LORNAY
ENVIRONMENTAL CONSULTING

Environmental Management Programme

Clearance of indigenous vegetation for the establishment of single residential dwelling and associated infrastructure on Portion 48 of the Farm 708

24 June 2025

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CLIENT: James Du Toit

TITLE: Proposed Agricultural Expansion through the Establishment of Additional Cultivation Blocks on Erf 1995, McGregor, Robertson RD

REFERENCE: EMP/48-708/Rev1

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STATEMENT OF INDEPENDENCE

Lornay Environmental Consultants nor any of the authors of this report have any material present or contingent interest in the outcome of this report, nor do they have any financial or other interest which may affect the independence of the author(s) or Lornay Environmental Consulting. The consultant fees paid to Lornay Environmental Consulting for the completion of this report is in line with standard professional fees and daily rates. The settling of the professional fee is not dependent on the outcome of the report.

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KEY TERMS AND ABBREVIATIONS

BAR	Basic Assessment Report
CARA	Conservation of Agricultural Resources Act (Act No. 43 of 1983)
DEA&DP	Department of Environmental Affairs and Development Planning (Western Cape)
EA	Environmental Authorisation
ECA	Environment Conservation Act (Act No. 73 of 1989)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEM:BA	National Environmental Management Biodiversity Act (Act No. 10 of 2004)
NEM:WA	National Environmental Management Waste Act (Act No. 59 of 2008)
PPE	Personal Protective Equipment
SDS	Safety Data Sheets
SHE	Safety Health and Environmental

Competent authority - The Department of Environmental Affairs and Development Planning (DEA&DP).

Contractor - the main or specialised contractors as appointed by the developer / applicant for the execution of the works, including all sub-contractors

Developer / Applicant – James Du Toit

Environmental Control Officer (ECO) - a suitably qualified person to be appointed by the Developer / Applicant, to oversee the implementation of the EMP and environmental agreement until the completion of works on the site

Environmental Management Plan / Programme (EMP/r) - this document, approved by the competent authority, to control the implementation of the works on the site in such a way as to ensure that they do not result in undue or reasonably adverse impacts on the environment.

General waste - Waste that does not pose an immediate hazard or threat to health or to the environment, and includes domestic waste, building and demolition waste, business waste and inert waste

Hazardous waste - 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.

Project manager - Overall responsible and accountable person for the site during the construction, operation and decommissioning of the facility.

Project Management team - The responsibility of the EMP implementation resides with this team. This team includes a Project Manager and appointed contractors and consultants.

Safety, Health and Environmental Officer (SHE Representative) – Applicant / developer will appoint one Safety Health and Environmental Officer, assisting the construction manager on Safety, Health and Environmental aspects of the project on the construction site.

Site Manager **–** the employee of the main contractor responsible for the day-to-day control of all activities and operation on site.

Sub-contractor and Contractor - Any provider of services, goods or people to the Applicant / Developer, for the construction, operation or decommissioning.

LEGISLATIVE REQUIREMENTS

A Basic Environmental Assessment process was applicable in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and the Environmental Impact Assessment (EIA) regulations (2014) (as amended). Appendix 4 of the NEMA EIA Regulations (GN. R982) sets out the minimum requirements for the drafting of an Environmental Management Plan (EMP). This EMP has been created in fulfilment of these prescribed requirements for the construction phase of the activity. The implementation of this EMP will be a condition of approval of the Environmental Authorisation (EA). Failure by the applicant, to comply with this EMP, will therefore constitute an offence, and the applicant and / or the appointed contractors can be held liable for penalties and / or legal action. It is therefore important that a copy of this EMP be issued to each contractor, preferably at the appointment stage, in order to allow for the costs of implementing the EMP, to be included in cost proposals. This will also ensure that the contractor is aware of his responsibilities prior to appointment and commencement. Each appointed contractor involved in the project, as well as the project manager (as applicable), will be required to sign for and thereby acknowledge contents of, the approved EMP and therefore abide by the specifications of the document and any amendments thereto.

Other applicable legislation

The Constitution of The Republic of South Africa (Act 108 of 1996)

The Constitution of the Republic of South Africa states that everyone has a right to a non-threatening environment and that reasonable measures are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

National Environmental Management Act (Act 107 of 1998)

The National Environmental Management Act (NEMA), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the relevant competent authorities. NEMA is a National Act, which is enforced by the Department of Environmental Affairs (DEA). These powers are delegated in the Western Cape to the Department of Environmental Affairs and Development Planning (DEA&DP).

National Environmental Management: Biodiversity Act (Act 10 of 2004)

Chapter 4 of the National Environmental Management: Biodiversity Act, 2004 (NEMBA) deals with threatened and protected ecosystems and species. The need to protect listed ecosystems is addressed (Section 54). Section 73 deals with Duty of Care relating to invasive species, while Section 76(2) calls for development of invasive species monitoring, control and eradication plans by all organs of state in all spheres of government, as part of environmental management plans required in terms of Section 11 of NEMA.

National Environmental Management: Waste Act (Act No. 59 of 2008)

The National Environmental Management: Waste Act (NEM:WA) provides for specific waste management measures (disposal and storage) and the remediation of contaminated land.

National Environmental Management: Air Quality Act (Act No. 39 of 2004)

Section 32 provides provision for the control of dust, section 34 provides provision for the control of noise and section 35 provides provision for the control of offensive odours, all which may be experienced during the construction or operation of an applicable development.

Environment Conservation Act (Act No. 73 of 1989)

The Environment Conservation Act (ECA) provides provision for the prevention of littering by employees and subcontractors during construction and the maintenance phases of development.

Occupational Health and Safety Act (Act No. 85 of 1993)

Section 8 outlines the general duties of employers to their employees and section 9 outlines the general duties of employers and self-employed persons, to persons other than their employees.

Hazardous Substances Act (Act No. 5 of 1973)

This Act provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances.

1. INTRODUCTION

Lornay Environmental Consulting (Pty) Ltd has been appointed by the applicant, Mr. James Du Toit, to ensure compliance with the National Environmental Management Act (NEMA, Act 107 of 1998), as amended, and the Environmental Impact Assessment Regulations of 2014, as amended. This appointment relates to the unauthorised clearance of indigenous vegetation for the establishment of a single residential dwelling and associated infrastructure on Portion 48 of Farm 708, Franskraal.

This Environmental Management Programme (EMPr) is binding on the applicant and all successors in title or future developers, whether ownership is transferred in whole or in part. The EMPr applies to the proposed development on Portion 48 of Farm 708, including any future amendments to the approved layout or development plan.

The submission of this EMPr forms part of the Basic Assessment process, as required by NEMA. It serves as a guiding document for both the construction and post-construction phases of the project, specifically addressing the clearance of vegetation, construction activities, and placement of infrastructure on the property.

The EMPr outlines prescriptive mitigation measures and identifies the individuals or organisations responsible for implementing specific tasks during both the construction and operational phases. Its primary objective is to ensure that all potential environmental impacts are either minimised or avoided entirely. As a dynamic document, the EMPr may require updates to reflect changes in site conditions or project activities. Once approved by the Competent Authority, this EMPr becomes legally binding.

Compliance with the EMPr is particularly critical during the construction phase, which includes vegetation clearing. A completion audit may be required at the end of construction, including the clearing and establishment of infrastructure, as stipulated in the Environmental Authorisation (EA).

This EMPr has been compiled in accordance with Section 24N of the National Environmental Management Act (NEMA), Act 107 of 1998, as amended.

2. DEVELOPMENT PROPOSAL

The unauthorised clearance of indigenous vegetation on Portion 48 of Farm 708, Franskraal, was undertaken to facilitate the construction of a single residential dwelling, as well as the placement of a container structure (Wendy house) and the establishment of animal, all of which have already been established on the property.

Development already established:

- Single residential dwelling
- Container (wendy house)
- Animal camp

In addition to the retrospective rectification of these developments, the current application in terms of Chapter 4, Section 16 (2) (o) of the Overstrand Municipal's Amended By-Law on Municipal Land Use Planning, 2020, also seeks approval for consent use as well as departure for tourism-related activities on the property. These proposed activities include:

Development to be concluded:

- A guesthouse
- A petting farm (expansion of the existing)
- A coffee shop
- A formalised parking area to support these uses.

The scope of this EMPr therefore covers both the retrospective rectification of the unauthorised activities already implemented, as well as the prospective environmental authorisation of the proposed tourism-related development. The objective is to ensure that all components of the development are implemented and operated in an environmentally responsible manner, with mitigation measures in place to manage and minimise any potential environmental impacts.

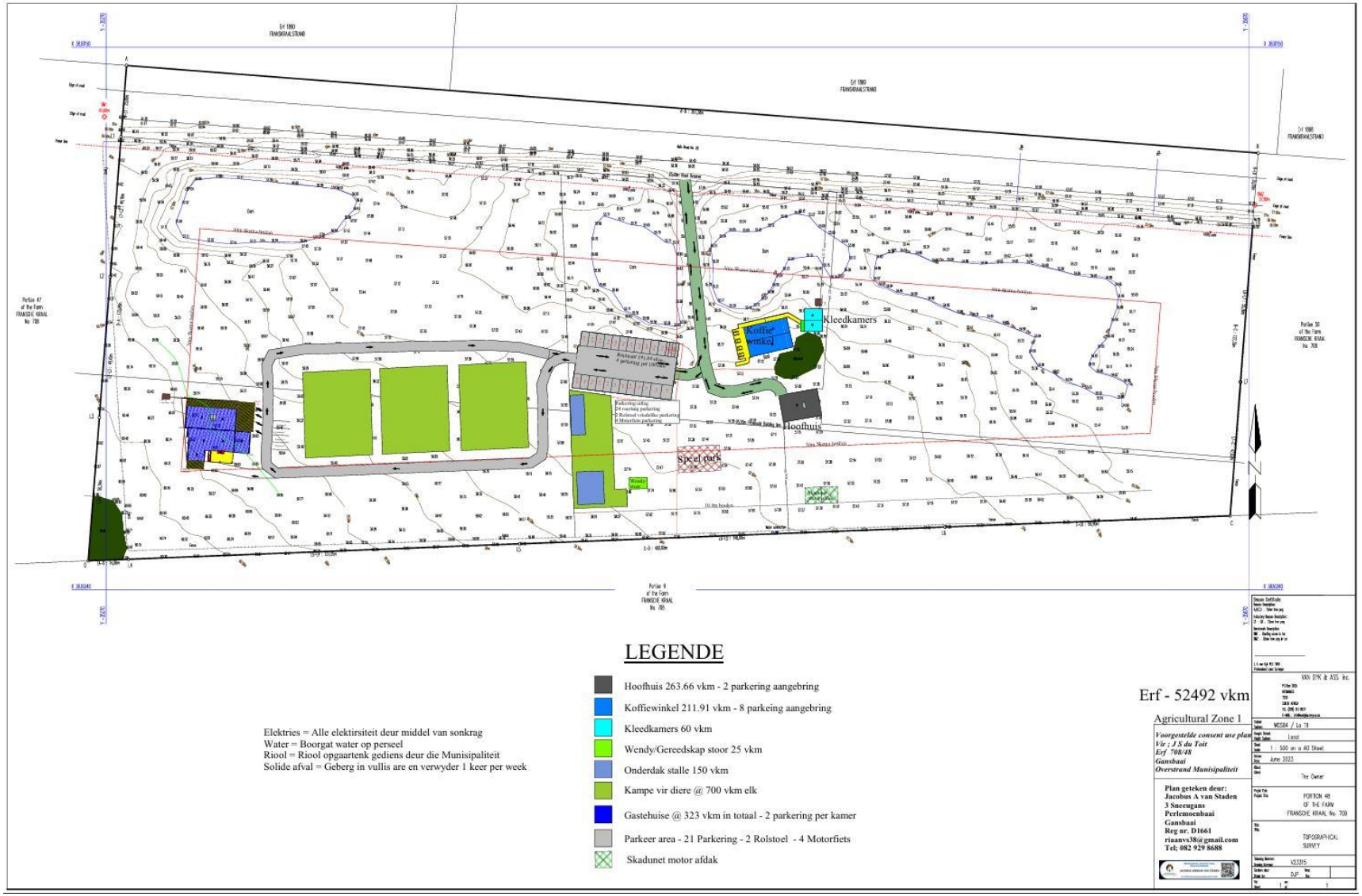

Figure 1: Proposed site development plan.

3. TERMS OF REFERENCE

The primary objective of this Environmental Management Programme (EMPr) is to identify, manage, and mitigate potential negative environmental impacts associated with both the unauthorised activities that have already taken place and the proposed development activities to be undertaken on Portion 48 of Farm 708. The EMPr serves as a guiding and legally binding document to ensure that all construction and post-construction activities are executed in an environmentally responsible manner, in line with applicable environmental legislation and best practices.

3.1 Scope of Application:

- All activities related to site preparation, vegetation clearance, construction, and post-construction, including the establishment of tourism-related facilities and associated infrastructure.
- All phases of development undertaken by the applicant, contractors, subcontractors, or any third-party working on behalf of the applicant.
- It must be made readily accessible to all project personnel and form an integral part of all tender documents, project specifications, and contractual agreements.

3.2 Binding Requirements:

- The provisions of this EMPr are binding on the applicant/owner, all contractors, subcontractors, and any third parties acting on their behalf.
- The applicant/owner is responsible for ensuring that all contractors and subcontractors are fully informed of the environmental requirements contained within this document.
- Failure to comply with the EMPr's requirements by any party involved in the construction will result in appropriate penalties, and the contractor will be obligated to remedy any environmental damage caused by their actions or the actions of their subcontractors.

3.3 Responsibilities and Accountability

- The contractor is accountable for the environmental performance of the site and must ensure that all activities are conducted in accordance with the environmental standards and guidelines set out in the EMPr.
- The contractor must also take proactive steps to prevent environmental damage and address any environmental issues that may arise during construction.
- In the event of environmental harm or non-compliance, the contractor will be required to restore the affected areas and bear any costs associated with remediation or penalties imposed.

3.4 Implementation and Compliance Monitoring

- Regular site inspections and audits will be conducted to monitor compliance with the EMPr. Any non-compliance will be recorded, and corrective actions will be mandated to mitigate environmental risks.
- Contractors and subcontractors are required to cooperate fully during audits and inspections, and all personnel must receive appropriate environmental training to ensure adherence to the EMPr’s guidelines.

4. ENVIRONMENTAL CONTROL ON SITE

4.1 Approach

The Table below illustrates the various approaches to be undertaken to manage potential scenarios as a result of the activity on site:

Table 1: Impact management

Avoidance	Avoiding activities that could result in adverse impacts and/or resources or areas considered sensitive.
Prevention	Preventing the occurrence of negative environmental impacts and/or preventing such an occurrence having negative impacts.
Preservation	Preventing any future actions that might adversely affect an environmental resource.
Minimisation	Limiting or reducing the degree, extent, magnitude or duration of adverse impacts through scaling down, relocating, redesigning and/or realigning elements of the project.
Mitigation	Measures taken to minimise adverse impacts on the environment.
Enhancement	Magnifying and/or improving the positive effects or benefits of a project.
Rehabilitation	Repairing affected resources, such as natural habitats or water resources.
Restoration	Restoring affected resources to an earlier (possibly more stable and productive) state, typically, 'background' or 'pristine' condition. These resources may include soils and biodiversity
Compensation	Compensating for lost resources, and where possible, the creation, enhancement or protection of the same type of resource at another suitable and acceptable location.

4.2 Organisational Structure and Responsibilities

The Applicant and their appointed contractors will be responsible for the construction phase of each house, internal and access roads and associated infrastructure. All construction related staff are to be briefed on the requirements of the EA and EMP and copies of these documents are to be kept on site during all phases of construction.

4.3 Environmental Control Officer

Due to the sensitivity of the site, it is recommended that an ECO be appointed for the construction phase of the development. ECO site visits should take place for the duration of the construction phase as per the conditions of the Environmental Authorisation. This will ensure that the additional conditions contained in the EA, EMP and BAR are implemented.

It will be the ECO's responsibility to ensure that the mitigation / rehabilitation measures and recommendations referred to in the EA (still to be issued) are implemented and complied with by the owner.

The applicant (owner/holder) will be responsible for the remuneration of the ECO and any other expenses encountered in the process of environmental monitoring of the construction.

Roles and Responsibilities of an ECO

The responsibilities of the ECO during the construction phase of the project, will include, but not be limited to, the following:

- Ensure compliance with the EMPr at all times during the pre-construction and construction phase;
- Ensure compliance with relevant management conditions of the EA during the preconstruction and construction phase;
- Meet with the contractors to set out the environmental parameters within which they must work (pre-construction and construction phase);
- To environmentally educate and raise the awareness of the Contractors and their staff and to target responsible individuals as key players for environmental education and to facilitate the spread of the correct environmental attitude during the contract work.
- Approve the previously disturbed areas set out;
- Indicate where all no-go areas are to be demarcated and to ensure adherence to these delimitations at the induction session BEFORE any construction or site clearance commences on-site (pre-construction phase)
- To review method statements and to determine the most environmentally sensitive options
- To oversee the implementation of environmental procedures set out in this document
- Indicate where plant rescue may be necessary, and what species should be rescued on this site (pre-construction phase)
- Advise on rehabilitation/landscaping measures to be implemented
- Ensure that the correct earthworks practices are adhered to; e.g. no encroachment into the surrounding vegetation, separation of topsoil and subsoil, correct stockpiling and stripping of topsoil);
- To attend site contractor's meetings, as required and report on environmental issues
- To receive notices and minutes of all site meetings
- To maintain an open and direct channel of communication with the construction team and site manager
- To take immediate action on site where clearly defined no-go areas are violated, or in danger of being violated, and to inform the site manager immediately, of the documents and the action taken
- To keep an up-to-date record of works on site, as they relate to environmental issues in the site diary.
- To be contactable by the public regarding matters of environmental concern during the construction phase.
- The ECO is to submit a completion report to the competent authority (DEADP) and applicant upon completion of the construction phase and before the EA lapses

4.4 Project Manager

In addition to the ECO, the Project Manager will be responsible for the following:

- All activities relating to the construction phase
- Delegate activities in accordance with the EMP
- Communicate design changes and technical issues to the team timeously
- Ensure that all contractors are managing their team adequately and abiding by the conditions of the EMP and EA
- Ensuring that the Contractors are aware of the conditions of the EMP and EA

4.5 Contractor

The Contractor (including sub-contractors) will be responsible for:

- Familiarising themselves with the EIA and EMP
- Complying with the EMP and EA commitments and any other legislative requirements as applicable
- Adhering to any instructions issued by the Project Manager or the Safety, Health and Environmental (SHE) Officer, if applicable
- Submitting an environmental report at designated site meetings on the environmental incidents that have occurred, if applicable
- Arranging that all employees and those of the subcontractors receive appropriate training prior to the commencement of construction, taking cognisance of this EMP and EA

4.6 Site Documentation and Reporting

Site logbook

A logbook should be kept on a construction site for the purposes of recording on-site instructions and as a general record of environmental issues. The logbook should be kept for a minimum of two years after the activity is completed for the relevant authority to review if deemed necessary. A photographic record of before and after construction should also be kept for visual reference purposes. The logbook should also contain the following sections:

Environmental Site Instruction

The Environmental Site Instruction section will be used for the recording of general site instructions relating to the protection of environmentally sensitive or potentially impacted areas or features on the site as applicable, by the ECO / site manager / construction team.

Site Diary

The purpose of this section will be to record the comments of the ECO / site manager / contractor etc., as they relate to activities on the site. The diary should also hold the complaints register, received from onsite personnel and the general public, Environmental Incident Register, disposal certificates for waste and sewage, non-conformance information, and written corrective active instructions.

Monitoring Section

The purpose of this section will be to record the comments of the ECO / site manager / contractor, during construction, relating to the implementation of the mitigation measures as well as waste, recycling, landscaping and renewable energy measures used during the construction. The findings of all inspections and internal audits should be structured into instructive reporting, providing information to all responsible personnel. Corrective actions must be clearly defined where required. Within the reporting function a structured review component will be enforced. This review function will assist in prescribing necessary corrective actions. During construction, the ECO / Project management team, will be responsible for onsite monitoring to ensure that the contractor abides by the conditions of the EA and EMP.

The Environmental Authorisation (EA) as well as a copy of the approved Environmental Management Plan (EMP) for Construction, should also be accessible on site at all times.

5. CONDITIONS OF AUTHORISATION

The Environmental Authorisation (EA), once issued, will be included here and will be mandatory for all contractors, sub-contractors, agents, consultants, and construction personnel working on the property.

6. ENVIRONMENTAL AWARENESS

It is important to ensure that the contractors and employees associated with the proposed activity receive the appropriate level of training and awareness to ensure that continual environmental due diligence and conservation is applied at all levels of work carried out on site. Employees, contractors and sub-contractors must be made aware of their responsibilities in terms of relevant legislation, guidelines, as well as this EMP and EA.

The environmental conditions should be included in the contracts issued to the contractors, making them aware of the potential environmental impacts and risks associated with the proposed development as well as what measures are expected of them whilst conducting work on site. The importance of implementing the conditions in the EMP and the necessity of good housekeeping practices, will be made known to the contractors and employees.

6.1 Aim of the Environmental Awareness Plan

- Promote environmental education and conservation on site
- Inform employees and contractors on the applicable environmental procedures and plans

6.2 Environmental Awareness Training and content

- All personnel should undergo induction, which as a minimum should include Safety, Health and Environmental awareness
- All attendees should sign an acknowledgement register upon receiving and understanding the induction
- Construction and operational staff should be trained on the implementation of emergency procedures where applicable.
- Definitions as used in this EMP should be provided
- How and why environmental protection is necessary, should be explained
- Management measures required to prevent environmental impacts should be outlined
- Emergency and spills response procedures should be outlined

Environmental conditions in the induction should focus on the following:

- Good house-keeping practices
- Air quality (Dust)
- Waste Management
- Odour/vermin Control
- Proper use of sanitation facilities; and
- Chemicals and materials storage, use and handling.

Environmental training should be implemented at the onset of the construction and can be done verbally or in written format. Proof of training should be kept on record.

7. CONSTRUCTION PHASE IMPACTS AND MITIGATIONS

7.1 Terrestrial Biodiversity Impact Assessment

The assessment identified the following key potential impacts as well as mitigations measures for the management of impacts on aquatic ecosystems during the construction phase:

Potential impacts:

Vegetation loss

Loss and degradation of the pre-existing natural and partly natural vegetation in the 1.2ha development area.

Plant Species of Conservation Concern

At least two plant Species of Conservation Concern (*Gnidia spicata* and *Limonium sp.nov*., and perhaps a third - *Leucadendron linifolium*) are likely to have occurred in the cleared area. The sensitivity of the vegetation in the impacted area probably ranged from Low (40%), to Medium (40%) to High (20%).

Management of impacts and Mitigation measures:

- All woody invasive alien vegetation (mainly *Acacia saligna* and Acacia cyclops) on the greater 5.95ha property must be felled using a hand or chainsaw, following appropriate methodology as per Martens et al (2021). No heavy machinery may be used, and Port Jackson (*Acacia saligna*) stems should be cut at close to ground level and immediately (within ten minutes) painted (not sprayed) with a suitable herbicide such as Garlon. This alien vegetation control must be undertaken within six months of any 24g authorisation, and must repeated annually to ensure no regrowth.
- No disturbance of the current High sensitivity areas (as per Figure 6) may take place at any stage in the future, and to safeguard and ensure this a new fence needs to be put in west of the access road, partly parallel to the access road, and mostly parallel to the R43 (see Figure 6). The eastern High sensitivity area is already fenced off and should remain so.
- No livestock may be allowed into the fenced off High sensitivity sections.
- Rehabilitation of the disturbed (Low sensitivity) areas should be undertaken wherever these areas are not needed for current activity, such as vehicular access or parking. Key steps are outlined here:
    - Any planting must be undertaken at the start of the winter rain season, to ensure maximum establishment time before the summer dry season.
    - All rehabilitation areas need to be fenced off from all livestock, in order to prevent grazing and trampling.
    - Rehabilitation areas should be ripped or scarified before planting, as the soil is currently badly compacted. No fertiliser should be added, but plant based, sterile (no alien plant seeds) compost

can be used, along with sterile mulch. Irrigation may be necessary through the first summer. Plants (plugs, seeds and rooted cuttings) should be sourced from a nearby indigenous nursery, such as Green Futures.

- Wind fences should be erected every 5 or 8m, at 90 degrees to the prevailing winds. These should be 1m high, made of black shadecloth, and can be removed once plants are about two years old.
- Suitable indigenous groundcovers are *Arctotis stoechadifolia, Gazania maritima, Stenotaphrum secundatum* (buffalo grass), *Falkia repens, Tetragonia fruticosa, Salicornia natalensis* (saltwort), *Psoralea repens, Plantago carnosa*, Mesembryanthemum (Phyllobolus) *canaliculatus, Ruschia macowanii* and *Cynodon dactylon* (kweek grass).
- Suitable indigenous shrubs include *Senecio halimifolius* (wetter areas), *Searsia laevigata* (dunetaaibos), *Searsia glauca* (kunibos), *Salvia aurea* (brown sage), *Leonotis leonurus (wildedagga), Orphium frutescens* (vleiroos), *Athanasia dentata, Athanasia quinquedentata, Helichrysum paulum*, *Metalasia muricata, Gnidia squarrosa, Otholobium bracteolatum* and *Pelargonium capitatum*.
- The most appropriate trees to plant would be milkwoods (*Sideroxylon inerme*).

7.2. Aquatic Biodiversity Impact Assessment

The assessment identified the following key potential impacts as well as mitigations measures for the management of impacts on aquatic ecosystems during the construction phase:

Potential impacts:

Disturbance of wetland Habitat

Approximately 860 m² of the hillslope seep was infilled with locally sourced fill (sand without any signs of rubble or foreign materials) which constitutes approximately 6 % of the total on-site wetland extent of 1,471 m².

Alteration of Flow Regime

The clearance of vegetation and the infilling without re-vegetation from the immediate southern catchment of the on-site hillslope seep wetland would have decreased the catchment roughness significantly in this area and this would have exacerbated run-off and minimised infiltration with to result of increased flood peaks with possible secondary impacts such as increased erosion and sedimentation.

Increased erosion and sedimentation

The vegetation has been completely removed from parts of the southern catchment of the on-site hillslope seep and combined with the increase in flood peaks due to the very low catchment roughness in this area would have caused a degree of erosion and sedimentation over the few years that the site has remained denuded of vegetation.

Water Quality impairment

During the construction phase there is a reasonable likelihood that as a result of the operation of machinery and vehicles, and if oil leaks remain unchecked and fuel spillages occur during refuelling, then contamination of the stormwater would occur.

Management of impacts and mitigation measures:

- Remove all the fill material from the area indicated in Figure 20 as comprising the extent of infilling undertaken by the current owner.
- Post-fill removal re-shape the area to approximate the natural terrain and reshape the southern edge of the Central-eastern Pond to a slope of 1:4 or less to allow natural vegetation to establish.
- Once the vegetation has begun to re-establish naturally or as result planting search and remove all alien invasive plants as these are likely to be present in the seedbank.

- Allow the naturally occurring vegetation to become re-established in the cleared areas and areas containing fill that is to be removed or alternatively introduce indigenous wetland vegetation within the historical extent of the wetland through planting and/or seeding.
- It is acceptable if the landowner plants lawns outside the historical wetland area provided the lawn comprises *Stenotaphrum secondatum* (buffalo grass).
- Post-fill removal re-shape the area to approximate the natural terrain and reshape the southern edge of the Central-eastern Pond to a slope of 1:4 or less to allow natural vegetation to establish.
- Allow the naturally occurring vegetation to become re-established in the cleared areas and areas containing fill that is to be removed or alternatively introduce vegetation through planting and/or seeding. It is acceptable if the landowner plants lawns outside the historical wetland area provided the lawn comprises *Stenotaphrum secondatum* (buffalo grass).
- Ensure that all construction machinery and vehicles are checked for oil leaks and are in good working order before being permitted onto the development site (i.e. before leaving the R43);
- Use drip-drays at all times when operating petrochemical driven construction machinery (e.g. generators and cement mixers);
- Use drip trays and other appropriate containment methods while refuelling of vehicles and machinery;
- Demarcate an area for the refuelling of machinery and vehicles (this is recommended to be near the main farmstead and cellar);
- Ensure that hazardous substances and chemicals are stored in a contained, impermeable area which has the capacity to contain at least 110% of the total volume of stored substances.
- Store cement is a secure weather-proof area (e.g. shipping container) and ensure that used cement bags are placed in plastic bin-bags prior to placement in the on-site solid waste storage area;
- All cement batching on the site must be undertaken on impermeable and bunded batching boards to ensure cement slurry is contained; and
- Any cement residues and concrete waste within the construction site must be removed at the end of every working day and disposed of as rubble.

8. POST-CONSTRUCTION PHASE IMPACTS AND MITIGATIONS

8.1 Terrestrial Biodiversity Impact Assessment

Potential Impacts:

Loss of previous levels of fair ecological connectivity across the area, and associated habitat fragmentation, plus ongoing grazing and trampling by livestock, both in the focus area and elsewhere on the property (especially in the west).

Impact Management and Mitigation Measures:

To minimize post-construction impacts on terrestrial and plants species, the following measures should be implemented:

- All woody invasive alien vegetation (mainly *Acacia saligna* and *Acacia cyclops*) on the greater 5.95ha property must be felled using a hand or chainsaw, following appropriate methodology as per Martens et al (2021). No heavy machinery may be used, and Port Jackson (*Acacia saligna*) stems should be cut at close to ground level and immediately (within ten minutes) painted (not sprayed) with a suitable herbicide such as Garlon. This alien vegetation control must be undertaken within six months of any 24g authorisation and must repeated annually to ensure no regrowth.

- No disturbance of the current High sensitivity areas (as per Figure 6) may take place at any stage in the future, and to safeguard and ensure this a new fence needs to be put in west of the access road, partly parallel to the access road, and mostly parallel to the R43 (see Figure 6). The eastern High sensitivity area is already fenced off and should remain so.
- No livestock may be allowed into the fenced off High sensitivity sections.
- Rehabilitation of the disturbed (Low sensitivity) areas should be undertaken wherever these areas are not needed for current activity, such as vehicular access or parking. Key steps are outlined here:
    - Any planting must be undertaken at the start of the winter rain season, to ensure maximum establishment time before the summer dry season.
    - All rehabilitation areas need to be fenced off from all livestock, in order to prevent grazing and trampling.
    - Rehabilitation areas should be ripped or scarified before planting, as the soil is currently badly compacted. No fertiliser should be added, but plant based, sterile (no alien plant seeds) compost can be used, along with sterile mulch. Irrigation may be necessary through the first summer. Plants (plugs, seeds and rooted cuttings) should be sourced from a nearby indigenous nursery, such as Green Futures.
    - Wind fences should be erected every 5 or 8m, at 90 degrees to the prevailing winds. These should be 1m high, made of black shadecloth, and can be removed once plants are about two years old.
    - Suitable indigenous groundcovers are *Arctotis stoechadifolia*, *Gazania maritima*, *Stenotaphrum secundatum* (buffalo grass), *Falkia repens, Tetragonia fruticosa, Salicornia natalensis* (saltwort), *Psoralea repens, Plantago carnosa, Mesembryanthemum* (Phyllobolus) *canaliculatus, Ruschia macowanii* and *Cynodon dactylon* (kweek grass).
    - Suitable indigenous shrubs include *Senecio halimifolius* (wetter areas), *Searsia laevigata* (dunetaaibos), *Searsia glauca* (kunibos), *Salvia aurea* (brown sage), *Leonotis leonurus* (wildedagga), *Orphium frutescens* (vleiroos), *Athanasia dentata, Athanasia quinquedentata, Helichrysum paulum, Metalasia muricata, Gnidia squarrosa, Otholobium bracteolatum* and *Pelargonium capitatum*.
    - The most appropriate trees to plant would be milkwoods (*Sideroxylon inerme*).

8.2. Aquatic Biodiversity Impact Assessment

Potential impacts:

Alteration of Flow Regime

The presence of hard surfaces as a result of the development (in this case comprising buildings with roofs which are impermeable and compacted gravel parking areas and internal roads which retards stormwater infiltration) increases run-off from the site.

Water Quality impairment

Domestic effluent (including sewage) generated by the tourism facility and main residence will be temporarily stored on-site in a single large conservancy tank before being routinely emptied by the municipal sewage disposal tanker. The proposed system, if operating efficiently, has a low likelihood of causing nutrient and toxicant loading of the on-site hillslope wetland, despite being located near the wetland edge. However, if the system fails and results in discharges of raw effluent into the surrounding area, the potential impact could be significant, particularly given the proximity of the wetland and its high sensitivity to changes in water quality.

Loss of Biota

Any discharge of untreated effluent, whether from an overflowing conservancy tank or leakages from the sewerage system, would cause some loss of wetland biota as the contaminants would reach the wetland given the proximity of the conservancy tank to the wetland.

Impact management and mitigation measures:

- Collect rainwater off the roofs of the buildings and store the water in rainwater tanks for domestic use or garden irrigation use.
- Re-establish appropriate vegetation within the areas cleared of vegetation.
- Ensure that the conservancy tank is appropriately sized (input should be obtained from a professional civil engineer and the calculation endorsed by the municipality).
- Formalise an operational agreement between the owner/s and the municipality that specifies the timing of tank emptying; and
- During the operational phase, monitor the site for any odorous liquids possibly being associated with the sewerage system.
- Ensure that the conservancy tank is appropriately sized (input should be obtained from a professional civil engineer and the calculation endorsed by the municipality).
- Formalise an operational agreement between the owner/s and the municipality that specifies the timing of tank emptying; and
- During the operational phase, monitor the site for any odorous liquids possibly being associated with the sewerage system.

Table 2. Activity specific impacts and mitigations

PRE-CONSTRUCTION/ CONSTRUCTION PHASE AND POST-CONSTRUCTION PHASE			
IMPACT	**DESCRIPTION**	**MITIGATION MEASURES**	**RESPONSIBLE PERSONS**
Botanical/ Ecological/Plant Species of Conservation concern Impacts	***Construction phase***: Loss and degradation of the pre-existing natural and partly natural vegetation in the 1.2ha development area. At least two plant Species of Conservation Concern (*Gnidia spicata* and *Limonium sp.nov.,* and perhaps a third - *Leucadendron linifolium*) are likely to have occurred in the cleared area. The sensitivity of the vegetation in the impacted area probably ranged from Low (40%), to Medium (40%) to High (20%). ***Post-construction phase:*** Loss of previous levels of fair ecological connectivity across the area, and associated habitat fragmentation, plus ongoing grazing and trampling by livestock, both in the focus area and elsewhere on the property (especially in the west)	• All woody invasive alien vegetation (mainly *Acacia saligna* and Acacia cyclops) on the greater 5.95ha property must be felled using a hand or chainsaw, following appropriate methodology as per Martens et al (2021). No heavy machinery may be used, and Port Jackson (*Acacia saligna*) stems should be cut at close to ground level and immediately (within ten minutes) painted (not sprayed) with a suitable herbicide such as Garlon. This alien vegetation control must be undertaken within six months of any 24g authorisation and must repeated annually to ensure no regrowth. • No disturbance of the current High sensitivity areas (as per Figure 6) may take place at any stage in the future, and to safeguard and ensure this a new fence needs to be put in west of the access road, partly parallel to the access road, and mostly parallel to the R43 (see Figure 6). The eastern High sensitivity area is already fenced off and should remain so. • No livestock may be allowed into the fenced off High sensitivity sections. • Rehabilitation of the disturbed (Low sensitivity) areas should be undertaken wherever these areas are not needed for current activity, such as vehicular access or parking. Key steps are outlined here: ○ Any planting must be undertaken at the start of the winter rain season, to ensure maximum establishment time before the summer dry season.	Applicant Contractor ECO

		○ All rehabilitation areas need to be fenced off from all livestock, in order to prevent grazing and trampling. ○ Rehabilitation areas should be ripped or scarified before planting, as the soil is currently badly compacted. No fertiliser should be added, but plant based, sterile (no alien plant seeds) compost can be used, along with sterile mulch. Irrigation may be necessary through the first summer. Plants (plugs, seeds and rooted cuttings) should be sourced from a nearby indigenous nursery, such as Green Futures. ○ Wind fences should be erected every 5 or 8m, at 90 degrees to the prevailing winds. These should be 1m high, made of black shadecloth, and can be removed once plants are about two years old. ○ Suitable indigenous groundcovers are *Arctotis stoechadifolia*, *Gazania maritima*, *Stenotaphrum secundatum* (buffalo grass), *Falkia repens, Tetragonia fruticosa, Salicornia natalensis* (saltwort), *Psoralea repens, Plantago carnosa, Mesembryanthemum* (Phyllobolus) *canaliculatus, Ruschia macowanii* and *Cynodon dactylon* (kweek grass). ○ Suitable indigenous shrubs include *Senecio halimifolius* (wetter areas), *Searsia laevigata* (dunetaaibos), *Searsia glauca* (kunibos), *Salvia aurea* (brown sage), *Leonotis leonurus* (wildedagga), *Orphium frutescens* (vleiroos), *Athanasia dentata, Athanasia quinquedentata, Helichrysum paulum, Metalasia muricata, Gnidia squarrosa, Otholobium bracteolatum* and *Pelargonium capitatum*. ○ The most appropriate trees to plant would be milkwoods (*Sideroxylon inerme*).	
Disturbance of wetland Habitat	***Construction phase*** Approximately 860 m² of the hillslope seep was infilled with locally sourced fill	• Remove all the fill material from the area indicated in Figure 20 as comprising the extent of infilling undertaken by the current owner.	ECO Contractor Applicant

	(sand without any signs of rubble or foreign materials) which constitutes approximately 6 % of the total on-site wetland extent of 1,471 m².	• Post-fill removal re-shape the area to approximate the natural terrain and reshape the southern edge of the Central-eastern Pond to a slope of 1:4 or less to allow natural vegetation to establish. • Once the vegetation has begun to re-establish naturally or as result planting search and remove all alien invasive plants as these are likely to be present in the seedbank.	
Alteration of flow regime	***Construction phase:*** The clearance of vegetation and the infilling without re-vegetation from the immediate southern catchment of the on-site hillslope seep wetland would have decreased the catchment roughness significantly in this area and this would have exacerbated run-off and minimised infiltration with to result of increased flood peaks with possible secondary impacts such as increased erosion and sedimentation. ***Post-construction phase:*** The presence of hard surfaces as a result of the development (in this case comprising buildings with roofs which are impermeable and compacted gravel parking areas and internal roads which retards stormwater infiltration) increases run-off from the site.	• Allow the naturally occurring vegetation to become re-established in the cleared areas and areas containing fill that is to be removed or alternatively introduce indigenous wetland vegetation within the historical extent of the wetland through planting and/or seeding. • It is acceptable if the landowner plants lawns outside the historical wetland area provided the lawn comprises *Stenotaphrum secondatum* (buffalo grass). • Collect rainwater off the roofs of the buildings and store the water in rainwater tanks for domestic use or garden irrigation use. • Re-establish appropriate vegetation within the areas cleared of vegetation.	ECO Contractor Developer

Increased erosion and sedimentation	***Construction phase:*** The vegetation has been completely removed from parts of the southern catchment of the on-site hillslope seep and combined with the increase in flood peaks due to the very low catchment roughness in this area would have caused a degree of erosion and sedimentation over the few years that the site has remained denuded of vegetation.	• Post-fill removal re-shape the area to approximate the natural terrain and reshape the southern edge of the Central-eastern Pond to a slope of 1:4 or less to allow natural vegetation to establish. • Allow the naturally occurring vegetation to become re-established in the cleared areas and areas containing fill that is to be removed or alternatively introduce vegetation through planting and/or seeding. It is acceptable if the landowner plants lawns outside the historical wetland area provided the lawn comprises *Stenotaphrum secondatum* (buffalo grass).	ECO Contractor Developer
Water Quality impairment	***Construction phase:*** During the construction phase there is a reasonable likelihood that as a result of the operation of machinery and vehicles, and if oil leaks remain unchecked and fuel spillages occur during refuelling, then contamination of the stormwater would occur. ***Post-Construction:*** Domestic effluent (including sewage) generated by the tourism facility and main residence will be temporarily stored on-site in a single large conservancy tank before being routinely emptied by the municipal sewage disposal tanker. The proposed system, if operating efficiently,	• Ensure that all construction machinery and vehicles are checked for oil leaks and are in good working order before being permitted onto the development site (i.e. before leaving the R43); • Use drip-drays at all times when operating petrochemical driven construction machinery (e.g. generators and cement mixers); • Use drip trays and other appropriate containment methods while refuelling of vehicles and machinery; • Demarcate an area for the refuelling of machinery and vehicles (this is recommended to be near the main farmstead and cellar); • Ensure that hazardous substances and chemicals are stored in a contained, impermeable area which has the capacity to contain at least 110% of the total volume of stored substances.	ECO Developer Contractor

	has a low likelihood of causing nutrient and toxicant loading of the on-site hillslope wetland, despite being located near the wetland edge. However, if the system fails and results in discharges of raw effluent into the surrounding area, the potential impact could be significant, particularly given the proximity of the wetland and its high sensitivity to changes in water quality.	• Store cement is a secure weather-proof area (e.g. shipping container) and ensure that used cement bags are placed in plastic bin-bags prior to placement in the on-site solid waste storage area; • All cement batching on the site must be undertaken on impermeable and bunded batching boards to ensure cement slurry is contained; and • Any cement residues and concrete waste within the construction site must be removed at the end of every working day and disposed of as rubble. • Ensure that the conservancy tank is appropriately sized (input should be obtained from a professional civil engineer and the calculation endorsed by the municipality). • Formalise an operational agreement between the owner/s and the municipality that specifies the timing of tank emptying; and • During the operational phase, monitor the site for any odorous liquids possibly being associated with the sewerage system.	
Biota Loss	***Construction phase:*** Infilling within and near the hillslope seep wetland would have caused biota loss (vegetation and less mobile fauna species). In addition, the driving of vehicles and excavator within and near the wetland would have also caused mortality and displacement of wetland biota. ***Post-construction phase:***	• Remove all the fill material from the area indicated in Figure 20 as comprising the extent of infilling undertaken by the current owner. • Allow the naturally occurring vegetation to become re-established in the cleared areas and areas containing fill that is to be removed or alternatively introduce indigenous wetland vegetation within the historical extent of the wetland through planting and/or seeding. • Ensure that the conservancy tank is appropriately sized (input should be obtained from a professional civil engineer and the calculation endorsed by the municipality).	ECO Developer Contractor

	Any discharge of untreated effluent, whether from an overflowing conservancy tank or leakages from the sewerage system, would cause some loss of wetland biota as the contaminants would reach the wetland given the proximity of the conservancy tank to the wetland.	• Formalise an operational agreement between the owner/s and the municipality that specifies the timing of tank emptying; and • During the operational phase, monitor the site for any odorous liquids possibly being associated with the sewerage system.	
Socioeconomic impacts	***Construction phase:*** Positive impacts include temporary employment creation, procurement of local goods and services, and stimulation of the local economy. ***Post-construction phase:*** Positive impacts on local employment rates during the operational phase of the tourist-facilities.	• Prioritise local employment and procurement during the construction phase to maximise economic benefits. • Schedule construction activities to minimise disruption (e.g., working hours, transport planning). • Ensure compliance with health and safety regulations to protect workers and surrounding communities. • Prioritise local employment and procurement during the operational phase. • Promote social integration and avoid displacement or inequality through inclusive development.	ECO Developer Contractor
Noise impacts:	Elevated noise levels from construction machinery, vehicles, and equipment may cause disturbance to nearby residents, and wildlife.	• Restrict construction to daytime hours (e.g., 08:00–17:00) and avoid weekends/public holidays where possible. • Use noise-dampening equipment and properly maintain machinery. • Install temporary noise barriers if sensitive receptors (e.g., schools, clinics, residences) are nearby. • Notify surrounding communities in advance of particularly noisy activities.	ECO Developer Contractor

Visual impacts	***Construction phase:*** Temporary visual intrusion due to construction activities, equipment, stockpiles, dust, and movement of vehicles and workers; potential alteration of the area's character or aesthetic value, which may be especially important in scenic or rural settings. ***Post-construction phase:*** Changes in the community's sense of place due to new structures, lighting, increased activity.	• Clearly demarcate construction boundaries to reduce visual sprawl. • Use screening (e.g., shade cloth, fencing) around high-visibility areas. • Keep site neat and orderly, with designated storage areas. • Minimise unnecessary lighting at night. • Rehabilitate and landscape the site immediately after construction. • Use appropriate materials and colors that blend with the natural environment. • Implement landscape planting and green buffers to screen visually intrusive elements. • Minimize light pollution by using downward-facing, low-intensity lighting. • Preserve key view corridors and natural features where possible. • Maintain vegetation and open space around the development to soften its visual presence.	ECO Developer Contractor

9. GENERAL CONSTRUCTION PHASE IMPACTS AND REQUIREMENTS

9.1 Contractors camp

Responsibility – Contractor / ECO / owner

The contractor shall comply will all relevant laws and regulations concerning water provision, sanitation, wastewater discharge and liquid and solid waste handling and disposal during the construction phase. The contractor is referred to the requirements of the NEMA and the NEM:WA and related regulations. The contractor shall not locate the camp, or sanitation facilities, in any areas that can cause nuisance or safety hazards to surrounding land users, inhabitants or the general public. Suitable temporary toilet facilities should be provided to the construction team. These facilities should be emptied and cleaned on a regular basis by a registered contractor and the waste is to be removed by contractor to a registered facility. The contractor shall at all times carefully consider the machinery required for the desired task while minimizing the extent of environmental damage. The contractor shall keep construction campsites clean and tidy at all times. The contractor shall not leave domestic waste uncontained, and temporary storage shall be enclosed to keep out people and animals. No permanent domestic waste disposal shall be permitted. All domestic refuse is to be removed to an existing licensed landfill site. The contractor shall take specific measures to prevent the spread of veld fires, which may be caused by activities at the camp. These measures may include appropriate instruction of employees about the fire risks and the construction of firebreaks around the site perimeter, as required. The contractor shall prevent accelerated erosion from the construction campsite and shall not discharge polluted runoff into the environment. Adequate firefighting equipment shall be made available and maintained on site. the contractors camp should be located in area proposed for development, in order to reduce impacting undisturbed areas. No overnighting will be permitted at the contractors camp, unless specifically arranged or required. Decommissioning of the campsite will involve removal of all compacted platforms, equipment machinery, tools, waste, etc.

9.2 Health and Safety

Responsibility - Project Manager / Contractor / ECO / owner

Correct Personal Protective Equipment (PPE) must be worn at all times by the personnel on site. Personnel must be trained on the use of PPE. The applicant will appoint one safety officer for the activities. Suitable warning and information signage should be erected at the commencement of construction. The handling of hazardous materials should only be done by trained personnel. Safety Data Sheets (SDSs) must be readily available for all hazardous substances on site and employees should be aware of the risks associated with any hazardous materials used. All provisions of the Occupational Health and Safety Act (Act No. 85 of 1993) must be complied with. In the event of an emergency relating to a hazardous substance, procedures detailed in the SDSs should be immediately implemented.

9.3 Fire risk management

Responsibility - Project Manager / Contractor / ECO / owner

The Applicant / Project manager / contractor should identify a Fire Officer who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. The Fire Officer shall ensure that there is basic fire-fighting equipment available on site at all times. Any fires should be reported to the fire officer immediately.

9.4 Fuels and hazardous materials

Responsibility - Project Manager / Contractor / owner

Fuels and flammable materials are to be suitably stored, inside the contractor's camp or as appropriate. Impervious materials are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks. Quantities of fuels and hazardous materials stored on site should be appropriate to the requirement for these substances on site.

Bulk fuel depots, if required, should be placed within bunded areas to prevent soil contamination in the event of leaks of spills. Bunded areas are to have a holding capacity equal to 110% of the largest fuel container. The relevant Health and Safety requirements for the hazardous materials and fuels should be kept on site in the event of an emergency.

9.5 Emergencies protocol

Responsibility - Project Manager / Contractor / owner

Fire: The fire officer / suitable other person should be notified of any fires. Employees should be aware of the procedure to be followed in the event of a fire.

Hydrocarbon (fuel & oil) leaks and spillages: Employees should be aware of the procedure to be followed for dealing with spills and leaks, which shall include notifying the project manager / contractor. All vehicles leaking fuel or other liquids should immediately be removed to the maintenance area and repaired. In the event of a hydrocarbon spillage, the soil must be excavated and treated and adequately disposed. The necessary materials and equipment for dealing with spills and leaks are present on site at all times. The clean-up of sewerage spills and any damage caused by the spill or leak shall be for the applicant's account. The applicant shall ensure that the Health and Safety officer is available for the duration of the construction period.

Raw Sewerage spills (from portable toilets): Employees are to be aware of the procedure to be followed for dealing with spills and leaks. All the necessary materials and equipment for dealing with spills and leaks are present on site at all times. The clean-up of sewerage spills and any damage caused by the spill or leak shall be for the Applicant's account or applicable contractor.

Sudden illness in member of team: emergency numbers should be readily available on site in case of a sudden illness or injury to a construction team member.

Snake bite: Emergency contact numbers must be kept on site in case of a snake siting or snakebite.

9.6. Site Demarcation

Responsibility - Project Manager / Contractor / ECO / owner

Prior to any construction commencing, the boundaries of the sites must be appropriately indicated and fenced off to prevent sprawl of activities. Natural areas that should be retained should also be indicated at this stage. Following this, all construction works, as well as the storage or preparation of any materials must be within the demarcated boundaries of the construction zone. No Go areas are to also be demarcated at this stage.

9.7 Stockpiles

Responsibility - Project Manager / Contractor / ECO / owner

The contractor and / or project manager should identify sites for the stockpiling of building materials and excavated material. Stockpile sites should preferably be in areas with a gentle gradient. Stockpiles should be stabilised as required and monitored for dust blow and runoff / erosion.

9.8 General Wastes

Responsibility - Project Manager / Contractor / ECO / owner

Refuse refers to all construction debris (cement bags, rubble, timber, cans, nails, wire, spilt bitumen, glass, packaging, plastic, organic matter, etc.). Refuse generated during the construction phase should be stored in an appropriate area on site, should be watertight and wind proof, and removed on a regular basis for disposal at a permitted disposal site. Waste bins should be labelled for their designated use. No burning or burying of general refuse on site should be permitted. Recycling and sorting of waste, at the source, is encouraged. Disposal certificates should be kept.

9.9 Recreational / Eating areas

Responsibility - Project Manager / Contractor / ECO / owner

If construction workers are permitted to eat on the development site, other than within the contractor's camp, the Contractor shall provide adequate refuse bins at all such places and ensure that they are used. Bins are to be cleared on a daily basis. No rest areas are to be permitted in No Go areas or areas which do not form part of approved vineyard sites.

9.10 Construction water

Responsibility - Project Manager / Contractor / ECO / owner

Given the nature of the development, construction related wastewater will be limited. All cement effluent from mixer washings and run-off from batching areas, as well as other work areas, should be contained in suitable manner, these areas should be lined and allowed to dry from time to time in order to remove the solid materials. Care should be taken to prevent the runoff of construction water, to other areas on site.

9.11 Equipment maintenance

Responsibility - Project Manager / Contractor / ECO / owner

All mechanical equipment and work vehicles which are present on-site during construction, are to be stored, serviced and refuelled only at designated areas or within the contractor's camp. Within these areas drip trays and other impervious materials, for example plastic or metal sheeting, must be used to prevent contamination of the ground. The project manager may order the removal of equipment that is causing continual environmental damage, until such equipment has been repaired.

9.12 Stormwater Management

Responsibility - Project Manager / Contractor / ECO / owner

Due to the small-scale nature of the construction, a Stormwater Management Plan is not required. however, Stormwater should be monitored regularly to ensure no environmental risk or unmanageable load to the existing infrastructure. The contractor must take suitable measures to prevent erosion resulting from a diversion,

restriction or increase in flow of stormwater caused by the approved activities on site. The open space erf will be used for stormwater retention.

9.13 Topsoil Removal and Stockpiling

Responsibility - Project Manager / Contractor / ECO / owner

Where services are to be extended or houses erected, topsoil is to be removed from the work areas, stockpiled separately from subsoil, and must be stabilised within a day of stockpiling. In general, stockpiles should be convex at the top to promote run- off, so that water is not able to accumulate and result in leaching of nutrients from the soil. Stockpiling areas should be determined in consultation with the ECO and only for short term.

9.14 Erosion Control

Responsibility - Project Manager / Contractor / ECO / owner

Action should be taken to prevent erosion of soils on the construction site. Should any erosion be detected on site, the cause of such erosion should be identified, and appropriate remedial action must be immediately implemented.

9.15 Dust Control

Responsibility - Project Manager / Contractor / ECO / owner

Appropriate action should be taken to minimise the generation of dust on the site. This can be done by applying appropriate stabilisation materials, such as straw or mulch or watering of exposed areas. Suppression methods not involving water, are preferred as far as possible.

9.16 Construction Traffic Management

Responsibility - Project Manager / Contractor / ECO / owner

All construction vehicles which carry construction materials, must use sheeting or a suitable cover, to prevent loss of load during travelling or due to wind or rain. Any spills should be cleaned immediately.

9.17 Architecture / Design

Responsibility - Project Manager / Contractor / ECO / owner

N/A

9.18 Sustainable Building Guidelines and materials

Responsibility - Project Manager / Contractor / ECO / owner

N/A

9.19 Site Clean Up and Rehabilitation

Responsibility - Project Manager / Contractor / ECO/ owner

The following actions should be implemented once construction has concluded:

- No foreign matter such as rubble, waste or hazardous material will be mixed with the topsoil or used to backfill excavation.

- All temporary works within the construction footprint, including fences, access, roads etc. disturbed by construction, should be restored to their original condition, as applicable
- Compacted soils within the construction footprint should be loosened by means of a plough or scarified to aid revegetation.
- Runoff and erosion, as a result of the construction phase, should be suitably managed to prevent long term impacts.
- All structures, equipment, materials and facilities used or created on site for or during construction activities are removed once the project has been completed
- Vegetation cover (using species appropriate to the local area) in all areas disturbed by the works should be reintroduced, as required.
- All vegetation removed must be disposed of at appropriate facility or reused if possible, in soil stabilisation and preparation

10. COMPLIANCE AND MONITORING

10.1. Non-compliance

The Environmental Authorisation (EA) stipulates that, *"Non-compliance with a condition of this Environmental Authorisation and the EMP may render the holder liable to criminal prosecution."* It is therefore important that the conditions are adhered to as outlined in the EA and EMP. A Penalties scheme can be used during construction for transgressions.

Transgressions relate to actions by the contractor whereby damage or harm is inflicted upon the environment or any feature thereof and where any of the conditions or specifications of the EMP and EA have been infringed upon. In the instance of environmental damage, the damage is to be repaired and rehabilitated using appropriate measures, as far as possible and as directed by appropriate specialists, if required. These remedial actions are for the account of the contractor or other guilty party as identified by the Project Manager, applicant or ECO. Where non-repairable damage is inflicted upon the environment or non-compliance with any of the EMP / EA obligations is registered, then the Contractor may face a monetary penalty to an amount specified by the Project manager / ECO. The Project manager / ECO reserves the right to implement a first offence warning.

If excessive infringement with regard to any of the specifications is registered, the applicant / project manager / owner reserves the right to terminate the contractor's contract.

Table 3. Penalties Scheme – to be reviewed by ECO if required

Infringement	Description	Penalty
Hydrocarbon / fuel spill	Penalty to be issued when remediations not implemented timeously	From R 5000
Disturbance beyond approved footprint	Disturbance to vegetation beyond approved areas	From R 5000
Waste management	Inappropriate waste management	From R 3000, dependent of extent
Not adhering to conditions of EA	Not attending to specific EA conditions	From R 3000 per condition

10.2. Environmental Control Sheets

Environmental Control Sheets should be used by the ECO on a weekly basis to monitor construction activities to ensure compliance with recommendations. The ECO should familiarise themselves with the full set of recommendations proposed by the specialists for the site and reasons for these recommendations, as well as understand the site and constraints analysis and be able to identify the constraints / No Go areas.

Table 3. Environmental Control Sheets

					RECORD OF PERFORMANCE		
TASK	**ACTION REQUIRED / MITIGATION & METHOD FOR IMPLEMENTATION**	**FREQUENCY**	**TARGET / OUTCOME**	**RESPONSIBILITY**	**COMPLETED YES/ NO**	**DATE**	**COMMENT**
PRE-CONSTRUCTION							
Procurement	- EA and EMP to be distributed to contractor at tender stage to include costing incurred due to compliance with EA and EMP METHOD: Distribute with tender documents	As required	Contractors are aware of requirements in terms of NEMA and can budget accordingly	Developer Project Manager			
Environmental File	- To include EA, EMP, site diary, public complaints section - To be updated on a regular basis - Public complaints register - Kept on site at all times METHOD: Issue all applicable documents to site manager	As required	Construction team(s) and general public can access relevant information f and when required	ECO Project Manager			
Environmental Awareness training and induction	- All contractors to attend briefing prior to commencement of site works - Register to be signed as proof of attendance - Contractor to understand the extent of the approved site and No-Go zones	As required	Construction team(s) informed of all requirements in terms of EMPr and EA	ECO Project Manager			

	METHOD: Briefing to be undertaken by project manager and / ECO						
Method Statements	- Contractors to submit MS seven working days prior to commencement on site - MS to contain clear methods for pollution control measures during construction including hazardous waste, run off, general waste etc. METHOD: Request for method statements to be contained in tender documents	As required	ECO and project manager to be well informed in terms of methods for construction	Contractor			
Site definition and demarcation	- Survey and clearly demarcate approved development areas on the ground using durable markers (e.g., stakes or low-profile fencing) prior to any site development to prevent accidental disturbance of Medium and High sensitivity conservation areas. - Site demarcation and fencing (mark construction areas – as per approved site development plan) - Install signage indicating restricted access to conservation areas, ensuring no vegetation disturbance or loss occurs outside the approved development footprints at any stage. - Engage a qualified Search and Rescue contractor, approved by a botanist, to translocate at least 15 species of bulbs and succulents from within the development footprints prior to site	As required and to be repeated on a regular basis in the event that demarcations shift or disturbed by operators, weather etc.	A well demarcated site Well-defined No-Go areas Well defined construction zones	ECO Project Manager Contractor			

	development. In addition, for Alternative 1 & 3, any specimens of the Near Threatened vygie *Brianhuntleya intrusa* (absent from Alt 3 footprint), the dwarf succulent *Tulista pumila* and the unnamed purple flowered *Anisodontea* (seen only in southern part of Block 2) within the authorised footprint must be rescued (none of these is in the Alternative 2 footprint). This must be undertaken by a qualified Search and Rescue contractor approved by the botanist. Some of the material should be used to help rehabilitate the previously disturbed northeastern part of the site (if not developed), and the remainder can be used elsewhere (at contractor and botanist's discretion). - Access roads for construction vehicles to be clearly indicated, consideration to be given to turning circles - Review of the botanical specialist assessment to familiarise with mitigation measures. - Buffer areas to be indicated and demarcated as No Go METHOD: Demarcation methods to be undertaken as outlined in EMP, suitable to the environment and semi-permanent to last as long as possible						

	during construction phase, to be checked on a regular basis						
Construction traffic	- All construction vehicles carrying materials must use cover sheeting to prevent loss of loads due to wind or rain - Maximum speed to be enforced - Movement of construction vehicles must be limited to approved haul and access routes and existing tracks METHOD: To be monitored by ECO and project manager as well as construction team leaders	Duration of Construction	A safe working environment with minimal impact on No Go areas, minimal dust impact, minimal loss of load and minimal general public impact	Project Manager Contractor			
Emergencies protocol	- Staff to be aware of actions to be taken in the event of a natural or medical emergency - Applicable Health and Safety required in terms of OH&S Act METHOD: OH&S officer to be appointed, appropriate signage to be implemented	Duration of Construction	A safe working environment with minimal incidences	Project Manager Contractor			
Fire	- Fire Management recommendations to be implemented - Required firefighting equipment is available on site, and in working order - No open fires are lit on site without approval of the ECO and Site Manager METHOD: To be checked by the ECO and project manager and implemented by the contractor	Duration of Construction	A safe working environment with minimal incidences Action plan in the event of a fire	Project Manager Contractor			

Contractors camp	- Contractor's Camp is located at the most suitable site as identified by the ECO and Site Manager, preferably in areas to be developed or used (i.e roads or house footprints) or already transformed areas - Contractor team to be briefed regarding Do's and Don'ts of camp and site in general - Suitable toilet facilities are provided for all staff - Ablutions are to be restricted to the facilities provided - Toilets are to be kept in a hygienic condition and emptied regularly - Recommendations by Freshwater specialist will be implemented METHOD: Site to be determined in conjunction with project manager and ECO, to be well demarcated with appropriate signage, serviced and cleaned on a regular basis, checked by ECO	Duration of Construction	A well placed and functional contractors camp to minimise impacts on other areas on site	Project Manager Contractor			
CONSTRUCTION							
TASK	**ACTION REQUIRED / MITIGATION & METHOD FOR IMPLEMENTATION**	**FREQUENCY**	**TARGET / OUTCOME**	**RESPONSIBILITY**	**COMPLETED YES/ NO**	**DATE**	**COMMENT**

Topsoil removal and stockpiling	- Replaced immediately after works where required. - Topsoil which is required to be removed from direct work areas, should be stockpiled separately from subsoil and reused as far as possible. - Stockpiles should be suitably shaped to prevent leaching of nutrients, and stabilized, or dispersal by wind or rain - Stockpiles to be monitored for dispersal by rain and wind METHOD: Implement conditions outlined in EMP for stockpiling and topsoil removal	Duration of Construction	Reusable sand and soil stockpiles to facilitate rehabilitation of the site	Project Manager Contractor			
Earthworks	- Works to be restricted construction area only - Bulldozer/ heavy machinery operators to be under constant supervision particularly at onset of works - Use and excessive movement of heavy machinery to be avoided in areas of environmental sensitivity or high erosion potential - Trenching to be undertaken in a phased manner - Fill material to be replaced in same work area from which it originated - Fill material to be compacted to its approximate original density METHOD: Construction zone to be clearly demarcated, instruction for	Duration of Construction	Minimal disturbance to sensitive zones, minimal disturbance to vegetation	Project manager Contractor ECO			

	stockpiling to be implemented, operators to be briefed prior to works						
Material handling, dispatching and storage	- Fuels and hazardous materials to be stored in suitably equipped storage areas in the Contractor's camp and approved by the ECO - Strict measures to be put in place for the use and storage of hazardous materials on site - Disposal to licenced facility only - These areas shall comply with fire safety requirements - Impervious materials are to be used to prevent contamination of the ground in the event of spillages or leaks - Construction materials spilled on public or private roads to be immediately cleaned - No storage other than contractor camp METHODS: Undertake regular inspections of areas and procedures	Duration of Construction	Minimal disturbance to sensitive zones including non-perennial drainage line Minimal incidences	Project Manager Contractor			
Stockpiles	- Sites for stockpiling as identified by the Contractor are to be marked on a plan, and approved by the ECO and Site Manager - Stockpiles must be suitably stabilized where necessary METHODS: Undertake regular checks of stockpiles to ensure methods outlined in the EMP and Dune EMP are implemented	Duration of Construction	Reusable sand and soil stockpiles to facilitate rehabilitation of the site	Project Manager Contractor ECO			

Waste management	- All waste to be stored in an appropriate contained area on site, and protected against wind, rain and animal dispersal - Waste to be removed on a weekly basis for disposal at a permitted disposal site - No burning or burying of refuse on site is allowed - Eating areas must be demarcated and provided with suitable refuse collection areas METHOD: Waste areas to be designed correctly and be wind and weatherproof and emptied on a regular basis	Duration of Construction, as required	A clean waste collection point which is serviced on a regular basis	Project Manager Contractor ECO			
Construction wastewater	- Careful runoff management will be required particularly during construction. No contaminated water should be allowed to seep into the ground or runoff the construction site - All runoff from batching plants, work areas and mixer washings to be contained in sedimentation ponds, which are suitably lined - Ponds must be allowed to dry out regularly, and solid waste removed and disposed of at a site approved by the local authority. METHOD: Wastewater areas to be suitably designed and inspected on a regular basis	Duration of Construction, as required	A clean site post construction	Project Manager Contractor ECO			

Maintenance of equipment	- All mechanical equipment and work vehicles to be stored, serviced and refuelled at designated areas in the contractor's camp - Major services to take place off site - Drip trays or impervious materials to be used to prevent contamination of ground METHOD: Regular inspections undertaken	Duration of Construction, as required	A clean site post construction	Project Manager Contractor ECO			
Stormwater	- Suitable measures must be in place to prevent erosion resulting from diversion, restriction or increase in stormwater runoff - Measures must be taken to prevent stormwater from flowing from excavated areas or stockpiles - Stormwater containing harmful substances to be contained, and removed from site METHOD: Regular inspections undertaken	Duration of Construction, as required	A clean site post construction, avoiding additional impact on surrounds	Project Manager Contractor ECO			
Erosion	- Stormwater channels are to be kept clear from soil and debris - Erosion or stormwater damage resulting from Contractor's operations to be suitably repaired - Suitable stabilization measures are to be implemented wherever works are taking place as outlined in this document - Where erosion is detected, suitable mitigation methods are to be employed as soon as possible	Duration of Construction, as required	A clean site post construction, avoiding additional impact on surrounds	Project Manager Contractor ECO			

	METHOD: Regular visual inspections undertaken						
Dust	- Sand stockpiles are to be covered with Hessian, shade cloth or DPC plastic - Stockpiles are to be located in sheltered areas and the useable face to be orientated away from the prevailing wind - Excavation and transporting erodible material during high wind conditions - water dampening measures or cessation of activities should be required - If necessary, certain components of the work should be stopped until conditions are more favourable - Vehicles must not exceed 40 km/h along gravel roads - If roads generate unacceptable levels of dust, suppression measures should be introduced - If water is used only the critical areas should be watered by cart or hand to avoid unnecessary run-off, erosion or misuse METHOD: Areas and activities of possible dust generation to be inspected on a regular basis, as well as strategies to address dust	Duration of Construction	A clean site post construction, avoiding additional impact on surrounds, avoidance of impacts on general public	Project Manager Contractor ECO			
Site clean-up and rehabilitation	- All structures, equipment materials and facilities are to be removed from site on completion of the project	Duration of Construction	A functional ecosystem post construction, suitably rehabilitated as required, functional areas around the development areas	Project Manager Contractor Applicant ECO			

	- Construction site shall be cleared and cleaned to the ECO's satisfaction - Site / Area Rehabilitation to be conducted in line with recommendations herein - Use rescued plant material to rehabilitate the previously disturbed northeastern part of the site and allocate remaining material for use elsewhere, as determined by the contractor and botanist. - Document the Search and Rescue process, including species counts and relocation sites, and submit a report to the project botanist for verification. - No waste or remaining materials to be buried on site - In line with the NEMBA, all AIPS listed under the amended AIPS Lists (DEFF: GN1003, 2020) must either be removed or controlled on land under the management of the proponent. An AIPS control plan must therefore be compiled which includes measures to control and prevent the proliferation of AIPS during the construction phase. METHOD: Inspected upon site closure / suspension of works, rehabilitation methods contained in EMP and Dune EMP to be implemented						

Clearance of indigenous vegetation	- The approved development areas must be surveyed and clearly demarcated on the ground prior to any site development, so that no accidental disturbance of the conservation areas occurs. - No disturbance or loss of vegetation should be allowed within the Medium and High sensitivity areas as well as areas outside the proposed development footprints at any stage in the future. - Search and Rescue of all translocatable bulbs and succulents (at least 15 species) from within the development footprints must be undertaken prior to any site development. In addition, for Alternative 1 & 3, any specimens of the Near Threatened vygie Brianhuntleya intrusa (absent from Alt 3 footprint), the dwarf succulent Tulista pumila and the unnamed purple flowered Anisodontea (seen only in southern part of Block 2) within the authorised footprint must be rescued (none of these is in the Alternative 2 footprint). This must be undertaken by a qualified Search and Rescue contractor approved by the botanist. Some of the material	Duration of Construction phase	To minimise clearance of plant species of conservation concern.				

	should be used to help rehabilitate the previously disturbed northeastern part of the site (if not developed), and the remainder can be used elsewhere (at contractor and botanist's discretion).						
Wetland loss and Rehabilitation of the Wetland Habitat	- Remove all the fill material from the area indicated in Figure 20 as comprising the extent of infilling undertaken by the current owner. - Post-fill removal re-shape the area to approximate the natural terrain and reshape the southern edge of the Central-eastern Pond to a slope of 1:4 or less to allow natural vegetation to establish. - Once the vegetation has begun to re-establish naturally or as result planting search and remove all alien invasive plants as these are likely to be present in the seedbank.	Duration of Construction phase and Post-construction	The aim is to rehabilitate the wetland area through removal of the fill material.	Project Manager Contractor Applicant ECO			
Alteration flow regime	- Allow the naturally occurring vegetation to become re-established in the cleared areas and areas containing fill that is to be removed or alternatively introduce indigenous wetland vegetation within the historical extent of the	Duration of Construction phase and Post-construction	To minimise the increased flow and flood peaks downstream, receiving watercourse, provided the structures and infrastructure are located near the edge of the watercourse.	Project Manager Contractor Applicant ECO			

	wetland through planting and/or seeding. - It is acceptable if the landowner plants lawns outside the historical wetland area provided the lawn comprises *Stenotaphrum secondatum* (buffalo grass). - Collect rainwater off the roofs of the buildings and store the water in rainwater tanks for domestic use or garden irrigation use. - Re-establish appropriate vegetation within the areas cleared of vegetation.						
Water Quality impairment	- Undertake the construction project during the dry summer months and ensure that all construction vehicles and machinery cease from operating during the rainy winter period. - Ensure that all construction machinery and vehicles are checked for oil leaks and are in good working order before being permitted onto the development site (i.e. before leaving the R43); - Use drip-drays at all times when operating petrochemical driven construction machinery (e.g.	Duration of Construction phase.	To prevent oil leaks, fuel spillages and cement from entering and contaminating water resources.	Project Manager Contractor Applicant ECO			

	generators and cement mixers); - Use drip trays and other appropriate containment methods while refuelling of vehicles and machinery; - Demarcate an area for the refuelling of machinery and vehicles (this is recommended to be near the main farmstead and cellar); - Ensure that hazardous substances and chemicals are stored in a contained, impermeable area which has the capacity to contain at least 110% of the total volume of stored substances. - Store cement is a secure weather-proof area (e.g. shipping container) and ensure that used cement bags are placed in plastic bin-bags prior to placement in the on-site solid waste storage area; - All cement batching on the site must be undertaken on impermeable and bunded batching boards to ensure cement slurry is contained; and - Any cement residues and concrete waste within the construction site must be removed at the end of every						

	working day and disposed of as rubble.						
Biota loss	- Remove all the fill material from the area indicated in Figure 20 as comprising the extent of infilling undertaken by the current owner. - Allow the naturally occurring vegetation to become re-established in the cleared areas and areas containing fill that is to be removed or alternatively introduce indigenous wetland vegetation within the historical extent of the wetland through planting and/or seeding. - Ensure that the conservancy tank is appropriately sized (input should be obtained from a professional civil engineer and the calculation endorsed by the municipality). - Formalise an operational agreement between the owner/s and the municipality that specifies the timing of tank emptying; and - During the operational phase, monitor the site for any odorous liquids possibly being associated with the sewerage system.	Duration of Construction phase and post-construction phase.	To restore the habitat of the displaced biota to return and with germination from the seedbank.	Project Manager Contractor Applicant ECO			

11. DECOMMISSIONING PHASE

Not Applicable to this development.

12. ENVIRONMENTAL AUDITS

The purpose of auditing is to determine and monitor compliance with the EMP and EA and measure its effectiveness in mitigating environmental impacts. In terms of Regulation 34 of the NEMA EIA Regulations, 2014, the holder of the EA must conduct environmental audits in order to determine compliance with the conditions of the EA and EMP. Environmental Audit Reports should be submitted to the Competent Authority or as stipulated in the EA. The audit reports should be prepared by an independent person. The audit report should also provide recommendations regarding the need to amend the EMP.

The objective of the environmental audit report is to:

- Report on the level of compliance with the conditions of the EA and the EMP
- Report on the extent to which the avoidance, management and mitigation measures outlined in the EMP, achieve the objectives and outcomes of the EMP
- Identify and assess any new impacts and risks as a result of the activity
- Evaluate the effectiveness of the EMP
- Identify shortcomings in the EMP
- Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMP.

An environmental audit report should contain the following:

- Details and expertise of the independent person who prepared the environmental audit report
- A declaration that the auditor is independent
- An indication of the scope of, and the purpose for which, the environmental audit report was prepared
- A description of the methodology adopted in preparing the environmental audit report
- An indication of the ability of the EMP to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity as well as to ensure compliance with the provisions of environmental authorisation and EMP.
- A description of any assumptions made, and any uncertainties or gaps in knowledge
- A description of any consultation process that was undertaken during the course of carrying out the environmental audit report if required
- A summary and copies of any comments that were received during any consultation process
- Any other information requested by the competent authority.

13. CONCLUSION

An EMP has been developed as part of the Basic Assessment process to ensure that mitigation and management measures are enforced during the construction phase of the development, and that the conditions of the EA are upheld. The EMP should guide all phases of the project to minimize possible negative impacts and assign responsibility for environmental controls. The EMP provides a tool to recognise the needs of the environment and is intended to be utilised in conjunction with the Environmental Authorisation.

14. DECLARATION OF CONTRACTOR'S ACCEPTANCE

I, _____ (name), representing _____ (company name), have read and understood the above Environmental Management Plan and hereby acknowledge its contents and requirements as a framework for my company's environmental performance during the applicable development.

Signed: _____ Date: _____