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ENVIRONMENTAL MANAGEMENT PROGRAMME

For

ERF 3927 PATRYS DEVELOPMENT

Stilbaai, Hessequa Municipal District

Prepared for Applicant: Daily Double Trading 447 cc
By: *Cape EAPrac*
Report Reference: HES651/08
Department Reference: **16/3/3/6/7/1/D5/19/0117/21**
Case Officer: Shireen Pullen
Date: 28 March 2022

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Registrations: **EAPASA 2019/1444**

PURPOSE OF THIS REPORT:

Environmental Management Plan for Monitoring

APPLICANT:

Daily Double Trading 447 cc

CAPE EAPRAC REFERENCE NO:

HES658/08

SUBMISSION DATE

28 March 2022

ENVIRONMENTAL MANAGEMENT PROGRAMME

Patrys Development

Erf 3927 Stilbaai (Hessequa Municipal District)

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ORDER OF REPORT

Environmental Management Plan

Appendix 1	:	Location Plans and Site Layout
Appendix 2	:	Figure 1: Silt Fences
		Figure 2: Temporary Stormwater Management
		Figure 3: Management of Haul Roads
		Figure 4: Demarcation of no-go areas during construction
Appendix 3	:	Environmental Guidelines on Site
Appendix 4	:	Alien Invaders List and Categories, Working for Water Guide to Control Method and Herbicide Selection
Appendix 5	:	Recycling
Appendix 6	:	EAP Curriculum Vitae
Appendix 7	:	Environmental Authorisation (EA)

TABLE OF CONTENTS

FIGURES

ENVIRONMENTAL MANAGEMENT PROGRAMME REQUIREMENTS

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

Requirement	Description
Details of the EAP who prepared the EMPr; and The expertise of the EAP to prepare an EMPr, including a curriculum vitae.	Louise-Mari van Zyl of Cape Environmental Assessment Practitioners. MA Geography & Environmental Studies EAPSA registered (2019/1444). Appendix 7 for copy of CV
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 should 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 5
A description and identification of impact management outcomes required for the aspects contemplated above.	Section 5
A description of the proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated above will be	Section 5

Requirement	Description
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.	
The method of monitoring the implementation of the impact management actions contemplated above.	Section 10
The frequency of monitoring the implementation of the impact management actions contemplated above.	Section 10
An indication of the persons who will be responsible for the implementation of the impact management actions.	Section 6
The time periods within which the impact management actions must be implemented.	Section 11
The mechanism for monitoring compliance with the impact management actions.	Section 10.2
A program for reporting on compliance, taking into account the requirements as prescribed in the Regulations.	Section 10
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 6.4 Section 7 Section 8 Section 9
Any specific information that may be required by the competent authority.	

ABBREVIATIONS AND ACRONYMS

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

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.

DAFF Department of Agriculture, Forestry and Fisheries – the national authority responsible for the agricultural, forestry and fishery sector and its management.

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

DWA Department of Water Affairs – the provincial authority mandated to enforce the Forestry Act. Permits for the removal or pruning of protected tree species eg Milkwoods must be obtained from this entity.

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.

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 by a proponent to observe and enforce environmental policies and principles on a development site.

HWC Heritage Western Cape – Provincial body responsible for enforcing the National Heritage Resources Act in the Western Cape.

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.

1 INTRODUCTION

Cape Environmental Assessment Practitioners (*Cape EAPrac*) was appointed by the applicant, **Daily Double Trading 447 cc** to develop an Environmental Management Programme (EMPr) which will be used to promote and ensure environmental monitoring, control and management associated with any authorisation of Erf 3927 as part of the existing Patrys Development in Stilbaai-West.

The Environmental Management Plan is a requirement in terms of the National Environmental Management Act (NEMA, Act 107 of 1998, as amended)[1].

The applicant is proposing the rezoning and subdivision of Erf 3927 which forms part of the existing Patrys residential development, to develop twelve (12) individual erven on the property.

The property is currently zoned Private Open Space (as per the original subdivision of the greater Patrys Development). Erf 3927 is ±8 010m² in size and the average Erf sizes are expected to be ±440m² in size.

Figure 1: Location of Erf 3927 in Stilbaai-West.

The property is located inside the urban edge of Stillbaai-West, immediately adjacent to the Jongensfontein Road (MR331). Access exists via Bessie Street that services the greater Patrys development and other residential homes in the vicinity.

[1] The National Environmental Management Act (Act 107 of 1998) was amended in 2006 and August 2010.

Figure 2: Erf 3927 as part of the greater Patrys Development approval.

Erf 3927 is part of the greater Patrys Development, municipal services are available along the road already (water, sewage, stormwater). Off-site infrastructure is required for extension of the electrical connection line to be installed from the existing mini-sub situated in Geelhout Street north of the site, via underground sleeves within the building line area(s) between Erven 3566 & 3565. Hessequa Municipality confirmed services availability to Element Consulting Engineers in 2019.

This Environmental Management Programme (EMPr) contains management requirements and recommendations made by *Cape EAPrac*, participating specialists and stakeholders, as well as in terms of best practice. Should the future environmental authorisation contain requirements (conditions) that contradict any points in this EMPr, the requirements (conditions) in the authorisation supersede this EMPr. This EMPr will be updated to reflect any approval conditions relevant to the environment.

This EMPr has been compiled with due consideration of Section 33 of NEMA and relevant guidelines for Environmental Management Plans. These requirements and recommendations make reference to **pre-construction, construction and operation activities.** Since it is unlikely that a residential development will be decommissioned, this EMP does not address the **decommissioning phase.**

- This EMPr must be included in ALL tender and contract documentation associated with this project.
- This draft EMPr must be resubmitted to DEA&DP for approval once changes have been made in this EMPr to include conditions of the Environmental Authorisation.

Section 28 of NEMA provides for the Duty of Care principle that *"…obliges every person who causes, has caused or may cause significant environmental degradation to take reasonable measures to prevent such degradation from occurring, continuing or recurring".* This clause forms the underpinning philosophy of this EMPr.

1.1 PURPOSE OF THE EMPR

The purpose of this EMPr is to ensure that the environmental impacts and management of the development on the receiving environment are avoided where possible, managed, mitigated and kept to a minimum.

The main phases of this project, include **demarcation of protected trees/no-go areas, vegetation removal** and **earthworks**, **construction of roads/services and dwellings**, operational management of **open space area**.

The EMPr must provide easily understood and clearly defined actions that should 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. Changes to 'management actions' may be implemented with consent from the **Environmental Control Officer (ECO),** however changes to 'management outcomes'[2] must be considered by the competent authority and may require a formal amendment of the EMPr prior to implementation.

- This document is binding on the Applicant, all future homeowners, all contractors and sub-contractors and visitors to the site. It must be included as part of any documents / agreements as well as contractual documents between the Proponent or individual landowners/operators of any of the facilities.
- Copies of the approved EMPr must be kept on site and all homeowners/operators are expected to familiarise themselves with the content of this EMPr most notably due to the **responsibility of each individual land owner** with regards to trimming of protected trees and management of the open space.

1.2 STATUS OF THIS EMPR

It is of utmost importance that this EMPr be read in conjunction with any legally obtained authorisations such as an Environmental Authorisation (EA), DAFF permits (if required), General Authorisation (GA), municipal certification and/or heritage permits. Should the environmental

[2] Unless otherwise defined in this EMPr an impact management outcome is identified by underlined writing and stipulated as an 'impact management outcome'. Other management items not underlined as considered to be 'impact management actions'.

authorisation (EA) contain requirements (conditions) that contradict any points in this EMPr, the requirements (conditions) in the authorisation, supersede this EMPr.

- The Holder of the EA intends to commence construction **within five (5) years** from the date of Authorisation.
- And a further five (5) years to complete construction, thus a **total implementation and construction period of ten (10) years.**

The EMPr is valid for the duration of the project with these specific timeframes linked to the implementation and construction phases that must be stipulated in the Environmental Authorisation.

1.3 AMENDMENT OF THE EMPR

The manner and frequency for updating this EMPr is as follows:

- Any substantial amendments that may result in the change of a management outcome, once approved, of this EMPr, must be approved by the Competent Authority in writing prior to the amendment/deviation taking effect;
- Should impact '**management outcomes'** be affected, a formal Amendment of the EMPr must be submitted to the Competent Authority and such amendments may only take affect with prior permission from the Competent Authority;
- Impact '**management actions'** may be amended with prior consent from the ECO, without formal amendment of the EMPr on condition that such management actions not result in changes to management outcomes and then be updated once the following Audit is completed.

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 mechanism are built into the planning phase to be developed in the construction and operational phase.

- Any changes to, or deviations from the scope of approved development proposal must be accepted or approved, in writing, by the Competent Authority before such changes or deviations may be implemented unless it is administrative or associated with management actions.
- The Holder of the Authorisation is responsible for compliance with this phase of the project.

2.2 CONSTRUCTION PHASE

The construction phase refers to the actual construction of any type of development on the property, and includes **vegetation removal**, **all earthworks**, **bulk services construction** (road, pipelines,

slipways etc.) and **structural construction i.e. houses**. All construction activities must have the relevant approvals in place before they may commence.

- The development must commence on the approved site (Erf 3927 Stilbaai-West).
- The **Holder of the Environmental Authorisation** must commence with the physical implementation of the authorised listed activity no later than permissible timeframe for implementation:
    - Commencement of listed activities = within five (5) years from date of authorisation
    - Construction phase = ten (10) years from date of authorisation
- Post construction rehabilitation and completion statement must be finalised for the site within a period of 3-months from the date the development activities (construction phase) are concluded i.e. three months post the ten (10) year construction phase.
- The **Holder of the Environmental Authorisation and/or his/her Contractor** is responsible for compliance with this phase of the project.
- **Fourteen (14) calendar days' notice** must be given to the Competent Authority prior to commencement of construction.

2.3 OPERATIONAL PHASE

The operational phase refers to occupation and operational activities once the construction phase is completed. Although there is not a lot of focus on the operational phase for the development due to the type and small scale of the development, the Holder of the EA and/or Management Agency (i.e. Home Owners Association / Body Corporate etc) must ensure that the operational phase of the area maintains the underpinning principles and ideals of sustainable development.

- The **Holder of the Environmental Authorisation** and/or the **Management Agency** of the development is responsible for compliance with this phase of the project.
- Once an erf has been transferred to a private owner, that owner is responsible for ensuring compliance with the National Forest Act for the trimming/removal of any protected trees on his/her property.
- The Holder of the Environmental Authorisation and/or the Management Agency remains responsible for ensuring compliance with the National Forest Act for the trimming/removal of protected trees within the onsite open space and streetscape areas.
- The necessary permits in terms of the National Forest Act must be obtained prior to any trimming/cutting/removal of any protected trees.
- The designated open space area must be maintained as a near-natural area with allowances made for best practical environmental functional use and benefit to the residents.

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.

As the proposed development will be a residential, inside the urban area, it is highly unlikely that it will be decommissioned in the near future. It is more likely that on occasions dwellings may be demolished to make way for new or renovated buildings. As such, specific management recommendations for project demolishing are not included with this EMPr. In the event that full decommissioning is required, all relevant legal processes must be complied with.

Individual house/structure demolition must comply with the construction requirements as stipulated in this EMP. Demolition Certificates must be obtained from the Hessequa Municipality prior to any such activities being undertaken.

3 LEGISLATIVE REQUIREMENTS

All owners and visitors are 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 national Department of Environmental Affairs) based on the findings of an Environmental Assessment. It also 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**).

Principles contained in Section 2 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended (NEMA), which, amongst other things, indicates that environmental management should:

- 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 proponent to show how the proposed activities would comply with these principles and thereby contribute towards the achievement of sustainable development as defined by the NEMA.

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.

In addition, Regulations 506, 507, 508 and 509 of July 2013 relating to the control of alien invasive species must be considered and complied with.

3.3.1 The National Spatial Biodiversity Assessment (NBA) (2011)

The NBA 2011 assesses the state of South Africa's biodiversity, across terrestrial, freshwater, estuarine and marine environments, emphasising spatial (mapped) information for both ecosystems and species. The NBA is central to fulfilling the South African National Biodiversity Institute's (SANBI) mandate in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) to monitor and report regularly on the state of biodiversity, and includes two headline indicators

that are assessed across all environments: **ecosystem threat status** and **ecosystem protection level**.

Information from the NBA can thus be used to streamline environmental decision-making, strengthen land-use planning, strengthen strategic planning about optimal development futures for South Africa, and identify priorities for management and restoration of ecosystems with related opportunities for ecosystem-based job creation.

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.

3.5 NATIONAL FOREST ACT (ACT 84 OF 1998)

In terms of regulation 15 of the aforesaid Act,

No person may:

a. cut, disturb, damage, destroy or remove any protected tree; or
b. collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a License granted by the Minister.

   The Department of Agriculture, Forestry and Fisheries (DAFF) have declared the following species as protected trees:

   Acacia erioloba (Camel thorn), *Acacia haematoxylon* (Gray camel thorn), *Adansonia digitata* (Baobab), *Afzelia quanzensis* (Pod mahogany), *Balanites* subsp. *maughamii* (Torchwood), *Barringtonai racemosa* (Powder-puff tree), *Boscia albitrunca* (Sheperd's tree), *Brachystegia spiciformis* (Msasa), *Breonadia salicina* (Matumi), *Bruguiera gymnhorrhiza* (Black mangrove), *Cassipourea swaziensis* (Swazi onionwood), *Catha edulis* (Bushman's tea), *Ceriops tagal* (Indian mangrove), *Cleistanthus schlectheri* var. *schlechteri* (False tamboti), *Colubrina nicholsonii* (Pondo weeping thorn), *Comretum imberbe* (Leadwood), *Curtisia dentata* (Assegai), Elaedendron transvaalensis (Bushveld saffron), *Erythrophysa transvaalensis* (Bushveld red balloon), *Euclea pseudebenus* (Ebony guarri), *Ficus trichopoda* (Swamp fig), *Leucadendron argenteum* (Silver tree), *Lumnitzera racemosa* var. *racemosa* (Tonga mangrove), *Lydenburgia abottii* (Pondo bushman's tea), *Lydenburgia cassinoides* (Sekhukhuni bushman's tea), *Mimusops caffra* (Coastal red milkwood), *Newtonia hildebrandtii* var. *hildebrandtii* (Lebombo wattle), *Ocotea bullata* (Stinkwood), *Ozoroa namaquensis* (Gariep resin tree), *Philenoptera*

violacea (Aplle-leaf), *Pittosporum viridiflorum* (Cheesewood), *Podocarpus elongatus* (Breede River yellowwood), *Podocarpus falcatus* (Outeniqua yellowood), *Podocarpus henkelii* (Henkel's yellowwood), *Podocarpus latifolius* (Real yellowwood), *Protea comptonii* (Saddleback sugarbush), *Protea curvata* (Serpentine sugarbush), *Prunus africana* (Red stinkwood), *Pterocarpus angolensis* (Wild teak), *Rhizophora mucronata* (Red mangrove), *Sclerocarya birrea* subsp. *caffra* (Marula), *Securidaca longependunculata* (Violet tree), *Sideroxylon inerme* subsp. *inerme* (White milkwood), *Tephrosia pondoensis* (Pondo poison pea), *Warburgia salutaris* (Pepper-bark tree), *Widdringtonia cedarbergensis* (Clanwilliam cedar) and *Widdringtonia schwarzii* (Willowmore cedar)

Any trimming and / or removal of the Milkwood trees (*Sideroxylon inerme*) or other protected trees on the properties will be subject to a license in terms of the aforementioned Act. The list is a national list, however if any species are planted as part of landscaping, the Act will still apply.

- The preferred alternative avoids all of the on-site protected trees (refer to sensitivity map);
- If a DAFF permit is required for the disturbance, trimming and removal of Milkwood trees the Holder of the EA/Managing Agent/individual home owner must consult with the Department of Environmental, Fisheries & Forestry (DEFF) to obtain the necessary permit in advance (impact management outcome).
- No protected trees may be trimmed/damaged or removed without a Forestry Permit;
- ECO to demarcate all on-site protected trees (according to drip-line) as No-Go areas prior to earthworks/vegetation removal to ensure that they are not impacted.

3.6 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 Catchment Agency may enforce these obligations and recover costs from those responsible or from those who benefited from the measures.

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.

The development is located within an already built-up urban area and as such does not require individual firebreaks for properties. .

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 has confirmed that the proposal does not require any further heritage studies. In terms of the proposed development any evidence of archaeological remains must be communicated to the Heritage Western Cape immediately.

- Should any heritage resources, including evidence of graves and human burials, archaeological materials and palaeontological material be discovered during excavations, Heritage Western Cape must be notified (impact management outcome).

3.9 NATURE CONSERVATION ORDINANCE (NO. 19 OF 1974)

The Nature Conservation Ordinance provides for the protection of endangered and threatened animal and plant species in the Western Cape and requires that certain permits are obtained from the relevant authority for activities that affect these species.

Permits are required for the following activities relating to wind animals and game in the Western Cape Province:

- **Export, Import and Transport of Wild Animals and Game** - In terms of section 44 (1)(a) of the Ordinance one needs a permit to import into, export from or transport in or through the Western Cape Province any wild animal. For birds this provision only applies to birds that are listed as protected or endangered in terms of the Ordinance. It is also important to draw a distinction between this Transport Permit and a CITES permit that is mentioned below.
- **Permit to Possess the Carcase of an Endangered Wild Animal(**s) - In terms of section 26 of the Ordinance not only does one need a permit to possess any live endangered wild animal but one also needs a permit to possess the carcase or any part of the carcase of any such animal.
- **Wild Animal Captivity Permit** - In terms of section 31 of the Ordinance no person may keep any wild animal(s) in captivity without a permit. For birds, a captivity permit is only required for bird species classified as protected or endangered in terms of the Ordinance.

In the event that any wild animals are found during the required search & rescue prior to construction, the relevant permit must be obtained from CapeNature by the Holder for relocation.

4 DEVELOPMENT PROPOSAL

The preferred development proposal is for the rezoning (from private open space) to allow for twelve (12) group housing erven and the remainder as private open space (1 636m^2 = approximately 20%).

Substantial changes to the layout or scope of this approved plan that may result in change to an impact management outcome, must be accepted, or approved by the Competent Authority in writing prior to such changes or deviations may be implemented.

- **Access** to the property is via Bessie Street which is an existing arterial road providing access to the greater Patrys Development (no listed activities applicable);
- **Water connection** will be to the existing municipal water line that runs along Bessie Street (no listed activities applicable);
- **Sewage** will connect to the existing municipal sewage line that runs along Bessie Street (no listed activities applicable);
- **Solid waste** will be collected by the Municipal solid waste collection services and disposed of at the licenced, municipal landfill site at Steynskloof Solid Waste site in Riversdale with 22 years landfill space spare capacity (no listed activities applicable);
- **Electricity connection** will be to the existing Municipal electrical infrastructure via the Strandloper mini-sub in Geelhoutstreet from where it will be installed as an underground cable along the street, between erven 3566 and 3565, underneat Bessie Street to the site;
- **Stormwater** drains in a north, north-westerly direction. The internal street will be designed to link into Bessie Street and stormwater will be directed to the formal stormwater system;
- **Fire hydrants** will be installed within the development in accordance with the requirements of the Hessequa Municipality and in adherence with the so-called Engineering Red Book (*Guidelines for provision for Engineering Services and Amenities in Residential Township development*). Water supply accounts for the demand associated with fire management associated with the development.

5 ENVIRONMENTAL IMPACTS & MITIGATIONS

5.1 IMPACTS

The site is not deemed sensitive from an ecological or heritage perspective. The protected trees identified have been surveyed and accommodated in the preferred layout along with the area that will remain as private open space (refer to the sensitivity map).

Figure 3: Site sensitivity map for the Patrys Development application.

During the Environmental Impact Assessment process, the following impacts and recommended mitigations were identified:

Botanical:

The botanical specialist confirmed the vegetation map status to be Hartenbos Dune Thicket (Least Threatened status 2018) according to the National Vegetation Map whilst the Western Cape Biodiversity Plan indicates it as Albertinia Sand Fynbos (Vulnerable status 2017). The fine scale vegetation mapping refers to it as Ystervarkpunt Forest-Thicket-Fynbos representing mostly a **fynbos matrix with thicket patches**. No rare or threatened species were identified during the site assessment. A number of individual milkwood trees are spread across the site with the highest density in the north-eastern corner that will be retained as private open space. The protected trees have been surveyed and will be avoided with the preferred alternative.

The overall sensitivity rating allocated by the botanical specialist is LOW with the following potential impacts:

1. the destruction of **vegetation and habitat;**
2. disturbance of **protected tree species**.

The following **mitigation measures** are recommended in terms of managing these impacts:

- **All on-site milkwood trees must be retained and incorporated** into the services and house plans for the development (impact management outcome);
- **Holder of the EA must compile a species list for landscaping (only indigenous vegetation permitted) that must be approved by the ECO prior to implementation.**
- The loss of habitat and ecosystem services is inevitable should the development be approved, but its impact is also considered relatively **low and localised**.
- **Avoid internal fencing** of individual erven.
- **Private open space area** must be managed as near natural allowing for best practical environmental functional use by residents.
- **Removal invasive alien vegetation** from within the private open space.

The specialist, in his report, stated that even without such mitigation, the overall envisaged impact on botany **remains low and restricted to a local scale**.

Biodiversity / Ecology:

The site is indicated as a 'Other Natural Areas' according to the to the National Spatial Biodiversity Plan (2017) and not indicated as an area that forms part of any designated ecological corridors or for necessary ecological patterns and processes. The lack of ecological burning and continuous weeding/bossiekapping over years, have reduced the ecological value and created a modified habitat.

The specialist, in his report, stated that even without such mitigation, the overall envisaged impact on biodiversity **remains low and restricted to a local scale**.

- **Avoid internal fencing** of individual erven.
- **Private open space area** must be managed as near natural allowing for best practical environmental functional use by residents.
- **Removal invasive alien vegetation** from within the private open space.

Fauna:

Due to the transformed nature of the on-site habitat the property is deemed marginal with no threatened or sensitive species identified by the faunal specialist. The preferred alternative accommodates the protected trees which ensures habitat for local bird species.

The specialist, in his report, stated that even without such mitigation, the overall envisaged impact on biodiversity **remains low and restricted to a local scale**.

- **ECO must be** appointed to oversee search and rescue for animals that can be relocated during construction i.e. snakes/tortoises.
- Avoid **internal fencing** of individual erven.

Heritage / Archaeology / Palaeontology:

It has been confirmed that **no registered, graded, or significant heritage sites** occur in the immediate surroundings of the property. The two stone age tools found by the archaeologist during his site inspection has no context and therefore no conservation value. The Palaeontologist has confirmed that the potential for finding intact fossils during construction is low.

The specialists, in their reports, state that even without mitigation, the overall envisaged impact on cultural heritage **remains low and restricted to a local scale**.

- In the event that any archaeological/human remains are identified during construction the Heritage Western Cape must be notified and the site demarcated until such time as HWC provides further instructions.

Noise:

Construction noise impacts will take place. These are typically of a temporary nature and can be mitigated to acceptable levels with management recommendations both ito construction times and phased clearing of the site.

Dust pollution:

The property is mostly surrounded by existing residential/urban development. Removal of groundcover and earthworks is likely to result in soil disturbance that can cause dust pollution. Clearing of the site in phases and applying dust suppression agents will address dust pollution.

- Unnecessary, unreasonable dust pollution must be avoided and managed during construction of all phases (impact management outcome);
- Should the need arise for additional dust pollution the ECO must specify the most appropriate dust suppression methods suitable for the area of concern.

Theft and security:

Refer to Job Security Plan section of EMP.

- No construction workers are permitted to enter any of the surrounding residential properties that are not part of the study site.

Socio-Economic impacts:

Employment opportunities during construction and operation are expected. Furthermore, the economic spin-off from sourcing supplies for construction and operational phases will generate income. Municipal income will increase from future rates and taxes.

- Maximum local employment and sourcing of material must be achieved as an impact management outcome (aim is for 50% if possible) and the Contractor must keep record of labour and material sources to confirm.

Stormwater Management:

Hardening of natural areas will result in an increase in stormwater runoff. The Municipal system is designed to accommodate 1:20 year flood events. Stormwater will be directed to Bessie Street.

- SUDS stormwater principles of treating stormwater on-site, reducing runoff and allowing infiltration must be implemented.
- All pavement within the development must be segmented, permeable pavers to enable infiltration to reduce runoff volumes.
- Stormwater catchpits must be cleaned by the Holder/Managing Agent regularly.
- All low points must be fitted with silt fences during construction to avoid pollution of surface water.
- Houses must be fitted with rainwater tanks to reduce runoff volumes.

5.2 MITIGATIONS

The mitigation measures identified during the environmental process are listed below. The management requirements associated with these mitigations in order to ensure that the development retains the impact significant ratings predicted by the specialist are included throughout this document.

Table 1: Mitigation Measure Table for impacts identified.

Mitigation	Management Requirement
(a) All personnel must undergo environmental induction with regards to fauna and in particular awareness about not harming or collecting species such as snakes and tortoises.	ECO to perform Environmental Induction with contractor/sub-contractors prior to vegetation clearing.
(b) Protected trees that do not have a Forestry Permit (for removal/trimming) within the development footprint must be	ECO to demarcate protected trees and private open space area, at

clearly marked by the ECO prior to vegetation removal. Their importance must be pointed out to the contractor and they are not to be removed.	driplines, as No-Go areas with no access permitted.
(c) Forestry permit must be obtained from the Department of Forestry for any trimming of branches/roots or removal of on-site protected trees.	Holder of the Authorisation / Managing Agent / Home Onwer to apply for forestry permit prior to any trimming/removal of any protected tree species.
(d) Construction works limited to Monday-Friday, 7h00 – 18h00 and Saturdays, 8h00 – 13h00. No work is permitted on Sundays or Public Holidays.	ECO to monitor complaints about any noise pollution.
(e) Dust suppression must be implemented if any dust pollution is noted. No potable water may be used for dust suppression.	ECO to monitor any complaints about dust pollution.
(f) Where possible, the contractor must aim for 50% local labour and 50% local supplier to ensure maximum benefit to the local community and economy.	Contractor to keep record of labour and material sourcing for verification.
(g) Stormwater quality and volume controls required.	All houses to be fitted with rainwater tanks. All internal paving must be segmented, permeable pavers. Silt traps must be installed at low points during construction. HOA/Holder of the EA to clear out stormwater catchpits regularly.
(h) Environmental/biodiversity/Faunal	No fences around individual erven. Conserve protected trees. ECO to conduct search & rescue during construction. Indigenous landscaping. Private open space to be retained as near natural with best practical environmental use as a functional space for residents.

6 RESPONSIBILITIES

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

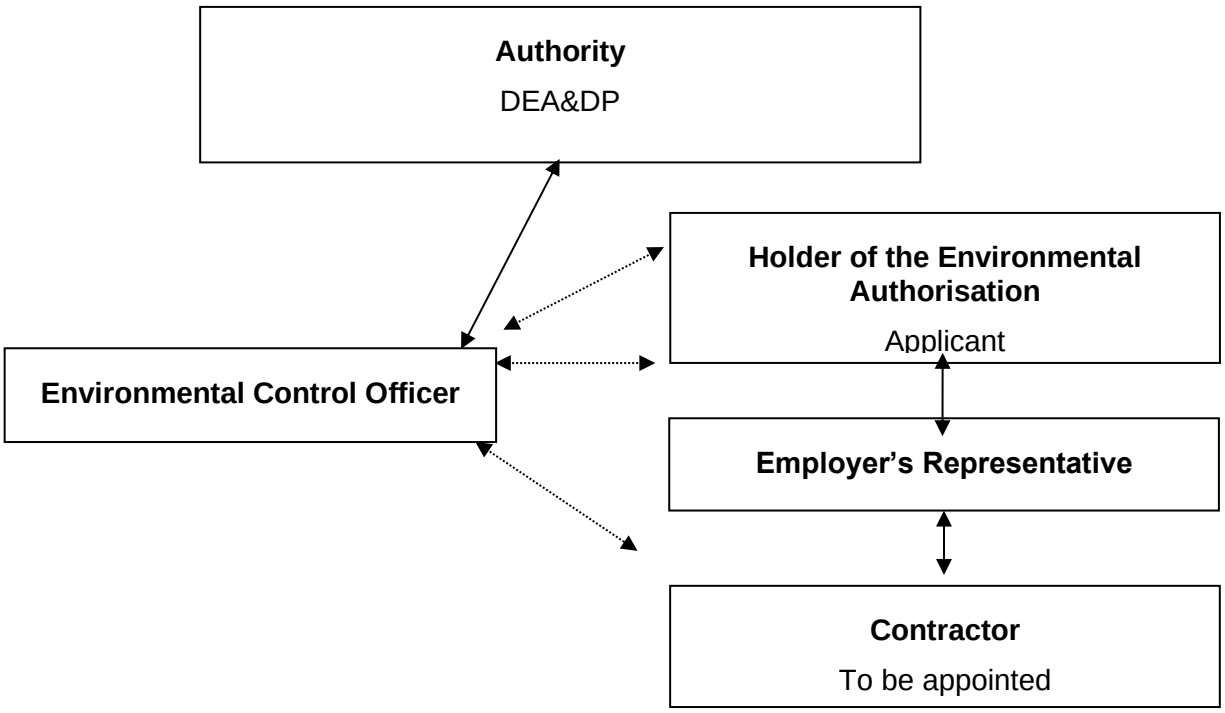

Figure 4: Responsibilities

6.1 HOLDER OF THE ENVIRONMENTAL AUTHORISATION

The Holder of the Environmental Authorisation is the person or entity who is responsible for carrying out pre-planning and construction activities undertaken within the approved area. This includes activities authorised in terms of any legislation.

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

- Be conversant with the EMPr, any relevant Environmental Authorisation, Permit or any other legally binding documentation;
- Ensure that the senior site personnel are aware of and understand the conditions and recommendations contained in the EMPr, any relevant Environmental Authorisation, Permits or any other legally binding documentation;
- Order the removal of any person(s) and / or equipment found in contravention of any of the above-mentioned authorisations.

- Access to the site must be granted to the Competent Authority, and relevant environmental reports i.e. EMP/EA/permits must be produced, to any authorised official representing the Competent Authority who requests to see it for the purposes of assessing and/or monitoring compliance with the conditions contained herein.

6.2 ENGINEERS AND CONTRACTORS

The Engineers and Contractors are responsible for physically carrying out the relevant activities, and onto whom the majority of the recommendations in this EMPr are intended. The responsibilities indicated here are also relevant to Sub-Contractors.

The responsibilities of the Engineers and Contractors include but are not limited to the following:

- Be conversant with the EMPr, any relevant Environmental Authorisation, Permit or any other legally binding documentation;
- 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 ECO and the Project Proponent in the event that any industry regulated standards are in contradiction with the EMPr or any other authorisations;
- Review and amend 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.

6.3 ECOLOGICAL CONTROL OFFICER (ECO)

It is a recommendation of the EAP and participating specialists that a suitably qualified Environmental Control Officer (ECO) be appointed to oversee all activities for the duration of the construction phase (i.e. site clearance and demarcation, construction activities, services, road works), home construction.

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** as an ECO.

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

- Give fourteen (14) calendar days' notice to the Competent Authority prior to commencement of construction;
- Be appointed prior to commencement of any works (i.e. demarcation of protected trees/private open space, removal of vegetation, movement of soil and / or rubble or construction activities commencing);
- Provide environmental induction training to contractors on site prior to construction activities commencing, especially with regard to the protection of Milkwood Trees, as well as removal of reptiles/mammals found on the site during construction;
- Keep record of all activities on the site; problems identified; transgressions noted, and a task schedule of tasks undertaken by the ECO;
- Provide maintenance, update and review of the EMPr if necessary;
- Liaison between the Holder of the EA, Contractors, Authorities and other lead stakeholders on all environmental concerns, including the implementation of the EMPr;
- Compilation of **Environmental Control Report (ECR)** to ensure compliance with the EA, EMPr and duty of care requirements, where necessary and present these reports to the Holder of the EA as well as the appointed main Contractor at the monthly meetings;
- Compile an ECR every month;
- Ensuring compliance with this EMPr and conditions contained in the EA;
- Advise on the need for Forestry Permit(s) if any to the Holder of the EA, private land owners or Managing Agent;
- 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;
    - **Weekly site inspections** during vegetation removal, earth works, bulk services for each phase of the development
    - **Bi-weekly site inspections** during civils and construction of structures/access and upgrade of MR311/MR322
    - **Weekly site inspections** when dwellings/structures are being built
- The duration and frequency of these visits may be increased or decreased at the discretion of the ECO and should the contractor have a suitably experienced environmental site officer (ESO) the ECO can act in a supervisory role with the ESO assisting;
- Attendance of monthly site meetings;

- 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 complaint register in which all complaints and action taken must be recorded. This information must also be included in the ECR;
- Remain employed until all development/construction activities are concluded, and the post construction rehabilitation and monitoring requirements are finalised.

6.4 ENVIRONMENTAL INDUCTION AND TRAINING

The ECO in consultation with the contractor must 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 EMPr. The presentation must 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 should this be necessary.

As a minimum, training must include:

- Explanation of the importance of complying with the 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.

Should the staff turnover be 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.

7 PRE-CONSTRUCTION DESIGN CONSIDERATIONS

7.1 STORMWATER MANAGEMENT

During the construction phase, the risk is highest of stormwater damage to both the environment and the works. The cost of the proper planning and implementing of stormwater management systems is small compared to the cost of repairing damage or retrofitting solutions.

Therefore, it is prudent to implement sufficient stormwater management elements, before any construction activities take place, to prevent such damage.

- Final, approved services plans by the consulting engineers must be implemented for stormwater management.
- Implement Best Management Practices in Stormwater Management.
- Apply the principles of Low Impact Development (LID) in the design of the drainage systems.
- The capture and storage of rainwater from roofs by installing rainwater tanks at each dwelling, and the discharge of the overflows from rainwater tanks must be promptly returned to natural overland sheet flow (SUDS principles).
- Silt fences must be erected at suitable run-off points on the property as deemed necessary by the ECO to prevent unwanted erosion, siltation and pollution of runoff for the duration of construction.
- Stormwater catchpits must be cleaned out regularly by the Managing Agent/Holder of the EA to prevent blockage and/or solids being discharged into the Municipal stormwater system.
- All internal paving must be segmented, permeable pavers to facilitate infiltration.

7.2 WATER CONSERVATION

Water conservation in South Africa is of vital importance. Our water resources are under extreme pressure from pollution, over abstraction and development and all efforts to minimise usage should be implemented.

- No potable water may be used for the irrigation of gardens or any other outdoor uses.
- No potable water may be used for dust suppression during construction.
- Each dwelling must be fitted with a rainwater tank.
- Duel flush toilets must be installed in all units.
- Low flow tamps must be installed in all units.
- Low flow shower heads must be installed in all units.

7.2.1 Rainwater Harvesting

Capturing of rainwater will minimise the impacts on the municipal resources (each dwelling must be fitted with a rainwater tank).

The overflow from tanks must be directed into gardens / open spaces / formal stormwater system.

7.2.2 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 must be fitted with dual flush systems.

7.2.3 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.

7.2.4 Low flow Taps

Low flow taps use aerators to reduce the flow of the water. These are either built into the faucet or added as an aftermarket product.

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.

7.2.5 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 must have insulation on geysers and all hot water pipes. Solar and heat pumps must be installed for each dwelling. It is recommended that gas geysers and gas stoves be installed for the development.

7.2.6 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). No kikuyu.

- 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.

7.3 ENERGY CONSERVATION

The provision of energy has become a controversial topic and has led to the reconsideration for many people of how they use energy in their homes. It is important for people to create a habit of conserving energy on a daily basis.

Solar energy is created by light and heat which is emitted by the sun, in the form of electromagnetic radiation. With modern technology, we are able to capture this radiation and turn it into usable forms of solar energy such as electricity.

7.3.1 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 homeowners must consider all their requirements (number of people using facility, location of house, angles of roof) before making a choice.

Dwellings must be fitted with solar/heat pumps or similar energy saving devices.

7.3.2 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) lighting be used as opposed to incandescent lighting. This is required for all internal and external lighting, including street lighting. Proximity switches must be used in areas where lighting for pedestrians is required.

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

CF lighting uses quantities of mercury in the bulbs and tubes which pose serious environmental hazards.

8 CONSTRUCTION PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS

These Construction Phase requirements are aimed at using Best Practise Principles to manage the impacts on the environment during the construction of the development as well as any future dwellings, roads or infrastructure within the development area.

8.1 ESTABLISHMENT OF CONTRACTORS SITE CAMP

The Contractors Site Camp must be established to provide a safe base for operations, security of materials and to prevent unnecessary impacts on the environment during the construction phase. It must not be erected on any areas considered sensitive and no indigenous vegetation may be removed, damaged or disturbed without prior approval. If there is no space on the erf under construction and the site camp needs to be located on other private property, permission from the relevant landowner must be obtained. The following points must be taken into consideration when siting the contractor's camp:

- The site camp must be established with the ECO's input;
- The Contractors Site Camp must be situated within the development area. Site Camps that are allowed off site may only be erected once written permission from the landowner is obtained and any other necessary authorisations are in place;
- The site camp must be clearly demarcated and fenced off with shade netting or any other approved material;
- Topsoil from the site camp area must be stripped and stockpiled for reuse during rehabilitation. This must be done to ensure no contamination of the topsoil while the site camp is in use;
- All construction material must be stored in the site camp, unless otherwise approved by an ECO;
- No personnel may overnight in the site camp, except in the case of a night watchman / security if required;
- No fires are allowed;
- Fuel may only be stored in the site camp;
- Storage of waste must take place within the site camp and must be removed on a regular basis;
- The site camp must be provided with sufficient ablution facilities (toilets and potable water) of which the content must be disposed of regularly and at the suitable facilities;
- All relevant permits must be valid and kept on site.

8.2 SANITATION

Chemical ablution facilities must be available for the use by construction staff for the duration of the construction period. The following must therefore be implemented:

- Toilet and washing facilities must be available to the site personnel at all times;
- These must be situated within the construction area (preferably at the site camp;
- A minimum of one toilet for every 15 personnel is required;
- The facilities must be serviced on a regular basis to prevent any spillage;
- The servicing contractor must dispose of the waste in an approved manner;
- The toilets must be secured to ensure that they do not blow over in windy conditions;
- All toilet facilities must be removed from site on completion of the contract period;
- Should the construction period be interrupted by a builders break, the toilets must be emptied prior to the break.

8.3 DEMARCATION OF WORK AND NO-GO AREAS

The demarcation of no-go areas is of extreme importance to ensure that damage is restricted to the future developed area and that areas outside this demarcated area are protected and not damaged unnecessarily. The process for this is as follows:

- The exact footprint of the construction areas to be surveyed and pegged prior to clearing of any vegetation;
- The contractor in conjunction with the ECO, if any, must walk and inspect the areas determined and mark the full extent of the area to be disturbed (allowing sufficient space for the construction activity);
- This disturbance is to be clearly marked with a double strand of wire with danger tape, or similar material, placed between strands (this include the private open space and all protected trees as surveyed);
- All areas outside this demarcated area are considered as “no-go” areas for any construction activity including movement of staff (i.e. private open space area);
- Construction staff must be briefed as part of the environmental induction on the requirements regarding the no-go areas;
- Non-compliance with no go demarcation may be penalised.

8.4 EROSION CONTROL

The development site is a flat piece of land and erosion control is unlikely to be a significant concern, but erosion control during construction and operation is still an important environmental impact management outcome.

- Any areas that are identified by the ECO as being prone to erosion must be suitably protected.
- During construction, the Contractor must 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 slopes must be backfilled, compacted and restored to an acceptable condition.
- Stabilisation of cleared areas to prevent and control erosion and/or sedimentation must be actively managed. Consideration and provision must 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 must 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 must commence as soon as possible.

See Appendix 4, Figure 2 & 3 for further details regarding erosion control on the site.

8.5 FIRE MANAGEMENT AND PROTECTION

The Hessequa Municipal area has the potential of being a high-risk fire area and the utmost care must be taken to ensure that none of the construction activities result in wildfires. Precautions must be undertaken to protect habitation, biodiversity and against loss of life and infrastructure.

The following points must be considered with regards to fire protection on site:

- **NO OPEN FIRES** are allowed anywhere on the construction site,
- The total removal of all invasive alien vegetation must take place in order to decrease the fire risk associated with the site;
- Cigarette butts may not be thrown in the veld, but must be disposed of correctly in suitable receptacles. These can be glass, plastic or metal containers half filled with sand;
- In case of an emergency, the contact details of the local fire and emergency services must be readily available;
- Contractors must ensure that basic firefighting equipment is available on site;
- Biomass generated from removal of invasive and indigenous vegetation must be removed from site and not burned in situ;
- Fire risk on site is a point of discussion that must take place as part of the environmental induction.

8.6 NOISE AND EMISSION CONTROL

It is recommended that noise generation be kept to a minimum and that construction activities be confined to normal working hours (07:00 - 18:00 on weekdays and 08:00 to 14:00 on Saturdays).

No construction on public holidays and Sundays. Deviations to these times must be communicated with the ECO and neighbours.

Apart from confining noise to the normal hours as detailed above, the following noise abatement (reduction of intensity and amount) measures must be implemented:

The Contractor is responsible for compliance with the relevant legislation with respect to noise inter alia Section 25 of ECA.

8.7 WASTE MANAGEMENT

An integrated waste management approach must be adopted on site (impact management outcome).

- Only approved waste disposal methods are allowed.
- The Contractor shall ensure that all site personnel are instructed in the proper disposal of all waste. The Contractor must ensure that sufficient disposal facilities are available across the site.
- Recycling must be encouraged on site and recycling bins must be provided and clearly marked.
- Disposal of all waste materials must be done at the Riversdale landfill site.
- No dumping of any waste material on or off site is permitted unless done at a registered water site.

8.7.1 Solid Waste

The Contractor must ensure that all facilities are maintained in a neat and tidy condition and the site shall be kept free of litter. Measures must be taken to reduce the potential for litter and negligent behaviour with regard to the disposal of all refuse. At all places of work the Contractor shall provide litterbins, containers and refuse collection facilities for later disposal.

- Solid waste may be temporarily stored on site in a designated area approved by the ECO prior to collection and disposal.
- Solid waste must be removed on a weekly basis to a licensed waste disposal site. Recyclable waste must be recycled.
- Waste storage containers must be covered, tip-proof, weatherproof and scavenger proof. The waste storage area must be fenced off to prevent wind-blown litter.
- No burning, on-site burying or dumping of waste may occur. Used (empty) cement bags must be collected and stored in weatherproof containers to prevent windblown cement dust and water contamination. Used cement bags may not be used for any other purpose and shall be disposed of on a weekly basis via the solid waste management system;
- Plastic wrapping around building blocks/bricks must be contained in containers at the point where they are removed on the site and removed to the camps site on a daily basis.

8.7.2 Construction Rubble and Waste

- All construction waste must be disposed of at an approved site (no construction rubble may be spoiled anywhere on site).
- No illegal dumping of construction material may take place.

8.7.3 Scrap Metal

- Recycling of scrap metal is recommended.
- Scrap metal must be disposed of offsite at suitable facilities or arrangements made for community involvement in the recycling.

8.7.4 Hazardous Waste

- All hazardous waste (including bitumen, oil, diesel fuel from machines, paint, grease, shutter oil etc.) must be disposed of at an approved hazardous landfill site.
- Unused or rejected tar or bituminous products must be returned to the supplier's production plant.
- Under no circumstances may the spoiling of tar or bituminous products on the site, over embankments, or any burying, be allowed.
- Used oil, lubricants, grease and cleaning materials, etc. from the maintenance of vehicles and machinery must be collected in holding tanks and sent back to the supplier or removed from site by a specialist recycling/waste company for disposal at an approved hazardous waste site.

8.8 CONCRETE BATCHING

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.

- All concrete batching must take place on an area that is to be hard surfaced as part of the development.
- Concrete batching outside such areas may only take place with the necessary approval of the ECO and then all topsoil must be stripped and stockpiled for reuse.
- Concrete mixing areas must have bund walls or a temporary 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.

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 unless done at the temporary settling ponds.
- Batching at satellite sites must be done on a batching plate i.e. wood or metal sheet, to prevent soil contamination.
- In order to prevent cement run off, both under normal circumstances and in event of rain, batching plates must be used for all areas that are not hard surfaced.

8.9 FUEL STORAGE

The above ground storage of fuel is subject to authorization in terms of the National Environmental Management Act (NEMA as amended), if more than 80m³ is stored on site at any one time. It is not expected that the storage of fuel will be necessary for the construction of any dwellings or infrastructure on the properties.

Should a temporary fuel storage facility be required, the Contractor must ensure that he/she complies with legislation and that the following measures are in place:

- Temporary fuel storage must take place within the contractors site camp in an area approved by the ECO;
- No storage of fuel may take place on any other portion of the site;
- Mobile fuel units used to refuel plant on site must make use of drip trays when refuelling;
- Where possible, double lined storage tanks must be used;
- All storage tanks must be ISO 9001 certified;
- Fuel storage facilities must be located on flat ground. No cut and fill may take place immediately on or adjacent to fuel storage areas;
- Bund walls must be constructed to contain at least 110% of the total capacity of the storage tanks;
- Bund walls must be constructed of impermeable material or lined to ensure that petroleum products cannot escape;
- A suitable material must be placed in the base of the bund walls to soak up any accidental spillages;
- A sealable tap system may be implemented to drain water collecting in the bund walls. The tap must be at the base of the bund wall and drainage must be supervised to ensure that no pollutants are tapped out;
- The tanks must be locked and secured when not in use;
- Automatic shut-off nozzles are required on all dispensing units;

- Storage tanks must be drained within one week of completion of activities (unused fuel can be used by the contractor on other work sites or returned to the supplier). If the construction program extends over the Christmas shutdown, the contractor must ensure that storage tanks are emptied prior to this period;
- All storage tanks, containers and related equipment must be regularly maintained to ensure the safe storage and dispensing of fuel;
- Defective hoses, valves and containment structures must be promptly repaired;
- Vehicle and equipment fuelling must be undertaken on a hard-impermeable surface or over drip pans to ensure spilled fuel is captured and cleaned up.

8.10 DUST MANAGEMENT

The movement of construction vehicles and removal of existing vegetation will create dust that could impact on the surrounding vegetation and cause inconvenience to neighbouring property owners (impact management outcome).

- Construction vehicles must adhere to speed limits and minimisation of haul roads must be implemented.
- During dry, dusty periods haul roads must 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 must be sited taking into consideration the prevailing wind conditions. Covering could include planting of short-term vegetation to prevent dust such as rye grass or even covering with grass sods which can later be used for landscaping.
- No invasive alien vegetation may be used as a vegetative cover on stockpiles.
- Trucks bringing in materials must be covered to prevent dust and small particles escaping and potentially causing damage to people and property.
- Site to be cleared in phases.
- ECO to advise on necessary dust suppression measures should complaints be received from neighbouring property owners.

Please see attached Appendix 4, Figure 4 showing a diagrammatic representation of the management of haul roads.

8.11 WATER MANAGEMENT

Relatively little work has been carried out to date on water sustainability on construction sites, More cognizance is given to water sustainability during the operational phase of a project. However, as water moves up the political and environmental agenda due to increasing pressure on water resources, it is anticipated that this will change.

Taking this into consideration and applying the principles of Best Practice, it is recommended that the contractor must take a sustainable approach to the use of water during construction (impact management outcome).

The following table (Waylen et al, 2011) provides practical actions which can be implemented to minimise water use on site.

Table 2: Water using processes & actions to reduce consumption (Source: Waylen et al, 2011)

Key:			High water using processes	
Use of Water on Site (Processes/ Activities)	**Procedures/ Systems**	**Estimated proportion of current water use on sites**	**Behaviours**	**Technologies**
Design Stage Considerations (relating to water use impact of completed development)		N/A		Water efficient bathroom products and taps must be installed.
Site Camps				
Toilets, catering, washing (personnel)	Monitoring via meter readings etc. Rainwater collection and use		Site inspections for leaks, wastage / increase awareness through briefing and posters, notices. Awareness raising – toolbox talks / posters etc.	Eco-cabins (e.g. rainwater harvesting, waterless or low or sensor activated flush urinals, water saving devices [taps] and effluent management system), composting, water meter adaptors to facilitate fitment of water meter to improve quality of data. Water meter adapter / add-on

General site activities				
Tool washing Rinsing	Site inspections all to include checking for water leaks & use practices		Use toolbox talks to ensure operatives understand need to conserve water. Use buckets etc. to wash tools rather than running water. Dedicated tool washing areas.	Auto shut-off taps. Ensure water supply able to be switched off at point of use e.g. through trigger guns on hoses.
Wet Trades				
Brick/blockwork				On-site mortar silos as opposed to batch mixing
Concreting	Concrete mix design		Use water from settled concrete wash out area to clean equipment	On-site batching using closed-loop water recycling
Plastering				
Core Boring				Dry core
Lightweight Roofing				
Ceramic Tile				
Bentonite mixing				On-site batching using closed-loop water recycling

Rendering				
Groundworks				
Grouting				Auto shut-off taps (e.g. trigger type hoses/taps)
Drilling/Piling	Flushing water / coolant			
Dust Suppression				
General, site roads, wheel washes	Water spraying bowsers (using water diffusers to create mist as more effective at capturing dust) Rainwater collection Early hardstanding (or stone) site roads, car parks etc. (reduce requirement for damping down)	Considered to be the largest 'wasteful' use of water on sites.	Licensed water abstraction (surface water / boreholes)	Use temporary settlement lagoons and look at early construction of lagoons so that they can be utilised early. Closed-loop water recycling for drive-through wheel-washes. Admixtures for dust suppression reduces damping frequency. Source dust suppression agents that are biodegradable and binds together dust and floating parts to reduce damping.
Hydrodemolition with high pressure water		(High on sites where this is used)		Closed-loop water recycling
Cleaning				
Cleaning tools and small equipment			Use buckets as opposed to running water	

Plant & equipment				Closed loop systems
Lorry wash out				Recovery of water for re-use
Ready mixed concrete wagons	Wash out into segregated area			Wash out pit with recirculation system to reuse water in concrete mixes
Site / general cleaning				
Specialist / high pressure cleaning				
Paintbrush washing				Wash in closed containers such as Dulux EnviroWash System
Commissioning & Test				
Building plant/ services	Capture and re-use of commissioning water			

8.12 REHABILITATION AND ENVIRONMENTAL CONCERNS

Any disturbed area that is not designated for roads, structures or buildings must be rehabilitated and landscaped with indigenous vegetation (impact management outcome).

- Invasive alien vegetation on the site must be identified by the ECO prior to implementation (when demarcation of no-go areas and protected trees take place) and must be removed prior to transfer of the first erf.
- No alien vegetation may be used for any rehabilitation work.
- Rehabilitation of plant material must take place prior to the rainy season in order that the plants establish sufficiently. However, in areas that may be a concern for erosion, irrigation may be justified to establish a vegetative barrier against erosion.
- Indigenous and protected trees must form part of the landscaping list.

8.13 SOCIAL REQUIREMENTS

8.13.1 Use of local labour

It is strongly recommended that the contractor make use of local labour as far as possible for the construction phase of the project (impact management outcome).

Melkhoutfontein, Stilbaai, Jongensfontein and Riversdale area must be targeted for labour and material sourcing. Thereafter the Garden Route District, followed by the greater Western Cape Province should the specific labour or material requirements not be available.

8.13.2 Targets

- The target must be to have the majority of semi-skilled labour local to the Hessequa Municipal area (aim for 50%);
- The contractor must endeavour to source maximum materials from local suppliers Hessequa Municipal area, then Garden Route District, then Western Cape), aim for 50%;
- **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.

8.13.3 Record Keeping

Records must be kept of all personnel under the main contract as well as those under any subcontractors employed by the contractor.

Staff Type	Local to the Hessequa Municipal Area.		Southern Cape (excluding the Hessequa Municipal Area)		Outside the Southern Cape	
	Number	Percentage	Number	Percentage	Number	Percentage
Semi-skilled						
Operators						
Artisans						
Junior Management						
Senior Management						
Professionals						

Apart from the labour records detailed above, financial records must be kept indicating the financial contribution to the local economy through the input into wages and the use of local suppliers.

8.13.4 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 (impact management outcome).

- All incidents of theft or other crime should be reported to the South African Police Service, no matter how seemingly insignificant.

8.14 HERITAGE REQUIREMENTS

Although no further heritage assessments are required, there is always the possibility of unearthing artefacts and / or remains. In the event that any heritage remains are found it must be recorded, documented and report to Heritage Western Cape (impact management outcome).

As a general principle, the legislation governing Heritage Resources requires the following:

- If 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.

8.15 METHOD STATEMENTS

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 must prepare method statements for several specific construction activities and/or environmental management aspects.

- The Contractor may not commence the activity for which a method statement is required until the ECO has approved the relevant method statement.
- Method statements must be submitted at least 5-days prior to the date on which approval is required (start of the activity). Failure to submit a method statement may result in suspension of the activity concerned until such time as a method statement has been submitted and approved.

An approved method statement does not absolve the Contractor from any of his obligations or responsibilities in terms of the contract. However, any damage caused to the environment through activities undertaken without an approved method statement shall be rehabilitated at the contractor's cost.

Additional method statements can be requested at the ECO's discretion at any time during the construction phase.

The method statements shall cover relevant details with regard to:

- Construction procedures and location of the construction site;
- Start date and duration of the procedure;
- Materials, equipment and labour to be used;
- How materials, equipment and labour would be moved to and from the site as well as on site during construction;
- Storage, removal and subsequent handling of all materials, excess materials and waste materials of the procedure;
- Emergency procedures in case of any reasonably potential accident / incident which could occur during the procedure;
- Compliance / non-compliance with the EMPr specification and motivation if non-compliant.

8.15.1 Method Statements Required:

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):

- Site clearing.
- Site layout and site camp establishment.
- Marking of protected tree species as no-go area (private open space).
- Hazardous substances and their storage.
- Cement and concrete batching
- Solid waste control system
- Erosion remediation and stabilisation
- Fire control and emergency procedures
- Petroleum, chemical, harmful and hazardous materials.

8.16 PROJECT PROGRAMME

- The Holder of the EA intends to commence construction within five (5) years from the date of Authorisation.
- And a further five (5) years to complete construction, thus a total implementation and construction period of ten (10) years.

9 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.

These requirements are applicable to the Holder of the EA (until taken over by the Managing Agent), the Managing Agent, all landowners, tenants and all visitors (business or tourism) to any properties that fall under the umbrella of the development.

9.1 BOTANICAL REHABILITATION

Within urban environments, one of the greatest impacts on surrounding open spaces is the uninhibited use of exotic vegetation for gardening and landscaping. Plants do not adhere to boundaries such as fences or cadastral units, and may be blown, carried or creep outside of designated areas (gardens) and establish themselves in natural areas. This causes the so called "garden escapees", which can affect the natural biodiversity. The most effective method of preventing this is to simply **landscape with locally indigenous vegetation.** The other benefits to using this approach is that locally indigenous vegetation is adapted to local conditions and uses less water and fertiliser and requires less maintenance.

Not all indigenous vegetation is easy to recreate or replant in a garden setting. Endemic and indigenous species are available from most local nurseries in the Southern Cape.

- No invasive alien plant species may be used for any landscaping purposes in the private open space area (impact management outcome).
- Strongly promote the use of water wise landscaping, not only in the interests of water conservation, but excessive watering creates changes in the hydrological capabilities of soil. This could potentially have an impact on the structure of the soil as well as for the management of stormwater and its impact on the river.
- The Holder of the EA must compile a suitable landscaping species list with indigenous species only that must be approved by the ECO prior to implementation. The list must include local, indigenous and protected trees.

9.2 ALIEN VEGETATION MANAGEMENT

Alien invasive vegetation is identified as exotic (imported, not indigenous) plant material that is supremely adapted to local conditions. In most cases, these plant species have no natural predators and are able to out-compete indigenous vegetation.

The impact of alien vegetation on biodiversity, water resources, aesthetics and fire management are very well documented.

- All alien invasive vegetation must be removed from the site prior to transfer of the first erf (impact management outcome).

Removal of alien vegetation can be undertaken using various methods. These include mechanical (cutting, chopping, pulling, ring barking), chemical (poisoning) or biological (bugs, beetles). Each species reacts differently and thus often requires specific actions or a combination of actions to effectively remove.

The important thing is to first identify the species of plant and then to implement an effective removal plan. Most species require ongoing management, i.e. initial clearing then several follow up clearings of juvenile plants.

In the event that herbicides are required for the removal of alien vegetation, please refer to the ECO to obtain the details of acceptable products to use. Always read the instructions and follow the dilutions correctly.

- Although alien species are not seriously problematic within the site, they are present and must be managed to reduce the likelihood of proliferation in the future prior to transfer of the first erf;
- Cleared alien vegetation must not be dumped on adjacent intact vegetation during clearing but must be temporarily stored in a demarcated area (in consultation with the ECO);
- Any seed bearing material must be removed to prevent the spread of seed.

The status of the species identifies the threat and the management actions required to address the threat.

The NEM:BA categories currently are:

Category 1: Invader plants must be removed & destroyed immediately
Category 2: Invader plants may be grown under controlled conditions only
Category 3: Invader plants may no longer be planted

The full list of invasive alien plants and their status in terms of the National Environmental Management: Biodiversity Act (NEM:BA, Act 10 of 2004) and the Conservation of Agricultural Resources Act (CARA) is available as Appendix 8. The Working for Water Guide to Control Method and Herbicide Selection is also included.

Because the presence of invasive alien species on the site is so low it is not necessary to compile a standalone Alien Management Plan.

9.3 WILDLIFE MANAGEMENT

Developments of any kind create several problems for the indigenous fauna of an area. This includes destruction and fragmentation of their habitat, destruction of corridors, introduction of problem animals, poaching, road mortality and disturbance of breeding sites to name a few. Individual fences around erven are thus strongly discouraged. In urban areas, dogs and cats can cause particular devastation to small mammals and birds.

This section identifies various mechanisms that can be adopted by homeowners to improve their interaction with the local wildlife (Todd, 2016, Harrison, 2008 and CapeNature).

9.3.1 Destruction of Natural Habitats and Populations

Habitat destruction is the prime driver in the decimation of populations and all undeveloped areas must be rehabilitated/landscaped in support of remaining natural areas in vicinity to the development site (environmental management outcome).

- All personnel must undergo environmental induction with regards to fauna and in particular awareness about not harming or collecting species such as snakes and tortoises.
- The remaining intact vegetation on the property must be cleared in phases to allow fauna time to move off the site in advance;
- Restrict development and construction activities to planned development areas;
- Preserve undeveloped portions of erven in their natural state until construction on that erf happens;
- Rehabilitate affected areas with input from the ECO;
- Compensate for loss of habitats through creating only indigenous gardens/landscaping;
- Applicant must provide a list of suitable, indigenous plant species for landscaping – the ECO must approve the list prior to planting;
- The site must be managed to promote biodiversity at the site, this includes restricting dogs to fenced erfs and limiting or banning cats from the private open space area;
- Wherever possible, place pipelines and cables underground, and rehabilitate.

9.3.2 Poaching of local wildlife

Poaching of wildlife is a constant threat and comes from surprising quarters. In light of the objectives of sustainable management, poaching is strictly prohibited within the boundaries of the property. The following points should be considered to prevent poaching:

- Educate workers to avoid poaching;
- Patrol the area to ensure that no snares are set;
- Report incidents of snaring to the management;
- Keep a record of incidents;

- Extend the network of footpaths where appropriate to increase patrol areas;
- Control materials to avoid pollution and damage to fauna;

9.4 WASTE MANAGEMENT

Effective management of household waste contributes to a more sustainable implementation of landfill sites and their management. Sorting of recyclable materials at the source, i.e. in each household, causes less backlog at the landfill site and decreases the availability of material so required by scavengers to the dump site. Using biodegradable waste in a garden compost heap or an earthworm farm is far more supportive of the environment than disposing of it in the general waste.

9.4.1 Recycling

It is recommended that recycling bins are placed at a central point in the development, with access for all residents and visitors to encourage recycling of most of the general household waste that is produced. Bins need to be adequately marked for ease of reference. Separation at source is highly recommended.

9.5 STORMWATER MANAGEMENT

The Hessequa Municipality has not adopted the SUDS stormwater management system as yet. The stormwater system for the development does however address the following:

- All internal paving must be segmented, permeable pavers to improve infiltration;
- The Holder of the EA/Managing Agent must clean out stormwater catchpits regularly to reduce potential pollution;
- All houses must be fitted with minimum rainwater tanks to reduce runoff volumes.

10 MONITORING

Monitoring is an important tool in determining the effectiveness of management actions by measuring changes in the environment.

The most important aspect of any monitoring programme is consistency and continuity. This will determine a level of scientific accuracy that can used to measure changes.

10.1 PHOTOGRAPHIC MONITORING

Duration and frequency of monitoring must include:

- During construction, photographs must be taken at each ECO site visit.

10.2 AUDITS

Post-completion reports must be compiled by the ECO **30-days after completion of construction of civil services i.e. earthworks/roads/services/platforms** in order to ensure that all required recommendations were implemented. It is noted that phasing can overlap.

The post-completion *external*[3] Environmental Audit must be compiled by an independent Environmental Auditor within **six (6) months** from when the **last house is completed**.

- **Condition 15.1** of the EA stipulates that the Holder must, for the period during which the environmental authorisation and EMPr remain valid, ensure of compliance with the conditions of the environmental authorisation and the EMPr, is audited;
- **Condition 15.2** of the EA stipulates that the Holder must, for the period during which the environmental authorisation and EMPr remain valid, ensure that an Environmental Audit Report is submitted to the Competent Authority within six (6) months of completion of the development activities (construction phase), during which period the post construction rehabilitation and monitoring requirements must be concluded too, but by no later than 31 January 2027.
- The Audit Report must comply with **applicable Environmental Regulations** at the time of the Audit.

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

CONTENT OF AN ENVIRONMENTAL AUDIT REPORT	
Appendix 7 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Audit Report. The checklist below serves as a summary of how these requirements were incorporated into this Audit Report.	
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	

[3] The external Audit may not be conducted by the ECO or the EAP responsible for the original environmental impact assessment application process (Condition 16.1 of the EA).

(ii) The expertise of independent person that compiled the environmental audit report.	
(b) A declaration that the independent auditor is independent in a form as may be specified by the competent authority.	
(c) An indication of the scope of, and the purpose for which, the environmental audit report was prepared.	
(d) A description of the methodology adopted in preparing the environmental audit report.	
(e) An indication of the ability of the EMPr, and where applicable the closure plan to – (i) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis; (ii) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) Ensure compliance with the provisions of environmental authorisation, EMPr, and where applicable, the closure plan.	
(f) A description of any assumptions made, and any uncertainties or gaps in knowledge.	
(g) A description of an consultation process that was undertaken during the course of carrying out the environmental audit report.	
(h) A summary and copies of any comments that were received during any consultation process.	
(i) Any other information requested by the competent authority.	

11 DECOMMISSIONING PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS

It is not likely that decommissioning of a residential and care development such as Patrys Development will take place in the near future. The possibility does exist that individual owners may decide to demolish existing facilities to make way for new ones. In this event or if the entire area requires decommissioning for some reason, all relevant legislation and policies must be complied with for the given period.

In general, should the facility be decommissioned, the following should be undertaken:

- Only identified buildings must be removed within a demarcated area to prevent unnecessary damage to the surrounding vegetation;
- Materials that can be recycled should be correctly sorted and stacked for removal to appropriate waste stream sites;
- The footprint area of the facility must be rehabilitated unless otherwise developed.

12 IMPLEMENTATION

The following table is provided to assist the developer, design team, engineer and contractor with the effective implementation of this EMPr. The table below serves as a quick reference guide to the EMPr, but must be read in conjunction with the entire document.

Item	Associated Impacts	Management Action	Timing	Responsible Party	Monitoring
Design & Pre-Construction Phase					
Familiarisation with the contents of the EMPr & EA.	Loss of vegetation during construction; Fire risks	Attendance of a pre-construction environmental compliance workshop	Prior to commencement of site clearing & earthworks.	ECO, Engineers, Contractor & Project Management.	ECO to include details of this in the first environmental control Report.
Demarcation of Development Areas and No-Go Areas.	Loss of threatened vegetation; Disturbance of butterfly habitat; Fire risk	All areas outside of the construction / development area to be clearly demarcated. All vegetation outside development area are considered no-go.	Prior to commencement of site clearing & earthworks.	Contractor with input from the Engineer, ECO and participating specialists where necessary. Contractor responsible for maintaining demarcation throughout the construction phase.	ECO to maintain photographic record of demarcation.
Obtain Permit for trimming of protected plant species.	Removal of vegetation and listed or protected plant species during construction Habitat loss for avifaunal species Physical removal of the narrow strips of woody riparian zones at crossings Loss of topsoil	Permit application to be informed be list of protected plant species found by the ecological specialist within the final facility development footprint.	Prior to any trimming of branches/roots.	ECO, ESA, Ecological Specialist & Contractor	ECO & proponent to provide photographic record
Environmental Induction Training	Creation of employment during construction (positive) Employment opportunities and skills development opportunities during the operation (positive)	As defined in the EMPr	Prior to commencement of site clearing & earthworks.	ECO & Contractor	Contractor to provide details to ECO. ECO to provide details in monthly reports.
Construction Phase					
Minimise impact of construction vehicles	Land disturbance, changing run-off characteristics and increasing erosion risks	Implementation of recommendations defined in EMPr.	Throughout construction phase	Contractor	Engineer

Item	Associated Impacts	Management Action	Timing	Responsible Party	Monitoring
	Soil erosion during construction Disturbance of fauna during operation Soil erosion during operation Disturbance and displacement of avifaunal species Dust impacts during construction				
Prevent concrete contamination	Increasing the surface run-off velocities, while reducing the potential for any run-off to infiltrate the soils at crossings Increase in sedimentation and erosion within the development footprint	Use of delivered ready-mix concrete. Control at batching sites	Throughout construction phase	Contractor	Engineer and ECO.
Protection of all topsoil resources on site.	Increasing the surface run-off velocities, while reducing the potential for any run-off to infiltrate the soils at crossings Increase in sedimentation and erosion within the development footprint Loss of vegetation	As per the requirements of the EMPr i.e. brush/straw packing & re-seeding	Throughout the construction phase.	Contractor	ECO & Proponent
Limiting Noise Impact	Construction noise	As per the requirement of the EMPr.	Design, throughout the construction and operation phase	Contractor	ECO & Proponent
Reduction of dust generation as a result of construction activities.	Removal of vegetation and listed or protected plant species during construction Soil erosion during construction Soil erosion during operation Dust impacts during construction	As per the requirements of the EMPr. Do not strip topsoil from entire development footprint	Throughout the construction phase	Contractor	ECO & Proponent

Item	Associated Impacts	Management Action	Timing	Responsible Party	Monitoring
Protection of protected plant species and on-going re-vegetation & rehabilitation.	Land disturbance, changing run-off characteristics and increasing erosion risks Loss of topsoil Placement of spoil material during construction Removal of vegetation and listed or protected plant species during construction Soil erosion during construction Soil erosion during operation Dust impacts during construction Unearthing of significant finds during construction	Implementation of Plant Rescue, Re-vegetation & Rehabilitation Plan as per this EMPr.	Design phase and throughout the construction phase.	Design Team, Engineer and Contractors	ECO & Proponent
Prevention of theft and other crime.	All construction activities	Development of a job site security plan.	Before commencement of construction.	Contractor	Proponent
On-going Environmental Education	All construction activities	As defined in the EMPr.	During construction.	ECO & Contractor	Contractor to provide details to ECO.
Prevent pollution resulting from oil and fuel storage and handling.	All construction activities	Implement correct fuel and oil handling procedures. Implement emergency spill response plan.	Duration of the project lifespan.	ECO & Contractor	ECO & Proponent
Operational Phase					
Manage vegetation growth	Removal of vegetation and listed or protected plant species during construction Alien plant invasion during operation Soil erosion during operation	Gardening / landscaping activities.	Throughout operation	Proponent	Proponent
Control of alien plants	Removal of vegetation and listed or protected plant species during construction	Regular monitoring and removal of alien invasive plant species.	Prior to transfer of first erf and throughout operation	Proponent	Proponent

Item	Associated Impacts	Management Action	Timing	Responsible Party	Monitoring
	Alien plant invasion during operation Soil erosion during operation				
Stormwater quality control	Prevent ground and surface water pollution and erosion	Stormwater catchpits must be cleaned out regularly. Open spaces must remain landscaped with indigenous vegetation.	Throughout operation	Proponent /HOA	Proponent / HOA
Landscaping	Avoid the use of non-indigenous vegetation as part of landscaping	Holder of Authorisation must compile a landscaping species list with indigenous plants and local/protected trees.	Prior to implementation of landscaping	Holder of the EA	ECO to approve the landscaping species list.
Closure & Decommissioning Phase					
	Items, management, responsibilities and monitoring as per construction phase, as above.				
Decommissioning of residential facility.	Removal of vegetation and listed or protected plant species during construction Alien plant invasion during operation Soil erosion during operation	Closure of facility in compliance with legislation and this EMPr.	Unlikely	Proponent	Proponent

13 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 (e.g. Project Engineer), who in turn is tasked with reporting such matters to the Holder of the Authorisation. It is the responsibility of the Holder of the Authorisation (the Proponent), and not the ECO, to report such matters of non-compliance to the relevant Authority.

13.1 PROCEDURES

The Project Proponent shall comply with the environmental specifications and requirements of this EMPr, any EA 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**.

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

- The relevant authority shall issue a **Notice of Non-compliance** to the Project Proponent, stating the nature and magnitude of the contravention.
- The Project Proponent must **act to correct the transgression** within the period specified in by the authority.
- The Project Proponent must provide the relevant 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 Project Proponent failing to remedy the situation within the predetermined time frame, the relevant authority may recommend halting the activity.
- In the case of non-compliance giving rise to physical environmental damage or destruction, the relevant 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 Proponent.
- 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 EMMP, disagreement regarding the implementation or method of implementation of conditions of the EMMP, etc. any party shall be entitled to require that the issue be referred to **specialists and / or the competent authority** for determination.
- The relevant 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.

14 REFERENCES

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