



**PECANWOOD ESTATE:  
OPERATIONAL ENVIRONMENTAL  
MANAGEMENT PROGRAMME: MARCH  
2020**

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**ACRONYMS**

CARA	Conservation of Agricultural Resources Act (43 of 1983)
DAFF	Department of Forestry and Fisheries
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EO	Environmental Officer
Ha	Hectare
HCS	Hazardous Chemical Substances
HIA	Heritage Impact Assessment
HOA	Homeowners Association
MPRDA	Minerals and Petroleum Development Act (28 of 2002)
NFEPA	National Freshwater Ecosystem Priority Areas
NEMA	National Environmental Management Act 107 of 1998
NWA	National Water Act (36 of 1998)
OEMPR	Operational Environmental Management Programme
SACAD	South African Conservation Areas Database
SAPAD	South African Protected Areas Database
SAHRA	South African Heritage Resources Association
SDC	Safe Disposal Certificate

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**DOCUMENT DETAIL:**

<b>Project:</b>	Pecanwood Estate Operational Environmental Management Programme
<b>Client:</b>	Pecanwood Homeowners Association (HOA)
<b>ECO Consultant:</b>	EP3 Environmental (Pty) Ltd
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<b>Author:</b>	<u>Eben van Schalkwyk</u>
<b>Reviewed by:</b>	<u>Eben van Schalkwyk</u>
<b>Approved by:</b>	<u>Eben van Schalkwyk</u>

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**Drafter Information:**

The drafter of this OEMPr, Eben van Schalkwyk holds a Master’s degree in Environmental Management and is an internationally registered Environmental Auditor with the Institute of Environmental Management & Assessment (IEMA) based in the United Kingdom.



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**Signature of Drafter**

Eben van Schalkwyk

Company: EP3 Environmental (Pty) Ltd

Date: 13 March 2020

**DEFINITIONS****TABLE 1: DEFINITIONS**

<b>WORD</b>	<b>DEFINITION</b>
<b>Air quality</b>	The term “air quality” means the state of the air around us
<b>Best Environmental Practice</b>	Means to perform or exercise a particular activity or activities in at the most suitable, appropriate, advantageous or best advised manner in order to achieve the highest standards while performing such activity or activities.
<b>Bunded area</b>	A bund is an embankment or wall of brick, stone, concrete or other impervious material, which forms the perimeter and floor of a compound and provides a barrier to retain liquid. Bunds should be designed to contain spillages and leaks in order to prevent pollution of the receiving environment, bunds are also used for fire protection, product recovery and process isolation.
<b>CBA</b>	An CBA two is classified as areas with intermediate irreplaceability or some flexibility in terms of meeting biodiversity targets. There are options for loss of some components of biodiversity in these landscapes without compromising the ability to achieve biodiversity targets, although loss of these sites would require alternative sites to be added to the portfolio of CBAs.
<b>Environment</b>	The surroundings within which humans exist and that are made up of: (i) the land, water and atmosphere of the earth: (ii) micro-organisms, plant and animal life: (iii) any part or combination of (i) and (ii) and the interrelationships among and between them: and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being: (xix)
<b>ESA</b>	An ESA one is classified as areas with low irreplaceability with respect to biodiversity pattern targets only and areas that must be maintained in at least a semi-natural state as ecologically functional landscapes that retain basic natural attributes.
<b>Fauna</b>	Refers to all animals, including insects and micro-organisms.
<b>Flora</b>	Refers to all plant species.
<b>General Waste</b>	Means waste that does not pose an immediate hazards or threat to health or to the environmental, in includes: a) Domestic waste; b) Building and demolition waste; c) Business waste; and d) Inert waste.
<b>Handling</b>	Means the functions associated with the movement of waste, including storage, treatment and ultimate disposal, by the use of manual systems and automated systems.
<b>Hazard</b>	Hazard means the intrinsic potential property or the ability of any agent, equipment, material, or process to cause harm.
<b>Hazardous Chemical Substances</b>	Dangerous goods are solids, liquids, or gases that can harm people, other living organisms, property, or the environment. They are often subject to chemical regulations.

WORD	DEFINITION
<b>Hazardous Waste</b>	Means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste have a detrimental impact on health and the environment.
<b>Impermeable surface</b>	Means a physical barrier or a membrane that prevents leaching of waste.
<b>Pollution</b>	The introduction into the environment of any substance caused by the action of man which has, or results in, significant harmful effects to mankind or the environment. Pollutants include any substances which make the environment less fit in any way for its intended use.
<b>Recovery</b>	Recovery means the controlled extraction of a material or the retrieval of energy from waste to produce a product.
<b>Recycle</b>	Recycle means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.
<b>Re-use</b>	Re-use means to utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles.
<b>SDC</b>	Safe Disposal Certificate
<b>Soil</b>	The upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles.
<b>Waste</b>	Means any substance, whether or not that substance can be reduced, reused, recycled and recovered, that (i) is surplus, unwanted, rejected, discarded, abandoned or disposed of (ii) the generator has no further use of - for the purposes of production, reprocessing or consumption; (iii) that must be treated or disposed of; or (iv) is identified as a waste by the Minister.
<b>Water course</b>	Watercourse means - (i) a river or spring; (ii) a natural channel in which water flows regularly or intermittently; (iii) a wetland, lake or dam into which, or from which, water flows; and (iv) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks,
<b>Waste Disposal Facility</b>	Means any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise.

# 1. INTRODUCTION

EP3 Environmental has been appointed by Pecanwood Homeowners Association (HOA) to prepare an Operational Environmental Management Programme (OEMPr) for the Pecanwood Estate located west of the town Hartbeespoort Dam, North West Province (refer to the locality map in Figure 1).

This OEMPr covers all activities associated with the general Estate management of open spaces; golf course; residential and common gardens; Hartbeespoort Dam water frontage; as well as all dams and lakes on the Estate.

The OEMPr has been compiled to ensure that the development is undertaken in compliance with the requirements set out in Section 28 of the National Environmental Management Act (Act 107 of 1998) and other relevant legislation (refer to Table 1) under which the Duty of Care Principal is described. The OEMPr has been prepared as a stand-alone document.

The OEMPr identifies the aspects that might have an impact on the receiving environment and provides guidelines on how to mitigate significant impacts as far is reasonably practically possible. This OEMPr sets forth environmental management practices to ensure compliance with relevant Environmental Legislation and Environmental Best Practices.

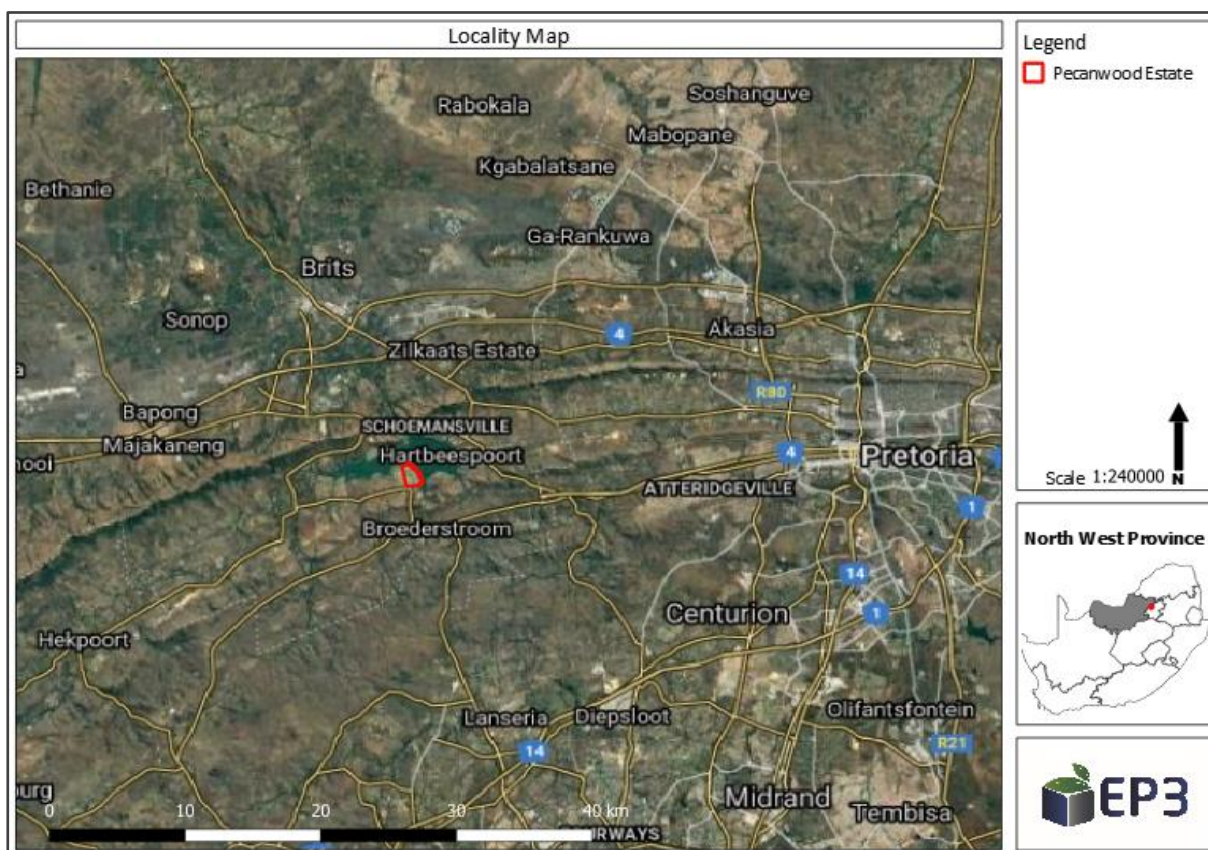


FIGURE 1: LOCALITY MAP



## 1.1. Client Information

Table 2 below provide details of the client.

**TABLE 2: CLIENT INFORMATION**

CLIENT DETAILS	
<b>Client</b>	Pecanwood Homeowners Association (HOA)
<b>Client Representative</b>	Mr. Urby Ueckermann
<b>Contact Details</b>	Email: <a href="mailto:Environmental@pecanwoodhoa.co.za">Environmental@pecanwoodhoa.co.za</a> Mobile: + 65 928 2501

## 1.2. EAP Information

Table 3 below provide details of the Independent Environmental Assessment Practitioner (EAP).

**TABLE 3: EAP INFORMATION**

EAP DETAILS	
<b>EAP</b>	EP3 Environmental (Pty) Ltd
<b>EAP Representative (Drafter)</b>	Mr. Eben van Schalkwyk
<b>Qualifications and Experience</b>	Masters in Environmental Management. Registered Environmental Auditor with the Institute of Environmental Management & Assessment (IEMA) based in the UK.
<b>Contact Details:</b>	Mobile: +27 828818500 Email: <a href="mailto:eben@ep3.co.za">eben@ep3.co.za</a>

## 2. BACKGROUND

The 2017 OEMPr reported that an EMP was compiled in 2007 by Turf-Net, who were then responsible for the management of the golf course. This EMP was mostly a check-list based template for weekly monitoring of activities that Turf-net undertook. In 2012, an EMP was done for issues relating specifically to construction at Pecanwood Estate. Then in 2014, a new EMP was compiled, the EMP was a short document and mostly generic.

In 2017 Seaton Thomson and Associates was appointed to prepare an EMP. As part of the EMP, a baseline Biodiversity Assessment was undertaken by The Biodiversity Company. A number of recommendations for environmental interventions were noted in the said plan, implementation of such interventions is ongoing and the recommendations in the Biodiversity Assessment is supported.

## 3. OBJECTIVE

The objective of the OEMPr is to provide management measures to be considered and implemented at the Pecanwood Estate.

## 4. LIMITATIONS

Limitations experienced:

- The OEMPr is not a legal opinion and EP3 cannot be held accountable for any legal non-compliances.

## 5. METHODOLOGY

### 5.1. Literature Study

Existing literature was reviewed, and applicable information was considered and included in the development of this OEMPr.

### 5.2. Field Survey

A site visit was undertaken in order to understand the extent of the Pecanwood estate and to determine environmental aspects that will require management and mitigation.

## 6. PROJECT DESCRIPTION & SCOPE

Pecanwood is a prestigious development, and is home to South Africa's first Jack Nicklaus signature golf course. It offers a unique combination of superb climate, outdoor activities and residential excellence that result in a lifestyle experience which many aspire to. Facilities and areas covered by the requirements of this OEMPr are listed below:

- Office areas and Club house;
- Laundry;
- Existing waste areas;
- Onsite Waste Water Treatment Works;
- Drinking water Abstraction and Storage area;
- Workshop Area;
- Boat Storage area;
- Bulk fuel storage areas;
- Golf course and Internal Dams;
- Car wash; and
- Backup Generator areas.

## 7. SENSITIVE ENVIRONMENTAL FEATURES

According to the North West Biodiversity Plan (2015) the majority of the Pecanwood Estate is situated within an Ecological Support Area one (ESA) (see Figure 8 below), while a small portion along the north western section of the estate is situated within an Critical biodiversity Area two (CBA).

An ESA one is classified as areas with low irreplaceability with respect to biodiversity pattern targets only and areas that must be maintained in at least a semi-natural state as ecologically functional landscapes that retain basic natural attributes. An CBA two is classified as areas with intermediate irreplaceability or some flexibility in terms of meeting biodiversity targets. There are options for loss of some components of biodiversity in these landscapes without compromising the ability to achieve biodiversity targets, although loss of these sites would require alternative sites to be added to the portfolio of CBAs.

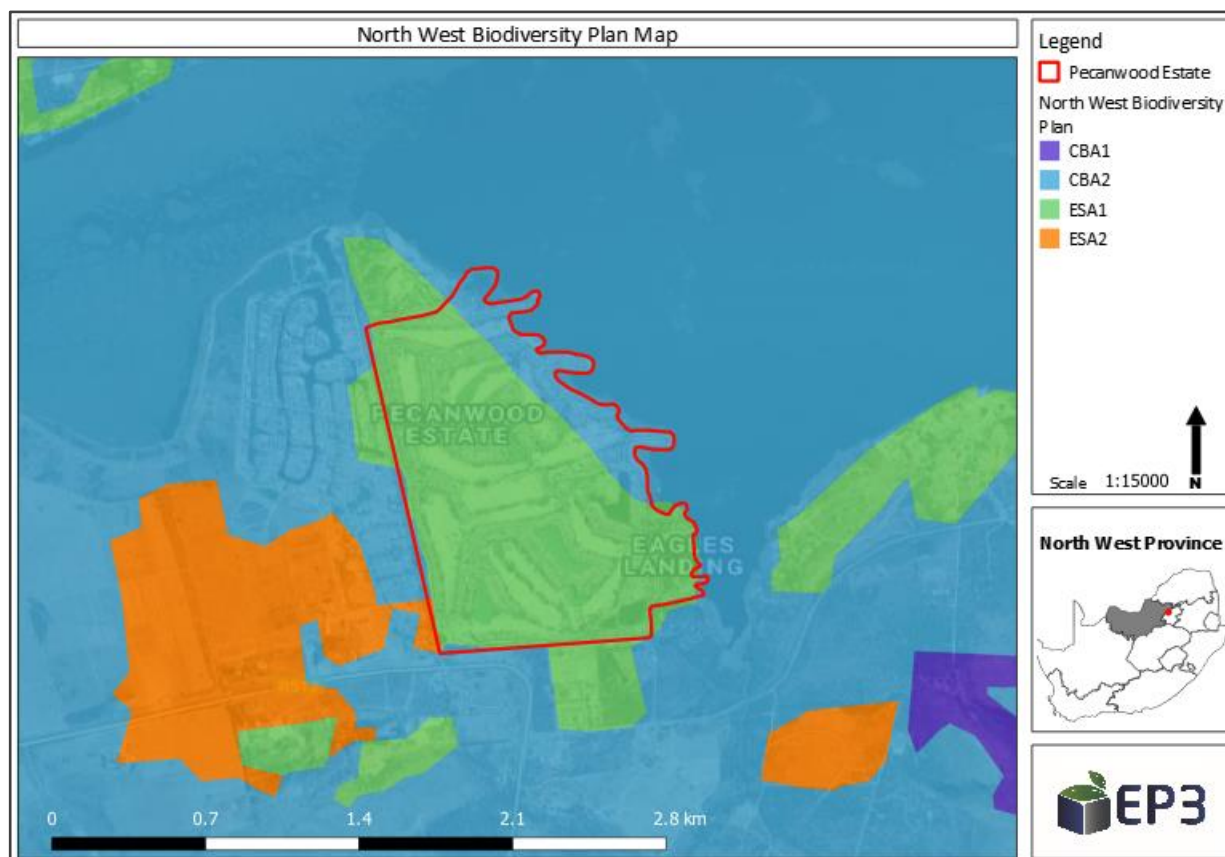


FIGURE 2 NORTH WEST BIODIVERSITY PLAN (2015)

## 7.1. Fauna and Flora

According to Mucina and Rutherford (2013), the Pecanwood Estate is located within the Moot Plains Bushveld (SVcb8) vegetation type considered to be least threatened.

### Important Taxa within the Moot Plains Bushveld:

**Small Trees:** *Acacia nilotica* (d), *A. tortilis* subsp. *heteracantha* (d), *Rhus lancea* (d).

**Tall Shrubs:** *Buddleja saligna* (d), *Euclea undulata* (d), *Olea europaea* subsp. *africana* (d), *Grewia occidentalis*, *Gymnosporia polyacantha*, *Mystroxydon aethiopicum* subsp. *burkeanum*.

**Low Shrubs:** *Aptosimum elongatum*, *Felicia fascicularis*, *Lantana rugosa*, *Teucrium trifidum*.

**Succulent Shrub:** *Kalanchoe paniculata*.

**Woody Climber:** *Jasminum breviflorum*.

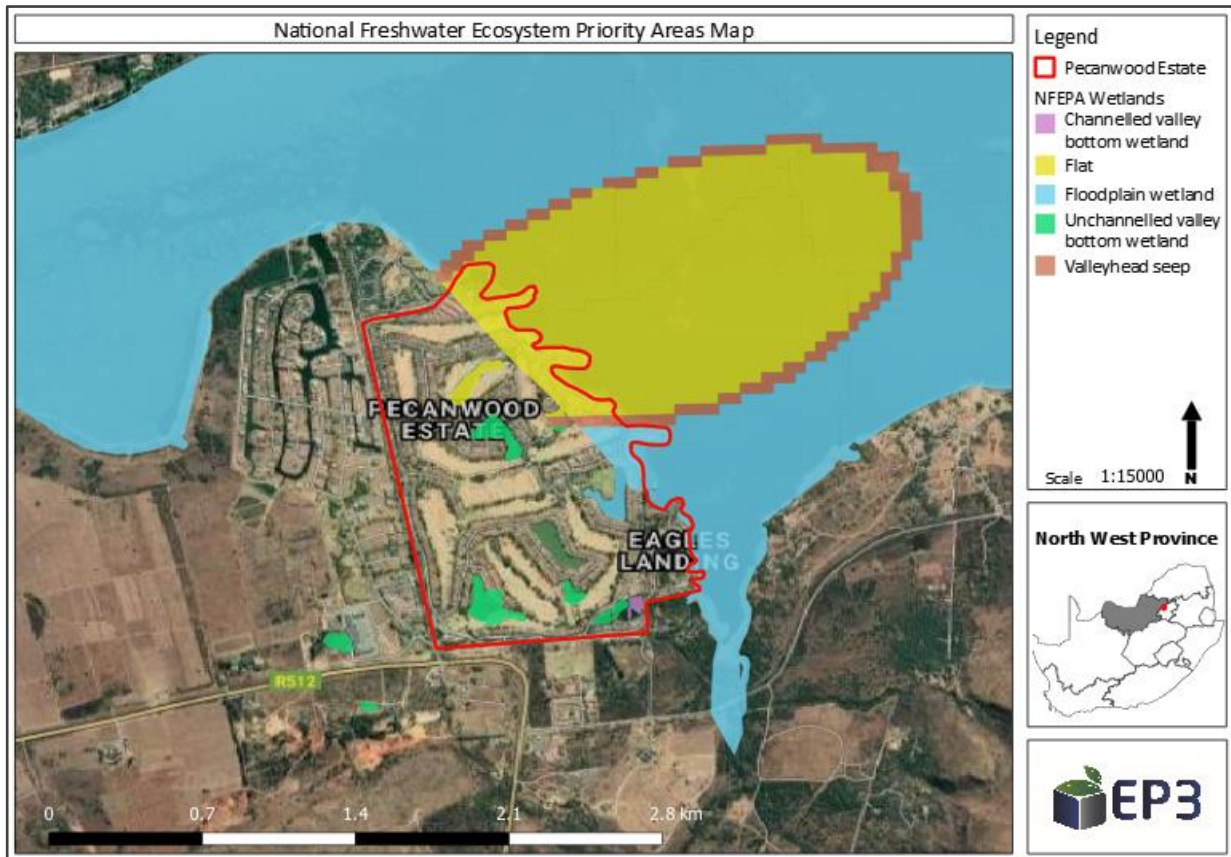
**Herbaceous Climber:** *Lotononis bainesii*.

**Graminoids:** *Heteropogon contortus* (d), *Setaria sphacelata* (d), *Themeda triandra* (d), *Aristida congesta*, *Chloris virgata*, *Cynodon dactylon*, *Sporobolus nitens*, *Tragus racemosus*.

**Herbs:** *Achyroopsis avicularis*, *Corchorus asplenifolius*, *Evolvulus alsinoides*, *Helichrysum nudifolium*, *H. undulatum*, *Hermannia depressa*, *Osteospermum muricatum*, *Phyllanthus maderaspatensis*.

### 7.2. Water Bodies & Wetlands

According to the National Freshwater Ecosystem Priority Areas (NFEPA) (2011) several wetland systems occur within the Pecanwood Estate. NFEPA indicated that the north eastern boundary of the Pecanwood Estate is associated with a floodplain wetland, a flat and valley head seep. While several unchanneled valley bottom wetland occur within the central and southern sections of the estate. Another flat wetland is located within the northern section of the Estate (please refer to Figure 3).



**FIGURE 3: NATIONAL FRESHWATER ECOSYSTEM PRIORITY AREAS (2011)**

### 7.3. Protected and Conservation Areas

According to the South African Protected Areas Database (SAPAD), the entire Pecanwood Estate is situated within the Hartebeespoort Dam Nature Reserve (Figure 4). Furthermore, the South African Conservation Areas Database (SACAD) indicated the entire Pecanwood estate to form part of the Magaliesberg Biosphere reserve (Figure 5).

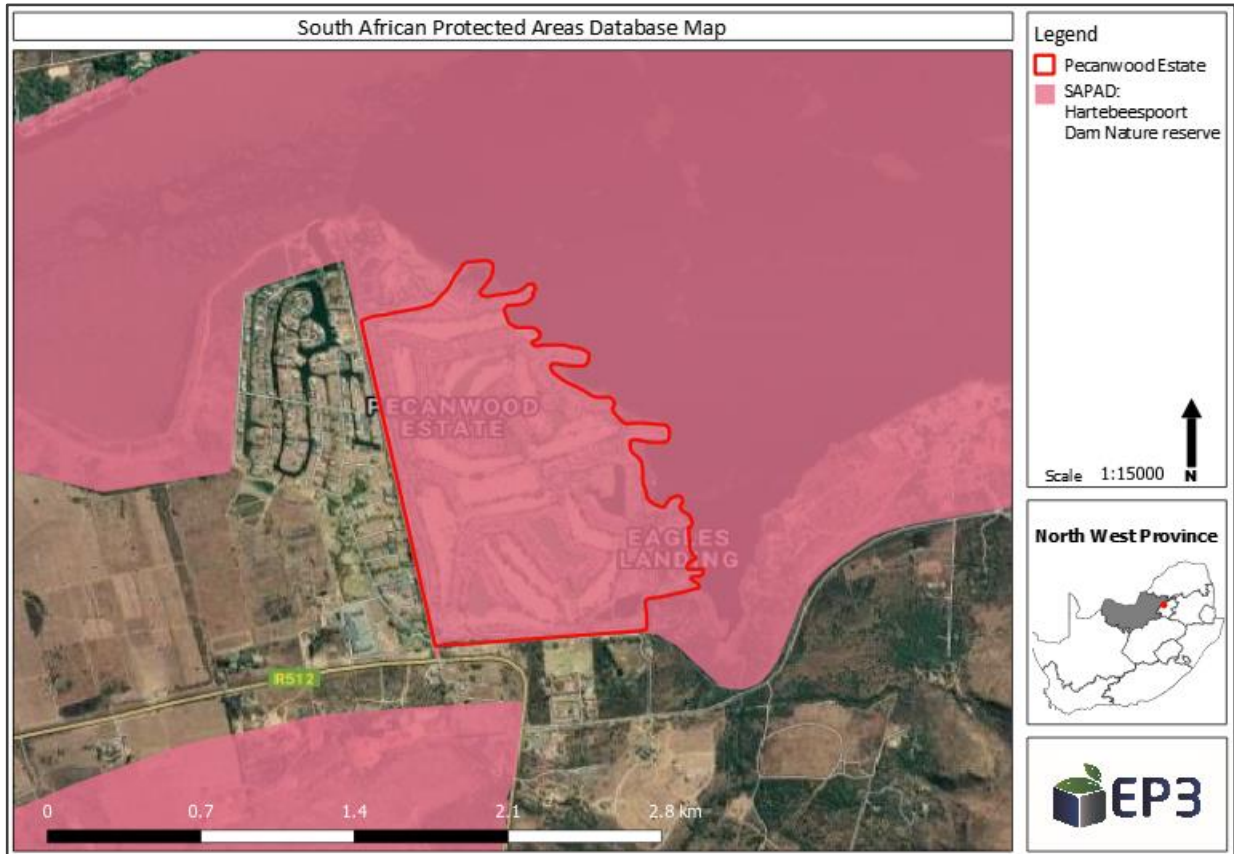


FIGURE 4: SOUTH AFRICAN PROTECTED AREAS (2019)

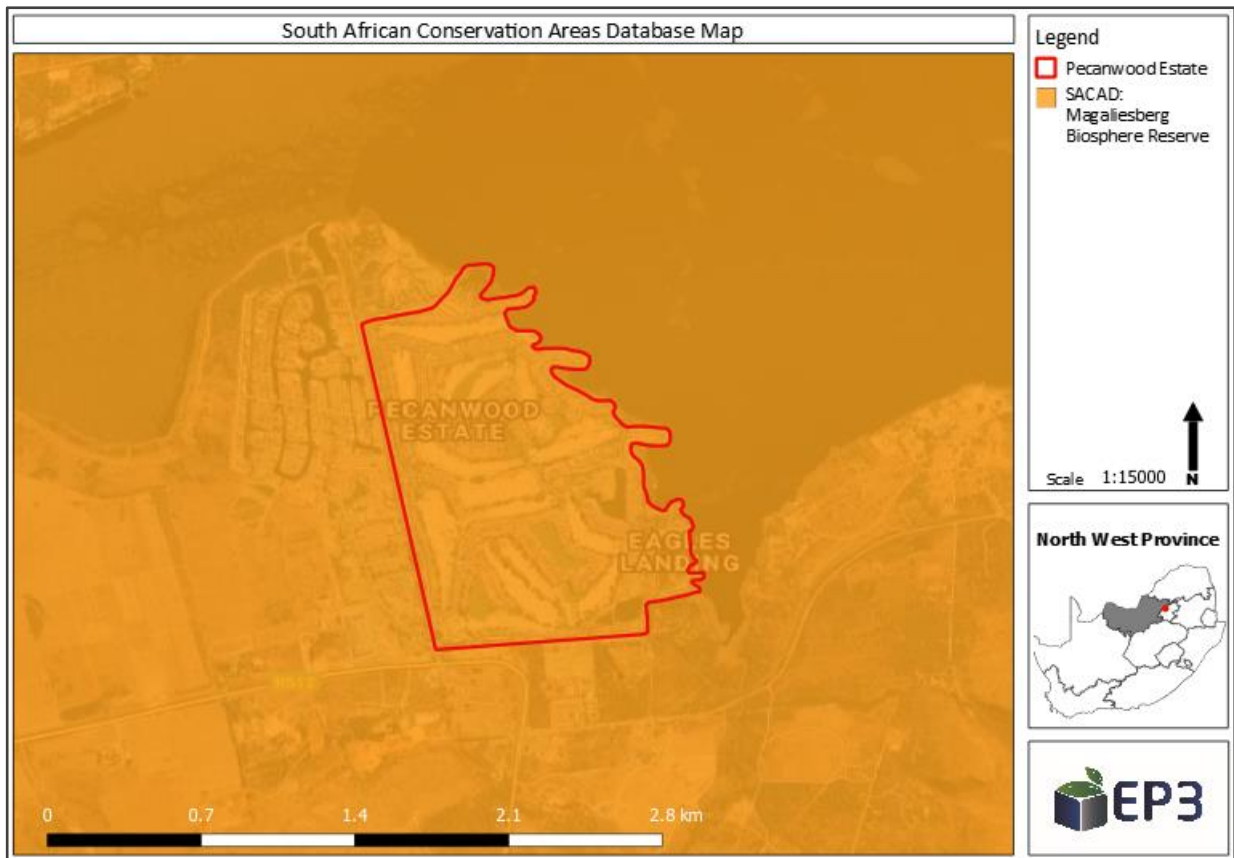


FIGURE 5: SOUTH AFRICAN CONSERVATION AREAS (2019)

## 8. STATUTORY REQUIREMENTS

The following environmental legislation is applicable to the project and should be monitored and managed to ensure compliance. The development must, however, comply with all applicable national and provincial legislation and municipal by-laws.

**TABLE 4: LEGAL REQUIREMENTS**

LEGISLATION	SECTIONS	RELATES TO
<b>The Constitution Republic of South Africa (Act No 108 of 1996)</b>	Chapter 2	Bill of Rights.
	Section 24	Environmental Right & Save environment.
<b>National Environmental Management Act (No 107 of 1998) as amended in 2017</b>	Chapter 2	Defines the strategic environmental management goals and objectives of the government. Applies throughout the Republic and to the actions of all organs of state that may significantly affect the environment.
	Chapter 5	Integrated Environmental Management.
	Section 24(a) &(d) &24(5)	Listed activities and Regulations.
	Section 28	The developer has a general duty to care for the environment and to institute such measures as may be needed to demonstrate such care.
<b>National Environmental Management: Waste Act (No 59 of 2008)</b>	Section 2	General policy.
	Chapter 2	Defines the national waste management strategy, norms and standards. It emphasises the role of the provincial organ of the state in the implementation of the waste management.
	Chapter 4	Generator of waste has a general duty to avoid generation of waste where possible, and if not avoided minimise and manage it accordingly.
	Section 16	It is the responsibility of the person/organisation generating the waste to ensure that the waste is treated and disposed of in an environmentally sound manner.
	Section 27	Provision of containers for waste management.
<b>The Conservation of Agricultural Resources Act (No 43 of 1983)</b>		Provides for the regulation of control over the utilization of the natural agricultural resources in order to promote the maintenance of ecological health of land, combating and preventing erosion and weakening or destruction of water resources, protecting vegetation and
	Section 6	Implementation of control measures to combat weeds, alien and invasive plant species.

LEGISLATION	SECTIONS	RELATES TO
	Section 19	Prevention of littering by employees and sub-contractors during construction and the maintenance phases of the project.
<b>National Heritage Resources Act (No 25 of 1999)</b>	Section 34	No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.
	Section 35	No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site.
	Section 36	No person may, without a permit issued by the South African Heritage Resource Agency (SAHRA) or a provincial heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority. "Grave" is widely defined in the Act to include the contents, headstone or other marker of such a place, and any other structure on or associated with such place.
	Section 38	This section provides for Heritage Impact Assessments (HIAs), which are not already covered under the ECA. Where they are covered under the ECA the provincial heritage resources authorities must be notified of a proposed project and must be consulted during the HIA process. The Heritage Impact Assessment (HIA) will be approved by the authorising body of the provincial directorate of environmental affairs, which is required to take the provincial heritage resources authorities' comments into account prior to making a decision on the HIA.
<b>National Environmental Management: Air Quality Act (No 39 of 2004)</b>	Sections 26 -27	Control of fuels.
	Section 32	Control of dust.
	Section 34	Control of noise.
	Section 35	Control of odours.
<b>National Water Act (36 of 1998)</b>	Section 21	List of activities which require a Water Use Authorisation.
<b>Hazardous Substances Act (No 15 of 1973) and regulations</b>		Provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances

LEGISLATION	SECTIONS	RELATES TO
<p><b>National Environmental Management: Biodiversity Act (10 of 2004)</b></p>	<p>Act</p>	<p>Management and conservation of South Africa’s biodiversity within the framework of the National Environmental Management Act1, 998.</p> <p>The protection of species and ecosystems that warrant national protection.</p> <p>The sustainable use of indigenous biological resources;</p> <p>The fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources.</p> <p>The establishment and functions of a South African National Biodiversity Institute.</p>
<p><b>National Road Traffic Act (No 93 of 1996)</b></p>	<p>Act</p>	<p>Road safety and transportation.</p>
<p><b>Government Notice R. 598 National Environmental Management: Biodiversity Act (10/2004): Alien and Invasive Species Regulations, 2014</b></p>	<p>Section 3</p>	<p>Category 1b Listed Invasive Species</p> <p>(1) Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be controlled.</p>
<p><b>Minerals and Petroleum Development Act (28 of 2002)</b></p>	<p>Section 39</p>	<p>Environmental Management Programme for entering borrow pits and legal sourcing of construction fill material.</p>
<p><b>National Forest Act, 1998 (Act No. 84 of 1998)</b></p>	<p>Section 7 (1) and 15 (1)</p>	<p>Section 7 (1) of the National Forest Act (Act 84 of 1998), any person wishing to cut, disturb, damage or destroy any indigenous tree in a natural forest, or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any tree or any forest product derived from a natural forest must apply for a license from the Minister or any delegated institution or authority.</p> <p>Section 15 (1) of the National Forest Act (Act 84 of 1998), any person wishing to cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree must apply for a license from the Minister or any delegated institution or authority.</p>



LEGISLATION	SECTIONS	RELATES TO
Occupational Health and Safety Act (No 85 of 1993)	Section 8	General duties of Employers to their Employees.
	Section 9	General duties of Employers and self-Employed persons to persons other than their employees.
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947)	Sections 3-10	Control of the use of registered pesticides, herbicides (weed killers) and fertilisers. Special precautions shall be taken to prevent workers from being exposed to chemical substances in this regard.
Greenhouse Gas Reporting regulation of 2017	Act	Registering of facilities Reporting on GHG emissions.
Carbon Tax Act (Act 15 of 2019)	Act	Registering of facilities Calculating Tax Liability. Pay tax to South African Revenue Service
Government Notice R. 634 National Environmental Management: Waste Act (No 59 of 2008): Waste Classification and Management Regulations	Chapter 1	Regulate the classification of waste.
	Chapter 2	Pre-Classified waste (Annexure 1) Waste separation Need for Safety Data Sheets
	Chapter 3	Waste transporters and waste managers responsibility. Waste receptacle labelling.
	Chapter 4	Waste management activities that do not require a Waste Management License (WML).
	Chapter 5	Records of waste generation and management. Waste Manifest System.
	Chapter 6	Offences and Penalties.
Government Notice R. 635 National Environmental Management: Waste Act (No 59 of 2008): Norms	Chapter 1	Assessment of waste prior to disposal.

LEGISLATION	SECTIONS	RELATES TO
and Standards for Assessment of Waste for Landfill Disposal.		
<b>Government Notice R. 636 National Environmental Management: Waste Act (No 59 of 2008): National Norms and Standards for Disposal of Waste to Landfill</b>	Chapter 1	Outlines which waste types must be disposed of at which type of landfill site.
<b>Government Notice R. 926 National Environmental Management: Waste Act (No 59 of 2008): National Norms and Standards for the Storage of Waste</b>	Chapter 1	Requirements for waste storage facilities.
	Chapter 2	Registration of waste storage facilities. Construction and design requirements for waste facilities. Management of Waste Storage Facilities (access Control and Notices). Requirements of waste storage containers Requirements for above ground waste storage facilities. Requirements for underground waste storage facilities.
	Chapter 3	Requirements for: <ul style="list-style-type: none"> <li>• Training.</li> <li>• Emergency Preparedness Plan.</li> <li>• Monitoring and Inspection.</li> <li>• Auditing.</li> <li>• Authority Audits and Inspections.</li> <li>• Reporting.</li> <li>• Records.</li> <li>• Requirements for Decommissioning Phase.</li> </ul>
<b>Government Notice R. 1093 National Environmental Management: Waste Act (No 59 of 2008): Norms and Standards for the Sorting, Shredding, Grinding,</b>	Chapter 1	Requirements for the management of waste facilities that Sorting, Shredding, Grinding, Crushing, Screening or Baling of general waste.
	Chapter 2	Registration of new and existing facilities. Construction and design requirements for waste facilities.
	Chapter 3	Access control and notices. Requirements for: <ul style="list-style-type: none"> <li>• Emergency Preparedness Plan.</li> </ul>

LEGISLATION	SECTIONS	RELATES TO
Crushing, Screening or Baling of general Waste		<ul style="list-style-type: none"> <li>• Monitoring and Inspection.</li> <li>• Auditing.</li> <li>• Authority Audits and Inspections.</li> <li>• Reporting.</li> <li>• Requirements for Decommissioning Phase.</li> </ul>
Waste Tyre Regulations, 2017	Part 1	To regulate the management of waste tyres.

## 9. ROLES AND RESPONSIBILITIES

The key role-players for the purposes of environmental management on site include but are not limited to: The Pecanwood Estate HOA, HOA Environmental Manager, and Service Providers/Contractors. Details of the responsibilities of each of the key role-players are provided below.

**TABLE 5: ROLES AND RESPONSIBILITIES**

ROLE	RESPONSIBILITY
<p><b>Pecanwood Estate Homeowners Association</b></p>	<p>The HOA is overall responsible for ensuring that the requirements of this OEMPr are implemented and issuing of penalties should the contractor not be in compliance with any of the requirements stipulated in the OEMPr.</p> <p>The HOA is responsible for the following:</p> <ul style="list-style-type: none"> <li>• To ensure that provision has been made to meet all the requirements of this OEMPr in all tender documents.</li> <li>• To make the OEMPr document binding to all contractors/suppliers.</li> <li>• To ensure that all contractors receive a copy of the OEMPr.</li> <li>• Signing a declaration to confirm understanding and endorsement of the OEMPr principles and conditions.</li> <li>• Continuously seek to improve any negative environmental impacts which result from the development.</li> <li>• Responsible for including OEMPr into the tender documents.</li> <li>• Must make provision for environmental management related cost associated with the OEMPr in the bill of quantities.</li> </ul>
<p><b>HOA Environmental Manager</b></p>	<p>The Environmental Manager is overall responsible for ensuring that the OEMPr is implemented and to deal with any parties who do not comply with the requirements.</p> <p>The Environmental Manager is responsible for the following:</p> <ul style="list-style-type: none"> <li>• To ensure that provision has been made to meet all the requirements of this OEMPr.</li> <li>• To ensure that all contractors performing work in the estate are aware of the requirements of the OEMPr.</li> <li>• To ensure that all residents in the estate are aware of the content and requirements of the OEMPr.</li> <li>• Issuing penalties for contravention of the OEMPr to contractors (as deemed necessary).</li> <li>• To conduct regular inspections and to produce audit reports reflecting the level of compliance achieved in term of the requirements of the OEMPr.</li> <li>• To establish and update an environmental file.</li> <li>• To keep photographic records of environmental issues and of the mitigation measures implemented to resolve the issues.</li> <li>• Attend meetings to report on environmental issues.</li> <li>• Recommend corrective action for any deviations.</li> </ul>
<p><b>Contractors and Service Providers</b></p>	<p>Contractor and Services providers are responsible for ensuring compliance with this OEMPr and for providing training to the site staff on the requirements of this OEMPr.</p>

ROLE	RESPONSIBILITY
	<p>Contractor/Service providers is to:</p> <ul style="list-style-type: none"> <li>• Ensure compliance with this OEMPr.</li> <li>• Ensure implementation of all applicable Environmental Specifications, during all works on site, failing which penalties, as outlined in the Environmental Specifications may be imposed by the HOA EM;</li> <li>• Ensure that all of its sub-contractors', employees, suppliers, agents or servants etc. are fully aware of the environmental requirements detailed in the Environmental Specifications.</li> </ul>

## 10. RISKS ASSESSMENT

The proposed development will have environmental impacts and the severity and/or extent of these impacts can be reduced, avoided or remedied by implementing the recommended mitigation measures. This section will focus on the main aspects associated with the development and the associated mitigation measures to be implemented.

### 10.1. Risk Assessment: Rating methodology

Potential environmental impacts and key issues were identified through a site visit and desktop studies. The significance of each of the potential impacts were calculated.

The predicted impacts are divided into the following categories:

- **Negligible:** The impact is not significant and does not require any mitigation.
- **Low:** The impact has a low significance which may require partial mitigation.
- **Moderate:** The impact is of importance and as a result might have a negative impact on the surrounding environment. Mitigation is therefore required in order to reduce the negative impacts to tolerable levels.
- **High:** The impact is of high importance and as a result might have a major impact on the surrounding environment. Mitigation measures are needed to reduce the negative impacts to tolerable levels is vital in order to make the proposed development feasible.

The following factors were evaluated when determining the significance of the impacts:

#### Longevity/ Duration

- **Short term:** The duration of the impact will be over a short period of time.
- **Medium term:** The duration of the impact will be over a medium period of time. Normally not longer than the last phase of the proposed project through implementation of adequate mitigation measures.
- **Long term:** The duration of the impact will be over a long period of time. Normally throughout the operational phase of the proposed project through implementation of adequate mitigation measures.
- **Permanent:** The impact will be permanent and will not even be addressed through implementation of adequate mitigation measures.

#### Intensity/ Magnitude

- **Low:** Natural processes are not affected or disturbed as a result of the impact.
- **Medium:** Natural processes are affected or disturbed as a result of the impact, however, continues in an altered manner.
- **High:** Natural processes are affected or disturbed in such a manner that it is permanent. Natural processes are ceased as a result of the impact.

#### Probability

- **Improbable:** The possibility of the impact occurring is very low to negligible.

- **Probable:** The possibility of the impact occurring is still low, however must be taken into account during development of mitigation measures.
- **Highly Probable:** The possibility of the impact occurring is highly likely.
- **Definite:** The possibility of the impact occurring is certain.

**TABLE 6: SIGNIFICANCE RATING**

SIGNIFICANCE RATING	
	Sum (Scale, Duration, Magnitude) x Probability
Negligible	Impact is negligible
Low	Impact is low and limited mitigation will be required
Moderate	Impact is moderate and specific mitigation measures will be required
High	Impact is high and extensive mitigation measures will be required.

**TABLE 7: IMPACT SCORING**

ASPECT	DESCRIPTION	WEIGHT
Scale	Local	1
	Site	2
	Regional	3
Duration	Short term	1
	Medium term	3
	Long term	4
	Permanent	5
Magnitude/Severity	Low	2
	Medium	6
	High	8
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Significance	Sum (Scale, Duration, Magnitude) x Probability	
	Negligible	<20
	Low	<40
	Moderate	<60
	High	>60

### 10.2.Risks

The activities in table 8 have been identified as potential environmental risks associated with the development. Firstly, without mitigation and then with mitigation. No major impacts are anticipated to occur.

**TABLE 8: RISK IMPACT ASSESSMENT**

ACTIVITY	ASPECT	IMPACT	RISK WITHOUT MITIGATION	RISK WITH MITIGATION
Legal Compliance	Legal Contraventions	Illegal operation associated with the development may result in fines or imprisonment	<60	<20
Policy and Commitment	Lack of Commitment	Lack of commitment and understanding	<60	<20
Water usage/ consumption/ pollution	Ground and Surface water resources	Depletion of natural water resources	<60	<40
	Ground and Surface water resources	Contravention with the NWA, resulting in possible fines or imprisonment		
Appointments and Role Adjudication	Document control	Poor implementation of the OEMPr requirements resulting in damage to the environment	<60	<40
Socio- Economic	Residents Local community	Negative impact on resident (visual, noise, impact on water quality) and local community.	<60	<40
Contractual Matters and Budget	Document control	Lack of responsibility and budget to ensure sound implementation of the OEMPr	<60	<40
Review of the OEMPr	OEMPr Document	The OEMPr may become redundant/not relevant to the scope of work.	<40	<20
Record Keeping	Document control	Lack of proof to support environmental management activities	<60	<20
Monitoring and Auditing	Evaluation	Failure to identify or evaluate the level of compliance with the established environmental criteria	<60	<40
Environmental Training and Awareness	Skill orientation	Lack of training and awareness will result in an increase of environmental non-compliance	<60	<40



ACTIVITY	ASPECT	IMPACT	RISK WITHOUT MITIGATION	RISK WITH MITIGATION
		events/incidents and could have been preventable.		
<b>Contractor/Supplier Laydown Areas</b>	Construction Machinery / Materials	Increase in Visual Impact	<60	<40
	Biodiversity	Soil and water pollution.		
	Erosion	Establishment of soil erosion.		
	Machinery	Dust pollution		
	Machinery	Noise pollution		
<b>Energy Consumption</b>	Equipment Awareness Behaviour	High electrical energy consumption	<60	<40
<b>Flora</b>	Biodiversity	Direct and indirect biodiversity loss	<60	<40
	Alien Invasive vegetation	Alien Invasive plant species		
<b>Fauna</b>	Biodiversity	Direct and indirect biodiversity loss	<40	<20
<b>Visual Impact</b>	Construction Machinery / Materials	Visual impacts tend to create a dislike feeling among people and the environment	<60	<40
<b>Security &amp; Access Control</b>	Protection of construction resources on site	Loss of property through theft	<60	<40
	Protection of construction resources on site	Injury to authorized and un-authorized		
<b>Stormwater and Erosion</b>	Flooding	Loss of Soil resources and contamination / siltation of water bodies	<60	<40
	Erosion	Loss of soil		

ACTIVITY	ASPECT	IMPACT	RISK WITHOUT MITIGATION	RISK WITH MITIGATION
<b>Concrete and Cement</b>	Handling of cement / concrete disposal	Cement powder has a high pH, spillage of dry cement powder and concrete slurry will affect both soil and water pH adversely	<40	<20
<b>Soil Management</b>	Soil handling	Direct impact on soil degradation (altering soil quality)	<40	<20
	Poor soil handling	Indirect impact on environment as soil may be unsuitable for vegetation growth		
<b>Waste Water Treatment &amp; Sanitation</b>	Surface and Groundwater resources	Ground and/ or water pollution	>60	<40
	Soil resources	Soil pollution		
	Health Risk	Negative effect on the health of living organisms including humans		
	Plant washing	Polluting of stormwater systems and ultimately dams		
<b>Water Management</b>	Borehole overuse	The depletion of natural resource through water wastage	>60	<40
	Groundwater resources	Degradation of water quality and water pollution		
	Water conservation	Leaking infrastructure		
	Maintenance Vehicles	Water pollution		
	Sewerage spills	Surface and groundwater pollution		

ACTIVITY	ASPECT	IMPACT	RISK WITHOUT MITIGATION	RISK WITH MITIGATION
<b>Traffic Management</b>	Traffic flow	Obstructing in traffic flow within the surrounding area	<60	<40
	Delivery/ Residential vehicles	Accidents (damage to property and injury to persons)		
<b>Stakeholder Engagement</b>	Poor communication with I& AP members	Unsatisfied community and I&AP members	<60	<40
<b>Hazardous Chemical Substances Management</b>	Incorrect HCS handling / storage / spillage	Contamination of the environment due to incorrect handling of hazardous substances	>60	<40
<b>Fire</b>	Open fire	Direct and indirect loss of fauna and flora species	<60	<40
	Defective machinery causing spark, short	Damage to property		
	Open fire	Health and safety hazard to humans.		
<b>Heritage Resources</b>	Discovery of heritage resources	Damage to or destruction of heritage resources	<40	<20
<b>Air Quality (Emissions and dust)</b>	Excessive dust emissions	Contribution to air pollution	<40	<20
	Excessive dust emissions	Posing a health hazard to living organisms (fauna and flora including humans)		
	Dust suppression measures inadequate	Dust pollution negatively impacting nearby schools and neighbouring communities		
<b>Waste Management</b>	Incorrect handling of waste	Pollution of natural resources like air, soil and water	>60	<40
	Incorrect handling / storage / disposal	Posing a health hazard to fauna / flora species / humans		

ACTIVITY	ASPECT	IMPACT	RISK WITHOUT MITIGATION	RISK WITH MITIGATION
	Incorrect storing of waste	Giving rise to the unwanted visual impact of the site		
	Incorrect handling / storage / disposal	Pollution and illegal dumping of waste on adjacent open areas		
	Waste handling and disposal	Unsuccessful collection and disposal frequencies		
<b>Noise Management</b>	Construction works i.e. loud machinery, equipment used	Loss of hearing of Employees	<40	<20
	Construction works i.e. loud machinery, equipment used	Nuisance residents		
<b>Safety</b>	Workers / Public / pedestrians	Death, injury or health effects of individuals working on or entering the construction area	<60	<40
<b>Emergency Preparedness</b>	Lack of emergency measures	Environmental Degradation	>60	<40
	Lack of emergency measures	Damage or harm to biodiversity		
	Inadequate emergency measures in place	Injury or harm to individuals		
<b>Rehabilitation</b>	Wrong rehabilitation method	Establishment of alien and invasive plant species within the estate	<60	<40

## 11. OBJECTIVES AND TARGETS

Objectives and targets enable projects to meet defined levels of performance against identified criteria. Objectives are segments of intent, while targets define the specific performance requirements that need to be met in order to achieve the objectives.

Objectives and targets have been set to be specific, measurable, achievable and realistic. In setting objectives and targets, potentially significant risks resulting from the project are identified, opportunities for improvement are identified, an achievement goal (objective) for each selected significant risk is set and at least one detailed performance requirement (target) for each objective that is measurable by some means must be specified.

The overall project environmental objective is to undertake all aspects of the project in an environmentally responsible manner and effectively manage risks which may lead to an impact on the environment and the surrounding communities.

The objectives and targets are detailed in section 12 below.

## 12. MITIGATION AND MANAGEMENT MEASURES

The OEMPr provides management and mitigation measures to be considered and implemented at the Pecanwood Estate as part of normal operational management practices as well as for when new units are being constructed within the estate. Refer to Table 9 below.

### 12.1.OEMPr Requirements

This section describes environmental mitigation and management measures to be considered and implemented at the Pecanwood Estate.

**TABLE 9: MITIGATION & MANAGEMENT MEASURES: OPERATIONAL PHASE**

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
<b>Legal Compliance</b>	<ul style="list-style-type: none"> <li>• Illegal operation associated with the project may result in fines or imprisonment.</li> </ul>	<ul style="list-style-type: none"> <li>• Review of applicable legislation.</li> <li>• All applicable environmental permits must be obtained from the relevant authorities to ensure compliance with applicable legislation where needed.</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental File.</li> <li>• Prior to the commencement of any construction activities, it must be ensured that the necessary and applicable permits and authorizations are obtained from the relevant authorities to ensure compliance with applicable legislation.</li> </ul>	<ul style="list-style-type: none"> <li>• To have easy access to all legal environmental documentation during the design phase.</li> <li>• Ensure that the development complies with all legislation.</li> </ul>	<ul style="list-style-type: none"> <li>• To achieve 100% compliance of the conditions as set out.</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing.</li> </ul>
<b>Policy and Commitment</b>	<ul style="list-style-type: none"> <li>• Lack of commitment and understanding.</li> </ul>	<ul style="list-style-type: none"> <li>• All parties to sign declaration of understanding in terms of responsibility to comply with the OEMPr.</li> </ul>	<ul style="list-style-type: none"> <li>• Signed declaration of understandings.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that all parties are kept responsible for their actions by issuing fines.</li> </ul>	<ul style="list-style-type: none"> <li>• To achieve 100% compliance of the conditions as set out.</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing.</li> </ul>
<b>Water usage/ consumption/ pollution</b>	<ul style="list-style-type: none"> <li>• Depletion of natural water resources.</li> <li>• Contravention with the NWA,</li> </ul>	<ul style="list-style-type: none"> <li>• When identifying a possible water source for the development the following should be kept in mind:</li> </ul>	<ul style="list-style-type: none"> <li>• Water Use License or Water Use Certificate from the Department of Water and</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure that all water is extracted from a legally permitted source and does not</li> </ul>	<ul style="list-style-type: none"> <li>• To achieve 100% compliance with the National Water Act.</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
	<p>resulting in possible fines or imprisonment.</p>	<ul style="list-style-type: none"> <li>- The water source should have a minimum impact on the water requirements of the activities in the area.</li> <li>- Legal review to identify the relevant authorizations and permits required for the development.</li> </ul>	<p>Sanitation (DWS) (if applicable); and/ or</p> <ul style="list-style-type: none"> <li>• Letter/ permit from any other responsible organ of state approving water to be extracted.</li> </ul>	<p>exceed the specified threshold.</p>		
<p><b>Appointments and Role Adjudication</b></p>	<ul style="list-style-type: none"> <li>• Poor implementation of the OEMPr requirements resulting in damage to the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• A qualified EM to oversee the implementation of the OEMPr.</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Appointment letter.</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure that suitable individuals are appointed and made responsible for the implementation and managing of environmental aspects and impacts.</li> </ul>	<ul style="list-style-type: none"> <li>• Suitable individuals that understands their roles and responsibility on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Once Off.</li> </ul>
<p><b>Socio- Economic</b></p>	<ul style="list-style-type: none"> <li>• An increase in economic growth as the development will support local businesses and provide jobs for the community.</li> </ul>	<ul style="list-style-type: none"> <li>• Local contractors should be appointed as far as reasonably possible for the proposed development.</li> </ul>	<ul style="list-style-type: none"> <li>• Database of Local contractors.</li> </ul>	<ul style="list-style-type: none"> <li>• To uplift the local community through job creation.</li> </ul>	<ul style="list-style-type: none"> <li>• Only to employ locally based contractors, laborers and skills where available.</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
<b>Contractual Matters and Budget</b>	<ul style="list-style-type: none"> <li>Lack of responsibility and budget to ensure sound implementation of the EMPr.</li> </ul>	<ul style="list-style-type: none"> <li>Suitable budgetary provision should be made to ensure sound implementation of the OEMPr.</li> <li>The OEMPr shall be included during the tender phase with contractor and suppliers to ensure that the necessary financial provisions required.</li> </ul>	<ul style="list-style-type: none"> <li>Proof that OEMPr was part of tender document.</li> <li>Contractors/Suppliers agreement/declaration of understanding to confirm commitment to OEMPr.</li> </ul>	<ul style="list-style-type: none"> <li>Accountability and budget for environmental matters.</li> </ul>	<ul style="list-style-type: none"> <li>Signed contractor agreement and sufficient resources to ensure sound implementation of the OEMPr.</li> </ul>	<ul style="list-style-type: none"> <li>Prior to commencement of activities.</li> </ul>
<b>Review of the OEMPr</b>	<ul style="list-style-type: none"> <li>The OEMPr may become redundant/not relevant to the scope of work.</li> </ul>	<ul style="list-style-type: none"> <li>The OEMPr should be reviewed annually.</li> </ul>	<ul style="list-style-type: none"> <li>OEMPr with updated amendments.</li> </ul>	<ul style="list-style-type: none"> <li>To ensure that the OEMPr remains site specific.</li> </ul>	<ul style="list-style-type: none"> <li>Have an OEMPr that is easy understandable by all personal.</li> <li>Have an OEMPr that is site specific.</li> </ul>	<ul style="list-style-type: none"> <li>Annually.</li> </ul>
<b>Record Keeping</b>	<ul style="list-style-type: none"> <li>Lack of proof to support environmental management activities.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental file will be kept on site.</li> <li>Records must be kept by the HOA.</li> <li>Environmental records will be updated regularly but not less than once per month.</li> </ul>	<ul style="list-style-type: none"> <li>Letters and correspondence with the relevant National or Provincial Authorities and site monitoring documentation to be filed:</li> <li>EMPr.</li> </ul>	<ul style="list-style-type: none"> <li>To provide proof of compliance to legislative requirements upon request.</li> <li>To ensure that environmental requirements are met.</li> </ul>	<ul style="list-style-type: none"> <li>An up to dated environmental file with relevant records available.</li> </ul>	<ul style="list-style-type: none"> <li>Daily</li> <li>Weekly</li> <li>Monthly</li> </ul>



AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
			<ul style="list-style-type: none"> <li>• Daily, weekly and monthly OEMPr checklist.</li> <li>• Incident register.</li> <li>• Waste register.</li> <li>• Safe Disposal Certificates for each entry in the waste register.</li> <li>• SDC's for Sanitary Services.</li> <li>• Complaints register.</li> <li>• Toolbox talk Topics.</li> <li>• Toolbox talk register.</li> <li>• Environmental Awareness and Induction training register.</li> <li>• Water records.</li> <li>• Electricity records.</li> <li>• Machinery maintenance records.</li> <li>• Material Safety Data Sheets.</li> <li>• Signed Method Statements.</li> </ul>			

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
<b>Monitoring and Auditing</b>	<ul style="list-style-type: none"> <li>Failure to identify or evaluate the level of compliance with the established environmental criteria.</li> </ul>	<ul style="list-style-type: none"> <li>Regular site inspections shall be undertaken by the EM and checklist be completed.</li> <li>Regular audits shall be conducted by the EM and reports completed.</li> <li>Any non-compliance must be formally recorded in an environmental audit register, together with the response and action undertaken and the timeframes.</li> <li>The client must appoint an Independent environmental auditor to audit compliance of the OEMPr.</li> </ul>	<ul style="list-style-type: none"> <li>Inspection checklist and register.</li> <li>EM report.</li> </ul>	<ul style="list-style-type: none"> <li>To ensure that all requirements set out in the OEMPr are implemented.</li> <li>To assess the degree to which the project complies with the OEMPr and identifying all short comings.</li> </ul>	<ul style="list-style-type: none"> <li>Regular site inspections.</li> <li>Regular audits and audit reports.</li> </ul>	<ul style="list-style-type: none"> <li>Monthly/Quarterly.</li> </ul>
<b>Environmental Training and Awareness</b>	<ul style="list-style-type: none"> <li>Lack of training and awareness will result in an increase of environmental non-compliance events/incidents and could have been preventable.</li> </ul>	<ul style="list-style-type: none"> <li>The content of the OEMPr must be included in the Induction Program on site.</li> <li>Induction shall be given to all staff working on or visiting the site.</li> <li>Induction training should include:</li> </ul>	<ul style="list-style-type: none"> <li>Induction program.</li> <li>Induction material.</li> <li>Induction training and attendance registers.</li> <li>Toolbox talk with attendance registers.</li> <li>Homeowners manual.</li> </ul>	<ul style="list-style-type: none"> <li>To ensure that all staff understand the requirements of the OEMPr.</li> <li>To ensure that each individual understands their role in the implementation of the control measures</li> </ul>	<ul style="list-style-type: none"> <li>Project inductions to given to all site staff and visitors prior to work.</li> <li>Well informed staff on site ensuring compliance</li> </ul>	<ul style="list-style-type: none"> <li>During the tender phase with contractors</li> <li>Within the first week of appointment.</li> <li>Daily.</li> <li>Weekly.</li> <li>Every 6 months.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>- Explanation of the importance of complying with the OEMPr.</li> <li>- Discussion of the potential impacts of construction activities.</li> <li>- The benefits of improved personal performance.</li> <li>- Employees roles and responsibilities and emergency preparedness.</li> <li>- Explanation of the mitigation measures that must be implemented when carrying out their activities.</li> <li>- No-go areas and other specifications.</li> <li>- Evaluation quiz to be completed as drafted by the ECO.</li> <li>• The OEMPr must be provided to residents within the estate.</li> <li>• Environmental matters must be communicated via the HOA monthly bulletin.</li> </ul>		<p>provided in the OEMPr.</p> <ul style="list-style-type: none"> <li>• The Consulting Engineers, Contractor and supervisory staff must be fully aware of the contents of this OEMPr and sign a letter to that effect.</li> </ul>	<p>with the OEMPr.</p> <ul style="list-style-type: none"> <li>• Daily pre-start meetings to be conducted before work of each day.</li> <li>• All staff are to be competent in relation to their environmental responsibilities.</li> </ul>	

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
<p><b>Contractor/Supplier Laydown Areas</b></p>	<ul style="list-style-type: none"> <li>• Increase in Visual Impact.</li> <li>• Soil and water pollution.</li> <li>• Establishment of soil erosion.</li> <li>• Dust pollution</li> <li>• Noise pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Clearly demarcate the entire development footprint prior to initial site clearance and prevent construction personnel from leaving the demarcated area.</li> <li>• Shade netting should be used to minimize the visual impact of the camp and construction activities.</li> <li>• Naturally occurring fauna &amp; flora should be preserved as far as possible.</li> <li>• No killing of small fauna in the site area are allowed.</li> <li>• Dust suppression must be implemented on site in the form of a water truck to control dust pollution during construction operations on site.</li> <li>• Construction activities to take place only during working hours i.e. 08h00 am till 17h00 pm – Monday to Fridays.</li> <li>• Machinery and noise induced equipment (plant muffler systems) to be in good order of repair.</li> </ul>	<ul style="list-style-type: none"> <li>• Site Layout Plan design.</li> <li>• Method Statements.</li> <li>• Environmental Risk Assessments.</li> <li>• Dust and Noise Monitoring Checklist.</li> </ul>	<ul style="list-style-type: none"> <li>• To minimize the construction footprint and impacts.</li> <li>• Minimize the area of disturbance by optimizing the layout of the construction.</li> <li>• Ensure a safe working environment for the construction workforce and the surrounding residents.</li> </ul>	<ul style="list-style-type: none"> <li>• Have the smallest possible impact on the environment.</li> <li>• Full control over “No-Go” areas and the movement of workforce.</li> </ul>	<ul style="list-style-type: none"> <li>• Once of during site establishment of contractors/suppliers.</li> <li>• When repair works are required.</li> <li>• As and when required.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
<p><b>Energy Consumption</b></p>	<ul style="list-style-type: none"> <li>• High electrical energy consumption</li> </ul>	<ul style="list-style-type: none"> <li>• Municipal energy usage must be meter and readings must be logged on a monthly site register.</li> <li>• Electrical generators used on site must be in good state of repair and should not be left running when not in use.</li> <li>• Generator operating hours to be recorded.</li> </ul>	<ul style="list-style-type: none"> <li>• Monthly Energy Consumption register</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiently managing energy resources</li> </ul>	<ul style="list-style-type: none"> <li>• To minimize energy consumption</li> </ul>	<ul style="list-style-type: none"> <li>• Monthly</li> </ul>
<p><b>Flora</b></p>	<ul style="list-style-type: none"> <li>• Direct and indirect biodiversity loss.</li> <li>• Alien Invasive plant species</li> </ul>	<ul style="list-style-type: none"> <li>• Alien and invasive plant species must be eradicated on an ongoing basis and material disposed of in the correct manner.</li> <li>• No plants shall be collected or harvested for firewood or medicinal purposes.</li> <li>• Burning of vegetation is not allowed on site.</li> <li>• Protected trees may not be removed and permits must be acquired if protected trees need to be removed/pruned.</li> <li>• Alien and invasive plant may not be planted onsite and all</li> </ul>	<ul style="list-style-type: none"> <li>• Daily/ weekly checklist.</li> <li>• Method Statements.</li> <li>• Landfill site waste License.</li> <li>• Landfill site disposal certification to be filed.</li> </ul>	<ul style="list-style-type: none"> <li>• Protect and encourage growth of indigenous and protected plant species.</li> <li>• Eradicate all alien/ invasive plant species.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimizing damage to the natural habitat;</li> </ul>	<ul style="list-style-type: none"> <li>• Before construction commence.</li> <li>• Daily.</li> <li>• Weekly.</li> <li>• Within 6 months.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		landscaping must be done in line with the plant species list. <ul style="list-style-type: none"> <li>Residents must be informed of plant species list and restriction with regards to introducing alien and invasive plant species.</li> <li>Recommendations as per the Baseline Biodiversity Assessment prepared by the Biodiversity Company in June 2017 must be implemented.</li> </ul>				
<b>Fauna</b>	<ul style="list-style-type: none"> <li>Direct and indirect biodiversity loss.</li> </ul>	<ul style="list-style-type: none"> <li>Animals found on the site may not be harmed or killed.</li> <li>No snaring, hunting or capturing or harming of animals will be allowed.</li> <li>Effective rodent control to be implemented.</li> <li>Limit pesticide use to non-persistent, immobile pesticides and apply in accordance with label and application permit directions.</li> <li>Maintain owl and bat boxes.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental incident Register.</li> </ul>	<ul style="list-style-type: none"> <li>No harm done to any fauna species within the area.</li> </ul>	<ul style="list-style-type: none"> <li>Have a zero-fauna fatality count.</li> <li>Manage all encounters of fauna species in line with the EMPr.</li> </ul>	<ul style="list-style-type: none"> <li>On-going</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>Permits must be in place should any fish species be introduced to existing dams.</li> <li>Recommendations as per the Baseline Biodiversity Assessment prepared by the Biodiversity Company in June 2017 must be implemented.</li> </ul>				
<b>Visual Impact</b>	<ul style="list-style-type: none"> <li>Visual impacts tend to create a dislike feeling among people and the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Good Housekeeping should be practiced at construction sites, laydown areas and waste areas.</li> <li>No uncontained waste should be allowed on and around the site, all waste must be placed in closed waste receptacles immediately upon production.</li> <li>Construction to occur only during daytime. Any nighttime work must be approved in consultation with the surrounding landowners.</li> </ul>	<ul style="list-style-type: none"> <li>Daily/ weekly checklists.</li> </ul>	<ul style="list-style-type: none"> <li>To have a clean and organized site.</li> <li>To decrease the dislike feeling among people and the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Neatly stacked laydown areas.</li> <li>No litter laying around on site and spreading to the surrounding environment and public roads.</li> </ul>	<ul style="list-style-type: none"> <li>Daily.</li> <li>Weekly.</li> </ul>
<b>Security &amp; Access Control</b>	<ul style="list-style-type: none"> <li>Loss of property through theft.</li> <li>Injury to authorized and un-authorized</li> </ul>	<ul style="list-style-type: none"> <li>Security guards must be stationed at the entrance to the site and records of all persons i.e. (telephone number, name and surname) and vehicles entering and leaving the site</li> </ul>	<ul style="list-style-type: none"> <li>Access Register.</li> <li>Security Plan and Procedure.</li> </ul>	<ul style="list-style-type: none"> <li>To prevent theft and injury to un-authorized personal and damage to property as a</li> </ul>	<ul style="list-style-type: none"> <li>No incidents of un-authorized persons or vehicles on site.</li> <li>Zero incidents of theft or</li> </ul>	<ul style="list-style-type: none"> <li>Daily</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
	persons in the area.	must be kept and filed to be used for roll call during an on-site emergency.		result of actions of un-authorized persons.	damage to property.	
<b>Stormwater and Erosion</b>	<ul style="list-style-type: none"> <li>Loss of Soil resources and contamination / siltation of water bodies.</li> </ul>	<ul style="list-style-type: none"> <li>A stormwater management plan must be developed and implemented.</li> </ul>	<ul style="list-style-type: none"> <li>SWM Plan.</li> </ul>	<ul style="list-style-type: none"> <li>To manage stormwater to prevent flooding/ ponding of water and to prevent soil loss through erosion.</li> </ul>	<ul style="list-style-type: none"> <li>No ponding of water that may promote soil erosion.</li> <li>No soil erosion occurring on site.</li> </ul>	<ul style="list-style-type: none"> <li>On-going</li> <li>On-going</li> </ul>
<b>Concrete and Cement</b>	<ul style="list-style-type: none"> <li>Cement powder has a high pH, spillage of dry cement powder and concrete slurry will affect both soil and water pH adversely.</li> </ul>	<ul style="list-style-type: none"> <li>No mixing of cement is allowed on bare ground, mortar boards or similar structures must be used.</li> <li>Empty cement bags should be disposed of as hazardous waste.</li> <li>Storage of cement shall only occur at designated storage areas.</li> </ul>	<ul style="list-style-type: none"> <li>Training records.</li> <li>Incident Register.</li> </ul>	<ul style="list-style-type: none"> <li>To water and soil pollution.</li> </ul>	<ul style="list-style-type: none"> <li>All concrete is mixed on mortar boards.</li> <li>No contamination of soil/water.</li> </ul>	<ul style="list-style-type: none"> <li>Daily</li> <li>On-going</li> </ul>
<b>Soil Management</b>	<ul style="list-style-type: none"> <li>Direct impact on soil degradation (altering soil quality).</li> <li>Indirect impact on environment</li> </ul>	<ul style="list-style-type: none"> <li>Topsoil must be stripped from all viable area and stockpiled for rehabilitation.</li> <li>Building sand to be correctly stored out of way of storm water runoff and riparian area.</li> </ul>	<ul style="list-style-type: none"> <li>Checklist.</li> <li>Incident Register.</li> </ul>	<ul style="list-style-type: none"> <li>To protect topsoil from erosion and degradation.</li> <li>Preserve topsoil and subsoil for rehabilitation</li> </ul>	<ul style="list-style-type: none"> <li>All measures to protect topsoil are implemented.</li> <li>To prevent any nuisance to the</li> </ul>	<ul style="list-style-type: none"> <li>Once off</li> <li>On-going until all earthwork activities are completed.</li> </ul>



AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
	<p>as soil may be unsuitable for vegetation growth.</p>	<ul style="list-style-type: none"> <li>• Building sand and aggregate must be sourced from license borrow pits and proof must be obtained and kept on site.</li> <li>• Soils contaminated with fuels, oils, paints, solvents etc. due to spillage shall be removed as soon as reasonably possible and disposed of at an appropriate (licensed) waste disposal facility (refer to hazardous waste section for more details).</li> </ul>		<p>purposes where available.</p>	<p>surrounding environment.</p>	
<p><b>Waste Treatment Sanitation</b></p>	<p><b>Water &amp;</b></p> <ul style="list-style-type: none"> <li>• Ground and/ or water pollution.</li> <li>• Soil pollution.</li> <li>• Negative effect on the health of living organisms including humans.</li> </ul>	<ul style="list-style-type: none"> <li>• The WWTW Operator must prepare and submit a Method Statement to the HOA.</li> <li>• Ongoing maintenance must be undertaken on the onsite WWTW.</li> <li>• The onsite WWTW must have secondary containment in place.</li> <li>• Stormwater infrastructure must be in place to divert spilled substances back into the plant.</li> <li>• Sludge drying beds must be maintained to prevent soil and groundwater contamination.</li> </ul>	<ul style="list-style-type: none"> <li>• Safe Disposal Certificates.</li> <li>• Letter from service provider stating that the municipality has given the company authorization to dispose of sewerage at the wastewater treatment plant.</li> <li>• A SDC register.</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure that all waste is treated and disposed of in a manner that does not cause harm to the environment and the health of any living organisms.</li> </ul>	<ul style="list-style-type: none"> <li>• All waste is accounted for and disposed of in the correct manner.</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly.</li> <li>• Monthly.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>• Dried sewerage sludge must be disposed of as hazardous waste (see Waste Management Plan for more requirements).</li> <li>• Screenings waste at the inlet works must be contained in impermeable containers and be disposed of as hazardous waste at a licensed hazardous waste landfill site.</li> <li>• Chemical toilets must be available at active construction areas.</li> <li>• All chemical toilets must be safely secured to the ground to prevent wind from blowing them over.</li> <li>• Chemical toilets must be serviced at least once a week or alternatively, as often as required.</li> <li>• Sewerage must be taken to an approved wastewater treatment plant (a letter from which must be obtained stating that they have capacity to treat the waste, and a copy of this letter must be kept on file on site).</li> </ul>				

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>• Safe Disposal Certificates (SDC) must be obtained from the sewerage disposal company and be readily available on the environmental file.</li> <li>• Potable water must be provided for hand washing near all toilets.</li> </ul>				
<p><b>Water Management</b></p>	<ul style="list-style-type: none"> <li>• The depletion of natural resource through water wastage.</li> <li>• Degradation of water quality and water pollution.</li> </ul>	<ul style="list-style-type: none"> <li>• No natural water sources (dams &amp; boreholes) shall be used if a Water Use License is not in place from the Department of Water and Sanitation (DWS).</li> <li>• Groundwater monitoring should be undertaken on a quarterly basis.</li> <li>• Effluent discharge ponds must be lined.</li> <li>• Effluent quality must be monitored by an accredited laboratory and result be readily available.</li> <li>• Effluent water from the WWTW musty comply with applicable water quality limits.</li> </ul>	<ul style="list-style-type: none"> <li>• Checklists.</li> <li>• Water usage register.</li> <li>• Method Statements.</li> <li>• General Authorization/ Water use License if applicable.</li> </ul>	<ul style="list-style-type: none"> <li>• To minimize water usage on site.</li> <li>• Ensure compliance with the NWA.</li> </ul>	<ul style="list-style-type: none"> <li>• No water wasted during construction.</li> <li>• No non-conformances from the DWS.</li> </ul>	<ul style="list-style-type: none"> <li>• Daily.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>• Effluent volumes being pumped into existing dams must be recorded.</li> <li>• Potable water must comply with the DWS Drink Water Quality Standards.</li> <li>• Water abstraction records must be kept for water abstracted from boreholes.</li> <li>• Water meter must be installed at all boreholes and calibration certificates must be available.</li> <li>• Borehole abstraction volumes may not exceed volumes as per existing water rights.</li> <li>• Water abstraction records must be kept for water taken from the Hartebeespoort Dam.</li> <li>• Water use records must be kept and monthly records submitted to the DWS.</li> <li>• Water levies imposed on by the DWS must be payed and records of payment be readily available on request.</li> </ul>				

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>• Water use for irrigation must comply with applicable water quality standards.</li> <li>• Irrigation volumes are to be recorded and records be kept.</li> <li>• Dams used for the storage of water must have the required WUL in terms of Section 21 (b) of the NWA (1998).</li> </ul>				
<p><b>Traffic Management</b></p>	<ul style="list-style-type: none"> <li>• Obstructing in traffic flow within the surrounding area.</li> <li>• Accidents (damage to property and injury to persons).</li> <li>• Damage to fauna and flora species.</li> </ul>	<ul style="list-style-type: none"> <li>• All vehicles shall be roadworthy.</li> <li>• Damages done to access roads should be repaired within 24 hours since detection.</li> <li>• Speed limits must be adhered to.</li> <li>• Signage must be placed along roads to indicate speed limits, travel restrictions and other standard traffic control information.</li> <li>• Construction vehicles should avoid traveling on public roadways during peak times such as during the morning and late afternoon commute time.</li> <li>• Public road conditions in and out of the site should be monitored</li> </ul>	<ul style="list-style-type: none"> <li>• Inspection checklist.</li> <li>• Traffic Management Plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that disturbances to the public along public roads used by construction vehicles are minimized.</li> </ul>	<ul style="list-style-type: none"> <li>• No road fatalities of person and fauna species.</li> <li>• No complaints received from the public.</li> </ul>	<ul style="list-style-type: none"> <li>• Daily.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		and kept clean from all site debris and soils to minimise potential risks caused by construction activities.				
<b>Stakeholder Engagement</b>	<ul style="list-style-type: none"> <li>• Unsatisfied community and I&amp;AP members.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor/suppliers are to inform neighbors of disruptive activities at least 24 hours beforehand.</li> </ul>	<ul style="list-style-type: none"> <li>• Complaints register.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide communities in the vicinity of the development and other interested stakeholders, with regular information on the progress of work and its implications.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide a response to all complaints within 7 days.</li> </ul>	<ul style="list-style-type: none"> <li>• Seven days.</li> </ul>
<b>Hazardous Chemical Substances Management</b>	<ul style="list-style-type: none"> <li>• Contamination of the environment due to incorrect handling of hazardous substances.</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical storage areas must be bunded.</li> <li>• Bunded area must be sealed with a SABS approved sealant.</li> <li>• Bunds must be constructed and must be capable of containing 110% of the total volume of chemicals to be stored.</li> <li>• A sump must be constructed inside the bunded area and the floor of the bunded area must slope towards the sump so that</li> </ul>	<ul style="list-style-type: none"> <li>• A register of hazardous chemicals stored on site must be drawn up and displayed at the storage area.</li> <li>• Material Safety Data Sheets (MSDS) must be made available for all chemicals used on the site.</li> </ul>	<ul style="list-style-type: none"> <li>• To prevent the pollution of ground or water.</li> <li>• To minimize the risk of pollution through leakages, spillages or inappropriate disposal of hazardous substances; and to minimize the risk of hazardous</li> </ul>	<ul style="list-style-type: none"> <li>• All HCS are stored within a drip tray or bunded area.</li> <li>• Spillages are treated immediately once it was produced on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Once off.</li> <li>• Daily.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<p>should any spillages occur, the chemicals or contaminated water (rainwater) can be easily pumped out.</p> <ul style="list-style-type: none"> <li>• Outlet valves can be placed on the bunded area in order to discharge any uncontaminated rainwater that has collected in the bund.</li> <li>• Preferably, the bunded area should be roofed in order to prevent the ingress of rainwater.</li> <li>• The bund capacity and the quantity of chemicals stored in the bunded areas must be displayed at the storage area.</li> <li>• Access to chemical storage areas must be restricted to authorized personnel only and must be clearly demarcated with the necessary warning signs.</li> <li>• A register of HCS must be displayed at the storage area.</li> <li>• Material Safety Data Sheet must be available for each HCS and must be easily accessible in case of an emergency.</li> </ul>	<ul style="list-style-type: none"> <li>• Flammable liquid storage permit.</li> <li>• Method Statements.</li> </ul>	<p>substances affecting the health of the workforce, public or the environment.</p>		

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>• Paints, solvents, acids, resins, etc. shall only be stored within designated storage sheds.</li> <li>• Suitable drip trays must be placed under all operating generators, both stationary and mobile.</li> <li>• Drip trays should be provided if there are small quantities of hazardous chemical substances (HCS) to be stored on site.</li> <li>• Re-fueling of vehicles, plant or equipment must be take place on a concrete floor in order to prevent spillages from contaminating the surrounding environment.</li> <li>• Alternatively, a metal drip tray should be used to prevent any spillage onto the ground during the decanting operation.</li> <li>• All vehicles should be inspected for oil and fuel leaks on a daily basis.</li> <li>• Vehicle maintenance will not be done on site except in emergency situations in which</li> </ul>				



AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<p>case mobile drip trays will be used to capture any spills.</p> <ul style="list-style-type: none"> <li>• A dedicated service area must be established at the workshop area for routine services.</li> <li>• An oil-water separator must be installed and maintained.</li> <li>• Hazardous substances must be handled in accordance with the manufacturer’s specifications, legal requirements and the procedures mentioned.</li> <li>• Employees who work with hazardous substances must receive training about the proper methods for storage, handling and disposing of these substances.</li> <li>• Oil Spill Kits must be available on site to deal with spillages.</li> <li>• Daily inspections must be undertaken, and any chemical spillages must be recorded as an incident.</li> <li>• Chemical spillages must be cleaned up immediately by utilizing the spill kit.</li> </ul>				

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>• A Flammable Liquid License must be obtained from the Municipal Emergency Services for storage of flammable substances in terms of local by-laws (if applicable).</li> <li>• Used motor oil must be stored in a bunded area and disposed of at a ROSE approved facility. Records must be kept.</li> <li>• See WMP for hazardous waste management requirements.</li> </ul>				
<b>Fire</b>	<ul style="list-style-type: none"> <li>• Direct and indirect loss of fauna and flora species.</li> <li>• Damage to property.</li> <li>• Health and safety hazard to humans.</li> </ul>	<ul style="list-style-type: none"> <li>• Enclosed fires should only be allowed within fire-safe demarcated areas.</li> <li>• No wood may be collected for the purpose of fires.</li> <li>• Designated smoking areas with ash trays must be established.</li> <li>• No vegetation and waste shall be burned on site.</li> <li>• The contact details of the local fire and emergency services must be readily available and shall be displayed on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Daily/ weekly checklists.</li> <li>• Fire prevention and management plan.</li> </ul>	<ul style="list-style-type: none"> <li>• To prevent any fire risks occurring in and around the site.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide designated braai areas that will pose no fire risk on site.</li> <li>• Fire hydrants and hoses to be readily available within the site.</li> <li>• Updated emergency contact details must be available.</li> </ul>	<ul style="list-style-type: none"> <li>• Within the 1st month.</li> <li>• On-going.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>• Basic fire-fighting equipment and suitably qualified/experienced personal are available on site at all times, as per the specifications defined by the health and safety representative/consultant.</li> <li>• Fire extinguishers shall be placed at all working areas including where hazardous substances are kept.</li> <li>• The fire risk on site must be included in the environmental induction training prior to commencement of construction and must be included in toolbox talks.</li> </ul>			<ul style="list-style-type: none"> <li>• Training of all staff for evacuation in the case of emergency.</li> </ul>	
<b>Heritage Resources</b>	<ul style="list-style-type: none"> <li>• Damage to or destruction of heritage resources.</li> </ul>	<ul style="list-style-type: none"> <li>• Should any Heritage sites be exposed, all work on the site must be stopped.</li> <li>• Contact the South African Heritage Resources Authority (SAHRA) and a heritage specialist.</li> </ul>	<ul style="list-style-type: none"> <li>• Incident report.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and preserve any heritage resources that may be on the site.</li> <li>• Compliance with NHRA.</li> </ul>	<ul style="list-style-type: none"> <li>• No damage to heritage resources.</li> </ul>	<ul style="list-style-type: none"> <li>• On-going.</li> </ul>
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>• Contribution to air pollution.</li> </ul>	<ul style="list-style-type: none"> <li>• Suitable dust control measures (watering down of access and other areas or by means of a</li> </ul>	<ul style="list-style-type: none"> <li>• Dust suppression records and schedule.</li> </ul>	<ul style="list-style-type: none"> <li>• To be within the allowed dust fallout thresholds.</li> </ul>	<ul style="list-style-type: none"> <li>• Have a 100% dust fallout</li> </ul>	<ul style="list-style-type: none"> <li>• Daily.</li> <li>• On-going.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
<b>(Emissions and dust)</b>	<ul style="list-style-type: none"> <li>• Posing a health hazard to living organisms (fauna and flora including humans).</li> <li>• Dust pollution negatively impacting nearby schools and neighboring communities.</li> </ul>	<ul style="list-style-type: none"> <li>dust control agent) should be implemented when required.</li> <li>• Ensure that all vehicles are in a road-worthy condition to avoid excessive exhaust emissions.</li> <li>• Speed limits must be implemented on access roads.</li> <li>• A register must be kept of all backup power generators.</li> <li>• Generators must be services in line with manufacture specifications and records be kept.</li> <li>• Reporting on emission to be undertaken in line with the Greenhouse Gas Reporting regulation of 2017.</li> <li>• Determine current and future Tax liability by considering the requirements of the Carbon Tax Act (Act 15 of 2019).</li> </ul>	<ul style="list-style-type: none"> <li>• Incident register.</li> <li>• Incident Report.</li> <li>• Generator Inventory.</li> </ul>	<ul style="list-style-type: none"> <li>• To prevent any health risk to the surrounding environment and humans.</li> </ul>	<ul style="list-style-type: none"> <li>compliance rate.</li> <li>• No offensive smells from waste.</li> <li>• No, I&amp;AP complaints.</li> </ul>	
<b>Waste Management</b>	<ul style="list-style-type: none"> <li>• Pollution of natural resources like air, soil and water.</li> </ul>	<ul style="list-style-type: none"> <li>• Refer to the WMP for detailed waste management requirements.</li> <li>• General waste storage areas may not exceed 100m<sup>3</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>• Waste disposal register for each waste stream.</li> <li>• Safe Disposal Certificates.</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure that all waste is dispose in a safe manner that will not cause</li> </ul>	<ul style="list-style-type: none"> <li>• 100% compliance with the National Waste Act.</li> </ul>	<ul style="list-style-type: none"> <li>• Daily.</li> <li>• Weekly.</li> <li>• Monthly.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
	<ul style="list-style-type: none"> <li>• Posing a health hazard to fauna / flora species / humans.</li> <li>• Giving rise to the unwanted visual impact of the site.</li> <li>• Pollution and illegal dumping of waste on adjacent open areas</li> </ul>	<ul style="list-style-type: none"> <li>• Waste may not be burned on site.</li> <li>• Waste may not be dumped onsite.</li> <li>• Waste must be disposed of at the relevant licensed/ municipal landfill site.</li> <li>• Separate labeled waste bins and skips must be provided to contain, construction rubble, general waste, metal, wood, paper and hazardous waste so that waste can be separated at source.</li> <li>• Waste bins and skips should be made scavenger proof.</li> <li>• Waste must be placed inside the dedicated waste bins immediate once it was produced.</li> <li>• General and hazardous waste must be separated and contained separately.</li> <li>• Waste may only be disposed of at a licensed landfill site, licensed in terms of section 20(b) of the National Environmental</li> </ul>	<ul style="list-style-type: none"> <li>• Letter from the landfill site or municipality to indicate that the landfill site at which waste from the construction area is disposed of is a legally certified landfill waste facility.</li> </ul>	<p>pollution to the environment.</p> <ul style="list-style-type: none"> <li>• To reduce, re-use, recycle and last option dispose where possible.</li> <li>• Compliance with NEMWA (2008).</li> </ul>	<ul style="list-style-type: none"> <li>• All waste disposed of in a manner that does not cause harm to the environment.</li> </ul>	

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<p>Management Waste Act, 2008 (Act 59 of 2008).</p> <ul style="list-style-type: none"> <li>• Cover nets should be made available over skips to prevent waste from being blown out of the skip.</li> <li>• Hazardous Waste must be removed by a registered waste removal company (waste handler).</li> <li>• A record of all waste removed must be kept on file and waste disposal waybills and a site register must be kept.</li> <li>• No uncontained waste shall be allowed on site.</li> <li>• Weighbridge slips must be obtained for both general and hazardous waste to prove that the waste has been properly disposed of.</li> </ul>				
<p><b>Noise Management</b></p>	<ul style="list-style-type: none"> <li>• Loss of hearing of Employees.</li> <li>• Nuisance residents.</li> </ul>	<ul style="list-style-type: none"> <li>• All machinery must be in a good working condition in order to avoid excessive noise.</li> <li>• Hearing protection must be worn when operating equipment or are in the vicinity</li> </ul>	<ul style="list-style-type: none"> <li>• Machinery maintenance records.</li> <li>• Noise calibration certificates.</li> </ul>	<ul style="list-style-type: none"> <li>• To protect the hearing of workers.</li> <li>• To minimize disruption of the</li> </ul>	<ul style="list-style-type: none"> <li>• All equipment must not exceed noise guidelines.</li> <li>• Equipment may not exceed 85</li> </ul>	<ul style="list-style-type: none"> <li>• Daily.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<p>of machinery or equipment which exceeds the 85dBA threshold of noise.</p> <ul style="list-style-type: none"> <li>Excessive noise activities must be done during normal working hours.</li> <li>No amplified music or shouting shall be allowed on site.</li> <li>Construction activities to take place only during normal working hours i.e. 08h00 am till 17h00 pm Mondays till Friday. Any alternative required work should be done in consultation with the HOA EM.</li> </ul>		<p>serenity of the area.</p> <ul style="list-style-type: none"> <li>Avoid unnecessary disturbances to the public and residents.</li> </ul>	<p>dBA at the point receptor in order to protect the hearing of employees.</p>	
<b>Safety</b>	<ul style="list-style-type: none"> <li>Death, injury or health effects of individuals working on or entering the construction area.</li> </ul>	<ul style="list-style-type: none"> <li>Activities must comply with the requirements of the Occupational Health and Safety Act (Act 85 of 1993).</li> <li>A Safety Specification must be prepared by the HOA and provided to contractors and suppliers.</li> <li>The HOA must develop and implement an Health and Safety Plan for the estate.</li> </ul>	<ul style="list-style-type: none"> <li>Refer to safety departmental files.</li> </ul>	<ul style="list-style-type: none"> <li>To protect all persons on site from harm, injury or ill health.</li> </ul>	<ul style="list-style-type: none"> <li>No incidents of workers on site.</li> <li>All workers issued with the correct PPE.</li> <li>Safety signs utilized on site identifying risks.</li> </ul>	<ul style="list-style-type: none"> <li>Daily.</li> <li>Upon appointment.</li> <li>Within the first month.</li> </ul>

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>• Safety Signs should be displayed at the entrance of the site and other necessary locations around the site.</li> <li>• The correct PPE should be issued to workers on the site (hard hats, safety shoes, reflective vests, overalls, gloves and goggles) and the use of PPE enforced.</li> <li>• Areas for storage of fuels and other flammable materials shall comply with standard fire safety regulations.</li> </ul>				
<b>Emergency Preparedness</b>	<ul style="list-style-type: none"> <li>• Environmental Degradation.</li> <li>• Damage or harm to biodiversity.</li> <li>• Injury or harm to individuals.</li> </ul>	<ul style="list-style-type: none"> <li>• An emergency plan must be prepared, implemented, displayed and communicated to all parties performing work on the estate. The plan must include as a minimum the following:                             <ul style="list-style-type: none"> <li>– How to report emergencies.</li> <li>– Notification of appropriate organization personnel.</li> <li>– Notification of outside parties, both organizational as well as civil.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Training material.</li> <li>• Training records.</li> <li>• Incident Register.</li> <li>• Emergency preparedness plan.</li> </ul>	<ul style="list-style-type: none"> <li>• To contain all Spillages and prevent environmental degradation.</li> <li>• To protect all persons and property on site.</li> </ul>	<ul style="list-style-type: none"> <li>• All emergency plans prepared and communicated to workforce.</li> <li>• No incidents occurring on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Within the first month.</li> <li>• Monthly.</li> </ul>



AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>- Individual roles and responsibilities.</li> <li>- Exit procedures and assembly points.</li> <li>- All clear and re-entry procedures.</li> <li>- Isolation and shut down of vital processes and work areas.</li> <li>- Hazardous Chemical and hydrocarbon spills clean-up and mitigation procedures.</li> <li>- Control of visitors and contractors.</li> <li>- Emergency telephone numbers.</li> <li>- Off-site emergencies; and</li> <li>- Communications with the general public and media.</li> <li>• Telephone numbers of emergency services, including the local fire-fighting service, shall be posted conspicuously in the Contractor's office near the telephone.</li> </ul>				

AREA/ ASPECT	IMPACT / RISK	CONTROL MEASURES	DOCUMENTATION & RECORDS	OBJECTIVE	TARGET	TIME FRAME
		<ul style="list-style-type: none"> <li>The environmental incident register should be updated by the site EM as and when needed when environmental incidents occur.</li> <li>Mock drills should be scheduled to be performed once every quarter on site and a register must be filed.</li> </ul>				
<b>Rehabilitation</b>	<ul style="list-style-type: none"> <li>Establishment of alien and invasive plant species within the estate.</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Plant Species list in Appendix B for a list of plant species that may be used within the Estate.</li> <li>Eradicate all alien invasive species that became established during the construction phase.</li> </ul>	<ul style="list-style-type: none"> <li>Method Statement.</li> <li>Daily/ Weekly Checklist.</li> </ul>	<ul style="list-style-type: none"> <li>Instate vegetation cover and landscape the area.</li> </ul>	<ul style="list-style-type: none"> <li>100% successful instatement of vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>Within six months after the cessation of construction works.</li> </ul>

### 13. METHOD STATEMENTS

Contractors and Suppliers must provide Method Statements detailing how they will perform their work in line with the requirements of this OEMPr.

Contractors/Suppliers shall not commence the activity until the Method Statement has been approved and accepted by the HOA EM.

Approved Method Statements shall be readily available on the site and shall be communicated to all relevant personnel. Where necessary, training shall be given to the personnel to facilitate compliance with the approved Method Statement.

### 14. NON-COMPLIANCE

The National Authority, Department of Environment, Forestry and Fisheries (DEFF) may initiate the following consequences for non-compliance with the NEMA (1998) or any other Act:

- Penalties (up to R10m);
- Termination of the Activity/ Withdrawal of Environmental Authorization;
- Criminal charges (10-year imprisonment).

Apart from the consequences above, the HOA can impose a penalty for non-compliance in terms of this OEMPr. The procedure detailed below is for a spot fine in terms of this OEMPr and does not detail the procedure for fining in terms of any other legal mechanisms.

The contractor shall comply with the environmental specifications and requirements of this OEMPr, and Section 28 of NEMA, on an on-going basis and any failure on his part to do so will entitle the client or client's representative to impose a penalty.

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

- The HOA shall issue a notice of non-compliance stating the nature and magnitude of the contravention.
- The Contractor/Supplier shall act to correct the transgression within the period specified.
- The Contractor/Supplier shall provide the HOA with a written statement describing the actions to be taken to discontinue the non-compliance, the actions taken to mitigate its effects and the expected results of the actions.
- In the case of the Contractor/Supplier failing to remedy the situation within the predetermined time frame, a penalty based on the conditions of the contract will be issued.
- In the case of non-compliance giving rise to physical environmental damage or destruction, the HOA shall be entitled to undertake or cause to be undertaken such remedial works as may be required to make good such damage and to recover from the Contractor/Supplier the full costs incurred in doing so.

## 15. PENALTIES

In terms of the contract, if the contractor is found to be in contravention of any of the items in this OEMPR the following penalties can be applied. Penalties can only be issued by the HOA EM:

**TABLE 10: PENALTIES**

	INFRINGEMENT	PENALTY
1.	Releasing a pollutant into the environment (Spillages).	R2000 – R20,000
2.	Failure to implement adequate dust control.	R2000 – R20,000
3.	Failure to clean up or treat a fuel/ chemical spill.	R2000 – R10,000
4.	Failure to adhere to working hours leading to nuisance.	R5000/hr
5.	Damage to No-go areas.	R2000 –R50,000
6.	Damage to archaeological site/finds.	R2000 – R20,000
7.	Illegal disposal of any waste types.	R2000 – R20,000
8.	Illegal water use.	R2000 – R20,000
9.	Failure to adhere to landscaping requirements.	R2000 – R20,000
10.	Failure to adhere to Safety Requirements.	R2000 – R20,000
11.	Intentional killing of faunal species	R2000 – R20,000
12.	Open Fires	R2000 – R20,000

## 16. COST ESTIMATES

There are a number of items that need to be identified and budgeted for in order to ensure sound environmental management. This section provides detailed items which need to be considered to ensure on-going compliance with the environmental requirements of this OEMPr. Provision must be made for the following cost items and included in the Bill of Quantities:

**TABLE 11: COST PROVISION**

	ITEM	DESCRIPTION	FREQUENCY
<b>CHEMICAL STORAGE</b>			
1	Bunded storage areas for chemicals	Impermeable lining; Concrete floor and walls; bricks; sump; must be able to contain 110% of the volume of chemicals to be stored in the bund.	Once off
2	Spill kits	To clean up chemical spills.	Once off

	ITEM	DESCRIPTION	FREQUENCY
3	Oil-Water Separators	Regular servicing of oil-water separators.	Ongoing.
<b>WASTE</b>			
3	Appointment of a Licensed waste service provider	To collect and safely dispose of contaminated waste from the site.	Once off
	Establishment of Waste Facilities	Establish facilities that meet legal requirements.	Once off/ as required
	Waste Receptacles	To contain waste. Labelling of waste receptacles.	Once off/ as required
	Third Party Audits	Audit waste facilities in line with requirements of waste norms and standards.	Annually
<b>WATER MANAGEMENT</b>			
4	Storm water control	Maintain stormwater infrastructure	Once off/ as required
	Waste Water Treatment Works	Water Quality Monitoring (Effluent)	Monthly
	Waste Water Treatment Works	Secondary Bunding of WWTW	Once off/ as required
	Waste Water Treatment Works	Lining of effluent ponds	Once off/ as required
	Waste Water Treatment Works	Waterproofing drying beds.	Once off/ as required
	Borehole water	Water Quality Monitoring	Monthly
	Boreholes	Installation and Calibration of Water Meters	Once off/ as required
<b>CONTROL OF ALIEN VEGETATION</b>			
6	Labour to remove weeds and alien plant species	Mechanical operation (no chemicals).	Monthly
<b>LEGAL AND OTHER REQUIREMENTS</b>			
7	Public Liability insurance	Insurance for damages caused to 3rd parties.	Once Off
8	OEMP Audits	Conduct regular audits to confirm compliance and continual improvement.	Annually
<b>EMERGENCY EQUIPMENT</b>			
9	Fire extinguishers & Servicing	Emergency scenarios	Annually
10	First Aid Boxes	Incidents	Once Off
11	Emergency Siren	Emergency Evacuation	Once off
<b>BIODIVERSITY MAINTENANCE</b>			
12	Floating Wetlands	Installation and maintenance	Annually
13	Bat and Owl Boxes, and Barbet Nests	Installation and maintenance	Annually
<b>TRAINING</b>			
14	Environmental Training and Awareness	Conduct regular training and awareness to increase cognizance of homeowners and employees.	Annually

	ITEM	DESCRIPTION	FREQUENCY
<b>SAFETY</b>			
15	Security & Access Control	Installation	Once off
	Health and Safety Plan	Develop and Implement a Health and Safety Plan.	Once off/ Ongoing.
<b>MACHINERY MAINTANANCE</b>			
	Servicing of plant and equipment	Regular servicing of plant and equipment including generators.	Ongoing.

## APPENDIX A: BASELINE BIODIVERSITY ASSESSMENT

## APPENDIX B: PLANT SPECIES LIST



APPENDIX C: DECLARATION OF UNDERSTANDING

Declaration of Understanding by the Client /Service Provider / Contractor

I, \_\_\_\_\_,

Representing \_\_\_\_\_,

Declare that I have read and understood the contents of the OEMPr

for:

Contract \_\_\_\_\_

I also understand that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the aforementioned Contract.

Signed: \_\_\_\_\_

Place: \_\_\_\_\_

Date: \_\_\_\_\_