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ENVIRONMENTAL CONSULTING

Environmental Management Programme

Proposed Franskraal Beach Estate on Remainder of Portion 36 of the Farm Fransche kraal No. 708 and Farm U.K.R West No. 707, Franskraal, Gansbaai

30 October 2024

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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 – as per EA

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 Tanya Mari de Villiers, the “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 the Remainder Portion 36 of Farm Fransche Kraal No. 708 and U.K.R West No. 707, located in Franskraal, Gansbaai.

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 the subject property 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).

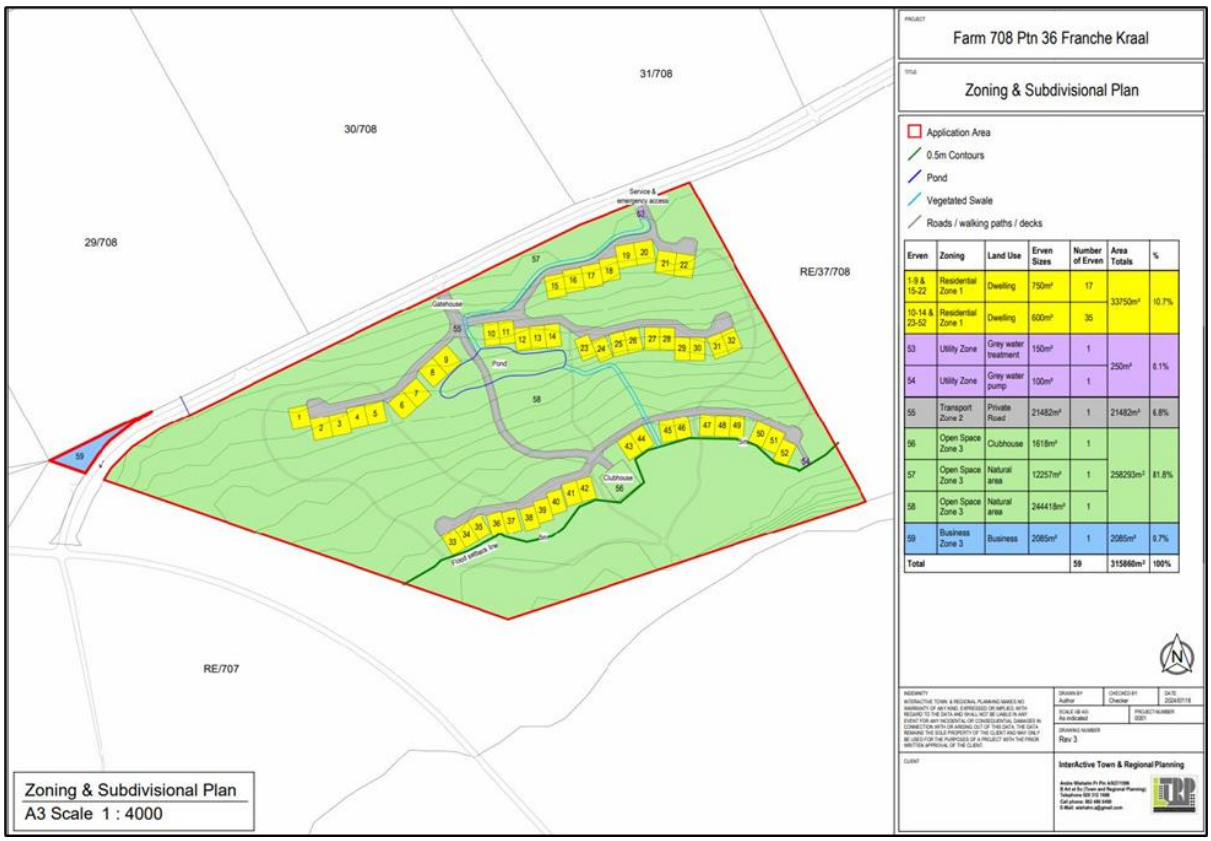
This EMP has been drafted in accordance with the requirements outlined in Section 24N of the National Environmental Management Act (NEMA), Act 107 of 1998.

2. DEVELOPMENT PROPOSAL

The preferred development alternative entails the establishment of 52 residential erven, a clubhouse, road networks, two utility areas for greywater management, designated open spaces as conservation zones, a business zone, a jetty, and a boardwalk on the Remainder of Portion 36 of Farm Fransche Kraal No. 708 and Farm U.K.R West No. 707. The proposed development will have a total footprint coverage of about 6 ha of the total property, which has a total area of approximately 31.59 hectares. The proposed development consists of the following:

Residential dwellings and associated infrastructure

Each residential unit will have a restricted development footprint of 600 to 750 m² and will consist of single- and double-storey structures in accordance with the approved site development plan. The associated infrastructure includes two proposed utility areas, each requiring a footprint of 100 to 150 m², and road infrastructure with a total footprint of 21,482 m².



Erven	Zoning	Land Use	Erven Sizes	Number of Erven	Area Totals	%
1-9 & 15-22	Residential Zone 1	Dwelling	750m²	17	33750m²	10.7%
10-14 & 23-52	Residential Zone 1	Dwelling	600m²	35		
53	Utility Zone	Grey water treatment	150m²	1	250m²	0.1%
54	Utility Zone	Grey water pump	100m²	1		
55	Transport Zone 2	Private Road	21482m²	1	21482m²	6.8%
56	Open Space Zone 3	Clubhouse	1618m²	1	258293m²	81.8%
57	Open Space Zone 3	Natural area	12257m²	1		
58	Open Space Zone 3	Natural area	244418m²	1		
59	Business Zone 3	Business	2085m²	1	2085m²	0.7%
Total				59	315860m²	100%

Figure 1: Proposed site development plan

Figure 2: Preferred site layout plan

The proposed site is currently infested with alien vegetation, interspersed with indigenous vegetation, and is in poor condition, as noted by specialists. Furthermore, a seep wetland has been identified on the property, which connects to the Uilkraals Estuary, located approximately 75 meters downstream. To address these issues, the plan involves clearing the alien vegetation to restore and promote the growth of indigenous vegetation. The objective is to ensure that the homes blend harmoniously with the remaining natural vegetation and maintain ecological corridors. To minimize the impact on the site's hydrological connectivity, the houses will be constructed using micro-piled foundations.

Access Roads and Pathways

Access to the property is provided via Elim Road extending westward from the R43 road. The roads will be designed to be as narrow as practicable, with a width of 6 metres for the main entrance road, and narrower dimensions ranging from 4.7 to 5 metres for the smaller internal roads. These roads will feature a "natural" appearance, utilizing exposed paving blocks that closely resemble the natural sand present on site.

Pathways and walking trails are proposed and will be of a soft material, such as gravel, together with timber boardwalks over wetlands and swales.

Jetty and Boardwalk

The section of land located between portion 36 and the Uilkraals Estuary belongs to the Department of Public Works and Infrastructure and is included in this application under the consent provided by the DPW&I. This area has been designated for the construction of a lightweight timber boardwalk, and floating jetty extending into the water along the estuary's edge. An application for the jetty in terms of the Sea Shore Act is in process.

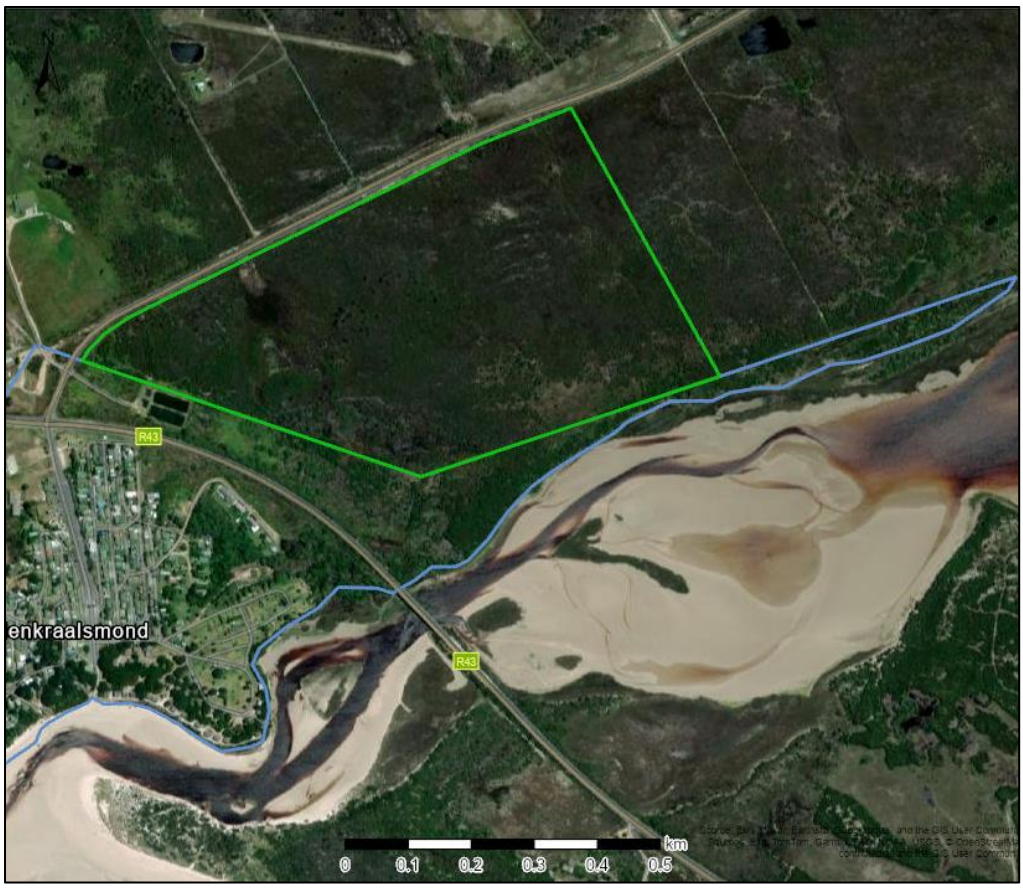


Figure 3: Subject property (green), DPW&I property in blue and Uilkraals Estuary.

Clubhouse and Gazebo

The clubhouse will be single storey and is proposed to be architecturally inline with the design of the dwelling units. A small gazebo structure is envisaged near the exit of the site. This would be constructed on stilts and would be light weight timber or steel and timber construction (see picture below).

Services (Water, Greywater, Sewage and Electricity)

- Water: The development will be supplied with water from the municipal main
- Grey Water: Two utilities are proposed for on-site greywater treatment. The treated water will be reused for irrigation and possibly for toilet flushing, pending approval.
- Sewage: gravity fed to a central closed conservancy tank, which will be removed and treated at the municipal treatment works.
- Electricity: The development will be supplied with electricity from the ESKOM line running in the road reserve adjacent to the site.

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 and subsequent operation of the proposed Franskraal Beach Estate on Remainder of Portion 36 of the Farm 708 and U.K.R West 707, Franskraal, Gansbaai . The EMPr serves as a guiding document to ensure that the construction and post-construction phases of the development 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 / operational 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. Long term management will be required in the post construction / operational phase and this will be done in conjunction with the Home Owners Association.

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 and operational 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.

4.7. Homeowners association

A Homeowners Association or similar structure is required to implement and manage the long term management actions required on site. The details of this must be refined.

5. CONDITIONS OF AUTHORISATION

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

6. ENVIRONMENTAL AWARENESS

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

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

6.1 Aim of the Environmental Awareness Plan

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

6.2 Environmental Awareness Training and content

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

Environmental conditions in the induction should focus on the following:

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

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

7. CONSTRUCTION PHASE IMPACTS AND MITIGATIONS

7.1 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**:*

→ Wetland loss in the delineated seep wetland (as per the Layout Alternative 1 and 2).
→ Alteration of the flow regime of the remnant seep wetland and Uilkraals Estuary during construction of the beach resort.
→ Water quality impairment due to increased sediment input, potential spillage, or release of potentially contaminated runoff into the remnant seep wetland and Uilkraals Estuary during construction of the beach resort.

Management of impacts and Mitigation measures:

1. *Wetland loss*

   → It is recommended that the Uilkraals Estuary, and the 75 m buffer surrounding the estuary, is designated as a No-Go area during construction activities.

2. *Altered flow regime*

   → It is recommended that the Uilkraals Estuary, and the 75 m buffer surrounding the estuary, is designated as a No-Go area during construction activities.
   → Install the stormwater infrastructure and conduct rehabilitation activities (as proposed in a suitable Offset and Rehabilitation Management Plan), prior to initiating other construction such that wetland flow and any stormwater leaving the construction site are attenuated in the wetland.
   → It is recommended that the SW design onsite takes cognisance of the fact that flow should still drain into the Uilkraals Estuary downstream of the development.
   → If possible, conduct construction and rehabilitation activities during summer months (November to March). Remove all alien invasive vegetation from the proposed site**.**
   → 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

3. *Water Quality impairment*

→ It is recommended that the It is recommended that the Uilkraals Estuary, and the 75 m buffer surrounding the estuary, is designated as a No-Go area during construction activities.
→ Bunded, impervious areas must be designated by an Environmental Control Officer for temporary toilets, vehicle parking/servicing areas, and for pouring and mixing of concrete/cement, paint, and chemicals. These bunded areas must be at least 100 m from the demarcated estuary's boundaries.
→ 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 estuary. 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.
- → A Maintenance and Monitoring Programme must be compiled for all infrastructure (e.g. pipelines) and implemented by a suitably qualified professional to ensure that all defects or leakages are identified timeously and repaired immediately.
- → Stormwater associated with the internal road network may potentially contain hydrocarbons and other contaminants. It is recommended that a SW Management Plan (SWMP) is drafted. Potentially contaminated SW should ideally drain into the Grey Water Treatment Plant and be adequately treated prior to discharge into the swale system (and downstream Estuary).
- → Stormwater associated with the internal road network may potentially contain hydrocarbons and other contaminants. It is recommended that a SW Management Plan (SWMP) is drafted. Potentially contaminated SW should ideally drain into the Grey Water Treatment Plant and be adequately treated prior to discharge into the swale system (and downstream Estuary).
- → 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.
- → Further recommendations specific to the Rehabilitation of the remnant Seep Wetland area should form part of a suitable Wetland Offset, Rehabilitation and Management Plan drafted for the proposed development.
- → Recommendations specific to the proposed 6 m wide road located in the buffer area of the Estuary, gazebo, access gate, and boardwalk (within the estuarine functional zone) include:
- → A method statement must be developed indicating how the contractor will minimise the passage of contaminants such as fuel and cement into the estuary. This method statement must be approved by the ECO prior to the commencement of construction activities.
- → Fuel, chemicals, and other hazardous substances should preferably be stored as far away as possible from the estuary and buffer 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 (as applicable) 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 estuary and buffer, and must take place on drip trays, shutter boards or other impermeable surfaces.
- → 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 estuary 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 downstream 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 estuary 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 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.
- → Locate site camp, 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 estuary and associated 75 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).
- → Prohibit the dumping of excavated material, building materials or removed vegetation within the estuary and its associated buffer area. Building material must be stored at the designated storage area located outside of the no-go area (estuary and buffer). Spoil material must be appropriately disposed of at a registered waste disposal facility.
- → 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 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. 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.

7.2 Terrestrial Biodiversity/Plant Species/Animal Species Impacts

The proposed residential development will lead to the direct loss of natural vegetation characterized by Agulhas sand fynbos, a critically endangered vegetation type according to the National Spatial Biodiversity Assessment (NSBA). The site hosts three vulnerable Red Data species: *Leucadendron coniferum, Leucadendron linifolium*, and *Leucospermum prostratum*, with the potential for more Red Data species to be identified with further surveys. The vegetation varies from open natural fynbos to heavily infested areas with alien invasive species, covering approximately 70% of the site. The removal of alien species, although costly, could largely restore the natural vegetation. The property, including terrestrial and aquatic Critical Biodiversity Areas, holds high local and regional conservation value.

The proposed development would fragment connectivity between the lagoon and Franskraal mountains, although an ecological corridor could mitigate this impact. The current state of the vegetation is poor due to alien infestation but holds potential for restoration.

Botanical impacts will occur during both construction and operational phases, with the former involving the loss of habitat and species due to clearing vegetation, and the latter involving less obvious but significant impacts such as secondary invasion by alien species, disruption of pollination and dispersal, and other effects from residential activities.

Mitigation measures recommended by the specialist

- → An initial alien clearing program should be implemented by a qualified local team of alien vegetation clearers prior to any development happening on site. The entire property should be cleared of all alien invasive species. An alien vegetation management plan must be drawn up and sufficient funding should be set aside to allow for effective long-term follow up clearing.
- → Once initial alien vegetation clearing has been implemented, search and rescue of all transplantable plant material must take place prior to clearing of vegetation and topsoil from any development areas (bulbs, succulents, and any others deemed translocatable). A suitably qualified botanist/horticulturalist should be appointed to undertake this work, which if it is to be done successfully should be carried out in late winter/early spring. If the search and rescue cannot be performed in the period July-October, a large proportion of the bulbs will not be located, and this is unacceptable and incomplete search and rescue. No vegetation clearing should commence until search and rescue has been completed. Once removed, bulbs can either be transplanted directly to surrounding natural areas or be stored in a dry, pathogen free storage facility, for replanting in post construction rehabilitation or gardening on the property.
- → All construction areas need to be clearly demarcated to ensure that no damage occurs to the vegetation outside of the minimum areas needed to create the construction footprint. A sturdy temporary fence must be erected around the proposed construction areas.
- → Roads should be kept to a minimum width.
- → Only one access route for machinery and cartage should be used and this should be aligned with the future road network of the estate. The footpath network should be carefully laid out and no additional roads, tracks or footpaths should be permitted on the property.
- → The appointment of an Environmental Control Officer for the duration of the construction phase is essential. The ECO should be responsible for enforcing no-go areas, environmental induction for all staff and making sure that search and rescue is done.
- → Following vegetation clearing, all available topsoil should be removed and stockpiled prior to construction commencing. This material should be used to rehabilitate road verges and for rehabilitation landscaping around dwellings.
- → No formal gardening should be allowed on any private erven, and the natural vegetation should be retained. Where rehabilitation is required, only an approved selection of locally indigenous species should be allowed. A large percentage of the material required for rehabilitation must be rescued from development footprints prior to development and maintained in a dedicated nursery until needed.

7.3 Visual Impacts

Potential impacts:

During the construction phase of the development it is assumed that the site will be cleared of the invasive alien vegetation and the installation of services, roads, units and fencing areas will be cleared of all vegetation. The clearing of the alien vegetation will result in the site being visually exposed to the adjacent areas namely the R43 roads and the Lagoon while the construction activity will also change the activity levels of the site as well as the

vegetation clearing for construction will also result in exposed substrates being more visible to the surrounding areas.

Mitigation measures as recommended by the specialist:

- → Phased removal of the invasive alien vegetation such that the construction activities are screened. Where the berm is along the southern and western areas, the construction and revegetation, including some large indigenous trees, should form part of the initial phase of construction and between this berm and the most western proposed roads and eastern units, some larger alien trees should be retained to screen the proposed units and roads from the R43 sections until the revegetated berms are established and can screen the development.
- → Similarly along the eastern boundary - some of the larger alien trees should be retained to screen development from the R43 Scenic Whale Route. The effectiveness of trees screening development is seen to the south of the R43 where there is a strip of vegetation between the lagoon and the resort, screening buildings well. Once the indigenous trees and shrubs are established, the remaining trees can be removed.
- → Quicker growing indigenous pioneer tree species such as Virgilia spp. Olivia ventosa, Kiggelaria africana, Buddleja spp., Euclea racemosa, and other quick growing trees from local area - (refer to Platbos Forest and vegetation specialist)
- → The linear arrangement of units needs to be broken, with either more space between units or some being set back so that the 'line' is broken. Additional landscaping can also assist with the breaking of the line
- → Limit extent of damage, keeping cut and fill to a minimum. Minimise disturbance through fencing off construction areas, thereby protecting and retaining vegetation in the areas that will not be built on.
- → Revegetate service areas and public street verges immediately after construction and continue maintenance eternally.
- → The site must be kept tidy at all times
- → Building material stockpiles must be protected from dispersion into the surrounding area by wind or water
- → A concerted effort must be made to minimise dust generation and its effect on the surrounding areas.

7.4. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment

Potential impacts:

From a faunal connectivity standpoint, the proposed development is assessed as having a 'medium' risk, assuming necessary mitigation measures are implemented to support animal movement.

The proposed building footprints are situated at a distance from the estuary and are not considered a significant threat. However, the construction of a jetty and increased human activity, including the presence of pets near the estuary, could disturb fauna, particularly the *Caspian Tern*, which uses sandbanks and mudflats for feeding and resting. As a result, potential impacts on the species due to human presence and jetty construction are considered low.

While some habitat loss is expected, and construction disturbance will have negative impacts, the open spaces within the site and adjacent properties provide refuge for the species. The overall impact on the Cape Dwarf Chameleon is classified as 'low'.

Despite some permanent habitat loss and construction-related disturbances, the open spaces in and around the site offer opportunities for the species to persist. The potential impact on the Western Leopard Toad is rated as 'medium'.

The proposed developments are assessed as having a 'very low' impact on *A. montanus* due to the following factors: 1) low elevation, 2) absence of species data for this area, 3) lack of host plant records linking current vegetation to potential insect presence, 4) no direct evidence of the species, and 5) extensive invasion by A. longifolia and A. cyclops that is unsuitable for A. montanus.

Mute Winter Katydid Brinckiella aptera

The proposed developments are considered to have a low impact on B. aptera due to 1) lack of host plant records linking present vegetation to the species, 2) no direct evidence of occurrence after extensive netting, and 3) significant site invasion by *A. longifolia and A. cyclops*. However, as a nocturnal species, *B. aptera* may return if the site is rehabilitated to support its historic habitat.

Mitigation measures as recommended by the specialist

- → An alien plant eradication and rehabilitation plan need to be developed and implemented to deal with the rehabilitation of the property. This plan and implementation need to be entrenched formally in the future maintenance of the properties open spaces.
- → Fire management plan needs to be developed and legally incorporated into the property's future management protocols so that fire is not removed as an ecological process due to perceived risk by future owners.
- → Only native plants should be allowed in household gardens.
- → During the construction phase the construction area should be clearly demarcated and blocked off from the 'private open spaces' area to avoid damage and pollution.
- → Pre and post construction site preparation should include rehabilitation of the 'private open space' by removing current building rubble and litter from this area.
- → The fence should always remain semi-permeable to allow for movement of small sized animals e.g. small antelope, genets, mongoose between the nature reserve and wetland system.
- → Search and Rescue of slow-moving animals should take place on building sites. Animals should however not be moved off-site but rather released in the open space areas.
- → Dogs should not be allowed to free-roam the 'private open space'. Cats should not be allowed due to their devastating effect on small animals.
- → Rodent control should make use of environmentally friendly methods such as instillation of owl boxes and raptor perches that attract natural predator control.
- → Human and their pet use of the walkway and jetty should be controlled to avoid disturbance to birds on the sandbanks, mudflats and salt marches.
- → Lights and insects:
    - Switch lights off when not needed
    - Add timers / sensors to lights
    - Make lights activated by movement

- Add shields to lights
- Make lights shine downward, or direct only to where needed
- Use long wavelength red or amber lights / filtered amber LED, with no blue / minimal green light for outdoor lighted areas
- A lighting plan should be developed to ensure that the impact of night lights is kept to an absolute minimum.
- Clearing of indigenous fynbos vegetation should be kept to an absolute minimum.
- Avoid trampling of natural fynbos vegetation surrounding developments.

7.4 Visual Impact Assessment

Potential impacts

During the construction phase of the development it is assumed that the site will be cleared of the invasive alien vegetation and the installation of services, roads, units and fencing areas will be cleared of all vegetation.

The clearing of the alien vegetation will result in the site being visually exposed to the adjacent areas namely the R43 roads and the Lagoon while the construction activity will also change the activity levels of the site as well as the vegetation clearing for construction will also result in exposed substrates being more visible to the surrounding areas.

Change in relatively passive scene, to that of a very active construction works site. In order to install services, construct roads, dwellings and facilities, the once predominantly undeveloped site will be cleared for development.

Mitigation measures as recommended by the specialist

During Construction

→ Clear invasive alien vegetation selectively such that the areas being developed can be screened by vegetation from receptors.
→ Have a phased revegetation/clearing approach
→ Minimise clearing to small areas - ie phased development
→ Ensure a construction EMP is in place.
→ Limit extent of damage, keeping cut and fill to a minimum. Minimise disturbance through fencing off construction areas, thereby protecting and retaining vegetation in the areas that will not be built on.
→ Revegetate service areas and public street verges immediately after construction and continue maintenance eternally.
→ The site must be kept tidy at all times.
→ Building material stockpiles must be protected from dispersion into the surrounding area by wind or water
→ A concerted effort must be made to minimise dust generation and its effect on the surrounding areas.

7.5 Palaeontological Impact Assessment

Anticipated impacts on Palaeontological resources

The physical extent of impacts on the project area is associated with the construction phase of the proposed development. The disturbance includes the subsurface disturbance through use of Self Drilling Anchor piles for micro piled foundations. This method of drilling for the placement of micropiled foundations is considered less

intrusive as it reduces the impact of the proposed development. The trenches for services infrastructure (generally ~1.0 m depth) and will primarily affect the aeolian Qg coversands and marginally affect the upper Waenhuiskrans Fm., of MODERATE palaeontological sensitivities with respect to fossil bones due to the estuarine shoreline setting. According to Kaplin (2024), although Peninsula Fm bedrock is rated high by SAHRIS, the proposed construction activities will not impact the fossil heritage associated with this bedrock.

Marine deposits of the De Hoopvlei Fm. and the Klein Brak Fm. have apparently been eroded from the bedrock platform, although it is possible that residual deposits may be encountered in the trenches for services. Thin veneers of cemented De Hoopvlei Fm. conglomerates may occur, but the shell content in such cases is dissolved to moulds except for oyster shells.

The Klein Brak Fm. raised beach deposits include a fossil shell fauna which is mainly comprised of extant (living) species which are common today. In sheltered settings where warm-water conditions pertained locally the deposits may also include a few tropical species that no longer occur along the coast today, as well as a small number of extinct species. The development is above ~5 m asl. and may intersect the older, pre-LIG deposits wherein there is less potential for the preservation of fossil shells. Due to the unfavourable setting a LOW sensitivity may be assigned to any residual Klein Brak Fm. raised beach deposits which may occur in the Project Area.

Residual shelly deposits of the Quaternary Klein Brak Fm. may occur beneath the coversands, of LOW sensitivity due to the preponderance of extant species and previous sampling in the region. An impact on the fossil shell heritage of the Klein Brak Fm. is not expected.

In consideration of the shoreline setting of the proposed development it is considered probable (distinct possibility) that fossil bones and buried archaeological material are present within the Project Area.

The overall, default palaeontological sensitivity of the Waenhuiskrans Fm. is classified as VERY HIGH and the unconsolidated Qg coversand deposits is classified as LOW by the SAHRIS Palaeo-Sensitivity map. Considering that the late Quaternary to present day fauna is fairly well known from archaeological sites and hyaena lair bone accumulations, additional finds are considered to be of moderate scientific importance, i.e. formations known to contain palaeontological localities and that have yielded fossils that are common elsewhere, and/or that are stratigraphically long-ranging, may be assigned a MODERATE sensitivity rating (Appendix 1 of the Palaeontological Impact Assessment). These criteria apply to both the Qg coversands and the Waenhuiskrans Fm. Furthermore, although fossil bones are quite sparse in the older aeolianites and in the coversands, the ecologically diverse estuarine setting increases the probability that they could occur to distinctly possible. Buried archaeological material, such as artefacts, shell and bone scatters, and brown hyaena (strandwolf) bone stashes, could be uncovered in the coversands.

The intensity or magnitude of impact relates to the palaeontological sensitivities of the affected formations and the volume of disturbance by excavation. The use of Self Drilling Anchor piles to support dwellings considerably reduces the subsurface impact of the proposed development. The trenches for services infrastructure (generally ~1.0 m depth) and will primarily affect the aeolian Qg coversands and marginally affect the upper Waenhuiskrans Fm., of MODERATE palaeontological sensitivities with respect to fossil bones due to the estuarine shoreline setting.

Residual shelly deposits of the Quaternary Klein Brak Fm. may occur beneath the coversands, of LOW sensitivity due to the preponderance of extant species and previous sampling in the region. An impact on the fossil shell heritage of the Klein Brak Fm. is not expected.

Cumulative impacts

It will never be possible to spot and rescue all fossils which means that there will always be some loss and therefore cumulative negative impact. As mentioned, the impact of both the finding and the loss of fossils is permanent. The loss of fossils would be of unknown significance. Diligent and successful mitigation contributes to a positive cumulative impact as the rescued fossils are preserved and accumulated for scientific study. Positive impacts would continue to be felt with successful mitigation because of the scientific implications of the resulting research opportunities. Even though just a very minor portion of the bone fossils exposed in excavations has been seen and saved, the rescued fossils proved to be of fundamental scientific value.

Mitigation measures recommended by the specialist

→ The possible presence of fossils in the subsurface does not have an *a priori* influence on the decision to proceed with the proposed development. However, mitigation measures are essential. The potential impact has a moderate influence upon the proposed project, consisting of implemented mitigation measures recommended below, to be followed during the Construction Phase.

→ It is not feasible for a specialist monitor to be continuously present during the Construction Phases, when fossils may be unearthed at any time. The rescue of fossil bones during earth works critically depends on spotting this material as it is uncovered during digging.

→ For successful mitigation, it is therefore crucial that earth works personnel must be involved in mitigation by watching for fossils as excavations are being made. It is recommended that a protocol for finds of buried fossil bones, the Fossil Finds Procedure (FFP), is included in the Environmental Management Plan (EMP) for the proposed development.

→ The Fossil Finds Procedure included as Appendix 3 provides guidelines to be followed in the event of fossil bone finds in the excavations. The works supervisor/foreman and workers involved in excavating the infrastructure trenches and stormwater drainage must be informed of the need to watch for fossils and archaeological material. Workers seeing potential objects are to cease work at that spot and to report to the Works Supervisor who, in turn, will report to the Environmental Control Officer (ECO) and/or the Developer. The ECO/Developer will contact and liaise with Heritage Western Cape and the standby palaeontologist on the nature of the find and suitable consequent actions such as immediate site inspection, application for a palaeontological collection permit and drafting of a work plan for the collection of the find.

→ If a significant occurrence of fossil bones in a palaeontological context is discovered a professional palaeontologist must be appointed to collect them and to record their contexts. Said palaeontologist must also undertake the recording of the stratigraphic context and sedimentary geometry of the exposure, the sampling of ambient small fossil content and the compilation of the report for distribution to Heritage Western Cape, SAHRA, the approved curatorial institution and local heritage interest groups.

→ A permit from HWC is required to excavate fossil bone finds. The applicant should be the qualified specialist responsible for assessment, collection and reporting (palaeontologist). Should fossils be found that require rapid collecting, application for a palaeontological permit with supporting work plan will immediately be made to HWC. The application requires the details and permission of the registered owner of the site. The fossils and their contextual information must be deposited at a SAHRA/HWC-approved institution. The rescue of discovered palaeontological remains by a contracted specialist shall be at the Developer's expense.

7.6. Heritage Impact Assessment

Anticipated impacts

Archaeology

Being on the edge of the Uilkraal Lagoon/vlei environment, shellfish, stone tools, and pottery for example, may be uncovered during vegetation clearing operations.

Unmarked Khoisan burials may be exposed during construction phase excavations, but the probability of this occurring is considered to be low. The proposed residential units will be raised off the ground, and subsurface excavations will be much less intrusive than conventional foundations. Services infrastructure for water, electricity and sewerage will be in conventional trenches about 1m deep along the road reserves and connected to the municipal network.

Palaeontology

Pether (2024) notes that although the Peninsula Fm. bedrock is rated as HIGH by SAHRIS, for the most part its palaeontological sensitivity is LOW due to the sparse presence of trace fossils and tectonic deformation which is particularly intense in the Southern Cape. `An impact on the fossil heritage of the Peninsula Fm. from the proposed construction activities is (therefore) not expected' (Pether 2024).

According to Pether (2024), it also appears improbable that residual raised beach deposits of the Klein Brak Fm. with well-preserved fossil content are present. Due to the unfavourable setting, a LOW sensitivity may be assigned to any residual Klein Brak Formation raised beach deposits which may occur in the Project Area.

Impact on the Cultural Landscape

The proposed eco type development is also low density and as such is an appropriate development for this site which is visible from Scenic Routes and is adjacent to the Uilkraal Lagoon (Anderson 2024).

The proposed development guidelines further indicate `that much consideration has been given to the sites visual sensitivity and if development is to go ahead, the site can be visually enhanced from the alien infested character now presented' (Anderson 2024:41).

Mitigation measures recommended by the specialist

Archaeology

→ No archaeological mitigation is required prior to construction excavations commencing
→ A walk down survey of the development site must be conducted by a professional archaeologist once vegetation has been cleared from the site.
→ If any human remains are uncovered or exposed during excavations, work must immediately stop, and the finds reported to the Environmental Control Officer (ECO) and the contracted archaeologist. Human remains must not be removed or disturbed until inspected by the archaeologist.

Palaeontology

→ The rescue of fossil bones during earth works critically depends on spotting this material as it is uncovered during digging. For successful mitigation, it is therefore crucial that earth works personnel must be involved in mitigation by watching for fossil bones as excavations are being made. It is recommended that a protocol for finds of buried fossil bones, the Fossil Finds Procedure (FFP), is included in the Environmental Management Plan (EMP) for the proposed development.

→ The field contractor and workers involved in excavations must be informed of the need to watch for fossil bones and archaeological material. Workers seeing potential objects are to cease work at that spot and to report to the works supervisor who, in turn, will report to the Environmental Control Officer (ECO) and/or the Developer. The ECO/Developer will contact and liaise, with Heritage Western Cape on the nature of the find and suitable consequent actions such as immediate site inspection, application for a palaeontological collection permit and drafting of a work plan for the collection of the find.

Visual impact

→ The proposed development plan, indicating 55 units, and the 'Franskraal Beach Estate (Portion 36 of Farm Franche Kraal) Design Guidelines and Philosophy' Draft document dated 6 March 2024, provide for a number of design elements that assist in the mitigation of the potential visual impacts. These include recessive buildings with flat, planted/dark chip roofs, use of dark colours on walls and roofs, stone and wood, shaded windows, broken up building elements to add shadow lines, cantilevered floors and decks, dark rainwater tanks, raised berms along the southern and western borders of the site, low level lighting, no bright security lights.

Other **mitigation measures** that should be implemented include the following (Anderson 2024)

→ Phased removal of the invasive alien vegetation such that the construction activities are screened. Where the berm is along the southern and western areas, the construction and revegetation, including some large indigenous trees, should form part of the initial phase of construction and between this berm and the most western proposed roads and eastern units, some larger alien trees should be retained to screen the proposed units and roads from the R43 sections until the revegetated berms are established and can screen the development.
→ Similarly, along the eastern boundary - some of the larger alien trees should be retained to screen development from the R43 Scenic Whale Route. The effectiveness of trees screening development is seen to the south of the R43 where there is a strip of vegetation between the lagoon and the resort, screening buildings well. Once the indigenous trees and shrubs are established, the remaining trees can be removed.
→ Quicker growing Indigenous pioneer tree species such as *Virgilia spp. Olivia ventosa, Kiggelaria africana, Buddleja spp., Euclea racemosa*, and other quick growing trees from local area.
→ The linear arrangement of units needs to be broken, with either more space between units or some being set back so that the 'line' is broken. Additional landscaping can also assist with the breaking of the line.
→ Home Owners Association (HOA) have an Operational Plan that clearly states their obligations in terms of ongoing maintenance of buildings and landscaping and that the maintenance actions comply with the architectural and landscaping guidelines provided for this Visual Impact Assessment and this VIA's mitigation measures.

8 POST-CONSTRUCTION PHASE IMPACTS AND MITIGATIONS

8.1 Aquatic Biodiversity Assessment

The proposed development will likely impact the hydrology water quality, geomorphology and wetland vegetation of the seep wetland present on site.

Potential impacts:

Alteration of Flow Regime

Alteration of the flow regime of the remnant seep wetland and Uilkraals Estuary.

Water Quality Impairment

Water quality impairment of the remnant seep wetland and Uilkraals Estuary due to the release of potentially contaminated stormwater (hydrocarbons).

Mitigation measures recommended by the specialist

1. Altered flow regime

→ Effective stormwater management measures – i.e. ensuring that stormwater flows into a designated rehabilitated remnant wetland area - will mitigate this impact to a large extent.
→ It is recommended that the SW design onsite takes cognisance of the fact that flow should still drain into the Uilkraals Estuary downstream of the development.

- → Alien invasive vegetation should be monitored onsite to ensure that Port Jackson does not re-colonise the area.
- → An AIPS control plan must be compiled which includes measures to control and prevent the proliferation of AIPS during the operational phase.

2. Water quality impairment

- → Ensure that all potentially significant pollution sources are listed in the Environmental Management Plan. Ensure that all activities that may lead to pollution take place indoors or on bunded impervious surfaces such that the pollutants cannot enter the stormwater system.
- → Repair all sewage leaks as soon as reasonably possible after detection. Inspection of all sewage pipes should be conducted by a plumber once every 10 years.
- → SW draining into the estuary should first flow into the rehabilitated onsite SW ponds / wetland area onsite.
- → Stormwater associated with the internal road network may potentially contain hydrocarbons and other contaminants. It is recommended that a SW Management Plan (SWMP) is drafted. Potentially contaminated SW should ideally drain into the Grey Water Treatment Plant and be adequately treated prior to discharge into the swale system (and downstream Estuary).
- → The estuary must be monitored monthly for dumping, and any refuse or waste encountered must be removed and disposed of at a registered waste facility.
- → The developer must confirm who will be responsible for this monitoring of the estuarine.
- → Once construction has been completed, orange hazard fences as well as all construction waste, rubble, and equipment must be removed from the construction footprint.

8.2 Terrestrial Biodiversity and Plant Species

Operational phase impacts are less obvious and more difficult to define but at this site would include potential secondary invasion by alien species including the introduction of new invasive species to the site, impact on pollination and dispersal, impact on faunal movement, fire suppression with associated negative long-term impact on fynbos regeneration and ecological functioning, impacts associated with residential activities such as the introduction of domestic animals to the site

Mitigation measures recommended by specialist

- → An initial alien clearing program should be implemented by a qualified local team of alien vegetation clearers prior to any development happening on site. The entire property should be cleared of all alien invasive species. An alien vegetation management plan must be drawn up and sufficient funding should be set aside to allow for effective long-term follow up clearing.
- → Once initial alien vegetation clearing has been implemented, search and rescue of all transplantable plant material must take place prior to clearing of vegetation and topsoil from any development areas (bulbs, succulents, and any others deemed translocatable). A suitably qualified botanist/horticulturalist should be appointed to undertake this work, which if it is to be done successfully should be carried out in late winter/early spring. If the search and rescue cannot be performed in the period July-October, a large proportion of the bulbs will not be located, and this is unacceptable and incomplete search and rescue. No vegetation clearing should commence until search and rescue has been completed. Once removed, bulbs can either be transplanted directly to surrounding natural areas or be stored in a dry, pathogen free storage facility, for replanting in post construction rehabilitation or gardening on the property.

- → All construction areas need to be clearly demarcated to ensure that no damage occurs to the vegetation outside of the minimum areas needed to create the construction footprint. A sturdy temporary fence must be erected around the proposed construction areas.
- → Roads should be kept to a minimum width.
- → Only one access route for machinery and cartage should be used and this should be aligned with the future road network of the estate. The footpath network should be carefully laid out and no additional roads, tracks or footpaths should be permitted on the property.
- → The appointment of an Environmental Control Officer for the duration of the construction phase is essential. The ECO should be responsible for enforcing no-go areas, environmental induction for all staff and making sure that search and rescue is done.
- → Following vegetation clearing, all available top soil should be removed and stockpiled prior to construction commencing. This material should be used to rehabilitate road verges and for rehabilitation landscaping around dwellings.
- → No formal gardening should be allowed on any private erven, and the natural vegetation should be retained. Where rehabilitation is required, only an approved selection of locally indigenous species should be allowed. A large percentage of the material required for rehabilitation must be rescued from development footprints prior to development, and maintained in a dedicated nursery until needed.

8.3. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment

Potential impacts:

The potential impact may include the introduction of domestic animal by humans such as cats that would be predators for wildlife.

Mitigation measures recommended by the specialist

- → Dogs should not be allowed to free-roam the 'private open space'. Cats should not be allowed due to their devastating effect on small animals.
- → Rodent control should make use of environmentally friendly methods such as instillation of owl boxes and raptor perches that attract natural predator control.
- → Human and their pet use of the walkway and jetty should be controlled to avoid disturbance to birds on the sandbanks, mudflats and salt marches.
- → Lights and insects: a. Switch lights off when not needed
- → Add timers / sensors to lights
- → Make lights activated by movement
- → Add shields to lights
- → Make lights shine downward, or direct only to where needed
- → Use long wavelength red or amber lights / filtered amber LED, with no blue / minimal green light for outdoor lighted areas
- → A lighting plan should be developed to ensure that the impact of night lights is kept to an absolute minimum
- → Clearing of indigenous fynbos vegetation should be kept to an absolute minimum
- → Avoid trampling of natural fynbos vegetation surrounding developments.

8.4. Visual Impact Assessment

The potential impacts associated with the post-construction phase of the development includes:

- → Loss of Scenic Resources - Change of visual character and Sense of Place, from a passive rural and wilderness site to a site with a residential character;
- → Visibility from sensitive receptors;
- → Visual intrusion of night lighting

Mitigation measures recommended by the specialist

- → Home Owners Association (HOA) have an Operational Plan that clearly states their obligations in terms of ongoing maintenance of buildings and landscaping and that the maintenance actions comply with the architectural and landscaping guidelines provided for this Visual Impact Assessment and this VIA's mitigation measures
- → HOA monitor the building and landscape guidelines
- → HOA maintain buildings and landscaping to a high standard
- → HOA continue minimising light pollution - keep outdoor lighting as bollard lighting, height to maximum 1.2 m, low spill type lights to minimize light spill and pollution, external lighting on buildings must be minimised or completely omitted etc.

Table 2. Activity specific impacts and mitigations

PRE-CONSTRUCTION/ CONSTRUCTION PHASE AND POST-CONSTRUCTION PHASE			
IMPACT	**DESCRIPTION**	**MITIGATION MEASURES**	**RESPONSIBLE PERSONS**
Plant Species/ Terrestrial Biodiversity	***Construction phase***: Most construction phase impacts are direct impacts which involve loss of natural habitat and species as a result of clearing of vegetation and associated biota for the development. **Post-Construction Phase**: Impacts are less obvious and more difficult to define but at this site would include potential secondary invasion by alien species including the introduction of new invasive species to the site, impact on pollination and dispersal, impact on faunal movement, fire suppression with associated negative long-term impact on fynbos regeneration and ecological functioning, impacts associated with residential activities such as the introduction of domestic animals to the site	- An initial alien clearing program should be implemented by a qualified local team of alien vegetation clearers prior to any development happening on site. The entire property should be cleared of all alien invasive species. An alien vegetation management plan must be drawn up and sufficient funding should be set aside to allow for effective long-term follow up clearing. - Once initial alien vegetation clearing has been implemented, search and rescue of all transplantable plant material must take place prior to clearing of vegetation and topsoil from any development areas (bulbs, succulents, and any others deemed translocatable). A suitably qualified botanist/horticulturalist should be appointed to undertake this work, which if it is to be done successfully should be carried out in late winter/early spring. If the search and rescue cannot be performed in the period July-October, a large proportion of the bulbs will not be located, and this is unacceptable and incomplete search and rescue. No vegetation clearing should commence until search and rescue has been completed. Once removed, bulbs can either be transplanted directly to surrounding natural areas or be stored in a dry, pathogen free storage facility, for replanting in post construction rehabilitation or gardening on the property. - All construction areas need to be clearly demarcated to ensure that no damage occurs to the vegetation outside of	Applicant Contractor ECO

		the minimum areas needed to create the construction footprint. A sturdy temporary fence must be erected around the proposed construction areas. - Roads should be kept to a minimum width. - Only one access route for machinery and cartage should be used and this should be aligned with the future road network of the estate. The footpath network should be carefully laid out and no additional roads, tracks or footpaths should be permitted on the property. - The appointment of an Environmental Control Officer for the duration of the construction phase is essential. The ECO should be responsible for enforcing no-go areas, environmental induction for all staff and making sure that search and rescue is done. - Following vegetation clearing, all available top soil should be removed and stockpiled prior to construction commencing. This material should be used to rehabilitate road verges and for rehabilitation landscaping around dwellings. - No formal gardening should be allowed on any private erven, and the natural vegetation should be retained. Where rehabilitation is required, only an approved selection of locally indigenous species should be allowed. A large percentage of the material required for rehabilitation must be rescued from development footprints prior to development, and maintained in a dedicated nursery until needed.	
Wetland loss	**Construction phase:** The development will result in the Infilling and loss of largely disturbed seep wetland area. The delineated seep wetland within the proposed site has a PES score in the E	- It is however recommended that a suitable amount of the remaining onsite wetland area is rehabilitated, and subsequently the wetland loss should be adequately offset.	ECO, Contractor Applicant

	category (Seriously Modified), exhibits Moderate EIS and offers Very Low – Moderate ecosystem services. The historical wetland vegetation type is EN, but the degraded nature of the wetland limits the value of wetland lost.		
Altered flow regime	***Construction phase*** Site clearance, infilling and compaction will result in alteration of the flow regime for the remnant seep wetland and potentially within the Uilkraals Estuary. The significance of this impact will be largely mitigated by effective stormwater measures, which will ensure that all runoff still drains into a suitably designated rehabilitated remnant wetland area, or into SW ponds onsite.	- It is recommended that the Uilkraals Estuary, and the 75 m buffer surrounding the estuary, is designated as a No-Go area during construction activities. - Install the stormwater infrastructure and conduct rehabilitation activities (as proposed in a suitable Offset and Rehabilitation Management Plan), prior to initiating other construction such that wetland flow and any stormwater leaving the construction site are attenuated in the wetland. - It is recommended that the SW design onsite takes cognisance of the fact that flow should still drain into the Uilkraals Estuary downstream of the development. - If possible, conduct construction and rehabilitation activities during summer months (November to March). Remove all alien invasive vegetation from the proposed site.	ECO Contractor Developer
Water quality impairment	***Construction phase*** Accidentally spilled cement, construction chemicals, sewage from temporary toilets or petrochemicals from construction vehicles may find their way into the remnant wetland and Uilkraals Estuary. Vegetation clearing may result in	- It is recommended that the It is recommended that the Uilkraals Estuary, and the 75 m buffer surrounding the estuary, is designated as a No-Go area during construction activities. - Bunded, impervious areas must be designated by an Environmental Control Officer for temporary toilets, vehicle parking/servicing areas, and for pouring and mixing of concrete/cement, paint, and chemicals. These bunded areas	ECO Applicant Developer

	increased sediment input within the estuary downstream. The potential intensity of the impact is limited by the pre-existing water quality impairment of the seep wetland; as well as the distance of the development from the estuary. ***Post-construction phase*** Stormwater from the proposed development areas, which may potentially be contaminated stormwater (hydrocarbons), will be directed into the remnant rehabilitated wetland area. Pollutants may also enter the remnant wetland onsite via sewage leaks (although highly unlikely).	must be at least 100 m from the demarcated estuary's boundaries. - Ensure that all potentially significant pollution sources are listed in the Environmental Management Plan. - Ensure that all activities that may lead to pollution take place indoors or on bunded impervious surfaces such that the pollutants cannot enter the stormwater system. - Repair all sewage leaks as soon as reasonably possible after detection. - Inspection of all sewage pipes should be conducted by a plumber once every 10 years. SW draining into the estuary should first flow into the rehabilitated onsite SW ponds / wetland area onsite. - the sewage system should connect to the Municipal network. Flow rates of sewage pipelines will further inform the WUA process - Should an onsite sewage treatment plant be implemented, additional input from an Aquatic Specialist is required. The treated effluent discharged into the swale system (and ultimately draining into the downstream Estuary) must comply with the South African Water Quality Guidelines for aquatic ecosystems (DWAF, 2006). As the guidelines are specific to protection of freshwater aquatic ecosystems (and do not deal with estuarine systems), guidance from the DWS will be sought should this be the preferred option. The sewage system must be monitored and maintained into perpetuity. A water quality monitoring plan would need to form part of the Operational EMPr and/or the WULA process. - Operational phase mitigation implemented during the design/construction phase o 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 estuary. 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. ○ A Maintenance and Monitoring Programme must be compiled for all infrastructure (e.g. pipelines) and implemented by a suitably qualified professional to ensure that all defects or leakages are identified timeously and repaired immediately. - Stormwater associated with the internal road network may potentially contain hydrocarbons and other contaminants. It is recommended that a SW Management Plan (SWMP) is drafted. Potentially contaminated SW should ideally drain into the Grey Water Treatment Plant and be adequately treated prior to discharge into the swale system (and downstream Estuary). - 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. - Further recommendations specific to the Rehabilitation of the remnant Seep Wetland area should form part of a suitable Wetland Offset, Rehabilitation and Management Plan drafted for the proposed development. - Recommendations specific to the proposed 6 m wide road located in the buffer area of the Estuary, gazebo, access gate, and boardwalk (within the estuarine functional zone) include: o A method statement must be developed indicating how the contractor will minimise the passage of contaminants such as fuel and cement into the estuary. This method statement must be approved by the ECO prior to the commencement of construction activities. o • Fuel, chemicals, and other hazardous substances should preferably be stored as far away as possible from the estuary and buffer 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. o Inspect all storage facilities, vehicles, and machinery (as applicable) 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. o Mixing and transferring of chemicals or hazardous substances must take place outside of the estuary and buffer, and must take place on drip trays, shutter boards or other impermeable surfaces. o 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 estuary and its associated buffer area and should only occur on bunded areas with a water/oil/grease separator. o Dispose of used oils, wash water from cement and other pollutants at an appropriate licensed landfill site. o 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 downstream areas. o 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. o 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 estuary 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 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. ○ Locate site camp, 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 estuary and associated 75 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). ○ Prohibit the dumping of excavated material, building materials or removed vegetation within the estuary and its associated buffer area. Building material must be stored at the designated storage area located	

		outside of the no-go area (estuary and buffer). Spoil material must be appropriately disposed of at a registered waste disposal facility. o Vegetation clearance should be restricted to the relevant development components and indigenous vegetation cover should be maintained as far as practically possible. o 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. o 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. o An ECO 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. 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. o 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. ○ Where possible undertake construction during the dry season. ○ The site manager / ECO must check the downslope estuary 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. ○ The estuary must be monitored monthly for dumping, and any refuse or waste encountered must be removed and disposed of at a registered waste facility. The developer must confirm who will be responsible for this monitoring of the estuarine. ○ An AIPS control plan must be compiled which includes measures to control and prevent the proliferation of AIPS during the operational phase	
Altered flow regime	***Post-construction phase:*** Site clearance, infilling and compaction will result in alteration of the flow regime for the remnant seep wetland and potentially the Uilkraals Estuary. The significance of this impact will be largely mitigated by effective stormwater	- Effective stormwater management measures – i.e. ensuring that stormwater flows into a designated rehabilitated remnant wetland area - will mitigate this impact to a large extent. - It is recommended that the SW design onsite takes cognisance of the fact that flow should still drain into the Uilkraals Estuary downstream of the development. - Alien invasive vegetation should be monitored onsite to ensure that Port Jackson does not re-colonise the area.	ECO Applicant Contractor

	measures, which will ensure that all runoff still drains into a suitably designated rehabilitated remnant wetland area, or into SW ponds onsite. There may however still be an impact due to catchment hardening, and associated increase in peak flows.		
Animal Species	The infestation of alien vegetation has devastating effects on natural Fynbos plant diversity and structure, with subsequent negative impacts on animal diversity, distribution, and density. Only minimal bird and mammal activity were observed, indicating the current degraded state of the habitat.	- An alien plant eradication and rehabilitation plan need to be developed and implemented to deal with the rehabilitation of the property. This plan and implementation need to be entrenched formally in the future maintenance of the properties open spaces. - fire management plan needs to be developed and legally incorporated into the property's future management protocols so that fire is not removed as an ecological process due to perceived risk by future owners. - Only native plants should be allowed in household gardens. - During the construction phase the construction area should be clearly demarcated and blocked off from the 'private open spaces' area to avoid damage and pollution. - Pre and post construction site preparation should include rehabilitation of the 'private open space' by removing current building rubble and litter from this area. - The fence should always remain semi-permeable to allow for movement of small sized animals e.g. small antelope, genets, mongoose between the nature reserve and wetland system. - Search and Rescue of slow-moving animals should take place on building sites. Animals should however not be moved off-site but rather released in the open space areas.	ECO Applicant Contractor

		- Dogs should not be allowed to free-roam the 'private open space'. Cats should not be allowed due to their devastating effect on small animals. - Rodent control should make use of environmentally friendly methods such as instillation of owl boxes and raptor perches that attract natural predator control. - Human and their pet use of the walkway and jetty should be controlled to avoid disturbance to birds on the sandbanks, mudflats and salt marches. - Lights and insects: o Switch lights off when not needed o Add timers / sensors to lights o Make lights activated by movement o Add shields to lights o Make lights shine downward, or direct only to where needed o Use long wavelength red or amber lights / filtered amber LED, with no blue / minimal green light for outdoor lighted areas o A lighting plan should be developed to ensure that the impact of night lights is kept to an absolute minimum o Clearing of indigenous fynbos vegetation should be kept to an absolute minimum o Avoid trampling of natural fynbos vegetation surrounding developments.	
Palaeontological Impacts	The construction phase poses potential impacts primarily due to subsurface disturbances caused by the use of Self Drilling Anchor piles for foundations. This technique minimizes disturbance,	- The possible presence of fossils in the subsurface does not have an a priori influence on the decision to proceed with the proposed development. However, mitigation measures are essential. The potential impact has a moderate influence upon the proposed project, consisting of implemented	ECO Applicant Contracctor

	targeting the surficial aeolian coversands and marginally affecting the Waenhuiskrans Fm., which has moderate palaeontological sensitivity concerning fossil bones. The potential for finding fossil bones and archaeological materials remains significant, especially given the estuarine context of the development site. However, overall, the Klein Brak Fm.'s shell deposits may not substantially impact the development due to their low sensitivity rating.	mitigation measures recommended below, to be followed during the Construction Phase. - It is not feasible for a specialist monitor to be continuously present during the Construction Phases, when fossils may be unearthed at any time. The rescue of fossil bones during earth works critically depends on spotting this material as it is uncovered during digging. - For successful mitigation, it is therefore crucial that earth works personnel must be involved in mitigation by watching for fossils as excavations are being made. It is recommended that a protocol for finds of buried fossil bones, the Fossil Finds Procedure (FFP), is included in the Environmental Management Plan (EMP) for the proposed development. - The Fossil Finds Procedure included as Appendix 3 provides guidelines to be followed in the event of fossil bone finds in the excavations. The works supervisor/foreman and workers involved in excavating the infrastructure trenches and stormwater drainage must be informed of the need to watch for fossils and archaeological material. Workers seeing potential objects are to cease work at that spot and to report to the Works Supervisor who, in turn, will report to the Environmental Control Officer (ECO) and/or the Developer. The ECO/Developer will contact and liaise with Heritage Western Cape and the standby palaeontologist on the nature of the find and suitable consequent actions such as immediate site inspection, application for a palaeontological collection permit and drafting of a work plan for the collection of the find. - If a significant occurrence of fossil bones in a palaeontological context is discovered a professional palaeontologist must be appointed to collect them and to record their contexts. Said palaeontologist must also undertake the recording of the	

		stratigraphic context and sedimentary geometry of the exposure, the sampling of ambient small fossil content and the compilation of the report for distribution to Heritage Western Cape, SAHRA, the approved curatorial institution and local heritage interest groups. - A permit from HWC is required to excavate fossil bone finds. The applicant should be the qualified specialist responsible for assessment, collection and reporting (palaeontologist). Should fossils be found that require rapid collecting, application for a palaeontological permit with supporting work plan will immediately be made to HWC. The application requires the details and permission of the registered owner of the site. The fossils and their contextual information must be deposited at a SAHRA/HWC-approved institution. The rescue of discovered palaeontological remains by a contracted specialist shall be at the Developer's expense.	
Change in relatively passive scene	**Construction phase:** Change from a rural/natural area to a very active construction site.	- Clear invasive alien vegetation selectively such that the areas being developed can be screened by vegetation from receptors. - Have a phased revegetation/clearing approach - Minimise clearing to small areas - i.e. phased development. - Ensure a construction EMP is in place. - Limit extent of damage, keeping cut and fill to a minimum. Minimise disturbance through fencing off construction areas, thereby protecting and retaining vegetation in the areas that will not be built on. - Revegetate service areas and public street verges immediately after construction and continue maintenance eternally. - The site must be kept tidy at all times.	ECO Applicant Contractor

		- Building material stockpiles must be protected from dispersion into the surrounding area by wind or water - A concerted effort must be made to minimise dust generation and its effect on the surrounding areas.	
Loss of Scenic Resources	**Post-construction phase:** Change of visual character and Sense of Place from a rural/wilderness (predominantly undeveloped site) to a low-density residential development.	- Limit number of units and implement guidelines as provided by the developer with low planted roofs etc. - Provide enough area/buffers along edges of site to provide suitable screening such as vegetated berms and indigenous trees. - Reducing units to as few as economically viable - Clustering the units with green areas surrounding them - Screening the units from sensitive receptors - earthworks/landscaping such that units have views but receptors are not significantly affected, phasing removal of alien vegetation and adding quick growing trees to tree list (refer to Platbos Forest) - Implementing design philosophy and guidelines - Ensure a construction EMP is in place. - Home Owners Association (HOA) have an Operational Plan that clearly states their obligations in terms of ongoing maintenance of buildings and landscaping and that the maintenance actions comply with the architectural and landscaping guidelines provided for this Visual Impact Assessment and this VIA's mitigation measures - HOA monitor the building and landscape guidelines - HOA maintain buildings and landscaping to a high standard - HOA continue minimising light pollution - keep outdoor lighting as bollard lighting, height to maximum 1.2 m, low spill type lights to minimize light spill and pollution, external lighting on buildings must be minimised or completely omitted etc	ECO Applicant Contractor

Visibility from sensitive receptors	***Post-construction phase*** The proposed development will be visible, in varying degrees, from the highly sensitive receptors in the Zone of Visual Influence, namely Uilenkraal Lagoon, EM&HPOZ's and the R43 Scenic Route.	- Limit number of units and implement guidelines as provided by the developer with low planted roofs etc. - Provide enough area/buffers along edges of site to provide suitable screening such as vegetated berms and indigenous trees - Ensure a construction EMP is in place	ECO Applicant Contractor
Visual Intrusion of night lighting	***Post-construction phase:*** The current rural/wilderness site is unlit. Lighting for the new residential units and streets will extend the Franskraal settlement into the rural area.	- Limit outdoor street and path lighting to bollard height and low spill with limited outdoor lighting on buildings - Electrical Engineer to design for appropriate lighting for a Natural area and alongside a Scenic route	ECO Applicant Contractor HOA
Archaeology Impact	***Construction phase:*** Scatters of shellfish, stone tools, and pottery may be exposed during vegetation clearing operations and preparation of the site for development. Unmarked Khoisan burials may be exposed during construction phase excavations, but the probability of this occurring is considered to be low.	- A walk down survey of the development site must be conducted by a professional archaeologist once vegetation has been cleared from the site. - If any human remains are uncovered or exposed during excavations, work must immediately stop, and the finds reported to the Environmental Control Officer (ECO) and the contracted archaeologist. Human remains must not be removed or disturbed until inspected by the archaeologist.	ECO Applicant Contractor

9 GENERAL CONSTRUCTION PHASE IMPACTS AND REQUIREMENTS

10.1 Contractors camp

Responsibility – Contractor / ECO / owner

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

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.

10 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			
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	Duration of Construction	A clean site post construction	Project Manager Contractor ECO			

	- 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						
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	Duration of Construction	A clean site post construction, avoiding additional impact on surrounds	Project Manager Contractor ECO			

	- 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 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	Duration of Construction	A clean site post construction, avoiding additional impact on surrounds, avoidance of impacts on general public	Project Manager Contractor ECO			

	inspected on a regular basis, as well as strategies to address dust						
Site clean-up and rehabilitation	- All structures, equipment materials and facilities are to be removed from site on completion of the project - 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	Duration of Construction	A functional ecosystem post construction, suitably rehabilitated as required	Project Manager Contractor Applicant ECO			

Alien Clearing	- An AIPS control plan must be compiled which includes measures to control and prevent the proliferation of AIPS during the operational phase. - 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: 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.	Construction and Post-construction phase	Long term ecological integrity and restoration of Agulhas Sand Fynbos vegetation	Project Manager Applicant Contractor ECO			
Freshwater Specialist	- It is however recommended that a suitable amount of the remaining onsite wetland area is rehabilitated, and subsequently the wetland loss should be adequately offset. - It is recommended that the Uilkraals Estuary, and the 75 m buffer surrounding the estuary,	Construction and Post-construction phase	Long term ecological integrity and rehabilitation of the site.	Project Manager Applicant Contractor ECO			

	is designated as a No-Go area during construction activities. - Install the stormwater infrastructure and conduct rehabilitation activities (as proposed in a suitable Offset and Rehabilitation Management Plan), prior to initiating other construction such that wetland flow and any stormwater leaving the construction site are attenuated in the wetland. - It is recommended that the SW design onsite takes cognisance of the fact that flow should still drain into the Uilkraals Estuary downstream of the development. - If possible, conduct construction and rehabilitation activities during summer months (November to March). Remove all alien invasive vegetation from the proposed site. - Bunded, impervious areas must be designated by an Environmental Control Officer for temporary toilets, vehicle parking/servicing areas, and for pouring and mixing of						

	concrete/cement, paint, and chemicals. These bunded areas must be at least 100 m from the demarcated estuary's boundaries. - Ensure that all potentially significant pollution sources are listed in the Environmental Management Plan. - Ensure that all activities that may lead to pollution take place indoors or on bunded impervious surfaces such that the pollutants cannot enter the stormwater system. - Repair all sewage leaks as soon as reasonably possible after detection. - Inspection of all sewage pipes should be conducted by a plumber once every 10 years. SW draining into the estuary should first flow into the rehabilitated onsite SW ponds / wetland area onsite. - the sewage system should connect to the Municipal network. Flow rates of sewage pipelines will further inform the WUA process - Should an onsite sewage treatment plant be						

	implemented, additional input from an Aquatic Specialist is required. The treated effluent discharged into the swale system (and ultimately draining into the downstream Estuary) must comply with the South African Water Quality Guidelines for aquatic ecosystems (DWAF, 2006). As the guidelines are specific to protection of freshwater aquatic ecosystems (and do not deal with estuarine systems), guidance from the DWS will be sought should this be the preferred option. The sewage system must be monitored and maintained into perpetuity. A water quality monitoring plan would need to form part of the Operational EMPr and/or the WULA process. - Operational phase mitigation implemented during the design/construction phase; o 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 estuary. 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.						

	○ A Maintenance and Monitoring Programme must be compiled for all infrastructure (e.g. pipelines) and implemented by a suitably qualified professional to ensure that all defects or leakages are identified timeously and repaired immediately. - Stormwater associated with the internal road network may potentially contain hydrocarbons and other contaminants. It is recommended that a SW Management Plan (SWMP) is drafted. Potentially contaminated SW should ideally drain into the Grey Water Treatment Plant and be adequately treated prior to discharge into the swale system (and downstream Estuary). - 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. - Further recommendations specific to the Rehabilitation of the remnant Seep Wetland area should form part of a suitable Wetland Offset, Rehabilitation and Management Plan drafted for the proposed development. - Recommendations specific to the proposed 6 m wide road						

	located in the buffer area of the Estuary, gazebo, access gate, and boardwalk (within the estuarine functional zone) include: ○ A method statement must be developed indicating how the contractor will minimise the passage of contaminants such as fuel and cement into the estuary. This method statement must be approved by the ECO prior to the commencement of construction activities. ○ Fuel, chemicals, and other hazardous substances should preferably be stored as far away as possible from the estuary and buffer 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 (as applicable) 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 estuary and buffer, and must take place on drip trays, shutter boards or other impermeable surfaces. ○ 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 estuary 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 downstream 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 estuary 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 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.						

	○ Locate site camp, 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 estuary and associated 75 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). ○ Prohibit the dumping of excavated material, building materials or removed vegetation within the estuary and its associated buffer area. Building material must be stored at the designated storage						

	area located outside of the no-go area (estuary and buffer). Spoil material must be appropriately disposed of at a registered waste disposal facility. ○ 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 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. 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. ○ Where possible undertake construction during the dry season. ○ The site manager / ECO must check the downslope estuary 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. ○ The estuary must be monitored monthly for dumping, and any refuse or waste encountered must be removed and disposed of at a registered waste facility. The developer must confirm who will be responsible for this						

	monitoring of the estuarine. ○ An AIPS control plan must be compiled which includes measures to control and prevent the proliferation of AIPS during the operational phase - Effective stormwater management measures – i.e. ensuring that stormwater flows into a designated rehabilitated remnant wetland area - will mitigate this impact to a large extent. - It is recommended that the SW design onsite takes cognisance of the fact that flow should still drain into the Uilkraals Estuary downstream of the development. - Alien invasive vegetation should be monitored onsite to ensure that Port Jackson does not re-colonise the area.						

Terrestrial Biodiversity Specialist	- An initial alien clearing program should be implemented by a qualified local team of alien vegetation clearers prior to any development happening on site. The entire property should be cleared of all alien invasive species. An alien vegetation management plan must be drawn up and sufficient funding should be set aside to allow for effective long-term follow up clearing. - Once initial alien vegetation clearing has been implemented, search and rescue of all transplantable plant material must take place prior to clearing of vegetation and topsoil from any development areas (bulbs, succulents, and any others deemed translocatable). A suitably qualified botanist/horticulturalist should be appointed to undertake this work, which if it is to be done successfully should be carried out in late winter/early spring. If the search and rescue cannot be performed in the period July-October, a large proportion of the bulbs will not be located, and this is unacceptable and incomplete search and rescue. No vegetation clearing should commence until search and rescue has been completed. Once removed, bulbs can either be	Construction and Post-construction phase	Long-term ecological integrity and restoration of indigenous vegetation.	Project Manager Applicant Contractor ECO			

	transplanted directly to surrounding natural areas or be stored in a dry, pathogen free storage facility, for replanting in post construction rehabilitation or gardening on the property. - All construction areas need to be clearly demarcated to ensure that no damage occurs to the vegetation outside of the minimum areas needed to create the construction footprint. A sturdy temporary fence must be erected around the proposed construction areas. - Roads should be kept to a minimum width. - Only one access route for machinery and cartage should be used and this should be aligned with the future road network of the estate. The footpath network should be carefully laid out and no additional roads, tracks or footpaths should be permitted on the property. - The appointment of an Environmental Control Officer for the duration of the construction phase is essential. The ECO should be responsible for enforcing no-go areas, environmental induction for all staff and making sure that search and rescue is done.						

	- Following vegetation clearing, all available top soil should be removed and stockpiled prior to construction commencing. This material should be used to rehabilitate road verges and for rehabilitation landscaping around dwellings. - No formal gardening should be allowed on any private erven, and the natural vegetation should be retained. Where rehabilitation is required, only an approved selection of locally indigenous species should be allowed. A large percentage of the material required for rehabilitation must be rescued from development footprints prior to development, and maintained in a dedicated nursery until needed.						
Terrestrial Animal Specialist	- An alien plant eradication and rehabilitation plan need to be developed and implemented to deal with the rehabilitation of the property. This plan and implementation need to be entrenched formally in the future maintenance of the properties open spaces. - fire management plan needs to be developed and legally incorporated into the	Construction and Post-construction phase	Long term ecological integrity, restoration of the site biodiversity features and rehabilitation.	ECO Applicant Contractor HOA			

	property's future management protocols so that fire is not removed as an ecological process due to perceived risk by future owners. - Only native plants should be allowed in household gardens. - During the construction phase the construction area should be clearly demarcated and blocked off from the 'private open spaces' area to avoid damage and pollution. - Pre and post construction site preparation should include rehabilitation of the 'private open space' by removing current building rubble and litter from this area. - The fence should always remain semi-permeable to allow for movement of small sized animals e.g. small antelope, genets, mongoose between the nature reserve and wetland system. - Search and Rescue of slow-moving animals should take place on building sites. Animals should however not be moved off-site but rather released in the open space areas.						

	- Dogs should not be allowed to free-roam the 'private open space'. Cats should not be allowed due to their devastating effect on small animals. - Rodent control should make use of environmentally friendly methods such as instillation of owl boxes and raptor perches that attract natural predator control. - Human and their pet use of the walkway and jetty should be controlled to avoid disturbance to birds on the sandbanks, mudflats and salt marches. - Lights and insects: o Switch lights off when not needed o Add timers / sensors to lights o Make lights activated by movement o Add shields to lights o Make lights shine downward, or direct only to where needed o Use long wavelength red or amber lights / filtered amber LED, with no blue / minimal						

	green light for outdoor lighted areas ○ A lighting plan should be developed to ensure that the impact of night lights is kept to an absolute minimum ○ Clearing of indigenous fynbos vegetation should be kept to an absolute minimum - Avoid trampling of natural fynbos vegetation surrounding developments.						
Visual Impact Specialist	- Clear invasive alien vegetation selectively such that the areas being developed can be screened by vegetation from receptors. - Have a phased revegetation/clearing approach - Minimise clearing to small areas - i.e. phased development. - Ensure a construction EMP is in place. - Limit extent of damage, keeping cut and fill to a minimum. Minimise disturbance through fencing off construction areas, thereby protecting and retaining vegetation in the areas that will not be built on.	Construction and Post-construction phase	Reduction of the visual impact of the proposed development.	Eco Applicant Contractor HOA			

	- Revegetate service areas and public street verges immediately after construction and continue maintenance eternally. - The site must be kept tidy at all times. - Building material stockpiles must be protected from dispersion into the surrounding area by wind or water - A concerted effort must be made to minimise dust generation and its effect on the surrounding areas. - Limit number of units and implement guidelines as provided by the developer with low planted roofs etc. - Provide enough area/buffers along edges of site to provide suitable screening such as vegetated berms and indigenous trees. - Reducing units to as few as economically viable - Clustering the units with green areas surrounding them - Screening the units from sensitive receptors - earthworks/landscaping such that units have views but receptors are not significantly affected, phasing removal of alien vegetation and adding quick growing trees to tree list (refer to Platbos Forest) - Implementing design philosophy and guidelines						

	- Ensure a construction EMP is in place. - Home Owners Association (HOA) have an Operational Plan that clearly states their obligations in terms of ongoing maintenance of buildings and landscaping and that the maintenance actions comply with the architectural and landscaping guidelines provided for this Visual Impact Assessment and this VIA's mitigation measures - HOA monitor the building and landscape guidelines - HOA maintain buildings and landscaping to a high standard - HOA continue minimising light pollution - keep outdoor lighting as bollard lighting, height to maximum 1.2 m, low spill type lights to minimize light spill and pollution, external lighting on buildings must be minimised or completely omitted etc - Limit number of units and implement guidelines as provided by the developer with low planted roofs etc. - Provide enough area/buffers along edges of site to provide suitable screening such as vegetated berms and indigenous trees - Ensure a construction EMP is in place						

	- Limit outdoor street and path lighting to bollard height and low spill with limited outdoor lighting on buildings - Electrical Engineer to design for appropriate lighting for a Natural area and alongside a Scenic route.						
Palaeontology Impact Specialist	- The possible presence of fossils in the subsurface does not have an a priori influence on the decision to proceed with the proposed development. However, mitigation measures are essential. The potential impact has a moderate influence upon the proposed project, consisting of implemented mitigation measures recommended below, to be followed during the Construction Phase. - It is not feasible for a specialist monitor to be continuously present during the Construction Phases, when fossils may be unearthed at any time. The rescue of fossil bones during earth works critically depends on spotting this material as it is uncovered during digging.	Construction	Positive discovery and rescue of fossil bones uncovered during the construction phase	Eco Applicant Contractor HOA			

	- For successful mitigation, it is therefore crucial that earth works personnel must be involved in mitigation by watching for fossils as excavations are being made. It is recommended that a protocol for finds of buried fossil bones, the Fossil Finds Procedure (FFP), is included in the Environmental Management Plan (EMP) for the proposed development. - The Fossil Finds Procedure included as Appendix 3 provides guidelines to be followed in the event of fossil bone finds in the excavations. The works supervisor/foreman and workers involved in excavating the infrastructure trenches and stormwater drainage must be informed of the need to watch for fossils and archaeological material. Workers seeing potential objects are to cease work at that spot and to report to the Works Supervisor who, in turn, will report to the Environmental Control Officer (ECO) and/or the Developer.						

	The ECO/Developer will contact and liaise with Heritage Western Cape and the standby palaeontologist on the nature of the find and suitable consequent actions such as immediate site inspection, application for a palaeontological collection permit and drafting of a work plan for the collection of the find. - If a significant occurrence of fossil bones in a palaeontological context is discovered a professional palaeontologist must be appointed to collect them and to record their contexts. Said palaeontologist must also undertake the recording of the stratigraphic context and sedimentary geometry of the exposure, the sampling of ambient small fossil content and the compilation of the report for distribution to Heritage Western Cape, SAHRA, the approved curatorial institution and local heritage interest groups.						

	- A permit from HWC is required to excavate fossil bone finds. The applicant should be the qualified specialist responsible for assessment, collection and reporting (palaeontologist). Should fossils be found that require rapid collecting, application for a palaeontological permit with supporting work plan will immediately be made to HWC. The application requires the details and permission of the registered owner of the site. The fossils and their contextual information must be deposited at a SAHRA/HWC-approved institution. The rescue of discovered palaeontological remains by a contracted specialist shall be at the Developer's expense.						
Archaeological Impact Specialist	- A walk down survey of the development site must be conducted by a professional archaeologist once vegetation has been cleared from the site. - If any human remains are uncovered or exposed during excavations, work must immediately stop, and the finds reported to the Environmental	Construction and Post-construction phase	Potential discovery of uncovered human remains.				

	Control Officer (ECO) and the contracted archaeologist. Human remains must not be removed or disturbed until inspected by the archaeologist.						

11 DECOMMISSIONING PHASE

Not Applicable to this development.

12 ENVIRONMENTAL AUDITS

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

The objective of the environmental audit report is to:

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

An environmental audit report should contain the following:

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

13 CONCLUSION

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

14 DECLARATION OF CONTRACTOR'S ACCEPTANCE

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

Signed: _____ Date: _____