



Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

DR. COLLEEN EBERSOHN

PhD Univ. Pretoria

Cell: 072 222 6013

e-mail: colleen@ecoroute.co.za

MS. JANET EBERSOHN

Bsc. Hons. Environmental Management

Cell: 082 557 7122

Tell: 044 343 2232

e-mail: janet@ecoroute.co.za

ENVIRONMENTAL MANAGEMENT PROGRAMME

In terms of the **National Environmental Management Act** (Act No. 107 of 1998, as amended) & 2017 Environmental Impact Regulations for:

PROPOSED WAREHOUSE AND STORAGE FACILITY ON PORTION 250 OF THE FARM 745, GOEDGELOOF, ST FRANCIS BAY, EASTERN CAPE.

DEDEAT REF: EC08/C/LN1&3/M/08-2024



PREPARED FOR THE APPLICANT:

PREPARED BY:

AUTHOR:

DATE:

GOEDGELOOF PROPERTIES (PTY) LTD

ECO ROUTE ENVIRONMENTAL CONSULTANCY

JOCLYN MARSHALL (EAPASA REG 2022/5006)

24/04/2024

EAP SIGNATURE: _____



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STATEMENT OF INDEPENDENCE

I, **Joclyn Marshall**, of Eco Route Environmental Consultancy, in terms of section 33 of the NEMA, 1998 (Act No. 107 of 1998), as amended, hereby declare that I provide services as an independent Environmental Assessment Practitioner (EAPASA Reg: **2022/5006**) and receive remuneration for services rendered for undertaking tasks required in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), and the Environmental Impact Assessment Regulations, 2014 (as amended). I have no financial or other vested interest in the project.

ENVIRONMENTAL MANAGEMENT PROGRAMME REQUIREMENTS:

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

(1) An EMP must comply with section 24N of the Act and include:-

<p>(a) Details of –</p> <ul style="list-style-type: none"> (i) The EAP who prepared the EMP; and (ii) The expertise of the EAP to prepare an EMP, including a curriculum Vitae; 	<p>This EMP was prepared by Joclyn Marshall of Eco Route Environmental Consultancy. Joclyn has an MSc in Environmental Science and 10 years' experience in the environmental field. Please see attached CV of the EAP (Annexure 1).</p>
<p>(b) A detailed description of the aspects of the activity that are covered by the EMP as identified by the project description;</p>	<p>Section 2 provides specific project details.</p>
<p>(c) 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;</p>	<p>Annexure 2 provides mapping which superimposes the environmentally sensitive areas onto the site.</p>
<p>(d) A description of the impact management outcomes, 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 phases of the development including –</p> <ul style="list-style-type: none"> (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; 	<p>Addressed in Sections 3, 4 and 10.</p>
<p>(f) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to –</p> <ul style="list-style-type: none"> (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 provision for rehabilitation, where applicable; 	<p>Addressed in Sections 3, 4 and 10.</p>

(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Addressed in Section 10.
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 7.1 and 10.
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 5 and 10.
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Sections 10.
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 10.
(l) a program for reporting on compliance, taking into account the requirements as prescribed by Regulations;	Section 7.
(m) 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; and	Section 7 and 10.
(n) any specific information that may be required by the competent authority.	Sections 10 and 14.

Glossary of Terms

BAR	Basic Assessment Report – A tool used by the EAP to submit to the competent authority if listed activities is triggered in Regulations GNR 327 and GNR 324 as per NEMA to make a decision regarding a proposed development.
DFFE	Department Forestry Fisheries and Environment – the national authority for sustainable environmental management and integrated development planning.
DFFE&DP	Department of Environmental Affairs and Development Planning – the provincial authority for sustainable environmental management and integrated development planning.
CBA	CBA Critical Biodiversity Area – Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.
EAP	<p>Environmental Assessment Practitioner – An EAP and a specialist, appointed in terms of regulation 12(1) or 12(2) must –</p> <ul style="list-style-type: none"> (a) be independent. (b) Have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these regulations and any guidelines that have relevance to the proposed activity. (c) Ensure compliance with these Regulations (d) Perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application. (e) Take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application and any report, plan or document relating to the application; and (f) Disclose to the proponent or applicant, registered and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing – <ul style="list-style-type: none"> i. Any decision to be taken with respect to the application by the competent authority in terms of these regulations; or ii. The objectivity of any report, plan or document to be prepared by the EAP or specialist, in terms of these Regulations for submission to the competent authority; unless access to that information is protected by law, in which case it must be indicated that such protected information exists and is only provided to the competent authority. <p>(2) In the event where the EAP or specialist does not comply with sub regulation (1)(a), the proponent or applicant must, prior to conducting public participation as contemplated in chapter 5 of these regulations, appoint another EAP or specialist to externally review all work undertaken by the EAP or specialist, at the applicants cost.</p> <p>(3) An EAP or specialist appointed to externally review the work of an EAP or specialist as contemplated in sub regulation (2), must comply with sub regulation (1).</p>
ECO/ESO	Environmental Control Officer – A site agent who needs to ensure that all environmental authorisation and conditions are adhered to during the construction phase of the project

EMPr	Environmental Management Programme – can be defined as “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 the positive benefits of the projects are enhanced”.
ESA	Ecological Support Area – Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of Pas or CBAs, and are often vital for delivering ecosystem services.
MMP	Maintenance Management Plan – means a maintenance management plan for maintenance purposes defined and adopted by the competent authority
NEMA	National Environmental Management Act (Act 107 of 1998) as amended 2017 – national environmental legislation that provides principles for decision-making on matters that affect the environment.
PA	Protected Area - A protected area is an area of land or sea that is formally protected by law and managed mainly for biodiversity conservation. Protected areas recognised in the National Environmental Management: Protected Areas Act (Act 57 of 2003) (hereafter referred to as the Protected Areas Act) are considered formal protected areas in the NPAES. This is a narrower definition of protected areas than the International Union for Conservation of Nature (IUCN) definition. ¹ The NPAES distinguishes between land-based protected areas, which may protect both terrestrial and freshwater biodiversity features, and marine protected areas.

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1. INTRODUCTION

In accordance with the Integrated Environmental Management Guidelines published by the Department of Forestry, Fisheries, and the Environment (DFFE) in 1992, the purpose of an Environmental Management Programme (EMPr) is "to describe how negative environmental impacts will be managed, rehabilitated or monitored and how positive impacts will be maximised".

Section 28 of NEMA (National Environmental Management Act, Act 107 of 1998) states that:

Duty of care and remediation of environmental damage -

"(1) Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot be reasonably avoided or stopped, to minimise and rectify such pollution or degradation of the environment"

This EMPr must be read in conjunction with the Environmental Impact Assessment Report dated October 2022 and the accompanying specialist reports. All recommendations, relevant conditions and mitigation measures provided in these documents must also be adhered to.

This EMPr must form an integral part of the contract documents, as it outlines the methodology & duties required so that the project objectives can be achieved in an environmentally sustainable manner; with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with this project.

These requirements will have a financial impact on the project's costings.

This EMPr is a dynamic document that may need to evolve during its implementation period so that it recognises any new issues that may arise; or changes in the parameters of identified issues and can address these issues with the required/amended mitigation.

1.1. Purpose of the EMPr

The purpose of this EMPr is to ensure that the negative environmental impacts of the proposed activities are managed, mitigated and kept to a minimum during the planning, construction and operation of the proposed development. The EMPr focuses on avoiding damage or loss on ecosystems and the services they provide, and to enhance positive environmental impacts where possible.

The EMPr is a living document that is flexible and responsive to new and changing circumstances, however, should a change be made within the EMPr permission from DEDEAT must first be obtained.

Once the EMPr is approved by DEDEAT it is seen as a legal binding document on the following affected parties:

- 1 Project Proponent.
- 2 All contractors.
- 3 Sub-contractors and construction staff.
- 4 The appointed ECO monitoring the construction phase.

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

It is suggested that the EMPr be reviewed on a 5 yearly basis if required. Should any amendments need to be made during operational phase, written authorisation should be obtained from DEDEAT.

1.2. The Polluter-Pays Principle

This principle provides for "the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment." The Polluter Pays Principle will be rigorously applied throughout the construction phase of this project.

In the event of damage being caused, the contractor will be responsible for the cost of cleanup, repair and / or rehabilitation as necessary, as well as being liable for the fine. Where there is erosion damage, pollution to the environment, or contravention of the no-go policy, the contractor is required to reinstate the conditions to normal as determined by the ECO. Spot fines up to a maximum value of R10 000 per offence can be instituted at the discretion of the ECO for any breach or non-compliance in terms of the EMPr. Fines issued will increase exponentially for repeat offences.

2. PROJECT DETAILS

Eco Route Environmental Consultancy has been appointed by the proponent **Goedgeloof Properties (Pty) Ltd** to prepare an Environmental Management Programme (EMPr) in compliance with the Basic Assessment Report Conditions as per the National Environmental Management Act (Act No. 107 of 1998, as amended) & 2017 Environmental Impact Regulations for Environmental Authorisation.

The proposed development comprises of a warehouse and light industrial units that will provide space for light industry and will be zoned appropriately. The total area of the warehouse and storage facilities will be 17 652.10 m², with a total development footprint of 32 490.10 m² including parking bays and paved road. There is a total of 309 storage units in Block B to O of 31m² each. The warehouse will contain 20 units of 297m² each. The development will entail the clearing of approximately 3.25 ha (32490.10 m²) of vegetation. The coverage is approximately 34.5% of the total property (5.1078 Ha).

The following will form part of the development footprint:

- ❖ Block A Warehouse Units (6 224.80 m²)
- ❖ Block B - O Storage Units (11 407.20 m²)
- ❖ Security gatehouse (20.10 m²)
- ❖ 147 Parking Bays (1 838 m²)
- ❖ Concrete paved Driveway (13 000 m²)
- ❖ Refuse Yard
- ❖ Electric powerline area and pipeline servitude (combined 0.27 ha)
- ❖ Areas for re-establishment of wetlands incorporating retention ponds and stormwater run-off.
- ❖ 10-meter buffer zone from artificial wetland areas.

Site Development Plan is attached as Annexure 3 to this report.

2.1. Site Description

Erf Number:	Portion 250 of the Farm Goedeloof 745
Nearest Town	St. Francis Bay
Municipality	Kouga Local Municipality
Province	Eastern Cape
Area:	5.1078 Ha
Zoning	Agricultural
Co-ordinates:	34°10'18.32"S 24°49'12.65"E

2.2. Locality



3. KEY ENVIRONMENTAL ISSUES

These are issues of importance and should be addressed during the Construction and Development Phases as well as the future management of the property. The relevant Key Issues with regard to the Receiving Environment and the positive and negative aspects are described in Table 1 below:

Table 1: Positive and Negative Aspects of the Project.

Specific Aspect of Proposal	Positive	Negative
Planning Policy, Documentation and Urban Edge.	The Kouga SDP and IDP emphasize the need for economic growth and diversification within the Kouga Municipality. A light industrial development (warehouse and storage facility) can attract business and entrepreneurs, fostering economic development by providing a space for manufacturing, processing, assembly, and storage of goods. This can lead to job creation, increased local revenue, and reduced dependency on specific sectors	No foreseeable negative aspects.
Rezoning	The property will need to be re-zoned from "Agriculture" to "Industrial Zone 1" in order to accommodate the proposed warehouses and storing units planned. Presently, the site is undeveloped.	The development will not have a significant impact on agricultural in the area and poses no threat to food security.
Bulk Services supply	<p>There already is a connection point for the proposed development and there should be no pressure / demand on the current system.</p> <p>Water Supply - Based on information received from Kouga Municipality staff, there appears to be adequate capacity in the St Francis Bay water supply network.</p> <p>Sewerage - Based on initial investigation information and information received from Kouga Municipality staff, there should be adequate capacity in the affected portion of the St Francis Bay sewer infrastructure to receive the design flow from the proposed development.</p>	All wastewater, water supply and stormwater will be managed appropriately with mitigation in place.

	The use of alternative technology will be investigated, such as the use of rainwater harvesting and solar panels. The use of alternative sources to supply the property with basic services will reduce strain being placed on the municipality.	
Pollution	Illegal dumping and litter on the site continue to compromise the functioning of the wetlands. The development will ensure that illegal dumping does not continue on the site.	<p>Solid waste will be produced during the construction and operational phases of the proposed development. This may include, inter alia, concrete rubble and bricks, material off-cuts and other surplus construction, and litter. The solid waste produced during the project has the potential to enter into the surrounding environment.</p> <p>Liquid waste that may result from accidental spillage of oils, cement-laden water, curing compounds, sealants, paints and other chemicals, temporary sanitation infrastructure, leaks from sewerage systems, and stormwater systems has the potential to be transported as contaminated run-off into the soil and groundwater systems.</p> <p>Pollutants (e.g. oil, paint, discarded pesticides etc.) are often disposed into stormwater systems which can pollute wetlands and rivers. Given the endorheic nature of the artificial wetlands on site, they are relatively sensitive to pollution.</p>
Vegetation and Habitats	According to the National Vegetation Map by Mucina and Rutherford (2012), the proposed site falls within St. Francis Dune Thicket (FFs 28), listed as Least Concern. The majority of the vegetation on the site is moderately intact and consists of a mosaic of coastal fynbos species and thicket woody shrub and tree species. The site investigation identified 47 indigenous plant species within the site boundary.	The development will result in the permanent loss of approximately 32490.10 m ² of lightly degraded indigenous vegetation (St. Francis Dune Thicket).

Species of Conservation Concern	<p>A viable sub-population of over 100 individuals of <i>Rapanea gilliana</i> occur on site. This species has managed to survive the current impacts occurring on site as it is able to resprout after severe disturbance. This species remains relatively common in the area and other populations exist that require conservation for its long-term persistence.</p> <p>This species remains reasonably common in the area and offset areas in less threatened areas containing viable populations as well are present.</p>	The proposed development has been assessed to have a very high negative impact on dune fynbos on site, due to the presence of a sub-population of the Endangered <i>R. gilliana</i> , that will not tolerate the level of transformation expected.
Loss or disturbance to artificial wetland habitat	The development will preserve the existing artificial wetland habitat such that the planned open space overlaps with the existing wetland habitat.	Vehicles, heavy machinery and various construction activities (e.g. laydown areas and stockpiles) may disturb wetland habitat, which could in turn compromise the hydro-functional attributes of the wetland and any fauna and flora that have established in the wetland.
Sedimentation of artificial wetland habitat	Given the relatively flat profile of the site and the sandy texture of the soil, the intensity of this impact is not expected to be very high.	Clearing of vegetation in order to prepare the site will expose soil, making it vulnerable to erosion, which can cause sedimentation of the wetland.
Alteration of the hydroperiod of the artificial wetland	The hydroperiod is likely to change as a result of the stormwater inputs and will most likely result in longer periods of saturation and inundation. The artificial wetland habitat is therefore expected to become more enhanced, which will likely lead to a transition to more seasonal to permanent wetland habitat. Given the wetland is artificial, this alteration of the hydroperiod is not considered as a significant impact.	High energy, high volume stormwater inputs can cause degradation of the wetland due to alteration of flow paths and erosion of the wetland.
Erosion	Rehabilitation of disturbed areas with indigenous vegetation.	The steep slopes of the property will be vulnerable to erosion during clearance of the site and the construction phase. Appropriate erosion control measures will be implemented.
Noise and Visibility	The scale and location of the development should not result in these forms of pollution.	Visual and noise Impacts to adjacent residents during construction phase.
Alien Vegetation	While alien invasives are present throughout the wetland, indigenous	Six alien invasive species (AIS) occur with <i>Acacia cyclops</i> and <i>Acacia</i>

	<p>vegetation is quite well-established and the density of invasion is currently relatively low. Alien invasives currently established within the wetland can be controlled with relatively low effort.</p> <p>Systematically remove invasive alien vegetation (also in the operational phase). And restoration of indigenous vegetation where there is heavy AIP infestation.</p>	<p><i>saligna</i> being the dominant invasives.</p> <p>It is possible that invasives may become more dominant over time, particularly due to disturbance of soils during the construction process. Alien invasives currently established within the wetland can be controlled with relatively low effort.</p>
Fire risk	Removal of alien vegetation to reduce fuel load.	Fire risk may be high if alien vegetation is not removed.
Stormwater	Initial investigation input showed that stormwater generated from surrounding catchment area to the west of the site should have limited impact on the site. Stormwater generated on site will be managed according to Sustainable Drainage System (SuDS) principles using, detention ponds and artificial wetlands.	The hydroperiod is likely to change as a result of the stormwater inputs and will most likely result in longer periods of saturation and inundation. The artificial wetland habitat is therefore expected to become more enhanced, which will likely lead to a transition to more seasonal to permanent wetland habitat. Given the wetland is artificial, this alteration of the hydroperiod is not considered as a significant impact. High energy, high volume stormwater inputs can also cause degradation of the wetland due to alteration of flow paths and erosion of the wetland.
Site Access	Access to the property is currently available through the existing roads network.	Potential increased vehicle movement.

4. IMPACTS ASSOCIATED WITH THE PLANNING/DESIGN, CONSTRUCTION AND OPERATION OF THE ACTIVITY

4.1. Assessment Criteria

Each potential environmental impact and risk identified was assessed according to specific criteria. These included the nature, extent, duration, consequence, probability and frequency of identified impacts, including the degree to which these impacts can be reversed, may cause irreplaceable loss of resources, and can be avoided, managed or mitigated. The criteria are based on the EIA Regulations, published by the Department of Forestry, Fisheries and the Environment (April 1998) in terms of the Environmental Conservation Act No. 73 of 1989. These criteria include:

Nature of the impact

This is an estimation of the type of effect the construction, operation and maintenance of a development would have on the affected environment. This description should include what is to be affected and how.

Mitigation Measures

Ways in which an impact can be avoided, minimised, or managed to reduce its environmental significance.

Extent of the impact - the scale of the impact	
Rating	Definition of Rating
Very Limited	Extending only as far as the development site area
Limited	Limited to the site and its immediate surroundings
Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic.
National	National scale or across international borders

Duration of the impact - the lifespan or length of time the impact will last	
Rating	Definition of Rating
Brief	Impact will not last longer than 1 year
Short term	Impact will last between 1 and 2 years
Medium Term	Impact will last between 2 and 15 years
Long Term	Impact will last more than 15 years
Permanent	Impact may be permanent, or in excess of 20 years

Intensity - the severity of the impact

Rating	Definition of Rating
Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Low	Natural and/or social functions and/or processes are slightly altered
Medium	Natural and/or social functions and/or processes are notably altered
High	Natural and/ or social functions and/ or processes are significantly altered
Very High	Natural and/ or social functions and/ or processes are severely altered

Probability of occurrence - the probability of the impact occurring	
Rating	Definition of Rating
Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Possible	Has occurred here or elsewhere and could therefore occur
Probable	It is most likely that the impact will occur
Definite	There are sound scientific reasons to expect that the impact will occur

Reversibility - the ability of the impacted environment to return to its pre-impacted state	
Rating	Definition of Rating
Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Partly reversible	the impact is reversible but more intense mitigation measures are required
Barely reversible	the impact is unlikely to be reversed even with intense mitigation measures
Irreversible	the impact is irreversible, and no mitigation measures exist

Irreplaceable loss of resources - the degree to which resources will be irreplaceably lost	
Rating	Definition of Rating
Negligible	No loss of resources
Low	Marginal loss, the resource is not damaged irreparably or is not scarce
Medium	the resource is damaged irreparably but is represented elsewhere
High	Irreparable damage and is not represented elsewhere

Cumulative effect - An effect which in itself may not be significant but may become significant if added to other existing or potential impacts that may result from activities associated with the proposed development.

Rating	Definition of Rating
Negligible	the impact would result in negligible to no cumulative effect
Low	the impact would result in insignificant cumulative effects
Medium	the impact would result in minor cumulative effects
High	the impact would result in significant cumulative effects

Confidence - the level of confidence in the assessment rating	
Low	Judgement is based on intuition
Medium	Determination is based on common sense and general knowledge
High	Substantive supportive data exists to verify the assessment

Significance - Significance of impacts are determined through a synthesis of the assessment criteria	
Rating	Definition of Rating
Very high negative (-)	The impact will have highly significant effects and are unlikely to be able to be mitigated adequately
High negative (-)	The impact will have significant effects and will require significant mitigation measures to achieve an accepted level of impact
Medium negative (-)	The impact will have moderate negative effects and will require moderate mitigation
Low negative (-)	The impact will have minimal effects and would require little mitigation
Negligible	The impact will have negligible effects and would require little or no mitigation
Low positive (+)	The impact will have minor positive effects
Medium positive (+)	The impact will have moderate positive effects
High positive (+)	The impact will have significant positive effects
Very High positive (+)	The impact will have highly significant positive effects.

4.2. Impacts foreseen during the Construction Phase

Project Phase	Construction
Impact	Direct loss of vegetation and habitat
Description of impact	Loss of St. Francis Dune Thicket - possible loss of habitat for endemic species, irreversible loss of possible species assemblages within the site boundary.
Mitigable	Medium Mitigation exists and will notably reduce significance of impacts
Potential mitigation	<ul style="list-style-type: none"> ❖ During the construction phase, the construction area (including site camp, laydown areas and access tracks) must be clearly demarcated and all other areas deemed as no-go areas for the duration of construction; ❖ The position of the construction site camp should be on an already disturbed area and should be identified in consultation with the Environmental Control Officer (ECO);

	<ul style="list-style-type: none"> ❖ Stripping of topsoil during the site clearing activities at the commencement of construction and appropriate storage for the duration of construction; ❖ Harvesting and collection of any flora, other than that performed under a permit from the Department of Economic Development, Environmental Affairs & Tourism, must be strictly prohibited; ❖ No open fires should be allowed on site outside of designated areas; ❖ A designated smoking area, outside of any areas where the risk of fire is prevalent, must be designated. Smoking shall not be permitted outside of designated smoking area; ❖ The objective of rehabilitation of natural areas must be to re-establish indigenous vegetation (coverage of at least 80% should be attained); ❖ Rehabilitation of disturbed areas must commence immediately after construction has been completed in that area. General rehabilitation measures include: <ul style="list-style-type: none"> ○ Loosen compacted soils within construction footprint which do not form part of the BESS footprint (e.g. access roads, site camp area, stockpile and laydown areas, etc.); ○ Spread stored topsoil over disturbed areas and water regularly until vegetation has sufficiently established; and ○ All area undergoing rehabilitation must be demarcated as no-go areas; ❖ During construction, erosion control measures must be implemented in areas sensitive to erosion such as exposed soil, areas with dispersive soils, etc. These measures include but are not limited to the use of sand bags, hessian sheets, silt fences and/ or replacement of vegetation. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Long Term	Impact will last between 16 and 30 years	Long Term	Impact will last between 16 and 30 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	High	Natural and/ or social functions and/ or processes are significantly altered	Medium	Natural and/or social functions and/or processes are notably altered
Probability	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	Medium negative		Medium negative	
Comment on significance	The development will result in the permanent loss of approximately 32490.10 m ² of lightly degraded indigenous vegetation (<i>St. Francis Dune Thicket</i>). A number of small wetlands will be lost as well.			
Cumulative impacts	If rehabilitation of disturbed areas is not adequately conducted, further impacts to areas outside the site boundary could occur due to erosion or fires.			

Project Phase	Construction			
Impact	Loss of Species of Conservation Concern (SCC)			
Description of impact	The proposed construction activities will result in a direct loss of a sub-population of one plant SCC and their habitat.			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> ❖ Demarcate the areas indicated as Public Open Space and Private Open Space as No Go Areas and manage accordingly; ❖ Apply for relocation and destruction permits for protected species from the relevant authority (DEDEAT); ❖ Identify offset areas of at least an equal extent of the area that will be lost to transformation that contain a viable population of <i>Rapanea gilliana</i>; ❖ Conduct a Search and Rescue exercise before the start of construction, ahead of any clearing of vegetation; ❖ A suitably qualified and experienced individual should oversee the Search and Rescue operation; ❖ Sufficient time for Search and Rescue must be allowed before construction commences; and ❖ Replant rescued SCCs in No Go areas. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low negative	
Duration	Long Term	Impact will last between 16 and 30 years	Long Term	Impact will last between 16 and 30 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	High	Natural and/ or social functions and/ or processes are significantly altered	Medium	Natural and/or social functions and/or processes are notably altered
Probability	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	High negative		Medium negative	
Comment on significance	<p>At least 100 individuals of <i>Rapanea gilliana</i> occur within the development site, and it can be considered one of the dominant species in the sandy fynbos on shallow soils. There is clear evidence of recruitment on site, including vegetative regrowth in areas where brushcutting has taken place. It is doubtful whether the species can be readily translocated as it is a woody shrub species. Furthermore, translocation is not considered a mitigation measure for the loss of SCCs, according to SANBI (2020). Individuals occur across the site, both within the footprint and within areas that have been excluded from development, including the dune in the north of the site and the drainage line.</p> <p>Besides plant SCCs, the CBAs are habitat for threatened animal species, including the mammalian Vulnerable Species 8 and the avian species African Marsh Harrier (<i>Circus ranivorus</i>), Knysna Woodpecker (<i>Bradypterus sylvaticus</i>),</p>			

	<p>Denham's bustard (<i>Neotis denhami</i>), White-bellied Korhaan (<i>Eupodotis senegalensis</i>) and Crowned Eagle (<i>Stephanoaetus coronatus</i>). It is however unlikely that most of these species persist on site, due to the high level of transformation and disturbance in the vicinity.</p> <p>The significance of the impact for the development is rated as High (-ve) and this cannot be reduced as translocation is not considered a mitigatory management by the Species Environmental Assessment Guidelines (SANBI 2022) for the conservation of SCCs, due to the general low rate of success. Avoidance mitigation should be exercised and no destructive development should take place within Very High SEI. However, as the majority of the site is considered Very High, preventing any viable development, it is recommended that the only mitigation measure would be to conserve an offset area that contains a healthy population of <i>Rapanea gilliana</i>.</p>
Cumulative impacts	If construction activities are not controlled, further individuals or species could be impacted. However, due to the small footprint, the site can be considered to be comprehensively assessed, and it is unlikely that any more SCCs are present.

Project Phase	Construction			
Impact	Spread of Invasive Alien Species			
Description of impact	Change in plant communities, increase in the risk of Invasive Alien Plants (IAPs) establishing in the disturbed sites and spreading to the surrounding areas.			
Mitigable	High	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> ❖ All invasive alien species cleared for the construction of the storage facility must be collected and disposed of as waste. Care must be taken not to disperse seeds or seed pods in the surrounding environment during the removal thereof; ❖ Remove any new alien invasive plant species in the construction footprint as soon as they are detected, preferably by physical removal or by spraying herbicides should physical removal not be feasible (to be conducted in conjunction with the ECO); ❖ Monitoring and removing of alien invasive plants should be conducted from the start of the construction phase, during clearing, until rehabilitation has been complete at the end of the liability period; ❖ After construction, ongoing control of invasive alien plants must be addressed by the property owner. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low Negative	
Duration	Long Term	Impact will last between 16 and 30 years	Short term	Impact will last between 1 and 5 years
Extent	Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic	Local	Extending across the site and to nearby settlements
Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/or social functions and/or processes are somewhat altered
Probability	Possible	Has occurred here or elsewhere and could therefore occur	Possible	Has occurred here or elsewhere and could therefore occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	High	Completely reversible – the impact can be reversed with the	High	Completely reversible – the impact can be reversed with the

		implementation of minor mitigation measures.		implementation of minor mitigation measures.
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	High negative		Negligible	
Comment on significance	<p>There is a high potential of the further spread of IAPs on site as a result of construction activities as a number of species are already established on site. Dense stands of Acacia cyclops and A. saligna occur in the area, and sandy coastal fynbos has a high invasability. The seasonally saturated soils around the site would also aid in the propagation and spread of invasive alien species (most specifically invasive Acacia species).</p> <p>The impact is rated with a High (-ve) significance without mitigation but can be reduced to Very Low (-ve) if the recommended measures are applied.</p>			
Cumulative impacts	The density of IAP stands will increase in the future, irrespective of whether the development goes ahead, if the site is not managed correctly.			

Project Phase	Construction			
Impact	Loss of Ecological Function of Landscape			
Description of impact	Loss of natural vegetation, increased area of hard surfaces, transforming the water flow dynamics of the site, increased amount of stormwater produced over short periods, and almost complete loss of habitat for useful fauna within the footprint of the development.			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> ❖ Manage all Open Space to maintain indigenous vegetation cover; ❖ Implement proper stormwater management principles, including the provision of retention ponds; ❖ Limit access to Open Space areas, particularly for cattle; ❖ Limit large areas of hard surfaces to improve stormwater flow 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low negative	
Duration	Long Term	Impact will last between 16 and 30 years	Long Term	Impact will last between 16 and 30 years
Extent	Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic	Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic
Intensity	Low	Natural and/or social functions and/or processes are somewhat altered	Low	Natural and/or social functions and/or processes are somewhat altered
Probability	Possible	Has occurred here or elsewhere and could therefore occur	Possible	Has occurred here or elsewhere and could therefore occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	Medium negative		Low negative	

Comment on significance	<p>The site is currently in an acceptable state of ecological function, although it has been negatively impacted by a number of activities, such as overgrazing, invasion by IAS and the illegal dumping of rubble and other waste products. It provides a number of ecological services to the surrounding area, including stormwater control, erosion control, supply of habitat for pollinators, dispersers and other essential invertebrates, and open space.</p> <p>The impact is rated with a Low (-ve) significance without mitigation, but can be reduced to Very Low (-ve) if the recommended measures are applied.</p>
Cumulative impacts	<p>The construction of the warehouse and storage facility will have a moderate cumulative impact on the terrestrial environment, mostly limited to an increase in the disturbance of the vegetation and habitat of the region. The region is situated in a sensitive dune environment with a number of wetlands and has experienced high rates of habitat transformation due to urban residential development, agriculture and the historic stabilisation of the Oyster Bay Bypass Dunefield. The cumulative loss will be reduced as a result of the relatively small footprint (5 ha) and the moderate degree of intactness of the vegetation type, St. Francis Dune Thicket. The vegetation type has experienced a current cumulative loss of 24%, and the proposed development will further increase the loss by almost 1%.</p>

Project Phase	Construction			
Impact	Loss or disturbance to artificial wetland habitat			
Description of impact	Loss or disturbance to artificial wetland habitat caused by heavy machinery and various construction activities (e.g. laydown areas and stockpiles).			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> ❖ Implement a buffer zone around the wetland (see Section 11). The buffer and the delineated wetland area should be considered as a No-Go area for construction activities (apart from construction of stormwater infrastructure (e.g headwall outlets, gabions etc.). ❖ Laydown areas and stockpiles must all be located outside of the delineated wetland area and its associated buffer. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low negative	
Duration	Medium Term	Impact will last between 2 and 15 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are somewhat altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Probable	It is most likely that the impact will occur	Possible	Has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Low	Marginal loss, the resource is not damaged irreparably or is not scarce	Low	Marginal loss, the resource is not damaged irreparably or is not scarce
Significance	Low negative (-)		Negligible	

Comment on significance	<p>Alternative 2 will result in the loss of most of the existing wetland habitat and the creation of new artificial wetland habitat in the open space area which is planned to receive and attenuate stormwater.</p> <p>Alternative 1 will preserve the existing artificial wetland habitat by adjusting the layout such that the planned open space overlaps with the existing wetland habitat. Vehicles, heavy machinery and various construction activities (e.g. laydown areas and stockpiles) may however disturb wetland habitat under this alternative, which could in turn compromise the hydro-functional attributes of the wetland and any fauna and flora that have established in the wetland.</p>
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Project Phase	Construction			
Impact	Sedimentation of artificial wetland habitat			
Description of impact	Sedimentation of artificial wetland habitat caused by erosion due to clearance of vegetation.			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> ❖ Ensure that construction activities do not cause any preferential flow paths and concentrated surface runoff during rainfall events. ❖ Implement a 10m buffer zone around the wetland. The buffer and the delineated wetland area should be considered as a No-Go area for construction activities. ❖ Reduce transport of sediment through use silt fences that must be placed around the outside of the buffer zone. ❖ Clearly demarcate the construction area and ensure that heavy machinery does not compact soil or disturb vegetation outside of these demarcated areas. ❖ Revegetate exposed areas once construction has been completed. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low negative	
Duration	Short term	Impact will last between 1 and 2 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are somewhat altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Probable	It is most likely that the impact will occur	Possible	Has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Low	Marginal loss, the resource is not damaged irreparably or is not scarce	Low	Marginal loss, the resource is not damaged irreparably or is not scarce
Significance	Low negative (-)		Negligible (-)	
Comment on significance	Clearing of vegetation in order to prepare the site will expose soil, making it vulnerable to erosion, which can cause sedimentation of the wetland. Given the relatively flat profile of the site and the sandy texture of the soil, the intensity of this impact is not expected to be very high.			

4.3. Impacts foreseen during the Operational Phase

Project Phase	Operation			
Impact	Direct Anthropogenic Disturbance to Ecology of Site			
Description of impact	Increase in the number of people utilising the area, increasing disturbance of existing habitat and ecosystem processes, and edge effects on the disturbed and intact vegetation and habitat in its vicinity.			
Mitigable	Medium	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> • Limit vehicle access to areas designated for access and parking; • Provide waste bins and animal proof waste handling facilities to prevent litter and attracting pests; • Limit the collection of firewood on site and from the surrounding vegetation; • Discourage pets from entering and hunting in the development site and surrounding landscape; and • Appropriate fire-fighting equipment must be available on site at all times and serviced at regular intervals; 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low Negative	
Duration	Long Term	Impact will last between 16 and 30 years	Long Term	Impact will last between 16 and 30 years
Extent	Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic	Local	Extending across the site and to nearby settlements
Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/or social functions and/or processes are somewhat altered
Probability	Possible	Has occurred here or elsewhere and could therefore occur	Possible	Has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Medium - negative		Low - negative	
Comment on significance	The impact is rated with a Medium (-ve) significance without mitigation, but can be reduced to Very Low (-ve) if the recommended measures are applied.			
Cumulative impacts	The transformation of the development footprint will cause a number of edge effects on the disturbed and intact vegetation and habitat in its vicinity. This will increase disturbance to the ecological function and species composition, resulting in the compaction of soil, reduction in pollinators and dispersers, collection of plant material such as wood and flowers, and trampling.			
Project Phase	Operation			
Impact	Wetland degradation			
Description of impact	Degradation of wetland habitat and alteration of the hydroperiod of the artificial wetland caused by increased stormwater input into the wetland.			

Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> ❖ Rainwater harvesting tanks must be installed where feasible – both as a water conservation and stormwater management strategy; ❖ Use of swales and detention ponds to attenuate stormwater runoff, encourage infiltration and reduce the speed, energy and volumes at which stormwater is discharged from the site; ❖ Use of permeable paving to encourage infiltration into the soil; ❖ Headwall outlets discharging into the wetland must include energy dissipation (e.g. stilling basin) and erosion protection (e.g. reno mattress). 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Probable	It is most likely that the impact will occur	Possible	Has occurred here or elsewhere and could therefore occur, although unlikely
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Low - negative		Negligible - negative	
Comment on significance	The hydroperiod is likely to change as a result of the stormwater inputs and will most likely result in longer periods of saturation and inundation. The artificial wetland habitat is therefore expected to become more enhanced, which will likely lead to a transition to more seasonal to permanent wetland habitat. Given the wetland is artificial, this alteration of the hydroperiod is not considered as a significant impact. High energy, high volume stormwater inputs can also cause degradation of the wetland due to alteration of flow paths and erosion of the wetland.			

Project Phase	Operation		
Impact	Waste pollution		
Description of impact	Pollution of artificial wetland habitat caused by litter and disposal of hazardous products into the stormwater system.		
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts	
Potential mitigation	<ul style="list-style-type: none"> ❖ Visible signage and lease agreements must clearly prohibit the disposal of pollutants into the stormwater system. The stormwater system must only accommodate surface runoff following rainfall. 		

	<ul style="list-style-type: none"> ❖ Oil water separators must be installed in areas where storage, spillage and or use of hydrocarbons is expected to be relatively high (e.g. warehouses). ❖ Adequate waste disposal bins must be provided on site. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Short term	Impact will last between 1 and 2 years
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/or social functions and/or processes are slightly altered
Probability	Probable	It is most likely that the impact will occur	Possible	Has occurred here or elsewhere and could therefore occur, although unlikely
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Low - negative		Negligible - negative	
Comment on significance	Pollutants (e.g. oil, paint, discarded pesticides etc.) are often disposed into stormwater systems which can pollute wetlands and rivers. Given the endorheic nature of the artificial wetlands on site, they are relatively sensitive to pollution.			

Project Phase	Operation			
Impact	Alien invasive plant species			
Description of impact	Invasion of artificial wetland by alien invasive plant species.			
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> ❖ Implement an alien invasive control plan to remove current invasive species and prevent their further spread. Relevant alien invasive plant (AIP) species must be identified by a suitably qualified ecologist or botanist. ❖ AIPs must be controlled using the cut-stump method – cutting the main stem close to the ground and applying a suitable, registered herbicide to the freshly cut stump. ❖ AIPs must NOT be controlled using a foliar herbicide. ❖ Felled plants must be removed from the wetland area. ❖ Follow up control must be implemented annually until AIPs have been eradicated. ❖ Follow up inspections must be undertaken annually. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Low negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years

Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are slightly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Probable	It is most likely that the impact will occur	Possible	Has occurred here or elsewhere and could therefore occur, although unlikely
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Low - negative		Negligible - negative	
Comment on significance	<p>For Alternative 1, the planned open space occurs through an area that is currently quite disturbed with a relatively high abundance of weedy species. The density of established indigenous vegetation is relatively low compared with other parts of the site and the likelihood of dense thickets of alien invasive plant species establishing in the designated open space area is relatively high.</p> <p>For Alternative 2, while alien invasives are present throughout the wetland, indigenous vegetation is quite well-established and the density of invasion is currently relatively low. It is possible that these invasives may become more dominant over time, particularly due to disturbance of soils during the construction process. Alien invasives currently established within the wetland can be controlled with relatively low effort.</p>			

5. LEGISLATIVE REQUIREMENTS

5.1 Signing of the EMPr

The acknowledgement form at the back of the approved EMPr is to be signed by the holder of the Environmental Authorisation (the Proponent), the Contractor, and the ECO; acknowledging that all parties are familiar with the requirements of the EMPr. All employees, especially the machine and equipment operators, are to be made aware of the conditions as contained in the EMPr as well as the contractual conditions relating to the environment as contained in the contract document.

5.2. Legislation

Of importance are all national, provincial and municipal by-laws and regulations. Statutes are amended periodically and it is the Proponent's responsibility to identify legislation relevant to the proposed activity.

Title of legislation, policy or guideline:	Administering authority:	Date:
Constitution of the Republic of South Africa. (Act 108 of 1996)	All State and Provincial Departments as well as Local Authorities that have been identified as relevant Competent Authorities.	Relevant Consideration
Environmental Conservation Act (Act 73 of 1989)	Department of Economic Development, Environmental Affairs & Tourism	Relevant Consideration
National Environmental Management Act (Act 107 of 1998)	Department of Economic Development, Environmental Affairs & Tourism	Authorisation
National Environmental Management: Biodiversity Act (Act 10 of 2004)	Department of Economic Development, Environmental Affairs & Tourism	Relevant Consideration
National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008)	Department of Forestry, Fisheries, and the Environment (DFFE), Branch Oceans & Coasts (O&C)/ Department of Economic Development, Environmental Affairs & Tourism	Comment/ Relevant Consideration
National Environmental Management: Protected Areas Act (Act 57 of 2003)	Department of Economic Development, Environmental Affairs & Tourism	Relevant Consideration
National Water Act (Act 36 of 1998)	Department of Water and Sanitation	Relevant Consideration
Water Services Act (Act 108 of 1997)	Department of Water and Sanitation	Relevant Consideration
Sea Shore Act (Act 21 Of 1935)	Department of Forestry, Fisheries, and the Environment (DFFE), Branch Oceans & Coasts (O&C)/ Department of Economic Development, Environmental Affairs & Tourism	Relevant Consideration
Conservation Of Agricultural Resources Act (Act 43 of 1983)	Department of Agriculture, Forestry and Fisheries	Relevant Consideration
National Heritage Resources Act (Act 25 of 1999)	Eastern Cape Provincial Heritage Resources Authority	Comment/ Relevant Consideration

5.3. Project Responsibilities

Responsibility for the implementation of the EMPr lies with the Proponent who must retain the services of a suitably experienced Environmental Control Officer (ECO) who will monitor the construction processes and activities periodically.

The project proponent will be responsible for the following:

- Adhering to the approved EMPr.
- Ensure that all employed Contractors and Engineers are aware of and understand the conditions of the EMPr.

- Has the right to remove any person or appointed contractors or personnel from site if the contravene with the EMPr.
- Ensure that all contracts with contractors/engineers include the authorised EMPr.
- Appoint an Environmental Control Officer.
- The project proponent (holder of the Environmental Authorisation of the EMPr) must notify the competent authority of the commencement of maintenance management activities 14 days prior to such commencement taking place.

The ECO's responsibilities must include, *inter alia*:

- Secure the protection and rehabilitation of the environment.
- Guide, advise and consult the relevant authority on environmental issues during construction.
- Guide, advise and consult any sub-contractors, suppliers etc. who will be involved in this project.
- Revise the EMPr as required and inform the relevant parties of the changes.
- Ensure that the EMPr has been accepted and understood as a contractually binding document on all parties involved with this project.
- Ensure staff operating equipment are adequately trained, certified and sensitised to any potential hazards associated with their tasks.
- Educate staff as to the need to refrain from indiscriminate waste disposal and/or pollution of local soil and water resources, ensure that they (the staff) have received the necessary safety training, and are aware of the importance of a "clean-site policy".
- The management guidelines contained in this document must form part of the contractual agreements between the Proponent, Contractor and the ECO.

The Engineers and Contractors are responsible for the construction of the residential estate. 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:

- Adhere with the conditions and recommendations of the EMPr or any other legally binding 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.
- Ensure compliance of all site personnel and / or visitors to the EMPr and any other authorisations.

All fines for non-compliance of the approved EMPr to be predetermined by Engineer, ECO and Project Proponent, and included in method statement.

6. REPORTING PROCEDURES

6.1. Documentation

The following documentation must be kept on site in order to record compliance with the EMPr:

An Environmental File which includes:

- ❖ Copy of the EMPr;
- ❖ Copy of the EA;
- ❖ Copy of all other licences/permits;

- ❖ Environmental Method Statements;
- ❖ Non-conformance Reports;
- ❖ Environmental register, which shall include:
 - Communications Register – including records of complaints, minutes and attendance registers of all environmental meetings;
 - Monitoring Results – including environmental monitoring reports, register of audits, non-conformance reports; and
 - Incident book – including copies of notification of Emergencies and Incidents, this must be accompanied by a photographic record.
- ❖ Waste Documentation such as, but not necessarily limited to: Waste Manifest Documents;
- ❖ Material Safety Data Sheets (MSDSs) for any hazardous substances; and
- ❖ Written Corrective Action Instructions.

6.2. Environmental Register

The Proponent will put in place an Environmental Register and will ensure that the following information is recorded for all complaints / incidents:

- ❖ Nature of complaint / incident.
- ❖ Causes of complaint / incident.
- ❖ Party/parties responsible for causing complaint / incident.
- ❖ Immediate actions undertaken to stop / reduce / contain the causes of the complaint / incident.
- ❖ Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint / incident.
- ❖ Timeframes and the parties responsible for the implementation of the corrective or remedial actions.
- ❖ Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented.
- ❖ Copies of all correspondence received regarding complaints/incidents.

6.3. Non-Conformance Report

A Non-Conformance Report (NCR) will be issued to the Proponent as a final step towards rectifying a failure in complying with a requirement of the EMPr. This will be issued by the ECO to the Proponent in writing. Preceding the issuing of a NCR, the Proponent must be given an opportunity to rectify the issue.

Should the ECO assess an incident or issue and find it to be significant (e.g. non-repairable damage to the environment), it will be reported to the relevant authorities and immediately escalated to the level of a NCR. The following information should be recorded in the NCR:

- ❖ Details of non-conformance;
- ❖ Any plant or equipment involved;
- ❖ Any chemicals or hazardous substances involved;
- ❖ Work procedures not followed;
- ❖ Any other physical aspects;
- ❖ Nature of the risk;
- ❖ Actions agreed to by all parties following consultation to adequately address the non-conformance in terms of specific control measures and should take the hierarchy of controls into account;
- ❖ Agreed timeframe by which the actions documented in the NCR must be carried out; and

- ❖ ECO should verify that the agreed actions have taken place by the agreed completion date, when completed satisfactorily; the ECO and Proponent should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

6.4. Emergency Response

The Proponents environmental emergency procedures must ensure appropriate responses to unexpected / accidental actions / incidents that could cause environmental impacts.

The Environmental Emergency Response Plan is separate to the Health and Safety Plan as it is aimed at responding specifically to environmental incidents and must ensure and include the following:

- ❖ Employees shall be adequately trained in terms of incidents and emergency situations;
- ❖ Details of the organisation (i.e. manpower) and responsibilities, accountability and liability of personnel;
- ❖ A list of key personnel and contact numbers;
- ❖ Details of emergency services (e.g. the fire department / on-site fire detail, spill clean-up services) shall be listed;
- ❖ Internal and external communication plans, including prescribed reporting procedures;
- ❖ Actions to be taken in the event of different types of emergencies;
- ❖ Incident recording, progress reporting and remediation measures to be implemented; and
- ❖ Information on any hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.

7. COMPLIANCE WITH THE EMPr

7.1 Monitoring and Compliance

The monitoring and compliance of the development should take place as follows:

- ❖ The ECO has the authority to instruct the Proponent to cease a particular operation causing or liable to cause significant environmental damage, and issue fines or penalties for non-compliance of the Environmental Management Programme/ EMPr.
- ❖ An Environmental Control Officer (ECO) must audit the site and compile an audit report on a monthly basis until rehabilitation is successful.
- ❖ The holder of the environmental authorisation (the Proponent) is responsible to ensure that an environmental audit report is submitted to the Department of Economic Development, Environment Affairs & Tourism (DEDEAT) as per the timeframes stipulated in the Environmental Authorisation (EA).

7.2 Auditing Process

The terms of reference for the audits must comprise the following:

- ❖ Develop a checklist against which the criteria can be referenced during the audit.
- ❖ During the audit process, key individuals involved with the management of the project are to be given the opportunity to comment on issues being audited and will be invited to accompany the auditor during the site inspection.
- ❖ Compile an audit report on the implementation of the EMPr and compliance to the Environmental Authorisation and submit this report to the competent authority (DEDEAT).

Compliance ratings against which the listed criteria are assessed are as follows:

Symbol	Rating	Interpretation
Y	Yes	Evidence of compliance
P	Partial	Evidence of partial compliance
N	No	Evidence of non-compliance
NR	Not Relevant	The condition or commitment is not relevant at this stage of the development or it is inappropriate
NA	Not Audited	Not audited

7.3 Non-Compliance

Definition

The non-compliance is defined as, and will be issued for:

- ❖ Any deviation by the Proponent from the environmental conditions and requirements as set out in the EA and EMPr, or;
- ❖ Any contravention by the Proponent of environmental legislation, or;
- ❖ Any unforeseen environmental impact resulting from direct or indirect actions or activities on site that would be considered as a significant impact. Significance will be determined by the Environmental Control Officer (ECO) but will be informed by geographic extent, duration, lasting effects of the impact and extent of remediation to the impact.

Types of non-compliances issued

Two types of non-compliances may be issued:

A. Stop Works Non-Compliance

Stop Works Non-Compliance will require that all works as described in the non-compliance will stop immediately and may only continue on a formal written permission from the ECO.

Stop Works Non-Compliance will be issued under the following conditions:

- ❖ Total disregard by the Proponent to the environmental conditions and requirements listed in the EA and EMPr;
- ❖ An activity that if left unattended will escalate the degree, severity or extent of the environmental impact.

B. General Non-Compliance

A general non-compliance will allow work and activity by the receiving party to continue while the corrective action takes place.

7.4 Issuing a Non-Compliance

Non-compliance may be issued to:

- ❖ The Proponent

- ❖ Any representative of the Proponent

7.5 Process of Issuing Non-Compliance

The appointed Environmental Control Officer (ECO) may issue a formal non-compliance to the Proponent. A copy of the non-compliance issued will be placed in the EMPr file. The Proponent will be responsible for returning a formally signed off corrective action (as per template) to the ECO to be placed in the EMPr file. The ECO will be required to sign-off on the corrective action, indicating that it has been completed within the timeframes and to the satisfaction of the ECO.

7.6 Failure to complete corrective actions

In the event that the Proponent fails or refuses to complete the corrective action, either at all or within the allocated timeframe, the ECO shall,

- ❖ Inform DEDEAT in writing that a condition of approval for the project is not being met.

The DEDEAT office is responsible for resolving the impasse with the Proponent.

The Proponent is deemed not to have complied with the EA and EMPr if:

- ❖ Within the boundaries of the site and site extensions there is evidence of contravention of clauses;
- ❖ Environmental damage occurs due to negligence; inappropriate actions taken by the Proponent or any of his staff.

On receiving a notice of non-compliance the Proponent is required to swiftly address the issue/s taking all corrective actions required to rectify the situation. Penalties will be applied for non-compliant situations. Penalties/fines are advocated to ensure corrective measures are successfully undertaken and the necessary standard of rehabilitation is achieved.

The penalty associated with a chemical spill is not a set amount but will depend on the nature and extent of the spill; the cost of any soil and /or groundwater monitoring and any soil and /or groundwater remediation required by authorities will be to the Proponent's account.

The imposition of such a penalties / fines shall not preclude the relevant competent authority from applying an additional penalty in accordance with statutory powers.

Failure to redress the cause shall be reported to the relevant authority for them to deal with the transgression as deemed fit.

7.7 Unlawful Activity/ies

NEMA and its Regulations entitle environmental authorities to administer a fine not exceeding R 5 million or 10 years imprisonment and/or a fine and imprisonment for a person guilty of an unlawful activity. The Act makes allowance for the rectification of unlawful activity and may charge up to R1 million administration fees over and above the remediation costs.

NEMA makes provision for damages to be awarded by the courts where loss or damage has occurred as a result of a contravention of other environmental statutes. Importantly, NEMA provides for the liability of

conviction of employees, managers, agents and directors for any offences resulting from the failure to take all the reasonable steps that were necessary under the circumstances to prevent the commission of an offence.

8. AMENDMENTS TO THE EMPr

This EMPr outlines the environmental practices and mitigation measures to be adhered to during the construction, operational phases, and rehabilitation in order to curtail and/or minimise potential negative impacts and promote sound environmental practises.

Any major issues not covered in the EMPr as submitted, will be addressed as an addendum to this EMPr, and submitted for approval. The EMPr is a living document and is subject to change from time to time in consultation with the DEDEAT. Any amendments to the EMPr will require approval from the DEDEAT.

9. ENFORCING THE EMPr

The holder of the Environmental Authorisation (EA) has a responsibility to ensure that all those people involved in the project are aware of and familiar with the environmental requirements for the project (this includes casual labour, etc.). The EA and EMPr shall be part of the terms of reference for all stakeholders.

All senior and supervisory staff members shall familiarise themselves with the full contents of the EA and EMPr. They shall know and understand the specifications of the EA and EMPr and shall be able to assist other staff members in matters relating to the EA and EMPr.

TABLE OF RESPONSIBLE PARTIES BELOW:

Responsibility	Name of Responsible Party
Proponent	Goedgeloof Properties (Pty) Ltd
Environmental Control Officer/ ECO	(To be appointed)
Contractor	(To be appointed)

10. ENVIRONMENTAL MANAGEMENT PROGRAMME

10.1 CONSTRUCTION PHASE

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Authorisations, Licences and Permits	Environmental Authorisations		
	All necessary authorisations, permits and licences must be obtained by the Proponent prior to construction commencement. This includes permits for the removal of protected plants.	Proponent	Once-off
Preparation of Method Statements	Method Statements		
	Method Statements must be submitted by the Proponent/ Contractor to the ECO and must be adhered to by the Proponent/ Contractor. These relate to water and stormwater management requirements, solid waste management requirements, the storage of hazardous materials (if applicable), and standard emergency procedures.	Proponent/ Contractor	Prior to commencement of construction and during construction (if necessary)
	The ECO will monitor the implementation of the statements.	ECO	On-going
Education of Site Staff on General and Environmental Conduct <i>A general regard for the social and ecological wellbeing of the site and adjacent areas is expected of the site staff.</i>	Environmental Awareness and Training		
	Construction staff must be adequately educated by the ECO as to the provisions included in the EMP, and in terms of general environmentally-friendly practice.	ECO	Once-off and as required
	The ECO must ensure that all staff, and if applicable, Contractors / Sub-contractors / Suppliers / Service Providers are trained on the environmental, occupational safety and/or legal responsibilities expected from them.		
	The training must take into account language and literacy requirements as well as measures to determine the effectiveness of the training. Proof of training must be attached to the ECO's audit reports.		
Consideration of the implications of the EA and EMP must form part of the formal site induction for all contractors, sub-contractors and casual labourers, preferably in their native language.			
	The induction training will, as a minimum, include the following: <ul style="list-style-type: none"> ➤ The importance of conformance with all environmental policies; ➤ The environmental impacts, actual or potential, of their work activities; ➤ The environmental benefits of improved personal performance; 		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	<ul style="list-style-type: none"> ➤ Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Consultant's environmental management systems, including emergency preparedness and response requirements; and ➤ The mitigation measures required to be implemented when carrying out their work activities. 		
	All contractors, sub-contractors and casual labourers must acknowledge their understanding of the EMPr and environmental responsibilities by signing an induction attendance record.	ECO	Once-off
	Staff, operating equipment, shall be adequately trained and sensitised to any potential hazards associated with their tasks.	Proponent	During staff induction, followed by on-going monitoring
	Translators are to be used where necessary during staff training.	ECO	
	The ECO must be on hand to explain more difficult / technical issues and to answer questions which may be raised.	ECO	
	Staff must be made aware that they are not to make excessive noise e.g. shouting, hooting.	ECO & Proponent	
	All employees must undergo the necessary safety training and wear the necessary protective clothing at all times.		
	No alcohol / drugs to be present on site; no vehicles or machinery are to be operated whilst under the influence of alcohol or drugs.		
	No firearms allowed on site or in vehicles transporting staff to / from the site (unless used by security personnel).		
	No unsocial behaviour will be permitted.		
	Bringing pets onto site is forbidden.		
	Staff must make use of facilities provided for them, as opposed to ad-hoc alternatives (e.g. fires for cooking, the use of surrounding bush as a toilet facility is strictly forbidden). No fires to be permitted on site.		
	Trespassing on private / commercial properties adjoining the site is forbidden.		
	No worker may be forced to do work that is potentially dangerous or for what he / she is not so trained		
The staff conduct rules are described in a separate table of rules in the EMPr. This is aimed at providing staff with the basic information regarding worker conduct on site.			
Site Management	Access		
No vehicles may drive onto the adjacent properties and any other no-go areas.	Proponent / Contractor	On-going	
No vehicles are to park or operate within "no-go" areas.			

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Heavy Machinery		
	Construction activities must be confined to clearly demarcated areas so as to prevent unnecessary disturbance the surrounding environment.	Contractor	On-going
	Excavators and all other machinery and vehicles must be checked for oil and fuel leaks daily. No machinery or vehicles with leaks are permitted to work on site.		
	Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills. These areas must not be located within any natural drainage areas or preferential flow paths and must be located outside of buffer zones.		
	The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly.		
	Site Management		
	To ensure that the ecological integrity of the surrounding environment is maintained and preserved, the proponent and contractor must ensure that the construction footprint is limited to the construction area. The extent of the construction must be marked out to satisfaction of the engineer and ECO.	Proponent/ Contractor	On-going
	The Contractor must restrict all activities, materials, equipment, and personnel within the area specified or restricted activities to areas that are necessary to undertake the work.		
	The Contractor must ensure that materials are appropriately secured to ensure safe passage between destinations, loads including, but not limited to, sandstone chips, fine vegetation or refuse should have appropriate cover to prevent pollution of adjacent properties.		
	The proponent will be held responsible for any clean-up in the dune environment resulting from failure by the contractors or suppliers to properly secure material.		
Adequate drainage and erosion protection must be provided around the site and where necessary.			
Access points and other cleared surfaces must be dampened whenever necessary and especially in dry and windy conditions to avoid excessive dust. Alternatively, a binding product such as Dustex (supplied by Patch Industrial Supplies) could be used.			
Sewage and Sanitation	Ablutions		
	Toilets at the recommended Health and Safety standards must be provided. Portable toilets must be emptied regularly to prevent overflow. Once no longer required, they must be pumped dry to prevent leakage into the surrounding environment and removed from site.	Contractor	Immediately & on-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Toilets facilities must comply with local authority regulations, shall be maintained in a clean and hygienic condition. Their use shall be strictly enforced. They must be positioned in an appropriate place, also taking into consideration, gradient of the land.		
	The Contractor must ensure that toilets are cleaned weekly or more regularly, if found to be necessary.		
	Unauthorised spilling of waste from the septic tank into the environment and burying of waste are strictly prohibited.		
	Ablution facilities must not cause any pollution to any water resource, and it must not be a health hazard to the general public.		
Social Impacts	Communication Between Contractor, Site Staff and I&APs		
	Should the staff be approached by members of the public or other stakeholders, they must assist them in locating the Contractor, or provide a number on which they may contact the Proponent/ Contractor.	Proponent / Contractor	On-going
	The conduct of the staff when dealing with the public or stakeholders shall be in a manner that is polite and courteous at all times.		
	Drivers of heavy-duty vehicles must exercise care when travelling to and from the site – and adhere to all legally enforceable requirements.		
	Noise pollution		
	Construction activities must only take place during normal working times between 07:00-17:00 on weekdays.	Contractor	On-going
	Machinery may be fitted with silences to dampen noise.		
	Staff must be reminded that they are working within a residential area and noise levels must be kept low.		
	Visual impact		
	The necessary measures be implemented during the construction phase to protect the natural vegetation, to control the noise, dust and visual intrusion.	Proponent / Contractor	On-going
Equipment lay-down and storage	Storage Areas		
	Choice of location for equipment lay-down and storage areas must take into account prevailing winds, distances to “No Go” areas, general on-site topography and water erosion potential of the soil. Impervious surfaces, bunded areas or drip trays must be provided where necessary.	Contractor	On-going
	Material stockpiles must be protected against rain and flooding.		
Equipment lay-down and storage areas must be designated, demarcated and signed.			

Activity	Management / Mitigation	Responsibility	Frequency / Timing	
Conservation of the Natural Environment	Vegetation and Habitats			
	The position of the construction site camp should be on an already disturbed area and should be identified in consultation with the Environmental Control Officer (ECO).	Contractor / ECO	Immediately	
	During the construction phase, the construction area (including site camp, laydown areas and access tracks) must be clearly demarcated and all other areas deemed as no-go areas for the duration of construction.	Contractor		
	Laydown and construction preparation activities (such as cement mixing, temporary toilets, etc.) must be limited to already modified areas and should take up the smallest footprint possible.			
	Stripping of topsoil during the site clearing activities at the commencement of construction and appropriate storage for the duration of construction.			
	Harvesting and collection of any flora, other than that performed under a permit from the Department of Economic Development, Environmental Affairs & Tourism, must be strictly prohibited.	Contractor / Proponent	On-going	
	No open fires should be allowed on site outside of designated areas.	Contractor		
	A designated smoking area, outside of any areas where the risk of fire is prevalent, must be designated. Smoking shall not be permitted outside of designated smoking area.			
	During construction, erosion control measures must be implemented in areas sensitive to erosion such as exposed soil, areas with dispersive soils, etc. These measures include but are not limited to the use of sand bags, hessian sheets, silt fences and/ or replacement of vegetation.			
	The removal and translocation of protected plants if found should be undertaken prior to construction clearing activities. A permit is required prior to removal.	Proponent / Contractor	Immediately	
	Protected plants must either be moved to a safer, no-go area on the property or taken to a nursery for temporary storage until rehabilitation takes place.			
	Loss of Species of Conservation Concern (SCC)			
	Demarcate the areas indicated as Public Open Space and Private Open Space as No Go Areas and manage accordingly	Proponent & ECO	Immediately & On-going	
Apply for relocation and destruction permits for protected species from the relevant authority (DEDEAT)				
Conserve an offset area that contains a healthy population of <i>Rapanea gilliana</i> .				

Activity	Management / Mitigation	Responsibility	Frequency / Timing	
	Conduct a Search and Rescue exercise before the start of construction, ahead of any clearing of vegetation.			
	A suitably qualified and experienced individual should oversee the Search and Rescue operation.			
	Sufficient time for Search and Rescue must be allowed before construction commences.			
	Replant rescued SSCs in No Go areas.			
	Fauna and Flora			
	Areas which are identified by the Environmental Control Officer (ECO) as being ecologically sensitive on or adjacent to the site are to be suitably demarcated to prevent damage by construction practices. These areas are to be recognised as "no-go" areas.	Proponent / Contractor	On-going	
	In situations fauna species are located at the site and need to be removed, the relevant specialists must be contacted to advise on how the species can be relocated.			
	The areas to be disturbed must be specifically demarcated to prevent the movement of staff or any individual into the surrounding environments, barrier tape must be put up to enforce this.			
	Noise must be kept to an absolute minimum during the evenings and at night to minimise all possible disturbances to nocturnal species which are more dependent on auditory signals for life processes.			
	No trapping, killing, or poisoning of any wildlife is to be allowed and Signs must be put up to enforce this. Monitoring must take place in this regard.			
Outside lighting should be designed and limited to minimise impacts on fauna. All outside lighting should be directed away from any sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible.				
Any holes/deep excavations must be dug in a progressive manner and shouldn't be left open overnight. Should any holes remain open overnight they must be properly covered temporarily to ensure that no small fauna species fall in. Holes must be subsequently inspected for fauna prior to backfilling.				
Disturbance to birds, animals and reptiles and their habitats must be minimized wherever possible.				
Spread of Invasive Alien Species				
All invasive alien species cleared for the construction of the storage facility must be collected and disposed of as waste. Care must be taken not to disperse seeds or seed pods in the surrounding environment during the removal thereof.	Contractor	Immediate and On-going		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Remove any new alien invasive plant species in the construction footprint as soon as they are detected, preferably by physical removal or by spraying herbicides should physical removal not be feasible (to be conducted in conjunction with the ECO);	Proponent & ECO	
	Monitoring and removing of alien invasive plants should be conducted from the start of the construction phase, during clearing, until rehabilitation has been complete at the end of the liability period.	Proponent	On-going
	After construction, ongoing control of invasive alien plants must be addressed by the property owner.		
Wetland habitat	Loss or disturbance to artificial wetland habitat		
	Implement a buffer zone around the wetland. The buffer and the delineated wetland area should be considered as a No-Go area for construction activities (apart from construction of stormwater infrastructure (e.g headwall outlets, gabions etc.).	Contractor	Immediately
	Laydown areas and stockpiles must all be located outside of the delineated wetland area and its associated buffer.		
	Sedimentation of artificial wetland habitat		
	Ensure that construction activities do not cause any preferential flow paths and concentrated surface runoff during rainfall events.	Contractor	On-going
	Implement a 10m buffer zone around the wetland. The buffer and the delineated wetland area should be considered as a No-Go area for construction activities.		Immediately
	Reduce transport of sediment through use silt fences that must be placed around the outside of the buffer zone.		
	Clearly demarcate the construction area and ensure that heavy machinery does not compact soil or disturb vegetation outside of these demarcated areas.		
Revegetate exposed areas once construction has been completed.			
Land Degradation	Erosion Management		
	During construction, erosion control measures must be implemented in areas sensitive to erosion such as exposed soil, areas with dispersive soils, etc. These measures include but are not limited to the use of sand bags, hessian sheets, silt fences and/ or replacement of vegetation.	Contractor	On-going
Ensure that construction activities do not cause any preferential flow paths and concentrated surface runoff during rainfall events.			

Activity	Management / Mitigation	Responsibility	Frequency / Timing	
	Clearly demarcate the construction area and ensure that heavy machinery does not compact soil or disturb vegetation outside of these demarcated areas.		Immediate and On-going	
	Reduce transport of sediment through use of structures such as silt fences and biodegradable coir logs placed along a contour below the development footprint.		On-going	
	Ensure that vegetation clearing is conducted in parallel with the construction progress to minimise erosion and runoff.			
	Revegetate exposed areas once construction has been completed.		On completion	
	Stormwater Management			
	Ensure that stormwater and runoff generated by hardened surfaces is discharged in retention areas (i.e. swales or retention ponds), to avoid concentrated runoff and associated erosion.	Proponent / Engineer	On-going	
	Disturbance and removal of topsoil			
	Areas that are disturbed through building activities (such as the excavations for pipelines) should be suitably rehabilitated without delay. Failure to do so will have a knock-on effect on biodiversity in the form of an increase in wind erosion, soil exposure and a loss of the soil micro-organisms that are essential for plant growth.	Proponent / Contractor	On-going	
	Organic matter, such as roots and humus/topsoil should be removed from the footprint of structures and stockpiled separately for landscaping purposes. The stockpiling of topsoil for use in rehabilitation is required.			
	Stockpiles must not exceed 1.5m in height, must be covered with shade cloth or similar, to prevent erosion and any invasive alien species that begin to grow within it must be removed.			
	Soil disturbance during the removal of alien invasive plants must be minimised as much as possible.			
	The site must be stabilised where necessary using available materials, where possible. It is recommended that exposed soils are covered with wood chips, and tree branches used to create berms. Any cut alien vegetation on site can be utilised for this purpose if it is without seed.			
	Loss of Ecological Function of Landscape			
	Manage all Open Space to maintain indigenous vegetation cover.	Proponent / Contractor	On-going	
Implement proper stormwater management principles, including the provision of retention ponds.				
Limit access to Open Space areas, particularly for cattle.				
Limit large areas of hard surfaces to improve stormwater flow				

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Waste Management	On-Site Waste Management		
	Waste management must be a priority and all waste must be collected and stored effectively and responsibly. Refuse bins will be responsibly emptied and secured. Temporary storage of domestic waste shall be in covered and secured waste skips. Dangerous waste such as metal wires and glass must be safely stored before being moved off site as soon as possible. Under no circumstances may domestic waste be burned on site or buried on open pits.	Proponent / Contractor	On-going and monitored weekly
	Separation and recycling of different waste materials should be supported.	Contractor	Daily
	Littering on the site is forbidden and the site shall be cleared of litter at the end of each working day.		
	Litter, spills, fuels, chemical and human waste in and around the Project Area must be minimised and controlled.		
	Cement mixing may not be performed on the ground. It is recommended that only closed side drum or pan type concrete mixers be utilised. Any spills must be immediately contained and isolated from the natural environment, before being removed from site.		
	Waste must be removed from the site on a weekly basis.		Weekly
Where a registered disposal facility is not available close to the Project Area, the Contractor shall provide a method statement with regards to waste management	Proponent / Contractor	On-going	
Handling of Hazardous Materials (if necessary)	Hazardous Materials		
	Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs must additionally include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes.	Contractor	On-going
	Cement and other potential environmental pollutants must be stored within an impermeable bunded, roofed and sign posted area.		
	The mixing of cement must be done on Rhino board.		
	All empty contaminated containers must be stored within a hazardous bunded area until collection by a reputable hazardous waste collection company. Waybills must be presented to the ECO for review and filing purposes.		
No vehicles transporting hazardous materials to the site may be washed on or near site. They must return to the supplier of such material to be cleaned out.			

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Cultural Environment	Archaeology and Artefacts	Proponent / Contractor	Immediate and On-going
	<p>No structures older than sixty years or parts thereof are allowed to be demolished altered or extended without a permit from Heritage Western Cape.</p> <p>If any archaeological sites/materials are exposed, mitigation regarding the finds and the destiny of the material must be conducted with the Eastern Cape Provincial Heritage Resources Authority. Examples of heritage resources are as follow:</p> <ul style="list-style-type: none"> • Human remains • Coins/Gold/Silver • Fossils • Fossils shell middens/ marine shell heaps • Pottery/ceramics 		
	<p>If Eastern Cape Provincial Heritage Resources Authority agrees to the removal of the material, an archaeologist must apply for a permit to scientifically excavate/collect the material.</p>		
	<p>All costs must be financed by the applicant. This may include: All monitoring and mitigation expenses regarding the excavations/collecting of material, travel, accommodation and subsistence, analysis of the material, radiocarbon date(s) of the site(s) and a one-off curation/storage fee payable to the Eastern Cape Provincial Heritage Resources Authority for Archaeological material.</p>		
Safety and Security	Safety and Security On-Site	Contractor	On-going
	<p>Material stockpiles or stacks must be stable and well secured to avoid collapse and possible injury to site workers / local residents.</p> <p>Firefighting equipment must be present on site at all times. All equipment on site must be used in accordance with the Occupational Health and Safety Act regulations of South Africa (OHSA), Act No. 85 of 1993); staff must be trained in firefighting procedures.</p>		
	<p>No unauthorised person may be permitted to enter the site without prior permission of the Proponent.</p>		
	Fire Management	Proponent / Contractor	On-going
<p>Firefighting equipment should be present on site at all times as per Occupational Health and Safety Act.</p>			

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	All project staff must be trained in fire hazard control and firefighting techniques and know the proper procedure in case of a fire occurring on site.		
	All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances.		
	No open fires will be allowed on site.		
	Smoking must not be permitted in areas considered to be a fire hazard.		
	A Fire Management Plan needs to be implemented to restrict the impact any potential fires would have on the surrounding areas.	Proponent	Immediate

10.2. OPERATIONAL PHASE

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Land Management	Landscaping	Proponent / Contractor	Project completion and Maintenance
	Re-vegetation and Landscaping of open space areas with suitable indigenous vegetation.		
	Systematic removal and follow-up operations of invasive alien plants.		
	Outside lighting should be designed and limited to minimise impacts on fauna. All outside lighting should be directed away from any sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible		
	Land Rehabilitation	Contractor	Project completion
	Any rubble is to be removed from site to an appropriate disposal site. Burying of rubble on site is prohibited.		
	The site is to be cleared of all litter.		
	The surface of all disturbed areas must be left rough to facilitate binding of topsoil and vegetation.		
Areas that are disturbed through building activities (such as the excavations for sewerage pipelines) should be suitably rehabilitated without delay. Failure to do so will have a knock-on effect on biodiversity in the form of an increase in wind erosion, soil exposure and a loss of the soil micro-organisms that are essential for plant growth. Use complete cover of locally chipped woody material (for example Acacia cyclops stems and branches but not the seed pods).		Progressive rehabilitation and on Project completion	

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Alien Invasive Plants	Alien plant eradication	Proponent / Contractor	Immediate and On-going
	All invasive alien plants should be completely cleared from the property, and where a tree or bush cover is desired, replaced with suitable indigenous species.		
	Rehabilitation of disturbed areas, as well as previously invaded areas, should promote establishment of site-appropriate indigenous species.		
	Implement an alien invasive control plan to remove current invasive species and prevent their further spread. Relevant alien invasive plant (AIP) species must be identified by a suitably qualified ecologist or botanist.		
	AIPs must be controlled using the cut-stump method – cutting the main stem close to the ground and applying a suitable, registered herbicide to the freshly cut stump.		
	AIPs must NOT be controlled using a foliar herbicide.		
	Felled plants must be removed from the wetland area.		
	Follow up control must be implemented annually until AIPs have been eradicated		
Follow up inspections must be undertaken annually			
Ecological function and species composition	Anthropogenic Disturbance	Proponent	On-going
	Limit vehicle access to areas designated for access and parking		
	Provide waste bins and animal proof waste handling facilities to prevent litter and attracting pests.		
	Limit the collection of firewood on site and from the surrounding vegetation.		
	Discourage pets from entering and hunting in the development site and surrounding landscape.		
	Appropriate fire-fighting equipment must be available on site at all times and serviced at regular intervals.		
	Wetland degradation	Contractor / Proponent	During Operational phase
	Rainwater harvesting tanks must be installed where feasible – both as a water conservation and stormwater management strategy.		
	Use of swales and detention ponds to attenuate stormwater runoff, encourage infiltration and reduce the speed, energy and volumes at which stormwater is discharged from the site.		
	Use of permeable paving to encourage infiltration into the soil.		
Headwall outlets discharging into the wetland must include energy dissipation (e.g. stilling basin) and erosion protection (e.g. reno mattress).			
Removal and Repair of Materials and Infrastructure	Materials and Infrastructure	Contractor	Project completion
	All material used for the construction must be removed from site after construction.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	The Contractor must repair any damage that the construction works may have caused to adjacent areas.		
	Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the ECO.		
	All areas where temporary services were installed are to be rehabilitated to the satisfaction of the ECO.		
Stormwater Management	Increased stormwater runoff		
	A sustainable stormwater design must be implemented to prevent excessive runoff that will lead to erosion of the surrounding landscape.	Contractor	During Operational phase
	Stormwater generated on site should be managed according to Sustainable Drainage System (SuDS) principles. This requires that as much stormwater as possible should be attenuated within the development footprint. The following measures, <i>inter alia</i> , should be considered: <ul style="list-style-type: none"> o Rainwater harvesting tanks must be installed; o Use of swales and detention ponds to attenuate stormwater runoff, encourage infiltration and reduce the speed, energy and volumes at which stormwater is discharged from the site; o Use of permeable paving to encourage infiltration into the soil; and o Use of retention ponds and artificial wetlands to capture stormwater runoff and prevent its discharge from the site. 	Contractor / Engineer	
	Impervious surfaces and foundations		
Stormwater management must encourage infiltration of water into the soil profile and other onsite attenuation through the use of grass pavers etc.	Contractor	Project completion	
Waste	Removal of Hazardous and Non-Hazardous Waste		
	All hazardous materials and containers must be collected by a reputable hazardous waste collection company and disposed of appropriately.	Proponent	During Operational phase
	Collection and disposal of non-hazardous waste to a registered landfill site must occur at least once a week.		
	Visible signage and lease agreements must clearly prohibit the disposal of pollutants into the stormwater system. The stormwater system must only accommodate surface runoff following rainfall.		
	Oil water separators must be installed in areas where storage, spillage and or use of hydrocarbons is expected to be relatively high (e.g. warehouses).		
Adequate waste disposal bins must be provided on site.			
Fire management	No burning of vegetation to be permitted, even as part of alien plant management.	Proponent	On-going
	Ensure that no refuse waste is buried or burnt on the site or surrounds.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Smoking must not be permitted in areas considered to be a fire hazard.		
	Undeveloped areas must be managed so that they do not pose a fire risk.		
	The Southern Cape Fire Protection Association should be consulted regarding firebreaks, and fire management for the property in case of wildfires. It is recommended that the landowner become a member of the SCFPA.		Immediate

10.3. REHABILITATION AND MAINTENANCE

***All rehabilitation measures must be implemented with consultation with an Alien Invasive Plant Control Plan**

Activity	Management / Mitigation	Responsibility	Frequency / Timing		
Vegetation Rehabilitation	Vegetation				
	The objective of rehabilitation of natural areas must be to re-establish indigenous vegetation (coverage of at least 80% should be attained).				
	Rehabilitation of disturbed areas must commence immediately after construction has been completed in that area. General rehabilitation measures include: <ul style="list-style-type: none"> ❖ Loosen compacted soils within construction footprint which do not form part of the BESS footprint (e.g. access roads, site camp area, stockpile and laydown areas, etc.); ❖ Spread stored topsoil over disturbed areas and water regularly until vegetation has sufficiently established; and ❖ All area undergoing rehabilitation must be demarcated as no-go areas; 	Proponent & ECO	On-going site maintenance		
	Erosion prevention and control measures must be fully implemented (if necessary).				
	All rehabilitated areas must be maintained through weekly inspections until the 80% success rate has been achieved.				
	Encroachment of invasive alien plants in this regard will need to be monitored on a regular basis to prevent re-infestation.				
Stormwater Management	Stormwater				
Any negative stormwater effects, related to the operational phase, must be remediated.				Proponent	On-going site maintenance
On-going monitoring and assessing of stormwater drainage must occur on site during the operational phase of the proposed project.					

13. STAFF CONDUCT CONTROL AND INFORMATION SHEET

ALL STAFF MUST OBEY THE FOLLOWING RULES:	
1	DO NOT tamper with or destroy nesting sites, lairs or any other form of animal shelter.
2	DO NOT feed the native animals.
3	DO NOT leave the project site untidy and strewn with rubbish that will attract pests.
4	DO NOT bring any pets onto the project site.
5	DO NOT trespass onto private properties not linked to the project.
6	DO NOT carry a weapon onto the project site or in the vehicles transporting workers to and from the site.
7	DO NOT set fires.
8	DO NOT cause any unnecessary disturbing noise at the project site or at any designated worker collection/drop off points.
9	DO NOT drive a vehicle under the influence of alcohol.
10	DO NOT exceed the national speed limits on public roads or exceed the recommended speed limits in this management plan (where applicable)
11	DO NOT drive a vehicle that is generating excessive noise (noisy vehicles must be reported and repaired as soon as possible).
12	DO NOT litter along the roadsides, including both public and private roads.
13	DO NOT remove or destroy vegetation around the site without the prior consent of the Proponent and Environmental Control Officer.
14	DO NOT tamper with, destroy or remove vegetation from any areas that have been fenced off or marked.
15	DO NOT pollute watercourses, whether flowing or not.
16	DO NOT drive through watercourses.
17	DO NOT operate critical items of mechanical equipment without having been trained and certified.
18	ALL employees must undergo the necessary safety training and wear the necessary protective clothing at all times.
19	NO unsocial behaviour will be permitted e.g., excessive shouting, hooting etc.
20	NO ad-hoc activities are to be undertaken e.g. fires for cooking, the use of surrounding bush as a toilet facility is strictly forbidden
21	NO trespassing on private / commercial properties adjoining the site is forbidden.
22	NO worker may be forced to do work that is potentially dangerous or for what he / she is not trained to do.

14. RESPONSIBILITIES

The "Responsibility" column is merely a guide and does not relieve the Proponent of his responsibilities in terms of overall compliance with the EA and EMPr.

FUNCTION	RESPONSIBILITY
Proponent	<ul style="list-style-type: none"> The Proponent is ultimately responsible for the ensuring compliance with all the requirements associated with the construction, operation, rehabilitation and decommissioning phases of the project. The Proponent is responsible to ensure that all necessary communication and submission of required documentation concerning this project is submitted to the relevant authorities.
Contractor	<ul style="list-style-type: none"> The Contractor is required to adhere to the EMPr and is responsible to ensure that all staff appointed also adhere the EMPr. Ensures that all staff are made aware of the need to conduct activities in an environmentally responsible manner. (Contractor) On instruction by the ECO, ensures that storm/surface water controls are established. Ensures prompt remediation of any sewage spills. Stockpiles are protected from aeolian effects, stormwater effects, or being driven over by workers. Ensures that a "clean-site" policy is applicable at all times. Ensures that all complaints by residents are dealt with promptly. Is responsible for any contravention/s by staff or any non-compliance with the EMPr.
Environmental Control Officer (ECO)	<ul style="list-style-type: none"> The ECO is to have access to the site at all times, for the purpose of inspections to ensure that the environmental conditions of the EMPr as well as the conditions stipulated to in the EA and the recommendations made in the EIR are being implemented and adhered to. The ECO must report on the environmental aspects of the project to the responsible person/authority at agreed intervals. The need for any deviations or variations in the environmental conditions must be reported to the DEDEAT for approval prior to these being undertaken. The ECO must be fully cognisant with the contents of the Environmental Authorisation as well as this EMPr and any other applicable legislation
Competent Authority	<ul style="list-style-type: none"> The Compliance Officer appointed by the Competent Authority is responsible for the ensuring that the Proponent, Contractor, and ECO are compliant with the provisions of the EA and EMPr.

ACKNOWLEDGEMENT FORM

Record of signatures providing acknowledgment of being aware of and committed to complying with the contents of this Environmental Management Programme (EMPr), which relates to the environmental mitigation measures for the project outlined below, and the environmental conditions contained in all other contract documents.

PROJECT NAME:

PROPOSED WAREHOUSE AND STORAGE FACILITY ON PORTION 250 OF THE FARM 745, GOEDGELOOF, ST FRANCIS BAY, EASTERN CAPE.

DEDEAT REF: TBC

PROPONENT:

Signed: Date:

CONTRACTOR:

Signed: Date:

ENVIRONMENTAL CONTROL OFFICER

Signed: Date:

ANNEXURE 1: CV of the EAP

Joclyn Joe Marshall

Heatherhill Farm, P.O. Box 19, Rheenendal, 6576

Contact: 072 126 6393

Email: joclynjoe@gmail.com

CAREER HISTORY

July 2022 – current

**Eco Route Environmental Consultancy
Environmental Assessment Practitioner**

- ❖ Environmental Impact Assessments, Basic Assessment Reports, and Environmental Impact reports pertaining to:
 - Residential housing developments
 - Security Estates and Eco Estates
 - Industrial Developments
 - Dams and Agri-industrial developments
- ❖ Environmental Impact Assessments for Section 24 G Applications pertaining to:
 - Rectification of Illegal Dams
 - Rectification of vegetation clearing for residential developments
- ❖ Environmental Management Programmes and Maintenance Programmes, and Rehabilitation Plans pertaining to:
 - Maintenance of golf course water ways.
 - Construction and Operational Environmental Management of Eco Estates.
 - Slipway and jetty maintenance.
- ❖ EIA Checklists, Environmental Screening Reports, and Part 1 Amendments to Environmental Authorisation.
- ❖ Outeniqua Sensitive Coastal Area Extension Regulations / OSCAE Permits.
- ❖ Environmental Auditing and Environmental Control Officer duties.
- ❖ Liaise with clients, specialists, and competent authorities.
- ❖ Prepare Public Participation documents and registers.

August 2020 – August 2022

**Moira Cloete Environmental Assessment Practitioner
Sub-Consultant**

- ❖ Perform tasks and functions as set out in the EIA Regulations 2014, as amended, specifically in line with Appendices 1-4 thereof.
- ❖ Complete environmental screening tool reports.
- ❖ Complete EIA/BAR application forms.
- ❖ Draft Scoping Reports.
- ❖ Draft EIAs/BARs.
- ❖ Prepare Public Participation documents, EMPs and BID documents.
- ❖ Completed Projects:
 1. BAR for Retail Development on Erf 1027 Klein Brak River.
 2. EIA for proposed construction of a water storage dam on Argyll Farm 218 for irrigation of 80ha of lucerne.
 3. EIA for proposed construction of a water storage dam on Coldstream Farm 970 for irrigation of 80ha of lucerne.
 4. BAR for proposed development of a poultry facility for egg production on Confluence Farm 143.
 5. EMP for operating an organic composting facility for Meat Traders Abattoir (completed).

February 2012 – April 2019

**Knysna Municipality
Senior Environmental Officer**

- ❖ Preparation of EMP's, MMP's, EMS's for the municipality.
- ❖ Carrying out ECO work on municipal projects and other construction sites.
- ❖ Commenting on Land Use applications, EIA applications and issuing of OSCAER permit.
- ❖ Conducting various site inspections and audits including taking water samples for analysis.

- ❖ Applying environmental legislation and regulations to applications and other environmental matters.
- ❖ Liaising with other Governmental Departments, NGO's, Forums, Committees and Conservancies.
- ❖ Campaigning in environmental education and development of educational programmes.
- ❖ Report writing, research and project development.
- ❖ Advising and assisting public on environmental matters and various related tasks.

February 2011 – January 2012

Allanson Associates c.c.

Research assistant at the Knysna Basin Project

- ❖ Field work that included water sample collection and analysis, critical observations of environmental health, monitoring of Waste Water Treatment Works outflow;
- ❖ Lab work that included water quality analysis (including chemical methodology), fluorometry, microscopy and scientific report writing and publication.

June - July 2010

Department of Environmental Science, Rhodes University

Field assistant

- ❖ Harvesting, transporting, shredding and drying spekboom material.

2009 – 2010

Department of Environmental Science, Rhodes University

Graduate Assistance

- ❖ Assisted in second year practicals and field trips, and data input.

2007

Departments of Zoology and Botany, Rhodes University

Demonstrator

- ❖ Assisted in first year practicals and field trips, and marking practical reports.

ACADEMIC QUALIFICATIONS

2009 – 2010

Masters in Environmental Science by research dissertation

Rhodes University

Thesis: Population assessments of priority plant species used by local communities in and around four Wild Coast Reserves, Eastern Cape, South Africa

2008

Honours in Biodiversity and Conservation (*Joint Botany and Environmental Science*)

Rhodes University

2005 -2007

Bachelor of Science with Majors in Botany and Zoology

Rhodes University

1998 – 2004

Heatherhill College (Cambridge University International Examination)

HIGCSE: Art and Design (2), First Language English (3), Biology (1), Mathematics (2), Physical Science (2), Afrikaans as a Second Language (3). IGCSE: Information Technology (B)

PUBLICATIONS

- ❖ B.R. Allanson & J.J. Fearon (2012): Growth rate of juvenile *Siphonaria compressa* (Gastropoda: Pulmonata), *Invertebrate Reproduction & Development*, DOI:10.1080/07924259.2011.646447

OTHER SKILLS AND TRAINING

- ❖ Registered as an Environmental Assessment Practitioner with Environmental Assessment Practitioner Association of South Africa (EAPASA). Registration No. 2022/5006.
- ❖ Registered as a Candidate Natural Scientist in Environmental Science. Registration No. 100121/1.
- ❖ SAGIC Invasive Species Training, 15-18 May 2018. Stellenbosch, Western Cape.
- ❖ Certificate of competence in Herbicide Applicator – Noxious Weeds, 18 May 2018. Invader Plant Specialists (Pty) Ltd. Stellenbosch, Western Cape.
- ❖ Certificate attained for Management of Estuaries in South Africa short learning programme. NMMU, Stellenbosch, Western Cape.
- ❖ Certificate attained for Urban Interface Fire Management Short Course, 10-12 November 2015. NMMU Saasveld.

- ❖ Certificate of attendance attained for ArGIS Basic Training, 4 May – 8 May 2015. ESRI South Africa.
- ❖ Certificate attained for Basic Training Course for Environmental Management Inspector, 17 November 2014 - 15 December 2014. Western Cape Department of Environmental Affairs and Development Planning.
- ❖ Certificate attained for Fire Ecology and Conservation Short Course, 14-18 July 2014. NMMU Saasveld.
- ❖ Certificate attained for EIA Short Course, 13-17 May 2013. Rhodes University.
- ❖ Computer literacy: Microsoft Office including Word, Excel, Powerpoint, Access and photodraw V2, Statistica, StatPlus, FISAT II, ArcView GIS 3.2, ArcMap GIS, Coral Draw.
- ❖ Drivers license code 08

REFERENCES ARE AVAILABLE ON REQUEST

Janet Ebersohn
Lead EAP: Eco Route Environmental Consultancy
Email: janet@ecoroute.co.za

Pamela Booth
Manager: Environmental Management Department, Knysna Municipality
Email: pbooth@knysna.gov.za / Cell: 060 998 6967

ANNEXURE 2: Mapping of Environmentally Sensitive Areas

Buffer Requirements



Legend

- Portion 250 of Farm 745
- Excavations
- Artificial Wetland
- 10m Buffer





ANNEXURE 3: Site Development Plan