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ENVIRONMENTAL CONSULTANCY
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DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

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

PROPOSED DEVELOPMENT OF ERF 301, WHITES ROAD, HOEKWIL (WILDERNESS HEIGHTS) GEORGE MUNICIPALITY, WESTERN CAPE.

DEA&DP REF: 16/3/3/6/7/1/D2/19/0099/24

PREPARED FOR THE APPLICANT:	Jeanne Lisa Holmes
PREPAPRED BY:	Eco Route Environmental Consultancy
AUTHOR:	Joclyn Marshall (EAPASA Reg. 2022/5006)
DATE:	11/11/2024

EAP SIGNATURE: _____

ENVIRONMENTAL MANAGEMENT PROGRAMME REQUIREMENTS:

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

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

(a) Details of – (i) The EAP who prepared the EMPr; and (ii) The expertise of the EAP to prepare an EMPr, including a curriculum Vitae;	This EMPr was prepared by Joclyn Marshall of Eco Route Environmental Consultancy. Joclyn has an MSc in Environmental Science and 10 years' experience in the environmental field. Please see attached CV of the EAP (Annexure 1).
(b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 2 provides specific project details.
(c) a map at an appropriate scale which superimposes the proposed activity, it associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Annexure 2 provides mapping which superimpose the proposed activity onto environmentally sensitive areas.
(d) A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including – (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Addressed in Sections 3, 4 and 10.
(f) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to – (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practises; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	Addressed in Sections 3, 4 and 10.

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

Glossary of Terms

BAR	**Basic Assessment Report –** A tool used by the EAP to submit to the competent authority if listed activities is triggered in Regulations GNR 327 and GNR 324 as per NEMA to make a decision regarding a proposed development.
DFFE	**Department Forestry Fisheries and Environment**– the national authority for sustainable environmental management and integrated development planning.
DFFE&DP	**Department of Environmental Affairs and Development Planning** – the provincial authority for sustainable environmental management and integrated development planning.
CBA	**CBA Critical Biodiversity Area** – Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.
EAP	**Environmental Assessment Practitioner –** An EAP and a specialist, appointed in terms of regulation 12(1) or 12(2) must – (a) be independent. (b) Have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these regulations and any guidelines that have relevance to the proposed activity. (c) Ensure compliance with these Regulations (d) Perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application. (e) Take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application and any report, plan or document relating to the application; and (f) Disclose to the proponent or applicant, registered and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing – i. Any decision to be taken with respect to the application by the competent authority in terms of these regulations; or ii. The objectivity of any report, plan or document to be prepared by the EAP or specialist, in terms of these Regulations for submission to the competent authority; unless access to that information is protected by law, in which case it must be indicated that such protected information exists and is only provided to the competent authority. (2) In the event where the EAP or specialist does not comply with sub regulation (1)(a), the proponent or applicant must, prior to conducting public participation as contemplated in chapter 5 of these regulations, appoint another EAP or specialist to externally review all work undertaken by the EAP or specialist, at the applicants cost. (3) An EAP or specialist appointed to externally review the work of an EAP or specialist as contemplated in sub regulation (2), must comply with sub regulation (1).
ECO/ESO	**Environmental Control Officer** – A site agent who needs to ensure that all environmental authorisation and conditions are adhered to during the construction phase of the project

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

Contents

1. INTRODUCTION

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

Section 28 of NEMA (National Environmental Management Act, Act 107 of 1998) states that:
Duty of care and remediation of environmental damage -
"(1) Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot be reasonably avoided or stopped, to minimise and rectify such pollution or degradation of the environment"
This EMPr must be read in conjunction with the Environmental Impact Assessment Report dated October 2022 and the accompanying specialist reports. All recommendations, relevant conditions and mitigation measures provided in these documents must also be adhered to.

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

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

1.1. Purpose of the EMPr

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

The EMPr is a living document that is flexible and responsive to new and changing circumstances, however, should a change be made within the EMPr permission from DEA&DP must first be obtained. Once the EMPr is approved by DEA&DP it is seen as a legal binding document on the following affected parties:
1. Project Applicant.
2. All contractors.
3. Sub-contractors and construction staff.
4. The appointed ECO monitoring the construction phase.

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

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

1.2. The Polluter-Pays Principle

This principle provides for "the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage

or adverse health effects must be paid for by those responsible for harming the environment." The Polluter Pays Principle will be rigorously applied throughout the construction phase of this project.

2. PROJECT DETAILS

Eco Route Environmental Consultancy has been appointed by the Applicant, **Ms Jeanne Lisa Holmes**, to prepare an Environmental Management Programme (EMPr) in compliance with the Basic Assessment Report Conditions set by Department of Environmental Affairs and Development Planning (DEA&DP) Western Cape Provincial Government, for Environmental Authorisation.

Erf 301 Hoekwil is a vacant smallholding of 3.92ha in extent, located in Hoekwil (Wilderness Heights). The property overlooks the Touw River and Ebb & Flow Rest Camp (Garden Route National Park) to the east, and the Village of Wilderness to the west. Access to the property is from Whites Road leading from the Village around the Wilderness Heights area with a circular route from the west to east and again reaching Heights Road in the west. The section of Whites Road passing Erf 301 Hoekwil is a provincial road, Divisional Road 1621.

The proposal is for the development of a single residential dwelling with six (6) smaller guest units called "Pods". The 3-bedroom primary dwelling (446 m^2) is positioned centrally on the property as close as possible to Whites Road to the north, with four (4) of the Pods (±50 m^2 each) to the west of it and another two (2) Pods directly south. The development footprint is approximately 1 638 m^2.

2.1. Site Description

Erf Number:	Erf 301 Hoekwil
Area:	39222.9 m^2
SG Code:	C02700050000030100000
Co-ordinates:	33.991177°S 22.593274°E

2.2. Locality

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

3.1. Assessment Criteria

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

Nature of the impact

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

Mitigation Measures

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

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

Duration of the impact - the lifespan or length of time the impact will last	
Rating	**Definition of Rating**
Brief	Impact will not last longer than 1 year
Short term	Impact will last between 1 and 2 years
Medium Term	Impact will last between 2 and 15 years
Long Term	Impact will last more than 15 years
Permanent	Impact may be permanent, or in excess of 20 years
Very High	Natural and/ or social functions and/ or processes are severely altered

Intensity - the severity of the impact	
Rating	**Definition of Rating**
Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Low	Natural and/or social functions and/or processes are slightly altered
Medium	Natural and/or social functions and/or processes are notably altered
High	Natural and/ or social functions and/ or processes are significantly altered
Very High	Natural and/ or social functions and/ or processes are severely altered

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

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

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

Cumulative effect - An effect which in itself may not be significant but may become significant if added to other existing or potential impacts that may result from activities associated with the proposed development.	
Rating	**Definition of Rating**
Negligible	the impact would result in negligible to no cumulative effect
Low	the impact would result in insignificant cumulative effects

Medium	the impact would result in minor cumulative effects
High	the impact would result in significant cumulative effects

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

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

3.2. Impacts foreseen during the Construction Phase

Project Phase	**Construction**
Impact	A direct loss of patches of habitat due to earthworks and other construction related activities.
Description of impact	❖ The further loss and fragmentation of an already fragmented habitat, and a loss of ecotonal vegetation. ❖ A shift towards a negative change in the conservation status of the forest / thicket habitat on the site.
Mitigable	Medium | Mitigation exists and will notably reduce significance of impacts
Potential mitigation	❖ Prior to construction, the disturbance footprint of proposed developments should be clearly defined and demarcated to prevent unnecessary damage to the surrounding environment. This mitigation measure is described in the animal species report and must be followed according to the specifications in that report. o For once off deliveries, clear indications on the nearby roads should be put up to guide truck drivers to the construction site, thus avoiding divers getting lost and causing unnecessary disturbance. ❖ Prior & during construction: Weather reports must be checked daily to avoid heavy machinery and activities on the site during rainy weather. Following a rainfall event

	(excluding short periods of gentle, light rain), all construction on the site must cease temporarily. ❖ During construction: Erosion control measures. o Make use of silt fences and sediment barriers on the site. ▪ Silt fences should only be implemented where necessary on the site if during the construction phase erosion becomes a noteworthy problem. ▪ Straw bales and sandbags are temporary barriers that can be used on the site from the start of the construction phase to avoid and control sediment movement in areas with higher potential for runoff. o Temporary vegetation cover in areas of permanent disturbance ▪ A hydroseed mixture of native grasses and groundcovers can be used on exposed soil surfaces to provide immediate soil stabilization. Species such as *Eragrostis capensis* and *Stenotaphrun secondatum* can be used for rapid coverage. *Vicia sativa* (common vetch) is a leguminous plant that can be used in areas where construction activities have temporarily ceased in order to protect the soil. o Erosion control blankets and mats that are biodegradable (e.g., coir made from coconut fibres) can be used with native seed mixes to enhance the stabilisation of soil. These are an option in the disturbance envelope of 2m around permanent disturbance footprints on the site. ❖ During construction: Protection and re-use of topsoil. o The topsoil will be vital for the success of rehabilitation of vegetation following construction process and must therefore be treated with care. o Topsoil from vegetation on the site (excluding topsoil under invasive plants) in new excavation areas must be stripped to a depth of ca. 30cm and kept in designated piles. Topsoil piles must be suitably covered with to prevent any additional invasive species seeds from falling in and establishing in the soil. o If the SDP of a proposed development does not have enough space for the storage and protection of topsoil within the disturbance envelope, then the Contractor must identify an alternative temporary stockpile area that is already transformed and where it can easily be retrieved for post-construction rehabilitation. o The topsoil piles must be clearly labelled so that it does not mix with subsoils excavated or any other construction material for the site. ❖ Prior planning & during construction: Minimise the disturbance area. o Dust suppression mechanisms e.g., materials and regular site maintenance (e.g., cleaning surfaces and "rounding off" a workday) is essential to reduce dust, and general pollution. o Implement phased construction to limit the extent of exposed soil at any given time. This approach reduces the area vulnerable to erosion and allows for stabilization measures to be applied progressively.

Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Low negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
Probability	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	Barely reversible	the impact is unlikely to be reversed even with intense mitigation measures	Barely reversible	the impact is unlikely to be reversed even with intense mitigation measures
Resource irreplaceability	Medium	the resource is damaged irreparably but is represented elsewhere	Medium	the resource is damaged irreparably but is represented elsewhere
Significance	**Medium negative (-)**		**Low negative (-)**	
Comment on significance	The proposed development will result in the permanent loss of thicket ecotonal vegetation, and small patches of forest south of Whites Road. The impact on the loss of vegetation and habitat is most severe and noticeable during the construction phase of the project due to the fact that structures placed on the site are permanent features.			

Project Phase	**Construction**	
Impact	A direct loss of patches of species of conservation concern (SCC) and protected trees due to earthworks and other construction related activities.	
Description of impact	❖ Fragmentation of SCC sub-populations. ❖ A shift towards a negative change in the conservation status of the SCC and a reduction in the extent of occurrence (EOO) of SCC and protected trees. ❖ A general loss of suitable habitat for SCC. ❖ A loss of genetic variation within remaining SCC stands. ❖ An increased risk of re-invasion of the site, mainly by wattles, hakeas, and pines.	
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts
Potential mitigation	❖ Prior planning & during construction: The proposed development must have a maximum disturbance envelope of 2m around the proposed development. o Prior to the commencement of construction and earth movement on the site, a plant search and rescue must be conducted of all fynbos taxa on the site (preferably with a botanist or suitably informed ECO on the site to supervise the search and rescue and provide guidance on best practice). o The rescued plants must be kept in a nursery that should preferably be set up on Erf 301. Alternatively, arrangements for a suitable nursery site should be made to keep and care for removed plants during the construction phase of the project. o The rescued plants must be planted back with the aid of the ECO or horticultural specialists within the 2m disturbance footprint around the permanent disturbance footprints. This will promote the regeneration of natural vegetation around the developments and reduce the possibility of negative edge effects on the site. o Additional plants that are observed during construction within a development footprint must be rescued and added to the rescued plants in the indigenous nursery. ❖ The development may not have any additional gardening, especially lawn areas, in order to prevent negative edge effects and long-term habitat degradation. The only additional landscaping / gardening on the site should be limited to potted plants and potted beds. o Only natural fynbos and forest plant species rescued from the site must regrow around the dwelling and pods, with regular invasive plant management (checks and removal). o No kikuyu grass is allowed anywhere on Erf 301. o The owner must be wary of so-called "indigenous" gardening, as this kind of advertising is not always accurate. o Plaques celebrating some of the naturally occurring flora on the property could potentially be made on Erf 301, however this is not a requirement. ❖ Materials used during construction must be sourced and transported responsibly to minimise the risk of further introductions of new invasive plants and contamination of the site. o Install vehicle wash stations at site exits to remove soil and prevent it from being transported off-site and contributing to erosion elsewhere.	

	○ Staff must check their clothes when they enter and leave to ensure no invasive plants have been introduced or poached from the natural surrounding environment. Geophytes are at a large risk of poaching, and this is an important reason why SANBI has a list of sensitive species for plants (i.e., their identities are unknown) in South Africa. However, some LC and Near Threatened species, especially geophytes (several on Erf 301), can also be targeted by plant poachers despite not being listed as sensitive species. ❖ Driveways and parking spaces for non-heavy machinery could make use of open pavers that are planted with non-invasive grasses, like *Cynodon dactylon* (the Cape Royal variety), or as an alternative *Stenotaphrum secundatum* (Buffalo grass). ❖ If any trees need to be removed or pruned then a permit is required, according to the National Forests Act.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Medium Term	Impact will last between 2 and 15 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are somewhat altered	Very low	Natural and/or social functions and/or processes are slightly altered
Probability	Probable	It is most likely that the impact will occur	Possible	Has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Barely reversible	the impact is unlikely to be reversed even with intense mitigation measures	Barely reversible	the impact is unlikely to be reversed even with intense mitigation measures
Resource irreplaceability	Medium	the resource is damaged irreparably but is represented elsewhere	Medium	the resource is damaged irreparably but is represented elsewhere
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	Erf 301 is home to SCC and protected trees (namely milkwood and cheesewood trees). The local loss of threatened and protected plant species can have potentially far-reaching impacts on the environment.			

Project Phase	**Construction**	
Impact	An indirect impact resulting in habitat degradation, and SCC loss due to construction site management.	
Description of impact	❖ Unanticipated losses of vegetation outside of designated areas. ❖ Increased duration of negative construction impacts. ❖ Increased vulnerability to impacts within remaining habitat portions. ❖ Potential health and safety hazards on the site and in the surrounding environment. ❖ The creation of novel habitat that indigenous species cannot survive in, but where exotics and invasive plants thrive in.	
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts
Potential mitigation	❖ During construction: All new staff must be briefed about the layout of the construction site and must be made aware of the no-go areas and fact that the surrounding environment is sensitive and must not be disturbed. ❖ During construction: Construction vehicles should be checked on a daily basis at the start of the day for leaks and other faults. ○ Sandbags or sawdust should be available on the site to ensure that any accidental oil or toxic material spills can be contained and stopped quickly.	

	○ Any contaminated soil on the site must be removed by a registered hazardous waste service provider (Spill Tech, Interwaste, EnviroServ etc.). ○ Vehicles with leaks and other problems must not be allowed to operate on the site until they have been repaired. ❖ During construction: Ongoing monitoring and clearing of invasive plants should occur. A detailed plan is not required for Erf 301, as the invasive plants on the site are minimal, and can easily be cleared. This is a requirement by law. Pine trees can be cut down as close to the ground as possible without application of herbicide. ❖ During construction: Adequate ablution must be provided and no waste dumping or burning is to be allowed. See the animal specialist report for more detail. ❖ During construction: Concrete, cement, plastering, and painting must be conducted with care. See the animal specialist report for more detail. ❖ During construction: Stockpiles of materials must be managed responsibly. See the animal specialist report for more detail.

Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Long Term	Impact will last more than 15 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Extending only as far as the development site area
Intensity	Medium	Natural and/or social functions and/or processes are notably 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	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	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	Medium	the resource is damaged irreparably but is represented elsewhere	Medium	the resource is damaged irreparably but is represented elsewhere
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	In addition to the large and obvious construction impacts, the management of materials and staff on the site is also an important impact on the site. If managed properly, many accidents and unanticipated negative losses to the expense of the environment, as well as staff can be avoided.			

Project Phase	**Construction**	
Impact	Loss of habitat for fauna within the footprint of the proposed houses, pods and roads due to construction related activities.	
Description of impact	Loss of suitable habitat for fauna SCC to live, forage and breed.	
Mitigable	Medium	Mitigation exists and will reduce significance of impacts
Potential mitigation	❖ Prior to construction, the disturbance footprint of proposed roads and houses should be clearly defined and demarcated to prevent unnecessary additional damage to the surrounding environment:	

	○ Construction netting or fencing must be used to clearly indicate construction areas. Access roads must be clearly marked so there is no confusion as to where the tracks are or how wide the road is. ○ Clear signs for "no-go" areas for vehicles and personnel should be placed strategically on the site and along access roads. No-go areas are anywhere outside of the direct area of influence of the construction phase. ○ All vehicles, construction or inspection, must only access the sites via a planned, single track access road with no additional roads, tracks to be made in the environment. Roads are to be clearly marked to prevent additional tracks or unnecessarily widening the access road. A turning area for construction vehicles should be demarcated within the existing footprint of the house. ❖ Where vegetation will be cleared to make way for construction, filled sandbags, silt socks or a silt fence must be used to reduce the intensity of water runoff and flow over the site and thereby reduce erosion potential. This should be placed around adaptive management to ensure the integrity of the system for reducing erosion. This is pertinent given the slope of the property. ❖ Protection and reuse of topsoil can be critical for the successful rehabilitation of vegetation following construction processes as it contains valuable seedbank of indigenous plants that regenerate after the soil is replaced.

Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Extending only as far as the development site area
Intensity	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	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	Medium	the resource is damaged irreparably but is represented elsewhere	Medium	the resource is damaged irreparably but is represented elsewhere
Significance	**Medium negative (-)**		**Low negative (-)**	
Comment on significance	The proposed development of a residential dwelling, pods and associated access roads will result in the permanent loss of habitat space on the property. The primary development footprint where permanent infrastructure is placed and permanent loss of habitat occurs, translates to approx. 2% of the property size. Efforts to reduce this impact have already been made by means of using stilts/pylons to raise sections of the development off the ground, thereby increasing habitat availability for many SCC.			

Project Phase	**Construction**
Impact	Fauna and habitat negatively affected by the management of the construction site (i.e., staff, stockpiles, and equipment).

Description of impact	❖ Loss of habitat or harm to fauna outside of designated construction areas. ❖ Litter and pollution of natural environment. ❖ Potential health and safety hazards (for staff and fauna) on the site and in the surrounding environment.
Mitigable	Medium | Mitigation exists and will reduce significance of impacts
Potential mitigation	❖ All new staff must be briefed about the layout of the construction site, made aware of the no-go areas and informed of the sensitive surrounding environment that is not to be disturbed. Regular site meetings should be held, during which the ECO should remind all staff of these requirements and any questions/concerns can be raised and addressed. ❖ Construction vehicles should be checked daily, prior to construction at the start of each day for leaks and other faults. o Sandbags or sawdust should be available and accessible on the site to ensure that any accidental oil spills are contained and stopped quickly. o Any contaminated soil on the site must be removed by a registered hazardous waste service provider (e.g. Spill Tech, Interwaste, EnviroServ., etc.). o Vehicles with leaks and other problems are not allowed to operate on the site until they have been repaired. ❖ No littering, waste dumping or burning is allowed on the site or in the surrounding environment. All waste is to be collected in designated bins with lids that can be secured or stored in a secure area when construction is not taking place (evenings, weekends, holidays, etc.) to prevent interference by animals (i.e. baboons). All waste is to be transported to a registered waste disposal facility off site. ❖ Adequate ablution facilities must be provided for every construction project. o Portable toilets will need to be used in remote areas like this site, and these must be placed on a level platform before construction starts within the footprint of the access roads or housing sites. o Ablution facilities must be regularly maintained and cleaned. o Refer to SHEQ guidelines for minimum toilet facilities to be provided for number of staff on site. ❖ Concrete, cement, plastering, and painting: o Mixing areas be clearly defined on the site and must be surrounded by an impermeable material (i.e. create a temporary coffer dam with sandbags and thick plastic sheeting) to prevent any runoff and absorption into the surrounding soils. o The designated mixing areas should be limited to areas that will become future hard surfaces on the site, or that are already transformed and likely to remain transformed. o No concrete and cement mixing is allowed in areas outside the site development plans (SDPs). o Cleaning of cement, plastering & paint equipment must be done into a designated, bunded & lined slurry sump or container to avoid contaminating the environment. ❖ All stockpiles of fine textured building materials and soils must be covered by a geotextile or plastic covering, which must also be bunded (e.g. with sandbags) when not in use. This will prevent material being lost to the environment and fauna from accessing stockpiles and possibly subjecting them to harm during construction. ❖ Any small items or building materials which can be carried away by medium-large animals (i.e. baboons) should be safely stored in containers or locked away in a designated area to prevent interference from animals, causing possible harm to them and preventing them from removing such items from site. ❖ All food waste (leftovers, bones, pips, apple cores) to be disposed of in designated bins and NOT to be disposed of in the surrounding environment within or outside the designated construction areas. Food sources serve as a major attractant for fauna and will expose them to unnecessary harm in the vicinity of the construction site. All food waste should be removed from site on a daily basis and disposed of appropriately. ❖ Construction should take place during daylight hours so that the site can be adequately monitored for fauna during work hours, and also to prevent the use of

	artificial lighting at night which attracts many animal species (predominantly insects and associated predators) and subjects them to the risks of construction.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Medium Term	Impact will last between 2 and 15 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Extending only as far as the development site area
Intensity	High	Natural and/ or social functions and/ or processes are significantly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Possible	Has occurred here or elsewhere and could therefore occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	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	Medium	the resource is damaged irreparably but is represented elsewhere	Low	Marginal loss, the resource is not damaged irreparably or is not scarce
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	The management of materials and staff on the site is also an important impact of development. If managed properly, many accidents and unanticipated negative impacts on fauna and the surrounding environment can be avoided.			

Project Phase	**Construction**	
Impact	**Harm/Death of fauna, particularly invertebrates and soil dwelling mammal SCC, due to earthworks and construction related activities.**	
Description of impact	❖ Loss of threatened species and a shift towards a negative change in the conservation status of the SCC and other indigenous species affected by the development. ❖ Loss of genetic diversity from remaining fauna populations. ❖ General loss of biodiversity.	
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts
Potential mitigation	❖ Construction should happen in phases, such that construction related activities are confined to one area at a time on the property and can be monitored for faunal impacts appropriately ❖ During construction: o Before construction commences for any new earthworks at the start of new phase, an ECO should do a walk-through of the demarcated area and access roads to look fauna with limited mobility. These animals should be removed from the demarcated area to an adjacent location, and where appropriate a Fauna Specialist contacted for assistance or guidance. Construction/Earthworks for this new phase can commence thereafter. o At any point during the day (during construction), if an animal with limited mobility is observed on site, this should be reported to the ECO and construction temporarily halted. Construction can commence once the ECO is satisfied that all such fauna are removed from the construction area. ❖ Speed limits should be imposed and monitored during construction phase, as collisions with vehicles (roadkill) pose a significant threat to many fauna species. The	

	development site falls within a largely natural area, increasing connectivity and ultimately the diversity of fauna that may be encountered and threatened by moving vehicles. Given the narrow access roads recommended for this development, speed limits should be restricted at the discretion of the ECO to appropriate speeds to allow for driver alertness and ability to avoid collisions with fauna. Recommended speeds include 40 km/hour on main access roads with good visibility into the road verges, and 20 km/hour on smaller access roads with narrow or overgrown verges where visibility is reduced. Signs should be put up along the roads to remind people of speed limits, as well as warnings to look out for small animals on the roads. ❖ Noise must be kept to an absolute minimum during the evenings and at night to minimise all possible disturbances to nocturnal species which are more dependent on auditory signals for life processes. ❖ No trapping, killing, or poisoning of any wildlife is to be allowed and Signs must be put up to enforce this. Monitoring must take place in this regard. ❖ Any holes/deep excavations must be dug in a progressive manner and shouldn't be left open overnight. Should any holes remain open overnight they must be properly covered temporarily to ensure that no small fauna species fall in. Holes must be subsequently inspected for fauna prior to backfilling.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Short term	Impact will last between 1 and 2 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Probable	It is most likely that the impact will occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	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	**Low negative (-)**		**Negligible**	
Comment on significance	Fauna may occur on site and be killed or seriously harmed during construction related activities. Cryptic and ground-dwelling species, like the golden mole SCC, are difficult to detect and are limited in their mobility rendering them vulnerable to earthmoving and construction activities.			

Project Phase	**Construction**	
Impact	**Fragmentation of habitats**	
Description of impact	Cut-off of natural dispersal and foraging movement by animals, fragmentation of ecological infrastructure, secondary impacts to wildlife such as noise and lighting.	
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts
Potential mitigation	❖ The security fence around the building footprint should be constructed in Clear View fencing in colour charcoal of not more than 1,8m high, following a random alignment to clear established trees and vegetation.	

	❖ Where fencing is required, wildlife gaps in the perimeter fence must be installed at appropriate intervals and be of a suitable dimension to allow for the movement of small animals.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Low negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Low	Natural and/or social functions and/or processes are slightly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Probable	It is most likely that the impact will occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Partly reversible	The impact is reversible but more intense mitigation measures are required	Partly reversible	The impact is reversible but more intense mitigation measures are required
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	The potential impact affects a small proportion of the vegetation but could have wider ecological implications.			
Cumulative impacts	The potential impact affects a negligible proportion of the overall habitat available for wildlife.			

Project Phase	**Construction**	
Impact	**Waste Pollution**	
Description of impact	Pollution of buffer zone and natural areas caused by waste generated by the construction process.	
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts
Potential mitigation	❖ Waste management must be a priority and all waste must be collected and stored effectively and responsibly. Refuse bins will be responsibly emptied and secured. Temporary storage of domestic waste shall be in covered and secured waste skips. Dangerous waste such as metal wires and glass must be safely stored before being moved off site as soon as possible. Under no circumstances may domestic waste be burned on site or buried on open pits. ❖ Separation and recycling of different waste materials should be supported. ❖ Litter, spills, fuels, chemical and human waste in and around the Project Area must be minimised and controlled. ❖ Cement mixing may not be performed on the ground. It is recommended that only closed side drum or pan type concrete mixers be utilised. Any spills must be immediately contained and isolated from the natural environment, before being removed from site. ❖ Toilets at the recommended Health and Safety standards must be provided. Portable toilets must be emptied regularly to prevent overflow. Once no longer required, they must be pumped dry to prevent leakage into the surrounding environment and removed from site.	

	❖ Where a registered disposal facility is not available close to the Project Area, the Contractor shall provide a method statement with regards to waste management.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Low negative	
Duration	Short term	Impact will last between 1 and 2 years	Brief	Impact will not last longer than 1 year
Extent	Very Limited	Extending only as far as the development site area	Very Limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are slightly altered	Low	Natural and/or social functions and/or processes are slightly altered
Probability	Possible	Has occurred here or elsewhere and could therefore occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Negligible	No loss of resources	Negligible	No loss of resources
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	Construction activities are likely to generate significant quantities of solid waste that could pollute the buffer zone and natural areas.			

Project Phase	**Construction**			
Impact	**Construction Vehicles**			
Description of impact	Pollution caused by the operation of vehicles and heavy machinery.			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	❖ Construction activities must be confined to clearly demarcated areas so as to prevent unnecessary disturbance the surrounding environment. ❖ No vehicles are to park or operate within "no-go" areas. ❖ Excavators and all other machinery and vehicles must be checked for oil and fuel leaks daily. No machinery or vehicles with leaks are permitted to work on site. ❖ Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills. These areas must not be located within any natural drainage areas or preferential flow paths and must be located outside of buffer zones. ❖ The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Low negative	
Duration	Short term	Impact will last between 1 and 2 years	Brief	Impact will not last longer than 1 year
Extent	Very Limited	Extending only as far as the development site area	Very Limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are slightly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered

Probability	Possible	Has occurred here or elsewhere and could therefore occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Negligible	No loss of resources	Negligible	No loss of resources
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	Operation of vehicles could result in spillages or leaks of hydrocarbons (fuel and oil) and could lead to unnecessary disturbance of natural areas.			

Project Phase	**Construction**			
Impact	**Erosion and Stormwater Management**			
Description of impact	Potential erosion during clearance of the site and increased stormwater runoff			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	❖ Ensure that construction activities do not cause any preferential flow paths and concentrated surface runoff during rainfall events. ❖ Clearly demarcate the construction area and ensure that heavy machinery does not compact soil or disturb vegetation outside of these demarcated areas. ❖ Reduce transport of sediment through use of structures such as silt fences and biodegradable coir logs placed along a contour below the development footprint. ❖ Ensure that vegetation clearing is conducted in parallel with the construction progress to minimise erosion and runoff. ❖ Revegetate exposed areas once construction has been completed. ❖ Ensure that vegetation clearing is conducted in parallel with the construction progress to minimise erosion and runoff. ❖ Ensure that stormwater and runoff generated by hardened surfaces is discharged in retention areas (i.e. swales or retention ponds), to avoid concentrated runoff and associated erosion.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Low Negative	
Duration	Short term	Impact will last between 1 and 2 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are slightly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Probable	It is most likely that the impact will occur	Possible	Has occurred here or elsewhere and could therefore occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Partly reversible	the impact is reversible but more intense mitigation measures are required	Completely reversible	the impact can be reversed with the

				implementation of minor mitigation measures.
Resource irreplaceability	Low	Marginal loss, the resource is not damaged irreparably or is not scarce	Negligible	No loss of resources
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	Steep slopes on the property will be vulnerable to erosion during clearance of the site and the construction phase. It is therefore important that appropriate erosion control measures are implemented.			

Project Phase	**Construction**			
Impact	**Disturbance / removal of topsoil**			
Description of impact	Disturbance of topsoil, potential soil erosion and the loss of topsoil			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	❖ Areas that are disturbed through building activities (such as the excavations for pipelines) should be suitably rehabilitated without delay. Failure to do so will have a knock-on effect on biodiversity in the form of an increase in wind erosion, soil exposure and a loss of the soil micro-organisms that are essential for plant growth. ❖ Organic matter, such as roots and humus/topsoil should be removed from the footprint of structures and stockpiled separately for landscaping purposes. ❖ The stockpiling of topsoil for use in rehabilitation is required. ❖ Stockpiles must not exceed 1.5m in height, must be covered with shade cloth or similar, to prevent erosion and any invasive alien species that begin to grow within it must be removed. ❖ Soil disturbance during the removal of alien invasive plants must be minimised as much as possible. ❖ The site must be stabilised where necessary using available materials, where possible. It is recommended that exposed soils are covered with wood chips, and tree branches used to create berms. Any cut alien vegetation on site can be utilised for this purpose if it is without seed.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Low Negative	
Duration	Short term	Impact will last between 1 and 2 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are slightly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Probable	It is most likely that the impact will occur	Possible	Has occurred here or elsewhere and could therefore occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Partly reversible	the impact is reversible but more intense mitigation measures are required	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Low	Marginal loss, the resource is not damaged irreparably or is not scarce	Negligible	No loss of resources
Significance	**Low negative (-)**		**Negligible**	

Comment on significance	Clearing areas of the site in preparation for construction will expose bare soil which may lead to the potential loss of topsoil through runoff and incorrect storage. This is not envisaged to be a significant impact with mitigation measures in place. Topsoil can be reused on site for rehabilitation purposes.

Project Phase	**Construction**			
Impact	**Noise pollution**			
Description of impact	Noise caused by machinery and staff			
Mitigable	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	❖ Construction activities must only take place during normal working times between 07:00-17:00 on weekdays. ❖ Machinery may be fitted with silences to dampen noise. ❖ Staff must be reminded that they are working within a residential area and noise levels must be kept low.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Brief	Impact will not last longer than 1 year	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Negligible	The impact will have negligible effects and would require little or no mitigation	Negligible	The impact will have negligible effects and would require little or no mitigation
Probability	Probable	It is most likely that the impact will occur	Probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Not relevant		Not relevant	
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	Some extent of noise pollution during construction is expected; however, with mitigation the impact will be reduced.			

Project Phase	**Construction**			
Impact	**Employment**			
Description of impact	Empowerment of the local community members living in the area relating to temporary employment opportunities			
Mitigable	Medium	Mitigation only exists to ensure that the positive impact is followed through.		
Potential mitigation	❖ Use existing social structures and communication channels to ensure social representation. ❖ Use local labour and source local materials as far as possible.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Positive	
Duration	Short term	Impact will last between 1 and 2 years	Short term	Impact will last between 1 and 2 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements

Intensity	Low	Natural and/or social functions and/or processes are slightly altered	Low	Natural and/or social functions and/or processes are slightly altered
Probability	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere	Definite	There are sound scientific reasons to expect that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Not relevant		Not relevant	
Resource irreplaceability	Not relevant		Not relevant	
Significance	**Negligible**		**Low positive (+)**	
Comment on significance	Due to the proposed development being on a small-scale, there is a low difference in impacts between without mitigation and with mitigation. However, as the impact would be positive for the local community to be employed during construction, mitigation is recommended to ensure this occurs.			

3.3. Impacts foreseen during the Operational Phase

Project Phase	**Operation**	
Impact	**Habitat and SCC negatively affected by the management activities, like vegetation trimming, path and road maintenance, fire regime changes, ongoing management of invasive plants, etc.**	
Description of impact	❖ A general long-term loss of habitat for plants, pollinators, and other important taxa. ❖ Altered soil characteristics which causes unnecessary harm to forest vegetation dynamics. ❖ Pollution of the environment. ❖ The creation of a landscape of fear where some animals and insects that are able to access the site do not do so because of excessive and potentially destructive anthropogenic activity. ❖ Loss of habitat to invasive plants species and increasingly species poor senescent fynbos in ecotonal areas on the site.	
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts
Potential mitigation	❖ It is a requirement of the law that alien clearing and monitoring be followed on Erf 301. ❖ Emergency & cleaning supplies for incidents of waste spillage, or fires accidentally spreading should be kept nearby for each development proposed (e.g., keep lime, spades, first aid etc. handy). Fire extinguishers etc. must be kept as per fire safety regulations. ❖ Owners and guests must be aware of activities that are not allowed on the site. o No disposal of grey water in the environment. o No walking where a path is not clearly indicated / present. o Instructions for the proper use of chemical toilets must be provided and must be clearly visible in all restrooms. ❖ No plants may be brought to the site from elsewhere, unless planted in pots or artificial beds. All species must be from the plant search and rescue operation, or must be species that occur there naturally. o No planting of trees or other plants outside of the development disturbance footprint. o Locally indigenous species may be sourced from elsewhere for the rehabilitation of the 2m disturbance strip.	

	❖ Light pollution must be considered during the operational phase of the project. Full-spectrum bulbs mimic natural sunlight, providing a balanced spectrum of light suitable for plant growth. They are suitable for areas with low natural light. See the animal specialist report for more detail on this mitigation measure. ❖ Due to the forest environment over the majority of the site, and Whites Road along the northern boundary, no fire breaks may be made on Erf 301. ❖ Fencing around the perimeter of Erf 301 should be avoided if possible to ensure the site remains connected to the habitat to the east and west.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Low	Natural and/or social functions and/or processes are slightly altered
Probability	Probable	It is most likely that the impact will occur	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	Medium	the resource is damaged irreparably but is represented elsewhere	Medium	the resource is damaged irreparably but is represented elsewhere
Significance	**Medium negative (-)**		**Low negative (-)**	
Comment on significance	The proposed developments will be in close proximity to Red Listed and protected plant species that are vulnerable to habitat loss and fragmentation. The primary dwelling and pods will alter the disturbance regime in the northern section of Erf 301. If the management of Erf 301 is done in an ecologically friendly way in the long-term, impacts of management in the area can prevent and reduce cumulative negative impacts. Without the appropriate consideration for the environment, management activities will impact the flora and habitat they grow in negatively.			

Project Phase	**Operation**
Impact	**Habitat and SCC are negatively affected in the long-term by landscaping resulting in water attenuation problems, genetic pollution, and potential long-term biodiversity loss from the cultivation of species that are not indigenous to the area.**
Description of impact	❖ A gradual increase in the number of negative edge effects that result from exotic garden plants outcompeting natural species in the environment. ❖ Biodiversity loss from introduction & establishment of invasive plants in natural fynbos vegetation ❖ A general loss of habitat, not only for plants, but important pollinator species too. ❖ Eventual loss of any remaining native vegetation remaining due to the gradual naturalisation of exotic garden plant varieties. ❖ A loss of natural genetic variation (e.g., due to introgression; Mitchell & Holsinger, 2018) between populations and species of plants. ❖ Loss of specific adaptations that make plant species resilient.

	❖ Altered population and plant community structure and fragmentation of sub-populations of SCC. ❖ Altered soil characteristics, including soil microbes, & seed bank changes. ❖ Altered fire regimes.			
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	❖ Additional gardening should be avoided and may only take place in pots and potted beds on the site. ❖ Ongoing effort to remove all invasive plants species is a requirement by law. ❖ As mentioned before, no planting of kikuyu grass will be allowed. Lawns may not be planted. ❖ Landowners are responsible to maintain their gardens, so that plants do not overgrow. No garden waste may be dumped in any remaining natural area and must be disposed of in a responsible manner. ❖ Fertilisers and pesticides must be avoided in gardens, and when used it must be done with caution and may not become routine practice. ❖ If gardens need to be considered within the 2m disturbance areas around permanent disturbance footprints, they can be designed to be water wise (avoid erosion) and friendly to wildlife and the greater natural habitat. Fynbos Life in Cape Town is an inspirational indigenous landscaping project - all tips from Fynbos Life form part of the mitigation on the impact of landscaping.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	High	Natural and/ or social functions and/ or processes are significantly altered	Low	Natural and/or social functions and/or processes are slightly altered
Probability	Definite	There are sound scientific reasons to expect that the impact will occur	Possible	Has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	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	Medium	the resource is damaged irreparably but is represented elsewhere	Medium	the resource is damaged irreparably but is represented elsewhere
Significance	**Medium negative (-)**		**Negligible**	
Comment on significance	Most landowners plant gardens with plants that are not native and indigenous to the area where they live. Pseudo-natural gardening also results in the creation of Frankenflora. This means that genetic pollution could result in cryptic hybridisation and eventual species loss. By allowing the planting of gardens in sensitive natural habitat (even with species advertised as being locally sourced), a loss of SCC will take place from increased edge effects habitat that is already somewhat fragmented. Some gardening / landscaping (a form of soft landscaping) may be required within the development footprint, and here "hard landscaping" must be avoided where possible.			

Project Phase	Operation			
Impact	**Loss of habitat for fauna during maintenance activities for roads and housing infrastructure.**			
Description of impact	❖ A general loss of habitat for plants and fauna by excessive vegetation clearing around houses and roads. ❖ The mismanagement of materials during routine maintenance of infrastructure can cause habitat loss (i.e. stockpiling/long term storage of materials on site rather than removing from site). ❖ Uncontrolled alien plants can completely invade and transform natural habitats leading to a loss in associated biodiversity.			
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	❖ Vegetation clearing along road verges should be kept to a minimum, and avoided in areas where it poses no risk to vehicles. ❖ During routine maintenance of infrastructure on the property, adequate management of materials should be implemented to reduce any unnecessary habitat loss. For footprint of the developments as far as possible to reduce additional damage to the natural (undisturbed) surroundings. Any old/removed building materials or rubble should be removed from site as soon as possible during maintenance activities and disposed of appropriately off-site. This will reduce the amount of additional space (natural surrounding habitat) lost or damaged for unnecessary storage of materials ❖ It is a requirement by law than an alien and invasive plant management plan be developed and implemented on the property. ❖ No insect zappers should be allowed on site, nor the general application of insecticides around infrastructure. Ecofriendly repellents are readily available (i.e. citronella oil/lotions) and should be used instead. ❖ Emergency & cleaning supplies for waste spillage or fires should be accessible at each development proposed development on the property (e.g., keep lime, spades, first aid, fire extinguishers, etc. handy). Rainwater tanks can also be a useful source of water to aid in extinguishing fires, provided the water is readily accessible. ❖ All staff and guests to the property must be properly trained and made aware of activities that are not allowed on the property. ❖ Limited additional vegetation clearing should take place on the property for activities, even if these are low impact, as the cumulative effects can be substantial (i.e. camping grounds, mountain biking/hiking trails, picnic areas). ❖ The establishment of indigenous gardens or the complete absence of gardens (i.e. fully rehabilitating any disturbed areas) within the footprints of the development will promote natural biodiversity.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Possible	Has occurred here or elsewhere and could therefore occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment

Reversibility	Partly reversible	the impact is reversible but more intense mitigation measures are required	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Low	Marginal loss, the resource is not damaged irreparably or is not scarce	Low	Marginal loss, the resource is not damaged irreparably or is not scarce
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	The development on the site could alter the natural area on the property through changes in vegetation clearing associated with the maintenance and operation of housing and road infrastructure or possibly the introduction of alien plants. For the most part habitat alterations will be restricted to the immediate surroundings of the roads (i.e. road verge clearing) and houses (i.e. clearing/trimming vegetation around houses) but any impacts associated with alien plant invasions can have landscape level impacts.			

Project Phase	**Operation**			
Impact	**Disturbance of fauna due to noise and lighting associated with residential units.**			
Description of impact	❖ The creation of a landscape of fear for fauna where areas of the property are avoided due to excessive anthropogenic activity, predominantly noise. ❖ Light pollution acts as an attractant to many insects and associated predators, putting all at risk.			
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	❖ Light pollution must be reduced and avoided wherever possible during the operational phase of the project. White LED lights have the worst negative effects for the environment, therefore dimmer lights with more natural warm light colours must be used, and no bright torches used outside the house at night unnecessarily. ❖ Permanent lighting along roads must be avoided. Given the low traffic volumes expected for this development, road-side lighting along the access roads is unnecessary and will cause avoidable impacts on biodiversity, particularly increasing the risk of roadkill. ❖ Noise should be minimised on the site and loud sirens/alarms should not be permitted unless there is an emergency. If security is a concern, then a silent alarm system should be implemented i.e. motion detection cameras.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Possible	Has occurred here or elsewhere and could therefore occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	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	Completely reversible	the impact can be reversed with the

		mitigation measures are required		implementation of minor mitigation measures.
Resource irreplaceability	Low	Marginal loss, the resource is not damaged irreparably or is not scarce	Low	Marginal loss, the resource is not damaged irreparably or is not scarce
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	The development on the site will alter the disturbance regime of the largely natural area on the property through changes in noise and artificial lighting levels. For the most part, these disturbances will be restricted to the immediate surroundings of the roads (i.e. traffic noise) and houses (i.e. people talking/shouting, music). However, this can have a significant impact on biodiversity and alter the way fauna use the landscape (i.e. the creation of a landscape of fear resulting in animals avoiding certain habitats/areas around human disturbances; insects attracted to lights decreases their survival, negatively impacts on the ecosystem services they provide and has negative knock-on consequences for their associate predators).			

Project Phase	**Operation**			
Impact	**Human-wildlife conflict**			
Description of impact	❖ Intentional harm or death of problem or pest animals due to their negative effects on people (or pets) living on the property. ❖ Unintentional harm or death of animals due to them consuming waste/food products which are bad for their health. ❖ Pets causing death/harm to indigenous wildlife. ❖ Changes in natural foraging and movement patterns of fauna across habitats within the landscape due to the presence of a favourable resource (usually food) near the development. This can have knock-on effects for the ecosystem services they provide and their associated predators.			
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	❖ No feeding of wildlife is permitted, and no disposal/discarding of any food waste (bones, scraps, fruit pips/cores) within the surrounding environment is allowed. ❖ All food waste or general waste should be kept in a secure location (i.e. a lockup cage or sealed outside room) which is not accessible to any wildlife. ❖ All waste should be stored in a double-container fashion, in such a way that it does not serve as an attractant to wildlife attempting to access the secure location (i.e. all waste products put into closed/sealed rubbish bags/containers and then placed within larger sealed containers/bins). ❖ Given that the waste area is secured against wildlife accessing it, allowances should still be made for the unlikely event that an animal does access the waste storage area, so that the waste is not easily accessed (i.e. use wildlife-proof dustbins/containers or lock the lids of larger containers). The double-container storage of waste (mentioned above) also prevents easy access of waste products to fauna, with all rubbish bags to be stored inside more solid containers. ❖ All waste, particularly food waste, should be regularly removed from the property and disposed of appropriately to prevent the scent of old products increasing the attractiveness to the disposal area and surrounding development for wildlife. ❖ Residents on the property should be limited in their ability to keep pets (i.e. how many pets and what types of pets). It is highly recommended that no cats be allowed on the property as they are known to actively hunt small animals and can have detrimental effects on the wildlife of an area. If dogs are kept on the property, they should be contained within the vicinity of the residence areas and not be allowed to wander the entire property unsupervised as they may hunt and kill fauna species or be exposed to risks from wildlife fauna			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	

Duration	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	High	Natural and/ or social functions and/ or processes are significantly 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	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	Partly reversible	the impact is reversible but more intense mitigation measures are required	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Low	Marginal loss, the resource is not damaged irreparably or is not scarce	Low	Marginal loss, the resource is not damaged irreparably or is not scarce
Significance	**Medium negative (-)**		**Negligible**	
Comment on significance	Some wild animals are attracted to human developments, usually due to the presence of a resource that has become available within the footprint of the development (i.e. food attracting baboons, leftover scraps attracting wild animals if disposed in the surrounding environment). If any animal becomes habituated or loses their fear of humans, they risk becoming pests and problem animals (sometimes even posing a risk to humans) and often require control, in severe cases resulting in their harm or death. Keeping pets on the premises can also increase the potential for human-wildlife conflict as pets can fight or kill animals (i.e. cats are known to be devastating for indigenous wildlife, especially birds, small mammals and reptiles), or be attractive to some animals as prey (i.e. leopard are known to take domestic cats and dogs occasionally). Pets also run the risk of being harmed by wildlife (i.e. snake bites) which can lead to owners wanting to control or harm the natural fauna of the area.			

Project Phase	**Operation**	
Impact	**Visual / Sense of place**	
Description of impact	Visual impacts of structures / aesthetic consequences due to incorrect or excessive lighting, especially outdoor lighting	
Mitigable	Medium	Mitigation exists and will notably reduce significance of impacts
Potential mitigation	❖ Municipal by-laws need to be adhered to. ❖ Re-vegetation and Landscaping of open space areas with suitable indigenous vegetation. ❖ Systematic removal and follow-up operations of invasive alien plants. ❖ Outside lighting should be designed and limited to minimise impacts on fauna. All outside lighting should be directed away from any sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible ❖ The Architectural Design must include the natural colour schemes and materials captured in the bulk of the VIA report. This Architectural Design has currently proposed	

	heights, disturbance areas & maximum footprint which are to be maintained, and clear-view fencing is used with an irregular alignment around the disturbance area only. ❖ The necessary measures must be implemented during the construction phase to protect the natural vegetation, to control erosion, noise, dust and visual intrusion. ❖ External lighting restrictions and guidelines (a dark sky policy) must be implemented. ❖ A landscape consultant must be appointed to prepare and implement an appropriate indigenous landscape plan and to introduce measures for the removal and/or re-location of trees and shrubs and to protect the existing indigenous vegetation during and after the construction phase. ❖ The project engineers must design the entrance driveway with appropriate alignment cut & fill, as well as storm water management measures.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Medium Term	Impact will last between 2 and 15 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Low	Natural and/or social functions and/or processes are slightly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Probable	It is most likely that the impact will occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Partly reversible	the impact is reversible but more intense mitigation measures are required	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Not relevant		Not relevant	
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	Lighting, specifically outdoor lighting is not only aesthetic, but it provides a level of security to property owners. Therefore, outdoor lighting is essential, but should be implemented in a way which does not cause negative impacts to neighbours.			

Project Phase	**Operation**	
Impact	**Stormwater Management**	
Description of impact	Accelerated erosion / pollution into sub-surface water.	
Mitigable	High	Mitigation exists and will considerably reduce the significance of impacts
Potential mitigation	❖ A sustainable stormwater design must be implemented to prevent excessive run-off that will lead to erosion of the surrounding landscape. ❖ Stormwater generated on site should be managed according to Sustainable Drainage System (SuDS) principles. This requires that as much stormwater as possible should be attenuated within the development footprint. The following measures, *inter alia*, should be considered: o Rainwater harvesting tanks must be installed; o Use of swales and detention ponds to attenuate stormwater runoff, encourage infiltration and reduce the speed, energy and volumes at which stormwater is discharged from the site;	

	○ Use of permeable paving to encourage infiltration into the soil; and ○ Use of retention ponds and artificial wetlands to capture stormwater runoff and prevent its discharge from the site.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Low Negative	
Duration	Short term	Impact will last between 1 and 2 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Very Limited	Extending only as far as the development site area
Intensity	Low	Natural and/or social functions and/or processes are slightly altered	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
Probability	Probable	It is most likely that the impact will occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Partly reversible	the impact is reversible but more intense mitigation measures are required	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Low negative (-)**		**Negligible**	
Comment on significance	A key impact related to residential developments is the generation of large volumes of stormwater associated with an increased area of impermeable surfaces (i.e. roads, roofs and other infrastructure). Stormwater is typically conveyed into watercourses, where high volumes (and associated high energy) cause degradation of watercourses, mainly due to the erosion of the bed and banks. In this respect given the steep slopes within the property, even though the drainage line is located outside of the development footprint, it is potentially vulnerable to stormwater impacts.			

Project Phase	**Operation**			
Impact	Eradication of Alien Vegetation			
Description of impact	Impacts on biodiversity / natural habitats / increased fire risk			
Mitigable	High	Mitigation exists and will considerably reduce significance of impacts		
Potential mitigation	❖ All invasive alien plants should be completely cleared from the property, and where a tree or bush cover is desired, replaced with suitable indigenous species. ❖ Rehabilitation of disturbed areas, as well as previously invaded areas, should promote establishment of site-appropriate indigenous species. ❖ Follow-up operations must be done. ❖ Minimise disturbance to the natural vegetation using low impact manual labour techniques. ❖ Reduce fire hazard on site.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Positive	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings

Intensity	Medium	Natural and/or social functions and/or processes are notably altered	Medium	Natural and/or social functions and/or processes are notably altered
Probability	Definite	There are sound scientific reasons to expect that the impact will occur	Improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Barely reversible	the impact is unlikely to be reversed even with intense mitigation measures	Completely reversible	the impact can be reversed with the implementation of minor mitigation measures.
Resource irreplaceability	Not relevant		Not relevant	
Significance	**Medium negative (-)**		**Low positive (+)**	
Comment on significance	Erf 301 also didn't have a marked invasive presence. Only one large black wattle (*Acacia mearnsii*) tree was seen on the site. Some black wattles were also seen outside of the development footprint in the valleys flanking the east and west, but it was not a big invasion and still very manageable. Ongoing monitoring and clearing of invasive plants should occur. A detailed plan is not required for Erf 301, as the invasive plants on the site are minimal, and can easily be cleared. The control of AIP on the property has a positive impact on biodiversity.			

4. SPECIALIST RECOMMENDATIONS/MANAGEMENT ACTIONS

4.1. Aquatic Compliance Statement

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

- Given the location of the property in a FEPA and SWSA, it is therefore important that stormwater generated on site should be managed according to **Sustainable Drainage System** (SuDS) principles. This requires that as much stormwater as possible should be attenuated within the development footprint. For example, the City of Cape Town guideline is that developments must provide for 24-hour extended detention of the 1-year return interval 24-hour storm event.

- The steep slopes of the property will be vulnerable to **erosion** during clearance of the site and the construction phase. It is therefore important that appropriate erosion control measures are implemented.

4.2. Plant Species and Terrestrial Biodiversity Assessment

- The proposed development will result in the **permanent loss of thicket ecotonal veget**ation, and small patches of forest south of Whites Road. The impact on the loss of vegetation and habitat is most severe and noticeable during the construction phase of the project due to the fact that structures placed on the site are permanent features. The proposed development of a primary dwelling with six pods amounts to approximately 4% of the total area of Erf 301 if the current preferred SDP is followed.

- The site assessment revealed Erf 301 is home to **SCC and protected trees** (namely milkwood and cheesewood trees). The local loss of threatened and protected plant species can have potentially far-reaching impacts on the environment.

- In addition to the large and obvious construction impacts, the **management of materials and staff** on the site is also an important impact on the site. If managed properly, many accidents and unanticipated negative losses to the expense of the environment, as well as staff can be avoided.

- The conclusion of any project is an essential, but often overlooked aspect of projects. This relates primarily to the **cleaning up of the site** once construction has concluded. All of the mitigation measures proposed are only meaningful if construction is properly concluded.

- The proposed dwelling developments will be in close proximity to **Red Listed and protected plant species** that are vulnerable to habitat loss and fragmentation. The primary dwelling and pods will alter the disturbance regime in the northern section of Erf 301. If the management of Erf 301 is done in an ecologically friendly way in the long-term, impacts of management in the area can prevent and reduce cumulative negative impacts. Without the appropriate consideration for the environment, management activities will impact the flora and habitat they grow in negatively.

- Most landowners plant gardens with plants that are not native and indigenous to the area where they live. Pseudo-natural gardening also results in the creation of Frankenflora. This means that genetic pollution

could result in cryptic hybridisation and eventual species loss. By allowing the **planting of gardens** in sensitive natural habitat (even with species advertised as being locally sourced), a loss of SCC will take place from increased edge effects habitat that is already somewhat fragmented. Some gardening / landscaping (a form of soft landscaping) may be required within the development footprint, and here "hard landscaping" must be avoided where possible.

4.3. Animal Species Assessment

- Keep artificial lighting along roads and around infrastructure to a minimum and consider lighting colour, brightness and design options with minimal impact on biodiversity.

- Access roads and parking spaces for non-heavy machinery could make use of open pavers that are planted with non-invasive grasses.

- Considerations should be given to limited fencing around the property and allowing for animal movement across the property as well as within the greater landscape. No fencing is always preferable, but this may not always be possible from a security perspective. Consideration should at least be given to limiting fencing in areas where security is not a concern.

- The proposed development of a residential dwelling, pods and associated access roads will result in the **permanent loss of habitat space** on the property. The primary development footprint where permanent infrastructure is placed and permanent loss of habitat occurs, translates to approximately 2% of the property size. Efforts to reduce this impact have already been made by means of using stilts/pylons to raise sections of the development off the ground, thereby increasing habitat availability for many SCC.

- The management of **materials and staff** on the site is also an important impact of development. If managed properly, many accidents and unanticipated negative impacts on fauna and the surrounding environment can be avoided.

- Fauna may occur on site and be killed or seriously harmed during construction related activities. Cryptic and ground-dwelling species, like the golden mole SCC, are difficult to detect and are limited in their mobility rendering them vulnerable to **earthmoving and construction activities**. Construction should happen in phases, such that construction related activities are confined to one area at a time on the property and can be monitored for faunal impacts appropriately.

- The development on the site could alter the natural area on the property through changes in vegetation clearing associated with the maintenance and operation of housing and road infrastructure or possibly the introduction of alien plants. For the most part **habitat alterations** will be restricted to the immediate surroundings of the roads (i.e. road verge clearing) and houses (i.e. clearing/trimming vegetation around houses) but any impacts associated with alien plant invasions can have landscape level impacts.

- The development on the site will alter the **disturbance regime** of the largely natural area on the property through changes in noise and artificial lighting levels. For the most part, these disturbances will be restricted to the immediate surroundings of the roads (i.e. traffic noise) and houses (i.e. people talking/shouting, music). However, this can have a significant impact on biodiversity and alter the way fauna use the landscape (i.e. the creation of a landscape of fear resulting in animals avoiding certain habitats/areas around human disturbances; insects attracted to lights decreases their survival, negatively impacts on the ecosystem services they provide and has negative knock-on

consequences for their associate predators). Light pollution must be reduced and avoided wherever possible during the operational phase of the project. Noise should be minimised on the site and loud sirens/alarms should not be permitted unless there is an emergency. If security is a concern, then a silent alarm system should be implemented i.e. motion detection cameras.

- Some wild animals are attracted to human developments, usually due to the presence of a resource that has become available within the footprint of the development (i.e. food attracting baboons, leftover scraps attracting wild animals if disposed in the surrounding environment). If any animal becomes habituated or lose their fear of humans, they risk becoming pests and problem animals (sometimes even posing a risk to humans) and often require control, in severe cases resulting in their harm or death. Keeping pets on the premises can also increase the potential for **human-wildlife conflict** as pets can fight or kill animals (i.e. cats are known to be devastating for indigenous wildlife, especially birds, small mammals and reptiles), or be attractive to some animals as prey (i.e. leopard are known to take domestic cats and dogs occasionally). Pets also run the risk of being harmed by wildlife (i.e. snake bites) which can lead to owners wanting to control or harm the natural fauna of the area. Good waste management must be implemented. Residents on the property should be limited in their ability to keep pets (i.e. how many pets and what types of pets).

5. LEGISLATIVE REQUIREMENTS

5.1 Signing of the EMPr

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

5.2. Legislation

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

5.3. Project Responsibilities

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

The project Applicant will be responsible for the following:

- Adhering to the approved EMPr.
- Ensure that all employed Contractors and Engineers are aware of and understand the conditions of the EMPr.
- Has the right to remove any person or appointed contractors or personnel from site if the contravene with the EMPr.
- Ensure that all contracts with contractors/engineers include the authorised EMPr.
- Appoint an Environmental Control Officer.

- The project Applicant (holder of the Environmental Authorisation of the EMPr) must notify the competent authority of the commencement of maintenance management activities 14 days prior to such commencement taking place.

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

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

The Engineers and Contractors are responsible for the construction of the residential estate. The responsibilities indicated here are also relevant to Sub-Contractors. The responsibilities of the Engineers and Contractors include but are not limited to the following:

- Adhere with the conditions and recommendations of the EMPr or any other legally binding documentation.
- Prevent actions that may cause harm to the environment.
- Be responsible for any remedial activities in response to an environmental incident within their scope of influence.
- Ensure compliance of all site personnel and / or visitors to the EMPR and any other authorisations.

All fines for noncompliance of EMPr to be predetermined by Engineer, ECO, and Project Applicant, this needs to be included in method statement.

6. REPORTING PROCEDURES

6.1. Documentation

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

An Environmental File which includes:

- Copy of the EMPr;
- Copy of the EA;
- Copy of all other licences/permits;
- Environmental Method Statements;
- Non-conformance Reports;
- Environmental register, which shall include:

- Communications Register – including records of complaints, minutes and attendance registers of all environmental meetings;
- Monitoring Results – including environmental monitoring reports, register of audits, non-conformance reports; and
- Incident book – including copies of notification of Emergencies and Incidents, this must be accompanied by a photographic record.

- Waste Documentation such as, but not necessarily limited to: Waste Manifest Documents;
- Material Safety Data Sheets (MSDSs) for any hazardous substances; and
- Written Corrective Action Instructions.

6.2. Environmental Register

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

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

6.3. Non-Conformance Report

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

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

- Details of non-conformance;
- Any plant or equipment involved;
- Any chemicals or hazardous substances involved;
- Work procedures not followed;
- Any other physical aspects;
- Nature of the risk;
- Actions agreed to by all parties following consultation to adequately address the non-conformance in terms of specific control measures and should take the hierarchy of controls into account;
- Agreed timeframe by which the actions documented in the NCR must be carried out; and
- ECO should verify that the agreed actions have taken place by the agreed completion date, when completed satisfactorily; the ECO and Applicant should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

6.4. Emergency Response

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

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

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

7. COMPLIANCE WITH THE EMPr

7.1 Monitoring and Compliance

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

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

7.2 Auditing Process

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

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

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

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

7.3 Non-Compliance

Definition

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

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

Types of non-compliances issued

Two types of non-compliances may be issued:

A. Stop Works Non-Compliance

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

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

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

B. General Non-Compliance

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

7.4 Issuing a Non-Compliance

Non-compliance may be issued to:

- The Applicant
- Any representative of the Applicant

7.5 Process of Issuing Non-Compliance

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

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

7.6 Failure to complete corrective actions

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

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

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

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

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

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

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

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

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

7.7 Unlawful Activity/ies

NEMA and its Regulations entitle environmental authorities to administer a fine not exceeding R 5 million or 10 years imprisonment and/or a fine and imprisonment for a person guilty of an unlawful activity. The Act makes

allowance for the rectification of unlawful activity and may charge up to R1 million administration fees over and above the remediation costs.

NEMA makes provision for damages to be awarded by the courts where loss or damage has occurred as a result of a contravention of other environmental statutes. Importantly, NEMA provides for the liability of conviction of employees, managers, agents and directors for any offences resulting from the failure to take all the reasonable steps that were necessary under the circumstances to prevent the commission of an offence.

8. AMENDMENTS TO THE EMPr

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

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

9. ENFORCING THE EMPr

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

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

10. ENVIRONMENTAL MANAGEMENT PROGRAMME

10.1 CONSTRUCTION PHASE

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Authorisations, Licences and Permits	**Environmental Authorisations**		
	All necessary authorisations, permits and licences must be obtained by the Applicant prior to construction commencement. This includes permits for the removal of protected plants.	Applicant	Once-off
Appointment of Environmental Control Officer	**Appointment of Environmental Control Officer**		
	An Independent ECO must be appointed at the Applicant's cost to monitor the implementation of the EMPr.	Applicant & ECO	Once-off
	Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence which includes site preparation and demolition.		
	The nomination of the ECO must be given to DEA&DP, in writing fourteen (14) days prior to construction commencement. The notification must include contact details for the ECO and details pertaining to the ECO's relevant experience.		
	Should the ECO for the development change at any time, this must be communicated, in writing, to DEA&DP, within fourteen (14) days of appointing the new ECO. The notification must include contact details for the ECO, details pertaining to the ECO's relevant experience and reasons for the change in ECO.		As required
Preparation of Method Statements	**Method Statements**		
	Method Statements must be submitted by the Applicant/ Contractor to the ECO and must be adhered to by the Applicant/ Contractor. These relate to water and stormwater management requirements, solid waste management requirements, the storage of hazardous materials (if applicable), and standard emergency procedures.	Applicant/ Contractor	Prior to commencement of construction & during construction
	The ECO will monitor the implementation of the statements.	ECO	On-going
Notifying Relevant I&APs	**Notice of Environmental Authorisation (EA)**		
	A written notice must be given to all relevant I&APs notifying them of the EA. The notice must include a date on which the EA was received and the 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 on General and Environmental Conduct	**Environmental Awareness and Training**		
	Construction staff must be adequately educated by the ECO as to the provisions included in the EMPr, and in terms of general environmentally-friendly practice.	ECO	Once-off and as required

Activity	Management / Mitigation	Responsibility	Frequency / Timing
A general regard for the social and ecological wellbeing of the site and adjacent areas is expected of the site staff.	The ECO must ensure that all staff, and if applicable, Contractors / Sub-contractors / Suppliers / Service Providers are trained on the environmental, occupational safety and/or legal responsibilities expected from them. The training must take into account language and literacy requirements as well as measures to determine the effectiveness of the training. Proof of training must be attached to the ECO's audit reports.		
	Consideration of the implications of the EA and EMPr must form part of the formal site induction for all contractors, sub-contractors and casual labourers, preferably in their native language. The induction training will, as a minimum, include the following: ➢ The importance of conformance with all environmental policies; ➢ The environmental impacts, actual or potential, of their work activities; ➢ The environmental benefits of improved personal performance; ➢ Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Consultant's environmental management systems, including emergency preparedness and response requirements; and ➢ The mitigation measures required to be implemented when carrying out their work activities.		
	All contractors, sub-contractors and casual labourers must acknowledge their understanding of the EMPr and environmental responsibilities by signing an induction attendance record.	ECO	Once-off
	All new staff must be briefed about the layout of the construction site and must be made aware of the no-go areas and fact that the surrounding environment is sensitive and must not be disturbed.		
	Staff, operating equipment, shall be adequately trained and sensitised to any potential hazards associated with their tasks.	Applicant	During staff induction, followed by on-going monitoring
	Translators are to be used where necessary during staff training.	ECO	
	The ECO must be on hand to explain more difficult / technical issues and to answer questions which may be raised.	ECO	
	Staff must be made aware that they are not to make excessive noise e.g. shouting, hooting.	ECO & Applicant	
	All employees must undergo the necessary safety training and wear the necessary protective clothing at all times.		
	No alcohol / drugs to be present on site; no vehicles or machinery are to be operated whilst under the influence of alcohol or drugs.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	No firearms allowed on site or in vehicles transporting staff to / from the site (unless used by security personnel).		
	No unsocial behaviour will be permitted.		
	Bringing pets onto site is forbidden.		
	Staff must make use of facilities provided for them, as opposed to ad-hoc alternatives (e.g. fires for cooking, the use of surrounding bush as a toilet facility is strictly forbidden). No fires to be permitted on site.		
	Trespassing on private / commercial properties adjoining the site is forbidden.		
	No worker may be forced to do work that is potentially dangerous or for what he / she is not so trained		
	The staff conduct rules are described in a separate table of rules in the EMPr. This is aimed at providing staff with the basic information regarding worker conduct on site.		
Site Management	**Access**		
	No vehicles may drive onto the adjacent properties and any other no-go areas.	Applicant / Contractor	On-going
	No vehicles are to park or operate within "no-go" areas.		
	For once off deliveries, clear indications on the nearby roads should be put up to guide truck drivers to the construction site, thus avoiding divers getting lost and causing unnecessary disturbance.		
	Demarcation		
	The disturbance footprint of proposed roads and houses should be clearly defined and demarcated to prevent unnecessary additional damage to the surrounding environment	Contractor	Immediately
	Construction netting or fencing must be used to clearly indicate construction areas. Access roads must be clearly marked so there is no confusion as to where the tracks are or how wide the road is.		
	Clear signs for "no-go" areas for vehicles and personnel should be placed strategically on the site and along access roads. No-go areas are anywhere outside of the direct area of influence of the construction phase.		
	All vehicles, construction or inspection, must only access the sites via a planned, single track access road with no additional roads, tracks to be made in the environment. Roads are to be clearly marked to prevent additional tracks or unnecessarily widening the access road. A turning area for construction vehicles should be demarcated within the existing footprint of the house.		
	Heavy Machinery		
	Construction activities must be confined to clearly demarcated areas so as to prevent unnecessary disturbance the surrounding environment.	Contractor	On-going
	Construction vehicles should be checked on a daily basis at the start of the day for leaks and other faults.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	❖ Sandbags or sawdust should be available on the site to ensure that any accidental oil or toxic material spills can be contained and stopped quickly. ❖ Any contaminated soil on the site must be removed by a registered hazardous waste service provider (Spill Tech, Interwaste, EnviroServ etc.). ❖ Vehicles with leaks and other problems must not be allowed to operate on the site until they have been repaired.		
	Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills. These areas must not be located within any natural drainage areas or preferential flow paths and must be located outside of buffer zones.		
	The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly.		
	Site Management		
	To ensure that the ecological integrity of the surrounding environment is maintained and preserved, the Applicant and contractor must ensure that the construction footprint is limited to the construction area. The extent of the construction must be marked out to satisfaction of the engineer and ECO.	Applicant/ Contractor	On-going
	The Contractor must restrict all activities, materials, equipment, and personnel within the area specified or restricted activities to areas that are necessary to undertake the work.		
	The Contractor must ensure that materials are appropriately secured to ensure safe passage between destinations, loads including, but not limited to, sandstone chips, fine vegetation or refuse should have appropriate cover to prevent pollution of adjacent properties.		
	The Applicant will be held responsible for any clean-up in the dune environment resulting from failure by the contractors or suppliers to properly secure material.		
	Adequate drainage and erosion protection must be provided around the site and where necessary.		
	Access points and other cleared surfaces must be dampened whenever necessary and especially in dry and windy conditions to avoid excessive dust. Alternatively, a binding product such as Dustex (supplied by Patch Industrial Supplies) could be used.		
	Dust suppression mechanisms e.g., materials and regular site maintenance (e.g., cleaning surfaces and "rounding off" a workday) is essential to reduce dust, and general pollution		
	Weather reports must be checked daily to avoid heavy machinery and activities on the site during rainy weather. Following a rainfall event (excluding short periods of gentle, light rain), all construction on the site must cease temporarily.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Sewage and Sanitation	**Ablutions**		
	Toilets at the recommended Health and Safety standards must be provided. Portable toilets must be emptied regularly to prevent overflow. Once no longer required, they must be pumped dry to prevent leakage into the surrounding environment and removed from site.	Contractor	Immediately & on-going
	Toilets facilities must comply with local authority regulations, shall be maintained in a clean and hygienic condition. Their use shall be strictly enforced.		
	Portable toilets will need to be used in remote areas and must be placed on a level platform before construction starts within the footprint of the access roads or housing sites.		
	The Contractor must ensure that toilets are cleaned weekly or more regularly, if found to be necessary.		Weekly
	Unauthorised spilling of waste from the septic tank into the environment and burying of waste are strictly prohibited.		On-going
	Ablution facilities must not cause any pollution to any water resource, and it must not be a health hazard to the general public.		
Social Impacts	**Communication Between Contractor, Site Staff and I&APs**		
	Should the staff be approached by members of the public or other stakeholders, they must assist them in locating the Contractor, or provide a number on which they may contact the Applicant/ Contractor.	Applicant / Contractor	On-going
	The conduct of the staff when dealing with the public or stakeholders shall be in a manner that is polite and courteous at all times.		
	Drivers of heavy-duty vehicles must exercise care when travelling to and from the site – and adhere to all legally enforceable requirements.		
	Noise pollution		
	Construction activities must only take place during normal working times between 07:00-17:00 on weekdays.	Contractor	On-going
	Machinery may be fitted with silences to dampen noise.		
	Staff must be reminded that they are working within a residential area and noise levels must be kept low.		
	Visual impact		
	The necessary measures be implemented during the construction phase to protect the natural vegetation, to control the noise, dust and visual intrusion.	Applicant / Contractor	On-going
Equipment lay-down and storage	**Storage Areas**		
	Choice of location for equipment lay-down and storage areas must take into account prevailing winds, distances to "No Go" areas, general on-site topography and water erosion potential of the soil. Impervious surfaces, bunded areas or drip trays must be provided where necessary.	Contractor	On-going
	Material stockpiles must be protected against rain and flooding.		
	Equipment lay-down and storage areas must be designated, demarcated and signed.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	All stockpiles of fine textured building materials and soils must be covered by a geotextile or plastic covering, which must also be bunded (e.g. with sandbags) when not in use. This will prevent material being lost to the environment and fauna from accessing stockpiles and possibly subjecting them to harm during construction.		
Conservation of the Natural Environment	**Loss of patches of habitat**		
	Exclude development from areas of indigenous natural vegetation, in this case, the forest at the bottom (southern side) of the site.	Applicant / Contractor	Immediately
	Access to areas of VERY HIGH/HIGH sensitivity during construction must not be permitted by any construction personnel. These areas must be fenced off and no access allowed.		On-going
	Prior to construction, the disturbance footprint of proposed developments should be clearly defined and demarcated to prevent unnecessary damage to the surrounding environment.		Immediately
	The rescued plants must be planted back with the aid of the ECO or horticultural specialists within the 2m disturbance footprint around the permanent disturbance footprints. This will promote the regeneration of natural vegetation around the developments and reduce the possibility of negative edge effects on the site.		On-going and after construction
	Additional plants that are observed during construction within a development footprint must be rescued and added to the rescued plants in the indigenous nursery.		
	The rescued plants must be kept in a nursery that should preferably be set up on Erf 301. Alternatively, arrangements for a suitable nursery site should be made to keep and care for removed plants during the construction phase of the project.		
	Materials used during construction must be sourced and transported responsibly to minimise the risk of further introductions of new invasive plants and contamination of the site.		
	Driveways and parking spaces for non-heavy machinery could make use of open pavers that are planted with non-invasive grasses, like *Cynodon dactylon* (the Cape Royal variety), or as an alternative *Stenotaphrum secundatum* (Buffalo grass).		
	Loss of patches of species of conservation concern (SCC)		
	Prior to the commencement of construction and earth movement on the site, a plant search and rescue must be conducted of all fynbos taxa on the site (preferably with a botanist or suitably informed ECO on the site to supervise the search and rescue and provide guidance on best practice).	Applicant / Contractor	On-going
	Staff must check their clothes when they enter and leave to ensure no invasive plants have been introduced or poached from the natural surrounding environment. Geophytes are at a large risk of poaching, and this is an important reason why SANBI has a list of sensitive species for plants (i.e., their identities are unknown) in South Africa. However, some LC and		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Near Threatened species, especially geophytes (several on Erf 301), can also be targeted by plant poachers despite not being listed as sensitive species.		
	Protected tree species		
	Protected trees as well as indigenous forest patches to be cordoned off as no-go areas.	Applicant / Contractor	Immediately
	If any trees need to be removed or pruned then a permit is required, according to the National Forests Act.	Applicant	As required
	Fauna		
	Areas which are identified by the Environmental Control Officer (ECO) as being ecologically sensitive on or adjacent to the site are to be suitably demarcated to prevent damage by construction practices. These areas are to be recognised as "no-go" areas.	Applicant / Contractor	Immediately
	In situations fauna species are located at the site and need to be removed, the relevant specialists must be contacted to advise on how the species can be relocated.		Every occurrence
	Construction should take place during daylight hours so that the site can be adequately monitored for fauna during work hours, and also to prevent the use of artificial lighting at night which attracts many animal species (predominantly insects and associated predators) and subjects them to the risks of construction.		On-going
	Before construction commences for any new earthworks at the start of new phase, an ECO should do a walk-through of the demarcated area and access roads to look fauna with limited mobility. These animals should be removed from the demarcated area to an adjacent location, and where appropriate a Fauna Specialist contacted for assistance or guidance. Construction/Earthworks for this new phase can commence thereafter.	ECO	Immediately & before each phase
	At any point during the day (during construction), if an animal with limited mobility is observed on site, this should be reported to the ECO and construction temporarily halted. Construction can commence once the ECO is satisfied that all such fauna are removed from the construction area.	Contractor / ECO	Every occurrence
	The areas to be disturbed must be specifically demarcated to prevent the movement of staff or any individual into the surrounding environments, barrier tape must be put up to enforce this.	Applicant / Contractor	Immediately
	Noise must be kept to an absolute minimum during the evenings and at night to minimise all possible disturbances to nocturnal species which are more dependent on auditory signals for life processes.		On-going
	No trapping, killing, or poisoning of any wildlife is to be allowed and Signs must be put up to enforce this. Monitoring must take place in this regard.		
	Outside lighting should be designed and limited to minimise impacts on fauna. All outside lighting should be directed away from any sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Any holes/deep excavations must be dug in a progressive manner and shouldn't be left open overnight. Should any holes remain open overnight they must be properly covered temporarily to ensure that no small fauna species fall in. Holes must be subsequently inspected for fauna prior to backfilling.		
	Disturbance to birds, animals and reptiles and their habitats must be minimized wherever possible.		
	Speed limits should be imposed and monitored during construction phase, as collisions with vehicles (roadkill) pose a significant threat to many fauna species. Recommended speeds include 40 km/hour on main access roads with good visibility into the road verges, and 20 km/hour on smaller access roads with narrow or overgrown verges where visibility is reduced. Signs should be put up along the roads to remind people of speed limits, as well as warnings to look out for small animals on the roads.		
	Preservation of natural habitats		
	Wherever there are sections of undisturbed natural habitat within the development area, they should not be impacted by the building activities and should be conserved as small islands of natural resources for the small wildlife of the area. These animals include skinks, rodents, birds and invertebrates. Any area of natural habitat that is not required for the approved development should be conserved for small wildlife.	ECO & Contractor	Immediate and On-going
	Landscape Connectivity		
	Where fencing is required, wildlife gaps in the perimeter fence must be installed at appropriate intervals and be of a suitable dimension to allow for the movement of small animals.	ECO & Contractor	Immediate
	Drainage Line		
	Establish and maintain a 36-meter buffer from the non-perennial drainage line to the west of the property.	ECO & Contractor	Immediate and On-going
Land Degradation	**Erosion Management**		
	Where vegetation will be cleared to make way for construction, filled sandbags, silt socks or a silt fence must be used to reduce the intensity of water runoff and flow over the site and thereby reduce erosion potential. This should be placed around adaptive management to ensure the integrity of the system for reducing erosion. This is pertinent given the slope of the property	Contractor	Immediate and On-going
	Ensure that construction activities do not cause any preferential flow paths and concentrated surface runoff during rainfall events.		
	Clearly demarcate the construction area and ensure that heavy machinery does not compact soil or disturb vegetation outside of these demarcated areas.		
	Implement phased construction to limit the extent of exposed soil at any given time. This approach reduces the area vulnerable to erosion and allows for stabilization measures to be applied progressively.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Reduce transport of sediment through use of structures such as silt fences and biodegradable coir logs placed along a contour below the development footprint.		On-going
	Ensure that vegetation clearing is conducted in parallel with the construction progress to minimise erosion and runoff.		
	Silt fences should only be implemented where necessary on the site if during the construction phase erosion becomes a noteworthy problem.		
	Straw bales and sandbags are temporary barriers that can be used on the site from the start of the construction phase to avoid and control sediment movement in areas with higher potential for runoff.		
	Revegetate exposed areas once construction has been completed.		On completion of construction phase
	Temporary vegetation cover in areas of permanent disturbance		
	A hydroseed mixture of native grasses and groundcovers can be used on exposed soil surfaces to provide immediate soil stabilization. Species such as *Eragrostis capensis* and *Stenotaphrun secondatum* can be used for rapid coverage. *Vicia sativa* (common vetch) is a leguminous plant that can be used in areas where construction activities have temporarily ceased in order to protect the soil.	Contractor	On completion of construction phase
	Erosion control blankets and mats that are biodegradable (e.g., coir made from coconut fibres) can be used with native seed mixes to enhance the stabilisation of soil. These are an option in the disturbance envelope of 2m around permanent disturbance footprints on the site.		
	Stormwater Management		
	Ensure that stormwater and runoff generated by hardened surfaces is discharged in retention areas (i.e. swales or retention ponds), to avoid concentrated runoff and associated erosion.	Applicant / Engineer	On-going
	Disturbance and removal of topsoil		
	The topsoil will be vital for the success of rehabilitation of vegetation following construction process and must therefore be treated with care.	Applicant / Contractor	On-going
	Topsoil from vegetation on the site (excluding topsoil under invasive plants) in new excavation areas must be stripped to a depth of ca. 30cm and kept in designated piles. Topsoil piles must be suitably covered with to prevent any additional invasive species seeds from falling in and establishing in the soil.		
	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.		
	Organic matter, such as roots and humus/topsoil should be removed from the footprint of structures and stockpiled separately for landscaping purposes. The stockpiling of topsoil for use in rehabilitation is required.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	The topsoil piles must be clearly labelled so that it does not mix with subsoils excavated or any other construction material for the site.		
	Soil disturbance during the removal of alien invasive plants must be minimised as much as possible.		
	The site must be stabilised where necessary using available materials, where possible. It is recommended that exposed soils are covered with wood chips, and tree branches used to create berms. Any cut alien vegetation on site can be utilised for this purpose if it is without seed.		
	If the SDP of a proposed development does not have enough space for the storage and protection of topsoil within the disturbance envelope, then the Contractor must identify an alternative temporary stockpile area that is already transformed and where it can easily be retrieved for post-construction rehabilitation.	Contractor	Immediately
Waste Management	**On-Site Waste Management**		
	Waste management must be a priority and all waste must be collected and stored effectively and responsibly. Refuse bins will be responsibly emptied and secured. Temporary storage of domestic waste shall be in covered and secured waste skips. Dangerous waste such as metal wires and glass must be safely stored before being moved off site as soon as possible. Under no circumstances may domestic waste be burned on site or buried on open pits.	Applicant / Contractor	On-going and monitored weekly
	All waste is to be collected in designated bins with lids that can be secured or stored in a secure area when construction is not taking place (evenings, weekends, holidays, etc.) to prevent interference by animals (i.e. baboons). All waste is to be transported to a registered waste disposal facility off site.		
	Separation and recycling of different waste materials should be supported.		
	Littering on the site is forbidden and the site shall be cleared of litter at the end of each working day.		Daily
	Litter, spills, fuels, chemical and human waste in and around the Project Area must be minimised and controlled.		
	All food waste (leftovers, bones, pips, apple cores) to be disposed of in designated bins and NOT to be disposed of in the surrounding environment within or outside the designated construction areas. Food sources serve as a major attractant for fauna and will expose them to unnecessary harm in the vicinity of the construction site. All food waste should be removed from site on a daily basis and disposed of appropriately.		
	Waste must be removed from the site on a weekly basis.		Weekly
	Any small items or building materials which can be carried away by medium-large animals (i.e. baboons) should be safely stored in containers or locked away in a designated area to prevent interference from animals, causing possible harm to them and preventing them from removing such items from site.		On-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Where a registered disposal facility is not available close to the Project Area, the Contractor shall provide a method statement with regards to waste management		
Handling of Hazardous Materials (if necessary)	**Hazardous Materials**		
	Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs must additionally include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes.	Contractor	On-going
	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.		
	Cement Batching		
	Cement and other potential environmental pollutants must be stored within an impermeable bunded, roofed and sign posted area.	Contractor	On-going
	Mixing areas be clearly defined on the site and must be surrounded by an impermeable material (i.e. create a temporary coffer dam with sandbags and thick plastic sheeting) to prevent any runoff and absorption into the surrounding soils.		
	Concrete, cement, plastering, and painting must be conducted with care.		
	The designated mixing areas should be limited to areas that will become future hard surfaces on the site, or that are already transformed and likely to remain transformed.		
	No concrete and cement mixing is allowed in areas outside the site development plans (SDPs).		
	Cleaning of cement, plastering & paint equipment must be done into a designated, bunded & lined slurry sump or container to avoid contaminating the environment.		
Cultural Environment	**Archaeology and Artefacts**		
	No structures older than sixty years or parts thereof are allowed to be demolished altered or extended without a permit from Heritage Western Cape.	Applicant / Contractor	Immediate and On-going
	If any archaeological sites/materials are exposed, mitigation regarding the finds must be conducted with the Heritage Western Cape regarding the destiny of the material. Examples of heritage resources are as follow: • Human remains • Coins/Gold/Silver • Fossils • Fossils shell middens/ marine shell heaps • Pottery/ceramics		
	If Heritage Western Cape agrees to the removal of the material, an archaeologist must apply for a permit to scientifically excavate/collect the material.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	All costs must be financed by the applicant. This may include: All monitoring and mitigation expenses regarding the excavations/collecting of material, travel, accommodation and subsistence, analysis of the material, radiocarbon date(s) of the site(s) and a one-off curation/storage fee payable to the Western Cape Repository for Archaeological material.		
Safety and Security	**Safety and Security On-Site**		
	Material stockpiles or stacks must be stable and well secured to avoid collapse and possible injury to site workers / local residents.	Contractor	On-going
	Firefighting equipment must be present on site at all times. All equipment on site must be used in accordance with the Occupational Health and Safety Act regulations of South Africa (OHSA), Act No. 85 of 1993); staff must be trained in firefighting procedures.		
	No unauthorised person may be permitted to enter the site without prior permission of the Applicant.		
	Fire Management		
	Firefighting equipment should be present on site at all times as per Occupational Health and Safety Act.	Applicant / Contractor	On-going
	All project staff must be trained in fire hazard control and firefighting techniques and know the proper procedure in case of a fire occurring on site.		
	All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances.		
	No open fires will be allowed on site.		
	Smoking must not be permitted in areas considered to be a fire hazard.		
	A Fire Management Plan needs to be implemented to restrict the impact any potential fires would have on the surrounding areas.	Applicant	Immediate

10.2. OPERATIONAL PHASE

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Preservation of natural habitats	**Vegetation**		
	Encroachment of invasive alien plants in this regard will need to be monitored on a regular basis to prevent re-infestation. This would need to be undertaken by the ECO or a designated specialist.	Applicant & ECO	Project completion and Maintenance
	Vegetation clearing along road verges should be kept to a minimum, and avoided in areas where it poses no risk to vehicles.	Applicant	Maintenance

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	During routine maintenance of infrastructure on the property, adequate management of materials should be implemented to reduce any unnecessary habitat loss. For footprint of the developments as far as possible to reduce additional damage to the natural (undisturbed) surroundings. Any old/removed building materials or rubble should be removed from site as soon as possible during maintenance activities and disposed of appropriately off-site. This will reduce the amount of additional space (natural surrounding habitat) lost or damaged for unnecessary storage of materials		
	All staff and guests to the property must be properly trained and made aware of activities that are not allowed on the property.		
	Landscaping		
	Future garden development on site should use only site-appropriate indigenous species. It is recommended that species that currently occur on site be used for future gardens.	Applicant	Project completion and Maintenance
	Re-vegetation and Landscaping of open space areas with suitable indigenous vegetation.		
	Systematic removal and follow-up operations of invasive alien plants.		
	No plants may be brought to the site from elsewhere, unless planted in pots or artificial beds. All species must be from the plant search and rescue operation, or must be species that occur there naturally. ❖ No planting of trees or other plants outside of the development disturbance footprint. ❖ Locally indigenous species may be sourced from elsewhere for the rehabilitation of the 2m disturbance strip.		
	Light pollution must be considered during the operational phase of the project. Full-spectrum bulbs mimic natural sunlight, providing a balanced spectrum of light suitable for plant growth. They are suitable for areas with low natural light.		
	Additional gardening should be avoided and may only take place in pots and potted beds on the site.		
	No planting of kikuyu grass will be allowed. Lawns may not be planted.		
	Landowners are responsible to maintain their gardens, so that plants do not overgrow. No garden waste may be dumped in any remaining natural area and must be disposed of in a responsible manner.		
	Fertilisers and pesticides must be avoided in gardens, and when used it must be done with caution and may not become routine practice.		
	If gardens need to be considered within the 2m disturbance areas around permanent disturbance footprints, they can be designed to be water wise (avoid erosion) and friendly to wildlife and the greater natural habitat. Fynbos Life in Cape Town is an inspirational indigenous landscaping project - all tips from Fynbos Life form part of the mitigation on the impact of landscaping (Annexure 3).		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Conservation of Fauna	**Landscape Connectivity**		
	Wherever fences are needed in the development area and on its boundary, it will be necessary to ensure that wildlife can move through the fences to enable their movement across the landscape. Consultation with CapeNature will be required to determine the best methods to use and spacing of permeability. It will also need to be determined where wildlife crosses the fence line. Permeability of the fence will be done according to CapeNature's requirements.	Applicant & ECO	Project completion
	Fencing around the property must be visible to wildlife, including birds, by fitting reflective or colourful weather-resistant flags (e.g., aluminum, or plastic strips) to the wire.	Applicant	
	Disturbance to wildlife		
	Light pollution must be reduced and avoided wherever possible during the operational phase of the project. White LED lights have the worst negative effects for the environment, therefore dimmer lights with more natural warm light colours must be used, and no bright torches used outside the house at night unnecessarily.	Applicant	On-going
	Permanent lighting along roads must be avoided. Given the low traffic volumes expected for this development, road-side lighting along the access roads is unnecessary and will cause avoidable impacts on biodiversity, particularly increasing the risk of roadkill.		
	Noise should be minimised on the site and loud sirens/alarms should not be permitted unless there is an emergency. If security is a concern, then a silent alarm system should be implemented i.e. motion detection cameras.		
	No insect zappers should be allowed on site, nor the general application of insecticides around infrastructure. Ecofriendly repellents are readily available (i.e. citronella oil/lotions) and should be used instead.		
	Human-wildlife conflict		
	No feeding of wildlife is permitted, and no disposal/discarding of any food waste (bones, scraps, fruit pips/cores) within the surrounding environment is allowed.	Applicant	On-going
	All food waste or general waste should be kept in a secure location (i.e. a lockup cage or sealed outside room) which is not accessible to any wildlife.		
	All waste should be stored in a double-container fashion, in such a way that it does not serve as an attractant to wildlife attempting to access the secure location (i.e. all waste products put into closed/sealed rubbish bags/containers and then placed within larger sealed containers/bins).		
	Given that the waste area is secured against wildlife accessing it, allowances should still be made for the unlikely event that an animal does access the waste storage area, so that the waste is not easily accessed (i.e. use wildlife-proof dustbins/containers or lock the lids of larger containers). The double-container storage of waste (mentioned above) also prevents easy access of waste products to fauna, with all rubbish bags to be stored inside more solid containers.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	All waste, particularly food waste, should be regularly removed from the property and disposed of appropriately to prevent the scent of old products increasing the attractiveness to the disposal area and surrounding development for wildlife.		
Alien Invasive Plants	**Alien plant eradication**		
	All invasive alien plants should be completely cleared from the property, and where a tree or bush cover is desired, replaced with suitable indigenous species.	Applicant / Contractor	Immediate and On-going
	Rehabilitation of disturbed areas, as well as previously invaded areas, should promote establishment of site-appropriate indigenous species.		
	Ongoing monitoring and clearing of invasive plants should occur. A detailed plan is not required for Erf 301, as the invasive plants on the site are minimal, and can easily be cleared. This is a requirement by law. Pine trees can be cut down as close to the ground as possible without application of herbicide.		
	Follow-up operations must be done.		
	Minimise disturbance to the natural vegetation using low impact manual labour techniques.		
	Reduce fire hazard on site.		
Removal and Repair of Materials and Infrastructure	**Materials and Infrastructure**		
	All material used for the construction must be removed from site after construction.	Contractor	Project completion
	The Contractor must repair any damage that the construction works may have caused to adjacent areas.		
	Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the ECO.		
	All areas where temporary services were installed are to be rehabilitated to the satisfaction of the ECO.		
Stormwater Management	**Increased stormwater runoff**		
	A sustainable stormwater design must be implemented to prevent excessive run-off that will lead to erosion of the surrounding landscape.	Contractor	During Operational phase
	Stormwater generated on site should be managed according to Sustainable Drainage System (SuDS) principles. This requires that as much stormwater as possible should be attenuated within the development footprint. The following measures, *inter alia*, should be considered: o Rainwater harvesting tanks must be installed; o Use of swales and detention ponds to attenuate stormwater runoff, encourage infiltration and reduce the speed, energy and volumes at which stormwater is discharged from the site; o Use of permeable paving to encourage infiltration into the soil; and	Contractor / Engineer	

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	o Use of retention ponds and artificial wetlands to capture stormwater runoff and prevent its discharge from the site.		
	Impervious surfaces and foundations		
	Stormwater management must encourage infiltration of water into the soil profile and other onsite attenuation through the use of grass pavers etc.	Contractor	Project completion
Waste	**Removal of Hazardous and Non-Hazardous Waste**		
	All hazardous materials and containers must be collected by a reputable hazardous waste collection company and disposed of appropriately.	Applicant	During Operational phase
	Collection and disposal of non-hazardous waste to a registered landfill site must occur at least once a week.		
Fire management	No burning of vegetation to be permitted, even as part of alien plant management.	Applicant	On-going
	Ensure that no refuse waste is buried or burnt on the site or surrounds.		
	Smoking must not be permitted in areas considered to be a fire hazard.		
	Undeveloped areas must be managed so that they do not pose a fire risk.		
	The Southern Cape Fire Protection Association should be consulted regarding firebreaks, and fire management for the property in case of wildfires. It is recommended that the landowner become a member of the SCFPA.		Immediate

10.3. REHABILITATION AND MAINTENANCE

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Vegetation Rehabilitation	**Vegetation**		
	Once construction is complete, rehabilitate previously disturbed areas to a state where natural successional processes can operate. Based on current processes occurring on site, this is very likely to lead to further thicket development within these areas.	Applicant	
	All disturbed areas, or areas which have been disturbed for the purpose of the development, are to be re-vegetated. This will aid in preventing erosion within the site. A 100% indigenous planting plan must be adhered to in terms of all planting carried out on the site. Consultation must be made with a Botanical Specialist for a site-specific vegetation list.	Applicant & ECO	Project completion
	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.		On-going site maintenance
	All rehabilitated areas must be maintained through weekly inspections until the 80% success rate has been achieved (if applicable).		
	Encroachment of invasive alien plants in this regard will need to be monitored on a regular basis to prevent re-infestation.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Stormwater Management	**Stormwater**		
	Any negative stormwater effects, related to the operational phase, must be remediated.	Applicant	On-going site maintenance
	On-going monitoring and assessing of stormwater drainage must occur on site during the operational phase of the proposed project.		
Land Rehabilitation	**Land**		
	Rehabilitation must be executed in such a manner that surface runoff will not cause erosion of disturbed areas during and after rehabilitation.	Applicant / Contractor	Project completion
	Any rubble is to be removed from site to an appropriate disposal site. Burying of rubble on site is prohibited.		
	The site is to be cleared of all litter.		
	The surface of all disturbed areas must be left rough to facilitate binding of topsoil and vegetation.		
	Areas that are disturbed through building activities (such as the excavations for sewerage pipelines) should be suitably rehabilitated without delay. Failure to do so will have a knock-on effect on biodiversity in the form of an increase in wind erosion, soil exposure and a loss of the soil micro-organisms that are essential for plant growth. Use complete cover of locally chipped woody material (for example Acacia cyclops stems and branches but not the seed pods).		

13. STAFF CONDUCT CONTROL AND INFORMATION SHEET

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

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14. RESPONSIBILITIES

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

FUNCTION	RESPONSIBILITY
Applicant	• The Applicant is ultimately responsible for the ensuring compliance with all the requirements associated with the construction, operation, rehabilitation and decommissioning phases of the project. • The Applicant is responsible to ensure that all necessary communication and submission of required documentation concerning this project is submitted to the relevant authorities.
Contractor	• The Contractor is required to adhere to the EMPr and is responsible to ensure that all staff appointed also adhere the EMPr. • Ensures that all staff are made aware of the need to conduct activities in an environmentally responsible manner. • (Contractor) On instruction by the ECO, ensures that storm/surface water controls are established. • Ensures prompt remediation of any sewage spills. • Stockpiles are protected from aeolian effects, stormwater effects, or being driven over by workers. • Ensures that a "clean-site" policy is applicable at all times. • Ensures that all complaints by residents are dealt with promptly. • Is responsible for any contravention/s by staff or any non-compliance with the EMPr.
Environmental Control Officer (ECO)	• The ECO is to have access to the site at all times, for the purpose of inspections to ensure that the environmental conditions of the EMPr as well as the conditions stipulated to in the EA and the recommendations made in the EIR are being implemented and adhered to. • The ECO must report on the environmental aspects of the project to the responsible person/authority at agreed intervals. • The need for any deviations or variations in the environmental conditions must be reported to the DEDEAT for approval prior to these being undertaken. • The ECO must be fully cognisant with the contents of the Environmental Authorisation as well as this EMPr and any other applicable legislation
Competent Authority	• The Compliance Officer appointed by the Competent Authority is responsible for the ensuring that the Applicant, Contractor, and ECO are compliant with the provisions of the EA and EMPr.

ACKNOWLEDGEMENT FORM

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

PROJECT NAME:

PROPOSED DEVELOPMENT OF ERF 301, WHITES ROAD, HOEKWIL (WILDERNESS HEIGHTS) GEORGE MUNICIPALITY & DIVISION, WESTERN CAPE.

DEA&DP REF: 16/3/3/6/7/1/D2/19/0099/24

APPLICANT:

Signed: …….. Date: …….....

CONTRACTOR:

Signed: …….. Date: …….....

ENVIRONMENTAL CONTROL OFFICER

Signed: …….. Date: …….....

ANNEXURE 1: CV of the EAP

Joclyn Joe Marshall

Heatherhill Farm, P.O. Box 19, Rheenendal, 6576
Contact: 072 126 6393
Email: joclynjoe@gmail.com

CAREER HISTORY

July 2022 – current **Eco Route Environmental Consultancy**
Environmental Assessment Practitioner

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

August 2020 – August 2022 **Moira Cloete Environmental Assessment Practitioner**
Sub-Consultant

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

February 2012 – April 2019 **Knysna Municipality**
Senior Environmental Officer

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

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

February 2011 – January 2012 **Allanson Associates cc.**
Research assistant at the Knysna Basin Project

- Field work that included water sample collection and analysis, critical observations of environmental health, monitoring of Waste Water Treatment Works outflow;

- Lab work that included water quality analysis (including chemical methodology), fluorometry, microscopy and scientific report writing and publication.

June - July 2010 **Department of Environmental Science, Rhodes University**
Field assistant

- Harvesting, transporting, shredding and drying spekboom material.

2009 – 2010 **Department of Environmental Science, Rhodes University**
Graduate Assistance

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

2007 **Departments of Zoology and Botany, Rhodes University**
Demonstrator

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

ACADEMIC QUALIFICATIONS

2009 – 2010 **Masters in Environmental Science** by research dissertation
Rhodes University
Thesis: Population assessments of priority plant species used by local communities in and around four Wild Coast Reserves, Eastern Cape, South Africa

2008 **Honours in Biodiversity and Conservation** (*Joint Botany and Environmental Science*)
Rhodes University

2005 -2007 **Bachelor of Science** with Majors in Botany and Zoology
Rhodes University

1998 – 2004 **Heatherhill College (*Cambridge University International Examination*)**
HIGCSE: Art and Design (2), First Language English (3), Biology (1), Mathematics (2), Physical Science (2), Afrikaans as a Second Language (3). IGCSE: Information Technology (B)

PUBLICATIONS

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

OTHER SKILLS AND TRAINING

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

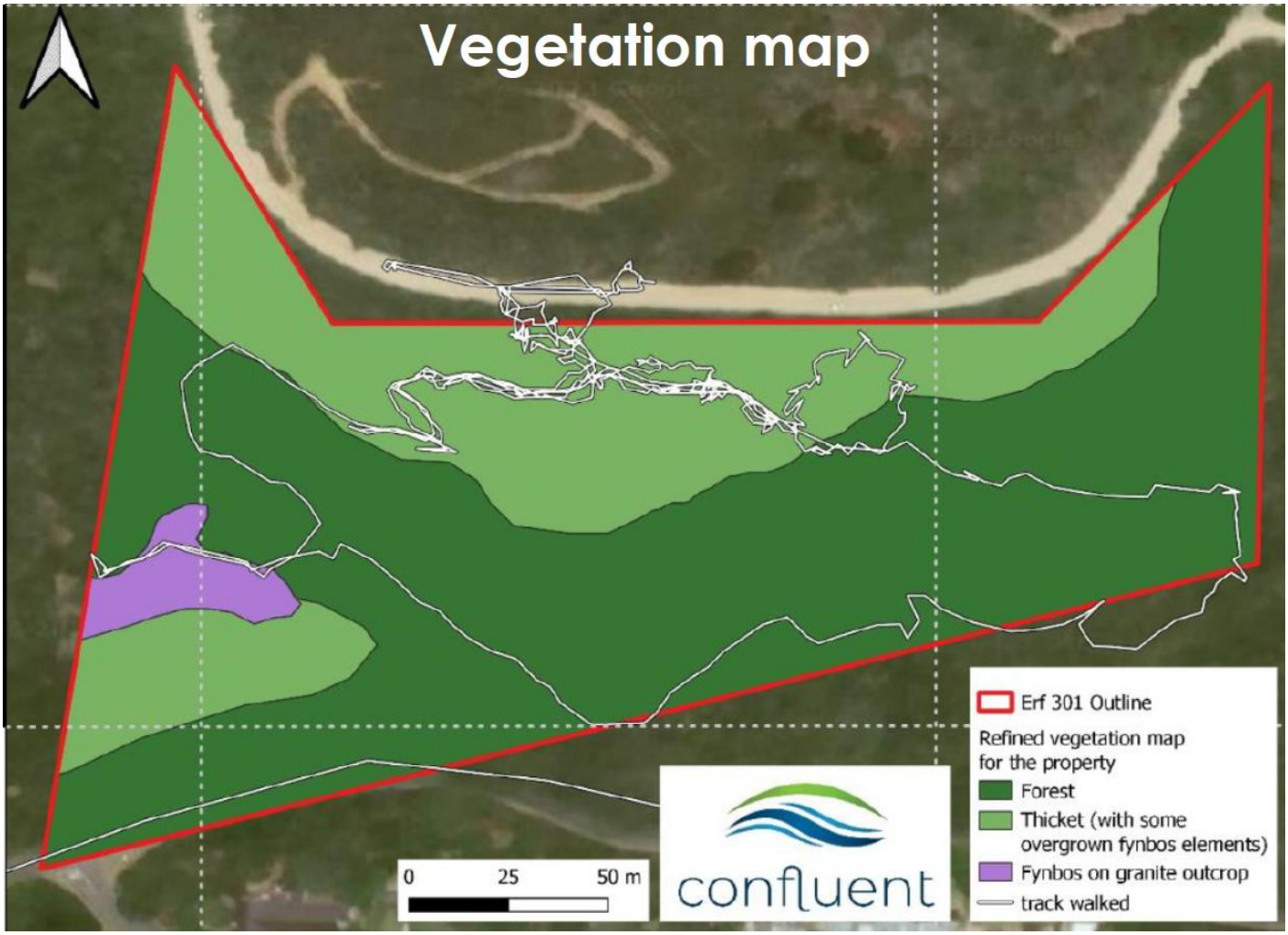
- Certificate of attendance attained for ArGIS Basic Training, 4 May – 8 May 2015. ESRI South Africa.
- Certificate attained for Basic Training Course for Environmental Management Inspector, 17 November 2014 - 15 December 2014. Western Cape Department of Environmental Affairs and Development Planning.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

REFERENCES ARE AVAILABLE ON REQUEST

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

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

ANNEXURE 2: Mapping of Environmentally Sensitive Areas


Vegetation map
Erf 301 Outline
Refined vegetation map for the property
Forest
Thicket (with some overgrown fynbos elements)
Fynbos on granite outcrop
track walked
0
25
50 m
confluent

ANNEXURE 3: Fynbos Life in Cape Town

TEN TIPS TO MAKE YOUR GARDEN COUNT FOR WATER AND WILDLIFE CONSERVATION:

1. Consider rainfall, slope/aspect, wind direction and microclimates of your garden before choosing plants. Shape the ground to capture rainfall and slow water loss. Install a rainwater tank if possible.

2. Ensure that your garden is free of NEMBA-listed invasive alien plants.

3. Select locally indigenous plants according to veld type, sourcing only forms of species grown from Cape Town lowland genetic stock. These are the plants that are best adapted to the local environment.
   Avoid hybrids and cultivars.
   Plant in the rainy season only, i.e. early winter (May/June) in Cape Town and add a 10cm-thick surface layer of wood chips to lock in soil moisture and keep roots cool.

4. Choose a variety of flower shapes, sizes, colours, scents and fruit types to sustain a diversity of bird and insect pollinators and dispersers. How about building an insect hotel? Plants with fluffy seedheads provide nesting material for birds.

5. Replace or substantially reduce lawn areas by planting water-wise groundcovers or enlarging existing shrub beds.

6. Add local edible and aromatic plants to supplement or replace thirsty exotic veggie/herb gardens.

7. Install nesting boxes for bats and owls to provide breeding sites for these natural pest control agents. Never use rat poisons with secondary poisoning effects.

8. Opt for permeable fencing or create holes in perimeter walls to allow the free passage of frogs and other wildlife between gardens.

9. Create a grey water wetland using plants to filter water and absorb excess nutrients.

10. Turn an unused corner into a dead hedge (unturned heap of garden waste) to provide suitable habitat for decomposers.

ANNEXURE 4: Site Development Plan (SDP)