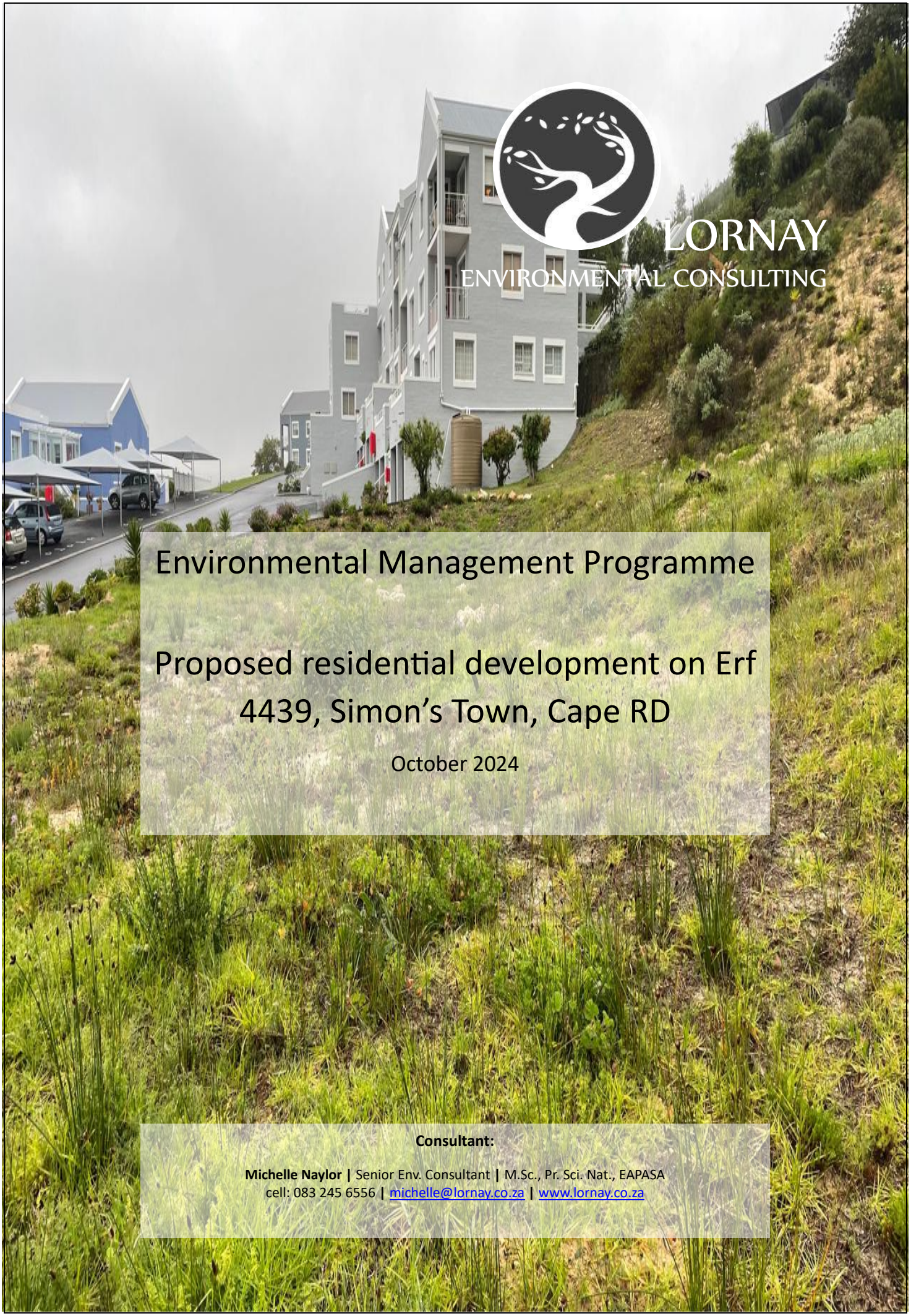

LORNAY
ENVIRONMENTAL CONSULTING

Environmental Management Programme

Proposed residential development on Erf 4439, Simon's Town, Cape RD

October 2024

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REFERENCE: EMP/4439/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

Basic Assessment - Process followed to receive Environmental Authorisation from the Competent Authority, necessitated by NEMA. The Basic Assessment Report (BAR) is drafted in line with the legislation.

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 – Elephant Ventures Africa cc

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 Henque 3030 CC “applicant” to ensure compliance with the regulations set forth in the National Environmental Management Act (NEMA, Act 107 of 1998), as amended, along with the Environmental Impact Assessment Regulations of 2014, as amended. This appointment pertains to the proposed residential development on Erf 4439 located in Simon’s Town.

The Environmental Management Programme (EMPr) established herein is binding on the applicant and all successors in title or future developers, whether they assume ownership in whole or in part. This binding agreement covers the proposed development on Erf 4439, as detailed in this application and any future amendments to the approved layout or development plan. Additionally, it extends to all property owners within the development.

Submission of this EMPr is in accordance with the requirements for a Basic Assessment as stipulated by NEMA. This Environmental Management Plan (EMP) serves as a guideline document for both the construction and post-construction phases of the project, specifically for roads, services, homes, and all proposed development infrastructure on the aforementioned property.

The EMP outlines mitigation measures and is prescriptive in nature, identifying specific individuals or organizations responsible for executing particular tasks during both construction and post-construction phases. The primary objective is to ensure that potential environmental impacts during construction and post-construction are minimized or entirely avoided. The EMP is a dynamic document that may require periodic updates to accommodate evolving site activities. Compiled as part of the Basic Assessment process, the EMP becomes legally binding once approved by the Competent Authority. It should be read in conjunction with the attached Architectural and Landscape Guideline Document.

Ensuring compliance with the Environmental Management Programme (EMPr) is essential during the construction phase, which involves vegetation clearing. A completion audit will likely be required at the end of the construction phase, including the installation of civil services, home building, and driveway construction, as stipulated by the Environmental Authorisation (EA).

This EMP has been drafted in accordance with the requirements outlined in Section 24N of the National Environmental Management Act (NEMA), Act 107 of 1998.

2. DEVELOPMENT PROPOSAL

The preferred development alternative involves the construction of a three-storey apartment building for residential use on Erf 4439, Simon's Town. The proposed development is located within the designated urban area and will cover a total footprint of 2000 m² out of the overall property size of 4191 m². However, only 1700 m² will be utilized for the apartment building and associated infrastructure, including driveways. The proposed development consists of the following:

Apartment building Layout:

→ A total of 19 units will be constructed and distributed across three floors as follows:

Ground Floor:

→ 2 units with 2 bedrooms each.

→ Parking will be provided on the ground floor, located beneath the building. A ratio of 1.5 parking bays per flat will be allocated to ensure adequate parking for residents.

First Floor:

→ 4 units with 1 bedroom each.

→ 6 units with 2 bedrooms each.

Second Floor:

→ 3 units with 1 bedroom each.

→ 2 units with 2 bedrooms each.

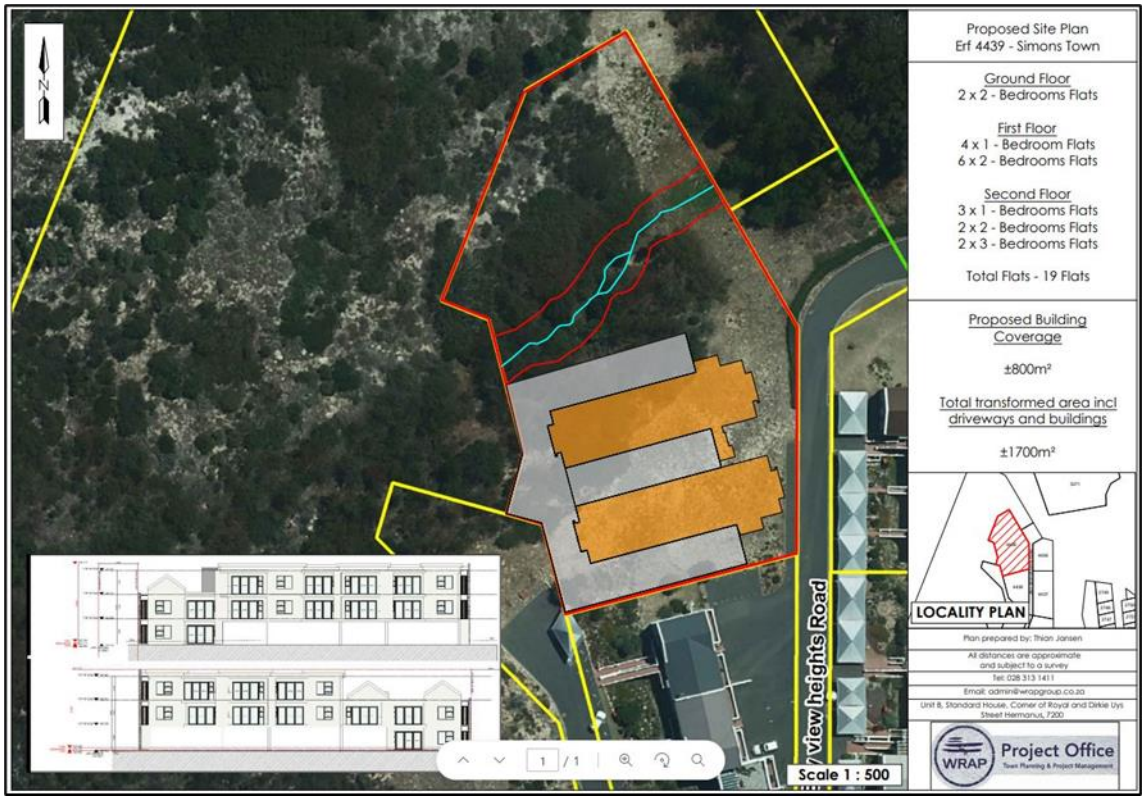
→ 2 units with 3 bedrooms each.

Each flat will have a restricted development floor plan of 50 to 100 m² in accordance with the below floor layout plans. The parking will be allocated on ground floor, providing 1.5 parking spaces per apartment, along with an additional allocation of 0.25 parking spaces per visitor per apartment.

Figure 1: Ground floor layout

Figure 2: First Floor layout

Figure 3: Second Floor layout



According to the assessments conducted by Terrestrial Biodiversity and Aquatic Biodiversity specialists, the area designated for the proposed development on Erf 4439, Simon's Town, has lost all its original natural vegetation due to prior disturbances. Therefore, no pristine natural vegetation remains in the development footprint that would be affected by the construction activities. However, the northern portion of the property has been identified as being heavily infested with alien invasive vegetation, which poses a significant ecological threat to the surrounding environment.

Additionally, a non-perennial stream has been identified in the northern part of the site, running from west to east. This stream plays a crucial role in maintaining the local hydrological system, although its riparian zone is also compromised by the presence of invasive plant species. The specialist studies conducted on site have highlighted the importance of implementing alien vegetation management measures to address the infestation and mitigate further ecological degradation.

Furthermore, the assessments emphasize the need for potential restoration efforts in the northern section of the property, particularly in areas where endangered ecosystems remain vulnerable. Restoration efforts would focus on removing alien species and rehabilitating the natural vegetation to enhance the ecological integrity of the area. These measures are necessary to protect the remaining ecosystems, prevent further biodiversity loss, and contribute to the long-term environmental sustainability of the site.

In light of these findings, it is recommended that an alien vegetation management plan be integrated into the development's environmental management strategy, along with restoration initiatives aimed at preserving and enhancing the site's ecological value. This approach will not only minimize the impact of the proposed development but also contribute to the rehabilitation of the degraded areas within the property.

3. TERMS OF REFERENCE

The primary objective of this Environmental Management Programme (EMPr) is to identify, manage, and mitigate any potential negative environmental impacts that may arise during the construction of the proposed residential apartment building and associated driveways on Erf 4439, Simon's Town. The EMPr serves as a guiding document to ensure that construction and post-construction activities are carried out in an environmentally responsible manner, in compliance with relevant legislation and best practices.

3.1 Scope of Application:

- This EMPr applies to all construction and post-construction activities associated with the proposed development, including site preparation, building construction, driveways, and any associated infrastructure.
- It must be made available to all contractors, subcontractors, and relevant stakeholders involved in the project, ensuring that it forms an integral part of all tender documentation and contracts.

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)
- Must inspect the construction footprint on a weekly basis during construction of these elements of the development; and must take immediate measures to address unforeseen disturbances to the estuary and its associated buffer area.
- Must check the non-perennial stream as well as the recommended buffer area for erosion damage and sedimentation weekly and after every heavy rainfall event.
- 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. IMPACT MANAGEMENT OUTCOMES

7.1 Aquatic Biodiversity Assessment

7.1.1. Impacts on non-perennial drainage line

A non-perennial drainage line was identified within a steep valley located in the north of the proposed development footprint. Despite the development area being highly disturbed, the proposed development has been greatly influenced by its presence on the property. This drainage line traverses the site in a west to east direction. The drainage line comprises a narrow active channel (approximately 0.5- 1m wide), with a relatively shallow bed dominated by sand (approximately 0.5 m deep). The drainage line is a non-perennial system which only contains natural surface water flow during the wet season and is fed by direct rainfall and interflow. The riparian area of the drainage line is dominated by alien *Eucalyptus sp.* interspersed with *Acacia saligna* (Port Jackson) and *Cenchrus clandestinus* (Kikuyu Grass).

An appropriate buffer of 16 m for the drainage line, that needs to be maintained during construction and operational phases of the proposed development, has been determined using the method described in the Buffer Zone Guidelines for Rivers, Wetlands and Estuaries (Macfarlane and Bredin, 2016). It is noted that the complete avoidance of the buffer area will not be possible, as the proposed apartment building encroaches into the buffer zone. It is also recommended that all non-essential construction and operational related activities must be strictly prohibited within the 16 m buffer (e.g. construction camps, laydown areas, mixing of cement, stockpiling of soils, ablution facilities etc) (refer to **Figure 9** of the BAR).

The proposed development will not be located directly within the non-perennial drainage line, however the north to north-western portion of the development falls within the recommended 16 m buffer. The potential impacts of the proposed project on aquatic biodiversity are summarised below:

The five potential aquatic impacts identified in Section 7 were assessed first without and then with application of mitigation measures. All of the post mitigation impact scores fell within the “Low” or “Very Low” impact categories. The ‘no go’ scenario was assessed and found to also be of “Low” impact significance as this scenario would still result in gradual decline of PES due to continuing erosion, channel incision and growth of alien invasive vegetation. No indirect impacts were noted.

Risk Assessment

The Risk Assessment Matrix prescribed by GN 4167 of 2023 was applied to the proposed project assuming full application of the essential mitigation measures. The result was an overall “Low Risk” rating for the proposed

development which will require a General Authorisation. A summary of the reasoning behind the risk scores is provided below:

1. The proposed development will not impede flow or encroach on the watercourse.
2. The potential for erosion due to catchment hardening as a result of the proposed development can be effectively mitigated by means of the proposed mitigation measures.
3. The drainage line is non-perennial, which limits sensitivity and therefore risk for most impact classes.
4. No wetlands are associated with the drainage line.
5. There is limited indigenous vegetation communities within the proposed site.
6. No aquatic fauna is reliant on the drainage line.

The completed risk assessment matrix is attached as Annexure 1 of the Aquatic Biodiversity Impact Assessment.

The non-perennial drainage line was found to be moderately to largely degraded, achieving a PES Score within the C/D category. The degradation and general nature of the drainage line also resulted in a Low/Marginal EIS score indicating that the non-perennial drainage line is not important from an ecological or biodiversity planning perspective. ES scores indicated that the non-perennial drainage line provides a negligible to moderately low contribution to ecosystem services.

Aquatic biodiversity impacts associated with the development were identified and assessed using both an impact assessment methodology compliant with NEMA requirements and the RAM prescribed by GN 4167 of 2023.
The five potential aquatic impacts identified were assessed first without and then with application of mitigation measures. Construction and operational phase impacts prior to the implementation of mitigation measures ranged from “Low” to “Medium” impact categories. However, with the successful implementation of mitigation measures, all impacts may be reduced to “Low” and “Very Low” impact categories.

The “No Go” Alternative would likely result in the site remaining as is and would therefore result in “Low” negative significance impact score to the onsite drainage line due to the continuation of current disturbances (alien invasive spread and water quality impairment).

The result of the RAM was an overall “Low Risk” rating for the proposed development, assuming that all mitigation measures will be implemented. It is therefore the opinion of the specialist that the proposed development should be approved subject to application of the mitigation measures listed in this report. It is furthermore the opinion of the specialist that the project should be registered under the GN509 (2016) General Authorisation.

7.2 Terrestrial Biodiversity Assessment

7.2.1. Impacts on Plant Species/ Animal Species/ Terrestrial Biodiversity

The assessment reveals that the site is primarily within the Cape Flats Dune Strandveld vegetation type, which is classified as an endangered ecosystem (**Figure 10**). However, the specialist noted that the site might also contain elements of Peninsula Sandstone Fynbos, a critically endangered ecosystem. Despite these sensitive classifications, much of the natural vegetation has been overtaken by dense alien species.

The 2014 landcover models indicated a significant loss of natural vegetation on the site, with only the northern parts still retaining the original habitat type. The South African Red List of Ecosystems further classifies these remaining vegetation types as endangered (SANBI & Department of Forestry, 2021). However, the site visit confirmed that the area designated for development has lost all-natural vegetation, while the northern region is heavily infested with alien vegetation. This biodiversity assessment has influenced the development by

confirming that no pristine natural vegetation will be impacted by the construction, and it emphasizes the need for alien vegetation management and possible restoration efforts to protect the remaining endangered ecosystems.

To address conservation concerns and mitigate impacts on Critical Biodiversity Areas (CBAs), the specialists consulted the Cape Town Biodiversity Network Spatial Plan to highlight the significance of biodiversity conservation and the preservation of ecosystem functions in CBA-designated areas. Although the proposed development site is situated outside any designated CBA, the northern portion of the erf, which is not included in the development plan, falls within a CBA where the remaining vegetation is considered highly threatened. This distinction is essential as it facilitates the protection and potential rehabilitation of the northern areas while ensuring that the development does not encroach upon ecologically sensitive and significant regions.

The specialist assessment highlighted that the northern parts of the property form part of buffer area for protected and conservation area. It is important to note that the area earmarked for development does not fall within this buffer, see

The specialist also indicated that the property is within the Strategic Water Source Area (SWSA), which is of high significance to the water supply of South Africa.

Bird Species of Conservation Concern

The specialist investigation involves the identification of bird species which may be associated with the site. Two birds species were investigated which are said to be associated with the site. *Circus maurus* (Temminck 1828) Black Harrier and *Sarothrura affinis* (Smith 1828) Striped Flufftail are birds' species of Conservation Concern which can be found in the Western Cape and the rest of South Africa. The specialist referenced Taylor, 2015 to highlight that the *Circus maurus* (Temminck 1828) Black Harrier species breeds on the ground in low, shrubby vegetation in spring, mainly in the Western Cape, before undertaking complex and variable post breeding movements that can take birds to the Drakensberg. However, the overgrown nature of the site and steep slope makes the site unsuitable for this species.

Sarothrura affinis (Smith 1828) Striped Flufftail was not detected during the site visit, and baased on the specialist knowledge the lack of dense montane vegetation on site makes it an unsuitable habitat for this species.

Site visit

The specialist highlighted that the area earmarked for development is not a suitable habitat for the animal species of Conservation Concern being listed above since it has evidence of disturbance and transformation.

There are no plans species of Conservation Concern found during the site visit, the plant habitat of the development area is highly disturbed and transformed. The specialist concludes that the developed area is considered as Low sensitivity in Terrestrial biodiversity, Plants species theme and animal species sensitivity.

Recommendations

- → All alien plants need to be removed from Erf 4439, and the northern areas, including the riparian zone of the stream, need to be cleared and rehabilitated.

8. CONSTRUCTION PHASE IMPACTS AND MITIGATIONS

8.1 Aquatic Biodiversity Impacts

The Aquatic Biodiversity 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 Riparian Vegetation

The proposed development is located adjacent to a non-perennial drainage line, which may result in the disturbance or removal of riparian vegetation. This disturbance can lead to habitat loss for aquatic and semi-aquatic species and impact the ecological functioning of the drainage line.

The overall risk matrix for this potential impact is rated as low, indicating that the disturbance of riparian vegetation is not expected to cause significant, long-term impacts if mitigation measures are implemented. Given the low-risk rating, a General Authorisation Application is recommended as a condition of authorisation.

Increased Runoff, Erosion, and Sedimentation

Site clearing and soil compaction during construction activities can alter the natural flow of surface water. This increases the risk of surface runoff, which can cause erosion and sedimentation within the drainage line, reducing water quality and altering the aquatic habitat.

Water Quality Impairment

Construction activities may lead to accidental spills of contaminants such as fuel, oils, or construction materials. In addition, stormwater runoff may carry sediment and pollutants into the non-perennial drainage line, affecting water quality and posing risks to aquatic organisms.

Management of impacts and Mitigation measures:

1. Disturbance of Riparian Habitat

- → Locate site camps, laydown areas, stockpile areas, construction material, equipment storage areas, vehicle parking areas, bunded vehicle servicing areas and re-fuelling areas in designated areas of already hardened surface or disturbed areas located outside of the non-perennial drainage line and associated 16 m buffer area. These areas should preferably be located on level ground in a previously disturbed area of vegetation approved by the Environmental Control Officer (ECO). Cut and fill must be avoided where possible during the set-up of the construction site camp.
- → Clearly demarcate the construction footprint (including construction camp, access roads, stockpile areas and working servitudes) with orange hazard tape, fencing or similar prior to the commencement of any activity, and strictly prohibit the movement of construction vehicles and personnel outside of the demarcated areas. Portions of the non-perennial drainage line and its associated buffer area that are located outside of the demarcated construction footprint must be designated as no-go area.
- → Demarcation of the construction footprint/working servitude must be signed off by an ECO (or similar). Demarcation should not be removed until construction is complete, and rehabilitation has taken place.
- → Limit access into the construction footprint to existing access roads.
- → Prohibit the dumping of excavated material, building materials or removed vegetation within the non-perennial drainage line and its associated buffer area. Building material must be stored at the designated storage area located outside of the no-go area. Spoil material must be appropriately disposed of at a registered waste disposal facility.

- → Topsoils and subsoils removed from the construction footprint must be stored separately at the designated stockpile area for future rehabilitation.
- → Vegetation clearance should be restricted to the relevant development components and indigenous vegetation cover should be maintained as far as practically possible.
- → Vegetation which is considered suitable for rehabilitation activities after construction (such as indigenous grasses and other herbaceous species) should be carefully removed from the construction footprint and stored at an appropriate facility for use in later rehabilitation activities.
- → Clear and remove any rubble or litter that may have been accidentally deposited into the no-go area as a result of construction activities and dispose of at an appropriate registered facility.
- → An ECO must inspect the construction footprint on a weekly basis and must take immediate measures to address unforeseen disturbances to the non-perennial drainage line and its associated buffer area. Any disturbed / compacted areas falling outside of the demarcated construction footprint must be immediately rehabilitated. Depending on the extent of damage the method of rehabilitation may require input from an aquatic specialist / suitably qualified contractor.
- → Once construction has been completed, orange hazard fences as well as all construction waste, rubble, and equipment must be removed from the construction footprint.
- → 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.
- → A Rehabilitation, Maintenance and Management Plan (RMMP) must be drafted by a suitably qualified specialist to address the rehabilitation of any disturbed / bare areas which fall outside of the direct construction footprint. Rehabilitation must take place as soon as possible after construction is completed, and monitoring of rehabilitated areas must be undertaken. A suitably qualified professional must supervise the rehabilitation and monitoring activities.

2. Erosion and Sedimentation of the Non-perennial Drainage Line

- → Undertake initial clearing in the early dry season (November to January) if possible.
- → Locate soil stockpile areas in designated areas of already hardened surface or disturbed areas on site. These areas should preferably be located on level ground in a previously disturbed area of vegetation approved by the ECO. Stockpile areas must not be located within the no-go area (i.e. the non-perennial drainage line and 16 m buffer area).
- → Design a Stormwater Management Plan (SWMP) prior to the commencement of construction related activities which details how stormwater runoff from cleared and compacted surfaces will be controlled to prevent the erosion and sedimentation of the downslope non-perennial drainage line. No stormwater runoff should flow directly into the downslope aquatic environment. Flow dissipaters should be constructed to reduce the velocity of flow which should be released as diffuse as opposed to channelled flow.
- → Implement erosion control measures where required. Examples of erosion control measures include:
  - Covering steep/unstable/erosion prone areas with geotextiles.
  - Covering areas prone to erosion with brush packing, straw bales, mulch.
  - Stabilizing cleared/disturbed areas susceptible to erosion with sandbags.
  - Constructing silt fences / traps in areas prone to erosion, to retain sediment-laden runoff. Silt fences must be adequately maintained. Furthermore, the ECO / site manager must monitor sediment fences / traps after every heavy rainfall event and any sediment that has accumulated must be removed by hand.

- → The site manager / ECO must check the downslope non-perennial drainage line as well as the recommended buffer area for erosion damage and sedimentation weekly and after every heavy rainfall event. Should erosion or sedimentation be noted, immediate corrective measures must be undertaken.
- → Stormwater/erosion/sediment control measures are to remain in place until construction has been completed and operational storm water management infrastructure is in place and operating correctly.
- → Implement rehabilitation and monitoring measures as recommended by an RMMP to stabilise soils and prevent erosion and sedimentation during the operational phase.

3. Water quality impairment

- → Locate topsoil stockpiles, construction material, equipment storage areas, bunded concrete batching areas as well as vehicle parking areas, bunded vehicle servicing and re-fuelling areas in designated areas outside of the no-go area. These areas should preferably be located on level ground in a previously disturbed area of vegetation.
- → Fuel, chemicals, and other hazardous substances should preferably be stored offsite, or as far away as possible from the no-go area. These substances must be stored in suitable secure weather-proof containers with impermeable and bunded floors to limit pilferage, spillage into the environment, flooding, or storm damage.
- → Inspect all storage facilities, vehicles, and machinery daily for the early detection of deterioration or leaks, and strictly prohibit the use of any vehicles or machinery from which leakage has been detected.
- → Mixing and transferring of chemicals or hazardous substances must take place outside of the non-perennial drainage line and its associated buffer area, and must take place on drip trays, shutter boards or other impermeable surfaces.
- → Drip trays must be utilised at all fuel dispensing areas.
- → Vehicles and machinery should preferably be cleaned off site. Should cleaning be required on site it must only take place within designated areas outside of the non-perennial drainage line and its associated buffer area and should only occur on bunded areas with a water/oil/grease separator.
- → Dispose of used oils, wash water from cement and other pollutants at an appropriate licensed landfill site.
- → Avoid the use of infill material or construction material with pollution / leaching potential. Where possible, in situ earthen materials must be used during construction in order to reduce the risk of leachate from imported materials contaminating the non-perennial drainage line areas.
- → Concrete should preferably be imported as “ready-mix” concrete from a local supplier. Should onsite concrete mixing be required it must not be done on exposed soils. Concrete must be mixed on an impermeable surface in an area of low environmental sensitivity identified by the ECO outside of the no-go area. Surplus or waste concrete must be sent back to the supplier who will dispose of it.
- → Construct temporary bunds around areas where cement is to be cast in situ.
- → Dispose of concrete and cement-related mortars in an environmental sensitive manner (can be toxic to aquatic life). Disposal of any of these waste materials into the stormwater system or the non-perennial drainage line is strictly prohibited.
- → Washout must not be discharged into the no-go area or the stormwater system. A washout area should be designated, and wash water should be treated on-site.
- → Clean up any spillages immediately with the use of a chemical spill kit and dispose of contaminated material at an appropriately registered facility.
- → Provide portable toilets where work is being undertaken (1 toilet per 10 workers). These toilets must be located within an area designated by the ECO outside of the no-go area and should preferably be located on level ground. Portable toilets must be regularly serviced and maintained.
- → Provide an adequate number of bins on site and encourage construction personnel to dispose of their waste responsibly.

→ Waste generated by construction personnel must be removed from the site and disposed of at a registered waste disposal facility on a weekly basis.

8.2 Terrestrial Biodiversity/Plant Species/Animal Species Impacts

The Terrestrial Biodiversity Assessment revealed that the site is in a highly transformed state, primarily due to the proliferation of dense alien vegetation. As such, impacts on indigenous plant and animal species are anticipated to be low during the construction phase.

Low Impact on Native Plant Species

Due to the dominance of alien vegetation on-site, the construction activities are unlikely to significantly affect indigenous plant species. However, some isolated areas, particularly in the northern part of Erf 4439, retain small patches of natural vegetation, which are of conservation concern.

Low Impact on Native Animal Species

Given the disturbed state of the habitat, the presence of native fauna is expected to be minimal. However, some small terrestrial species and birds may still use the area, particularly in the more natural northern region and riparian zones.

Alien Plant Encroachment

The widespread presence of alien plant species poses a risk of further encroachment into surrounding natural areas if not properly managed, potentially degrading the ecological value of the site.

Management of Impacts and Mitigation Measures:

→ The northern area of Erf 4439, where a small portion is classified as a Critical Biodiversity Area (CBA), should be preserved as much as possible. This will help retain ecological connectivity and provide habitat for native species. Development should avoid encroaching on this area and fencing or demarcation should be used to protect it during construction.

→ A systematic alien vegetation removal program must be implemented across Erf 4439, prioritizing species that are particularly invasive. This includes the riparian zone of the non-perennial stream. Alien species such as *Acacia* and *Eucalyptus* should be cleared, and follow-up treatments must be conducted to prevent regrowth.

→ Although impacts on animal species are expected to be low, construction activities should still be mindful of small animals. A Search and Rescue operation should be conducted before site clearance, relocating any displaced fauna to suitable nearby habitats. In addition, construction staff should be trained to avoid unnecessary harm to wildlife.

9. POST-CONSTRUCTION PHASE

9.1 Aquatic Biodiversity Impacts

The proposed development will not be located directly within the non-perennial drainage line, however the north to north-western portion of the development falls within the recommended 16 m buffer.

Potential Impacts:

Alteration of Flow Regime and Erosion

Hardening of surfaces, such as roads, buildings, and paved areas, can lead to increased surface runoff, disrupting the natural flow regime of the drainage line. This can result in the erosion of stream banks, sediment deposition, and degradation of the aquatic habitat downstream.

Water Quality Impairment

Stormwater runoff from the developed area could carry pollutants such as hydrocarbons, heavy metals, and other contaminants into the non-perennial drainage line, negatively affecting water quality. Additionally, potential leaks or spills from sewage systems could further compromise the health of aquatic ecosystems, posing a risk to local biodiversity.

Impact Management and Mitigation Measures:

To minimize post-construction impacts on aquatic biodiversity, the following measures should be implemented:

1. Altered flow regime and erosion of non-perennial drainage line

→ Design a SWMP in order to control stormwater runoff from hardened surfaces and prevent the erosion and sedimentation of the non-perennial drainage line. Runoff from the proposed development must not increase from the pre-development to the post-development scenario. Clean and dirty water must be separated and controlled via systems that do not result in erosion features developing.
→ Discharge stormwater from rooftops into rain harvesting tanks. This will limit the volumes of stormwater runoff that will reach the non-perennial drainage line. Where possible, water collected in rain harvesting tanks can be utilized for flushing of toilets, washing etc.
→ Implement rehabilitation and monitoring measures as recommended by an RMMP to reduce runoff from bare compacted soils and prevent erosion and sedimentation during the operational phase.
→ Stormwater runoff should preferably be discharged as diffuse flow into well vegetated areas outside of the non-perennial drainage line and its associated buffer area.
→ Energy dissipaters / erosion protection measures (such as lining with stones, grass, reno-mattresses, or gabions) must be constructed where stormwater is released in order to reduce the runoff velocity and therefore erosion.
→ Sheet runoff from hardened surfaces must be intercepted and the treatment and infiltration of runoff must be promoted.
→ Sediment traps should be incorporated into stormwater drains / swales upstream of discharge points.
→ Monitor the proposed development and adjacent non-perennial drainage line for erosion and sedimentation after heavy rainfall events. Any erosion noted must be immediately addressed. Rehabilitation measures may include the removal of accumulated sediment by hand, filling of erosion gullies and rills, the stabilisation of gullies with silt fences, riprap, and the revegetation of stabilised areas.
→ Stormwater systems will require ongoing maintenance. Any build-up of silt or debris within stormwater drains or swales will need to be cleared to ensure the continued functioning of the systems.
→ Any damage to stormwater infrastructure, and any flaws identified in the functionality of stormwater infrastructure, must be rectified immediately.

2. Water quality impairment

→ Design a SWMP which will allow for the infiltration and treatment of stormwater. All stormwater must receive basic filtering and treatment prior to its release.
→ Incorporate measures into the stormwater design to trap solid waste, debris and sediment carried by stormwater. Measures may include the use of curb inlet drain grates and debris baskets/bags.
→ Stormwater generated from areas with a higher risk of contamination such as parking areas and roads must receive basic filtering and treatment prior to its release into surrounding areas. Treatment methods may include sand filter traps and oil-water separators which will require maintenance.
→ Stormwater systems must be monitored and maintained into perpetuity and collections of debris and solid waste removed from grates and baskets. The developer must confirm who will be responsible for this monitoring and maintenance as well as their roles.
→ Operational phase mitigation implemented during the design/construction phase:
  - Construct sewage pipelines in accordance with the relevant SANS / SABS specifications.
  - Design the pipelines to accommodate the operating and surge pressures.
  - Provide surge protection e.g air valves.
  - Allow for scour valves along pipelines in order to ensure sewage pipelines can be emptied in a controlled manner if required.
  - Allow for surcharge containment and emergency storage of 2 hours of peak flow at manholes located within areas upslope of the non-perennial drainage line. Containment/emergency storage may include a concrete box or earthen bund surrounding the manholes. The backup storage capacity of manholes may also be improved by raising the manholes by one meter.
→ The sewage system must be monitored and maintained into perpetuity. The developer must confirm who will be responsible for this monitoring and maintenance as well as their roles.
→ The non-perennial drainage line and its associated buffer area must be regularly inspected for waste. Any waste or litter noted must be immediately removed and disposed of at a registered waste disposal facility. The developer must confirm who will be responsible for this monitoring of the non-perennial drainage line. This recommendation should be included in the MMP for the project.

9.2 Terrestrial Biodiversity/Plant Species/ Animal Species

The post-construction phase of the proposed development on the southern parts of Erf 4439 is not expected to result in significant negative impacts on species of conservation concern (SCC), terrestrial biodiversity features, or key habitats. This is primarily due to the transformed nature of the site and the absence of highly sensitive ecological areas in the southern portion, proposed for development.

Minimal Impact on Plant and Animal Species

The post-construction impact on native plant and animal species is anticipated to be low, provided that alien vegetation is effectively managed. With the removal of alien species and rehabilitation of the northern areas, the ecological integrity of the remaining natural vegetation will be enhanced, supporting local biodiversity.

Habitat Restoration and Biodiversity Support

If the northern part of Erf 4439, including riparian zones, is rehabilitated and preserved as natural vegetation, it could serve as a refuge for indigenous species and contribute to the overall ecological health of the site. This will help maintain ecological functionality and habitat value for both plant and animal species.

Invasion of Alien Plants

The key risk during the post-construction phase is the re-establishment of alien plant species, which could threaten the success of rehabilitation efforts and reduce the ecological value of the site.

Impact Management and Mitigation Measures:

→ A long-term alien plant management plan must be implemented to ensure that alien species do not recolonize the cleared areas. This includes regular monitoring and removal of alien species, particularly in the northern rehabilitated area and riparian zones.

→ The northern portion of Erf 4439 should be fully rehabilitated using indigenous plant species suited to the local conditions. Restoration efforts should aim to re-establish natural vegetation patterns, supporting the recovery of native biodiversity and providing habitat for local fauna.

Table 2. Activity specific impacts and mitigations

PRE-CONSTRUCTION/ CONSTRUCTION PHASE AND POST-CONSTRUCTION PHASE			
IMPACT	**DESCRIPTION**	**MITIGATION MEASURES**	**RESPONSIBLE PERSONS**
Vegetation clearance	***Construction phase***: Permanent loss of vegetation on the property which is not entirely pristine. The widespread presence of alien plant species poses a risk of further encroachment into surrounding natural areas if not properly managed, potentially degrading the ecological value of the vegetation in the northern section.	- Vegetation clearance should be restricted to the relevant development components and indigenous vegetation cover should be maintained as far as practically possible. - Vegetation which is considered suitable for rehabilitation activities after construction (such as indigenous grasses and other herbaceous species) should be carefully removed from the construction footprint and stored at an appropriate facility for use in later rehabilitation activities. - A Rehabilitation, Maintenance and Management Plan (RMMP) must be drafted by a suitably qualified specialist to address the rehabilitation of any disturbed / bare areas which fall outside of the direct construction footprint. Rehabilitation must take place as soon as possible after construction is completed, and monitoring of rehabilitated areas must be undertaken. A suitably qualified professional must supervise the rehabilitation and monitoring activities. - 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	Applicant Contractor ECO
Disturbance of Riparian Habitat	**Construction phase:** The movement of construction vehicles and setting up of the construction camp.	- Locate site camps, laydown areas, stockpile areas, construction material, equipment storage areas, vehicle parking areas, bunded vehicle servicing areas and re-fuelling areas in designated areas of already hardened surface or	ECO, Contractor Applicant

		disturbed areas located outside of the non-perennial drainage line and associated 16 m buffer area. These areas should preferably be located on level ground in a previously disturbed area of vegetation approved by the Environmental Control Officer (ECO). Cut and fill must be avoided where possible during the set-up of the construction site camp. - Clearly demarcate the construction footprint (including construction camp, access roads, stockpile areas and working servitudes) with orange hazard tape, fencing or similar prior to the commencement of any activity, and strictly prohibit the movement of construction vehicles and personnel outside of the demarcated areas. Portions of the non-perennial drainage line and its associated buffer area that are located outside of the demarcated construction footprint must be designated as no-go area. - Demarcation of the construction footprint/working servitude must be signed off by an ECO (or similar). Demarcation should not be removed until construction is complete, and rehabilitation has taken place. - Limit access into the construction footprint to existing access roads. - Prohibit the dumping of excavated material, building materials or removed vegetation within the non-perennial drainage line and its associated buffer area. Building material must be stored at the designated storage area located outside of the no-go area. Spoil material must be appropriately disposed of at a registered waste disposal facility. - Topsoils and subsoils removed from the construction footprint must be stored separately at the designated stockpile area for future rehabilitation.	

		- Vegetation clearance should be restricted to the relevant development components and indigenous vegetation cover should be maintained as far as practically possible. - Vegetation which is considered suitable for rehabilitation activities after construction (such as indigenous grasses and other herbaceous species) should be carefully removed from the construction footprint and stored at an appropriate facility for use in later rehabilitation activities. - Clear and remove any rubble or litter that may have been accidentally deposited into the no-go area as a result of construction activities and dispose of at an appropriate registered facility. - An ECO must inspect the construction footprint on a weekly basis and must take immediate measures to address unforeseen disturbances to the non-perennial drainage line and its associated buffer area. Any disturbed / compacted areas falling outside of the demarcated construction footprint must be immediately rehabilitated. Depending on the extent of damage the method of rehabilitation may require input from an aquatic specialist / suitably qualified contractor. - Once construction has been completed, orange hazard fences as well as all construction waste, rubble, and equipment must be removed from the construction footprint. - 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. - A Rehabilitation, Maintenance and Management Plan (RMMP) must be drafted by a suitably qualified specialist to address the rehabilitation of any disturbed / bare areas which	

		fall outside of the direct construction footprint. Rehabilitation must take place as soon as possible after construction is completed, and monitoring of rehabilitated areas must be undertaken. A suitably qualified professional must supervise the rehabilitation and monitoring activities.	
Erosion and Sedimentation of the Non-perennial Drainage Line	***Construction phase*** The removal of vegetation and stripping of soils from the construction footprint will result in the exposure of soils to erosive elements. An increase in stormwater runoff and velocities from exposed and compacted areas, particularly during peak rainfall periods, may result in the formation of erosion gullies and rills in the downslope non-perennial drainage line.	- Undertake initial clearing in the early dry season (November to January) if possible. - Locate soil stockpile areas in designated areas of already hardened surface or disturbed areas on site. These areas should preferably be located on level ground in a previously disturbed area of vegetation approved by the ECO. Stockpile areas must not be located within the no-go area (i.e. the non-perennial drainage line and 16 m buffer area). - Design a Stormwater Management Plan (SWMP) prior to the commencement of construction related activities which details how stormwater runoff from cleared and compacted surfaces will be controlled to prevent the erosion and sedimentation of the downslope non-perennial drainage line. No stormwater runoff should flow directly into the downslope aquatic environment. Flow dissipaters should be constructed to reduce the velocity of flow which should be released as diffuse as opposed to channelled flow. - Implement erosion control measures where required. Examples of erosion control measures include: o Covering steep/unstable/erosion prone areas with geotextiles. o Covering areas prone to erosion with brush packing, straw bales, mulch. o Stabilizing cleared/disturbed areas susceptible to erosion with sandbags.	ECO Contractor Developer

		○ Constructing silt fences / traps in areas prone to erosion, to retain sediment-laden runoff. Silt fences must be adequately maintained. Furthermore, the ECO / site manager must monitor sediment fences / traps after every heavy rainfall event and any sediment that has accumulated must be removed by hand. - The site manager / ECO must check the downslope non-perennial drainage line as well as the recommended buffer area for erosion damage and sedimentation weekly and after every heavy rainfall event. Should erosion or sedimentation be noted, immediate corrective measures must be undertaken. - Stormwater/erosion/sediment control measures are to remain in place until construction has been completed and operational storm water management infrastructure is in place and operating correctly. - Implement rehabilitation and monitoring measures as recommended by an RMMP to stabilise soils and prevent erosion and sedimentation during the operational phase. - General Authorisation is required.	
Water quality impairment	***Construction phase*** The movement of construction vehicles and the use of machinery during construction increases the possibility of the contamination of the non-perennial drainage line by hydrocarbons, oils and grease which may leak from the vehicles / machinery or spill during poor dispensing practices and enter the non-perennial	- Locate topsoil stockpiles, construction material, equipment storage areas, bunded concrete batching areas as well as vehicle parking areas, bunded vehicle servicing and re-fuelling areas in designated areas outside of the no-go area. These areas should preferably be located on level ground in a previously disturbed area of vegetation. - Fuel, chemicals, and other hazardous substances should preferably be stored offsite, or as far away as possible from the no-go area. These substances must be stored in suitable secure weather-proof containers with impermeable and	ECO Applicant Developer

	drainage line directly, or indirectly with stormwater runoff. There is also a possibility that the non-perennial drainage line will be contaminated by the runoff/spillage of cement and other construction related materials from the construction footprint. ***Post-construction phase*** With a housing development there is also a long-term risk that the non-perennial drainage line may be impacted on as a result of sewage surcharge or as a result of the leakage of sewage from poorly maintained pipes, manholes or sewage pumps.	bunded floors to limit pilferage, spillage into the environment, flooding, or storm damage. - Inspect all storage facilities, vehicles, and machinery daily for the early detection of deterioration or leaks, and strictly prohibit the use of any vehicles or machinery from which leakage has been detected. - Mixing and transferring of chemicals or hazardous substances must take place outside of the non-perennial drainage line and its associated buffer area, and must take place on drip trays, shutter boards or other impermeable surfaces. - Drip trays must be utilised at all fuel dispensing areas. - Vehicles and machinery should preferably be cleaned off site. Should cleaning be required on site it must only take place within designated areas outside of the non-perennial drainage line and its associated buffer area and should only occur on bunded areas with a water/oil/grease separator. - Dispose of used oils, wash water from cement and other pollutants at an appropriate licensed landfill site. - Avoid the use of infill material or construction material with pollution / leaching potential. Where possible, in situ earthen materials must be used during construction in order to reduce the risk of leachate from imported materials contaminating the non-perennial drainage line areas. - Concrete should preferably be imported as “ready-mix” concrete from a local supplier. Should onsite concrete mixing be required it must not be done on exposed soils. Concrete must be mixed on an impermeable surface in an area of low environmental sensitivity identified by the ECO outside of the no-go area. Surplus or waste concrete must be sent back to the supplier who will dispose of it. - Construct temporary bunds around areas where cement is to be cast in situ.	

		- Dispose of concrete and cement-related mortars in an environmental sensitive manner (can be toxic to aquatic life). Disposal of any of these waste materials into the stormwater system or the non-perennial drainage line is strictly prohibited. - Washout must not be discharged into the no-go area or the stormwater system. A washout area should be designated, and wash water should be treated on-site. - Clean up any spillages immediately with the use of a chemical spill kit and dispose of contaminated material at an appropriately registered facility. - Provide portable toilets where work is being undertaken (1 toilet per 10 workers). These toilets must be located within an area designated by the ECO outside of the no-go area and should preferably be located on level ground. Portable toilets must be regularly serviced and maintained. - Provide an adequate number of bins on site and encourage construction personnel to dispose of their waste responsibly. - Waste generated by construction personnel must be removed from the site and disposed of at a registered waste disposal facility on a weekly basis. ***Post-construction*** - Design a SWMP which will allow for the infiltration and treatment of stormwater. All stormwater must receive basic filtering and treatment prior to its release. - Incorporate measures into the stormwater design to trap solid waste, debris and sediment carried by stormwater. Measures may include the use of curb inlet drain grates and debris baskets/bags. - Stormwater generated from areas with a higher risk of contamination such as parking areas and roads must receive	

		basic filtering and treatment prior to its release into surrounding areas. Treatment methods may include sand filter traps and oil-water separators which will require maintenance. - Stormwater systems must be monitored and maintained into perpetuity and collections of debris and solid waste removed from grates and baskets. The developer must confirm who will be responsible for this monitoring and maintenance as well as their roles. o Construct sewage pipelines in accordance with the relevant SANS / SABS specifications. o Design the pipelines to accommodate the operating and surge pressures. o Provide surge protection e.g air valves. o Allow for scour valves along pipelines in order to ensure sewage pipelines can be emptied in a controlled manner if required. o Allow for surcharge containment and emergency storage of 2 hours of peak flow at manholes located within areas upslope of the non-perennial drainage line. Containment/emergency storage may include a concrete box or earthen bund surrounding the manholes. The backup storage capacity of manholes may also be improved by raising the manholes by one meter. - The sewage system must be monitored and maintained into perpetuity. The developer must confirm who will be responsible for this monitoring and maintenance as well as their roles. - The non-perennial drainage line and its associated buffer area must be regularly inspected for waste. Any waste or litter noted must be immediately removed and disposed of at a	

		registered waste disposal facility. The developer must confirm who will be responsible for this monitoring of the non-perennial drainage line. This recommendation should be included in the MMP for the project.	
Altered flow regime and erosion of non-perennial drainage line	***Post-construction phase:*** An increase in stormwater runoff volumes and velocities from the bare / hardened surfaces associated with the proposed development, or from areas left bare as a result of construction related activities may result in channel and headcut erosion as well as sedimentation of the downslope non-perennial drainage line.	- Design a SWMP in order to control stormwater runoff from hardened surfaces and prevent the erosion and sedimentation of the non-perennial drainage line. Runoff from the proposed development must not increase from the pre-development to the post-development scenario. Clean and dirty water must be separated and controlled via systems that do not result in erosion features developing. - Discharge stormwater from rooftops into rain harvesting tanks. This will limit the volumes of stormwater runoff that will reach the non-perennial drainage line. Where possible, water collected in rain harvesting tanks can be utilized for flushing of toilets, washing etc. - Implement rehabilitation and monitoring measures as recommended by an RMMP to reduce runoff from bare compacted soils and prevent erosion and sedimentation during the operational phase. - Stormwater runoff should preferably be discharged as diffuse flow into well vegetated areas outside of the non-perennial drainage line and its associated buffer area. - Energy dissipaters / erosion protection measures (such as lining with stones, grass, reno-mattresses, or gabions) must be constructed where stormwater is released in order to reduce the runoff velocity and therefore erosion. - Sheet runoff from hardened surfaces must be intercepted and the treatment and infiltration of runoff must be promoted. - Sediment traps should be incorporated into stormwater drains / swales upstream of discharge points.	ECO Applicant Contractor

		- Monitor the proposed development and adjacent non-perennial drainage line for erosion and sedimentation after heavy rainfall events. Any erosion noted must be immediately addressed. Rehabilitation measures may include the removal of accumulated sediment by hand, filling of erosion gullies and rills, the stabilisation of gullies with silt fences, riprap, and the revegetation of stabilised areas. - Stormwater systems will require ongoing maintenance. Any build-up of silt or debris within stormwater drains or swales will need to be cleared to ensure the continued functioning of the systems. • Any damage to stormwater infrastructure, and any flaws identified in the functionality of stormwater infrastructure, must be rectified immediately.	

10. GENERAL CONSTRUCTION PHASE IMPACTS AND REQUIREMENTS

10.1Contractors 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.

10.2 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.

10.3 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.

10.4 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.

10.5 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.

10.6 Site Demarcation

Responsibility - Project Manager / Contractor / ECO / owner

Prior to any construction commencing, the boundaries of the site and / or the footprints of each dwelling should be appropriately indicated or fenced off by the contractor. 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. The permanent delineated wetland must be clearly demarcated and made a no go area, this should apply to the temporary wetland zones too, as far as possible.

10.7 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.

10.8 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 water tight 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.

10.9 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.

10.10 Construction water

Responsibility - Project Manager / Contractor / ECO / owner

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 or onto adjacent sites.

10.11 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.

10.12 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 construction. The open space erf will be used for stormwater retention.

10.13 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.

10.14 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.

10.15 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.

10.16 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.

10.17 Architecture / Design

Responsibility - Project Manager / Contractor / ECO / owner

The architecture and design of the dwellings will be done in line with the general trend of the area. The houses should be designed to be in line with the surrounding architecture and cape vernacular style common to the area. Neutral colour palettes should be used which blend into the surrounds.

10.18 Sustainable Building Guidelines and materials

Responsibility - Project Manager / Contractor / ECO / owner

The houses should be designed in such a way as to create a sustainable living area. Ensure materials and orientation allow for an environmentally friendly design with lower operating costs, i.e natural ventilation, correct orientation, correct colours and roofing etc. Use recycled materials as far as possible.

Energy efficiency is also an important consideration and the following actions should be considered:

- North orientation to ensure that as many well-used spaces face north as possible. Sun control is more difficult on East and West facing windows

- Use of good insulation in the roof and walls to keep the inside temperature warm in winter or cool in summer
- Solar water heaters to be included in the design phase
- Suitable roof overhangs to let in the lower winter sun but provide shade from the summer sun
- Sensible fenestration – let in the light and catch the winter sun, but not too much window area so that warmth or cool cannot be retained inside when needed. They can be combined with shading and reflecting devices - such as overhangs, screens, shutters, awnings, trees, planting and different glass types which will aid to control the amount, quality and time of daylight entering the building
- Suitable ventilation for fresh air and cool breezes
- Natural lighting through windows and light wells

Water conservation should be a priority in design of the dwelling. Rainwater tanks are recommended as far as possible. Optimally designed systems for grey water reuse should also be explored during the design phase in order to prevent the expense of retrofitting a system. Water wise and indigenous landscaping is recommended and will reduce the water costs associated with maintaining gardens. Permeable paving is to be used in areas where paving is required. Low flow shower and heads and dual flushing systems should be fitted. Aerators on taps should also be fitted to reduce overall water demand.

Construction activities such as watering, mixing and cleaning should avoid water wastage. Dry brushing and trigger spray nozzles should be used. Reuse of construction water should also be implemented.

10.19 Site Clean Up and Rehabilitation

Responsibility - Project Manager / Contractor / ECO/ owner

The following actions should be implemented once construction has concluded:

- The construction footprint should be restored to the natural contours of the ground and shall allow normal surface drainage, as far as possible
- 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 far as practical.
- 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.

11. COMPLIANCE AND MONITORING

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	R 5000
Disturbance beyond approved footprint	Disturbance to vegetation beyond approved areas	R 5000
Waste management	Inappropriate waste management	R 3000 dependent of extent
Not adhering to conditions of EA	Not attending to specific EA conditions	R 3000 + per condition

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 METHOD: Briefing to be undertaken by project manager and / ECO	As required	Construction team(s) informed of all requirements in terms of EMPr and EA	ECO Project Manager			

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	- Site survey and pegging - Site demarcation and fencing (mark construction areas – all other areas are No Go) - Access roads for construction vehicles to be clearly indicated, consideration to be given to turning circles - Review of specialist input 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	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			
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	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			

	- 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						
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	Duration of Construction	A well placed and functional contractors camp to minimise impacts on other areas on site	Project Manager Contractor			

	- 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						

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	Duration of Construction	Minimal disturbance to sensitive zones, minimal disturbance to vegetation	Project manager Contractor ECO			

	- 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 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	A clean waste collection point which is serviced on a regular basis	Project Manager Contractor ECO			
Non-perennial drainage line	- Locate site camps, laydown areas, stockpile areas, construction material, equipment storage areas, vehicle parking areas, bunded vehicle servicing areas and re-fuelling areas in designated areas of already hardened surface or disturbed areas located outside of the non-perennial drainage line	Duration of Construction	Avoid disturbance of the riparian zone and channel	Project Manager Contractor ECO			

	and associated 16 m buffer area. These areas should preferably be located on level ground in a previously disturbed area of vegetation approved by the Environmental Control Officer (ECO). Cut and fill must be avoided where possible during the set-up of the construction site camp. - Clearly demarcate the construction footprint (including construction camp, access roads, stockpile areas and working servitudes) with orange hazard tape, fencing or similar prior to the commencement of any activity, and strictly prohibit the movement of construction vehicles and personnel outside of the demarcated areas. Portions of the non-perennial drainage line and its associated buffer area that are located outside of the demarcated construction footprint must be designated as no-go area. - Demarcation of the construction footprint/working servitude must be signed off by an ECO (or similar). Demarcation should not be removed until construction is complete, and rehabilitation has taken place. - Limit access into the construction footprint to existing access roads.						

	- Prohibit the dumping of excavated material, building materials or removed vegetation within the non-perennial drainage line and its associated buffer area. Building material must be stored at the designated storage area located outside of the no-go area. Spoil material must be appropriately disposed of at a registered waste disposal facility. - Topsoils and subsoils removed from the construction footprint must be stored separately at the designated stockpile area for future rehabilitation. - Vegetation clearance should be restricted to the relevant development components and indigenous vegetation cover should be maintained as far as practically possible. - Vegetation which is considered suitable for rehabilitation activities after construction (such as indigenous grasses and other herbaceous species) should be carefully removed from the construction footprint and stored at an appropriate facility for use in later rehabilitation activities. - Clear and remove any rubble or litter that may have been accidentally deposited into the no-go area as a result of construction						

	activities and dispose of at an appropriate registered facility. - An ECO must inspect the construction footprint on a weekly basis and must take immediate measures to address unforeseen disturbances to the non-perennial drainage line and its associated buffer area. Any disturbed / compacted areas falling outside of the demarcated construction footprint must be immediately rehabilitated. Depending on the extent of damage the method of rehabilitation may require input from an aquatic specialist / suitably qualified contractor. - Once construction has been completed, orange hazard fences as well as all construction waste, rubble, and equipment must be removed from the construction footprint. - 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. - A Rehabilitation, Maintenance and Management Plan (RMMP) must						

	be drafted by a suitably qualified specialist to address the rehabilitation of any disturbed / bare areas which fall outside of the direct construction footprint. Rehabilitation must take place as soon as possible after construction is completed, and monitoring of rehabilitated areas must be undertaken. A suitably qualified professional must supervise the rehabilitation and monitoring activities. METHOD: this area to be kept as a No-go during construction phase						
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	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	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	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	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	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 - Specialist advice to be sort where required - 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						
Alien Clearing	- All alien plants need to be removed from Erf 4439, and the northern areas, including the riparian zone of the stream, need to be cleared and rehabilitated. - 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	Construction and Post-construction phase	Long term ecological integrity and restoration of indigenous vegetation on the northern section of the property.	Project Manager Applicant Contractor ECO			

	must therefore be compiled which includes measures to control and prevent the proliferation of AIPS during the construction phase. METHOD: Regular monitoring of rehabilitation progress, alien plant regrowth, and any faunal presence should be conducted during and after the construction phase. Adaptive management practices should be applied to address emerging issues and ensure that the long-term ecological integrity of the site is maintained.						
Freshwater Specialist	**Disturbance of Riparian Habitat** - Locate site camps, laydown areas, stockpile areas, construction material, equipment storage areas, vehicle parking areas, bunded vehicle servicing areas and re-fuelling areas in designated areas of already hardened surface or disturbed areas located outside of the non-perennial drainage line and associated 16 m buffer area. These areas should preferably be located on level ground in a previously disturbed area of vegetation approved by the Environmental Control Officer (ECO). Cut and fill must be avoided where possible during the set-up of the construction site camp. - Clearly demarcate the construction footprint (including construction camp, access roads, stockpile areas	Construction and Post-construction phase	Long term ecological integrity and restoration of indigenous vegetation on the northern section of the property.	Project Manager Applicant Contractor ECO			

	and working servitudes) with orange hazard tape, fencing or similar prior to the commencement of any activity, and strictly prohibit the movement of construction vehicles and personnel outside of the demarcated areas. Portions of the non-perennial drainage line and its associated buffer area that are located outside of the demarcated construction footprint must be designated as no-go area. - Demarcation of the construction footprint/working servitude must be signed off by an ECO (or similar). Demarcation should not be removed until construction is complete, and rehabilitation has taken place. - Limit access into the construction footprint to existing access roads. - Prohibit the dumping of excavated material, building materials or removed vegetation within the non-perennial drainage line and its associated buffer area. Building material must be stored at the designated storage area located outside of the no-go area. Spoil material must be appropriately disposed of at a registered waste disposal facility. - Topsoil and subsoils removed from the construction footprint must be						

	stored separately at the designated stockpile area for future rehabilitation. - Vegetation clearance should be restricted to the relevant development components and indigenous vegetation cover should be maintained as far as practically possible. - Vegetation which is considered suitable for rehabilitation activities after construction (such as indigenous grasses and other herbaceous species) should be carefully removed from the construction footprint and stored at an appropriate facility for use in later rehabilitation activities. - Clear and remove any rubble or litter that may have been accidentally deposited into the no-go area as a result of construction activities and dispose of at an appropriate registered facility. - An ECO must inspect the construction footprint on a regular basis and must take immediate measures to address unforeseen disturbances to the non-perennial drainage line and its associated buffer area. Any disturbed / compacted areas falling outside of the demarcated construction footprint must be immediately rehabilitated. Depending on the						

	extent of damage the method of rehabilitation may require input from an aquatic specialist / suitably qualified contractor. - Once construction has been completed, orange hazard fences as well as all construction waste, rubble, and equipment must be removed from the construction footprint. - 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. - A Rehabilitation, Maintenance and Management Plan (RMMP) must be drafted by a suitably qualified specialist to address the rehabilitation of any disturbed / bare areas which fall outside of the direct construction footprint. Rehabilitation must take place as soon as possible after construction is completed, and monitoring of rehabilitated areas must be undertaken. A suitably qualified professional must supervise the rehabilitation and monitoring activities.						

	Erosion and Sedimentation of the Non-perennial Drainage Line. - Undertake initial clearing in the early dry season (November to January) if possible. - Locate soil stockpile areas in designated areas of already hardened surface or disturbed areas on site. These areas should preferably be located on level ground in a previously disturbed area of vegetation approved by the ECO. Stockpile areas must not be located within the no-go area (i.e. the non-perennial drainage line and 16 m buffer area). - Design a Stormwater Management Plan (SWMP) prior to the commencement of construction related activities which details how stormwater runoff from cleared and compacted surfaces will be controlled to prevent the erosion and sedimentation of the downslope non-perennial drainage line. No stormwater runoff should flow directly into the downslope aquatic environment. Flow dissipaters should be constructed to reduce the velocity of flow which should be released as diffuse as opposed to channelled flow. - Implement erosion control measures where required.						

	Examples of erosion control measures include: ○ Covering steep/unstable/erosion prone areas with geotextiles. ○ Covering areas prone to erosion with brush packing, straw bales, mulch. ○ Stabilizing cleared/disturbed areas susceptible to erosion with sandbags. ○ Constructing silt fences / traps in areas prone to erosion, to retain sediment-laden runoff. Silt fences must be adequately maintained. Furthermore, the ECO / site manager must monitor sediment fences / traps after every heavy rainfall event and any sediment that has accumulated must be removed by hand. - The site manager / ECO must check the downslope non-perennial drainage line as well as the recommended buffer area for erosion damage and sedimentation weekly and after every heavy rainfall event. Should						

	erosion or sedimentation be noted, immediate corrective measures must be undertaken. - Stormwater/erosion/sediment control measures are to remain in place until construction has been completed and operational storm water management infrastructure is in place and operating correctly. - Implement rehabilitation and monitoring measures as recommended by an RMMP to stabilise soils and prevent erosion and sedimentation during the operational phase. **Water quality impairment: Mitigations** - Locate topsoil stockpiles, construction material, equipment storage areas, bunded concrete batching areas as well as vehicle parking areas, bunded vehicle servicing and re-fuelling areas in designated areas outside of the no-go area. These areas should preferably be located on level ground in a previously disturbed area of vegetation. - Fuel, chemicals, and other hazardous substances should preferably be stored offsite, or as far away as possible from the no-go area. These substances must be stored in suitable secure weather-proof containers with						

	impermeable and bunded floors to limit pilferage, spillage into the environment, flooding, or storm damage. - Inspect all storage facilities, vehicles, and machinery daily for the early detection of deterioration or leaks, and strictly prohibit the use of any vehicles or machinery from which leakage has been detected. - Mixing and transferring of chemicals or hazardous substances must take place outside of the non-perennial drainage line and its associated buffer area, and must take place on drip trays, shutter boards or other impermeable surfaces. - Drip trays must be utilised at all fuel dispensing areas. - Vehicles and machinery should preferably be cleaned off site. Should cleaning be required on site it must only take place within designated areas outside of the non-perennial drainage line and its associated buffer area and should only occur on bunded areas with a water/oil/grease separator. - Dispose of used oils, wash water from cement and other pollutants at an appropriate licensed landfill site.						

	- Avoid the use of infill material or construction material with pollution / leaching potential. Where possible, in situ earthen materials must be used during construction in order to reduce the risk of leachate from imported materials contaminating the non-perennial drainage line areas. - Concrete should preferably be imported as "ready-mix" concrete from a local supplier. Should onsite concrete mixing be required it must not be done on exposed soils. Concrete must be mixed on an impermeable surface in an area of low environmental sensitivity identified by the ECO outside of the no-go area. Surplus or waste concrete must be sent back to the supplier who will dispose of it. - Construct temporary bunds around areas where cement is to be cast in situ. - Dispose of concrete and cement-related mortars in an environmental sensitive manner (can be toxic to aquatic life). Disposal of any of these waste materials into the stormwater system or the non-perennial drainage line is strictly prohibited. - Washout must not be discharged into the no-go area or the stormwater system. A washout						

	area should be designated, and wash water should be treated on-site. - Clean up any spillages immediately with the use of a chemical spill kit and dispose of contaminated material at an appropriately registered facility. - Provide portable toilets where work is being undertaken (1 toilet per 10 workers). These toilets must be located within an area designated by the ECO outside of the no-go area and should preferably be located on level ground. Portable toilets must be regularly serviced and maintained. - Provide an adequate number of bins on site and encourage construction personnel to dispose of their waste responsibly. - Waste generated by construction personnel must be removed from the site and disposed of at a registered waste disposal facility on a weekly basis. **Altered flow regime and erosion of non-perennial drainage line: Mitigations:** - Design a SWMP in order to control stormwater runoff from hardened surfaces and prevent the erosion and sedimentation of the non-perennial drainage line. Runoff from the proposed development						

	must not increase from the pre-development to the post-development scenario. Clean and dirty water must be separated and controlled via systems that do not result in erosion features developing. - Discharge stormwater from rooftops into rain harvesting tanks. This will limit the volumes of stormwater runoff that will reach the non-perennial drainage line. Where possible, water collected in rain harvesting tanks can be utilized for flushing of toilets, washing etc. - Implement rehabilitation and monitoring measures as recommended by an RMMP to reduce runoff from bare compacted soils and prevent erosion and sedimentation during the operational phase. - Stormwater runoff should preferably be discharged as diffuse flow into well vegetated areas outside of the non-perennial drainage line and its associated buffer area. - Energy dissipaters / erosion protection measures (such as lining with stones, grass, reno-mattresses, or gabions) must be constructed where stormwater is released in order to reduce the						

	runoff velocity and therefore erosion. - Sheet runoff from hardened surfaces must be intercepted and the treatment and infiltration of runoff must be promoted. - Sediment traps should be incorporated into stormwater drains / swales upstream of discharge points. - Monitor the proposed development and adjacent non-perennial drainage line for erosion and sedimentation after heavy rainfall events. Any erosion noted must be immediately addressed. Rehabilitation measures may include the removal of accumulated sediment by hand, filling of erosion gullies and rills, the stabilisation of gullies with silt fences, riprap, and the revegetation of stabilised areas. - Stormwater systems will require ongoing maintenance. Any build-up of silt or debris within stormwater drains or swales will need to be cleared to ensure the continued functioning of the systems. - Any damage to stormwater infrastructure, and any flaws identified in the functionality of stormwater infrastructure, must be rectified immediately.						

	Water quality impairment: Mitigations: - Design a SWMP which will allow for the infiltration and treatment of stormwater. All stormwater must receive basic filtering and treatment prior to its release. - Incorporate measures into the stormwater design to trap solid waste, debris and sediment carried by stormwater. Measures may include the use of curb inlet drain grates and debris baskets/bags. - Stormwater generated from areas with a higher risk of contamination such as parking areas and roads must receive basic filtering and treatment prior to its release into surrounding areas. Treatment methods may include sand filter traps and oil-water separators which will require maintenance. - Stormwater systems must be monitored and maintained into perpetuity and collections of debris and solid waste removed from grates and baskets. The developer must confirm who will be responsible for this monitoring and maintenance as well as their roles. **Operational phase mitigation implemented during the design/construction phase:**						

	- Construct sewage pipelines in accordance with the relevant SANS / SABS specifications. - Design the pipelines to accommodate the operating and surge pressures. - Provide surge protection e.g air valves. - Allow for scour valves along pipelines in order to ensure sewage pipelines can be emptied in a controlled manner if required. - Allow for surcharge containment and emergency storage of 2 hours of peak flow at manholes located within areas upslope of the non-perennial drainage line. Containment/emergency storage may include a concrete box or earthen bund surrounding the manholes. The backup storage capacity of manholes may also be improved by raising the manholes by one meter. - The sewage system must be monitored and maintained into perpetuity. The developer must confirm who will be responsible for this monitoring and maintenance as well as their roles. - The non-perennial drainage line and its associated buffer area must be regularly inspected for waste. Any waste or litter noted must be immediately removed and						

	disposed of at a registered waste disposal facility. The developer must confirm who will be responsible for this monitoring of the non-perennial drainage line. This recommendation should be included in the MMP for the project. -						
Terrestrial Specialist	- A long-term alien plant management plan must be implemented to ensure that alien species do not recolonize the cleared areas. This includes regular monitoring and removal of alien species, particularly in the northern rehabilitated area and riparian zones. - The northern portion of Erf 4439 should be fully rehabilitated using indigenous plant species suited to the local conditions. Restoration efforts should aim to re-establish natural vegetation patterns, supporting the recovery of native biodiversity and providing habitat for local fauna.	Construction and Post-construction phase	Long-term ecological integrity and restoration of indigenous vegetation on the northern section of the property.	Project Manager Applicant Contractor ECO			

12. DECOMMISSIONING PHASE

Not Applicable to this development.

13. 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.

14. 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.

15. 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: _____