritage Resources Act (Act No. 25 of 1999). Heritage remains uncovered or disturbed during earthworks may not be disturbed further until the necessary approval has been obtained from Heritage Western Cape.
- Should any archaeological remains including (but not limited to) fossil bones, fossil shells, coins, indigenous ceramics, colonial ceramics, marine shell heaps, stone artefacts, bone remains, rock art, rock engravings and any antiquity be discovered during construction, they must be immediately reported to the ECO and Heritage Western Cape and not disturbed further until the necessary approval has been obtained.
- Should any human remains be uncovered, they must immediately be reported to the ECO and the HWC archaeologist, who can be contacted on **(021) 483 9685**. Construction in the area must cease immediately and the site may not be disturbed further until the necessary approval has been obtained.

7.15 METHOD STATEMENTS

Management Statement	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 EMPr 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 EMPr, 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.
- Beach work schedule and duration.
- Stormwater Management and Erosion Control.

7.16 HEALTH AND SAFETY

The Contractor must ensure compliance with the Occupational Health and Safety (No. 85 of 1993). Of key importance is the following (Section 8 of the aforesaid act):

8. General duties of employers to their employees:

(1) Every employer shall provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his employees.
(2) Without derogating from the generality of an employer's duties under subsection (1), the matters to which those duties refer include in particular-
(a) the provision and maintenance of systems of work, plant and machinery that, as far as is reasonably practicable, are safe and without risks to health;
(b) taking such steps as may be reasonably practicable to eliminate or mitigate any hazard or potential hazard to the safety or health of employees, before resorting to personal protective equipment;
(c) making arrangements for ensuring, as far as is reasonably practicable, the safety and absence of risks to health in connection with the production, processing, use, handling, storage or transport of articles or substances;
(d) establishing, as far as is reasonably practicable, what hazards to the health or safety of persons are attached to any work which is performed, any article or substance which is produced, processed, used, handled, stored or transported and any plant or machinery which is used in his business, and he shall, as far as is reasonably practicable, further establish what precautionary measures must be taken with respect to such work, article, substance, plant or machinery in order to protect the health and safety of persons, and he shall provide the necessary means to apply such precautionary measures;
(e) providing such information, instructions, training and supervision as may be necessary to ensure, as far as is reasonably practicable, the health and safety at work of his employees;
(f) as far as is reasonably practicable, not permitting any employee to do any work or to produce, process, use, handle, store or transport any article or substance or to operate any plant or machinery, unless the precautionary measures contemplated in paragraphs (b) and (d), or any other precautionary measures which may be prescribed, have been taken;
(g) taking all necessary measures to ensure that requirements of this Act are complied with by every person in his employment or on premises under his control where plant or machinery is used;
(h) enforcing such measures as may be necessary in the interest of health and safety;
(i) ensuring that work is performed and that plant or machinery is used under the general supervision of a person trained to understand the hazards associated with it and who have the authority to ensure that precautionary measures taken by the employer are implemented; and

(j) causing all employees to be informed regarding the scope of their authority as contemplated in section 37 (1) (b).

The Occupational Health and Safety Act aims to provide for the health and safety of persons at work and for the health and safety of persons in connection with the activities of persons at work and to establish an advisory council for occupational health and safety.

Health & Safety on site is the responsibility of the contractor and the proponent.

Although this is not the function of the ECO, it is a standard requirement for building construction and must be monitored and evaluated by a suitably qualified Health & Safety person. It will not form part of any environmental audit in the future.

8 OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS

The Operational Phase of this EMPr 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.

8.1 STORMWATER MANAGEMENT

Management Statement	Impacts & Risks Avoided
To ensure management of stormwater during operation phase	• To prevent erosion due to stormwater impact

Management Actions

a. No stormwater runoff should be allowed to concentrate onto open spaces and roadways downstream of the property .

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

b. Runoff from the roof of the new buildings should be fed into an existing formal stormwater drainage system (if present) or directly infiltrate into soft landscaped areas surrounding the building .

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

		management action			
Ensure soft landscaping	Ongoing	Owners / HOA	As required	Audit	Audit

- Concentration of stormwater runoff will be minimised through the application of landscaping techniques, i.e. by creating grass lined swales, undulations and depressions.
- Ensure rainwater harvesting takes place.

8.2 BOTANICAL / LANDSCAPING

Management Statement	Impacts & Risks Avoided
To ensure that indigenous vegetation is encouraged within urban areas.	• Ongoing spread of alien invasive species. • Ensure protected species are taken into consideration.

Management Actions

a. Home owners must practice ongoing alien invasive management in the Conservation Areas and Private Open Space.

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

b. Retain and manage protected and indigenous vegetation.

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

- Rehabilitate with appropriate indigenous vegetation to promote soft landscaping.
- Replace vegetation if it dies off.
- Obtain permits for any pruning or removal of protected species, notably *Sideroxylon inerme* (Milkwoods).

8.3 FIRE MANAGEMENT

Management Statement	Impacts & Risks Avoided
Ecological burning must be implemented according to the fire management plan.	• Burning of the Conservation Area and Butterfly Areas must not be compromised when the site is developed. •

Management Actions

c. Home owners must practice ongoing ecological fire management throughout the operational phase of the development.

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

d. Retain and manage protected and indigenous vegetation through ecological burning cycles.

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

- Burning must take place at optimal times of the year.
- Obtain a burning permit prior to burning.
- Liaise with the South Cape Fire Protection Agency for assistance with ecological burning.

9 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;
- Incident Reports;
- Site meeting minutes.

9.1 MONITORING TIMEFRAMES SUMMARY

Table 6: 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)
	6 month post construction	Completion Statement
Auditing	One year post construction	Compliance with the EA, EMPr, municipal permits and any other approvals

9.2 ENVIRONMENTAL AUDITS

A final construction phase Completion Statement must be submitted within 6 months of completion of construction / site handover for each of the four phases.

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

An External Environmental Audit must be undertaken two (2) years post construction.

9.3 AUDIT REPORTS FREQUENCIES AND FORMAT

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

Table 7: Audit Reports Timeframe Summary

ENVIRONMENTAL AUDIT TIMEFRAMES		
Type	Frequency	Criteria
Final Construction Audit	Two years post construction	Audit on operational aspects of the EA and EMPr

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 8: 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.	
Objective	**Description**
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.	
Requirement	**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;	

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**
(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

It is not likely that decommissioning of this facility will take place in the near future. However, in the event that decommissioning does occur, all relevant legislation and policies must be complied with for the given period.

In general, in the future event that the facility be decommissioned, the following must be undertaken:

- Demolition of buildings and removal of rubble must be undertaken without impacting on areas outside of the development area.
- Rubble must be disposed of correctly and to a registered site if not reused on site.
- Decommissioning must comply with any relevant legislation valid at that time.

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 EMPr, 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**[1].

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 EMPr, disagreement regarding the implementation or method of implementation of conditions of the EMPr, 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 measures.

[1] 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.

12 REFERENCES

Aquanotion, 2008. www.twoflush.com/conservbody.htm. Aquanotion Ltd, Alberta, Canada.

Cape EAPrac, 2022. *Basic Assessment Report for Fleur De Vie on Portion 1 of Farm Duinekroon 591, Still Bay.* Cape Environmental Assessment Practitioners, George, South Africa.

Eartheasy, 2008. www.eartheasy.com - Solutions for Sustainable Living.

eHow Home, 2011. www.eHow.com - *How to Safely Dispose of Energy Efficient Light Bulbs*.

Hoare, D, 2022. *Terrestrial Plant Species Compliance Statement: Portion 1 of Farm Duinekroon 591, Still Bay*. David Hoare Consulting (Pty) Ltd, South Africa.

Hoare, D, 2022. *Terrestrial Animal Species Compliance Statement: Portion 1 of Farm Duinekroon 591, Still Bay*. David Hoare Consulting (Pty) Ltd, South Africa.

Hoare, D, 2022. *Terrestrial Biodiversity Compliance Statement: Portion 1 of Farm Duinekroon 591, Still Bay*. David Hoare Consulting (Pty) Ltd, South Africa.

Lochner, P. 2005. *Guideline for Environmental Management Plans.* CSIR Report No ENV-S-C 2005-053H, Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

Vreken, M, 2022. *Portion 1 of Farm Duinekroon NO 591, Division Riversdale, Still Bay: Specialist Planning Report*. Marike Vreken Urban and Environmental Planning, South Africa.