Eco Route
ENVIRONMENTAL CONSULTANCY
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DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

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

PROPOSED DEVELOPMENT OF ERF 1058, WHITES ROAD, HOEKWIL (WILDERNESS HEIGHTS) GEORGE MUNICIPALITY, WESTERN CAPE.

DEA&DP REF: 16/3/3/1/D2/30/0015/24

PREPARED FOR THE APPLICANT:	MR A POLSON
PREPAPRED BY:	ECO ROUTE
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DATE:	16/05/2024

EAP SIGNATURE: _____

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 EMPR:

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

(a) Details of – (i) The EAP who prepared the EMPr; and (ii) The expertise of the EAP to prepare an EMPr, including a curriculum Vitae;	This EMPr 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).
(b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 2 provides specific project details.
(c) a map at an appropriate scale which superimposes the proposed activity, it associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Annexure 2 provides mapping which superimpose the proposed activity onto environmentally sensitive areas.
(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 – (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;	Addressed in Sections 3, 4 and 10.
(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 – (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;	Addressed in Sections 3, 4 and 10.

(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	**Environmental Assessment Practitioner –** An EAP and a specialist, appointed in terms of regulation 12(1) or 12(2) must – (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 – 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. (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. (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).
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.

Contents

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, mitigatedand 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 DEA&DP must first be obtained.

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

1 Project Applicant.
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 DEA&DP.

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.

2. PROJECT DETAILS

Eco Route Environmental Consultancy has been appointed by the Applicant **Mr Alexander G. Polson** (Wealth Spring (Pty) Ltd) to prepare an Environmental Management Programme (EMPr) in compliance with the Basic Assessment Report Conditions set by Department of Environmental Affairs and Development Planning (DEA&DP) Western Cape Provincial Government, for Environmental Authorisation.

Erf 1058 Hoekwil is a vacant smallholding of 3.0108ha in extent, located in Hoekwil (Wilderness Heights). The zoning of the property is Agriculture Zone II in terms of the George Integrated Zoning Scheme By-law (2017). The property overlooks the Touw River and Ebb & Flow Rest Camp (Garden Route National Park) to the east, the Fairy Knowe-area and the Indian Ocean to the south, and the Village of Wilderness to the west. Access to the property is from Whites Road leading from the Village around the Wilderness Heights area with a circular route from the west to east and again reaching Heights Road in the west. The section of Whites Road passing Erf 1058 Hoekwil is a provincial road, Divisional Road 1621.

The proposed development will consist of 730m^2 of building structures (houses, accommodation units, etc), and 1051m^2 of landscaped areas (roads, parking, pool, deck areas, etc). The following is proposed on Erf 1058:

- Main residential dwelling for the property owner (280m^2).
- Outbuilding with homer office, garage, and storage space (170m^2).
- Kitchen Yards(35m^2).
- Driveway and parking for main dwelling (291m^2).
- Three tourist accommodation units of 80m2 each (240m^2).
- Three jacuzzi decks for tourist accommodation units of 16m^2 each (48m^2).
- Sauna House (40m^2).
- Natural outdoor pool (240m^2).
- Access to tourist accommodation and facilities (270m^2).
- Parking for tourist accommodation and facilities (72m^2).
- Footpaths (95m^2).

2.1. Site Description

Erf Number:	Erf 1058 Hoekwil
Area:	30100.7 m^2
SG Code:	C02700050000105800000
Co-ordinates:	33.989186°S 22.598800°E

2.2. Locality

2.3. Key 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 proposal aims to provide accommodation for the property owner and tourists on a section of the property which is not indicated as a specific spatial planning category. The Western Cape Land Use Planning Guidelines: Rural Areas (2019) states that overnight accommodation can be provided in a CBA-area with	None.

	temporary structures preferred (e.g., wooden structures, tents, raised boardwalks, and/or tree canopy structures), with units carefully dispersed or clustered (depending on the landscape, habitat and existing infrastructure and access) to achieve least impact. The use of alternative porous materials and innovative eco-friendly design concepts are encouraged. The accommodation units are not to be provided within the demarcated CBA-areas.	
Rezoning	The rezoning of the property to Open Space Zone III (nature conservation area) will contribute to the conservation of the property and support the abutting Wilderness Lakes Protected Area.	The function of small holdings as a settlement type is described as low-density rural living, with an agricultural component with reference in the relevant LSDF. Wilderness Heights is one such small holding area. Loss of agricultural component of a small holding is not considered to be significant.
Bulk Services supply	There already is a water connection point that the proposed development can connect to and there should be no pressure / demand on the current system. Access to the property is currently available through the existing roads network. The development aims to be self sufficient as far as possible whereby it will not connect to the sewage network and be off-grid.	All wastewater, water supply and stormwater will need to be managed but this is achievable with all the correct mechanisms and mitigation in place.
Conservation Status / value	This habitat unit is characterised by high levels of disturbance owing to its proximity to historical land-use and anthropogenic activities and main roads. Accordingly, the landcover is not congruent with the expected natural vegetation and therefore does not pose a high biodiversity value where the development is proposed.	The development is partially within a CBA. Loss of a small area identified as a CBA.

Vegetation and Habitats	The location, ecological state, and size of the habitats within the Project Area denotes that it is unlikely that any functional habitat or SCC will be lost as a result of the impacts arising from the proposed development. Landscaping with indigenous plant species will contribute towards a potential positive biodiversity gain.	Loss of vegetation and potential habitats. This can be managed and mitigated to limit the disturbance of vegetation.
Fauna / ecological corridors	Faunal species of conservation concern were not identified on the property. The development does not pose a significant impact to ecological connectivity. Clearing of AIP and landscaping with indigenous plant species will contribute towards a potential positive biodiversity gain and increased habitat for indigenous fauna.	Potential fragmentation of areas of indigenous vegetation. Recommended mitigation measures to reduce the negative fragmentation effects of the development and enable the safe movement of fauna species. Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should not be fragmented or disturbed further during the construction phase
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	Systematically remove invasive alien vegetation (also in the operational phase).	Loss of natural vegetation and increased fire risk if not removed. Restoration of indigenous vegetation where there is heavy AIP infestation.
Fire risk	Removal of alien vegetation to reduce fuel load.	Fire risk may be high if alien vegetation is not removed.
Stormwater	Stormwater generated on site will be managed according to Sustainable Drainage System (SuDS) principles – swales, detention ponds, permeable paving, and artificial wetlands.	Although the drainage line is located outside of the development footprint, it is potentially vulnerable to stormwater impacts given the steep slopes within the property.
Site Access	Access to the property is currently available through the existing roads network.	Potential increased vehicle movement.

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

3.1. 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
Local	Extending across the site and to nearby settlements
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
Very High	Natural and/ or social functions and/ or processes are severely altered

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.

3.2. Impacts foreseen during the Construction Phase

Project Phase	**Construction**			
Impact	Loss of natural fynbos vegetation			
Description of impact	Loss of fynbos vegetation, and habitat loss for terrestrial wildlife.			
Mitigable	High	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	❖ It would be ecologically desirable to (as much as possible) cluster development in nodes within previously disturbed areas and close to existing disturbance (e.g. major roads). Where development is proposed further from the main road, this should be located within existing open areas in the secondary thicket. ❖ Exclude development from areas of indigenous natural vegetation, in this case, the mesic thicket/forest at the bottom (southern side) of the site. ❖ Consult with the local fire protection agency regarding whether to implement a fire management plan for the site. Note that the natural vegetation occurring on site, and the probable natural vegetation in previously cultivated areas on site, is NOT fire-prone. Exclusion of fire will probably lead to promotion of more mesic thicket vegetation and exclusion of secondary fynbos, but this is supported by the ecological assessment of the site as likely having historically been mesic thicket. ❖ Access to areas of VERY HIGH sensitivity during construction must not be permitted by any construction personnel (mapped as "Mesic thicket/forest, and as "VERY HIGH"). These areas must be fenced off and no access allowed. ❖ Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control.			
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	Very limited	Extending only as far as the development site area	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	Definite	There are sound scientific reasons to expect that the impact will occur	Definite	There are sound scientific reasons to expect that the impact will occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Partly reversible	The impact is reversible but more intense mitigation measures are required	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	The vegetation on site (within the proposed development footprint) is secondary and in relatively poor condition and consists of secondary vegetation with a species composition that is not representative of the natural habitat.			
Cumulative impacts	The impact would result in insignificant cumulative effects			
Project Phase	**Construction**			
Impact	Loss of natural mesic thicket/forest vegetation			
Description of impact	Loss of mesic thicket/forest vegetation and habitat loss for terrestrial wildlife.			
Mitigable	Medium	Mitigation exists and may reduce significance of impacts		

Potential mitigation	❖ Keep all proposed infrastructure away from the mesic thicket/forest areas. In all areas close to the mesic thicket, rehabilitation of disturbed areas after construction should promote natural successional processes that currently drive the secondary vegetation towards thicket development. ❖ Strictly control any possible erosion from upslope areas. There should be no erosion or runoff effects on the mesic thicket/forest areas. ❖ Undertake regular monitoring to detect erosion or other degrading impacts early so that they can be controlled. ❖ Where possible, retain well-developed thicket patches within the upper parts of the site. These have a high diversity of woody plant species, including several that occur within existing mesic thicket. ❖ Once construction is complete, rehabilitate previously disturbed areas to a state where natural successional processes can operate. Based on current processes occurring on site, this is very likely to lead to further thicket development within these areas. ❖ Future garden development on site should use only site-appropriate indigenous species. It is recommended that thicket species that currently occur on site be used for future gardens. This will result in mostly thicket-type vegetation developing, but this should be allowed to the extent that it doesn't compromise any fire-protection considerations. ❖ It would be ecologically desirable to (as much as possible) cluster development in nodes within previously disturbed areas and close to existing disturbance (e.g. major roads). Where development is proposed further from the main road, this should be located within existing open areas in the secondary thicket. ❖ Exclude development from areas of indigenous natural vegetation, in this case, the mesic thicket/forest at the bottom (southern side) of the site. ❖ Consult with the local fire protection agency regarding whether to implement a fire management plan for the site. Note that the natural vegetation occurring on site, and the probable natural vegetation in previously cultivated areas on site, is NOT fire-prone. Exclusion of fire will probably lead to promotion of more mesic thicket vegetation and exclusion of secondary fynbos, but this is supported by the ecological assessment of the site as likely having historically been mesic thicket. ❖ Access to areas of VERY HIGH sensitivity during construction must not be permitted by any construction personnel (mapped as "Mesic thicket/forest, and as "VERY HIGH"). These areas must be fenced off and no access allowed. ❖ Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control.

Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		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 surrounding wider landscape	Limited	Limited to the site and its immediate surroundings
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	Probable	It is most likely that the impact will occur	Probable	It is most likely that the impact will occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Irreversible	the impact is irreversible, and no mitigation measures exist	Barely reversible	the impact is unlikely to be reversed even with intense mitigation measures

Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	**Medium negative (-)**		**Low negative (-)**	
Comment on significance	Damage to this area of thicket (in combination with the existing powerline servitude) could potentially affect the connectivity of the entire landscape, as well as buffer areas associated with the Garden Route National Park. The potential impact affects a small proportion of the vegetation but could have wider ecological implications. Note that if any impact did occur, then the probability would be definite and the significance of the impact would then be HIGH. The most important mitigation is therefore to minimise the possibility of the risk occurring			
Cumulative impacts	The impact could result in cumulative effects in the wider landscape.			

Project Phase	**Construction**			
Impact	Loss of individuals of protected tree species			
Description of impact	Loss of a small number of small individuals of protected tree species found on site.			
Mitigable	High	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	❖ Do not disturb natural woodland where there is a continuous canopy of forest trees, and protect forest margin areas so that forest interiors maintain existing microhabitat conditions and structural integrity. ❖ If any trees need to be removed or pruned then a permit is required, according to the National Forests Act. ❖ If necessary, plant additional milkwoods in the development as part of the final landscaping. These can be planted along with other appropriate coastal forest species, but the proportions and composition should reflect habitat that would have occurred naturally at this site.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Low negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Medium Term	Impact will last between 2 and 15 years
Extent	Very limited	Extending only as far as the development site area	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
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
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**	

Comment on significance	Currently, only a small number of small individuals of protected tree species were found on site. These have introduced through natural processes relatively recently, i.e. through natural propagation. They were only found within the secondary vegetation and are juveniles. Nevertheless, they are protected under national legislation and must therefore be protected or be dealt with appropriately. The potential impact affects a very small proportion of the overall known population of the species, and the proportion affected of those occurring on site is also smaller.
Cumulative impacts	The impact would result in insignificant cumulative effects

Project Phase	**Construction**			
Impact	Loss of habitat for flagged animal species			
Description of impact	Disturbance of mesic thicket/forest habitat on site that is suspected habitat for flagged animal species. This includes all natural thicket habitat on site, none of which is within the proposed development footprint, but which may possibly be affected by the proposed development.			
Mitigable	Medium	Mitigation exists and will reduce significance of impacts		
Potential mitigation	❖ Protect natural mesic thicket vegetation adjacent to the proposed development site. ❖ Keep all proposed infrastructure away from the mesic thicket/forest areas. In all areas close to the mesic thicket, rehabilitation of disturbed areas after construction should promote natural successional processes that currently drive the secondary vegetation towards thicket development. ❖ Access to forested areas during construction must not be permitted by any construction personnel. These areas must be fenced off and no access allowed. ❖ Do not disturb natural woodland where there is a continuous canopy of forest trees, and protect forest margin areas so that forest interiors maintain existing microhabitat conditions and structural integrity. ❖ Where possible, retain well-developed thicket patches within the upper parts of the site. These have a high diversity of woody plant species, including several that occur within existing mesic thicket.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		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	Possible	Has occurred here or elsewhere and could therefore occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Irreversible	the impact is irreversible, and no mitigation measures exist	Irreversible	the impact is irreversible, and no mitigation measures exist

Resource irreplaceability	Medium	the resource is damaged irreparably but is represented elsewhere	Medium	the resource is damaged irreparably but is represented elsewhere
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	The potential impact affects a small proportion of the overall habitat available for these species and will possibly not directly affect any individuals. Nevertheless, the threatened status of many species is due significantly to overall loss of habitat, which is reflected in the threatened status of the species. Additional loss of habitat, however small, continues to drive ecosystems towards new thresholds of loss. More importantly at the current location, the mesic thicket habitat is part of a wider network of habitat and loss of the habitat on site could break migration routes and habitat connectivity.			
Cumulative impacts	The potential impact affects a negligible proportion of the overall habitat available for wildlife.			

Project Phase	**Construction**			
Impact	**Disturbance to fauna and fragmentation of habitats**			
Description of impact	Cut-off of natural dispersal and foraging movement by animals, fragmentation of ecological infrastructure, secondary impacts to wildlife such as noise and lighting.			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	❖ Where fencing is required, wildlife gaps in the perimeter fence must be installed at appropriate intervals and be of a suitable dimension to allow for the movement of small animals. ❖ 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.			
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	Limited	Limited to the site and its immediate surroundings
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	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely

				been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Partly reversible	The impact is reversible but more intense mitigation measures are required	Partly reversible	The impact is reversible but more intense mitigation measures are required
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**	
Comment on significance	Damage to areas of thicket (in combination with the existing powerline servitude) could potentially affect the connectivity of the entire landscape, as well as buffer areas associated with the Garden Route National Park. The potential impact affects a small proportion of the vegetation but could have wider ecological implications.			
Cumulative impacts	The potential impact affects a negligible proportion of the overall habitat available for wildlife.			

Project Phase	**Construction**			
Impact	**Waste Pollution**			
Description of impact	Pollution of buffer zone and natural areas caused by waste generated by the construction process.			
Mitigable	High	Mitigation exists and will considerably reduce significance of impacts		
Potential mitigation	❖ 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. ❖ Separation and recycling of different waste materials should be supported. ❖ 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. ❖ 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. ❖ 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.			
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	Very Limited	Extending only as far as the development site area	Very Limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are slightly altered	Low	Natural and/or social functions and/or processes are slightly altered
Probability	Possible	Has occurred here or elsewhere and could therefore occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has

				rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
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	Negligible	No loss of resources	Negligible	No loss of resources
Significance	**Negligible**		**Negligible**	
Comment on significance	Construction activities are likely to generate significant quantities of solid waste that could pollute the buffer zone and natural areas.			
Cumulative impacts	The impact would result in insignificant cumulative effects.			

Project Phase	**Construction**			
Impact	**Construction Vehicles**			
Description of impact	Pollution caused by the operation of vehicles and heavy machinery.			
Mitigable	High	Mitigation exists and will considerably reduce significance of impacts		
Potential mitigation	❖ Construction activities must be confined to clearly demarcated areas so as to prevent unnecessary disturbance the surrounding environment. ❖ No vehicles are to park or operate within "no-go" areas. ❖ 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.			
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	Very Limited	Extending only as far as the development site area	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	Possible	Has occurred here or elsewhere and could therefore occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
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	Negligible	No loss of resources	Negligible	No loss of resources
Significance	**Negligible**		**Negligible**	
Comment on significance	Operation of vehicles could result in spillages or leaks of hydrocarbons (fuel and oil) and could lead to unnecessary disturbance of natural areas.			
Cumulative impacts	The impact would result in insignificant cumulative effects.			

Project Phase	**Construction**			
Impact	**Erosion Management**			
Description of impact	Potential erosion during clearance of the site and increased stormwater runoff			
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	❖ Ensure that construction activities do not cause any preferential flow paths and concentrated surface runoff during rainfall events. ❖ Clearly demarcate the construction area and ensure that heavy machinery does not compact soil or disturb vegetation outside of these demarcated areas. ❖ Reduce transport of sediment through use of structures such as silt fences and biodegradable coir logs placed along a contour below the development footprint. ❖ 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. ❖ 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.			
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 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
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Partly reversible	the impact is reversible but more intense mitigation measures are required	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	Negligible	No loss of resources
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	Steep slopes on the property will be vulnerable to erosion during clearance of the site and the construction phase. It is therefore important that appropriate erosion control measures are implemented.			
Cumulative impacts	Without mitigation this impact could result in potential erosion on site caused by stormwater.			

Project Phase	Construction			
Impact	**Disturbance / removal of topsoil**			
Description of impact	Disturbance of topsoil, potential soil erosion and the loss of topsoil			
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	❖ 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. ❖ 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.			
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 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
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Partly reversible	the impact is reversible but more intense mitigation measures are required	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	Negligible	No loss of resources
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	Clearing areas of the site in preparation for construction will expose bare soil which may lead to the potential loss of topsoil through runoff and incorrect storage. This is not envisaged to be a significant impact with mitigation measures in place. Topsoil can be reused on site for rehabilitation purposes.			
Cumulative impacts	Without mitigation this impact could result in potential erosion on the site caused by stormwater flow.			

Project Phase	Construction	
Impact	**Noise pollution**	
Description of impact	Noise caused by machinery and staff	
Mitigable	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts

Potential mitigation	❖ Construction activities must only take place during normal working times between 07:00-17:00 on weekdays. ❖ 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.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Brief	Impact will not last longer than 1 year	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Negligible	The impact will have negligible effects and would require little or no mitigation	Negligible	The impact will have negligible effects and would require little or no mitigation
Probability	Probable	It is most likely that the impact will occur	Probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
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	Not relevant		Not relevant	
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	Some extent of noise pollution during construction is expected; however, with mitigation the impact will be reduced.			
Cumulative impacts	No cumulative impacts exist.			

Project Phase	**Construction**	
Impact	**Visual impact**	
Description of impact	Visual & aesthetic consequences of the proposed project	
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts
Potential mitigation	❖ The necessary measures be implemented during the construction phase to protect the natural vegetation, to control the noise, dust and visual intrusion. ❖ The potential visual impacts and proposed mitigation thereof must be undertaken by a professionally registered landscape architect that must be part of the design team (including engineers and architects). The brief of the landscape architect (LA) must include: o The LA must consult with both engineers and architects to ensure that sensitive earthwork and building design development occurs, which will allow for reducing the construction and operation phase visual impacts. o The LA must work with the project surveyor, arborist and planners in establishing which trees are to remain on site for visual screening and taking this information into the design development of the civil and building works. o The LA must prepare a landscape plan, design development thereof and monitoring implementation and thereafter maintenance. The plan must include the tree survey and what trees are, what indigenous vegetation is, to be retained, what is to be removed, the planting of indigenous trees, new trees and shrub planting along roadways and in open spaces in the built areas and a guideline document for private gardens within the development.	
Assessment	**Without mitigation**	**With mitigation**
Nature	Negative	Negative

Duration	Short term	Impact will last between 1 and 2 years	Short term	Impact will last between 1 and 2 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
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	Definite	There are sound scientific reasons to expect that the impact will 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	Partly reversible	the impact is reversible but more intense mitigation measures are required	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Not relevant		Not relevant	
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	The proposal is sensitive towards the character of the area and attempts to create a unique sense of place that will blend in and compliment the ambience of the surrounding area.			
Cumulative impacts	No cumulative impacts exist.			

Project Phase	**Construction**			
Impact	**Employment**			
Description of impact	Empowerment of the local community members living in the area relating to temporary employment opportunities			
Mitigable	Medium	Mitigation only exists to ensure that the positive impact is followed through.		
Potential mitigation	❖ Use existing social structures and communication channels to ensure social representation. ❖ Use local labour and source local materials as far as possible.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Positive	
Duration	Short term	Impact will last between 1 and 2 years	Short term	Impact will last between 1 and 2 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Low	Natural and/or social functions and/or processes are slightly altered	Low	Natural and/or social functions and/or processes are slightly altered
Probability	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere	Definite	There are sound scientific reasons to expect that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Not relevant		Not relevant	

Resource irreplaceability	Not relevant		Not relevant	
Significance	**Negligible**		**Low positive (+)**	
Comment on significance	Due to the proposed development being on a small-scale, there is a low difference in impacts between without mitigation and with mitigation. However, as the impact would be positive for the local community to be employed during construction, mitigation is recommended to ensure this occurs.			
Cumulative impacts	Minor upliftment for the local community.			

3.3. Impacts foreseen during the Operational Phase

Project Phase	**Operation**			
Impact	**Visual / Sense of place**			
Description of impact	Visual impacts of structures / aesthetic consequences due to incorrect or excessive lighting, especially outdoor lighting			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	❖ Municipal by-laws need to be adhered to. ❖ Re-vegetation and Landscaping of open space areas with suitable indigenous vegetation. ❖ Systematic removal and follow-up operations of invasive alien plants. ❖ Adhere to the Landscape Plan. ❖ 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			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative Low	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Medium Term	Impact will last between 2 and 15 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
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	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Partly reversible	the impact is reversible but more intense mitigation measures are required	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Not relevant		Not relevant	
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	Lighting, specifically outdoor lighting is not only aesthetic, but it provides a level of security to property owners. Therefore, outdoor lighting is essential, but should be implemented in a way which does not cause negative impacts to neighbours.			

Cumulative impacts	Without mitigation the development would not be meeting design guidelines enforced by the municipality. Specifically design guidelines for the local area.

Project Phase	**Operation**			
Impact	**Stormwater Management**			
Description of impact	Accelerated erosion / pollution into sub-surface water.			
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	❖ A sustainable stormwater design must be implemented to prevent excessive run-off that will lead to erosion of the surrounding landscape. ❖ 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, *inter alia*, should be considered: 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.			
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 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	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Partly reversible	the impact is reversible but more intense mitigation measures are required	Completely reversible	the impact can be reversed with the 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	**Low negative (-)**		**Negligible**	
Comment on significance	A key impact related to residential developments is the generation of large volumes of stormwater associated with an increased area of impermeable surfaces (i.e. roads, roofs and other infrastructure). Stormwater is typically conveyed into watercourses, where high volumes (and associated high energy) cause degradation of watercourses, mainly due to the erosion of the bed and banks. In this respect given the steep slopes within the property, even though the drainage line is located outside of the development footprint, it is potentially vulnerable to stormwater impacts.			
Cumulative impacts	Without mitigation this impact could result in potential erosion on the site caused by stormwater flow.			

Project Phase	Operation			
Impact	Eradication of Alien Vegetation			
Description of impact	Impacts on biodiversity / natural habitats / increased fire risk			
Mitigable	High	Mitigation exists and will considerably reduce significance of impacts		
Potential mitigation	❖ 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. ❖ An Alien Control Plan should be implemented to systematically remove and control alien plant species. ❖ Follow-up operations must be done. ❖ Minimise disturbance to the natural vegetation using low impact manual labour techniques. ❖ Reduce fire hazard on site.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Positive	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Medium	Natural and/or social functions and/or processes are notably altered
Probability	Definite	There are sound scientific reasons to expect that the impact will occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Barely reversible	the impact is unlikely to be reversed even with intense mitigation measures	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Not relevant		Not relevant	
Significance	**Medium negative (-)**		**Medium positive (+)**	
Comment on significance	An approved AIP Control Plan is in place, and much of the property has already been legally eradicated of AIP. The control of AIP on the property has a positive impact on biodiversity.			
Cumulative impacts	Without mitigation this impact could result in the spread of alien invasive plants and the loss of indigenous vegetation.			

Project Phase	Operation	
Impact	**Landscaping**	
Description of impact	Habitat loss for terrestrial wildlife, fragmentation of ecological corridor	
Mitigable	Low	Mitigation will slightly reduce the significance of impacts
Potential mitigation	❖ The Landscape Plan must be implemented and adhered to. ❖ Areas that are not required for development purposes should remain natural with indigenous vegetation. ❖ All alien invasive plants must be removed from the site on an on-going basis. ❖ All landscaping must comprise of flora species indigenous to the region. The sole use of exotics and the planting of NEMBA listed Alien Invasive Plants is prohibited.	

Assessment	Without mitigation		With mitigation	
Nature	Negative		Positive	
Duration	Brief	Impact will not last longer than 1 year	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	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere	Definite	There are sound scientific reasons to expect that the impact will 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	Not relevant	
Resource irreplaceability	Not relevant		Not relevant	
Significance	**Negligible**		**Low positive (+)**	
Comment on significance	With mitigation the impact is likely to have more beneficial impact to retaining natural biodiversity, than without mitigation.			
Cumulative impacts	Without mitigation this impact could result in the spread of alien invasive plants and the loss of indigenous vegetation.			

4. SPECIALIST RECOMMENDATIONS/MANAGEMENT ACTIONS

4.1. Aquatic Compliance Statement

- ❖ Stormwater Management

A key impact related to residential developments is the generation of large volumes of stormwater associated with an increased area of impermeable surfaces (i.e. roads, roofs and other infrastructure). Stormwater is typically conveyed into watercourses, where high volumes (and associated high energy) cause degradation of watercourses, mainly due to the erosion of the bed and banks. In this respect given the steep slopes within the property, even though the drainage line is located outside of the development footprint, it is potentially vulnerable to stormwater impacts.

Given the location of the property in a FEPA and SWSA, it is therefore important that 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. For example, the City of Cape Town guideline is that developments must provide for 24-hour extended detention of the 1-year return interval 24- hour storm event. In this respect the following measures, inter alia, should be considered:

- Rainwater harvesting tanks must be installed;
- 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; and
- Use of retention ponds and artificial wetlands to capture stormwater runoff and prevent its discharge from the site.

- ❖ Erosion Management

The steep slopes of the property will be vulnerable to erosion during clearance of the site and the construction phase. It is therefore important that appropriate erosion control measures are implemented, which include inter alia, the following:

- Ensure that construction activities do not cause any preferential flow paths and concentrated surface runoff during rainfall events.
- Clearly demarcate the construction area and ensure that heavy machinery does not compact soil or disturb vegetation outside of these demarcated areas.
- Reduce transport of sediment through use of structures such as silt fences and biodegradable coir logs placed along a contour below the development footprint.
- 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.
- 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.

4.2. Plant Species, Animal Species and Terrestrial Biodiversity Assessment

- ❖ It would be ecologically desirable to (as much as possible) cluster development in nodes within previously disturbed areas and close to existing disturbance (e.g. major roads). Where development is proposed further from the main road, this should be located within existing open areas in the secondary thicket.
- ❖ Exclude development from areas of indigenous natural vegetation, in this case, the mesic thicket/forest at the bottom (southern side) of the site.

- Consult with the local fire protection agency regarding whether to implement a fire management plan for the site. Note that the natural vegetation occurring on site, and the probable natural vegetation in previously cultivated areas on site, is NOT fire-prone. Exclusion of fire will probably lead to promotion of more mesic thicket vegetation and exclusion of secondary fynbos, but this is supported by the ecological assessment of the site as likely having historically been mesic thicket.
- Access to areas of VERY HIGH sensitivity during construction must not be permitted by any construction personnel. These areas must be fenced off and no access allowed.
- Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control.
- Keep all proposed infrastructure away from the mesic thicket/forest areas. In all areas close to the mesic thicket, rehabilitation of disturbed areas after construction should promote natural successional processes that currently drive the secondary vegetation towards thicket development.
- Access to forested areas during construction must not be permitted by any construction personnel. These areas must be fenced off and no access allowed.
- Strictly control any possible erosion from upslope areas. There should be no erosion or runoff effects on the mesic thicket/forest areas.
- Undertake regular monitoring to detect erosion or other degrading impacts early so that they can be controlled.
- Where possible, retain well-developed thicket patches within the upper parts of the site. These have a high diversity of woody plant species, including several that occur within existing mesic thicket.
- Once construction is complete, rehabilitate previously disturbed areas to a state where natural successional processes can operate. Based on current processes occurring on site, this is very likely to lead to further thicket development within these areas.
- Future garden development on site should use only site-appropriate indigenous species. It is recommended that thicket species that currently occur on site be used for future gardens. This will result in mostly thicket-type vegetation developing, but this should be allowed to the extent that it doesn't compromise any fire-protection considerations.
- Do not disturb natural woodland where there is a continuous canopy of forest trees, and protect forest margin areas so that forest interiors maintain existing microhabitat conditions and structural integrity.
- If any trees need to be removed or pruned then a permit is required, according to the National Forests Act.
- If necessary, plant additional milkwoods in the development as part of the final landscaping. These can be planted along with other appropriate coastal forest species, but the proportions and composition should reflect habitat that would have occurred naturally at this site.

4.3. Heritage Statement

It is recommended that Heritage Western Cape consider and/or require that the following be included in the Environmental Authorisation / Environmental Management Program, if the project is approved:

- if any human remains or significant archaeological materials are exposed during mining activities, then the find should be protected from further disturbance and work in the immediate area should be halted and Heritage Western Cape must be notified immediately. These heritage resources are protected by Section 36(3)(a) and Section 35(4) of the NHRA (Act 25 of 1999) respectively and may not be damaged or disturbed in any way without a permit from the heritage authorities. Any work in mitigation, if deemed appropriate, should be commissioned and completed before construction continues in the affected area and will be at the expense of the developer.

4.4. Visual Impact Assessment

The potential visual impacts and proposed mitigation thereof must be undertaken by a professionally registered landscape architect that must be part of the design team (including engineers and architects). The brief of the landscape architect (LA) must include:

- The LA must consult with both engineers and architects to ensure that sensitive earthwork and building design development occurs, which will allow for reducing the construction and operation phase visual impacts.
- The LA must work with the project surveyor, arborist and planners in establishing which trees are to remain on site for visual screening and taking this information into the design development of the civil and building works.

The LA must prepare a landscape plan, design development thereof and monitoring implementation and thereafter maintenance. The plan must include the tree survey and what trees are, what indigenous vegetation is, to be retained, what is to be removed, the planting of indigenous trees, new trees and shrub planting along roadways and in open spaces in the built areas and a guideline document for private gardens within the development.

4.5. Geotechnical

It is important to note that the recommendations are based primarily on the profiling of test pits and the interpolation of information between test pits. It is therefore possible that variations from the expected conditions can occur.

- Classification of soils – Three (3) CBR tests were done and the results varied between 6 and 19% @ 95% Mod AASHTO, reflecting low to medium bearing capacities of approximately 54 to 171 KPa. The typical materials sampled on site classified as G8 to >G9 according to the COLTO classification system.
- Excavatability - No significant problems were noted, with no refusals encountered at depths shallower than 800mm. Excavation constraints may be expected at depths exceeding 1meter.
- Geohydrology - Excavations are to be adequately drained should rain water fill trenches during construction or if the water tables rise.
- Construction Material - The low expansive materials found on this site are suitable for floor fill purposes. Where encountered, clayey materials should be cut to spoil.
- Stability of Excavations - Excavations were all stable and no side walls collapsed.
- The NHBRC engineering geological zoning of this site is as follows: S. The Site Classes are S1 (100%). All the site classes are indicated on the soil profiles.
- Site Class S1 – Reinforced strip foot foundations are recommended as will be decided upon by the Structural Engineer. All trenches have to be inspected by the appointed Structural Engineer before steel is placed (if required) and concrete is poured.

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 Applicant), 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 Applicant's responsibility to identify legislation relevant to the proposed activity.

5.3. Project Responsibilities

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

The project Applicant 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 Applicant (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 Applicant, 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 noncompliance of EMPr to be predetermined by Engineer, Eco and Project Applicant, this needs to be 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 Applicant 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 Applicant 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 Applicant in writing. Preceding the issuing of a NCR, the Applicant 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 Applicant should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

6.4. Emergency Response

The Applicants 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 Applicant 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 monthlybasis until rehabilitation is successful.
- The holder of the environmental authorisation (the Applicant) is responsible to ensure that an environmental audit report is submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) 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 (DEA&DP).

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 Applicant from the environmental conditions and requirements as set out in the EA and EMPr, or;
- Any contravention by the Applicant 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 Applicant 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 Applicant
- Any representative of the Applicant

7.5 Process of Issuing Non-Compliance

The appointed Environmental Control Officer (ECO) may issue a formal non-compliance to the Applicant. A copy of the non-compliance issued will be placed in the EMPr file. The Applicant 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.

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.

7.6 Failure to complete corrective actions

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

- Inform DEA&DP in writing that a condition of approval for the project is not being met.

The DEA&DP office is responsible for resolving the impasse with the Applicant.

The Applicant 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 Applicant or any of his staff.

On receiving a notice of non-compliance the Applicant 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 Applicant'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 DEA&DP. Any amendments to the EMPr will require approval from the DEA&DP.

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
Applicant	**Mr Alexander G. Polson (Wealth Spring (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 Applicant prior to construction commencement. This includes permits for the removal of protected plants.	Applicant	Once-off
Appointment of Environmental Control Officer	**Appointment of Environmental Control Officer**		
	An Independent ECO must be appointed at the Applicant's cost to monitor the implementation of the EMPr.	Applicant & ECO	Once-off
	Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence which includes site preparation and demolition.		
	The nomination of the ECO must be given to DEA&DP, in writing fourteen (14) days prior to construction commencement. The notification must include contact details for the ECO and details pertaining to the ECO's relevant experience.		
	Should the ECO for the development change at any time, this must be communicated, in writing, to DEA&DP, within fourteen (14) days of appointing the new ECO. The notification must include contact details for the ECO, details pertaining to the ECO's relevant experience and reasons for the change in ECO.		As required
Preparation of Method Statements	**Method Statements**		
	Method Statements must be submitted by the Applicant/ Contractor to the ECO and must be adhered to by the Applicant/ Contractor. These relate to water and stormwater management requirements, solid waste management requirements, the storage of hazardous materials (if applicable), and standard emergency procedures.	Applicant/ Contractor	Prior to commencement of construction and during construction (if necessary)
	The ECO will monitor the implementation of the statements.	ECO	On-going
Notifying Relevant I&APs	**Notice of Environmental Authorisation (EA)**		
	A written notice must be given to all relevant I&APs notifying them of the EA. The notice must include a date on which the EA was received and the	Applicant	Prior to commencement

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	reference number for the EA. Commencement of construction may not begin until 21 days after the notification, provided no appeals have been lodged against the EA.		
Education of Site Staff on General and Environmental Conduct *A general regard for the social and ecological wellbeing of the site and adjacent areas is expected of the site staff.*	**Environmental Awareness and Training**		
	Construction staff must be adequately educated by the ECO as to the provisions included in the EMPr, 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 EMPr 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: ➢ 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; ➢ 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.	Applicant	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	

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Staff must be made aware that they are not to make excessive noise e.g. shouting, hooting.	ECO & Applicant	
	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.	Applicant / Contractor	On-going
	No vehicles are to park or operate within "no-go" areas.		
	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 Applicant and contractor must ensure that the	Applicant/ Contractor	On-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	construction footprint is limited to the construction area. The extent of the construction must be marked out to satisfaction of the engineer and ECO.		
	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 Applicant 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
	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.		Weekly
	Unauthorised spilling of waste from the septic tank into the environment and burying of waste are strictly prohibited.		On-going
	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 Applicant/ Contractor.	Applicant / Contractor	On-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	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.	Applicant / Contractor	On-going
	The potential visual impacts and proposed mitigation thereof must be undertaken by a professionally registered landscape architect that must be part of the design team (including engineers and architects). The brief of the landscape architect (LA) must include: o The LA must consult with both engineers and architects to ensure that sensitive earthwork and building design development occurs, which will allow for reducing the construction and operation phase visual impacts. o The LA must work with the project surveyor, arborist and planners in establishing which trees are to remain on site for visual screening and taking this information into the design development of the civil and building works. o The LA must prepare a landscape plan, design development thereof and monitoring implementation and thereafter maintenance. The plan must include the tree survey and what trees are, what indigenous vegetation is, to be retained, what is to be removed, the planting of indigenous trees, new trees and shrub planting along roadways and in open spaces in the built areas and a guideline document for private gardens within the development.	Applicant / Landscape Architect	
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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Equipment lay-down and storage areas must be designated, demarcated and signed.		
Conservation of the Natural Environment	**Natural fynbos vegetation**		
	Exclude development from areas of indigenous natural vegetation, in this case, the mesic thicket/forest at the bottom (southern side) of the site.	Applicant / Contractor	Immediately
	Access to areas of VERY HIGH sensitivity (Mesic thicket/forest) during construction must not be permitted by any construction personnel. These areas must be fenced off and no access allowed.		On-going
	Consult with the local fire protection agency regarding whether to implement a fire management plan for the site. Note that the natural vegetation occurring on site, and the probable natural vegetation in previously cultivated areas on site, is NOT fire-prone. Exclusion of fire will probably lead to promotion of more mesic thicket vegetation and exclusion of secondary fynbos, but this is supported by the ecological assessment of the site as likely having historically been mesic thicket.	Applicant	Immediately
	Natural mesic thicket/forest vegetation		
	Keep all proposed infrastructure away from the mesic thicket/forest areas. In all areas close to the mesic thicket, rehabilitation of disturbed areas after construction should promote natural successional processes that currently drive the secondary vegetation towards thicket development.	Applicant / Contractor	On-going
	Access to forested areas during construction must not be permitted by any construction personnel. These areas must be fenced off and no access allowed.		
	Strictly control any possible erosion from upslope areas. There should be no erosion or runoff effects on the mesic thicket/forest areas.		On-going
	Undertake regular monitoring to detect erosion or other degrading impacts early so that they can be controlled.		On-going / weekly
	Where possible, retain well-developed thicket patches within the upper parts of the site. These have a high diversity of woody plant species, including several that occur within existing mesic thicket.		Immediately
	Protected tree species		
	Do not disturb natural woodland where there is a continuous canopy of forest trees and protect forest margin areas so that forest interiors maintain existing microhabitat conditions and structural integrity.	Applicant / Contractor	On-going
	Protected trees as well as indigenous forest patches to be cordoned off as no-go areas.		Immediately

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	If any trees need to be removed or pruned then a permit is required, according to the National Forests Act.	Applicant	As required
	If necessary, plant additional milkwoods in the development as part of the final landscaping. These can be planted along with other appropriate coastal forest species, but the proportions and composition should reflect habitat that would have occurred naturally at this site.		
	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.	Applicant / 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.		
	Preservation of natural habitats		
	Wherever there are sections of undisturbed natural habitat within the development area, they should not be impacted by the building activities and should be conserved as small islands of natural resources for the small wildlife of the area. These animals include skinks, rodents, birds and invertebrates. Any	ECO & Contractor	Immediate and On-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	area of natural habitat that is not required for the approved development should be conserved for small wildlife.		
	Landscape Connectivity		
	Where fencing is required, wildlife gaps in the perimeter fence must be installed at appropriate intervals and be of a suitable dimension to allow for the movement of small animals.	ECO & Contractor	Immediate
	Drainage Line		
	Establish and maintain a 36-meter buffer from the non-perennial drainage line to the west of the property.	ECO & Contractor	Immediate and On-going
Land Degradation	**Erosion Management**		
	Ensure that construction activities do not cause any preferential flow paths and concentrated surface runoff during rainfall events.	Applicant / Engineer	On-going
	Clearly demarcate the construction area and ensure that heavy machinery does not compact soil or disturb vegetation outside of these demarcated areas.	Contractor	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 of construction phase
	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.	Applicant / 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.	Applicant / 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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	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.		
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.	Applicant / Contractor	On-going and monitored weekly
	Separation and recycling of different waste materials should be supported.	Contractor	
	Littering on the site is forbidden and the site shall be cleared of litter at the end of each working day.		Daily
	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.		Every Occurrence
	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	Applicant / 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

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	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.		
Cultural Environment	**Archaeology and Artefacts**		
	No structures older than sixty years or parts thereof are allowed to be demolished altered or extended without a permit from Heritage Western Cape.	Applicant / Contractor	Immediate and On-going
	If any archaeological sites/materials are exposed, mitigation regarding the finds must be conducted with the Heritage Western Cape regarding the destiny of the material. Examples of heritage resources are as follow: • Human remains • Coins/Gold/Silver • Fossils • Fossils shell middens/ marine shell heaps • Pottery/ceramics		
	If Heritage Western Cape agrees to the removal of the material, an archaeologist must apply for a permit to scientifically excavate/collect the material.		
	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 Western Cape Repository for Archaeological material.		
Safety and Security	**Safety and Security On-Site**		
	Material stockpiles or stacks must be stable and well secured to avoid collapse and possible injury to site workers / local residents.	Contractor	On-going
	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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	No unauthorised person may be permitted to enter the site without prior permission of the Applicant.		
	Fire Management		
	Firefighting equipment should be present on site at all times as per Occupational Health and Safety Act.	Applicant / Contractor	On-going
	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.	Applicant	Immediate

10.2. OPERATIONAL PHASE

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Vegetation Rehabilitation – progressive rehabilitation must be carried out	**Vegetation**		
	Erosion prevention and control measures must be implemented. Organic mulch or sand bags must be used to contain all sediment and prevent erosion during rehabilitation.	Contractor	Rehabilitation
	Encroachment of invasive alien plants in this regard will need to be monitored on a regular basis to prevent re-infestation. This would need to be undertaken by the ECO or a designated specialist.	Applicant & ECO	Project completion and Maintenance
	Landscaping		
	Future garden development on site should use only site-appropriate indigenous species. It is recommended that thicket species that currently occur on site be used for future gardens. This will result in mostly thicket-type vegetation developing, but this should be allowed to the extent that it doesn't compromise any fire-protection considerations.	Applicant / 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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Adhere to the Landscape Plan.	Applicant / Landscape Architect	
	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		
Landscape Connectivity	**Permeable fencing**		
	Wherever fences are needed in the development area and on its boundary, it will be necessary to ensure that wildlife can move through the fences to enable their movement across the landscape. Consultation with CapeNature will be required to determine the best methods to use and spacing of permeability. It will also need to be determined where wildlife crosses the fence line. Permeability of the fence will be done according to CapeNature's requirements.	Applicant & ECO	Project completion
	Fencing around the property must be visible to wildlife, including birds, by fitting reflective or colourful weather-resistant flags (e.g., aluminum, or plastic strips) to the wire.	Applicant	Project completion
Alien Invasive Plants	**Alien plant eradication**		
	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.	Applicant / Contractor	Immediate and On-going
	Rehabilitation of disturbed areas, as well as previously invaded areas, should promote establishment of site-appropriate indigenous species.		
	The Alien Control Plan should be implemented to systematically remove and control alien plant species.		
	Follow-up operations must be done.		
	Minimise disturbance to the natural vegetation using low impact manual labour techniques.		
	Reduce fire hazard on site.		
Removal and Repair of Materials and Infrastructure	**Materials and Infrastructure**		
	All material used for the construction must be removed from site after construction.	Contractor	Project completion
	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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Stormwater Management	**Increased stormwater runoff**		
	A sustainable stormwater design must be implemented to prevent excessive run-off 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, *inter alia*, should be considered: 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.	Applicant	During Operational phase
	Collection and disposal of non-hazardous waste to a registered landfill site must occur at least once a week.		
Fire management	No burning of vegetation to be permitted, even as part of alien plant management.	Applicant	On-going
	Ensure that no refuse waste is buried or burnt on the site or surrounds.		
	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**		
	Once construction is complete, rehabilitate previously disturbed areas to a state where natural successional processes can operate. Based on current processes occurring on site, this is very likely to lead to further thicket development within these areas.	Applicant	
	All disturbed areas, or areas which have been disturbed for the purpose of the development, are to be re-vegetated. This will aid in preventing erosion within the site. A 100% indigenous planting plan must be adhered to in terms of all planting carried out on the site. Consultation must be made with a Botanical Specialist for a site-specific vegetation list.	Applicant & ECO	Project completion
		Applicant & 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 (if applicable).		
	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.	Applicant	On-going site maintenance
	On-going monitoring and assessing of stormwater drainage must occur on site during the operational phase of the proposed project.		
Land Rehabilitation	**Land**		
	Rehabilitation must be executed in such a manner that surface runoff will not cause erosion of disturbed areas during and after rehabilitation.	Applicant / 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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	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).		

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 Applicant 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.

PO Box 1252 Sedgefield 6573 Fax: 086 402 9562 www.ecoroute.co.za

14. RESPONSIBILITIES

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

FUNCTION	RESPONSIBILITY
Applicant	• The Applicant is ultimately responsible for the ensuring compliance with all the requirements associated with the construction, operation, rehabilitation and decommissioning phases of the project. • The Applicant is responsible to ensure that all necessary communication and submission of required documentation concerning this project is submitted to the relevant authorities.
Contractor	• 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)	• 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	• The Compliance Officer appointed by the Competent Authority is responsible for the ensuring that the Applicant, 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 DEVELOPMENT OF ERF 1058, WHITES ROAD, HOEKWIL (WILDERNESS HEIGHTS) GEORGE MUNICIPALITY & DIVISION, WESTERN CAPE.

DEA&DP REF: 16/3/3/6/7/1/D2/30/0241/23

APPLICANT:

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 cc.**
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.

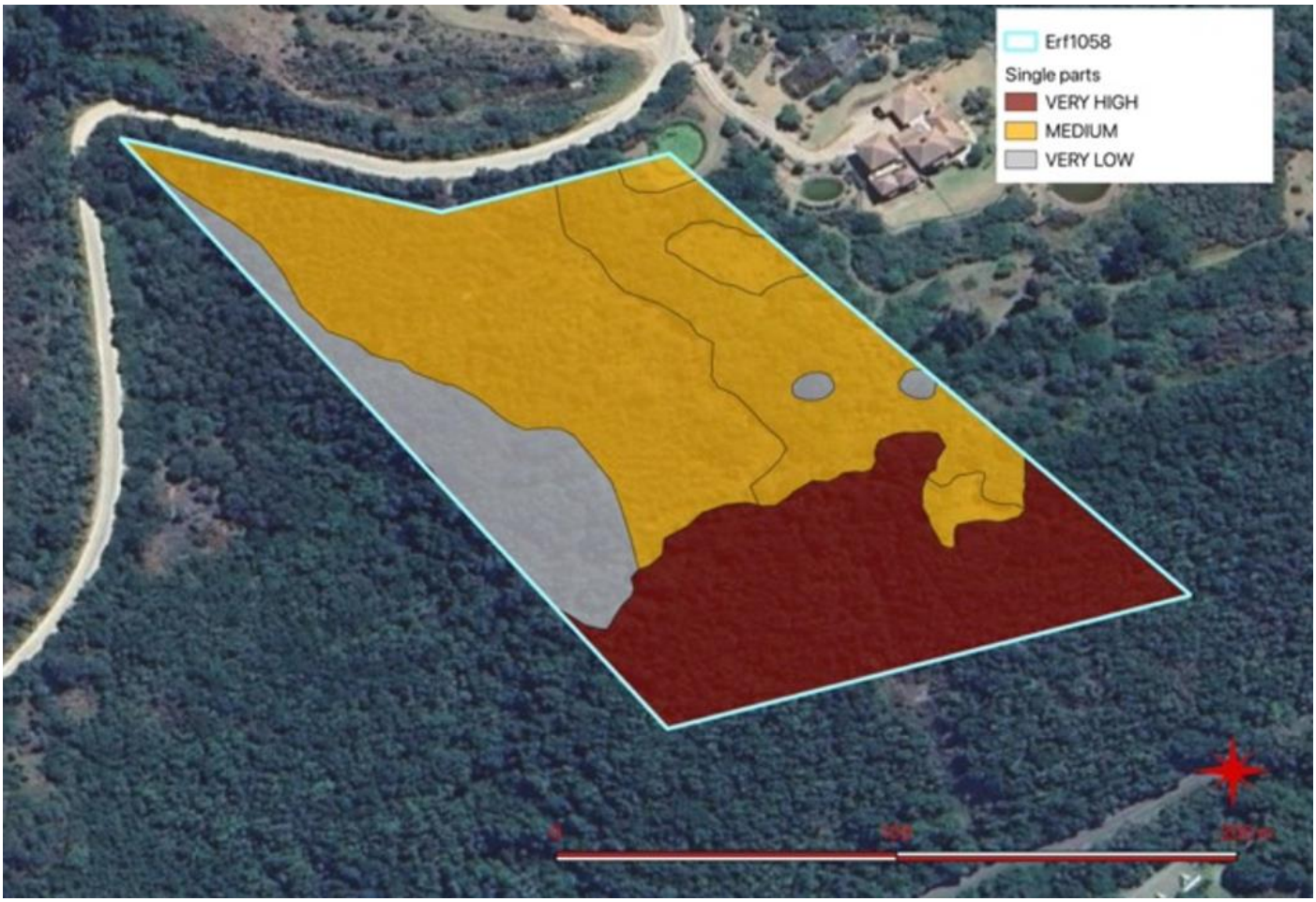
- Certificate of attendance attained for ArGIS Basic Training, 4 May – 8 May 2015. ESRI South Africa.
- Certificate attained for Basic Training Course for Environmental Management Inspector, 17 November 2014 - 15 December 2014. Western Cape Department of Environmental Affairs and Development Planning.
- 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

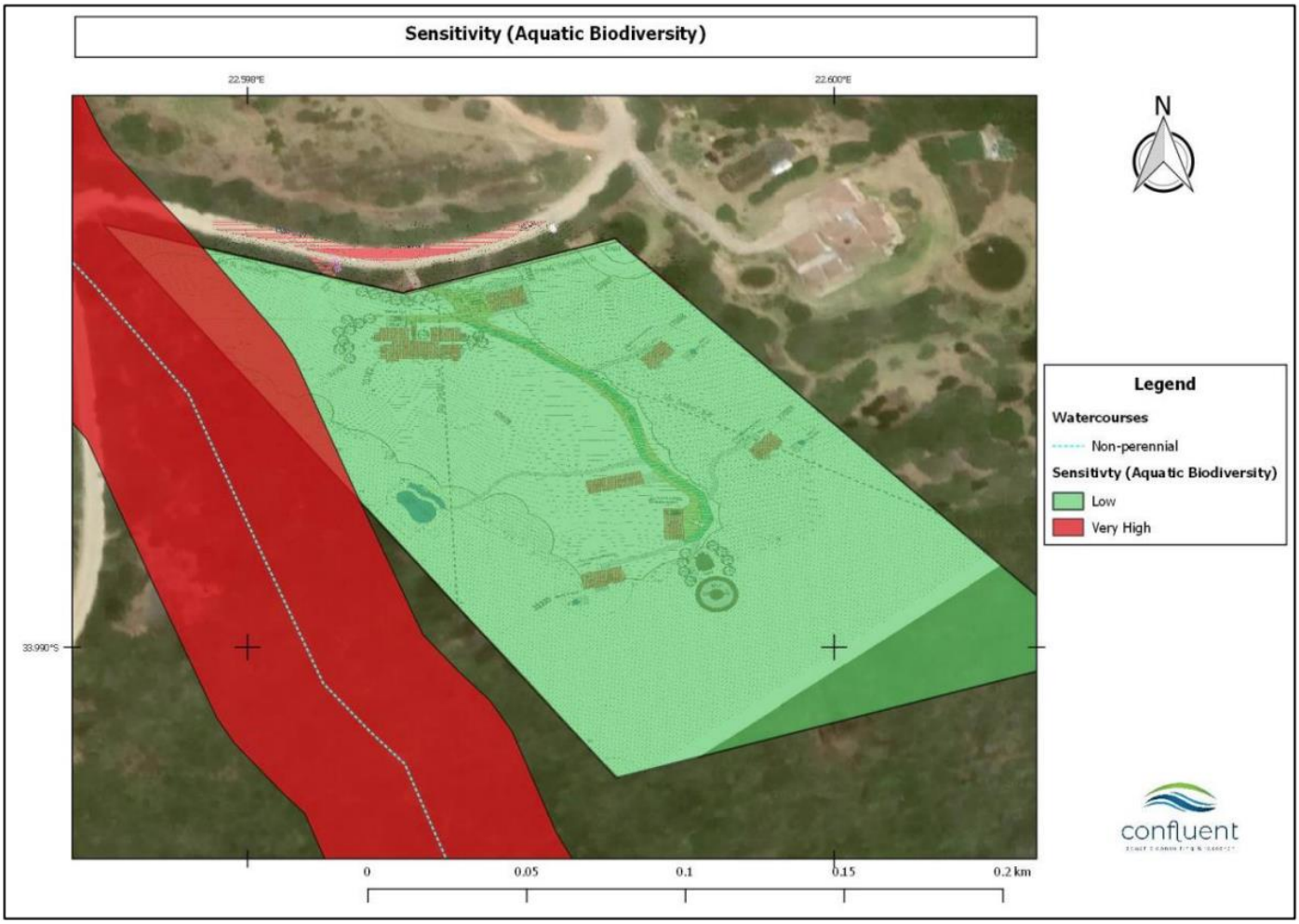
REFERENCES ARE AVAILABLE ON REQUEST

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

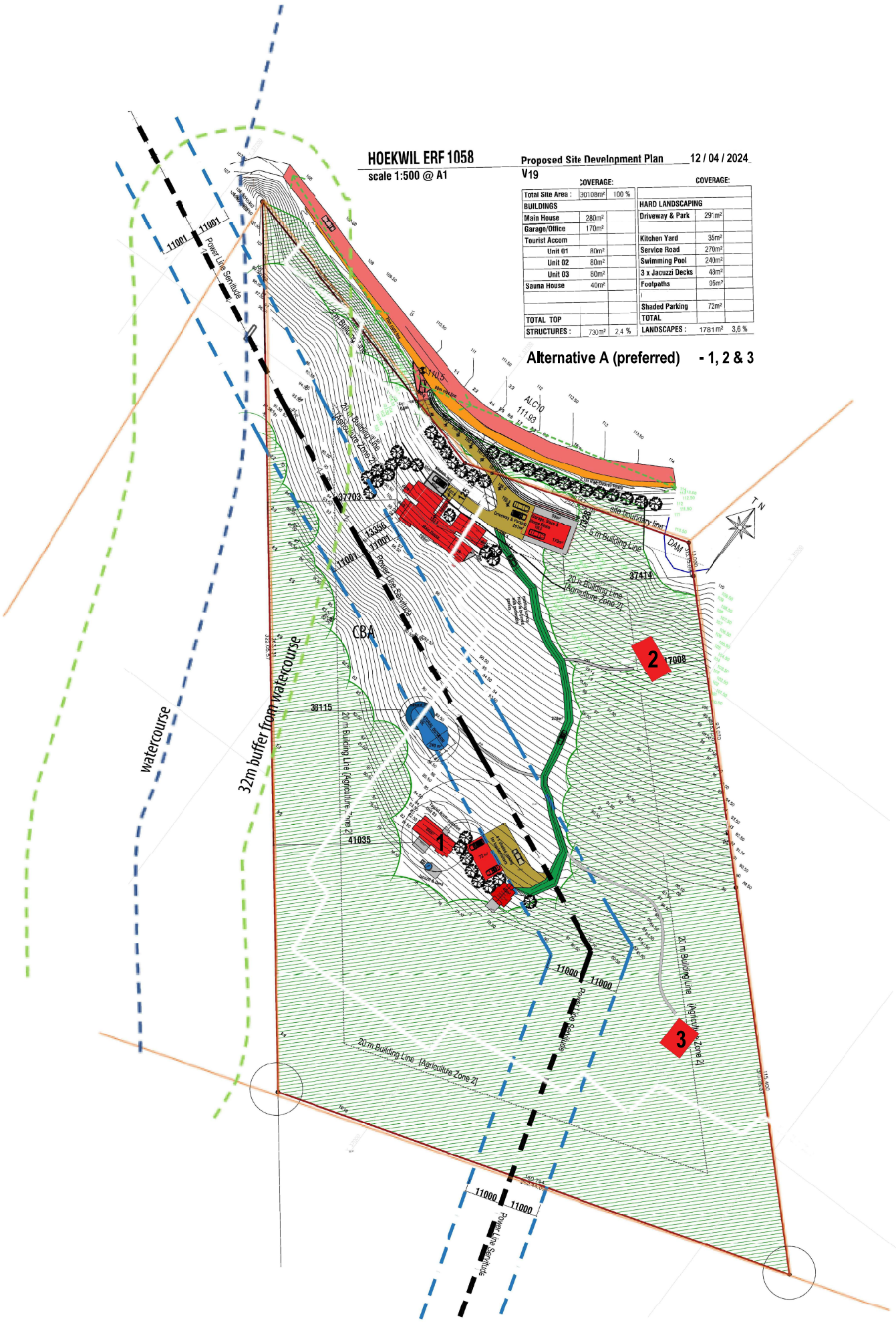
Pamela Booth
Manager: Environmental Management Department, Knysna Municipality
Email: pbooth@knysna.gov.za / Cell: 060 998 6967

ANNEXURE 2: Mapping of Environmentally Sensitive Areas




Sensitivity (Aquatic Biodiversity)
22.598°E
22.600°E
33.990°S
N
Legend
Watercourses
Non-perennial
Sensitivty (Aquatic Biodiversity)
Low
Very High
confluent
0
0.05
0.1
0.15
0.2 km

ANNEXURE 3: Site Development Plan (SDP)


HOEKWIL ERF 1058
scale 1:500 @ A1
Proposed Site Development Plan
V19
12 / 04 / 2024
COVERAGE:
Total Site Area : 30108m² 100 %
BUILDINGS
Main House 280m²
Garage/Office 170m²
Tourist Accom
Unit 01 80m²
Unit 02 80m²
Unit 03 80m²
Sauna House 40m²
TOTAL TOP STRUCTURES : 730m² 2.4 %
COVERAGE:
HARD LANDSCAPING
Driveway & Park 291m²
Kitchen Yard 35m²
Service Road 270m²
Swimming Pool 240m²
3 x Jacuzzi Decks 43m²
Footpaths 95m²
Shaded Parking 72m²
TOTAL LANDSCAPES : 1781m² 3.6 %
Alternative A (preferred) - 1, 2 & 3
Power Line Servitude
11001
CBA
20 m Building Line
Agriculture Zone 2
37703
13356
37414
37008
38115
41035
watercourse
32m buffer from watercourse
Site boundary line
DAM
ALC10
111,93
11000
Power Line Servitude
1
2
3
N