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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 Residential Development on Portion 91 of Farm Matjes Fontein 304, Keurboomstrand, Plettenberg Bay, Western Cape Province.

DEA&DP REF: 16/3/3/1/D1/13/0001/25



PREPARED FOR THE APPLICANT: PREPAPRED BY: AUTHOR: DATE: FAMILIE ROUX EIENDOMME PTY ECO ROUTE ENVIRONMENTAL CONSULTANCY JOCLYN MARSHALL (EAPASA REG 2022/5006) 24/06/2024

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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) Detail	s of –	This EMPr was prepared by Joclyn Marshall
(i)	The EAP who properted the EMPr	of Eco Route Environmental Consultancy.
(1)	and	Please see attached CV of EAP (Annexure
(ii)	The expertise of the EAP to prepare	A).
	an EMPr, including a curriculum	
(b) A dat	Vitae;	Section 2 provides apositio project details
(d) A den	ty that are covered by the EMPr as	section 2 provides specific project details.
identi	fied by the project description;	
(c) a ma	p at an appropriate scale which	Annexure F provides mapping which
superi	mposes the proposed activity, it	superimpose the proposed activity onto
assoc	ated structures, and intrastructure on	environmentally sensitive areas.
nrefer	red site indicating any areas that	
should	be avoided, including buffers;	
(d) A des	cription of the impact management	Addressed in Sections 3, 4 and 10.
outco	mes, including management	
stater	nents, identifying the impacts and risks	
mitiac	ted as identified through the	
enviro	nmental impact assessment process	
for all	phases of the development including	
-		
(1)	planning and design;	
(iii) pre-construction activities;		
(iv) rehabilitation of the environment		
after construction and where		
	applicable post closure; and	
(∨	) where relevant, operation activities;	
(f) a des	cription of proposed impact	Addressed in Sections 3, 4 and 10.
mana	gement actions, identifying the	
mann	er in which the impact management	
will be	achieved and must where	
applic	cable, include actions to –	
(i)	avoid, modify, remedy, control or	
	stop any action, activity or process	
	which causes pollution or	
(ii)	environmental degradation;	
(")	environmental management	
	standards or practises;	
(iii)	comply with any applicable	
	provisions of the Act regarding	
/:)	closure, where applicable; and	
(1∨)	Act regarding fingencial provision for	
	rehabilitation, where applicable;	

(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Addressed in Section 10.
<ul> <li>(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);</li> </ul>	Section 7.1 and 10.
<ul> <li>(i) an indication of the persons who will be responsible for the implementation of the impact management actions;</li> </ul>	Section 5 and 10.
<ul> <li>(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;</li> </ul>	Sections 10.
<ul> <li>(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);</li> </ul>	Section 10.
<ul> <li>(I) a program for reporting on compliance, taking into account the requirements as prescribed by Regulations;</li> </ul>	Section 7.
(m) an environmental awareness plan describing the manner in which –	Section 7 and 10.
(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	
<ul> <li>(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and</li> </ul>	
<ul> <li>(n) any specific information that may be required by the competent authority.</li> </ul>	Sections 10 and 14.

# **Glossary of Terms**

BAR	<b>Basic Assessment Report</b> – 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	<b>Department Forestry Fisheries and Environment</b> – the national authority for sustainable environmental management and integrated development planning.	
DFFE&DP	<b>Department of Environmental Affairs and Development Planning</b> – the provincial authority for sustainable environmental management and integrated development planning.	
CBA	<b>CBA Critical Biodiversity Area</b> – Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.	
EAP ECO/ESO	<ul> <li>Environmental Assessment Practitioner – An EAP and a specialist, appointed in terms of regulation 12(1) or 12(2) must – <ul> <li>(a) be independent.</li> <li>(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.</li> <li>(c) Ensure compliance with these Regulations</li> <li>(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.</li> <li>(e) Take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application; and</li> <li>(f) Disclose to the applicant or applicant, registered and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing – <ul> <li>i. Any decision to be taken with respect to the applications; or</li> <li>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; unless access to that information as protected by law, in which case it must be indicated that such protected information, explicing no explicing no applicant must, prior to conducting public participation as contemplated in chapter 5 of these regulations, appoint another EAP or specialist, at the applicants cost.</li> <li>(3) An EAP or specialist as contemplated in sub regulation (2), must comply with sub regulation (1).</li> </ul> </li> <li>Environmental Control Officer – A site agent who needs to ensure that all environmental authoristion and conditions are adhered to during the construction</li></ul></li></ul>	
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	<b>Ecological Support Area</b> – 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.
ΡΑ	Protected Area - A protected area is an area of land or sea that is formally protected by law and managed mainly for biodiversity conservation. Protected areas recognised in the National Environmental Management: Protected Areas Act (Act 57 of 2003) (hereafter referred to as the Protected Areas Act) are considered formal protected areas in the NPAES. This is a narrower definition of protected areas than the International Union for Conservation of Nature (IUCN) definition.1 The NPAES distinguishes between land-based protected areas, which may protect both terrestrial and freshwater biodiversity features, and marine protected areas.

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## **1. INTRODUCTION**

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

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

Duty of care and remediation of environmental damage -

"(1) Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot be reasonably avoided or stopped, to minimise and rectify such pollution or degradation of the environment" This EMPr must be read in conjunction with the Environmental Impact Assessment Report dated October 2022 and the accompanying specialist reports. All recommendations, relevant conditions and mitigation measures provided in these documents must also be adhered to.

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

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

#### 1.1. Purpose of the EMPr

The purpose of this EMPr is to ensure that the negative environmental impacts of the proposed activities are managed, mitigated and kept to a minimum during the planning, construction and operation of the proposed housing 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 Site Manager.
- 5 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.

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#### 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 **Familie Roux Eiendomme Pty** 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.

Portions 91 of the Farm Matjes Fontein 304 is situated in the Keurboom area in the Bitou Municipal Area to the northeast of Plettenberg Bay. The property can be accessed directly from Keurboom Road (Minor Road PO349 Rd) which connects with the N2 via Divisional Road DR1888. The site is approximately 1.8km west of Keurboomstrand (figure 1). This site is presently used for a horse-riding center and is directly opposite the Milkwood Glen Residential Complex, which consists of about 50 Group Housing erven and communal open space.

The vision of this development is to create an affordable and sustainable housing product specifically targeting the middle-income group. The aim is to create a pleasant yet affordable residential neighbourhood where the average person can own a home and live with dignity. The architecture will be based on green principles which will include smaller but well-designed houses, which are more cost-efficient, energy-efficient and healthy. The proposed development includes 60 single residential house stands with average erf sizes of ±500m<sup>2</sup>. The houses will vary in size but will be built in a similar style that will create a harmonious development. Ample open spaces and landscaped streets are incorporated into the design to enhance the quality of the neighbourhood.

The proposed open space system is made up of 9 642m<sup>2</sup> within the development footprint and 83 512m<sup>2</sup> of the remaining area. The open space areas within the development will be zoned as Open Space II and correspond to the position of indigenous vegetation, forest, and milkwood trees. The communal open space II area will incorporate landscaped gardens and stormwater infiltration ponds systems. Should it be required, excess effluent will be discharged to the stormwater infiltration ponds system. This will be environmentally acceptable, the effluent being to DWS Special Limits quality. These areas will be part of the landscaping plan of the development and will provide an opportunity for recreational areas such as walking trails, lookout points etc. A play park and picnic area are planned under the Milkwood trees and the small dam can be equipped with a bird hide or benches where the resident can enjoy the greenery.

The remaining undeveloped 83 512m<sup>2</sup> will be zoned as Open Space III and will be managed as a conservation area in accordance with a Conservation Management Plan (Appendix L). The conservation area also incorporates an ecological corridor for wildlife movement and the historical fountain. The ecological corridor will run between the west and east boundary of the property along the foot of the slope and creates a buffer zone of 20 meters between the development and the forest area. In addition to the wildlife benefitting from this 20 m corridor, the slope base is also then protected in terms of groundwater recharge

The engineer is responsible for monitoring the compliance of the contractor to the approved EMPr. To assist the Engineer and to bring environmental expertise to his team, it is required that the Engineer appoints an appropriately qualified Environmental professional with expertise in EMPr's to act as the Environmental Control Officer (ECO) for the project.

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#### 2.1. Site Description

<b>Erf Number:</b> Portion 91 (a potion of portion 14) of the F	
	Matjes Fontein 304
Area:	17.72 Ha
SG Code:	C0390000000030400091
Co-ordinates:	34° 05 '24" S
	23° 22' 13" E
Local Municipality	Bitou Local Municipality
District Municipality	Garden Route District Municipality

#### 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 and included in the Home Owners / Resident and Rate Payers Constitutions.

The relevant Key Issues with regard to the Receiving Environment include:

Forest habitats on the upland, steeply-sloping part of the site, have high biodiversity and conservation value, and are designated as sensitive. These areas must not be affected by the proposed development. A buffer zone of 20 meters will be retained along the base of the slope to protect the

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**forest margin**. For example, steps should be taken to rehabilitate these areas and encourage growth of species, such as *Pterocelastrus tricuspidatus* and *Sideroxylon inerme*, that are mesic and fire-resistant. An open space management system should be developed to formalize such steps for forest protection.

- No plant species of concern were found on site, but a small number of free-standing, relatively large milkwood trees (Sideroxylon inerme) were found on site that are protected under the National Forests Act. These will be retained within the proposed development.
- The dam and associated spring are identified as a watercourse as defined in the National Water Act. The mapped spring and dam have been protected by a 10 m buffer as recommended, which constitutes the regulated area as per GN509 as this incorporates riparian vegetation in the immediate vicinity of the features.
- The property is located on the edge of the 1:100 year floodline, which is not mapped to extend beyond the boundary of the property. In reality, the frequency of 100-year flood events is increasing due to climate change, and when coincident with sea-level rise and high tide events, it is not impossible that minor flooding could affect the low-lying area of the property in future. This should be considered in the design and layout of the property, and **stormwater management** should not further exacerbate the flood risk. To this end, Sustainable Drainage Systems (SuDS) should be fully implemented. The system should lead run off water away from sensitive areas, in order to prevent soil erosion and contamination. The use of grass blocks on paved driveways, roadway kerb and channel side drain, and retention ponds to assist percolations of stormwater.
- Sedimentation and pollutant runoff from the development during construction may impact the dam and associated spring and its buffer area.
- Removal of topsoil must only be allowed in the disturbance area and undertaken prior to commencement of construction activities and stored for later use during the Rehabilitation Phase of the development. This will largely determine the success and rate of rehabilitation.
- Allow for the maintenance of **animal movement** through the creation of open space links to the forest area. The preferred layout includes a 20m buffer along the forest margin and also incorporates portions of the secondary vegetation area to form part of the open space system within the development, which will link up with the forest area. the 20m wide buffer runs along the forest and foothill to allow for animal movement along the foothill of the ridge. 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. This can be achieved with wildlife gaps strategically placed in the fence.
- Alien plant infestation impacting biodiversity and ecological processes. An ongoing alien invasive management programme should take place on site. This will protect riparian habitats downslope from degradation and could potentially be the biggest contribution to maintaining and protecting biodiversity on site and in surrounding areas.
- Fire risk mostly posed by alien vegetation. The removal of the alien vegetation will mitigate fire risk to a large extent. There must be well-placed/planned defensible spaces around the structures/houses which will offer additional structural protection against possible wildfires moving into the development. These defensible spaces should be properly maintained. Highly burnable vegetation or flammable material should not be present within these defensible spaces. The road network within the development will also limit any spread of fires within the proposed development. It cannot be expected landowners/homeowners to make provision for extreme wildfire events.
- Erosion due to removal of organic rich topsoil and disturbance of vegetation during construction. 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 soil exposure and a loss of the soil micro-organisms that are essential for plant growth. The disturbed open space areas will be rehabilitated with indigenous vegetation.

• The **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. Any area of natural habitat that is not required for the approved development should be conserved for small wildlife. Rehabilitation of disturbed areas, as well as previously invaded areas, should promote establishment of site-appropriate indigenous species.

# 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	

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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		

<b>Reversibility -</b> 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		

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	

Sig	Significance - Significance of impacts are determined through a synthesis of the assessment criteria			
Rating		Definition of Rating		
	Major negative (-)	The impact will have highly significant effects and are unlikely to be able to be mitigated adequately		
	Moderate negative (-)	The impact will have medium significant effects and will require moder mitigation measures to achieve an accepted level of impact		
	Minor negative (-)	The impact will have low significant effects and will require minor mitigation		
	Negligible negative (-)	The impact will have very low significant effects and would require little mitigation		
	Neutral	The impact will have insignificant effects and would require no mitigation		
	Negligible positive (+)	The impact will have negligible positive effects		
	Minor positive (+)	The impact will have minor positive effects		
	Moderate positive (+)	The impact will have moderate positive effects		
	Major High positive (+)	The impact will have highly significant positive effects.		

### 3.2. Impacts foreseen during the Construction Phase

Project Phase	Construction				
Activity		Loss of habitat within CBAs			
Description of	Enci	roachment into and loss of CBA	1 and CBA2 ar	eas due construction.	
impact					
Mitigable	Medium	Mitigation exists and will notab	ly reduce sign	ificance of impacts	
Potential mitigation	• Some	e form of offset or conservation s	ervitude can l	pe considered.	
Assessment		Without mitigation		With mitigation	
Nature	Negative		Low negative	e	
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	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/or social functions and/or processes are somewhat altered	
Probability	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	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	Medium	the resource is damaged irreparably but is represented elsewhere	Medium	the resource is damaged irreparably but is represented elsewhere
Significance		Minor - negative		Minor - negative
Comment on significance	The site occurs entirely within CBA1 and CBA2 areas. The secondary vegetation ("pastures") in the southern part of the site does not have the properties consistent with protecting biodiversity patterns, but remaining areas are ecologically functional. The vegetation on site (within the proposed development footprint) is in relatively poor condition, and consists either of lawns or secondary vegetation with a species composition that is not representative of the natural habitat			
Cumulative impacts	The impact would result in insignificant cumulative effects as the significance of the impacts is low. The CBAs are designated for the protection of listed Garden Route shale fynbos, but this does not occur within these designated CBA1 areas, only forest.			

Project Phase	Construction				
Activity	Clear	Clearance of vegetation for the construction of the dwelling and associated infrastructure			
Description of impact	Loss of sensitive vegetation, habitat loss for terrestrial wildlife, mortalities to various species unable to evade the disturbance, loss of viable propagules, fragmentation of ecological infrastructure				
Mitigable	Medium	Mitigation exists and will notabl	y reduce signi	ficance of impacts	
Potential mitigation	<ul> <li>Meaium   Mitigation exists and will notably reduce significance of impacts</li> <li>Wherever there are sections of undisturbed natural habitat within the development area, they must not be impacted by the building activities and must be conserved as small islands of natural resources for the small wildlife of the area.</li> <li>the removal and translocation of protected plants if found must be undertaken prior to construction clearing activities. A permit is required prior to removal.</li> <li>Protected plants must either be moved to a safer, no-go area on the property or taken to a nursery for temporary storage until rehabilitation takes place.</li> <li>Access by heavy machinery must be limited on the site.</li> <li>Only areas necessary for the development footprint must be cleared and the remainder of the property must be left natural.</li> <li>Laydown areas for construction materials must be contained within the clearing footprint of the proposed development.</li> <li>A 20-meter buffer zone must be retained along the base of the slope to protect the forest margin.</li> </ul>				
Assessment		Without mitigation With mitigation			
Nature	Negative		Low negative	e	
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	Limited to the site and its immediate surroundings	
Intensity	High	Natural and/ or social functions and/ or processes are significantly altered	Low	Natural and/or social functions and/or processes are somewhat altered	
Probability	Definite	There are sound scientific reasons to expect that the impact will occur	Probable	Has occurred here or elsewhere and could therefore occur	
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment	

Reversibility	Irreversible	the impact is irreversible, and	Partly	the impact is reversible but
		no mitigation measures exist	reversible	more intense mitigation
				measures are required
Resource	Medium	the resource is damaged	Low	Marginal loss, the resource is
irreplaceability		irreparably but is represented		not damaged irreparably or
		elsewhere		is not scarce
Significance	Minor - negative		N	egligible - negative
Comment on	The forested area to the north of the development is excluded from		excluded from the proposed	
alour if a sup a a	development and will not be directly affected.			
significance	developmei	nt and will not be alrectly affecte	ea.	
Cumulative	The impact	would result in insignificant cumu	ea. Jative effects	
Cumulative impacts	The impact	would result in insignificant cumu	ea. Jative effects	

Project Phase	Construction				
Activity	Loss of secondary vegetation within endangered ecosystem				
Description of	Loss of habitat on site (within the proposed development footprint), modification of				
impact	ecological processes, spillover effects into surrounding areas due mostly to secondary				
	impacts such as boundary disturbance and alien invasive species spread.				
Mitigable	Medium	Mitigation exists and will notabl	y reduce signi	ficance of impacts	
Potential	• Acc	ess to forested areas during co	onstruction m	ust not be permitted by any	
mitigation	cons	struction personnel. These areas r	must be tence	ed off and no access allowed.	
	• Corr	ities and areas and provides a pl	nanagement rogrammo for	pian, which highlights control	
		nies and dieds and provides a plantake regular monitoring to det	nogramme for	sions oarly so that they can be	
		rolled as per the Alien Manager	ment Plan	sions early so that they can be	
	Reh	abilitation of disturbed areas	ns well as pr	eviously invaded areas must	
	prop	note establishment of site-approx	priate indiaen		
Assessment	pion	Without mitigation		With mitigation	
Nature	Negative	Wintoor miligation	Low pegativ		
Duration	Permanent	Impact may be permanent.	Permanent	Impact may be permanent	
		or in excess of 20 years		or in excess of 20 years	
Extent	Limited	Limited to the site and its	Very	Limited to the site and its	
		immediate surroundings	limited	immediate surroundings	
Intensity	Medium	Natural and/or social	Low	Natural and/or social	
		functions and/or processes		functions and/or processes	
Day has hall the	Carlain (	are notably altered	Cartain (	are somewhat altered	
Probability	Certain /	Inere dre sound scientific	Certain /	reasons to expect that the	
	Demme	impact will definitely occur	Delinine	impact will definitely occur	
Confidence	Hiah	Substantive supportive data	High	Substantive supportive data	
	Ŭ	exists to verify the assessment	J	exists to verify the	
				assessment	
Reversibility	Low	The affected environment will	Medium	The affected environment	
		not be able to recover from		will only recover from the	
		the impact - permanently		impact with significant	
_		modified			
Resource	Low	The resource is not damaged	Low	The resource is not	
irreplaceability		Irreparably or is not scarce		admaged irreparably or is	
Significance		Minor - negative	N		
Comment on	The vegeta	tion type (Garden Route Shale	Evnbos) is liste	ed as Endangered. All upland	
significance	areas of the site on the steep slopes are covered with forest that matches the description				
	for Southern Afrotemperate Forest, which is not threatened, but is separately listed as protected under the National Forests Act. The forest areas on site fall within a CBA1. These forested areas are completely excluded from the proposed development (both options)				
	and are not	directly affected.			

	The only remaining non-forest vegetation on site is considered to be secondary. However, on the basis that no legal soil disturbance has occurred during the preceding 10 years, it is legally considered to be natural vegetation that is within an Endangered ecosystem. It is, however, not representative of this vegetation unit and, being secondary is not considered to be irreplaceable.
Cumulative	The impact would result in insignificant cumulative effects
impacts	

Project Phase	Construction					
Activity	Loss of individuals of protected tree species					
Description of	Loss of habitat on site (within the proposed development footprint), disturbance or loss of					
impact	protected tre	ees.	·			
Mitigable	Medium	Mitigation exists and will notab	ly reduce sign	ificance of impacts		
Potential	<ul> <li>Retai</li> </ul>	n existing large trees within prop	osed develop	ment.		
mitigation	<ul> <li>If any</li> </ul>	/ trees need to be removed or p	oruned then a	permit is required, according		
	to the	e National Forests Act.				
	<ul> <li>Plant</li> </ul>	additional milkwoods in the de	velopment as	part of the final landscaping.		
	These	e can be planted along with othe	er appropriate	coastal forest species, but the		
	prop	ortions and composition must	reflect habita	t that would have occurred		
	natur	ally at this site.				
Assessment		Without mitigation		With mitigation		
Nature	Negative		Low negative	0		
Duration	Permanent	Impact may be permanent,	Long Term	Impact will last between 16		
		or in excess of 20 years		and 30 years		
Extent	Very	Limited to the site and its	Very	Limited to the site and its		
	limited	immediate surroundings	limited	immediate surroundings		
Intensity	Very high	Natural and/ or social	Low	Natural and/or social		
		functions and/ or processes		functions and/or processes		
Due la sela 111 la s	Duala adala	dre majoriy alferea	Davia (	dre somewnaf alferea		
Probability	Probable	Has occurred here or	Rare /	Conceivable, but only in		
		therefore apour	impropable	exileme circumsiances,		
	project although this has					
	rarely been known to					
Confidence	Medium	Determination is based on	Medium	Determination is based on		
		common sense and general	into diotti	common sense and general		
		knowledge		knowledge		
Reversibility	Partly	The impact is reversible but	Partly	The impact is reversible but		
	reversible	more intense mitigation	reversible	more intense mitigation		
		measures are required		measures are required		
Resource	Low	The resource is not damaged	Low	The resource is not		
irreplaceability		irreparably or is not scarce		damaged irreparably or is		
				not scarce		
Significance		Minor - negative	N	egligible - negative		
Comment on	The tree spea	cies affected is Sideroxylon inerm	e, protected u	under the National Forests Act.		
significance	A total of 4 in	dividuals were seen on site, all of	them relativel	y large individuals. The species		
	is widesprea	d but is a key and dominant c	omponent of	coastal forests in the Garden		
	Route.					
Cumulative	The impact v	would result in insignificant cumu	lative effects			
impacts						

Project Phase	Construction					
Activity	Loss of habitat for listed threatened animal species					
Description of	Loss of habitat for threatened plant and animal species, spillover effects into surrounding					
impact	areas due mostly to secondary impacts such as dust deposition and alien invasive species					
	spread.					
Mitigable	Medium	Mitigation exists and will notab	ly reduce signi	ificance of impacts		
Potential	Prote	ct natural forest vegetation adjo	acent to the p	roposed development site.		
mitigation	Reha	bilitate and improve the small	dam on site	, including introducing pond		
-	marg	in vegetation typical of mount	ain ponds in fo	prested areas. This will provide		
	good	I habitat for various frogs, includi	ing potentially	Afrixalus knysnae.		
	Fores	t habitats on the upland, ste	eply-sloping	part of the site, have high		
	biodi	versity and conservation value, o	and are desigr	nated as sensitive. These areas		
	must	not be affected by the propo	osed developr	ment. A buffer zone must be		
	retair	ned along the base of the slope	to protect th	e forest margin. For example		
	stops	must be taken to rebabilitate the	o to protect in	oncourage growth of species		
	sieps					
	such	as Pterocelastrus tricuspiaatus c	ana siaeroxyio	n inerme, that are mesic and		
	fire-re	esistant.				
	<ul> <li>An o</li> </ul>	pen space management syster	n must be de	veloped to formalize steps for		
	fores	t protection.				
Assessment		Without mitigation		With mitigation		
Nature	Negative	•	Low negative	9		
Duration	Permanent	Impact may be permanent,	Permanent	Impact may be permanent,		
		or in excess of 20 years		or in excess of 20 years		
Extent	Limited	Limited to the site and its	Very	Limited to the site and its		
		immediate surroundings	limited	immediate surroundings		
Intensity	Very high	Natural and/ or social	Low	Natural and/or social		
		functions and/ or processes		functions and/or processes		
		are majorly altered		are somewhat altered		
Probability	Probable	Has occurred here or	Rare /	Conceivable, but only in		
		elsewhere and could	improbable	extreme circumstances,		
	theretore occur and/or might occur for thi					
	project although this has					
	rarely been known to					
				result elsewhere		
Confidence	Medium	Determination is based on	Medium	Determination is based on		
	common sense and general common sense and g					
Derre welle iliter	D authori		Daurkh			
Reversibility	POILIY		POINY	mere intense mitigation		
	reversible		reversible	more intense miligation		
Posouroo		The receives is not demaged	Low	The recourse is not		
irreplaceability	LOW	irreparably or is not scarce	LOW	damaged irreparably or is		
mepiaceability				not scarce		
Significance		Minor - negative	N			
Comment on	<ul> <li>There</li> </ul>	is habitat on site that is suspect	ed habitat for	threatened plant and animal		
significance	speci	ies This is the forest habitat wi	hich is outside	the proposed development		
	footc	print and will not be affected by	the proposed	development.		
	• The s	pecies that could potentially oc	cur within this l	habitat are as follows:		
		Knysna Warbler (Vulnerable)	has a moder	ate probability of occurrina in		
	ĺ	forest margin areas.		,		
	0	Crowned Eagle (Near Threate	ened) - the fore	ests on site may constitute part		
		of the general foraging range	but it is unlikely	y that they are resident on site.		
		or are dependent on it.	_			
	0	Tunnelling Dung Beetle (Endo	angered). The	type locality of the species is		
		forest habitats in the Keurboo	mstrand area.	·		
	0	Small antelope (Vulnerable).	There is a mod	derate to high probability of it		
	occurring in the forests on site.					

Cumulative	The potential impact affects a negligible proportion of the overall habitat available for
impacts	these species and will not directly affect any individuals.

Project Phase		Constr	uction		
Activity		Earthworks and vegetation cle	aring for const	ruction activities	
Description of	Sedimentation of the pond resulting in poor water quality. Destruction of vegetation				
impact	around the p	ond and spring.			
Mitigable	High	Mitigation exists and will notab	ly reduce sign	ificance of impacts	
Potential	<ul> <li>Pre-c</li> </ul>	onstruction erect temporary fe	ncing along t	he entire green corridor and	
mitigation	open	space to protect the pond of	as well as the	corridor from impact during	
	const	ruction.			
	Add :	signage to the fence indicating	the area as No	o-Go.	
	Site ir	iductions for all statt must ensure	contractors ar	nd works area aware they may	
	not e	nter the pond and spring area.			
Assessment	N a sealth as	without mitigation	1	with mitigation	
Nature	Negative		Low negative		
Duration	Short lettin	and 2 years.	впет	than 1 year.	
Extent	Limited	Limited to the site and its	Very	Limited to the site and its	
		immediate surroundings	limited	immediate surroundings	
Intensity	Low	Natural and/or social	Negligible	Natural and/ or social	
		functions and/or processes		functions and/ or processes	
		are somewhat altered		are negligibly altered	
Probability	Possible	Has occurred here or	Rare /	Conceivable, but only in	
		elsewhere and could	improbable	extreme circumstances,	
		therefore occur		and/or might occur for this	
				project although this has	
				rarely been known to	
Canfidanaa		Determination is based on		result elsewhere	
Confidence	Medium	Determination is based on	Medium	Determination is based on	
		knowledge		knowledge	
Reversibility	Completely	The impact can be reversed	Completely	The impact can be reversed	
Reversionity	reversible	with the implementation of	reversible	with the implementation of	
	10 0 0131010	minor mitigation measures	10 0 0131010	minor mitigation measures	
Resource	Low	The resource is not damaged	Low	The resource is not	
irreplaceability		irreparably or is not scarce		damaged irreparably or is	
,				not scarce	
Significance		Minor - negative	N	egligible - negative	
Comment on	While a natu	ral spring and pond are present	on the site, the	ey are very small in extent and	
significance	can be ade	quately protected from the dev	velopment by	implementing the 10m buffer	
	during the construction and operational phases as indicated in this report. The presence				
	of this feature is not sufficient to increase the sensitivity of the site to Very High, and it has				
	been excluded from the development area. No stormwater must be put into this pond as				
	the water is a	of high quality.			
Cumulative	The impact v	vould result in insignificant cumu	lative effects.		
impacts					

Project Phase		Construction		
Activity		Waste Pollution		
Description of	Pollutio	on of buffer zones and natural areas caused by waste generated by the		
impact	construction process.			
Mitigable	High	Mitigation exists and will considerably reduce significance of impacts		
Potential mitigation	All construction waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials must be			
	supp	oorted.		

	<ul> <li>All construction waste materials must be collected and disposed of at a suitable waste facility.</li> </ul>				
	No dumping of construction material within natural areas or buffer zones may take     place				
	• The	buffer and "no-go" areas must k	pe monitored	on a weekly basis to clean-up	
	any	waste that may have been blow	n from the co	nstruction site.	
	Ade	quate sanitary facilities and ab	olutions must l	be provided for all personnel	
	fnrou	itios must be kept clean so th	of these facility	a desired alternative to the	
	Surre	nunding vegetation)	iai mey are	a desired diferialitie to the	
Assessment	50110	Without mitigation		With mitigation	
Nature	Negative	g	Low negative	e	
Duration	Short term	Impact will last between 1	Brief	Impact will not last longer	
		and 5 years		than 1 year	
Extent	Very	Limited to the site and its	Very	Limited to the site and its	
	limited	immediate surroundings	limited	immediate surroundings	
Intensity	Low	Natural and/or social	Very low	Natural and/or social	
		functions and/or processes		functions and/or processes	
Probability	Likoly	The impact may occur	Rare /	Conceivable, but only in	
Trobability	LIKCTY		improbable	extreme circumstances.	
				and/or might occur for this	
				project although this has	
				rarely been known to result	
				elsewhere	
Confidence	High	Substantive supportive data	High	Substantive supportive data	
				exisis to verify the	
Reversibility	Hiah	The affected environmental	High	The affected environmental	
····,	- ingri	will be able to recover from		will be able to recover from	
		the impact		the impact	
Resource	Low	The resource is not damaged	Low	The resource is not	
irreplaceability		irreparably or is not scarce		damaged irreparably or is	
				not scarce	
Significance	<b>N</b>	Negligible - negative	N	egligible - negative	
Comment on	Construction	n activities are likely to generate s	addition the	high numbers of construction	
significance	workers pres	sent on site will generate a signif	icant amount	of human waste which could	
	pollute the	environment.		er hornari wasie, which coold	
Cumulative	The impact	would result in insignificant cumu	Jative effects.		
impacts					

Project Phase	Construction			
Activity	Construction Vehicles			
Description of	Pollution caused by the operation of vehicles and heavy machinery.			
impact				
Mitigable	High Mitigation exists and will considerably reduce significance of impacts			
Potential mitigation	<ul> <li>Construction activities must be confined to clearly demarcated areas so as to prevent unnecessary disturbance the surrounding environment.</li> <li>No vehicles are to park or operate within "no-go" areas.</li> <li>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.</li> <li>No fuel storage, refuelling, vehicle maintenance or vehicle depots to be allowed near natural spring and dam.</li> <li>Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and must have bunds around them (sized to contain 110 % of the tank capacity) to contain any</li> </ul>			

	<ul> <li>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.</li> <li>The contractors used for the project must have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly.</li> </ul>					
Assessment		Without mitigation		With mitigation		
Nature	Negative		Low negative	0		
Duration	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year		
Extent	Very limited	Limited to the site and its immediate surroundings	Very limited	Limited to the site and its immediate surroundings		
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	Likely	The impact may occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere		
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment		
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact		
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce		
Significance	Ν	legligible - negative	N	egligible - negative		
Comment on	Operation c	of vehicles could result in spillage	s or leaks of hy	vdrocarbons (fuel and oil) and		
significance	could lead	to unnecessary disturbance of no	atural areas.			
Cumulative impacts	The impact would result in insignificant cumulative effects.					

Project Phase		Construction				
Activity		Disturbance / removal of topsoil				
Description of impact		Disturbance of topsoil, potential so	il erosion and the loss of topsoil			
Mitigable	High	Mitigation exists and will considerably re	duce the significance of impacts			
Potential mitigation	•	Areas that are disturbed through buildin pipelines) must be suitably rehabilitated knock-on effect on biodiversity in the for exposure and a loss of the soil micro-org Organic matter, such as roots and humus of structures and stockpiled separately f The stockpiling of topsoil for use in rehab Stockpiles must not exceed 1.5m in heig similar, to prevent erosion and any invas it must be removed. Soil disturbance during the removal of a much as possible. The site must be stabilised where necess possible. It is recommended that expose tree branches used to create berms. An utilised for this purpose if it is without see	g activities (such as the excavations for without delay. Failure to do so will have a m of an increase in wind erosion, soil anisms that are essential for plant growth. s/topsoil must be removed from the footprint or landscaping purposes. ilitation is required. ht, must be covered with shade cloth or ive alien species that begin to grow within lien invasive plants must be minimised as ary using available materials, where ed soils are covered with wood chips, and y cut alien vegetation on site can be d.			
Assessment		Without mitigation	With mitigation			
Nature	Negat	ive	Low Negative			

Duration	Short	Impact will last between 1 and 5	Brief	Impact will not last		
	term	years		longer than 1 year		
Extent	Limited	Limited to the site and its	Very limited	Limited to specific		
		immediate surroundings		isolated parts of the		
				site		
Intensity	Low	Natural and/or social functions	Very low	Natural and/ or social		
		and/or processes are somewhat		functions and/ or		
		altered		processes are slightly		
				altered		
Probability	Almost	It is most likely that the impact will	Likely	The impact may occur		
	certain	occur				
Confidence	High	Substantive supportive data exists	High	Substantive supportive		
		to verify the assessment		data exists to verify the		
				assessment		
Reversibility	Medium	The affected environment will	High	The affected		
		only recover from the impact with		environmental will be		
		significant intervention		able to recover from		
_				the impact		
Resource	Low	The resource is not damaged	Low	The resource is not		
irreplaceabilit		irreparably or is not scarce		damaged irreparably		
У				or is not scarce		
Significance	Minor - negative Negligible - negative					
Comment on	Clearing areas of the site in preparation for construction will expose bare soil which may					
significance	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	Without mi	tigation this impact could result in po	otential erosion dow	nhill of the site caused		
impacts	by stormwater flow.					

Project Phase		Сог	nstruction			
Activity	Pollution of groundwater					
Description of impact	Spillages of may poter	Spillages of diesel, petrol, oil, paints, clears and other harmful chemicals. These substances may potentially percolate into the groundwater and enter the surrounding environment				
Mitigable	High Mitic	gation exists and will considerab	ly reduce the sigr	nificance of impacts		
Potential mitigation	<ul> <li>Instantia</li> <li>Spead</li> <li>Act,</li> <li>Guid</li> <li>Site</li> <li>spilla</li> <li>Sepad</li> <li>Sepad</li> <li>Cov</li> <li>Regnantia</li> <li>Colla</li> <li>inset</li> <li>remain</li> <li>Instantia</li> </ul>	all the sewage and and wastew onal SANS standards (SANS1200 cifications, SANS10400:The Natio SANS 1913:Planning, Design, an delines and adhere to municipo to be monitored regularly for co age remediation companies. arate, tightly cover and monito contamination. er stockpiles of building materic ularly inspect stockpiles for spillo nage areas. ect any wastewater generated thement tanks then screen, disc aining sludge according to env all at least three monitoring piez two downstream of site.	vater infrastructure Part K:Civil Engine onal Building Regu and Construction of al regulations & by ontaminant spillag r toxic substances als like cement, sa ages and store aw from site activitie charge the clean ironmental regula ometers into the v	e according to applicable eering Standard vlations and Building Standards f Sanitation Systems), DWS r-laws. ges and if detected, contact to prevent spills and possible nd and other powders. vay from waterways or s during construction water, and dispose of ttions. water table, one upstream		
Assessment	Without mitigation With mitigation					
Nature	Negative	1	Low Negative			
Duration	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year		
Extent	Local	Extending across the site and to nearby settlements	Limited	Limited to the site and its immediate surroundings		

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	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	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	Minor - negative Negligible - negative					
Comment on	After the implementation of mitigation measures, the significance becomes negligible -					
significance	negative.	negative.				
Cumulative	Since the im	Since the impact is negligible negative with mitigation, cumulative impacts to				
impacts	groundwate	er with other projects are not ar	nticipated.			

Project Phase	Construction					
Activity	Noise pollution					
Description of impact	Noise caused by machinery and staff					
Mitigable	Low	Mitigation does not exist; significance of impacts	; or mitigatior	will slightly reduce the		
Potential mitigation	<ul> <li>Construction activities must only take place during normal working times between 07:00-17:00 on weekdays.</li> <li>Machinery may be fitted with silences to dampen noise.</li> <li>Staff must be reminded that they are working within a residential area and noise levels must be kept low.</li> </ul>					
Assessment	Witho	ut 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	Very 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	Almost certain / Highly probable	It is most likely that the impact will occur	Almost certain / Highly 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	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact		
	Not relevant		Not			
Significance	Mino	r - negative		legligible - negative		
Comment on	Some extent of noi	se pollution during constru	ction is evner	sted: however with mitigation		
significance	the impact will be	educed.				
significance						

Cumulative	No cumulative impacts exist.
impacts	

Project Phase	Construction					
Activity	Visual impact					
Description of	Removal of some vegetation will be required for earthworks. Some vegetation would					
Impact	also be cleared for building thereby increasing the visibility of the site and resulting in a					
	scarring of the landscape.					
Mitigable	Medium	Mitigation exists and will	notably redu	ce significance of impacts		
Potential	The Archite	ectural Design Guidelines	proposed for	or the development must be		
mitigation	<ul> <li>adopted to mitigate the colours, heights, disturbance areas, maximum footprint, vegetation, etc, which will all contribute to a smaller visual impact on the landscape.</li> <li>The necessary measures be implemented during the construction phase to protect the natural vegetation, to control the noise, dust and visual intrusion.</li> <li>Appoint a Landscape consultant to recommend and implement the introduction</li> </ul>					
	and to prep	pare a landscape plan for i	implementat	ion in the private and common		
	areas.					
	Implement	external lighting restriction	s and guideli	nes.		
Assessment	Witho	ut mitiaation		With mitigation		
Nature	Negative	g	Negative			
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 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 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	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	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	Low	Marginal loss, the	Low	Marginal loss, the resource is		
irreplaceability		resource is not		not damaged irreparably or		
		or is not scarce		is not searce		
Significance	Mino	r - negative	1	legligible - negative		
Comment on	The significance of	impacts is determined th	rough a syntl	nesis of the assessment criteria.		
significance	The significance of	the impacts for the develo	opment layou	ut options is low.		
Cumulative impacts	An effect that in it other existing or p proposed develop	self may not be significan otential impacts that ma oment. The cumulative im	nt but may b y result from npacts of the	ecome significant if added to activities associated with the e development layout option		
	before mitigation are medium and low after mitigation.					

Project Phase	Construction
Activity	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	<ul> <li>Use existing social structures and communication channels to ensure social representation.</li> <li>Use local labour and source local materials as far as possible.</li> </ul>				
Assessment	Withou	ut mitigation		With mitigation	
Nature	Negative		Positive		
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 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 somewhat altered	Low	Natural and/ or social functions and/ or processes are somewhat altered	
Probability	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere	Almost certain / Highly 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	Not relevant		Not relevant		
Resource irreplaceability	Not relevant		Not relevant		
Significance	Negligik	ole - negative	N	Negligible - 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		Operat	ional	
Activity		Visual / Sens	e of place	
Description of impact	The development would result in a small change in visual character from a landscape covered in vegetation and without buildings to a low-density well landscaped built landscape.			
Mitigable	Medium	Mitigation exists and will r	notably reduce significance of impacts	
Potential mitigation	<ul> <li>Municipal b</li> <li>Re-vegetati</li> <li>vegetation.</li> <li>Systematic r</li> <li>Adhere to A</li> <li>Create a 10</li> <li>This strip of b</li> <li>Implement</li> </ul>	y-laws need to be adhere fon and Landscaping of a removal and follow-up op Architectural Design Guide Om wide buffer between the and will be densely vegeta mitigations as per the Visua	d to. open space areas with suitable indigenous erations of invasive alien plants. lines and Landscape Plan. ne development and the Keurboom Road. ated to obscure the development. al Impact Assessment (November 2023).	
Assessment	Withou	ut mitigation	With mitigation	

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Nature	Negative Negative				
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 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 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	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	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	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	Modero	ate - negative		Minor - negative	
Comment on significance	The significance of impacts is determined through a synthesis of the assessment criteria. The significance of the impacts for the development layout options is low. Lighting, specifically outdoor lighting is not only aesthetic, but it provides a level of security to property owners. Therefore, outdoor lighting is essential, but must be implemented in a				
	Ample open spaces and landscaped streets are incorporated into the design to enhance the quality of the neighbourhood.				
Cumulative impacts	An effect that in it other existing or p proposed develop before mitigation c	self may not be significar otential impacts that ma oment. The cumulative im are medium and low after	nt but may b y result from npacts of the mitigation.	ecome significant if added to activities associated with the e development layout option	

Project Phase	Operational					
Activity	Inputs of stormwater from roofs and roads into the pond					
Description of	Reduced ph	ysico-chemical water quality inc	cluding the inti	roduction of litter.		
impact		1				
Mitigable	High	Mitigation exists and will notab	ly reduce sign	ificance of impacts		
Potential	<ul> <li>No st</li> </ul>	ormwater infrastructure to be dir	rected toward	ls the pond.		
mitigation	🔹 Routi	ne maintenance inspections to	clear windble	ow / discarded litter from the		
	ponc	I and spring.				
	Storm	Stormwater must be diverted to detention ponds on the site which are indicated				
	on vo	arious SDP layouts and are consistent with the SUDS approach to stormwater				
	mana	agement.				
Assessment		Without mitigation		With mitigation		
Nature	Negative		Low negative			
Duration	Short term	Impact will last between 1	Brief	Impact will not last longer		
		and 2 years.		than 1 year.		
Extent	Limited	Limited to the site and its	Very	Limited to the site and its		
		immediate surroundings limited immediate surroundings				
Intensity	Low	Natural and/or social	Negligible	Natural and/ or social		
		functions and/or processes		functions and/ or processes		
		are somewhat altered		are negligibly altered		

Probability	Possible	Has occurred here or elsewhere and could therefore occur	Rare / 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	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance		Minor - negative	N	egligible - negative
Comment on significance	While a natural spring and pond are present on the site, they are very small in extent and can be adequately protected from the development by implementing the 10m buffer during the construction and operational phases as indicated in this report. The presence of this feature is not sufficient to increase the sensitivity of the site to Very High, and it has been excluded from the development area. No stormwater must be put into this pond as the water is of high quality.			
Cumulative impacts	The impact v	vould result in insignificant cumu	lative effects.	

Project Phase	Operational					
Activity	Landscapi	ing, gardening and maintenanc	e extending in	to the pond and buffer area		
Description of	Transformation of indigenous vegetation through planting, removal and / or dumping.					
impact						
Mitigable	High	Mitigation exists and will notab	ly reduce sign	iticance of impacts		
mitigation	<ul> <li>Landscaping and gardening starmiss nor ordentate any cleaning of vegetation inside of the 10m buffer.</li> <li>A bird hide in the buffer to spot wildlife would be acceptable, but no additional recreational activities. The point is to create a quiet habitat with suitable vegetation cover for continued use by animals, birds etc.</li> <li>Indigenous plants found in adjacent thickets may be planted around the pond.</li> </ul>					
	<ul> <li>Only indigenous plants found in the immediate surrounding area may be planted.</li> <li>A list of recommended wetland plants for that can be used to improve vegetation cover of muddy areas and marginal areas of the pond is provided in this report.</li> <li>Do not place any fish into the pond as only alien invasive fish to the area would survive and could be transferred to other waterbodies on the feet of animals or birds.</li> <li>The only plants that must be removed from the area are listed alien invasive</li> </ul>					
Assessment		Without mitigation		With mitigation		
Nature	Negative		Low negative	Ð		
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	Limited to the site and its immediate surroundings		
Intensity	Low Natural and/or social functions and/or processes are somewhat altered Negligible Natural and/ or soci functions and/ or pro-		Natural and/ or social functions and/ or processes are negligibly altered			
Probability	Possible	Has occurred here or elsewhere and could therefore occur	Rare / 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	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce	
Significance		Minor - negative	N	egligible - negative	
Comment on significance	The purpose of the pond and spring is to provide a sustained water source for wildlife in the green corridor.				
Cumulative	The impact v	vould result in insignificant cumu	lative effects.		
impacts					

Project Phase	Operation				
Activity		Stormwater M	anagement		
Description of	Accelerated erosion / pollution into sub-surface water.				
impact					
Mitigable	High Mitigat	on exists and will considerably re	educe the signific	ance of impacts	
Potential	<ul> <li>The stc</li> </ul>	rm water drainage system must	t be adhered to,	and the system must lead	
mitigation	runoff	water away from sensitive areas	to prevent soil er	osion.	
	<ul> <li>Use rai</li> </ul>	nwater collection tanks to serve	as a retention ve	ssel in downpours.	
	<ul> <li>Drivew</li> </ul>	ays can be constructed from gr	ass blocks to allo	w for effective retarding of	
	surface	flow and facilitate percolation.			
Assessment		Without mitigation	N	/ith mitigation	
Nature	Negative		Low Negative		
Duration	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year	
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site	
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	Almost certain	It is most likely that the impact will occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere	
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment	
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact	
Resource	Low	The resource is not	Low	The resource is not	
irreplaceability		damaged irreparably or is		damaged irreparably	
		not scarce		or is not scarce	
Significance		Minor – negative	Negl	igible - negative	
Comment on significance	The developm has no defined for natural infil	ent portion of the site is flat with r I drainage discharge points. The ration.	no gradient along existing flat and p	g its southern boundary and permeable conditions allow	

Cumulative	Without mitigation this impact could result in potential erosion on the site caused by
impacts	stormwater flow.

Activity         Stomwaler Runoff           Description of impact         Alteration of surface flows caused by increased stommwater runoff.           Mitigable         High         Mitigation exists and will considerably reduce the significance of impacts           Potential         Stommwater from exrem must be attenuated on site as far as possible.           Stommwater from excess roads must be reduced with energy dissipaters prior to discharge into retention ponds.         The runoff velocity of stomwater must be reduced with energy dissipaters prior to discharge into retention ponds.           Assessment         Stomwater must be protected by a 10 m buffer throughout the operational phase.         No stomwater must be point this dom as the water is of high quality.           Assessment         Without mitigation         With mitigation         With mitigation           Nature         Negative         Low Negative         Impact may be permanent.         Permonent           Nature         Very limited         Umited to specific isolated parts of the site         Very limited         Umited to specific isolated parts of the site           Intensity         Medium         Natural and/or social functions and/or processes are notably altered         Low         Natural and/or social functions and/or processes are notably altered         Low         Natural and/or social functions and/or processes are notably altered         Low         Natural and/or social functions and/or processes are notably altered	Project Phase	Operation					
Description of Impact         Alteration of surface flows caused by increased stormwater runoff.           Miligobio         High         Miligobio exists and will considerably reduce the significance of impacts           Potential         Stormwater from exrem must be aftenuated on site as far as possible.         Stormwater from excem must be attenuated on site (prior to any discharge into retention ponds).           • The runoff velocity of stormwater must be reduced with energy dissipaters prior to discharge into retention ponds.         • Stormwater moust be protected by a 10 m buffer throughout the operational phase.           • No stormwater must be put into this dam as the water is of high quality.         • No stormwater must be put into this dam as the water is of high quality.           Assessment         Without infigation         Low Negative           Duration         Permanent         Impact may be permanent, or in excess of 20 years           Extent         Very limited         Limited to specific isolated parts of the site         Very limited         Limited to specific isolated parts of the site         Very limited         Limited to appecific isolated parts of the site           Probability         Almost certain         It is most likely that the impact will occur         Rare / improbable         Concetvable, but only in extreme circumstances, and/or might occur for this is project atthough this has arrely been known to result elsewhere           Reversibility         High         The effected environmental will be able to recover fr	Activity		Stormwate	er Runoff			
Impact         Mitigation         High         Mitigation exists and will considerably reduce the significance of impacts           Potential <ul> <li>Stomwater from even must be aftenuated on site (prior to any discharge into relention ponds).</li> <li>The runoff velocity of stomwater must be reduced with energy dissipaters prior to discharge into relention ponds.</li> <li>Stomwater monagement must encourage infittation of water into the soil profile and other on site attenuation (i.e. using grass pavers etc.).</li> <li>The natural spring and small dam must be protected by a 10 m buffer throughout the operational phase.</li> <li>No stormwater must be participation</li> <li>With mitigation</li> <li>Without mitigation</li> <li>With without mitigation</li> <li>Notive</li> <li>Nearmwater must be participation of water is of high quality.</li> </ul> <li>Assessment</li> <li>Wery limited</li> <li>Impact may be permanent, or in excess of 20 years</li> <li>Extent</li> <li>Very limited</li> <li>Iprotect may be permanent, or in excess of 20 years</li> <li>Con Natural and/or processes are notably altered</li> <li>Natural and/or processes are somewhat altered</li> <li>Probability</li> <li>Almost is to verify the assessment</li> <li>Budy altered</li> <li>Substantive supportive data exists to verify the assessment assess of a verify the assessment</li> <li>Reversibility</li> <li>High</li> <li>The additable parts of the significance</li> <li>Substantive supportive data exists to verify the assessment asses and/or processes are somewhat alter</li>	Description of	Alt	reration of surface flows caused	by increased storm	water runoff.		
Mitigable         High   Mitgation exists and will considerably reduce the significance of impacts.           Potential <ul> <li>Stormwater from erven must be attenuated on site as tar as possible.</li> <li>Stormwater from access roads must be attenuated on site as tar as possible.</li> <li>Stormwater from access roads must be attenuated on site as tar as possible.</li> <li>Stormwater management must be courage infiltration of water into the soil profile and other on site attenuation (i.e. using grass powers etc.).</li> <li>The nuroff velocity of stormwater trong be profected by a 10 m buffer throughout the operational phase.</li> <li>No stormwater must be put into this dam as the water is of high quality.</li> </ul> Assessment	impact	,					
Potential miligation <ul> <li>Stomwater from erven must be attenuated on site as for as possible.</li> <li>Stomwater from access roads must be attenuated onsite (prior to any discharge into retention ponds).</li> <li>The numoff velocity of stormwater must be reduced with energy dissipaters prior to discharge into retention ponds.</li> <li>Stomwater management must encourage infiltration of water into the soil profile and other on site attenuation (i.e. using grass power etc.).</li> <li>The natural spring and small dam must be potention of must expendional phase.</li> <li>No stomwater must be put into this dam as the water is of high quality.</li> </ul> Assessment         Without miligation         With miligation           Nature         Negative         Low Negative           Duration         Permanent         Impact may be permanent, or in excess of 20 years         Permanent           Extent         Very limited         Limited to specific isolated parts of the site         Very limited         Low Negative           Intensity         Medium         Natural and/or social functions and/or processes are notably difered         Low         Natural and/or social functions and/or processes are somewhat attered           Probability         Almost         If is nost likely that the impact will occur         Rare / improbable         Conceivable, but only in extreme clraumatanees, and/or might occur of this has rarely been known to result elsewhere           Confidence         High         The affected env	Mitigable	High Mitigati	on exists and will considerably re	educe the significan	nce of impacts		
Stormwater from access foads must be attenuated onsite (prior to dry discharge into retention ponds). <ul> <li>The runoff velocity of stormwater must be reduced with energy disipaters prior to discharge into retention ponds.</li> <li>Stormwater management must encourage infiltration of water into the soil profile and other on site attenuation (i.e. using grass payers etc.).</li> <li>The natural spring and small dam must be profetced by a 10 m buffer throughout the operational phase.</li> <li>No stormwater must be put into this dam as the water is of high quality.</li> </ul> Assessment         Without mitigation         With mitigation           Nature         No stormwater must be particeted by a 10 m buffer throughout the operational phase.         No stormwater must be reduced with energy disipaters prior to discharge into the soil profile and other on site attenuation (i.e. using grass payers etc.).           Assessment         Without mitigation         With mitigation           Nature         No stormwater must be payers etc.).         Impact may be permanent           Duration         Permonent         Impact may be permanent, or in excess of 20 years         Permanent         Impact may be percesses 20 years           Extent         Very limited         Limited to specific isolated         Isolated parts of the site         Introfile on ond/or social functions and/or processes are notably altered         Low         Natural and/or social functions and/or processes are notably altered           Probability         Almost High         It is most	Potential	Stormw	ater from erven must be attenue	ated on site as far o	as possible.		
Into retention ponds, <ul> <li>The runoff velocity of stormwater must be reduced with energy dissipates prior to discharge into retention ponds.</li> <li>Stormwater must encourage infiltration of water into the soil profile and other on site attenuation (i.e., using grass paves setc.).</li> <li>The natural spring and small dam must be protected by a 10 m buffer throughout the operational phase.</li> <li>No stormwater must be put into this dam as the water is of high quality.</li> </ul> Assessment         With outingation              With mitigation            Nature         Negative              Low Negative               Impact may be permanent, or in excess of 20 years            Extent         Very limited              Limited to specific isolated parts of the site               Very limited              Limited to specific isolated parts of the site            Intensity         Medium              Natural and/or social             Lock               Low               Natural and/or social             Low               Natural and/or social             tunctions and/or             processes             are notably aliered               Conceivable, but only             reture             circumstances, and/or             mignoch will occur            Probability              Almost             Lift is most likely that the             impact will occur             impact will occur             improbable             in ceall elsewhere             circumstances, and	mitigation	Stormw	ater from access roads must be	e attenuated onsite	e (prior to any discharge		
The function value of stormwater management must be reduced with energy displaters plud to discharge information plands.         Stormwater management must encourage infiltration of water into the soil profile and other on site attenuation (i.e. using grass pavers etc.). <ul> <li>The notural spring and small dam must be protected by a 10 m buffer throughout the operational phase.</li> <li>No stormwater must be put into this dam as the water is of high quality.</li> </ul> Assessment         Without mitiggition         Without mitiggition           Nature         No stormwater must be put into this dam as the water is of high quality.           Assessment         Without mitiggition         Low Negative           Duration         Permanent         Impact may be permanent, or in excess of 20 years           Probability         Very limited         Limited to specific isolated parts of the site           Intensity         Medium         Natural and/or social functions and/or processes are notably altered         Low           Probability         Almost         It is most likely that the impact will occur         Rare / in extreme ciccurstances, and/or more sees ment           Confidence         High         Substantive supportive data exists to verify the assessment         High         Substantive supportive data exists to verify the casessment           Reversibility         High         The affected environmental will be able to recover from the impact			ention ponds).	he reduced with	parav dissinators prior to		
Stormwater management must encourage infiltration of water into the soil profile and other on site attenuation (i.e. using grass paves etc.).       In motified particular products and the protected by a 10 m buffer throughout the operational phase.         Assessment       Without mitigation       With mitigation         Nature       No stormwater must be put into this dam as the water is of high quality.         Assessment       Without mitigation       With mitigation         Nature       Negative       Low Negative       permanent, or in excess of 20 years         Duration       Permanent       Impact may be permanent, or in excess of 20 years       permanent water is of high quality.         Extent       Very limited       Limited to specific isolated parts of the site       Very limited       Limited to specific isolated parts of the site         Intensity       Medium       Natural and/or social functions and/or processes are notably attered       Low       Natural and/or social functions and/or processes are somewhat attered         Probability       Almost       It is most likely that the impact will occur       Rare / improbable       Conceivable, but only in extreme circumstances, and/or might occur for this project atthough this has rarely been known to result elsewhere         Confidence       High       Substantive supportive data exists to verify the assessment data exists to verify the assessment the impact       High       The affected environmental will be able to recover from the impact		dischar	a into retention ponds		energy dissipaters prior to		
Probability         Almost register         Use operation in the second parts of the		Stormw	vater management must encou	rage infiltration of	water into the soil profile		
<ul> <li>The natural spring and small dam must be protected by a 10 m buffer throughout the operational phase.</li> <li>The natural spring and small dam must be protected by a 10 m buffer throughout the operational phase.</li> <li>No stormwater must be put into this dam as the water is of high quality.</li> </ul> Assessment Without mitigation Nature Negative Low Negative Low Negative Duration Permanent, or in excess of 20 years Extent Very limited Limited to specific isolated parts of the site Intensity Medium Natural and/or social functions and/or processes are somewhat altered Probability Almost Lit is most likely that the impact will occur Frobability Almost Lit is most likely that the exists to verify the assessment High Substantive supportive data exists to verify the assessment High The affected environmental will be able to recover from the impact Intensity High The affected environmental will be able to recover from the impact Intensity Almost Low The affected environmental will be able to recover from the impact Low Intersity Number of the site of the one and the operation of the impact of the impact into and some and the impact of the impact into a some and the impact of the impact o		and off	ner on site attenuation (i.e. using	arass pavers etc.)			
Assessment       No stormwater must be put into this dam as the water is of high quality.         Assessment       With miligation       With miligation         Nature       Negative       Low Negative       Impact may be permanent, or in excess of 20 years         Duration       Permanent       Impact may be permanent, or in excess of 20 years       Permanent intervents of the stee         Extent       Very limited       Limited to specific isolated parts of the site       Very limited to specific isolated functions and/or processes are notably altered       Low       Natural and/or social functions and/or processes are notably altered         Probability       Almost       It is most likely that the impact will occur       Rare /       Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere         Confidence       High       Substantive supportive data exists to verify the assessment       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 effected environmental will be able to recover from the impact         Significance       Minor - negative       Medi read suffaces, this will result in an increase in the cread of paved/hardened suffaces, this will generate is of high quality, and pollutants from stormwater runoff entering the dam must be minimised.         Adequa		<ul> <li>The nat</li> </ul>	tural spring and small dam must	be protected by	a 10 m buffer throughout		
◆ No stormwater must be put into this dam as the water is of high quality.           Assessment         With mitigation           Nature         Negative         Low Negative           Duration         Permanent or in excess of 20 years         Permanent permanent, or in excess of 20 years           Extent         Very limited united to specific isolated parts of the site         Very limited united to specific isolated parts of the site           Intensity         Medium         Natural and/or social functions and/or processes are notably altered         Low         Natural and/or social functions and/or processes are somewhat altered           Probability         Almost certain         It is most likely that the impact will occur         Rare / improbable         Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere           Confidence         High         The affected environmental will be able to recover from the impact         High         The affected environmental will be able to recover from the impact         High         The resource is not damaged irreparceability         Low         The resource is not damaged irreparceability or is not scarce           Significance         Minor - negative         Wediang quality, and pollulants from stormwater runoff. Hardened surfaces. This will generate increased volumes of stormwater runoff. Hardened surfaces. This will generate increased volumes of stormwater runoff. Hardened surfaces. This will generate increased volumes of s		the ope	erational phase.		5		
Assessment         Without mitigation         With mitigation           Nature         Negative         Low 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         Limited to specific isolated parts of the site         Very limited         Limited to specific isolated parts of the site         Low         Natural and/or social functions and/or processes are notably altered         Low         Natural and/or social functions and/or processes are notably altered           Probability         Almost certain         It is most likely that the impact will occur         Rare / improbable         Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere           Confidence         High         Substantive supportive data exists to verify the assessment         High         Substantive supportive data exists to verify the assessment           Reversibility         Low         The affected environmental will be able to recover from the impact         High         The affected environmental will be able to recover from the impact           Significance         Minor - negative         Nort - negative         Negligible - negative foundations for houses may increase sub-surface of paved/hardened surfaces. This will generate increased volumes of stormwater runoff. Harden		<ul> <li>No store</li> </ul>	mwater must be put into this dar	m as the water is of	high quality.		
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         Limited to specific isolated parts of the site         Very limited         Limited to specific isolated parts of the site           Intensity         Medium         Natural and/or social functions and/or processes are notably altered         Low         Natural and/or social functions and/or processes are somewhat altered           Probability         Almost         It is most likely that the impact will occur         Rare / improbable         Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere           Confidence         High         Substantive supportive data exists to verify the assessment         High         Substantive supportive data exists to verify the assessment           Reversibility         High         The affected environmental will be able to recover from the impact         High         The affected environmental will be able to recover from the impact           Significance         Kinor - negative         Negligible - negative         Negligible - negative functions for houses may increase sub-sufface flows towards the natural spring and smail increased volumes of stormwater runoff. Hardened sufface and establishment of foundatins for houses may increase sub-sufface flows towards the natora	Assessment	N	Without mitigation	Wit	h mitigation		
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Project Phase	Operational					
Activity		Groundwate	er Contamination			
Description of	<ul> <li>Leak</li> </ul>	age from underground sewage	e holding tank ar	nd associated pipework.		
impact	<ul> <li>Leak</li> </ul>	is and leachate from the waste	water treatment	plant.		
	<ul> <li>Impr</li> </ul>	operly treated effluent used for	rirrigation.			
	• WW <sup>-</sup>	IP failure.				
	All o	f the aforementioned impacts of	<u>could percolate i</u>	nto the groundwater.		
Mitigable	High Mitig	ation exists and will considerab	ly reduce the sign	nificance of impacts		
Potential mitigation	<ul> <li>Ensure the WWTP comply with SANS1200 Part K: Civil Engineering Standard Specifications, NWA, Water Quality Guidelines (DWAF), SANS1913: Planning, Design, and Construction of Sanitation Systems, Wastewater Treatment Plant Design and Operational Guidelines (DWAF, 2008).</li> <li>All areas where potential leachate may occur are to be paved and cemented.</li> <li>Regularly service the WWTP and inspect the integrity and efficacy of the WWTP.</li> <li>Ensure emergency procedures are in place to rapidly repair WWTP should failure occur.</li> <li>Set up a comprehensive monitoring system to monitor the effluent quality.</li> <li>Incorporate monitoring network as implemented during the construction phase into operational phase monitoring</li> <li>Install shallow aquifer piezometers in close proximity to the WWTP to be monitored regularly for any leakages.</li> <li>Should a leak be detected or the monitoring piezometers be contaminated, a baseline Phase 1 Contamination Assessment must be undertaken and the site</li> </ul>					
	Auth	orities.	1			
Assessment		Without mitigation		With mitigation		
Nature	Negative		Low Negative			
Duration	Short term	Impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year		
Extent	Local	Extending across the site and to nearby settlements	Limited	Limited to the site and its immediate surroundings		
Intensity	Low	Natural and/or social functions and/or processes are somewhat altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered		
Probability	Probable	It is most likely that the	Probable	It is most likely that the		
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	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce		
Significance		Minor - negative	Ne	gligible - negative		
Comment on significance	After the im and the sigr	plementation of mitigation mean hificance, negligible - negative.	asures, the conse	quence becomes negligible		
Cumulative	Since the impact is negligible negative with mitigation, cumulative impacts to					

Project Phase	Operational			
Activity	Groundwater Recharge and Flooding			
Description of	Infrastructure limiting groundwater recharge and/or flooding risk.			
impact				
Mitigable	High Mitigation exists and will considerably reduce the significance of impacts			

Potential mitigation	<ul> <li>Permeable pavement and green infrastructure (limit coverage of surface area by infrastructure as far as possible.</li> <li>Rainwater Harvesting</li> <li>Sustainable Urban Drainage Systems (SUDS)</li> <li>Retention and Detention Basins</li> <li>Design stormwater drainage systems to handle increased rainfall events by incorporating overflow pathways, sump pumps, and flow control structures.</li> <li>Installation of piezometers to track groundwater level.</li> <li>Inspect and maintain drainage systems, stormwater infrastructure, and mitigation features.</li> <li>The site levels must be designed such that the floor levels will all be set higher than the level of the Band 204, the aviiting acutherm flood containers and level.</li> </ul>					
Assessment		Without mitigation		With mitigation		
Nature	Negative	1	Low 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	Very Limited	Extending only as far as the development site area		
Intensity	Low	Natural and/or social functions and/or processes are somewhat altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered		
Probability	Probable	It is most likely that the impact will occur	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	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	r is Low The resource is not damaged irreparably not scarce			
Significance	N	egligible - negative	Ne	gligible - negative		
Comment on significance	After the im and the sign	plementation of mitigation med nificance remains as negligible	asures, the conse - negative.	equence becomes negligible,		
Cumulative impacts	Since the impact is negligible negative with mitigation, cumulative impacts to groundwater with other projects are not anticipated.					

Project Phase	Operation					
Activity		Impacts on ecological drivers				
Description of	Effects of t	he development and activity or	the underlyin	g systems and processes that		
impact		support ea	cosystems.			
Mitigable	Medium	Mitigation will reduce the signif	icance of imp	acts		
Potential mitigation	<ul> <li>Access to forested areas during construction must not be permitted by any construction personnel. These areas must be fenced off and no access allowed.</li> <li>Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control.</li> <li>Undertake regular monitoring to detect alien invasions early so that they can be controlled, as per the Alien Management Plan.</li> <li>Restrict access to forested areas once the development is complete. An ecological management plan must be compiled and committed to by the future HOA. This should contain measures for protecting the forest from undue traffic and</li> </ul>					
Assessment	Without mitigation With mitigation					
Nature	Negative		Negative			
Duration	Long Term	Impact will last more than 15 years	Long Term	Impact will last more than 15 years		

Extent	Limited	Limited to the site and its	Very	Limited to the site and its			
		immediate surroundings	limited	immediate surroundings			
Intensity	Low	Natural and/or social	Very low	Natural and/or social			
		functions and/or processes		functions and/or processes			
		are somewhat altered		are slightly altered			
Probability	Possible	Has occurred here or	Possible	Has occurred here or			
		elsewhere and could		elsewhere and could			
		therefore occur		therefore occur			
Confidence	High	Substantive supportive data	High	Substantive supportive data			
		exists to verify the assessment		exists to verify the			
				assessment			
Reversibility	Irreversible	the impact is irreversible, and	Irreversible	the impact is irreversible,			
		no mitigation measures exist		and no mitigation measures			
				exist			
Resource	High	Irreparable damage and is	High	Irreparable damage and is			
irreplaceability		not represented elsewhere		not represented elsewhere			
Significance		Minor - negative	N	egligible - negative			
Comment on	The most im	portant ecological drivers on s	ite that may	be affected by the proposed			
significance	developmer	nt are related to maintenance o	f the forest ec	osystem. The forest margins are			
	important for maintaining forest integrity, and the forest canopy needs to be maintained						
	for the healt	e health of the forest ecosystem. No development is proposed within the forest, and					
	the secondo	ary forest on the southern margin	n is also exclud	ed from development.			
Cumulative	The impact	would result in insignificant cumu	lative effects				
impacts							

Project Phase	Operation					
Activity	Impacts on ecological corridors					
Description of	Cut-off of natural dispersal and foraging movement by animals, impacts on suitable link					
impact		or important corridor, fragmente	ation of ecolog	gical infrastructure		
Mitigable	Low	Mitigation will slightly reduce th	ne significance	e of impacts		
Potential mitigation	<ul> <li>Fencing should not extend into the corridor on the neighbouring boundaries as the aim is to have an inter-connected corridor that extends across properties, should development occur in adjacent areas.</li> <li>Use clearVu fencing to separate the corridor from the development area. The spring must be incorporated into the corridor. The fence is to keep domestic animals (cats and dogs, etc) out of the wildlife corridor.</li> <li>Fencing should not extend into the corridor on the neighbouring boundaries as the aim is to have an inter-connected corridor that extends across properties, should development occur in adjacent areas.</li> </ul>					
Association	* Provi	de open-space corridors inroug	n the develop	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	Limited	Limited to the site and its immediate surroundings		
Intensity	Low Natural and/or social functions and/or processes are somewhat altered		Negligible	Natural and/ or social functions and/ or processes are negligibly altered		
Probability	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	High	Irreparable damage and is not represented elsewhere	High	Irreparable damage and is not represented elsewhere		

aative
along the forest a to form part of he forest area.
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Project Phase		Oper	ation			
Activity		Eradication of A	lien Vegetatio	n		
Description of	Impacts on biodiversity / natural habitats / increased fire risk					
impact		1				
Mitigable	High	Mitigation exists and will o	considerably re	educe significance of impacts		
Potential	<ul> <li>All invasive and</li> </ul>	alien plants must be compl	etely cleared	from the property, and where a		
mitigation	tree or bush	cover is desired, replaced	with suitable i	ndigenous species.		
	Rehabilitation	on of disturbed areas, as we	ell as previousi	y invaded areas, must promote		
	establishme	nt of site-appropriate indig	enous species			
	<ul> <li>A suitable pl</li> </ul>	anting list of trees and shru	bs must be cc	mpiled and incorporated into		
	the Landsco	ipe Plan. ntral Dian must be commile	d to a late as at:			
	An Alien Co plant specie	nitol Flati musi de complie	a lo systemati	cally remove and control dilen		
	<ul> <li>Follow-up or</li> </ul>	perations must be done				
	<ul> <li>Minimise dist</li> </ul>	turbance to the natural ve	aetation usina	low impact manual labour		
	techniques.	· · · · · · · · · · · · · · · · · · ·	0			
	<ul> <li>Reduce fire</li> </ul>	hazard on site				
Assessment	Without mitigation			With mitigation		
Nature	Negative	1	Positive			
Duration	Permanent	Impact may be	Brief	Impact will not last longer		
		of 20 years		than I year		
Fxtent	Limited	Limited to the site and	Limited	Limited to the site and its		
EXICIL		its immediate	Linnog	immediate surroundinas		
	surroundings					
Intensity	Very high	Natural and/ or social	Medium	Natural and/or social		
		functions and/ or		functions and/or processes		
		processes are majorly		are notably altered		
Due le cele ilite e	Cartain (Dafinita	altered	Devre (			
Probability	Certain / Definite	scientific reasons to	kare /	conceivable, but only in		
		expect that the impact	Improbabic	and/or might occur for this		
	will definitely occur					
	rarely been known to					
				result elsewhere		
Confidence	Medium	Determination is based	Medium	Determination is based on		
		on common sense and		common sense and general		
D	1	general knowledge		knowledge		
Reversibility	LOW		Meaium	ine attected environment will		
		able to recover from		with significant intervention		

		the impact - permanently modified			
Resource	Not relevant		Not		
irreplaceability			relevant		
Significance	Moderc	ite - negative		Moderate - positive	
Comment on	An ongoing alien inv	vasive management progr	amme must ta	ke place on site. This will protect	
significance	riparian habitats downslope from degradation and could potentially be the biggest				
	contribution to maintaining and protecting biodiversity on site and in surrounding areas.				
Cumulative	Without mitigation t	he development would no	t be meeting	design guidelines enforced by	
impacts	the municipality. Sp	ecifically design guidelines	s for the local o	area.	

Project Phase	Operation					
Activity		Formal	gardens			
Description of	Habitat loss for terrestrial wildlife, fragmentation of ecological corridor					
impact						
Mitigable	Low	Mitigation will slightly redu	uce the signifi	cance of impacts		
Potential	<ul> <li>Areas that c</li> </ul>	are not required for develop	oment purpos	ses must remain natural with		
mitigation	indigenous	vegetation.				
	<ul> <li>All alien invo</li> </ul>	asive plants must be remov	ed from the si	ite on an on-going basis.		
	<ul> <li>Investing lar</li> </ul>	ndowners within the propos	ed developm	nent must be encouraged to		
	avoid planti	ng exotic plants in favour c	of locally indig	genous plants.		
	<ul> <li>Landscaping</li> </ul>	g must be done with locall	y occurring in	digenous vegetation.		
Assessment	Witho	ut mitigation		With mitigation		
Nature	Negative	T	Positive			
Duration	Brief	Impact will not last	Permanent	Impact may be permanent, or		
Ford a sub		longer than I year		In excess of 20 years		
Extent	Limited	Limited to the site and	very limited	Limited to specific isolated		
			Innied	pairs of the site		
Intonsity	Nagligibla	Natural and ( or social	Vonclow	Natural and (or social		
mensity	Inegligible	functions and/or		functions and/or processes		
		processes are pealigibly		are slightly altered		
		altered		are signify anered		
Probability	Hiahly unlikely /	Expected never to	Almost	It is most likely that the impact		
	None	happen	certain /	will occur		
	Highly					
			probable			
Confidence	Medium	Determination is based	Medium	Determination is based on		
		on common sense and		common sense and general		
		general knowledge		knowledge		
Reversibility	Medium	The affected	Not			
		environment will only	relevant			
		recover from the				
		impact with significant				
		intervention				
Resource	Low	The resource is not	Not			
irreplaceability		damaged irreparably	relevant			
		or is not scarce				
Significance	Negligi	ole - negative		Minor - positive		
Comment on	With mitigation the	impact is likely to have mo	re beneticial i	impact to retaining natural		
significance	biodiversity, than w	ithout mitigation.				
Cumulative	Without mitigation t	his impact could result in th	ne spread of a	alien invasive plants and the loss		
impacts	of indigenous vegetation.					

Project Phase	Operational				
Activity	Package Plant Maintenance				
Description of	Impacts associated with the maintenance of the sewage package plant and potential				
impact	downtime or failures.				
Mitigable	High Mitigation exists and will considerably reduce the significance of impacts				
Potential	✤ Assign an Estate maintenance manager responsible for daily inspections of the				
mitigation	plant.				
	<ul> <li>Ensure the maintenance manager is trained specifically in plant operations and</li> </ul>				
	maintenance procedures.				
	Install screening systems to remove non-biodegradable materials and prevent				
	cloggi	clogging or system damage.			
	<ul> <li>Dispos</li> </ul>	<ul> <li>Dispose of screened non-biodegradable waste via incineration at a recognized</li> </ul>			
	waste	waste disposal site.			
	<ul> <li>Install</li> </ul>	<ul> <li>Install an emergency alarm system that activates if effluent levels rise in the</li> </ul>			
	emerg	emergency storage component.			
	<ul> <li>Design the plant with a 48-hour emergency effluent storage period to</li> </ul>				
	accommodate unexpected downtime or failures.				
	<ul> <li>Have a contract or arrangement with etfluent removal tanker services for extended</li> </ul>				
	maintenance events.				
	<ul> <li>Conduct monthly testing of effluent to ensure compliance with quality standards.</li> </ul>				
	<ul> <li>Power the plant using a solar/Eskom battery system with a backup generator to mitigate Eskom power outgoos</li> </ul>				
A	Million power outrages.				
Assessment			Low No gotivo	with mitigation	
Nature	Negative		Low Negative		
Duration	Brief	Impact will not last longer	Briet	Impact will not last longer	
	Lingite d	Limited to the site and ite	Vandinaitad		
Extent	Limited	Limited to the site and its	very limited	Limited to specific isolated	
Interests (			Lovi	Netwerkered and (ar as sight	
Intensity	Medium	Natural and/or social	LOW	Natural ana/or social	
		are notably altered		are slightly altered	
Probability	Possible	Has occurred here or	Improbable		
TODODINIY		elsewhere and could	Improbable	extreme circumstances	
		therefore occur		and/or might occur for this	
				project although this has	
				rarely been known to result	
				elsewhere	
Confidence	Medium	Determination is based on	Medium	Determination is based on	
connactice	Medioini	common sense and	Medioini	common sense and general	
		general knowledge		knowledge	
Reversibility	High	The affected	High	The affected environmental	
	- ing it	environmental will be able	i iigi i	will be able to recover from	
		to recover from the		the impact	
		impact			
Resource	Negliaible	No loss of resources	Negliaible	No loss of resources	
irreplaceability					
Significance	Moderate - negative Negligible - negative		egligible - negative		
Comment on	The implementation of the proposed mitigation measures will significantly reduce the				
significance	likelihood and severity of operational failures, environmental contamination, and service				
	disruptions associated with the sewage package plant.				
Cumulative	Without mitigation this impact could result in the groundwater quality being compromised.				
impacts		•	<u> </u>		
# 3.4. Impacts foreseen during the Decommissioning Phase

Project Phase	Decommissioning			
Activity	Package Plant			
Description of	Decommission	ing of the package plant re	esulting in pote	ntial pollution of surface and
impact	groundwater s	ources, soil contamination, ar	nd health and so	afety risks.
Mitigable	High Mitigati	on exists and will considerably	reduce the sig	nificance of impacts
Potential	<ul> <li>Empty of</li> </ul>	and clean tanks before disma	intling.	
mitigation	<ul> <li>Remove</li> </ul>	e all sludge and residue with a	certified disposa	l contractors.
	Conduc	ct soil testing before and attei	decommissioni	ng.
	<ul> <li>Provide</li> </ul>	PPE and fraining for workers.		
	<ul> <li>Follows</li> <li>Property</li> </ul>	sate dismantling procedures.	at Dian	
		e and follow a Health and sal	ely Plan.	sower connections to provent
		health issues		sewer connections to prevent
Assessment	W	ithout mitigation		With mitigation
Nature	Negative		Low Negative	
Duration	Short term	Impact will last between 1	Brief	Impact will not last longer
		and 2 years		than 1 year
Extent	Local	Extending across the site	Very limited	Limited to specific isolated
		and to nearby settlements		parts of the site
Intensity	Low	Natural and/or social	Negligible	Natural and/ or social
		functions and/or processes		functions and/ or processes
	are slightly altered are negligibly altered			
Probability	Possible	Has occurred here or	Improbable	Conceivable, but only in
		elsewhere and could		extreme circumstances,
	Therefore occur and/or might occur for this			
	project annough this has			
				elsewhere
Confidence	Medium	Determination is based on	Medium	Determination is based on
		common sense and		common sense and general
		general knowledge		knowledge
Reversibility	High	The affected	High	The affected environmental
-	-	environmental will be able	_	will be able to recover from
		to recover from the		the impact
		impact		
Resource	Negligible	No loss of resources	Negligible	No loss of resources
irreplaceability				
Significance	N	Ninor - negative	Ne	egligible - negative
Comment on	The decommis	sioning requirements will only	/ comprise the	emptying and removal of the
significance	above ground	containerized bio reactor pla	ant. Sludge is re	cyclea within the plant system
Cumulativa	and there will be no sludge accumulation requiring removal on decommissioning.			
impacts	winour minga	non mis impact could result in	me groundwat	er quainy being compromised.
inpucis				

# 4. SPECIALIST RECOMMENDATIONS/MANAGEMENT ACTIONS

## 4.1. Agricultural

Due to the small footprint and low impact on existing agricultural activities, it is the specialist's opinion that the development continues. The development will not have a significant impact on agricultural in the area and poses no threat to food security. In terms of agricultural sensitivity, the development should thus be allowed to proceed.

## 4.2. Freshwater

Based on the results of the desktop review and the site survey, the sensitivity of aquatic biodiversity on Portion 91/304 can be regarded as LOW. The main factors influencing the statement include the following:

- The mapped aquatic features at the site are associated with estuarine habitat which is mapped according to the contours (5 m.a.m.s.l.) and not the actual habitat present. Ground-truthing of the site by the aquatic specialist confirmed no estuarine habitat present in remnant vegetation at the site, and no hydromorphic indicators in the soil that would indicate wetland conditions;
- While a natural spring and dam are present on the site, they are very small in extent and can be adequately protected from the development by implementing the 10m buffer during the construction and operational phases as indicated in this report. The presence of this feature is not sufficient to increase the sensitivity of the site to Very High, and it has been excluded from the development area in both SDP options. No stormwater should be put into this dam as the water is of high quality.
- According to the Keurbooms-Bitou Estuarine Management Plan the property and proposed development area are located above the 100-year floodline and outside of any ecologically sensitive areas associated with the estuary or Tshokwane wetlands.
- Following feedback received from DEA&DP querying the level of groundwater at the site, a geotechnical study was compiled. Groundwater was only present in 2 of the test pits at an average depth of 2 m. For wetland or estuarine conditions to form, the soil profile must be periodically saturated in the plant root zone (upper 50 cm). This would need to happen for at least several months of the year to influence vegetation composition. As the groundwater level was substantially deeper than this, and no wetland / estuarine vegetation was observed at the soil surface, it is concluded that no estuarine or wetland habitat could form at the site.

The mapped spring and dam have been protected by a 10 m buffer as recommended, which constitutes the regulated area as per GN509 as this incorporates riparian vegetation in the immediate vicinity of the features. Provided no development takes place within this area, the development will not require any level of Water Use Authorisation in terms of the National Water Act.

## 4.3. Geohydrology

The following recommendations are made to ensure the protection of groundwater resources to mitigate the potential risks of contamination, recharge and flooding during both the construction and operational phases of the development:

 Mitigation Measures: Implement and strictly adhere to prescribed mitigation measures to minimize environmental impact and ensure compliance with relevant regulations.

- Monitoring Network Installation: It is strongly recommended that the monitoring network be installed prior to the commencement of the proposed development. This will ensure that data is available to monitor groundwater quality and levels from the outset and allow for early detection of any potential issues during the construction phase. This network will also be essential for monitoring during the operational phase to ensure continuous assessment of groundwater quality and levels and to detect any contamination, recharge and flooding risks promptly.
- Piezometer Installation: At least four monitoring piezometers should be installed to effectively detect any potential contaminants and enable monitoring of groundwater quality and levels over time.
- Regular Monitoring: To track changes in groundwater quality, water levels and chemical parameters should be recorded monthly from each of the installed piezometers. Additionally, effluent quality should also be regularly tested to assess the potential impact of the wastewater treatment plant (WWTP).
  - **Laboratory Testing:** All groundwater and effluent samples should be sent to an accredited SANAS laboratory for analysis. Sample collection, handling, and transport should strictly adhere to laboratory standards to ensure the accuracy and integrity of the results.
- Rapid Response Plan: A rapid response plan should be developed in the event that any contamination is detected during the monitoring process. This plan should include clear procedures for identifying the source of contamination, containing the issue, and mitigating any potential environmental impacts. It should also outline specific actions to address contamination quickly and effectively, reducing the risk of groundwater or environmental degradation.

## 4.4. Plant Species, Animal Species and Terrestrial Biodiversity

Desktop information, field data collection and mapping from aerial imagery provides the following verifications of patterns for various themes:

- The site consists of a combination of pasture / lawns (on the flat lowlands), secondary scrub vegetation, forest woodland (on the steep south-facing slopes), patches of alien trees, and some scattered milkwood trees within the pasture area. The forests are in a natural state whereas other habitats are secondary.
- The proposed development will be restricted to the lowland areas that were previously cultivated. The forest areas are therefore outside the proposed development footprint.
- The forest exists in the areas designated as Critical Biodiversity Area 1. The site occurs within Garden Route Shale Fynbos, which is listed as Endangered. The forest habitat on site is not typical of the listed ecosystem within which it occurs but it is nevertheless a listed ecosystem.
- Following the procedures within the Species Environmental Assessment Guidelines, the forests on site have been assessed as having Very High sensitivity / Ecological Importance, secondary vegetation as having Medium sensitivity / Ecological Importance, and remaining areas Low or Very Low sensitivity.
- On the basis of the presence of natural habitat within a CBA1 area and within a listed ecosystem, it is verified that the site occurs partially within an area of VERY HIGH sensitivity with respect to the Terrestrial Biodiversity Theme. These areas are not affected by the proposed development.
- No plant species of concern were found on the lowland part of the site and, based on the available habitat (except for the forest, which will not be affected by the proposed development), it is considered unlikely that any of those plant species flagged for the site would occur there. However, it is likely that an Endangered tree species occurs within the forest, and possible that a Rare tree occurs within the forest. It is therefore verified that the site has MEDIUM sensitivity with respect to the Plant Species Theme, but only within areas not affected by the proposed development.

- The lowland part of the site is not considered to be good habitat for any of the animal species flagged for the site. However, the forest is likely habitat for three animal species, the Knysna Warbler (Vulnerable), a small antelope (Vulnerable), and the Tunnelling Dung Beetle (Endangered). It is therefore verified that the Animal Species Theme has MEDIUM sensitivity for the site, but only within areas not affected by the proposed development.
- An impact assessment determined that the impact of the proposed development (both options) has Very Low significance on vegetation, protected trees, and animal species of concern. However, Alternative 1 is preferred on the basis that it incorporates more open space, which is better for ecosystem processes and connectivity, although not significantly so.
- The proposed development project (73 units) affects a small area mapped in the Keurbooms and Environs Local Area Spatial Plan (KELASP) as "Map Unit 8: Fynbos invaded with aliens", which is a restricted zone according to this LASP. The on-site vegetation was found to be secondary with alien plants, but this is legally natural vegetation within an Endangered ecosystem (according to the legal definition of natural vegetation in NEMA). This small patch of habitat is not considered to have biodeiversity significance, but constitutes the only restriction, according to the information considered here. On this basis, the Alternative 1 proposal is preferred.
- The proposed development is entirely within areas mapped as secondary or pasture that has low biodiversity value and sensitivity. The development is therefore supported on condition that forest habitats on the property are fully protected. Either option is acceptable, although Alternative 1 is marginally preferred.

The following recommendations have been made based on the specialist's findings:

- Forest habitats on the upland, steeply-sloping part of the site, have high biodiversity and conservation value, and are designated as sensitive. These areas must not be affected by the proposed development. A buffer zone must be retained along the base of the slope to protect the forest margin. For example, steps must be taken to rehabilitate these areas and encourage growth of species, such as *Pterocelastrus tricuspidatus* and *Sideroxylon inerme*, that are mesic and fire-resistant. An open space management system must be developed to formalize such steps for forest protection.
- Rehabilitation of disturbed areas, as well as previously invaded areas, should promote establishment of site-appropriate indigenous species.
- An ongoing alien invasive management programme must take place on site. This will protect riparian habitats downslope from degradation and could potentially be the biggest contribution to maintaining and protecting biodiversity on site and in surrounding areas.
- The bulb species, Brunsvigia orientalis, was found on site within the proposed development footprint. Although not threatened, it is recommended that all individuals are rescued prior to commencement of development. Locations of individuals must be determined by a qualified botanist during the flowering period in late summer (around March) and plants rescued at an appropriate time thereafter. Plant rescue and relocation must follow the requirements of the Bitou Municipality.

## 4.5. Visual Impact Assessment

#### 4.5.1. Reducing unnecessary disturbance

As a general rule, reducing the amount of land disturbed during the construction of a project reduces the extent of visual impact. Measures relevant to the project include:

- Retain as much of the existing vegetation as possible and where practical screen construction activities from key viewing locations. This is also referred to as vegetation manipulation.
- Establish limits of disturbance that reflect the minimum area required for construction.
- Existing vegetation must be retained where possible through the use of retaining walls.

#### 4.5.2. Colour selection

The selection of the best colour for the planned project will have the greatest impact on the visual success or failure of the project. Strong contrasts in colour create easily recognizable visual conflicts in the landscape. Measures relevant to the project include:

- The selection of colours that blend with or are in harmony with the surrounding landscape will drastically reduce the visual impact of the project
- Galvanized steel on structures should be darkened to prevent glare. Low-lustre paints should be used wherever possible to reduce glare.

#### 4.5.3. Reduce contrasts from earthworks

The scars left by excessive cut and fill activities during construction often leave long-lasting negative visual impacts. Once the dark surface soil layer is disturbed, exposing the much lighter colour of the subsurface soil, a strong contrast is created that may take many years to recover.

There are several ways to reduce the contrasts created by earthwork construction. Proper location and alignment are the most important factors. Fitting the proposed project infrastructure to the existing landforms in a manner that minimizes the size of cuts and fills will greatly reduce visual impacts from earthwork. Other earthwork design techniques, such as balancing cut and fill or constructing with all fill or all cut should be considered, where appropriate, as methods to reduce strong visual impacts. Measures relevant to the project include:

- The scars left by excessive cut and fill activities during construction often leave long-lasting negative visual impacts. Where possible fitting the proposed project infrastructure to the existing landforms in a manner that minimizes the size of cuts and fills will greatly reduce visual impacts from earthwork.
- The dumping of excess rock and earth on downhill slopes must be limited.

#### 4.5.4. Glint and Glare

Solar glint and glare i.e. reflected sunlight from shiny surfaces such as windows can affect safety and residential amenity in surrounding areas. Glint is a momentary flash of light. and may be produced as a direct reflection of the sun on a window. Glint effects are not restricted to just windows and can occur from any reflective surface including building facades.

Glare is a continuous source of excessive brightness. It could be experienced by a stationary observer located in the path of reflected sunlight from the face of a window. Glare can also be an issue for buildings with reflective/glassy facades.

Glint and glare can cause a distraction or lead to an after-image being experienced by an observer. This can present a nuisance and, under some circumstances, a safety hazard. Solar glint and glare impact significance is categorised differently for varying observer types. For dwelling receptors, significance is predominantly defined by duration and separation distance. For road users, it is mostly down to the location of the glare relative to an observer's field of view.

Low emissivity windows (Low-E) are designed to reflect much more solar energy than standard glass panes. They block as much as 99% of the sun's ultraviolet rays, preventing interiors from fading and reducing the health risks posed by ultraviolet light. Low-E windows also block a large percentage of the sun's infrared light, which is chiefly responsible for solar heat gain inside a property; it is primarily for this reason that these windows are known as energy efficient. Most low-E windows are also quite well-insulated thanks to a double pane design, which further enhances their energy efficiency.

But all that UV and IR light reflected off Low-E windows has to go somewhere, and quite often it does so in the form of light beams (glare) intense enough to melt some materials or to pose a hazard to nearby humans and animals.

Anti-glare window film can be applied to windows prone to glare. They reduce the reflection without reducing the amount of light that reaches the room and without obstructing the view either. The roof of a building can also be extended to provide more shade and thereby reducing glare from windows.

#### 4.5.5. Limiting the footprints and heights of structures

Visual impact can be reduced by limiting the footprint of the buildings and hardscaping as well as the heights of buildings. Limiting the footprint of infrastructure will help to provide more greening areas in between buildings which will assist with screening and visual absorption of structures

#### 4.5.6. Development and architectural guidelines

Development and building guidelines need to address procedural, planning and aesthetic considerations required for the successful design and development of the property and the architectural ethos of the development. The purpose of design guidelines is to protect and safeguard the environment and scenic resources and guide the appropriate architectural character to protect the investment value of the development. The guidelines should not be restrictive conditions but must promote an overall design sensitivity whilst allowing flexibility for individual expression.

#### 4.5.7. Landscaping

A Landscape Plan must be drawn up by a professionally registered Landscape Architect. The objective of the Landscape Plan must be:

- To identify and retain indigenous trees and shrubs that will visually screen the development.
- To provide a planting plan of indigenous trees and shrubs for streets and open spaces that will allow for the medium long-term visual screening of the development and enhance the living environment of the owners and residents.
- To draw up a management plan for phasing in indigenous trees and phasing out exotic trees such that the proposed development will always be screened from sensitive receptors, by trees. The plan must include the planting of fast-growing, pioneer-type trees, trees with a medium growth rate and those that have a slower growth rate. This management plan must be for a minimum of 20 years and must be monitored and revised every 5 years.
- To provide Landscape Guidelines for homeowners. Planting of lawn alone exacerbates the visibility of the units. The mix of lawn, shrubs and trees must be carefully designed with the importance of trees and large shrubs emphasized, to provide further greening of the built environment.
- To draw up a Landscape Operational Maintenance Plan for the Homeowners Association or owner to manage the shared open spaces beyond individual erf boundaries.
- To provide guidelines on visually permeable boundary treatments, using fencing for the most part and walls at entrances only. No precast concrete walls.

#### 4.5.8. Lightning design

Effective light management needs to be incorporated into the design of the lighting to ensure that the visual influence is limited to the power station, without jeopardising operational safety and security.

Several measures can be implemented to reduce light pollution and those relevant to the project are as follows:

- Where possible construction activities must be conducted behind noise/light barriers that could include vegetation screens.
- Low flux lamps and the direction of fixed lights toward the ground must be implemented where practical. Choose "full-cut off shielded" fixtures that keep light from going uselessly up or sideways. Full cut-off light fixtures produce minimum glare. They increase safety because you see illuminated people, cars, and terrain, not dazzling bulbs. If you can see the bright bulb from a distance, it's a bad light. With a good light, you see lit ground instead of the dazzling bulb. "Glare" is light that beams directly from a bulb into your eye.
- The design of night lighting must be kept to a minimum level required for operations and safety

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- The utilisation of specific frequency LED lighting with a green hue on perimeter security fencing.
- Where feasible, put lights on timers to turn them off each night after they are no longer needed

#### 4.5.9. Restoration and reclamation

Strategies for restoration and reclamation are very similar to the design strategies for earthwork, as well as the design fundamentals of repeating form, line, colour, and texture and reducing unnecessary disturbance. The objectives of restoration and reclamation include reducing long-term visual impacts by decreasing the amount of disturbed area and blending the disturbed area into the natural environment while still providing for project operations.

Though restoration and reclamation are separate parts of project design, they must not be forgotten or ignored. It is always a good idea to require a restoration/reclamation plan as part of the original design package. All areas of disturbance that are not needed for operation and maintenance must be restored as closely as possible to previous conditions. Measures relevant to the project include:

- The objective of restoration and reclamation efforts is to reduce the long-term visual impacts by decreasing the amount of disturbed area and blending the disturbed area into the natural environment while still providing for project operations.
- Topsoil must be stripped, saved, and replaced on earth surfaces disturbed by construction activities.
- Planting holes must be established on cut/fill slopes to retain water and seeds.
- Indigenous plant species must be selected to rehabilitate disturbed areas.
- Where possible rehabilitation efforts must emulate surrounding landscape patterns in terms of colour, texture and vegetation continuums.
- Replacing soil, brush, rocks and forest debris over disturbed earth surfaces when appropriate, thus allowing for natural regeneration rather than introducing an unnatural-looking grass cover.
- Revegetation of disturbed areas must occur as soon as practicable possible after the completion of various construction activities.

#### 4.5.10. Monitoring program

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.

## 4.6. Geotechnical

The geotechnical investigations have indicated that the site was potentially suitable for the proposed development but there were some moderate geotechnical constraints which required consideration in the structural design. Some preliminary recommendations were provided but all geotechnical information should be verified during construction.

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The following recommendations are based on limited information gained from the site investigation and although the confidence in the information is high, significant variation is likely to occur between information points. All geotechnical information should be verified during construction and any significant variations should be brought to the attention of the geotechnical engineer for comment or further recommendations. It is recommended that the structural & civil engineers discuss their designs with the geotechnical engineer to ensure that the designs are compatible with the expected geotechnical conditions. Regular supervision by the structural engineer was highly recommended to ensure suitable founding conditions.

#### 4.6.1. Earthworks and structural foundations

Earthworks should be designed and constructed in accordance with SABS 1200D and/or any site-specific specifications provided by the civil engineer. Foundations should be designed and constructed in accordance with SANS 10400-H or as specified by the structural engineer.

To clear and prepare site for earthworks and construction, it was recommended that at least 150mm of topsoil and vegetation cover be removed from the footprint area. Large roots be grubbed and platform levels established by cutting and/or filling with insitu soil obtained from site. Bulk fill should be compacted to minimum 93%MDD. Low retaining walls may be required in some areas, depending on site levels. The insitu sandy soils were generally suitable for use as general fill on platforms, in roadbeds and as trench backfill. Any organic matter or unsuitable soil should be removed from potential fill material.

Unsuitable ground conditions exposed during earthworks should be referred to the engineer for further investigation and consideration on appropriate action.

Foundation system for the proposed single/double storey residential structures:

- a. RC strips/bases clear and level site to PL, excavate trenches to PL-1m, wet and compact base of trench with 6 passes of mechanical rammer, such that DCP penetrates at less than 30mm/blow to a depth of 1m below the base of the excavation, backfill the trench to PL-0.7m (recommended final founding level) in layers with compacted sand ex-insitu to 100%MDD or <20mm/blow of DCP. Limit bearing pressures to max 150kPa. Alternatively, excavate trenches to PL-0.7m, compact base of trench such that DCP penetrates at less than 30mm/blow and limit bearing pressures to 100kPa.</p>
- b. Raft foundations on a compacted insitu platform excavate ~0.6m of insitu soils below entire platform area, compact base of excavation with roller, replace compacted soil in layers back up to platform level such that DCP penetrates at <30mm/blow, construct light raft foundation with max bearing pressures of 75kPa.

Additional measures can be considered for heavier structures.

#### 4.6.2. Site drainage

The design and construction of storm water drainage should be carried out in accordance with SABS 1200LE, COLTO, The Red Book or other applicable standards, as determined by the civil engineer.

Consideration should be paid to stormwater drainage due to the low gradient on the site and the likelihood of stormwater accumulating on surface after heavy downpours. Stormwater from roofs can generally be handled in gutters, downpipes and open channels or underground pipes, with suitable discharge locations on the southern side of the site. A well designed road layout can assist in management of stormwater run-off from site, with minor flood events being accommodated within the road prism with raised barrier kerbs and/or side channels.

Allowances should be made for stormwater handling from slopes above the site (including continual seepage at/near spring area).

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#### 4.6.3. Roads

It is recommended that road layerworks, including G4-G6 subbase and G1-G4 base layers (for asphalt-sealed roads) be imported from local commercial quarries. The insitu sandy soil can be used for roadbed and SSG layerworks in lightly trafficked internal estate roads.

## 4.7. Stormwater Management

The stormwater will be managed such that roof areas will drain to gardens which will fall towards roads or directly to one of three infiltration attenuation ponds P1, P2 and P3 to be provided. The main access roads will be surfaced with permeable paving and secondary roads with grass block paving. In either case infiltration will occur through the road structure and roadbed to the natural ground below. Excess runoff to the road surfaces which does not infiltrate will be surface discharged to the infiltration ponds.

Based on an average roof area of 225m<sup>2</sup> the overall impermeable roof area will be approximately 25 percent of the road reserve and landscaped areas. This impermeable proportion does not increase the total discharge volume of the site, but does reduce the available infiltration area, and therefore increases the required duration of infiltration. Containment of the excess discharge within the ponds, will allow for the longer discharge infiltration time.

Site levels will be designed to ensure the effective implementation of the stormwater management system. The minimum floor level of any stand will be 4.0m MSL. The site slopes and road levels will be designed to flat gradients to enable maximum infiltration whilst draining on surface to the ponds. The levels will also be designed to contain flood runoff within the ponds. The preliminary estimated pond invert levels are such that they will be a minimum of 1.5m above the existing watertable. The site design levels will protect homes from flooding and will also detain excess site runoff from flooding over the Keurboomstrand Road.



Figure 1: General Layout for roads, stormwater, sewer and water reticulation (Poise Consulting Engineer).

### 4.8. Fire Management

One could argue that the landowner does have an obligation to protect the people/residence inside his/her property/development therefore he/she could be held accountable for damages to infrastructure/houses inside his/her property should a wildfire spread onto the development from neighbouring property and there were no boundary firebreaks in place. This goes beyond boundary firebreaks. Then defendable spaces must/should be created around the structures. Removing vegetation around structures within a property is regulated by other environmental legislation. The NVFFA only focuses on reducing/limiting the spread of wildfires/vegetation fires from one property/owner to another/neighbouring property/landowner therefore the system of boundary firebreaks.

By nature, veldfires do not respect property or boundaries. Without preventive measures, veldfires will continue to burn for as long as the weather is favourable and there is vegetation to burn. Anyone owning land has the first responsibility to control fires on his or her own land. But when fires burn in severe conditions they quickly extend beyond any one property, and become a problem that cannot be handled by individuals, but can only be controlled by joint, co-ordinated efforts. Veldfires are a matter of common concern. For this reason, in South Africa as in other countries, effective policies and plans for preventing and combating veldfires must be clear about individual responsibility as well and co-operative and co-ordinated roles and responsibilities. The landowner will become a member of the Southern Cape Fire Protection Association (SCFPA). The SCFPA will engage with the landowner and will provide advice to cover the other aspects related to compliance to the NVFFA (equipment needed and actions to be taken when there is a vegetation fire on the property).

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Recommendations:

- Implementing regulations/rules around "braai" fires /open flame fires that should be considered especially when high fire danger weather conditions are predicted.
- ensuring that access roads are kept clear for firefighting vehicles to have unobstructed access to the structures/houses.
- work collaboratively with local authorities develop an emergency preparedness plan that outlines the steps to take in the event of a fire. The plan should include protocols for notification, evacuation, and communication with local authorities.
- overall, the goal of the fire management plan should be to prevent wildfires from starting and spreading within the development and to minimize the impact of any fires that do occur.

## 4.9. Maintenance of the Bio Sewage System Plant

Plant care will be included in the job responsibility of the Estate maintenance manager, who will be trained accordingly and will visit site and inspect the plant on a daily basis.

Pre-treatment screening will be provided which will facilitate the cleaning and removal of non biodegradables. The frequency of cleaning will be determined once the plant is in operation and the amount of non-biodegradables being screened. The non-biodegradables removed would be sent for incineration at a recognised waste disposal site.

To enable the monitoring of any potential failure and consequential overflow of the system, an emergency alarm will be installed which will be activated once effluent level rises in the emergency storage component of the system.

All required regular maintenance can be done within the 48 hour emergency storage period. In the event of any abnormal extended maintenance period arising, effluent removal tanker services will be engaged.

Effluent quality will be tested on a monthly basis.

The plant will be powered by a Solar/Eskom charged battery system with a backup generator for emergency supply in the event of extended Eskom down time.

## 4.10. Decommissioning of the Bio Sewage System Plant<sup>1</sup>

The Bio Sewage Systems plant comprises an underground anaerobic tank and an above ground containerized bio reactor plant. Sludge is recycled within the plant system and there will be no sludge accumulation requiring removal on decommissioning.

On decommissioning of the Plant a sewerage pump station will be required which will pump the effluent to the municipal system. The Plant underground anaerobic tank will serve as the future pump station sump and will be designed in the initial stage to accommodate the later conversion.

The decommissioning requirements will therefore only comprise the emptying and removal of the above ground containerized bio reactor plant.

The decommissioning process will therefore be as follows:

<sup>&</sup>lt;sup>1</sup> Information provided by Poise Consulting Engineers, May 2025.

- Construct the future pump station outlet valve chamber adjacent to the existing anaerobic tank, including installation of outlet valve manifold.
- Construct the rising main from the outlet valve chamber to the site gravity municipal connection.
- Install the permanent pumps in the anaerobic tank/future pump sump, connect to the outlet chamber manifold and commission the pump station.
- Close the Bio Sewage Plant anaerobic tank extraction valve and empty the contents of the containerized plant into the pump sump.
- Clean and disinfect the containerized plant by pumping chlorinated water through the plant.
- Remove the containerized above ground component to new usage or approved disposal site.

# 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 Site Manager 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.

Title of legislation, policy or guideline:	Administering authority:	Date:	
Constitution of the Republic of South Africa. (Act 108 of 1996)	All State and Provincial Departments as well as Local Authorities that have been identified as relevant Competent Authorities.	Relevant Consideration	
Environmental Conservation Act (Act 73 of 1989)	Department of Economic Development, Environmental Affairs &Tourism	Relevant Consideration	
National Environmental Management Act (Act 107 of 1998)	Department of Economic Development, Environmental Affairs &Tourism	Authorization – December 2022/January 2023	
National Environmental Management: Biodiversity Act (Act 10 of 2004)	Department of Economic Development, Environmental Affairs &Tourism	Relevant Consideration	
National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008)	Department of Forestry, Fisheries, and the Environment (DFFE), Branch Oceans & Coasts (O&C)/ Department of Economic	Comment/ Relevant Consideration	

	Development, Environmental Affairs &Tourism	
National Environmental Management: Protected Areas Act (Act 57 of 2003)	Department of Economic Development, Environmental Affairs &Tourism	Relevant Consideration
National Water Act (Act 36 of 1998)	Department of Water and Sanitation	Relevant Consideration
Water Services Act (Act 108 of 1997)	Department of Water and Sanitation	Relevant Consideration
Sea Shore Act (Act 21 Of 1935)	Department of Forestry, Fisheries, and the Environment (DFFE), Branch Oceans & Coasts (O&C)/ Department of Economic Development, Environmental Affairs &Tourism	Relevant Consideration
Conservation Of Agricultural Resources Act (Act 43 of 1983)	Department of Agriculture, Forestry and Fisheries	Relevant Consideration
National Heritage Resources Act (Act 25 of 1999)	Eastern Cape Provincial Heritage Resources Authority	Comment/ Relevant Consideration

## 5.3. Project Responsibilities

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

#### 5.3.1. The Applicant / Holder of the EA

The holder of the EA / property owner is the overseeing entity responsible for ensuring that all activities undertaken on the property comply with the Environmental Authorisation (EA) and associated Environmental Management Programme (EMPr) (& any other approval / licence / permit).

Actions relate (but are not limited to) -

- Ensure that that all tender documentation include reference to, and the need for compliance with, the EA and EMPr as well as any other legally binding documentation.
- Ensure that all employed Contractors and Engineers are aware of and understand the conditions of the EMPr (Include the EMPr in all tender documents)
- The right to remove any person or appointed contractors or personnel from site if the contravene with the 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.

#### 5.3.2. The ECO

- Secure the protection and provide assistance on the 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.

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- 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.

#### Site Visit Frequency:

- The ECO must conduct site inspections every two weeks during the construction phase (the frequency may be increased to weekly site inspections) and submit the ECO monitoring reports monthly.
- The ECO must conduct site inspections once a month during the rehabilitation phase and submit the ECO monitoring reports during this phase monthly.

#### Environmental induction and training

- It will be the responsibility of the ECO to provide adequate environmental awareness training of senior site personnel takes place and that all construction workers receive an induction presentation on the importance and implications of the EA and EMPr.
- Where staff turnover is high and with additional appointment of Sub-contractors, it may be necessary to undertake additional induction training sessions. The Contractor must keep records of all environmental training sessions, including names, dates and the information presented.

#### 5.3.3. The Engineers and Contractors

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 Site Manager, ECO and Project Applicant, this needs to be included in method statement. Breach of the Construction Phase Management Rules can be consulted in this regard.

# **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, nonconformance 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 nonconformance 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 must 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 monitor the site and compile a monitor report on the frequency that was determined.

• The holder of the environmental authorisation (the Applicant) is responsible to ensure that an environmental audit report is submitted to the Competent Authority as per the timeframes stipulated in the Environmental Authorisation (EA).

## 7.2 Auditing Process

- An independent EAP must be appointed to conduct an audit of the project. As per the EA, such person may not be the ECO or EAP who conducted the EIA process.
- Auditing during non-operational phase (construction phase):
  - During the period which the development activities have been commenced with on the site, the Holder must ensure annual environmental audit(s) are undertaken and the Environmental Audit Report(s) submitted annually to the Competent Authority.
  - Final Environmental Audit Report for the construction phase (non-operational component) must be submitted to the Competent Authority within three (3) months of completion of the construction phase.
- The audit is to report on the success of the implementation of the EA and the EMPr as the case may be.
- Auditing requirements are to cover ONLY the construction and rehabilitation phase and do not extend to the operational phase.

## 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. <u>Stop Works Non-Compliance</u>

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. <u>General Non-Compliance</u>

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

## 7.4 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. These fines will not be determined by the ECO, rather the ECO will report continued non-compliance to the competent authority which will determine the amount of the fine.

Non-compliance may be issued to:

- The Applicant
- Any representative of the Applicant

## 7.5 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

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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.

Responsibility	Name of Responsible Party
Applicant	Familie Roux Eiendomme Pty
Environmental Control Officer/ ECO	(To be appointed)
Site Manager	(To be appointed)

#### TABLE OF RESPONSIBLE PARTIES BELOW:

# **10. ENVIRONMENTAL MANAGEMENT PROGRAMME**

## **10.1 PRE-CONSTRUCTION PHASE**

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Authorisations,	Environmental Authorisations		
Licences and Permits	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.		
	The bulb species, <i>Brunsvigia orientalis</i> , was found on site within the proposed development footprint. Although not threatened, it is recommended that all individuals are rescued prior to commencement of development. Locations of individuals must be determined by a qualified botanist during the flowering period in late summer (around March) and plants rescued at an appropriate time thereafter. Plant rescue and relocation must follow the requirements of the Bitou Municipality.	Applicant	Once-off
Appointment of	Appointment of Environmental Control Officer		
Environmental Control Officer	An Independent ECO must be appointed at the Applicant's cost to monitor the implementation of the EMPr. 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.	Applicant & ECO	Once-off
	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

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Activity	Management / Mitigation	Responsibility	Frequency / Timing
Preparation of Method	Method Statements		
Statements	Method Statements must be submitted by the Applicant/ Contractor to the ECO and DEA&DP for approval. Method Statements must be adhered to by the Applicant/ Contractor. These relate to but are not limited to: Stormwater management Erosion control Shoring (if required) Dust control Stockpile and storage areas Site preparation and construction Installation of services and roadways Road upgrade Solid waste management Storage of hazardous materials (if applicable) Standard emergency procedures Rapid Response Plan in the event that groundwater contamination is detection during the monitoring process	Applicant/ Contractor	Prior to commencement of construction and during construction (if necessary)
	The ECO will monitor the implementation of the statements.	ECO	On-aoina
Notifying Relevant	Notice of Environmental Authorisation (EA)		<u> </u>
I&APs	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 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.	Applicant	Prior to commencement
Education of Site Staff	Environmental Awareness and Training	-	
on General and Environmental Conduct A general regard for the social and	All contractors, sub-contractor and delivery personnel will be required to be briefed on the Construction Phase Management Rules (Appended to the EMPr). The main contractor must do these briefings before his staff will be allowed to work on the Estate. The main contractor remains the liable person.	Contractor	Once-off and as required
ecological wellbeing of the site and adjacent areas is expected of the site staff.	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. 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.	ECO	Once-off and as required

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	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.		
	<ul> <li>The induction training will, as a minimum, include the following:</li> <li>The importance of conformance with all environmental policies;</li> <li>The environmental impacts, actual or potential, of their work activities;</li> <li>The environmental benefits of improved personal performance;</li> <li>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</li> <li>The mitigation measures required to be implemented when carrying out their work activities.</li> </ul>		
	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	
	The ECO must be on hand to explain more difficult / technical issues and to answer auestions which may be raised.	ECO	
	Staff must be made aware that they are not to make excessive noise e.g.         shouting, hooting.         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.	ECO & Applicant	During staff induction, followed by on- going monitoring

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Activity	Management / Mitigation	Responsibility	Frequency / Timing
	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.		
	The contractor/consultant is encouraged to provide training on best practices for erosion control, sediment management, and spill prevention to all site personnel.	Contractor	Staff induction and on-going monitoring

## **10.2 CONSTRUCTION PHASE**

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Site Management	Access		
	No vehicles may drive onto the adjacent properties and any other no-go areas.		
	Site preparation must include the development of the site boundary fence. The area outside the boundary fence must be regarded as no-go area and no persons may be allowed enter such area prior to obtaining permission from the ECO.	Contractor & Site Manager	On-going
	Noise		
	Construction activities must only take place during normal working times		
	between 07:00-17:00 on weekdays.	Contractor 8	On-going
	Machinery may be fitted with silences to dampen noise.	Site Manager	
	Staff must be reminded that they are working within a residential area and noise	sile Manager	Immediately &
	levels must be kept low.		on-going
	Visual		
	The necessary measures be implemented during the construction phase to	Contractor &	On going
	protect the natural vegetation, to control the noise, dust and visual intrusion.	Site Manager	Un-going

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Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Appoint a Landscape consultant to recommend and implement the introduction of an indigenous landscape plan to protect the existing indigenous vegetation and to prepare a landscape plan for implementation in the private and common areas.		Immediate
	Implement external lighting restrictions and guidelines.		On-going
	Housekeeping	Γ	
	To ensure that the ecological integrity of the surrounding environment is maintained and preserved, the applicant and contractor must ensure that the construction footprint is limited to the construction area. The extent of the construction must be marked out to satisfaction of the engineer and ECO. 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 must have appropriate cover to prevent pollution of adjacent properties. The applicant will be held responsible for any clean-up in the 'no-go' and buffer areas 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	Applicant/ Contractor/ Site Manager	On-going
	Alternatively, a binding product such as Dustex (supplied by Patch Industrial		
	Supplies) could be used.		
	No vehicles are to park or operate within "no-ao" 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 No fuel storage, refuelling, vehicle maintenance or vehicle depots to be allowed near natural spring and dam. Refuelling and fuel storage areas, and areas used for the servicing or parking of	Contractor & Site Manaaer	Immediately & on-going
	vehicles and machinery, must be located on impervious bases and must 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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	The contractors used for the project must have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly.		
Sewage and Sanitation	Ablutions		
	Contractors must make adequate provision for drinkable water and temporary toilets situated on the building site for the use of their employees until such time as the water-borne sewer drainage is available. This must be done prior to any work done on site.		
	All site temporary toilets are to be serviced and cleaned at least once a week. The contractor is to keep an onsite weekly record of the servicing/emptying of the temporary ablution facilities.	Contractor & Site Manager	Immediately & on-going
	Unauthorised spilling of waste from the septic tank into the environment and burying of waste are strictly prohibited.		
	Ablution facilities must not cause any pollution to any water resource and it must not be a health hazard to the general public.		
Social Impacts	Communication Between Site Manager, 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 Site Manager, or provide a number on which they may contact the Applicant/ Site Manager.		
	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.	Site Manager	On-going
	Drivers of heavy-duty vehicles must exercise care when travelling to and from the site – and adhere to all legally enforceable requirements.		
Equipment lay-down	Storage Areas		
and storage	The contractor will be allowed to erect green storage sheds/huts within the boundaries of the building site and to a maximum height of 2,4 m. The position of such structures must be indicated on the site diagram, which must be approved by the ECO.	Site Manager/ Contractor & ECO	On-going
	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. Material stockpiles must be protected against rain and flooding. Equipment lay-down and storage areas must be designated, demarcated and signed.	Site Manager & Contractor	On-going
Erosion and Stormwater	Soil erosion and runoff		
Control	Soil disturbance during the removal of alien invasive plants must be minimised as much as possible.	Site Manager & Contractor	On-going

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Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Storm water control must be undertaken to prevent soil loss and erosion impacts from the site.		
	Erosion prevention and control measures must be implemented. This may be by the use of mulch bags or silt fences. The engineer must provide a method		
	statement for site specific erosion methods.		
	Provision shall be made for storm water management measures that will ensure effective run-off control and prevent erosion at run-off points.		
	Continuous monitoring for evidence of erosion must be undertaken around the site.		
	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.		
	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.		
	Installation of services and roadways		
	Topsoil removed for trenching along the route for installation of services to be		Durina service
	stockpiled and replaced as the final compacted layer.	<b>C</b> <sup>1</sup>	installation
	Pipelines to be placed in consultation with and to recommendations of the ECO.	Site Manager	
	pipeline trenches.	& ECO	completion installation of services
	Install a series of berms across the internal access road to retard flow from higher	Site Manaaer	Throughout the
	areas.	& Contractor	duration of the project
Conservation of the	Clearing of vegetation		
Natural Environment	Prior to the commencement of clearing the proposed building site, the		
	contractor must undertake vegetation search-and-rescue on the site. This		
	operation is a legal requirement to ensure that any endangered vegetation	Site	
	species is transplanted prior to work commencing on the erf.	Manager,	Immediately
	Areas which are identified by the Environmental Control Officer (ECO) as being	Contractor &	initiodiatory
	ecologically sensitive on or adjacent to the site are to be suitably demarcated	ECO	
	to prevent damage by construction practices. These areas are to be recognised as "no-go" areas.		

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Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Wherever there are sections of undisturbed natural habitat within the development area, they must not be impacted by the building activities and must be conserved as small islands of natural resources for the small wildlife of the area. Indigenous vegetation that is removed is to be replanted either back to the point from which it was taken or must be replaced by new relevant indigenous vegetation	Site Manager	Immediate and On-going
	Access by heavy machinery must be limited on the site.	Site Manager	On-going
	Only areas necessary for the development footprint must be cleared and the remainder of the property must be left natural.	& Contractor	Immediate and
	Laydown areas for construction materials must be contained within the clearing footprint of the proposed development.		On-going
	Permission must be attained from the relevant authority (DEFF) to remove any of the protected Milkwood trees ( <i>Sideroxynon inerme</i> ) that occur on the properties.		Immediately
	Fauna and Flora		
	All alien invasive plant species must be continuously removed around the site. The best way to do this is to remove the plants from the roots by hand and leave the plants in the sun to dry out and die before disposal. Please refer to the Alien Plant Control Programme.	Site Manager	On-going
	Disturbance to birds, animals and reptiles and their habitats must be minimized wherever possible.	& Contractor	
	Retain existing large trees within proposed development. If any trees need to be removed or pruned then a permit is required, according to the National Forests Act.		Immediately
	Preservation of natural habitats		
	A 20-meter buffer zone must be retained along the base of the slope to protect the forest margin. Steps must be taken to rehabilitate the buffer zone and forest margins and to encourage growth of species, such as <i>Pterocelastrus tricuspidatus</i> and <i>Sideroxylon inerme</i> , that are mesic and fire-resistant. An open space management system must be developed to formalize steps for forest protection. Access to forested areas 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	Site Manager & Contractor	Immediate and On-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Rehabilitate and improve the small dam on site, including introducing pond margin vegetation typical of mountain ponds in forested areas. This will provide good habitat for various frogs, including potentially Afrixalus knysnae. Undertake regular monitoring to detect alien invasions early so that they can be controlled, as per the Alien Management Plan. Rehabilitation of disturbed areas, as well as previously invaded areas, must promote establishment of site-appropriate indigenous species. 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 must reflect habitat that would have occurred naturally at this site. A Landscape consultant must be appointed prepare a landscape plan for implementation in the private and common areas.		
Conservation of Water	Aquatic Biodiversity		
Resources	A list of wetland plant species below which can be planted around the margins of the pond to improve habitat for amphibians and water quality for wildlife making use of the pond. These plants can also be used in the stormwater ponds and are strongly recommended as alternatives to <i>Typha capensis</i> or <i>Phragmites</i> <i>australis</i> , both of which can become dominant and weedy, although they are indigenous. <i>Isolepis prolifera; Eleocharis limosa; Persicaria decipiens; Wachendorfia thyrsiflora;</i> <i>Falkia repens; Juncus lomatophyllus; Juncus effusus</i> . Pre-construction erect temporary fencing along the entire green corridor and open space to protect the pond as well as the corridor from impact during construction. Add signage to the fence indicating the area as No-Go. Site inductions for all staff must ensure contractors and works area aware they may not enter the pond and spring area.		
	Groundwater		
	It is strongly recommended that the monitoring network be installed prior to the commencement of the proposed development. This will ensure that data is available to monitor groundwater quality and levels from the outset and allow for early detection of any potential issues during the construction phase. This network will also be essential for monitoring during the operational phase to ensure continuous assessment of groundwater quality and levels and to detect any contamination, recharge and flooding risks promptly.	Applicant	Prior to commencement

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	At least four monitoring piezometers must be installed to effectively detect any potential contaminants and enable monitoring of groundwater quality and levels over time.		
	To track changes in groundwater quality, water levels and chemical parameters must be recorded monthly from each of the installed piezometers. Additionally, effluent quality must also be regularly tested to assess the potential impact of the wastewater treatment plant (WWTP).		
	All groundwater and effluent samples must be sent to an accredited SANAS laboratory for analysis. Sample collection, handling, and transport must strictly adhere to laboratory standards to ensure the accuracy and integrity of the results.		
	A rapid response plan must be developed in the event that any contamination is detected during the monitoring process. This plan must include clear procedures for identifying the source of contamination, containing the issue, and mitigating any potential environmental impacts. It must also outline specific actions to address contamination quickly and effectively, reducing the risk of		
Wasto Managomont	groundwater or environmental degradation.		
wasie Managemeni	The excavation and use of rubbish pits is forbidden.		On-going
	Burning of waste is forbidden. A possible exception to this may be that the alien invasive vegetation which is removed from the site should be burned to prevent the spread of the plants. The transportation of Alien Invasive Plants is strictly forbidden in terms of the Conservation of Agricultural Resources Act (CARA), especially if in seed; unless stored in a completely sealed container.		On-going and monitored weekly
	Littering on the site is forbidden and the site shall be cleared of litter at the end of each working day.	Site Manager	
	An adequate number of general waste bins must be arranged around the site to collect all domestic refuse, and to minimise littering.	& Contractor	On-going
	Solid waste must be managed and separated into recyclable and non- recyclable and disposed of accordingly.		monitoring
	Adequate sanitary facilities and ablutions must be provided for all personnel throughout the project area. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation).		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	The contractor must make adequate provision for removal of building rubble and excess material. No material or building rubble will be spoiled on the property. Stockpiling of sand to be completely covered with netting or hessian. No dumping of construction material within natural areas or buffer zones may take place.		
	The buffer and "no-go" areas must be monitored on a weekly basis to clean-up any waste that may have been blown from the construction site. Waste must be removed from the site on a weekly basis.		Weekly
Handling of Hazardous	Hazardous Materials		
Malenais (ir necessary)	Addendi Safety Data sheets (MSDSS) shall be readily available on site for di 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. 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.	Site Manager & Contractor	On-going
Cultural Environment	Archaeology and Artefacts		
	<ul> <li>demolished altered or extended without a permit from Heritage Western Cape.</li> <li>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.</li> <li>Examples of heritage resources are as follow: <ul> <li>Human remains</li> <li>Coins/Gold/Silver</li> <li>Fossils</li> <li>Fossils shell middens/ marine shell heaps</li> <li>Pottery/ceramics</li> </ul> </li> </ul>	Site Manager & Contractor	Immediate and On-going

Activity	Management / Mitigation	Responsibility	Frequency /
	If Heritage Western Cape agrees to the removal of the material, an		liming
	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.		
	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.	Site Manager & Contractor	On-going
	No unauthorised person may be permitted to enter the site without prior permission of the site manager.		
	Fire Management		
	Firefighting equipment must be present on site at all times as per Occupational Health and Safety Act.		
	No fires will be allowed on any part of the property including the building site. Fire extinguishers are required to be on all sites at all times.		
	All project staff must be trained in fire hazard control and firefighting techniques	Site Manager	
	and know the proper procedure in case of a fire occurring on site.	& Contractor	On-going
	All flammable substances must be stored in dry areas which do not pose an		
	Ignition risk to the said substances.		
	Smoking must not be permitted in areas considered to be a fire hazard.		

## **10.3. OPERATIONAL PHASE**

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Vegetation	Vegetation		
Rehabilitation – progressive rehabilitation must be carried out	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 Horticulturist or Botanical Specialist for a site-specific vegetation list.	Contractor & ECO	Project completion
	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.	Site Manager & Contractor	Rehabilitation
	All rehabilitated areas must be maintained through weekly inspections until an acceptable success rate has been achieved.	Contractor & ECO	Post Construction/ Weekly
	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.	Site Manager / Contractor & ECO	Project completion and Maintenance
	Landscaping		
	Investing landowners within the proposed development must be encouraged to avoid planting exotic plants in their garden areas in favour of locally indigenous plants.	Site Manager	Project
	A Landscape consultant be appointed to recommend and implement the introduction of an indigenous landscape plan to protect the existing indigenous vegetation and to prepare a landscape plan for implementation in the private and common areas.	& Contractor	completion
	All disturbed open space areas are to be rehabilitated using locally occurring indigenous vegetation.	Site Manager / Contractor & ECO	Project completion and Maintenance
	Pond and buffer area	1	
	Indigenous plants found in adjacent thickets may be planted around the pond. Only indigenous plants found in the immediate surrounding area may be planted.	Site Manager / Contractor	Rehabilitation

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	A list of recommended wetland plants for that can be used to improve vegetation cover of muddy areas and marginal areas of the pond is provided. Isolepis prolifera; Eleocharis limosa; Persicaria decipiens; Wachendorfia thyrsiflora; Falkia repens; Juncus lomatophyllus; Juncus effusus.	Site Manager & Applicant Site Manage	
	Do not place any fish into the pond as only alien invasive fish to the area would survive and could be transferred to other waterbodies on the feet of animals or birds. Indigenous plants found in adjacent thickets may be planted around the pond. The only plants that must be removed from the area are listed alien invasive species. Landscaping and gardening staff must not undertake any clearing of vegetation		On-going
	inside of the 10m buffer. The only plants that must be removed from the area are listed alien invasive species.		
Landscape	Minor wildlife linkages		
Connectivity	Rehabilitate and maintain secondary vegetation area to form part of the open space system within the development, which will link up with the forest area. The proposed open space system must correspond to the position of indigenous vegetation. An open space management system must be developed and followed to formalize steps for forest protection.	Site Manager	On-going
	Permeable fencing		
	<ul> <li>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.</li> <li>Permeability of the fence will be done according to CapeNature's requirements.</li> <li>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.</li> <li>No fencing be permitted along the eastern and western boundaries of the conservation area (including the 20m corridor) to form a continuous corridor with neighbouring properties.</li> </ul>	Site Manager, Contractor & ECO	Project completion

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Fencing must not extend into the corridor on the neighbouring boundaries as the aim is to have an inter-connected corridor that extends across properties, should development occur in adjacent areas.		
	spring must be incorporated into the corridor. The fence is to keep domestic animals (cats and dogs, etc) out of the wildlife corridor.		
Alien Invasive Plants	Alien plant eradicationAll invasive alien plants must be completely cleared from the property, and where a tree or bush cover is desired, replaced with suitable indigenous species. Section 11 details methods for Alien Invasive Plant Control.An Alien Invasive Plant Control Plan must be implemented, as encroachment of alien vegetation may increase as a result of the construction process 	ECO & Site Manager	Immediate and On-going
Landscaping, Gardening and Maintenance	Land RehabilitationRehabilitation must be executed in such a manner that surface runoff will not cause erosion of disturbed areas during and after rehabilitation.Any rubble is to be removed from site to an appropriate disposal site. Burying of rubble on site is prohibited.	-	Project completion
	The site is to be cleared of all litter. The surface of all disturbed areas must be left rough to facilitate binding of		On-going
	topsoil and vegetation. Areas that are disturbed through building activities (such as the excavations for sewerage pipelines) must 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). Pond and buffer area	Contractor	Progressive rehabilitation

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Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Landscaping and gardening staff must not undertake any clearing of vegetation inside of the 10m buffer.	Site Manager	On-going
	A bird hide in the buffer to spot wildlife would be acceptable, but no additional recreational activities. The point is to create a quiet habitat with suitable vegetation cover for continued use by animals, birds etc.	Applicant	Project completion
Removal and Repair of	Materials and Infrastructure		
Materials and Infrastructure	All material used for the construction must be removed from site after construction.		
	The Contractor must repair any damage that the construction works may have caused to adjacent areas.	Contractor	Project
	Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the ECO.		completion
	All areas where temporary services were installed are to be rehabilitated to the satisfaction of the ECO.		
Stormwater	Increased stormwater runoff		
Management	Stormwater must be diverted to detention ponds on the site which are indicated on various SDP layouts and are consistent with the SUDS approach to stormwater management.		
	Use rainwater collection tanks to serve as a retention vessel in downpours.		Project
	Stormwater from erven must be attenuated on site as far as possible. Stormwater from access roads must be attenuated onsite (prior to any discharge into retention ponds).	Applicant (	completion
	The runoff velocity of stormwater must be reduced with energy dissipaters prior to discharge into retention ponds.	Contractor	
	No stormwater infrastructure to be directed towards the pond.		
	The natural spring and small dam must be protected by a 10 m buffer throughout the operational phase.		On-going
	No stormwater must be put into this dam as the water is of high quality.		
	Routine maintenance inspections to clear windblow / discarded litter from the pond and spring.		
	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	•	· · · · ·

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	All hazardous materials and containers must be collected by a reputable hazardous waste collection company and disposed of appropriately.	Contractor	Project completion
	Collection and disposal of non-hazardous waste to a registered landfill site must occur at least once a week.	Site Manager	During Operational phase
	Residents must be made aware of the dangers that accompany the irresponsible use of harmful chemicals.	Site Manager	During Operational phase
Fire management	No burning of vegetation to be permitted. 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.		On-going
	<ul> <li>The Southern Cape Fire Protection Association must be consulted regarding firebreaks, and fire management for the property in case of wildfires.</li> <li>The responsibilities of people in control of land - All owners on whose land a veldfire may start or burn or from whose land it may spread must: <ul> <li>prepare firebreaks on their side of the boundary if there is a reasonable risk of veldfire</li> <li>have such equipment, protective clothing and trained personnel for extinguishing fires as are: prescribed (in the regulations)</li> <li>If there are no regulations, reasonably required in the circumstances take all reasonable steps to notify the FPO of the local FPA (if there is one) when a fire breaks out do everything in their power to stop the spread of the fire.</li> </ul> </li> <li>The Act also requires that if the owner is absent, he or she must have a responsible person present on or nearby his or her land to: <ul> <li>extinguish a fire if one broke out, or assist others to do so.</li> <li>take all reasonable steps to alert the neighbours and the FPA (if there is one).</li> <li>The owner may appoint an agent to act on his or her behalf to perform these duties.</li> </ul> </li> <li>Implement regulations/rules around "braai" fires /open flame fires especially when high fire danger weather conditions are predicted.</li> <li>Ensure that access to the structures/houses.</li> </ul>	Site Manager	During Operational phase
Activity	Management / Mitigation	Responsibility	Frequency / Timing
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	Work collaboratively with local authorities to develop an emergency preparedness plan that outlines the steps to take in the event of a fire. The plan must include protocols for notification, evacuation, and communication with local authorities. The goal of the management plan must be to prevent wildfires from starting and		
	spreading within the development and to minimize the impact of any fires that do occur.		
	Residents, security guards, and estate manager must report any sign of smoke or a vegetation fire immediately to their local Municipal Fire and Rescue Services.		

# **11. ALIEN PLANT CONTROL PROGRAMME**

Please consult a Botanical specialist before attempting to remove Alien Invasive Plants.

# 11.1. INTRODUCTION

### **Benefits of control**

- > Elimination of spread of these species into non-affected areas.
- > Improvement of water quality and quantity.
- Legal compliance: landowners are required to eradicate or control declared weed and alien invader plants in terms of the Conservation of Agricultural Resources Act 43 of 1983 and the National Environmental Management: Biodiversity Act 10 of 2004.
- Improvement of biodiversity in conservation areas. Fast growing invader plants suppress indigenous flora, with a resultant loss in overall biodiversity.
- Commercial reasons: alien vegetation can spread from conservation areas into production land resulting in greater weed control costs.

### Important factors influencing the effectiveness of a control programme

- > Timeous implementation of control operations is important for alien plants.
- Operations must be directed towards killing alien vegetation. This is best achieved by using an effective herbicide chosen by the ECO and applied by using the "cut-stump; frilling or ring barking methods. Under no circumstances may spraying with a "Rose" or multi- stream nozzle head be done.

### Requirements for an effective alien vegetation control programme

- > Identify the problem: extent, location and species of problem plant.
- Divide the problem areas into manageable units, taking budget and resource constraints into account.
- Identify any sensitive ecosystems, rare or endangered plants etc. which may be affected by a control programme. Identify the original ecosystem applicable to the area.
- Make provision for a number of follow up operations. The initial clearing operation is only part of the total programme. Failure to follow up will result in a failure of the entire programme.

While the importance of removing or clearing of alien or exotic vegetation is recognised, there should be control over the way in which this takes place. Often what generally appears to be covered by alien vegetation, actually contains pockets of sensitive vegetation or protected species. It is for this reason that clearing of such areas must be undertaken by hand (*Guidelines for the Control and Management of Activities in Sensitive Coastal Areas, first edition, 1998*).

# It is important to note that all of the above must be performed with instruction by the ECO, as well as in the presence of an ECO at all times.

PO Box 1252 Sedgefield 6573

# 11.2. LEGISLATION

The National Environmental Management Act, No 107 of 1998, creates a duty of care towards the environment. Within the preface of this Act, it is stated thus:

"Everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development: the environment is a functional area of concurrent national and provincial legislative competence, and all spheres of government and all organs of state must co-operate with, consult and support one another."

Any person or business found to be responsible for illegally introducing an invasive plant or species, and allowing it to spread, may be compelled, by this Act to desist with their actions and remove the source of invasion.

The Conservation of Agricultural Resources Act, No 43 Of 1983 (CARA) was passed to protect soil, water resources and vegetation. This included measures to manage and control weeds and invader vegetation species. The CARA regulations declare several species of "weeds" or "invader plants." These species have been divided into three categories:

# Category 1a Listed Invasive Species:

Category 1a Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the National Environmental Management: Biodiversity Act/ NEMBA (Act 10 of 2004) as species which must be combatted and eradicated.

A person in control of a Category 1a Listed Invasive Species must-

(a) comply with the provisions of section 73(2) of the NEMBA;

(b) immediately take steps to combat or eradicate listed invasive species in compliance with sections 75(1), (2) and (3) of the NEMBA; and

(c) allow an authorised official from the Department to enter onto land to monitor, assist with or implement the combatting or eradication of the listed invasive species.

If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

# Category 1b Listed Invasive Species:

1) Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the NEMBA as species which must be controlled.

2) A person in control of a Category 1b Listed Invasive Species must-

(a) control the listed invasive species in compliance with sections 75(1), (2) and (3) of the NEMBA.

(b) must allow an authorised official from the Department to enter onto the land to monitor, assist with or implement the control of the listed invasive species, or compliance with the Invasive Species Management Programme contemplated in section 75(4) of NEMBA.

3) If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

# Category 2 Listed Invasive Species:

1) Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the NEMBA as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be.

2) Unless otherwise indicated in the Notice, no person may carry out a restricted activity in respect of a Category 2 Listed Invasive Species without a permit.

3) A landowner on whose land Category 2 Listed Invasive Species occurs or person in possession of a permit, must ensure that the specimens of the species do not spread outside of the land or the area specified in the Notice or permit.

4) Unless otherwise specified in the Notice, any species listed as Category 2 Listed Invasive Species that occurs outside the specified area contemplated in sub-regulation (1), must, for purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to Regulation 3 above.

5) Notwithstanding the specific exemptions relating to existing plantations in respect of Listed Invasive Plant Species published in *Government Gazette* No. 37886, Notice 599 of 1 August 2014 (as amended), any person or organ of state must ensure that the specimens of such Listed Invasive Plant Species do not spread outside of the land over which they have control.

6) If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

# Category 3 Listed Invasive Species:

1) Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the NEMBA, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of the NEMBA, as specified in the Notice.

2) Any plant species identified as a Category 3 Listed Invasive Species that occurs in riparian areas, must, for the purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to regulation 3 below.

3) If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

Should any invasive plant species occur, other than those stated in The Act, the land user must control them by species-specific control methods. Caution should ALWAYS be taken when dealing with noxious chemicals, and care should be taken to cause the least amount of harm to the environment.

# 11.3. Ways to Eradicate Invasive Alien Plants

This IAP eradication and control program comprises the following three steps:

# Step 1

The first step of the Invasive Alien Plant Eradication Programme will be to undertake an inception and educational meeting, where the people employed to undertake this activity are able to identify the correct species as aliens and the manner in which to remove and control them.

# Step 2

The second step will be to identify the Invasive Alien Plants (IAP) and start a process of removing the individuals that occur on the site. The removal of the alien species must be in a stepwise manner and be undertaken within a single area at a time. This will ensure that all individuals are removed at the same time to reduce re-infestations. Below are a number of methods that may be employed to undertake the activity of removing alien plant species. These methods are dependent on the size and nature of the plant that is to be removed.

# 11.3.1. Managing IAP Invasions

Once an invasion has been identified and quantified there are four methods that managers and landowners can take to deal with IAPs that includes prevention of new infestations and the early identification and eradication, containment or suppression of existing invasions. In the case of introduced, naturalised or invasive species, pre-introduction measures are no longer possible (apart from preventing additional introductions), therefore post-introduction management is focused on controlling infestations with chemical, mechanical or biological means.

# Prevention

This includes the monitoring of the area so that new infestations can be prevented. This also includes rehabilitating disturbed areas and keeping the disturbance of natural areas to a minimum.

# ✤ Early identification and eradication

When an IAP is spotted during prevention monitoring it must be swiftly dealt with using the methods described below.

# Containment, control, and suppression

If there are already an established infestation of an IAP on site which cannot be eradicated, then it should be contained to the site. New propagules should be removed so that the infestation doesn't worsen. Efforts should be made to ensure the infestation is reduced as far as physically and economically possible.

# 11.3.2. Mechanical Methods

# ✤ Hand-pulling

This method of removal is only really an option during the summer months and when the IAP that are requiring removal are very small, and their root system is not very well established. The only precautionary note here is that many alien plant species may look similar to indigenous species when they emerge, so the labour force must be extremely well versed in the individuals that will require removal.

# Up-rooting

This method is similar to hand-pulling but is undertaken on slightly older individuals of the target species. It only has one drawback; a relatively large area can be disturbed with the soils being altered and opening the area up to re-infestation.

# Lasso & Winch

This method is the upgraded version of the up-rooting, with the same principles applying, that is of trying to remove the entire plant with all the root system attached, to prevent re-growth. This can have a serious destabilizing effect on the receiving environment and should definitely not be undertaken on slopes or sandy soils.

# Cutting / Slashing

This method is not a suitable method for control and long term management if used as a standalone technique because many of the IAP will simply coppice or re-sprout during the summer periods. Many, if not most, alien plants species are annual species, and through their natural life strategy (r-selected) are able to withstand disturbance, even extreme disturbance as in this instance.

# Ring-barking

This involves the removal of bark in a 30 centimetre band. This technique is used to desiccate the plant through killing the phloem and xylem and thus preventing transpiration. Further it also facilitates pathogen infestation. It is very effective on large trees if undertaken correctly.

# Strip-barking

As with ring-barking, just at a larger scale.

# Frilling / Girdling

Girdling and frilling are methods of killing standing trees that may be done with or without an herbicide. Girdling involves cutting a groove or notch into the trunk of a tree to interrupt the flow of sap between the roots and crown of the tree. The groove must completely encircle the trunk and should penetrate into the wood to a depth of at least 1.5 centimetres on small trees, and 2.5 to 4 centimetres on larger trees. Girdling can be done with an axe, panga or chain saw. When done with an axe or panga, the girdle is made by striking from above and below along a line around the trunk so that a notch of wood and bark is removed. The width of the notch varies with the size of the tree. Effective girdles may be as narrow as 2.5 to 5 centimetres on small-diameter trees, and as wide as 15 to 20 centimetres on very large-diameter trees. When a chain saw is used to girdle, two horizontal cuts between 5 and 10 centimetres apart are usually made completely around the tree when no herbicide is used and one horizontal cut is made completely around the tree when herbicide is used.

Frilling is a variation of girdling in which a series of downward angled cuts are made completely around the tree, leaving the partially severed bark and wood anchored at the bottom. Frilling is done with an axe or panga.

By themselves, girdling and frilling are physical methods to deaden trees that require very little equipment and may be done without herbicides. Both techniques require considerable time to carry out, particularly with an axe or panga. The effectiveness of girdling and frilling depends on the tree species and on the size and completeness of the girdle or frill. To be effective, girdles and frills must completely encircle the tree. Because frills can heal-over more easily, girdling is usually more effective.

The effectiveness of both girdling and frilling can be increased by using herbicides. With frilling and girdling, water soluble forms of herbicides are most commonly used to get maximum movement of herbicide within the plant. When using water-soluble herbicides, the herbicide/water mixture is commonly applied by squirting it on the girdle or frill until the cut surface is wet. Hand-held, spray bottles, such as those available at local garden stores, are ideal for applying herbicide to the girdle. Again, note that a single, rather than double chain saw girdle is used when a water soluble herbicide is to be applied.

# 11.3.3. Chemical Methods

The use of chemicals in controlling and removing of IAP should not be excluded as a possible option. Once the IAP are more manageable the use of chemicals should be reduced or excluded completely. The best option would be to pursue a combination of mechanical and chemical control in the early stages.

The only negative impact of the use of chemicals is that if used incorrectly may result in plant species being able to develop some form of resistance to the herbicide. If herbicides are used as a foliar spray, drift will cause non-target species to be impacted upon. The only method that should be undertaken is the cutting of the plants prior to the treatment of the remaining stems using a "stem painting" technique.

It is imperative that the herbicides used are dye treated or that the end-user add a dye to ensure that all stems that have been treated are easily identified. Note, the application of the chemical solution must follow directly after the cutting of the vegetation. Therefore, a small area should be selected and all cutting and stem painting be undertaken on that area prior to moving to the next area.

DFFE herbicide quantity estimation (<u>Invasive alien plant control management plan | Department of</u> <u>Environmental Affairs (dffe.gov.za)</u>) is attached to this document as a guide.

# 11.3.4. Biological Control

This entails using a natural enemy (bacteria, fungus, weevils, mites) of the intended IAP to attack specific parts of the plant (roots, stem, flowers) to either kill the plant, reduce its vigour, or reduce reproductive output. Only certain species have registered bioagents, the most successful stories of biocontrol being the *Opuntia* genus and *Acacia species*. Please contact DFFE or SANBI for directions on how to obtain these agents.

DFFE have provided a guide on bio-control agents for terrestrial plant species (<u>Invasive alien plant</u> <u>control management plan</u> | <u>Department of Environmental Affairs (dffe.gov.za)</u>), attached to this document.

# 11.4. Environmental Safety

In order to minimise the impact of the operation on the natural environment the following must be observed.

- Area contamination must be minimised by careful accurate application with a minimum amount of herbicide to achieve good control.
- All care must be taken to prevent contamination of any water bodies. This includes due care in storage, application, cleaning equipment and disposal of containers, product and spray mixtures.
- Equipment should be washed where there is no danger of contaminating water sources and washings carefully disposed of at a suitable site.
- To avoid damage to indigenous or other desirable vegetation product should be selected that will have the least effect on non-target vegetation.
- Coarse droplet nozzles should be fitted to avoid drift onto neighbouring vegetation, e.g. TG-1 or equivalent.
- The correct protective clothing is to be used in line with manufacturer's instructions and / or the Occupational Health & Safety Act, Act 85 of 1993 (and amendments) and,

All MSDS sheets are to be made available on site along with a Medical First Aid Kit.

### 11.4.1. Disposal of IAP Vegetation

- Plant material should be used beneficially wherever possible, as opposed to disposing of it at a landfill site where it takes up valuable airspace, or let it further propagate on unchecked, vacant land.
- Woody and dry material, provided no seeds are present, can be chipped and used as mulch or made available to the local community for firewood.
- Wet material and aquatic weeds should be combined with other organic matter and composed. Alternatively, it may be possible to use it for basket making, animal feed or other uses.
- Burning of alien vegetation waste material is prohibited.
- Burying of alien vegetation waste material in or near the stream, drainage lines, dams, wetlands and their buffer zones is prohibited.
- Any vegetation which is not viable for use must be disposed of at a registered disposal unit.

# 11.5. LIST OF INVASIVE ALIEN PLANT SPECIES

# Please consult a Botanical specialist or Horticulturist to identify Invasive Alien Plants before attempting to undertake IAP removal.

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Name	Common Name	Category
Acacia cyclops	Rooikrans	1b
Pinus sp	Pine	2
Paraserianthes lophantha	Stink bean	16
Cenchrus clandestinus	Kikuyu grass	Naturalized exotic
Solanum linnaeanum	Devil's apple	Naturalized exotic
Vicia sativa	Vetch	Naturalized exotic
Yucca aloifolia	Spanish bayonet	Naturalized exotic

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MANAGEMENT TREATMENTS SUMMARY GUIDE - Terrestrials				Compiled by: T Bold, WfW Nat.Off.CT Updated 25 May 07 - TB							
	TRE	ATMENT DETAIL		APPL	ICATION DE	TAIL		PLANNING DETAIL			
Species	Size class	Treatment	Herbicide	Dosage	a.i. Litres	Mix Litres	% Mix a.i.	Density	Estimated Product Litres / Ha (or kg)	if Mix volume Litres / Ha	
Wattle - Rooikrans,	Seedlings	Hand pull	None		•			•			
cyclops)	Seedlings, saplings and coppice	Foliar spray	clopyralid / triclopyr (-amine salt) 90 / 270 g/L SL Confront 360 SL (L7314)	50ml / 10 Litres water and 0.5% Wetter & Dye	0.05	10	0.5	Closed / Dense	1.50	300	
			fluroxypyr 200 g/L EC Starane 200 EC (L4918), Tomahawk 200 EC (L6652), Voloxypyr 200 EC (7776)	25ml / 10 Litres water and 0.5% Wetter & Dye	0.025	10	0.25	Closed / Dense	0.75	300	
			triclopyr (butoxy ethyl ester) 240 g/L EC Ranger 240 EC adjuvant incl. (L6179) NB: add buffer for ph 5-6	100ml / 10 Litres water and 0.1% Dye	0.1	10	1	Closed / Dense	3.00	300	
			triclopyr (butoxy ethyl ester) 480 g/L EC Garlon 4 EC (L3249) & 480 EC (L4916), Triclon EC (L6661), Viroaxe EC (L6663)	50ml / 10 Litres water and 0.5% Wetter & Dye	0.05	10	0.5	Closed / Dense	1.50	300	
	Mature/Adult	Fell	None								
		Cut stump / Frill NB: for trial, not registered	triclopyr (-amine salt) 360 g/L SL Lumberjack 360 SL (L7295), Timbrel 360 SL (L4917)	300ml / 10 Litres Water and 0.5% Wetter & Dye	0.3	10	3	Closed / Dense	6.00	200	
Pine	All	Cut down low	None				-				
		Ring bark	None								
Stink bean	Seedlings	Hand pull	None		•						
(Paraserianthes lophantha)	Adult	Foliar	clopyralid / triclopyr (-amine salt) 90 / 270 g/L SL Confront 360 SL (L7314)	30ml / 10 Litres water and 0.5% Wetter & Dye	0.03	10	0.3	Closed / Dense	0.90	300	
		Cut stump / frill NB: for trial, not registered	triclopyr (-amine salt) 360 g/L SL Lumberjack 360 SL (L7295), Timbrel 360 SL (L4917)	300ml / 10 Litres Water and 0.5% Wetter & Dye	0.3	10	3	Closed / Dense	6.00	200	

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# **12. SPECIES PLANTING LIST**

### A Botanical specialist should be consulted for a comprehensive list in this regard.

# 12.1. Important Taxa of Garden Route Shale Fynbos

Growth form	Species
Tall shrubs	Leucadendron eucalyptifolium (d), Protea aurea subsp. aurea (d), P. coronata (d), Leucospermum formosum, Metalasia densa, Passerina corymbosa, Protea neriifolia, Rhus Iucida <sup>T</sup>
Low shrubs	Acmadenia alternifolia, A. tetragona, Anthospermum aethiopicum, Cliffortia ruscifolia, Elytropappus rhinocerotis, Erica hispidula, Helichrysum cymosum, Leucadendron salignum, Pelargonium cordifolium, Phylica axillaris, P. pinea, Psoralea monophylla, Selago corymbosa.
Herbs	Helichrysum felinum
Geophytic herb	Pteridium aquilinum (d), Eriospermum vermiforme
Succulent herb	Crassula orbicularis
Herbaceous succulent climber	Crassula roggeveldii
Graminoid	Ischyrolepis sieberi (d), Aristida junciformis subsp. galpinii, Brachiaria serrata, Cymbopogon marginatus, Elegia juncea, Eragrostis capensis, Ischyrolepis gaudichaudiana, Restio triticeus, Themeda triandra, Tristachya leucothrix.

# 12.2. Plant species recorded on site

A total of 69 plant species were recorded on site within the proposed development footprint and along the margins of the forest (Plant, Animal & Terrestrial Biodiversity Assessment), of which three are declared weeds and/or alien invader plants, three are naturalized exotic species, and the remainder are indigenous species, some of which are weedy species commonly found in disturbed places or are species that commonly colonise areas of disturbance.

### The indigenous species are as follows:

- Abutilon sonneratianum
- Anemia caffrorum
- Arctotheca prostrata
- Asparagus asparagoides
- Brunsvigia orientalis
- Buddleja saligna
- Capparis sepiaria
- Carex uhligii

- Carpobrotus deliciosus
- Cerastium glomeratum
- Clausena anisata
- Crassula multicava
- Cynanchum obtusifolium
- Dovyalis rhamnoides
- Euphorbia helioscopia
- Euryops virgineus
- Felicia amoena
- Acalypha
- Chenopodium
- Cotula
- Dietes bicolor
- Isoglossa
- Medicago
- Melolobium
- Moraea
- Grewia occidentalis
- Gymnosporia buxifolia
- Hebenstretia integrifolia
- Helichrysum cymosum
- Helichrysum petiolare
- Helichrysum teretifolium
- Lauridia tetragona
- Lepidium africanum
- Lycium ferocissimum
- Lysimachia arvensis
- Massonia depressa
- Mesembryanthemum aitonis
- Mystroxylon aethiopicum
- Nidorella ivifolia
- Osteospermum moniliferum
- Otholobium stachyerum
- Passerina corymbosa
- Pelargonium elongatum
- Podalyria myrtillifolia
- Polygala myrtifolia
- Pterocelastrus tricuspidatus
- Putterlickia pyracantha
- Rhoicissus digitata
- Rubia petiolaris
- Rubus pinnatus
- Rumex hypogaeus
- Salvia aurea
- Scutia myrtina
- Searsia crenata
- Searsia lucida
- Senecio inaequidens

- Sideroxylon inerme (PROTECTED TREE)
- Stachys aethiopica
- Stenotaphrum secundatum
- Trimeria grandifolia

# **12. WILDLIFE CORRIDOR MANAGEMENT**

The aim of the wildlife corridor is to maintain functional habitat on more level land with access to water for the wildlife that occur in the area. For this area to remain functional through the operational phase of the development, it would need to be managed effectively.

The recommendations for the wildlife corridor (see red line in screenshot below) would be to:

- A perimeter fence is recommended along the northern section of the property to preserve the wildlife corridor and natural area beyond. The fenceline should not extend into the 20m corridor and should aim to separate the development area from the conservation / wildlife area.
- Use clearVu fencing to separate the corridor from the development area. The spring must be incorporated into the corridor. The fence is to keep domestic animals (cats and dogs, etc) out of the wildlife corridor.
- Clear vu type fencing would have the important benefit of excluding pets (cats and dogs) from the wildlife corridor area where they could deter or kill wildlife large and small.
- No fencing should be permitted along the boundary either side of the corridor. It should be continuous to neighbouring properties to allow free animal movement.
- The fence can have a pedestrian gate or two which can be kept locked. No electric fencing should be permitted. If security is required, cameras can be used to monitor fence lines.
- Dense planting along the corridor side of the fencing should be done using plant species found on the site. This will aim to screen light and sound from the development.
- No garden waste disposal over the fence line into corridor. This must be strictly enforced by the HOA as it will smother indigenous vegetation and introduce alien / exotic species.
- No landscaping, mowing or weedeating should be permitted in the corridor. Only clearance of alien vegetation should be allowed.
- Recreational use of the corridor should be restricted to walking (no dogs) and bird-watching during daylight hours only. The gates should be locked and access restricted from dusk to dawn. No mountain biking should be permitted as this causes too much disturbance.
- Lighting within the development should be minimised as far as possible. Use motion detector lights / bollards instead of tall lights along streets. Minimise insect attraction to lights by installing yellow spectrum vs blue spectrum lights. Provide specifications to all residents for their outdoor lighting and recommend that motion sensor lights be installed instead of permanent lights through the HOA.

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# 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	<b>DO NOT</b> feed the native animals.
3	DO NOT leave the project site untidy and strewn with rubbish that will attract pests.
4	<b>DO NOT</b> 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	<b>DO NOT</b> 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	<b>DO NOT</b> 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
	site manager and Environmental Control Officer.
14	DO NOT tamper with, destroy or remove vegetation from any areas that have been
	fenced off or marked.
15	<b>DO NOT</b> 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	<b>NO</b> 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

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21	NO trespassing on private / commercial properties adjoining the site is forbidden.
22	NO worker may be forced to do work that is potentially dangerous or for what he / she is
	not trained to do.

# **14. RESPONSIBILITIES**

The "Responsibility" column is merely a guide and does not relieve the 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.
Site Manager / Contractor	<ul> <li>The Site Manager is responsible to ensure that all necessary communication and submission of required documentation concerning this project is submitted to the relevant authorities.</li> <li>The site manager is required to adhere to the EMPr and is responsible to ensure that all staff appointed also adhere the EMPr.</li> <li>Ensures that all staff are made aware of the need to conduct activities in an environmentally responsible manner.</li> <li>(Site Manager) On instruction by the ECO, ensures that storm/surface water controls are established.</li> <li>Ensures prompt remediation of any sewage spills.</li> <li>Stockpiles are protected from aeolian effects, stormwater effects, or being driven over by workers.</li> <li>Ensures that all complaints by residents are dealt with promptly.</li> <li>Is responsible for any contravention/s by staff or any non-compliance with the EMPr.</li> </ul>
Environmental Control Officer (ECO)	<ul> <li>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.</li> <li>The ECO must report on the environmental aspects of the project to the responsible person/authority at agreed intervals.</li> <li>The need for any deviations or variations in the environmental conditions must be reported to the DEDEAT for approval prior to these being undertaken.</li> <li>The ECO must be fully cognisant with the contents of the Environmental Authorisation as well as this EMPr and any other applicable legislation</li> </ul>
Competent Authority	<ul> <li>The Compliance Officer appointed by the Competent Authority is responsible for the ensuring that the Applicant, Site Manager and ECO are compliant with the provisions of the EA and EMPr.</li> </ul>

# 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 Residential Development on Portion 91 of Farm Matjes Fontein 304, Keurboomstrand, Plettenberg Bay, Western Cape Province.

DEA&DP REF: 16/3/3/6/7/1/D1/13/0268/22

APPLICANT:

Signed: ..... Date: .....

### SITE MANAGER / CONTRACTOR:

Signed: ..... Date: .....

### **ENVIRONMENTAL CONTROL OFFICER**

Signed: ..... Date: .....

# Annexure A: CV of the EAP

### Joclyn Marshall

(EAPASA Reg. 2022/5006)

Location: Sedgefield, Western Cape, 6576 Contact: 072 126 6393 Email: joclynjoe@gmail.com Citizenship: South Africa DOB: 09 May 1986



#### CAREER HISTORY

#### July 2022 – current

#### Eco Route Environmental Consultancy Environmental Assessment Practitioner

- Environmental screening for new projects (DFFE Screening Tool, mapping, site assessments, review
  of applicable legislation, etc).
- · Compile Basic Assessment Report and EIA's (NOI, NID, Application, DBAR, EMPr, FBAR, etc).
- Compile EMPr's, MMP's, screening reports, rehabilitation plans, AIS Control Plans, and any other reports required.
- Part 1 and 2 Amendments applications.
- · Liaise with clients, specialists, and competent authorities.
- Complete EIA Checklists.
- OSCAER permit and EMMS compilations and submission.
- Environmental audits and ECO duties.
- S24G Rectification Applications.
- Prepare Public Participation documents and registers.
- Compiling quotations, tender documents and RFQ's

#### 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:
  - EIA for proposed construction of a water storage dam on Argyll Farm 218 for irrigation of 80ha of lucerne, Indwe, Eastern Cape.
  - ✓ EIA for proposed construction of a water storage dam on Coldstream Farm 970 for irrigation of 80ha of lucerne, Indwe, Eastern Cape.
  - ✓ BAR for proposed development of a poultry facility for egg production on Confluence Farm 143, Maclear, Eastern Cape.
  - ✓ EMP for operating an organic composting facility for Meat Traders Abattoir, Komani, Eastern Cape.

#### February 2012 – April 2019 Knysna Municipality

#### Senior Environmental Officer

- Preparation of EMP's, MEMP's, EMM's for municipality and clients.
- · Carrying out ECO work on municipal projects and other construction sites.

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- · 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 Wastewater 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.

#### Departments of Zoology and Botany, Rhodes University Demonstrator

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

#### ACADEMIC QUALIFICATIONS

2007

# 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

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#### OTHER SKILLS AND TRAINING

- Registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA)

   Registration number 2022/5006
- Registered as a Candidate Natural Scientist in Environmental Science. Registration number: 100121/11
- 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 Publisher.
- Drivers license code 08.

#### **REFERENCES ARE AVAILABLE ON REQUEST**

# Annexure B: TRAINING REGISTER

ENVIRONMENTAL AWAREN	Date:							
PROJECT NAME:	PROJECT NAME:							
CONTRACTOR		Phone number						
Induction given by		E-mail						
Name of Attendee & Signat	ture	Company						

<sup>&</sup>lt;sup>2</sup> Ecosence CC

# **Annexure C: INCEDENCE REPORTING**

INCIDENT REPORT FORM						Date:			
PROJECT NAME:									
To be completed by the person reporting the incident:									
Name Designation									
Contact number		Physical	location	of					
		incident							
Describe the incident and environmental impact									
What remediation ha	as been undertaken? (descrit	pe)							
In the opinion of the	Site Operations Manager is	the remedi	ation acti	on su	fficient?				
If not, what further a	actions must be taken? (deta	il)							
Has the damage/ cor	ntamination been completely	remediat	ed?						
If not, what residual	damage remains (detail the	residual da	mage)?		I				
If residual damage re	mains - what is the reason ar	nd what is p	blanned w	ith re	espect to th	ne environr	mental damage?		
Upon investigation, what was found to be the cause of the incident? (Detail)									
Is this a repeat of a s	imilar incident?								
What is the reason that planned changes did not prevent a recurrence of the incident?									
What is to be changed to ensure that the incident will not be repeated? (Detail)									
Does the incident po	tentially compromise legislat	tion?							

3

<sup>&</sup>lt;sup>3</sup> Ecosense CC

**Note**: In the event of a significant incident which is defined in terms of section 30(1)(a) of the National Environmental Management Act as an unexpected sudden occurrence, including a major emission, fire or explosion leading to danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed, the incident shall be reported. In line with Section 30(3)(d) any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment must be reported to-

(i) the Director-General of the Department responsible for Environmental and / or Water Affairs;

(ii) the South African Police Services and the relevant fire prevention service;

(iii) the relevant provincial head of department or municipality; and

(iv) all persons whose health may be affected by the incident

	Other	Comments:
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Date

Signed by person completing the report.

<sup>&</sup>lt;sup>4</sup> Ecosense CC

# Annexure D: COMPLAINTS REGISTER

ENVIRONMENTAL COMPLAINTS REGISTER						
PROJECT NAME						
RESPONSIBLE PERSON:		Phone number				
Company		E-mail				

Date of complaint	Contact Details of Complainant	Nature of Complaint	Actions taken to rectify including dates

\_\_\_\_\_5

<sup>&</sup>lt;sup>5</sup> Ecosense CC

# **Annexure E: SDP**



PO Box 1252 Sedgefield 6573

Fax: 086 402 9562

# **Annexure F: Environmental Sensitivities**



Figure 12: Western Cape Biodiversity Spatial Plan of the site and surrounding areas.



Figure 6. Critical Biodiversity Areas indicated in the Western Cape Biodiversity Spatial Plan (2024).

# **Conservation: 2023 WC Biodiversity Spatial Plan**



# **Vegetation Type (Vegmap 2018)**



# SANBI Red List of Ecosytems: Original



# Wetlands and Watercourses



# Slope and Contours





Map of habitats on site (Plants, Animals & Terrestrial Biodiversity Assessment by David Hoare Consulting).


Habitat sensitivity on site (Plants, Animals & Terrestrial Biodiversity Assessment by David Hoare Consulting).



Habitat Units from KELASP (Plants, Animals and Terrestrial Biodiversity Report by David Hoare Consulting (Pty) Ltd, dated 16 March 2023).



Location of the small, excavated dam and spring along with the mapped 10 m buffer.



Mapped floodlines according to the Keurbooms-Bitou Estuary Management Plan indicating the proposed development site.



Floodlines and wetlands from KELASP (Plants, Animals and Terrestrial Biodiversity Report by David Hoare Consulting (Pty) Ltd, dated 16 March 2023).



Slope Analysis from KELASP - slopes steeper than 1:4