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ENVIRONMENTAL CONSULTING

# Environmental Management Programme

## Proposed Residential dwellings and associated infrastructure on Portion 4 of the Farm 643, Stanford, Caledon RD

**4 JUNE 2026**

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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* – Cheddles Pty Ltd

*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 is 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 and post-construction phase of the activity applied for. 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

Cheddles (Pty) Ltd, herein referred to as the Applicant, has appointed Lornay Environmental Consulting (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) to apply for Environmental Authorisation in terms of the National Environmental Management Act (Act 107 of 1998) and the Environmental Impact Assessment Regulations (2014), as amended. This appointment relates to the application for environmental authorisation of listed activities associated with the Proposed Residential development as well as associated infrastructure, as well as jetty and slipways on Portion 4 of the Farm Middelburg No. 643, Stanford.

The Environmental Management Programme (EMPr) presented in this document is a legally binding instrument applicable to the applicant, all successors in title, and any future developers or property owners, whether they assume ownership of the whole or any portion of the development. This EMPr governs the proposed residential development on the subject property, Portion 4 of the Farm 643, as outlined in this application, including any future amendments to the approved layout or development plan. It further extends to all property owners within the development, ensuring a consistent and enforceable framework for environmental management.

This EMPr has been prepared and submitted as part of the Basic Assessment process, in accordance with the requirements of NEMA and its associated regulations. It serves as a comprehensive guideline for managing environmental impacts during both the construction and post-construction phases of the project. The scope of the development includes the establishment of roads, residential dwellings, slipways and jetties, as well as the associated infrastructure on Portion 4 of the Farm 643. The document is prescriptive in nature, detailing mitigation measures and assigning specific responsibilities to individuals or organizations tasked with implementing actions during the construction and post-construction phases.

The primary objective of this EMPr is to minimise or, where possible, entirely avoid potential environmental impacts arising from the proposed development. It addresses key activities such as vegetation clearing, civil works, residential construction, rehabilitation plans and the installation of services, while promoting sustainable development practices. As a dynamic document, the EMPr is designed to be adaptable, allowing for periodic updates to reflect changing site conditions or project requirements. While it is compiled as an integral component of the Basic Assessment process, this EMPr becomes legally enforceable upon approval by the Competent Authority, Department of Environmental Affairs and Development Planning (DEADP).

Compliance with the EMPr is critical throughout the construction and post-construction phases, particularly during activities such as vegetation clearing and the installation of civil services, road construction, and residential units. Upon completion of the construction phase, a completion audit is anticipated to be required, as may be stipulated in the Environmental Authorisation (EA). This audit will verify adherence to the EMPr and ensure that all environmental management commitments have been met.

This EMPr has been drafted in strict accordance with Section 24N of the National Environmental Management Act (NEMA, Act 107 of 1998), ensuring alignment with statutory requirements and best practices in environmental management. It reflects a commitment to balancing the developmental needs of the proposed residential project with the imperative to protect and preserve the natural environment of the subject properties and its surroundings.

# 2. DEVELOPMENT PROPOSAL

The property is located outside the urban edge and is currently zoned Agricultural Zone I, which permits agricultural activities and, under certain conditions, related uses. The surrounding properties are also zoned for agricultural purposes and have been transformed to support agricultural operations, contributing to the rural character and land-use pattern of the area. The property abuts Kleinriver to the north, vacant properties to the east and the west, which appear to have been historically transformed for agricultural purposes (farming) as well as a transformed portion of the properties situated to the south. The project involves the construction of two single residential dwelling, a manager's cottage and associated infrastructure, primarily concentrated within previously disturbed or transformed areas to limit environmental impact. The proposed development will cover a total area of approximately 4950 m² within the broader 13.53 ha (135,300 m²) farm property.

The proposed development components, as indicated on the preferred layout plan (Alternative 4), are described below together with their respective footprint areas:

**Primary Residential Structures**

Two primary residential dwellings are proposed within the central-northern portion of the site, positioned on higher-lying ground above the 5 m contour line and outside of the delineated Estuarine Functional Zone (EFZ) of the Klein River Estuary.

- House 1, situated in the upper-central portion of the site, has a proposed footprint of approximately 1662 m² and includes the primary residential unit together with associated ancillary structures and a swimming pool.
- House 2 is proposed to the east of House 1, similarly positioned outside of the EFZ, with a proposed footprint of approximately 1220 m². Both dwellings are accessed via an internal road network connecting to the existing farm access tracks on the property.

**Manager's Cottage**

A manager's cottage with a proposed footprint of approximately 1000 m² is situated in the south-western portion of the site, in close proximity to the existing access gate off Wortelgat Road. This structure is located entirely within the terrestrial environment, well removed from the Klein River Estuary and its associated buffer zones.

**Gatehouse**

A gatehouse with a proposed footprint of approximately 595 m² is proposed at the primary entrance to the development off Wortelgat Road, forming part of the controlled access arrangement for the residential development.

**Access Road**

An internal access road will be constructed and / or upgraded, using existing disturbed pathways to minimise vegetation disturbance. The applicant will aim to retain the internal access roads as informal as possible, as per the current roads on site. Some natural surface material or grass blocks may have to be added in sections. All the access roads will have a combined length of less than 1000 m and a maximum width of 4m.

**Associated Infrastructure**

Associated infrastructure, including a swimming pool, fire pit, and footpaths, collectively accounts for an additional approximately 420 m² of development footprint. These elements are located within the terrestrial portion of the site and have been positioned to avoid encroachment into the EFZ.

***Jetty and Estuarine Access***

A jetty with a footprint of approximately 53 m², together with an associated footpath, is proposed extending northward from the residential cluster toward the Klein River Estuary. These are the only development components that encroach into the EFZ of the Klein River Estuary, and their combined footprint has been confined to the minimum extent necessary to provide access to the river.

- A jetty with a development footprint of approximately 53 m² is proposed. The jetty is designed in line with the "Specific Conditions and Structure Specifications" as issued by Cape Nature in line with the Application to Enter into a Lease Agreement in terms of the Sea Shore Act, Act 1935 (Act No 21 of 1935).
- An unpaved pathway with a development footprint of approximately 320 m² will facilitate access to the proposed jetty. It is important to note that, the pathway will be less than 3m in width and less than 1000 m in length.

***Water***

To ensure reliable water availability and pressure regulation, storage tanks will be installed within existing disturbed area of approximately 26 m² situated on the western portion of the property. Water will be extracted from the borehole located near the entrance of the property, the water will be for household use, and therefore no authorisation is required in terms of National Water Act as it will fall under Schedule 1 – Reasonable Domestic Use.

***Electricity***

The dwellings will operate off the grid with the use of roof mounted solar installations.

***Sewage***

A minimum 6 000-litre sealed conservancy tank will be provided, sized to adequately accommodate effluent volumes from the residential units. The tank will be connected to the internal sewer drainage network of the buildings to collect both sewage and greywater in a secure, watertight system. The contents of the conservancy tank will be periodically emptied by a licensed private waste contractor and disposed of at a registered municipal wastewater treatment facility.

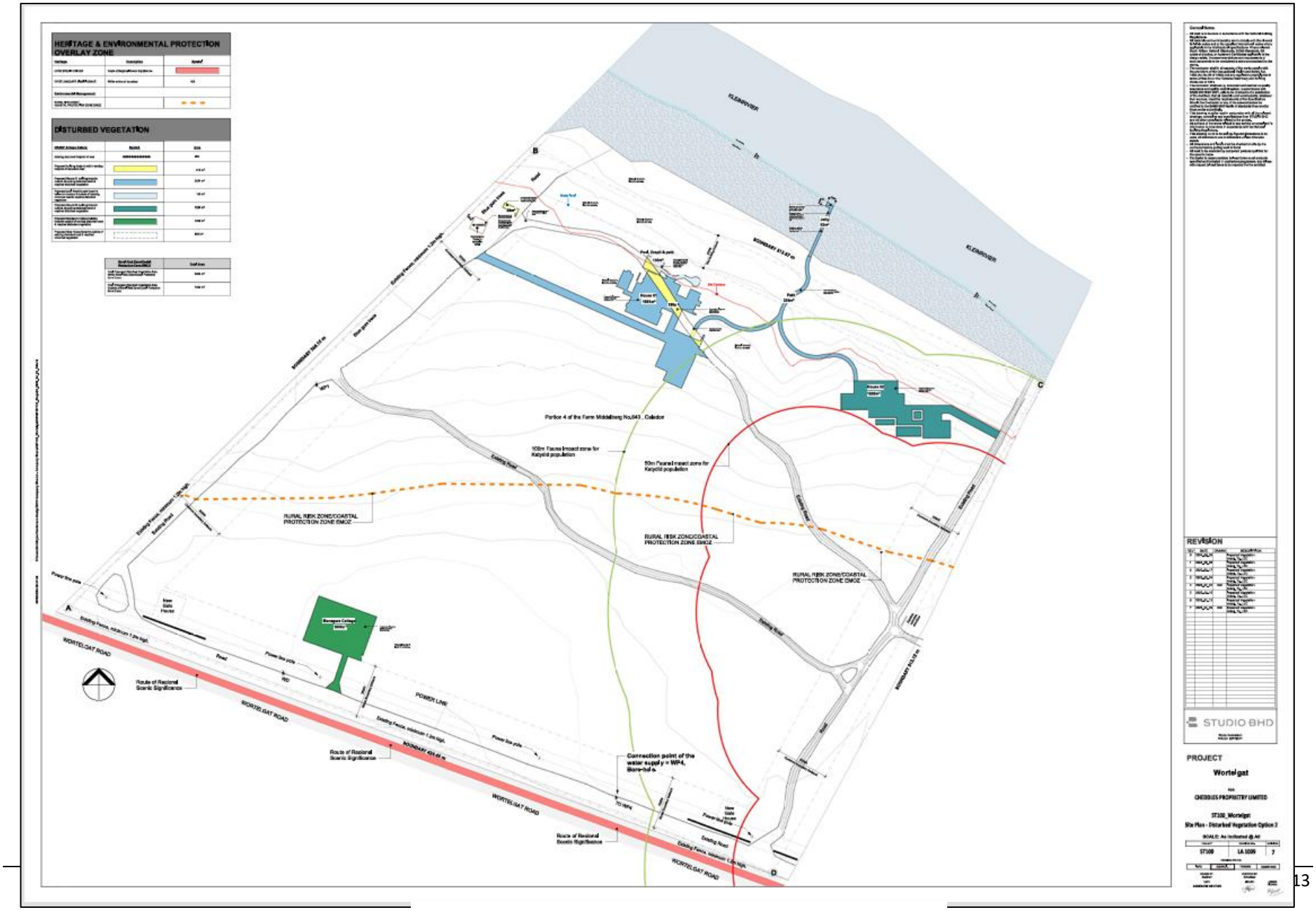


**Figure 1:** Proposed site development plan

# 3. TERMS OF REFERENCE

The primary objective of this Environmental Management Programme (EMPr) is to identify, manage, and mitigate any potential negative environmental impacts that may arise during the construction and post-construction phases of the proposed residential development and associated infrastructure. 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, access roads, service infrastructure 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 / similar structure.

### *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 river 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*

N/A.

# 5. CONDITIONS OF AUTHORISATION

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

# 6. ENVIRONMENTAL AWARENESS

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

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

### *6.1. Aim of the Environmental Awareness Plan*

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

### *6.2. Environmental Awareness Training and content*

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

Environmental conditions in the induction should focus on the following:

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

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

# 7. CONSTRUCTION PHASE IMPACTS AND MITIGATIONS

### *7.1 Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment*

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

***Potential impacts**:*

The proposed development may contribute to loss of animal species of conservation concern, including confirmed records of Mute Winter Katydid, Western Leopard and African Marsh Harrier.

The development will also contribute to the loss of functional landscape connectivity between Kleinriver and surrounding fynbos.

***Management of impacts and Mitigation measures:***

*General Site-Wide Mitigation*

- → Restrict built infrastructure to ~30% of the 12-ha property.
- → Cap development at three dwellings, as assessed in this application.
- → Adopt dark-sky compliant lighting (low-spectrum, full cut-off fittings, shield estuary-facing lights) to reduce disturbance to nocturnal fauna and birds.
- → Enforce pet curfews at night and discourage free-ranging cats and dogs to limit predation and disturbance to birds, reptiles and amphibians.
- → Implement a formal alien clearing and follow-up programme across retained natural areas to prevent decline in functional integrity.
- → Consider assigning all retained natural habitat (~70% of site) to a formal conservation status, such as a biodiversity stewardship agreement, to ensure long-term ecological management.

*Faunal Landscape Connectivity*

- → Maintain a continuous natural corridor across at least 70% of the property to allow free movement between the Klein River estuary and adjacent upland habitats.

→ Prohibit impermeable fencing; if fences are required, ensure wildlife-permeable design (≥30 cm ground clearance, no mesh smaller than 100×100 mm).

→ Consolidate infrastructure and driveways to reduce fragmentation and maintain open strips for fauna.

→ Actively rehabilitate degraded strips post-construction and manage alien regrowth to preserve corridor functionality.

*Estuarine and Water-Associated Birds (African Marsh Harrier, Caspian Tern, Great White Pelican)*

→ Reduce proposed jetties from two to a single low-intensity jetty to limit repeated disturbance pulses.

→ Maintain a no-work buffer at reed margins and estuary edges during construction; enforce quiet hours at dusk and dawn to protect hunting harriers and roosting terns.

→ Lighting controls: Shield and direct lighting away from the estuary to prevent disorientation or displacement of estuary-dependent species.

→ Schedule noisy construction away from peak breeding/foraging seasons (Aug–Nov for marsh harrier; peak roost periods for terns/pelicans).

→ Secure long-term management of estuary-edge natural habitat through stewardship or conservation agreements.

*Terrestrial SCC Birds (Southern Black Korhaan, Denham's Bustard)*

→ Align dwellings and infrastructure away from the few lower, more open fynbos patches that may be marginally suitable for korhaan or bustard activity.

→ Use alien clearing and appropriate fire management to preserve a patchy vegetation structure, favouring species sensitive to tall, dense shrub encroachment.

→ Disturbance reduction: Limit human and pet activity in marginal open patches and restrict additional disturbance near sensitive zones.

*Amphibians (Western Leopard Toad)*

→ Shape access tracks with shallow U/V profiles; include amphibian-safe drainage.

→ Prohibit pesticides and herbicides on site.

→ Fit escape ramps or "toad savers" in swimming pools.

→ Retain indigenous groundcover and vegetated strips between dwellings to support terrestrial dispersal.

→ Provide residents with awareness material on toad movement periods and safe behaviours.

*Reptiles (Southern Adder)*

→ Pre-construction search and rescue: Conduct supervised vegetation clearance with relocation of snakes and refugia where possible.

→ Retain or recreate rock piles, woody debris, and shrub thickets as refugia.

→ Educate contractors and residents about the conservation importance of Southern Adder and provide protocols for safe handling.

→ Impose strict speed limits on internal tracks to reduce roadkill risk.

→ Maintain functional fynbos structure with alien clearing and fire in line with ecological cycles.

Invertebrates (Mute Winter Katydid, Other SCCs)

*Mute Winter Katydid*

→ Keep development outside the 50 m no-go buffer surrounding mapped katydid habitat.

→ Avoid hard road surface construction

→ Mark and protect occupied patches as no-go areas during and after construction.

→ Prohibit mowing, gardening or herbicide or pesticide use within buffers.

→ Regularly survey katydid populations post-construction to verify persistence and recolonisation.

*Yellow-winged Agile Grasshopper*

→ No targeted mitigation required as the species' specific habitat is absent; site-wide alien control and natural vegetation retention suffice.

*Other SCC Invertebrates*

→ Map and avoid patches supporting confirmed SCCs where possible.

→ Establish indicator taxa monitoring to detect changes in population presence or habitat quality.

→ Actively restore and reseed disturbed patches post decommissioning to return invertebrate habitat function.

### *7.2 Terrestrial Biodiversity Impact Assessment*

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

***Potential impacts:***

Loss of terrestrial vegetation with low sensitivity above the 5 m contour and loss of riparian vegetation with medium sensitivity at the river i.e. above and below 5 m contour.

***Management of impacts and mitigation measures***

→ Designing the development to stay above the 5 m contour and the estuarine functional zone to reduce ecological impacts.
→ Using existing roads and paths for access to minimize new disturbances to the environment.
→ Limiting infrastructure like slipways and jetties, as only one jetty per property is typically permitted and slipways are discouraged.
→ Clearing of alien invasive plant species.
→ Avoidance of the estuarine functional zone to reduce ecological impacts.
→ Existing roads would be used to avoid unnecessary disturbances to the environment.
→ Only one jetty and one slipway would be constructed.
→ Clearing of alien invasive plant species.

### *7.3. Aquatic Compliance Statement*

***Potential impacts:***

- **Jetty placement and design:** The proposed jetty (53 m²) is the only built infrastructure component that encroaches into the EFZ. Its placement has been confined to the minimum footprint necessary, and it must be designed and constructed in accordance with the Coastal Protection Zone Environmental Management Overlay Zone (EMOZ) provisions of the Overstrand Local Municipality and CapeNature's specifications. Given the limited and localised nature of the jetty, significant long-term impacts on the ecological functioning of the Klein River Estuary are not anticipated, provided that all recommended mitigation measures are implemented.
- **Access and footpath routing:** The proposed footpath is the only other development component that enters the EFZ. Its routing has been planned to minimise disturbance to the estuarine environment.

***Management of impacts proposed by the specialist:***

→ All activities must comply with the requirements of the Coastal Protection Zone Environmental Management Overlay Zone (EMOZ) of the Overstrand Local Municipality. Of particular note, the jetty must be designed and constructed in accordance with the specifications and requirements stipulated within the applicable EMOZ provisions and designed in line with Cape nature's specifications.

→ The provisions and management objectives of the Klein River Estuarine Management Plan must be adhered to at all times for activities within and adjacent to the Klein River Estuary.

→ Construction of the jetty and pathways must be undertaken using low-impact methods and minimal machinery where feasible.

→ Prior to the commencement of construction, the estuary and its associated buffer (25 m) must be clearly demarcated on site using temporary fencing and/or danger tape, and workers must be instructed that no access, disturbance, or storage of materials may occur within this area, apart from the development of the footpath and the jetty.

→ Construction vehicles must remain within clearly defined access routes and may not enter the estuary buffer or surrounding natural vegetation.

→ Where feasible, the proposed works should be undertaken during the dry season to reduce the potential for stormwater runoff and sediment mobilisation towards the nearby estuary.

→ Should construction activities occur outside of the dry season, additional mitigation measures must be implemented to minimise the risk of sediment transport and water quality impairment. These measures include the installation of temporary erosion and sediment control structures (e.g. silt fences, sandbags, or geotextile sediment barriers) downslope of disturbed areas, stabilisation of exposed soils, and the placement of stockpiled materials outside of drainage pathways.

→ Access track and construction-related works must ensure that stormwater runoff from disturbed surfaces is directed through vegetated areas or temporary sediment traps prior to discharge.

→ No temporary crossings, drainage diversions, or discharge of stormwater may occur directly into the estuary.

→ Construction camps, laydown areas, stockpiling of materials, and waste storage must be located outside of the estuary buffer and away from any drainage pathways that could transport pollutants into the estuary.

→ Concrete mixing and cement handling must take place in designated areas located well outside of the estuary buffer, and wash water from concrete works must not be discharged onto the ground where it could enter drainage pathways.

- → The storage of fuels, oils, and other hazardous substances must occur within bunded areas, and vehicle refuelling or servicing must not occur near drainage pathways or within the estuary buffer.
- → A spill response kit must be kept on site at all times, and any accidental spills of fuels, oils, or chemicals must be immediately contained and cleaned up to prevent contamination of soils and stormwater runoff.
- → All waste generated during construction must be stored in sealed containers and regularly removed from site to prevent litter and debris from entering the estuary or surrounding natural vegetation.
- → Construction activities must be temporarily suspended during periods of heavy rainfall where runoff may mobilise sediments.
- → All disturbed areas must be rehabilitated and stabilised as soon as practicable following completion of the works.
- → Vegetation clearance should be restricted to the relevant development components and indigenous vegetation cover should be maintained as far as practically possible. Furthermore, it is recommended that natural fynbos vegetation be used predominantly for garden establishment, including appropriate local indigenous lawn grass, to contribute towards conservation of the wildlife of the region.
- → No invasive alien plant species may be used for landscaping or rehabilitation purposes.
- → A conservancy tank is proposed. Therefore, it is recommended that monitoring of sewerage collection tanks should occur to ensure no leakage and ensure that no leakages occur when sewerage collection tanks are emptied. The disposal of sewage must at all times comply with the requirements of Sections 22 and 40 of the National Water Act of 1998, (Act 36 of 1998).
- → When a conservancy tank is used for the disposal of sewerage, the Breede-Olifants Catchment Management Agency (BOCMA) must be furnished with a signed copy of the contract between the contractor and/or the municipality which is appointed to pump the conservancy tank.
- → The tank must be provided with a fresh air inlet and an intercepting grease trap.
- → The tank must have an airtight manhole cover to allow access to the tank for the removal and safe disposal of the tank contents.
- → No industrial waste or refuse may be discharged into the conservancy tank except by written agreements with the relevant authorities.
- → The size of the conservancy tank must be determined by both the frequency of removal of its contents to the local Wastewater Treatment Works and by the quantity of sewage anticipated from the above-mentioned project.
- → The contents of the tank must be removed by a vacuum tanker and conveyed to a local WWTW that is capable of processing the volume and contents of the conservancy tank.
- → The contingency plan including a system backup, consideration to any blockage in pipes, and prevention of storm water or groundwater (if applicable) ingress must be drawn up to protect against overflow of the conservancy tank.
- → As per above, ingress of storm water or groundwater (if applicable) into the conservancy tank must be prevented. Consider installing a grey water system, as washing/dishwashing machines require the capacity of the conservancy tank to be increased.
- → Rainwater harvesting systems should be installed to reduce runoff volumes.
- → External lighting associated with the development should be minimised and directed away from the estuarine environment to reduce disturbance to estuarine fauna and avifauna.

# 8. POST-CONSTRUCTION PHASE IMPACTS AND MITIGATIONS

### *8.1. Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment*

**Potential impacts:**

- Direct habitat loss for SCC such as the Mute Winter Katydid.
- Fragmentation and reduced faunal connectivity between estuary and upland habitats.
- Disturbance and displacement of estuarine birds from increased human activity and jetty use.
- Mortality risks for amphibians and reptiles from vehicles, pets, and persecution.
- Long-term edge effects from lighting, gardens and alien plants.

***Mitigation measures recommended by the specialist***

*General Site-Wide Mitigation*

→ Restrict built infrastructure to ~30% of the 12-ha property.

→ Cap development at three dwellings, as assessed in this application.

→ Adopt dark-sky compliant lighting (low-spectrum, full cut-off fittings, shield estuary-facing lights) to reduce disturbance to nocturnal fauna and birds.

→ Enforce pet curfews at night and discourage free-ranging cats and dogs to limit predation and disturbance to birds, reptiles and amphibians.

→ Implement a formal alien clearing and follow-up programme across retained natural areas to prevent decline in functional integrity.

→ Consider assigning all retained natural habitat (~70% of site) to a formal conservation status, such as a biodiversity stewardship agreement, to ensure long-term ecological management.

*Faunal Landscape Connectivity*

→ Maintain a continuous natural corridor across at least 70% of the property to allow free movement between the Klein River estuary and adjacent upland habitats.

→ Prohibit impermeable fencing; if fences are required, ensure wildlife-permeable design (≥30 cm ground clearance, no mesh smaller than 100×100 mm).

→ Consolidate infrastructure and driveways to reduce fragmentation and maintain open strips for fauna.

→ Actively rehabilitate degraded strips post-construction and manage alien regrowth to preserve corridor functionality.

*Estuarine and Water-Associated Birds (African Marsh Harrier, Caspian Tern, Great White Pelican)*

→ Reduce proposed jetties from two to a single low-intensity jetty to limit repeated disturbance pulses.

→ Maintain a no-work buffer at reed margins and estuary edges during construction; enforce quiet hours at dusk and dawn to protect hunting harriers and roosting terns.

→ Lighting controls: Shield and direct lighting away from the estuary to prevent disorientation or displacement of estuary-dependent species.

→ Schedule noisy construction away from peak breeding/foraging seasons (Aug–Nov for marsh harrier; peak roost periods for terns/pelicans).

→ Secure long-term management of estuary-edge natural habitat through stewardship or conservation agreements.

*Terrestrial SCC Birds (Southern Black Korhaan, Denham's Bustard)*

→ Align dwellings and infrastructure away from the few lower, more open fynbos patches that may be marginally suitable for korhaan or bustard activity.

→ Use alien clearing and appropriate fire management to preserve a patchy vegetation structure, favouring species sensitive to tall, dense shrub encroachment.

→ Disturbance reduction: Limit human and pet activity in marginal open patches and restrict additional disturbance near sensitive zones.

*Amphibians (Western Leopard Toad)*

→ Shape access tracks with shallow U/V profiles; include amphibian-safe drainage.

→ Prohibit pesticides and herbicides on site.

→ Fit escape ramps or "toad savers" in swimming pools.

→ Retain indigenous groundcover and vegetated strips between dwellings to support terrestrial dispersal.

→ Provide residents with awareness material on toad movement periods and safe behaviours.

*Reptiles (Southern Adder)*

→ Pre-construction search and rescue: Conduct supervised vegetation clearance with relocation of snakes and refugia where possible.

→ Retain or recreate rock piles, woody debris, and shrub thickets as refugia.

→ Educate contractors and residents about the conservation importance of Southern Adder and provide protocols for safe handling.

→ Impose strict speed limits on internal tracks to reduce roadkill risk.

→ Maintain functional fynbos structure with alien clearing and fire in line with ecological cycles.

Invertebrates (Mute Winter Katydid, Other SCCs)

*Mute Winter Katydid*

→ Keep development outside the 50 m no-go buffer surrounding mapped katydid habitat.

→ Avoid hard road surface construction

→ Mark and protect occupied patches as no-go areas during and after construction.

→ Prohibit mowing, gardening or herbicide or pesticide use within buffers.

→ Regularly survey katydid populations post-construction to verify persistence and recolonisation.

*Yellow-winged Agile Grasshopper*

→ No targeted mitigation required as the species' specific habitat is absent; site-wide alien control and natural vegetation retention suffice.

*Other SCC Invertebrates*

→ Map and avoid patches supporting confirmed SCCs where possible.

→ Establish indicator taxa monitoring to detect changes in population presence or habitat quality.

→ Actively restore and reseed disturbed patches post decommissioning to return invertebrate habitat function.

### *8.2. Terrestrial Biodiversity Impact Assessment*

Loss of low-lying vegetation close to the river that provides stability to the environment.

***Mitigation measures recommended by the specialist***

→ Development of residences should be above the 5 m contours and should wherever possible avoid well-established old trees, particularly of wild olive (*Olea europaea subsp. cuspidata*).

### *8.3. Aquatic Compliance Statement*

The following mitigation measures are recommended for the water resource Klein River Estuary:

→ All activities must comply with the requirements of the Coastal Protection Zone Environmental Management Overlay Zone (EMOZ) of the Overstrand Local Municipality. Of particular note, the jetty must be designed and constructed in accordance with the specifications and requirements stipulated within the applicable EMOZ provisions and designed in line with Cape nature's specifications.
→ The provisions and management objectives of the Klein River Estuarine Management Plan must be adhered to at all times for activities within and adjacent to the Klein River Estuary.
→ No temporary crossings, drainage diversions, or discharge of stormwater may occur directly into the estuary.
→ All disturbed areas must be rehabilitated and stabilised as soon as practicable following completion of the works.
→ Vegetation clearance should be restricted to the relevant development components and indigenous vegetation cover should be maintained as far as practically possible. Furthermore, it is recommended that natural fynbos vegetation be used predominantly for garden establishment, including appropriate local indigenous lawn grass, to contribute towards conservation of the wildlife of the region.
→ No invasive alien plant species may be used for landscaping or rehabilitation purposes.
→ A conservancy tank is proposed. Therefore, it is recommended that monitoring of sewerage collection tanks should occur to ensure no leakage and ensure that no leakages occur when sewerage collection tanks are emptied. The disposal of sewage must at all times comply with the requirements of Sections 22 and 40 of the National Water Act of 1998, (Act 36 of 1998).

- → When a conservancy tank is used for the disposal of sewerage, the Breede-Olifants Catchment Management Agency (BOCMA) must be furnished with a signed copy of the contract between the contractor and/or the municipality which is appointed to pump the conservancy tank.
- → The tank must be provided with a fresh air inlet and an intercepting grease trap.
- → The tank must have an airtight manhole cover to allow access to the tank for the removal and safe disposal of the tank contents.
- → No industrial waste or refuse may be discharged into the conservancy tank except by written agreements with the relevant authorities.
- → The size of the conservancy tank must be determined by both the frequency of removal of its contents to the local Wastewater Treatment Works and by the quantity of sewage anticipated from the above-mentioned project.
- → The contents of the tank must be removed by a vacuum tanker and conveyed to a local WWTW that is capable of processing the volume and contents of the conservancy tank.
- → The contingency plan including a system backup, consideration to any blockage in pipes, and prevention of storm water or groundwater (if applicable) ingress must be drawn up to protect against overflow of the conservancy tank.
- → As per above, ingress of storm water or groundwater (if applicable) into the conservancy tank must be prevented. Consider installing a grey water system, as washing/dishwashing machines require the capacity of the conservancy tank to be increased.
- → Rainwater harvesting systems should be installed to reduce runoff volumes.
- → External lighting associated with the development should be minimised and directed away from the estuarine environment to reduce disturbance to estuarine fauna and avifauna.

**Table 2.** Activity specific impacts and mitigations

| PRE-CONSTRUCTION / CONSTRUCTION PHASE AND POST-CONSTRUCTION PHASE | | | |
|---|---|---|---|
| **IMPACT** | **DESCRIPTION** | **MITIGATION MEASURES** | **RESPONSIBLE PERSONS** |
| **Socioeconomic Impacts** | ***Construction phase***<br>Job creation during the development / construction phase. | • Ensure labour force is sourced locally as far as possible.<br>• Consider gender balance when sourcing labour. | Applicant<br>Contractor<br>ECO |
| **Visual Impacts** | ***Construction phase***<br>Visual impacts of construction site and construction activities. | • Good design approved by local authority.<br>• Good housekeeping of construction site and working areas.<br>• Screen the visual elements of the site construction camp with netting.<br>• Locate the site camp in a transformed area, not on proposed Open Space.<br>• Site officer to walk the site daily to check for general site aesthetics and visual impacts, particularly prior to weekends and holidays.<br>• Officer to ensure that waste and batching areas are correctly screened and secured to prevent spread by wind, rain, or animals. | Applicant<br>Contractor<br>ECO |
| **Dust Impacts** | ***Construction phase***<br>Dust generated from site clearing and site preparation. | • Maintain ground cover for as long as possible to reduce the total surface area exposed to wind.<br>• Do not clear entire plots; rather clear building sites only.<br>• Ensure vehicle speed limits on site are kept to a minimum.<br>• Delivery vehicles to keep loads covered.<br>• Cover fine material stockpiles.<br>• Wet dry and dusty surfaces using non-potable water.<br>• Staff to wear correct PPE if dust is generated for long periods.<br>• Road surfaces to be swept and kept clean of sand and fine materials. | Applicant<br>Contractor<br>ECO |
| **Noise Impacts** | ***Construction phase*** | • Limit noise levels (e.g. install and maintain silencers on machinery).<br>• Provide protective wear for workers (e.g. earplugs). | Applicant<br>Contractor |

| | | | |
|---|---|---|---|
| | Noise generated by vehicles and machinery during the construction phase. | • Ensure that construction vehicles and machinery are maintained regularly to reduce noise generation.<br>• Restrict construction to normal working hours. | ECO |
| **Botanical / Ecological Impacts** | ***Construction phase***<br>Loss of terrestrial vegetation with low sensitivity above the 5 m contour and loss of riparian vegetation with medium sensitivity at the river (i.e. below 5 m contour).<br>***Post-construction phase***<br>Loss of low-lying vegetation close to the river that provides stability to the environment. | • Design the development to remain above the 5 m contour and outside the estuarine functional zone to reduce ecological impacts.<br>• Use existing roads and paths for access to minimise new disturbances to the environment.<br>• Limit infrastructure such as slipways and jetties; only one jetty per property is typically permitted and slipways are discouraged.<br>• Clear alien invasive plant species.<br>• Development of residences should be above the 5 m contour and should, wherever possible, avoid well-established old trees, particularly wild olive (Olea europaea subsp. cuspidata). | Applicant<br>Contractor<br>ECO |
| **Faunal Landscape Connectivity** | ***Construction and post-construction phase***<br>Construction may temporarily disrupt connectivity through vegetation removal, increased human presence, and establishment of physical barriers such as buildings, roads, and fences. | • Maintain a continuous natural corridor across at least 70% of the property to allow free movement between the Klein River Estuary and adjacent upland habitats.<br>• Prohibit impermeable fencing; where fences are required, ensure wildlife-permeable design (≥30 cm ground clearance; no mesh smaller than 100×100 mm).<br>• Consolidate infrastructure and driveways to reduce fragmentation and maintain open strips for fauna.<br>• Actively rehabilitate degraded strips post-construction and manage alien regrowth to preserve corridor functionality. | Applicant<br>Contractor<br>ECO |
| **Black Harrier** | ***Construction and post-construction phase***<br>Habitat loss and fragmentation within potential territories; construction disturbance. | • Reduce proposed jetties from two to a single low-intensity jetty to limit repeated disturbance pulses.<br>• Maintain a no-work buffer at reed margins and estuary edges during construction; enforce quiet hours at dusk and dawn.<br>• Shield and direct lighting away from the estuary to prevent disorientation or displacement of estuary-dependent species.<br>• Schedule noisy construction away from peak breeding and foraging seasons (August–November for marsh harrier; peak roost periods for terns and pelicans).<br>• Secure long-term management of estuary-edge natural habitat through stewardship or conservation agreements. | Applicant<br>Contractor<br>ECO |

| | | | |
|---|---|---|---|
| **African Marsh Harrier (Circus ranivorus)** | ***Construction and post-construction phase***<br>Construction noise and presence adjacent to reedbeds cause temporary displacement from foraging routes. | • Reduce proposed jetties from two to a single low-intensity jetty to limit repeated disturbance pulses.<br>• Maintain a no-work buffer at reed margins and estuary edges during construction; enforce quiet hours at dusk and dawn.<br>• Shield and direct lighting away from the estuary to prevent disorientation or displacement of estuary-dependent species.<br>• Schedule noisy construction away from peak breeding and foraging seasons (August–November for marsh harrier; peak roost periods for terns and pelicans).<br>• Secure long-term management of estuary-edge natural habitat through stewardship or conservation agreements. | Applicant<br>Contractor<br>ECO |
| **Denham's Bustard (Neotis denhami)** | ***Construction and post-construction phase***<br>Temporary disturbance near estuary; marginal habitat on site. | • Align dwellings and infrastructure away from the lower, more open fynbos patches that may be marginally suitable for korhaan or bustard activity.<br>• Use alien clearing and appropriate fire management to preserve a patchy vegetation structure, favouring species sensitive to tall, dense shrub encroachment.<br>• Limit human and pet activity in marginal open patches and restrict additional disturbance near sensitive zones. | Applicant<br>Contractor<br>ECO |
| **Southern Black Korhaan (Afrotis afra)** | ***Construction and post-construction phase***<br>Loss and disturbance to small, patchy suitable areas; construction noise. | • Align dwellings and infrastructure away from the lower, more open fynbos patches that may be marginally suitable for korhaan or bustard activity.<br>• Use alien clearing and appropriate fire management to preserve a patchy vegetation structure, favouring species sensitive to tall, dense shrub encroachment.<br>• Limit human and pet activity in marginal open patches and restrict additional disturbance near sensitive zones. | Applicant<br>Contractor<br>ECO |
| **Great White Pelican** | ***Construction phase***<br>Disturbance of foraging and roosting birds near reed margins and estuary edges. | • Reduce proposed jetties from two to a single low-intensity jetty to limit repeated disturbance pulses.<br>• Maintain a no-work buffer at reed margins and estuary edges during construction; enforce quiet hours at dusk and dawn.<br>• Shield and direct lighting away from the estuary to prevent disorientation or displacement of estuary-dependent species.<br>• Schedule noisy construction away from peak breeding and foraging seasons.<br>• Secure long-term management of estuary-edge natural habitat through stewardship or conservation agreements. | Applicant<br>Contractor<br>ECO |

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|---|---|---|---|
| **Martial Eagle** | ***Construction and post-construction phase***<br>Disturbance to overflying birds; no nesting or open hunting habitat on site. | • Align dwellings and infrastructure away from the lower, more open fynbos patches that may be marginally suitable for korhaan or bustard activity.<br>• Use alien clearing and appropriate fire management to preserve a patchy vegetation structure.<br>• Limit human and pet activity in marginal open patches and restrict additional disturbance near sensitive zones. | Applicant<br>Contractor<br>ECO |
| **Caspian Tern** | ***Construction phase***<br>Temporary disturbance during works; no breeding on site. | • Reduce proposed jetties from two to a single low-intensity jetty to limit repeated disturbance pulses.<br>• Maintain a no-work buffer at reed margins and estuary edges during construction; enforce quiet hours at dusk and dawn.<br>• Shield and direct lighting away from the estuary to prevent disorientation or displacement of estuary-dependent species.<br>• Schedule noisy construction away from peak breeding and foraging seasons.<br>• Secure long-term management of estuary-edge natural habitat through stewardship or conservation agreements. | Applicant<br>Contractor<br>ECO |
| **Western Leopard Toad** | ***Construction phase***<br>Construction disturbance; occasional roadkill.<br>***Post-construction phase***<br>Edge effects (lighting, pets, pesticides) on terrestrial movement. | • Shape access tracks with shallow U/V profiles and include amphibian-safe drainage.<br>• Prohibit pesticides and herbicides on site.<br>• Fit escape ramps or toad savers in swimming pools.<br>• Retain indigenous groundcover and vegetated strips between dwellings to support terrestrial dispersal.<br>• Provide residents with awareness material on toad movement periods and safe behaviours. | Applicant<br>Contractor<br>ECO |
| **Southern Adder** | ***Construction phase***<br>Direct loss of refugia during clearing; persecution risk; roadkill during works.<br>***Post-construction phase***<br>Ongoing persecution and roadkill near dwellings; edge effects on refugia. | • Conduct supervised vegetation clearance with relocation of snakes and refugia where possible.<br>• Retain or recreate rock piles, woody debris, and shrub thickets as refugia.<br>• Educate contractors and residents about the conservation importance of the Southern Adder and provide safe handling protocols.<br>• Impose strict speed limits on internal tracks to reduce roadkill risk.<br>• Maintain functional fynbos structure with alien clearing and fire management in line with ecological cycles. | Applicant<br>Contractor<br>ECO |
| **Mute Winter Katydid** | ***Construction phase*** | • Keep development outside the 50 m no-go buffer surrounding mapped katydid habitat.<br>• Avoid hard road surface construction within this zone. | Applicant<br>Contractor |

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| | Direct loss of occupied microhabitats; local collapse risk due to low mobility.<br>***Post-construction phase***<br>Trampling and gardening degrade occupied patches; edge stress. | • Mark and protect occupied patches as no-go areas during and after construction.<br>• Prohibit mowing, gardening, or herbicide and pesticide use within buffers.<br>• Regularly survey katydid populations post-construction to verify persistence and recolonisation. | ECO |
| **Aquatic Impacts** | ***Construction and post-construction phase***<br>The proposed jetty (53 $m^2$) is the only built infrastructure component that encroaches into the estuarine functional zone (EFZ). Its placement has been confined to the minimum footprint necessary, and it must be designed and constructed in accordance with the Coastal Protection Zone EMOZ provisions of the Overstrand Local Municipality and CapeNature's specifications. | • All activities must comply with the requirements of the Coastal Protection Zone Environmental Management Overlay Zone (EMOZ) of the Overstrand Local Municipality.<br>• The jetty must be designed and constructed in accordance with the applicable EMOZ provisions and in line with CapeNature's specifications.<br>• The provisions and management objectives of the Klein River Estuarine Management Plan must be adhered to at all times for activities within and adjacent to the Klein River Estuary.<br>• Construction of the jetty and pathways must be undertaken using low-impact methods and minimal machinery where feasible.<br>• Prior to commencement of construction, the estuary and its associated 25 m buffer must be clearly demarcated on site using temporary fencing or danger tape; no access, disturbance, or storage of materials may occur within this area, apart from the footpath and jetty works.<br>• Construction vehicles must remain within clearly defined access routes and may not enter the estuary buffer or surrounding natural vegetation.<br>• Works should be undertaken during the dry season where feasible to reduce stormwater runoff and sediment mobilisation; where construction occurs outside the dry season, additional measures must be implemented, including installation of temporary erosion and sediment control structures (e.g. silt fences, sandbags, geotextile sediment barriers), stabilisation of exposed soils, and placement of stockpiled materials outside drainage pathways.<br>• Stormwater runoff from disturbed surfaces must be directed through vegetated areas or temporary sediment traps prior to discharge; no direct discharge of stormwater into the estuary is permitted.<br>• Construction camps, laydown areas, stockpiles, and waste storage must be located outside the estuary buffer and away from drainage pathways.<br>• Concrete mixing and cement handling must take place in designated areas well outside the estuary buffer; wash water from concrete works must not be discharged where it could enter drainage pathways.<br>• Fuels, oils, and hazardous substances must be stored within bunded areas; vehicle refuelling or servicing must not occur near drainage pathways or within the estuary buffer. | Applicant<br>Contractor<br>ECO |

| | | | |
|---|---|---|---|
| | | • A spill response kit must be kept on site at all times; any accidental spills must be immediately contained and cleaned up.<br>• All waste must be stored in sealed containers and regularly removed from site.<br>• Construction activities must be temporarily suspended during heavy rainfall where runoff may mobilise sediments.<br>• All disturbed areas must be rehabilitated and stabilised as soon as practicable after completion of works.<br>• Vegetation clearance must be restricted to relevant development components, and indigenous vegetation cover must be maintained as far as practically possible.<br>• Natural fynbos vegetation is recommended for garden establishment, including appropriate local indigenous lawn grass.<br>• No invasive alien plant species may be used for landscaping or rehabilitation purposes.<br>• A conservancy tank is proposed; monitoring of the tank must occur to ensure no leakage, including when emptied.<br>• Disposal of sewage must comply with Sections 22 and 40 of the National Water Act (Act 36 of 1998) at all times.<br>• When a conservancy tank is used, the Breede-Olifants Catchment Management Agency (BOCMA) must be furnished with a signed copy of the contract between the contractor and/or municipality appointed to pump the tank.<br>• The tank must be provided with a fresh air inlet, an intercepting grease trap, and an airtight manhole cover.<br>• No industrial waste or refuse may be discharged into the conservancy tank except by written agreement with the relevant authorities.<br>• The size of the conservancy tank must be determined by both the frequency of removal of its contents and the quantity of sewage anticipated.<br>• The contents must be removed by vacuum tanker and conveyed to a Wastewater Treatment Works capable of processing the volume and contents.<br>• A contingency plan, including a system backup, provision for blockages, and prevention of stormwater or groundwater ingress, must be drawn up to protect against overflow.<br>• Consider installing a greywater system; rainwater harvesting systems should be installed to reduce runoff volumes.<br>• External lighting must be minimised and directed away from the estuarine environment to reduce disturbance to estuarine fauna and avifauna. | |


The Very High Sensitivity area (Katydid Buffer 50m) represents a no-go zone due to its ecological importance and sensitivity and is therefore excluded from the development footprint.

# 9. GENERAL CONSTRUCTION PHASE IMPACTS AND REQUIREMENTS

***9.1 Contractors camp***

Responsibility – Contractor / ECO / owner

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

***9.2 Health and Safety***

Responsibility - Project Manager / Contractor / ECO / owner

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

***9.3 Fire risk management***

Responsibility - Project Manager / Contractor / ECO / owner

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

***9.4 Fuels and hazardous materials***

Responsibility - Project Manager / Contractor / owner

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

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

***9.5 Emergencies protocol***

Responsibility - Project Manager / Contractor / owner

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

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

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

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

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

***9.6 Site Demarcation***

Responsibility - Project Manager / Contractor / ECO / owner

Prior to any construction commencing, the boundaries of the 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.

***9.7 Stockpiles***

Responsibility - Project Manager / Contractor / ECO / owner

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

***9.8 General Wastes***

Responsibility - Project Manager / Contractor / ECO / owner

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

***9.9 Recreational / Eating areas***

Responsibility - Project Manager / Contractor / ECO / owner

If construction workers are permitted to eat on the development site, other than within the contractor's camp, the Contractor shall provide adequate refuse bins at all such places and ensure that they are used. Bins are to be cleared on a daily basis. No rest areas are to be permitted in No Go areas.

***9.10 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.

***9.11 Equipment maintenance***

Responsibility - Project Manager / Contractor / ECO / owner

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

***9.12 Stormwater Management***

Responsibility - Project Manager / Contractor / ECO / owner

Due to the small-scale nature of the construction, a Stormwater Management Plan is not required. however, Stormwater should be monitored regularly to ensure no environmental risk or unmanageable load to the existing infrastructure. The contractor must take suitable measures to prevent erosion resulting from a diversion, restriction or increase in flow of stormwater caused by construction. The open space erf will be used for stormwater retention.

***9.13 Topsoil Removal and Stockpiling***

Responsibility - Project Manager / Contractor / ECO / owner

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

***9.14 Erosion Control***

Responsibility - Project Manager / Contractor / ECO / owner

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

***9.15 Dust Control***

Responsibility - Project Manager / Contractor / ECO / owner

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

***9.16 Construction Traffic Management***

Responsibility - Project Manager / Contractor / ECO / owner

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

***9.17 Architecture / Design***

Responsibility - Project Manager / Contractor / ECO / owner

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.

***9.18 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.

### *9.19 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

### *10.1. Non-compliance*

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

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

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

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

**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 5 000 |
| Disturbance beyond approved footprint | Disturbance to vegetation beyond approved areas | R 5 000 |
| Waste management | Inappropriate waste management | R 3 000 (dependent on extent) |
| Not adhering to conditions of EA | Not attending to specific EA conditions | R 3 000+ per condition |

### *10.2. Environmental Control Sheets*

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

| Table 4. Environmental Control Sheets — Record of Performance | | | | | | | |
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| **TASK** | **ACTION REQUIRED / MITIGATION & METHOD FOR IMPLEMENTATION** | **FREQUENCY** | **TARGET / OUTCOME** | **RESPONSIBILITY** | **COMPLETED YES/NO** | **DATE** | **COMMENT** |
| **PRE-CONSTRUCTION** | | | | | | | |
| **Procurement** | EA and EMPr to be distributed to contractor at tender stage to include costing incurred due to compliance with EA and EMPr.<br><br>METHOD: Distribute with tender documents. | As required | Contractors are aware of requirements in terms of NEMA and can budget accordingly. | Developer<br>Project Manager | | | |
| **Environmental File** | To include EA, EMPr, site diary, and public complaints section.<br>To be updated on a regular basis.<br>Public complaints register to be kept on site at all times.<br><br>METHOD: Issue all applicable documents to site manager. | As required | Construction team(s) and general public can access relevant information if and when required. | ECO<br>Project Manager | | | |
| **Environmental Awareness Training and Induction** | All contractors to attend briefing prior to commencement of site works.<br>Register to be signed as proof of attendance.<br><br>METHOD: Briefing to be undertaken by project manager and/or ECO. | As required | Construction team(s) informed of all requirements in terms of EMPr and EA. | ECO<br>Project Manager | | | |
| **Method Statements** | Contractors to submit method statements seven working days prior to commencement on site.<br>Method statements to contain clear methods for pollution control measures during construction, including hazardous waste, runoff, general waste, etc. | As required | ECO and project manager to be well informed of methods for construction. | Contractor | | | |

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| | METHOD: Request for method statements to be contained in tender documents. | | | | | | |
| **Site Definition and Demarcation** | Site survey and pegging.<br>Site demarcation and fencing (mark construction areas — all other areas are No-Go).<br>Access roads for construction vehicles to be clearly indicated, with consideration given to turning circles.<br>Review of specialist input to familiarise with mitigation measures.<br>Buffer areas to be indicated and demarcated as No-Go.<br><br>METHOD: Demarcation to be undertaken as outlined in EMPr, suitable to the environment and semi-permanent to last as long as possible during construction phase; to be checked regularly. | As required; to be repeated regularly if demarcations shift or are disturbed by operators or weather. | A well-demarcated site with well-defined No-Go areas and construction zones. | ECO<br>Project Manager<br>Contractor | | | |
| **Construction Traffic** | All construction vehicles carrying materials must use cover sheeting to prevent loss of loads due to wind or rain.<br>Maximum speed limits to be enforced.<br>Movement of construction vehicles must be limited to approved haul and access routes and existing tracks.<br><br>METHOD: To be monitored by ECO, project manager, and construction team leaders. | Duration of construction | A safe working environment with minimal impact on No-Go areas; minimal dust impact; minimal loss of load; minimal impact on the general public. | Project Manager<br>Contractor | | | |
| **Emergency Protocol** | Staff to be aware of actions to be taken in the event of a natural or medical emergency.<br>Applicable health and safety requirements in terms of the OH&S Act to be implemented. | Duration of construction | A safe working environment with minimal incidences. | Project Manager<br>Contractor | | | |

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| | METHOD: OH&S officer to be appointed; appropriate signage to be implemented. | | | | | | |
| **Fire** | Fire management recommendations to be implemented.<br>Required firefighting equipment to be available on site and in working order.<br>No open fires to be lit on site without approval of the ECO and site manager.<br><br>METHOD: To be checked by ECO and project manager and implemented by the contractor. | Duration of construction | A safe working environment with minimal incidences and an action plan in the event of a fire. | Project Manager<br>Contractor | | | |
| **Contractor's Camp** | Contractor's camp to be located at the most suitable site as identified by the ECO and site manager, preferably in areas to be developed or already transformed.<br>Contractor team to be briefed regarding dos and don'ts of camp and site in general.<br>Suitable toilet facilities to be provided for all staff; ablutions restricted to facilities provided.<br>Toilets to be kept in a hygienic condition and emptied regularly.<br>Recommendations by the freshwater specialist to be implemented.<br><br>METHOD: Site to be determined in conjunction with project manager and ECO; to be well demarcated with appropriate signage, serviced, and cleaned regularly; to be checked by ECO. | Duration of construction | A well-placed and functional contractor's camp to minimise impacts on other areas on site. | Project Manager<br>Contractor | | | |
| **CONSTRUCTION** | | | | | | | |
| **Topsoil Removal and Stockpiling** | Topsoil to be replaced immediately after works where required. | Duration of construction | Reusable sand and soil stockpiles to facilitate rehabilitation of the site. | Project Manager<br>Contractor | | | |

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| | Topsoil removed from direct work areas to be stockpiled separately from subsoil and reused as far as possible.<br>Stockpiles to be suitably shaped to prevent leaching of nutrients and stabilised to prevent dispersal by wind or rain.<br>Stockpiles to be monitored for dispersal by rain and wind.<br><br>METHOD: Implement conditions outlined in EMPr for stockpiling and topsoil removal. | | | | | | |
| **Earthworks** | Works to be restricted to the construction area only.<br>Bulldozer/heavy machinery operators to be under constant supervision, particularly at onset of works.<br>Use and excessive movement of heavy machinery to be avoided in areas of environmental sensitivity or high erosion potential.<br>Trenching to be undertaken in a phased manner.<br>Fill material to be replaced in the same work area from which it originated and compacted to its approximate original density.<br><br>METHOD: Construction zone to be clearly demarcated; stockpiling instructions to be implemented; operators to be briefed prior to works. | Duration of construction | Minimal disturbance to sensitive zones and vegetation. | Project Manager<br>Contractor<br>ECO | | | |
| **Material Handling, Dispatching and Storage** | Fuels and hazardous materials to be stored in suitably equipped storage areas in the contractor's camp, approved by the ECO.<br>Strict measures to be in place for use and storage of hazardous materials on site.<br>Disposal to licensed facility only.<br>Storage areas to comply with fire safety requirements.<br>Impervious materials to be used to prevent ground contamination in the event of spillage or leaks. | Duration of construction | Minimal disturbance to sensitive zones including non-perennial drainage lines; minimal incidences. | Project Manager<br>Contractor | | | |

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| | Construction materials spilled on public or private roads to be immediately cleaned up.<br>No storage outside the contractor's camp.<br><br>METHOD: Undertake regular inspections of areas and procedures. | | | | | | |
| **Stockpiles** | Sites for stockpiling as identified by the contractor to be marked on a plan and approved by the ECO and site manager.<br>Stockpiles to be suitably stabilised where necessary.<br><br>METHOD: Undertake regular checks of stockpiles to ensure methods outlined in the EMPr are implemented. | Duration of construction | Reusable sand and soil stockpiles to facilitate rehabilitation of the site. | Project Manager<br>Contractor<br>ECO | | | |
| **Waste Management** | All waste to be stored in an appropriate contained area on site and protected against wind, rain, and animal dispersal.<br>Waste to be removed weekly for disposal at a permitted disposal site.<br>No burning or burying of refuse on site is permitted.<br>Eating areas to be demarcated and provided with suitable refuse collection facilities.<br><br>METHOD: Waste areas to be correctly designed, wind- and weatherproof, and emptied regularly. | Duration of construction | A clean waste collection point serviced on a regular basis. | Project Manager<br>Contractor<br>ECO | | | |
| **Construction Wastewater** | Careful runoff management required, particularly during construction.<br>No contaminated water to be allowed to seep into the ground or run off the construction site.<br>All runoff from batching plants, work areas, and mixer washings to be contained in suitably lined sedimentation ponds. | Duration of construction | A clean site post construction. | Project Manager<br>Contractor<br>ECO | | | |

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| | Ponds to be allowed to dry out regularly; solid waste to be removed and disposed of at a site approved by the local authority.<br><br>METHOD: Wastewater areas to be suitably designed and inspected regularly. | | | | | | |
| **Maintenance of Equipment** | All mechanical equipment and work vehicles to be stored, serviced, and refuelled at designated areas in the contractor's camp.<br>Major services to take place off site.<br>Drip trays or impervious materials to be used to prevent ground contamination.<br><br>METHOD: Regular inspections to be undertaken. | Duration of construction | A clean site post construction. | Project Manager<br>Contractor<br>ECO | | | |
| **Stormwater** | Suitable measures to be in place to prevent erosion resulting from diversion, restriction, or increase in stormwater runoff.<br>Measures to be taken to prevent stormwater from flowing from excavated areas or stockpiles.<br>Stormwater containing harmful substances to be contained and removed from site.<br><br>METHOD: Regular inspections to be undertaken. | Duration of construction | A clean site post construction, avoiding additional impact on surrounds. | Project Manager<br>Contractor<br>ECO | | | |
| **Erosion** | Stormwater channels to be kept clear of soil and debris.<br>Erosion or stormwater damage resulting from contractor's operations to be suitably repaired.<br>Suitable stabilisation measures to be implemented wherever works are taking place.<br>Where erosion is detected, suitable mitigation methods to be employed as soon as possible. | Duration of construction | A clean site post construction, avoiding additional impact on surrounds. | Project Manager<br>Contractor<br>ECO | | | |

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| | METHOD: Regular visual inspections to be undertaken. | | | | | | |
| **Dust** | Sand stockpiles to be covered with hessian, shade cloth, or DPC plastic.<br>Stockpiles to be located in sheltered areas with the useable face orientated away from the prevailing wind.<br>During excavation and transport of erodible material in high wind conditions, water dampening or cessation of activities required.<br>Certain components of work to be stopped if conditions are unfavourable.<br>Vehicles must not exceed 40 km/h on gravel roads.<br>If roads generate unacceptable dust levels, suppression measures to be introduced.<br>If water is used, only critical areas to be watered by cart or hand to avoid unnecessary runoff, erosion, or misuse.<br><br>METHOD: Areas and activities of possible dust generation to be inspected regularly; strategies to address dust to be reviewed. | Duration of construction | A clean site post construction, avoiding impact on surrounds and the general public. | Project Manager<br>Contractor<br>ECO | | | |
| **Site Clean-up and Rehabilitation** | All structures, equipment, materials, and facilities to be removed from site on completion of the project.<br>Construction site to be cleared and cleaned to the ECO's satisfaction.<br>Site rehabilitation to be conducted in line with recommendations herein.<br>Specialist advice to be sought where required.<br>No waste or remaining materials to be buried on site.<br>In line with the NEMBA, all alien invasive plant species (AIPS) listed under the amended AIPS Lists (DFFE: GN1003, 2020) must either be removed or controlled on land under the management of the proponent. An AIPS control plan must be compiled | Duration of construction | A functional ecosystem post construction, suitably rehabilitated as required. | Project Manager<br>Contractor<br>Applicant<br>ECO | | | |

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| | which includes measures to control and prevent the proliferation of AIPS during the construction phase.<br><br>METHOD: Inspected upon site closure/suspension of works; rehabilitation methods contained in EMPr to be implemented. | | | | | | |
| **Alien Invasive Plant Species (AIPS) Clearing** | An AIPS control plan to be compiled which includes measures to control and prevent the proliferation of AIPS during the construction and operational phases.<br>Plants to be removed by digging out all rhizomes and stolons.<br>In line with the NEMBA, all AIPS listed under the amended AIPS Lists (DFFE: GN1003, 2020) must either be removed or controlled on land under the management of the proponent.<br><br>METHOD: Regular monitoring of rehabilitation progress, alien plant regrowth, and faunal presence to be conducted during and after the construction phase. Adaptive management practices to be applied to address emerging issues and ensure long-term ecological integrity of the site. | Construction and post-construction phase | Long-term ecological integrity and restoration of vegetation on site. | Project Manager<br>Applicant<br>Contractor<br>ECO | | | |
| **Protection of Animal Species and Maintenance of Faunal Landscape Connectivity** | GENERAL SITE-WIDE MITIGATION<br>• Limit development footprint to ~30% of the 12 ha property.<br>• No further densification: cap development at three dwellings as assessed in this application.<br>• Lighting management: adopt dark-sky compliant lighting (low-spectrum, full cut-off fittings; shield estuary-facing lights) to reduce disturbance to nocturnal fauna and birds.<br>• Pet management: enforce pet curfews at night and discourage free-ranging cats and dogs to limit | Construction and post-construction phase | Maintenance of landscape connectivity between the Klein River Estuary and surrounding fynbos habitats. | Project Manager<br>Applicant<br>Contractor<br>ECO | | | |

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| | predation and disturbance to birds, reptiles, and amphibians.<br>• Alien plant control: implement a formal alien clearing and follow-up programme across retained natural areas.<br>• Stewardship: consider assigning all retained natural habitat (~70% of site) to a formal conservation status, such as a biodiversity stewardship agreement.<br><br>FAUNAL LANDSCAPE CONNECTIVITY<br>• Maintain a continuous natural corridor across at least 70% of the property to allow free movement between the Klein River Estuary and adjacent upland habitats.<br>• Prohibit impermeable fencing; where fences are required, ensure wildlife-permeable design (≥30 cm ground clearance; no mesh smaller than 100 × 100 mm).<br>• Consolidate infrastructure and driveways to reduce fragmentation.<br>• Actively rehabilitate degraded strips post construction and manage alien regrowth.<br><br>ESTUARINE AND WATER-ASSOCIATED BIRDS<br>• Reduce proposed jetties to a single low-intensity jetty to limit disturbance pulses.<br>• Maintain a no-work buffer at reed margins and estuary edges during construction; enforce quiet hours at dusk and dawn.<br>• Shield and direct lighting away from the estuary.<br>• Schedule noisy construction away from peak breeding/foraging seasons (Aug–Nov for marsh harrier; peak roost periods for terns/pelicans). | | | | | | |

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| | TERRESTRIAL SCC BIRDS (Southern Black Korhaan, Denham's Bustard)<br>• Align dwellings and infrastructure away from open fynbos patches that may be suitable for korhaan or bustard activity.<br>• Maintain mosaic using alien clearing and appropriate fire management.<br>• Limit human and pet activity in marginal open patches.<br><br>AMPHIBIANS (Western Leopard Toad)<br>• Shape access tracks with shallow U/V profiles and include amphibian-safe drainage.<br>• Prohibit pesticides and herbicides on site.<br>• Fit escape ramps or toad savers in swimming pools.<br>• Retain indigenous groundcover and vegetated strips between dwellings.<br>• Provide residents with awareness material on toad movement periods.<br><br>REPTILES (Southern Adder)<br>• Conduct supervised vegetation clearance with relocation of snakes and refugia where possible.<br>• Retain or recreate rock piles, woody debris, and shrub thickets as refugia.<br>• Educate contractors and residents about the conservation importance of the Southern Adder and provide safe handling protocols.<br>• Impose strict speed limits on internal tracks to reduce roadkill risk.<br><br>INVERTEBRATES — Mute Winter Katydid<br>• Keep development outside the 50 m no-go buffer surrounding mapped katydid habitat; avoid hard road surface construction within this zone. | | | | | | |

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| | • Mark and protect occupied patches as no-go areas during and after construction.<br>• Prohibit mowing, gardening, or herbicide/pesticide use within buffers.<br>• Regularly survey katydid populations post construction to verify persistence.<br><br>INVERTEBRATES — Other SCCs<br>• Map and avoid patches supporting confirmed SCCs where possible.<br>• Establish indicator taxa monitoring to detect changes in population or habitat quality.<br>• Actively restore and reseed disturbed patches post construction. | | | | | | |
| **Vegetation Clearance and Maintenance of Ecological Connectivity** | Design the development to remain above the 5 m contour and outside the estuarine functional zone to reduce ecological impacts.<br>Use existing roads and paths for access to minimise new disturbances to the environment.<br>Limit jetty and slipway infrastructure: only one jetty per property is typically permitted; slipways are discouraged.<br>Clear alien invasive plant species.<br>Only one jetty to be constructed; no slipways permitted.<br>Development of residences to be above the 5 m contour and to avoid well-established old trees, particularly wild olive (Olea europaea subsp. cuspidata).<br><br>METHOD: Monitor vegetation clearance and ecological connectivity throughout the construction and post-construction phases. | Construction and post-construction phase | Maintenance of landscape connectivity between the Klein River Estuary and surrounding fynbos habitats. | Project Manager<br>Applicant<br>Contractor<br>ECO | | | |

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| **Aquatic & Freshwater Assessment** | • The following mitigation measures are recommended for the water resource Klein River Estuary:<br>• All activities must comply with the requirements of the Coastal Protection Zone Environmental Management Overlay Zone (EMOZ) of the Overstrand Local Municipality. Of particular note, the jetty must be designed and constructed in accordance with the specifications and requirements stipulated within the applicable EMOZ provisions and designed in line with Cape nature's specifications.<br>• The provisions and management objectives of the Klein River Estuarine Management Plan must be adhered to at all times for activities within and adjacent to the Klein River Estuary.<br>• Construction of the jetty and pathways must be undertaken using low-impact methods and minimal machinery where feasible.<br>• Prior to the commencement of construction, the estuary and its associated buffer (25 m) must be clearly demarcated on site using temporary fencing and/or danger tape, and workers must be instructed that no access, disturbance, or storage of materials may occur within this area, apart from the development of the footpath and the jetty.<br>• Construction vehicles must remain within clearly defined access routes and may not enter the estuary buffer or surrounding natural vegetation.<br>• Where feasible, the proposed works should be undertaken during the dry season to reduce the | Construction and post-construction phase | Protection of the Kleinriver estuary from the construction activities related to the proposed development on site. | Project Manager<br>Applicant<br>Contractor<br>ECO | | | |

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| | potential for stormwater runoff and sediment mobilisation towards the nearby estuary.<br>• Should construction activities occur outside of the dry season, additional mitigation measures must be implemented to minimise the risk of sediment transport and water quality impairment. These measures include the installation of temporary erosion and sediment control structures (e.g. silt fences, sandbags, or geotextile sediment barriers) downslope of disturbed areas, stabilisation of exposed soils, and the placement of stockpiled materials outside of drainage pathways.<br>• Access track and construction-related works must ensure that stormwater runoff from disturbed surfaces is directed through vegetated areas or temporary sediment traps prior to discharge.<br>• No temporary crossings, drainage diversions, or discharge of stormwater may occur directly into the estuary.<br>• Construction camps, laydown areas, stockpiling of materials, and waste storage must be located outside of the estuary buffer and away from any drainage pathways that could transport pollutants into the estuary.<br>• Concrete mixing and cement handling must take place in designated areas located well outside of the estuary buffer, and wash water from concrete works must not be discharged onto the ground where it could enter drainage pathways.<br>• The storage of fuels, oils, and other hazardous substances must occur within bunded areas, and vehicle refuelling or servicing must not | | | | | | |

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| | occur near drainage pathways or within the estuary buffer.<br>• A spill response kit must be kept on site at all times, and any accidental spills of fuels, oils, or chemicals must be immediately contained and cleaned up to prevent contamination of soils and stormwater runoff.<br>• All waste generated during construction must be stored in sealed containers and regularly removed from site to prevent litter and debris from entering the estuary or surrounding natural vegetation.<br>• Construction activities must be temporarily suspended during periods of heavy rainfall where runoff may mobilise sediments.<br>• All disturbed areas must be rehabilitated and stabilised as soon as practicable following completion of the works.<br>• Vegetation clearance should be restricted to the relevant development components and indigenous vegetation cover should be maintained as far as practically possible. Furthermore, it is recommended that natural fynbos vegetation be used predominantly for garden establishment, including appropriate local indigenous lawn grass, to contribute towards conservation of the wildlife of the region.<br>• No invasive alien plant species may be used for landscaping or rehabilitation purposes.<br>• A conservancy tank is proposed. Therefore, it is recommended that monitoring of sewerage collection tanks should occur to ensure no leakage and ensure that no leakages occur when sewerage collection tanks are emptied. | | | | | | |

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| | The disposal of sewage must at all times comply with the requirements of Sections 22 and 40 of the National Water Act of 1998, (Act 36 of 1998).<br>• When a conservancy tank is used for the disposal of sewerage, the Breede-Olifants Catchment Management Agency (BOCMA) must be furnished with a signed copy of the contract between the contractor and/or the municipality which is appointed to pump the conservancy tank.<br>• The tank must be provided with a fresh air inlet and an intercepting grease trap.<br>• The tank must have an airtight manhole cover to allow access to the tank for the removal and safe disposal of the tank contents.<br>• No industrial waste or refuse may be discharged into the conservancy tank except by written agreements with the relevant authorities.<br>• The size of the conservancy tank must be determined by both the frequency of removal of its contents to the local Wastewater Treatment Works and by the quantity of sewage anticipated from the above-mentioned project.<br>• The contents of the tank must be removed by a vacuum tanker and conveyed to a local WWTW that is capable of processing the volume and contents of the conservancy tank.<br>• The contingency plan including a system backup, consideration to any blockage in pipes, and prevention of storm water or groundwater (if applicable) ingress must be drawn up to | | | | | | |

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| | protect against overflow of the conservancy tank.<br>• As per above, ingress of storm water or groundwater (if applicable) into the conservancy tank must be prevented. Consider installing a grey water system, as washing/dishwashing machines require the capacity of the conservancy tank to be increased.<br>• Rainwater harvesting systems should be installed to reduce runoff volumes.<br>• External lighting associated with the development should be minimised and directed away from the estuarine environment to reduce disturbance to estuarine fauna and avifauna. | | | | | | |

# 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 author

# 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

**CONTRACTOR ACKNOWLEDGEMENT OF ENVIRONMENTAL MANAGEMENT PLAN**

*To be completed and signed by each contractor prior to commencement of site works*

I, _____ (full 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.

**Signature:**

_____

**Date:**

_____

**Designation / Title:**

_____

**Contractor Company Stamp:**

*A signed copy of this acknowledgement must be retained in the Environmental File on site at all times.*