

## Draft BAR: Appendix F – DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT (Draft EMPr)

In terms of the **National Environmental Management Act** (Act No. 107 of 1998, as amended) & 2014 Environmental Impact Regulations (as amended, 2017) for:

### Proposed development of medium – high density affordable middle income residential housing on ERF 7614 KNYSNA, Garden Route District Municipality, Western Cape

For 30-day review and comment period

2 December 2024 – 27 January 2025

DFFE Reference: 14/12/16/3/3/1/3078



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## ENVIRONMENTAL MANAGEMENT PROGRAMME REQUIREMENTS:

Appendix 4 of Regulation 982 of the 2014 EIA Regulations (as amended, 2017) published in terms of the NEMA, contains the required contents of an Environmental Management Programme (EMP). The table below serves as a summary of how these requirements were incorporated into this EMPR:

An EMPR must comply with section 24N of the Act and include:-

<p>(a) Details of –</p> <p>(i) The EAP who prepared the EMPR; and</p> <p>(ii) The expertise of the EAP to prepare an EMPR, including a curriculum Vitae;</p>	<p>This EMPR was prepared by Claire De Jongh. Please see attached CV of the EAP (Appendix A of DBAR).</p>
<p>(b) A detailed description of the aspects of the activity that are covered by the EMPR as identified by the project description;</p>	<p>Section 5 - ENVIRONMENTAL MANAGEMENT PROGRAMME</p>
<p>(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;</p>	<p>Appendix G of draft BAR</p>
<p>(d) A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including –</p> <p>(i) planning and design;</p> <p>(ii) pre-construction activities;</p> <p>(iii) construction activities;</p> <p>(iv) rehabilitation of the environment after construction and where applicable post closure; and</p> <p>(v) where relevant, operation activities;</p>	<p>Section 10 of draft BAR</p>
<p>(f) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to –</p> <p>(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;</p> <p>(ii) comply with any prescribed environmental management standards or practises;</p> <p>(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and</p> <p>(iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;</p>	<p>Section 10 of draft BAR Section 5 - ENVIRONMENTAL MANAGEMENT PROGRAMME</p>
<p>(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);</p>	<p>Section 5 - ENVIRONMENTAL MANAGEMENT PROGRAMME Section 6 -EMP Targets – Planning, Construction, Operations Section 7 - COMPLIANCE WITH THE EMPR</p>
<p>(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);</p>	<p>Section 6 -EMP Targets – Planning, Construction, Operations Section 7 - COMPLIANCE WITH THE EMPR</p>
<p>(i) an indication of the persons who will be responsible for the implementation of the impact management actions;</p>	<p>Section 6 of draft EMPR</p>
<p>(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;</p>	<p>Section 5 - ENVIRONMENTAL MANAGEMENT PROGRAMME Section 6 -EMP Targets – Planning, Construction, Operations</p>

	Section 7 - COMPLIANCE WITH THE EMPr
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 6 -EMP Targets – Planning, Construction, Operations Section 7 - COMPLIANCE WITH THE EMPr
(l) a program for reporting on compliance, taking into account the requirements as prescribed by Regulations;	Section 4 - REPORTING PROCEDURES Section 7 - COMPLIANCE WITH THE EMPr
(m) an environmental awareness plan describing the manner in which – (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 7 - COMPLIANCE WITH THE EMPr Section 10. - DRAFT STAFF CONDUCT CONTROL AND INFORMATION SHEET
(n) any specific information that may be required by the competent authority.	Draft BAR and associated appendices. Approval of final SDP and SWMP

## Glossary of Terms

<b>AIS</b>	<b>Alien Invasive species</b>
<b>BAR</b>	<b>Basic Assessment Report</b> – A tool used by the EAP to submit to the competent authority if listed activities is triggered in Regulations GNR 327 and GNR 324 as per NEMA to make a decision regarding a proposed development.
<b>DFFE</b>	<b>Department Forestry Fisheries and Environment</b> – the national authority for sustainable environmental management and integrated development planning.
<b>DEADP</b>	<b>Department of Environmental Affairs and Development Planning</b> – the provincial authority for sustainable environmental management and integrated development planning.
<b>DWS</b>	<b>Department of Water and Sanitation</b> – authority for issuing water use licence authorisation for Section 21 activities listed in the National Water Act (Act 36 of 1998)
<b>CBA</b>	<b>CBA Critical Biodiversity Area</b> – Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.
<b>EAP</b>	<p><b>Environmental Assessment Practitioner</b> – An EAP and a specialist, appointed in terms of regulation 12(1) or 12(2) must –</p> <ul style="list-style-type: none"> <li>(a) be independent.</li> <li>(b) Have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these regulations and any guidelines that have relevance to the proposed activity.</li> <li>(c) Ensure compliance with these Regulations</li> <li>(d) Perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application.</li> <li>(e) Take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application and any report, plan or document relating to the application; and</li> <li>(f) Disclose to the proponent or applicant, registered and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing – <ul style="list-style-type: none"> <li>i. Any decision to be taken with respect to the application by the competent authority in terms of these regulations; or</li> <li>ii. The objectivity of any report, plan or document to be prepared by the EAP or specialist, in terms of these Regulations for submission to the competent authority; unless access to that information is protected by law, in which case it must be indicated that such protected information exists and is only provided to the competent authority.</li> </ul> </li> </ul> <p>(2) In the event where the EAP or specialist does not comply with sub regulation (1)(a), the proponent or applicant must, prior to conducting public participation as contemplated in chapter 5 of these regulations, appoint another EAP or specialist to externally review all work undertaken by the EAP or specialist, at the applicants cost.</p> <p>(3) An EAP or specialist appointed to externally review the work of an EAP or specialist as contemplated in sub regulation (2), must comply with sub regulation (1).</p>
<b>ECO/ESO</b>	<b>Environmental Control Officer</b> – A site agent who needs to ensure that all environmental authorisation and conditions are adhered to during the construction phase of the project
<b>EMPr</b>	<b>Environmental Management Programme</b> – can be defined as “an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced”.



<b>ESA</b>	<b>Ecological Support Area</b> – Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PAs or CBAs and are often vital for delivering ecosystem services.
<b>KM</b>	<b>Knysna Municipality – local municipal authority responsible for confirming capacity of required bulk services and approval of rezoning and final site development plans</b>
<b>MMP</b>	<b>Maintenance Management Plan</b> – means a maintenance management plan for maintenance purposes defined and adopted by the competent authority
<b>NEMA</b>	<b>National Environmental Management Act (Act 107 of 1998) as amended 2017</b> – national environmental legislation that provides principles for decision-making on matters that affect the environment.
<b>PA</b>	<b>Protected Area</b> - A protected area is an area of land or sea that is formally protected by law and managed mainly for biodiversity conservation. Protected areas recognised in the National Environmental Management: Protected Areas Act (Act 57 of 2003) (hereafter referred to as the Protected Areas Act) are considered formal protected areas in the NPAES. This is a narrower definition of protected areas than the International Union for Conservation of Nature (IUCN) definition. <sup>1</sup> The NPAES distinguishes between land-based protected areas, which may protect both terrestrial and freshwater biodiversity features, and marine protected areas.

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## 1. INTRODUCTION

In accordance with the Integrated Environmental Management Guidelines published by the Department of Forestry, Fisheries, and the Environment (DFFE) in 1992, the purpose of an Environmental Management Programme (EMPr) is “to describe how negative environmental impacts will be managed, rehabilitated or monitored and how positive impacts will be maximised”.

Section 28 of NEMA (National Environmental Management Act, Act 107 of 1998) states that:

*Duty of care and remediation of environmental damage -*

*"(1) Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot be reasonably avoided or stopped, to minimise and rectify such pollution or degradation of the environment"*

This draft EMPr must be read in conjunction with the draft Basic Assessment Report and all related appendices dated December 2024. All recommendations, relevant conditions and mitigation measures provided in these documents have been included in the EMPr and must be adhered to.

This EMPr must form an integral part of the contract documents, as it outlines the methodology & duties required so that the project objectives can be achieved in an environmentally sustainable manner; with particular reference to the prevention and mitigation of environmental impacts caused by planning, construction and operational phases and activities associated with this project.

These requirements will have a financial impact on the project's costings.

This EMPr is a dynamic document that may require updating during the project phases in response to new and changing circumstances to mitigate environmental impacts.

Relevant changes and updated EMPr must be submitted to the DFFE for approval.

### 1.2 Purpose of the EMPr

The purpose of this EMPr is to ensure that the negative environmental impacts of the proposed activities are managed, mitigated and kept to a minimum during the planning, construction and operational phases of the proposed development. The EMPr focuses on providing practical measures to avoiding negative environmental impacts and enhance positive environmental impacts where possible.

Once the EMPr is approved by DFFE it is seen as a legal binding document on the following affected parties:

- 1 Project Applicant.
- 2 Project planning team including engineers, landscapers, architects
- 3 All contractors and subcontractors
- 4 Operational management team (including Home owners associations and maintenance teams)

Copies of this EMPr must be kept on site and all senior personnel are expected to familiarise themselves with the content of this EMPr.

Method statements compiled by contractors must be aligned to relevant conditions in the EMPr and any conditions of the EA (if attained). (Planning and construction Phase)

Operational management by the body corporate must be aligned with relevant conditions in the EMPr and any conditions of the EA (if attained). (Operational Phase)

It is suggested that the EMPr be reviewed on a 5 yearly basis if required. Should any amendments need to be made, written authorisation should be obtained from DFFE.



## 1.2 The Polluter-Pays Principle

This principle provides for “the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.” The Polluter Pays Principle will be rigorously applied throughout the construction phase of this project.

## 2. PROJECT DETAILS

The project details are provided in the Basic Assessment Report and accompanying appendices (Appendix D) and is not repeated here.

The main impacts associated with the proposed activity includes the following:

- Loss of vegetation and habitats and disturbance to fauna
- Impacts on aquatic systems and services
- Increased runoff from increased hard surfaces
- Impact on social conditions – sense of place
- Positive impact on socio-economic conditions as a result of employment opportunities
- Positive impact on socio-economic conditions as a result of housing provisions

The EMPr contains all the mitigation measures to prevent / reduce negative environmental impacts and enhance positive impacts.

## 3. LEGISLATIVE REQUIREMENTS

### 3.1 Signing of the EMPr

The acknowledgement form at the back of the approved EMPr is to be signed by the holder of the Environmental Authorisation (the Applicant), the Contractor, and the ECO; acknowledging that all parties are familiar with the requirements of the EMPr. All employees, especially the machine and equipment operators, are to be made aware of the conditions as contained in the EMPr as well as the contractual conditions relating to the environment as contained in the contract document.

### 3.2 Legislation

Of importance are all national, provincial and municipal by-laws and regulations. Statutes are amended periodically and it is the Applicant’s responsibility to identify legislation relevant to the proposed activity.

### 3.3. Project Responsibilities

Responsibility for the implementation of the EMPr lies with the Applicant who must retain the services of a suitably experienced Environmental Control Officer (ECO) who will monitor the construction processes and activities periodically.

The project Applicant will be responsible for the following:

- Adhering to the approved EMPr.
- Ensure that all employed Contractors and Engineers are aware of and understand the conditions of the EMPr.
- Has the right to remove any person or appointed contractors or personnel from site if they contravene with the EMPr.
- Ensure that all contracts with contractors/engineers include the authorised EMPr.
- Appoint an Environmental Control Officer.

- The project Applicant (holder of the Environmental Authorisation of the EMPr) must ensure that the competent authority is notified of the commencement of activities 14 days prior to such commencement taking place.

The ECO's responsibilities must include, *inter alia*:

- Secure the effective management of construction activities and progressive rehabilitation of the environment.
- Guide, advise and consult the relevant authority on environmental issues during construction.
- Guide, advise and consult any sub-contractors, suppliers etc. who will be involved in this project.
- Revise the EMPr as required and inform the relevant parties of the changes.
- Ensure that the EMPr has been accepted and understood as a contractually binding document on all parties involved with this project.
- Ensure staff operating equipment are adequately trained, certified and sensitised to any potential hazards associated with their tasks.
- Educate staff as to the need to refrain from indiscriminate waste disposal and/or pollution of local soil and water resources, ensure that they (the staff) have received the necessary safety training, and are aware of the importance of a "clean-site policy".
- The management guidelines contained in this document must form part of the contractual agreements between the Applicant, Contractor and the ECO.

The Engineers and Contractors are responsible for the construction of the residential estate. The responsibilities indicated here are also relevant to Sub-Contractors. The responsibilities of the Engineers and Contractors include but are not limited to the following:

- Adhere with the conditions and recommendations of the EMPr or any other legally binding documentation.
- Prevent actions that may cause harm to the environment.
- Be responsible for any remedial activities in response to an environmental incident within their scope of influence.
- Ensure compliance of all site personnel and / or visitors to the EMPr and any other authorisations.

**All fines for noncompliance of EMPr to be predetermined by Engineer, Eco and Project Applicant, this needs to be included in method statement.**

## 4. REPORTING PROCEDURES

### 4.1 Documentation

The following documentation must be kept on site in order to record compliance with the EMPr:

An Environmental File which includes:

- Copy of the EMPr;
- Copy of the EA;
- Copy of all other licences/permits (i.e., fauna, flora, heritage etc.);
- Method Statements required and aligned to EMPr;
  - Environmental register, which shall include:
  - Communications Register – including records of complaints, minutes and attendance registers of all environmental meetings;
  - Monitoring Results – including environmental monitoring reports, register of audits, non-conformance reports; and

- Incident book – including copies of notification of Emergencies and Incidents, this must be accompanied by a photographic record.
- Waste Documentation such as, but not necessarily limited to: Waste Manifest Documents;
- Material Safety Data Sheets (MSDSs) for any hazardous substances; and
- Written Corrective Action Instructions.

## 4.2. Environmental Register – complaints / incident register

The Applicant will put in place an Environmental Register and will ensure that the following information is recorded for all complaints / incidents:

- Nature of complaint / incident.
- Causes of complaint / incident.
- Party/parties responsible for causing complaint / incident.
- Immediate actions undertaken to stop / reduce / contain the causes of the complaint / incident.
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint / incident.
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions.
- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented.
- Copies of all correspondence received regarding complaints/incidents.

## 4.3. Non-Conformance Report

A Non-Conformance Report (NCR) will be issued to the Applicant as a final step towards rectifying a failure in complying with a requirement of the EMPr. This will be issued by the ECO to the Applicant in writing. Preceding the issuing of a NCR, the Applicant must be given an opportunity to rectify the issue.

Should the ECO assess an incident or issue and find it to be significant (e.g. non-repairable damage to the environment), it will be reported to the relevant authorities and immediately escalated to the level of a NCR. The following information should be recorded in the NCR:

- Details of non-conformance;
- Any plant or equipment involved;
- Any chemicals or hazardous substances involved;
- Work procedures not followed;
- Any other physical aspects;
- Nature of the risk;
- Actions agreed to by all parties following consultation to adequately address the non-conformance in terms of specific control measures and should take the hierarchy of controls into account;
- Agreed timeframe by which the actions documented in the NCR must be carried out; and
- ECO should verify that the agreed actions have taken place by the agreed completion date, when completed satisfactorily; the ECO and Applicant should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

## 4.4. Emergency Response

The Applicants environmental emergency procedures must ensure appropriate responses to unexpected / accidental actions / incidents that could cause environmental impacts.

The Environmental Emergency Response Plan is separate to the Health and Safety Plan as it is aimed at responding specifically to environmental incidents and must ensure and include the following:

- Employees shall be adequately trained in terms of incidents and emergency situations;
- Details of the organisation (i.e. manpower) and responsibilities, accountability and liability of personnel;
- A list of key personnel and contact numbers;
- Details of emergency services (e.g. the fire department / on-site fire detail, spill clean-up services) shall be listed;
- Internal and external communication plans, including prescribed reporting procedures;
- Actions to be taken in the event of different types of emergencies;
- Incident recording, progress reporting and remediation measures to be implemented; and
- Information on any hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.

## 5. ENVIRONMENTAL MANAGEMENT PROGRAMME

It is imperative that mitigation measures are strictly adhered to and that all measures are taken to reduce the developmental footprint wherever possible to minimize negative impacts on the environment.

### 1. PLANNING AND DESIGN

The proposed development of a medium to high residential development on Erf 7614 requires a number of approvals to be in place prior to the start of construction.

Two concept plans have been proposed for this development. Alternative concept layout 1 had a density of 274 units. Specialist studies confirmed that concept layout 1 placed a number of buildings in a wetland area.

Concept layout alternative 2 proposes 262 units and takes into account the delineated wetland area.

The development of three portions of residential housing is proposed. The development is proposed to take place in phase. Detailed site Development plans will be submitted for each phase before building plan approval. The detailed designs and associated detailed stormwater management plan will need to be revised and be based on recommendations and measures included in the basic assessment report and any conditions of the EA (if authorised). This final SDPs and SWMPs will need to be submitted to Department of water and sanitation (DWS) as part of the water use license authorisation (WULA) process.

This EMP must be updated as required and submitted to the DFFE for approval together with final SDPs and SWMPs. Construction can only commence once final approval/ / authorisation of SDPs is attained from relevant authorities (i.e. KM, DFFE, DWS).

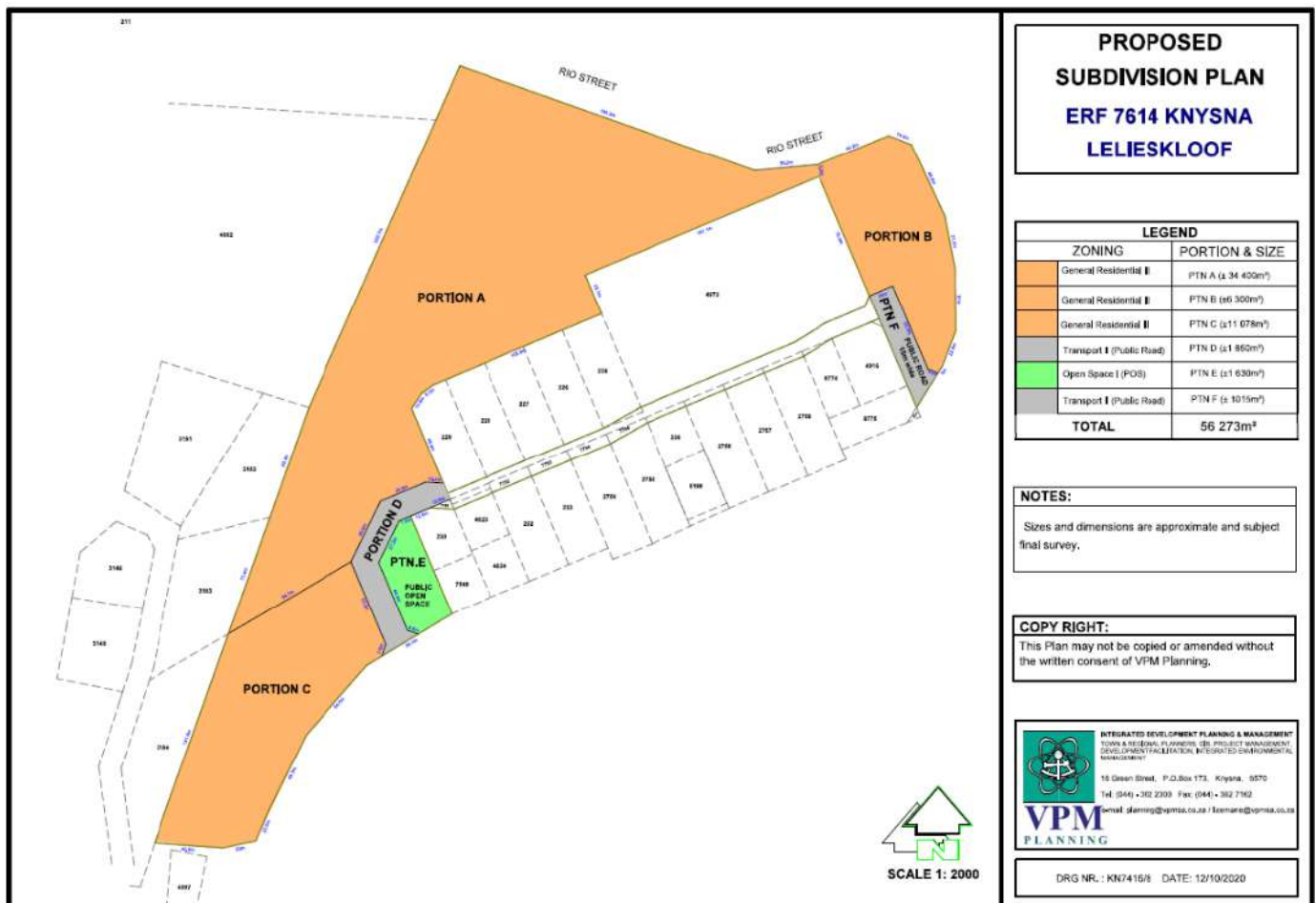


Figure 1: Proposed subdivision plan (adapted from VPM Planning, 2020)

## All Phases

### Planning – Planning Team

- Ensure an Environmental Management File is put in place to contain all documents / report which pertain to the relevant conditions of the planning, construction and operational phases (e.g. EA, WUL, permits, waste disposal certificates etc.)
- Ensure all approvals in place
- Ensure all preconstruction requirements are in place prior to construction
- Ensure layouts, designs and accompanying engineering drawing approved
- All preconstruction requirements included as conditions of the Environmental Authorisation (if attained) to be met.
- All preconstruction requirements included as conditions in any other license, authorisation, approval etc. required for the site to be met.
- Method statements for construction phase are to be compiled by the project team for each portion (A,B,C) and be aligned to mitigation measures and conditions of the Environmental Authorisation (if attained)
- Construction team should include a suitably qualified Environmental site officer to assist with daily environmental management on site and compliance with the CEMP and conditions of the EA (if attained)
- Appoint a suitably qualified external environmental control officer to ensure environmental management requirements are met by carrying out monthly external audits.
- Suitable budget to be assigned to environmental management requirements for construction and operational phase
- Operational management plans are to be aligned to mitigation measures and conditions of the Environmental Authorisation (if attained)
- Integrate environmental management requirements into a management system for the project

## 2. HERITAGE

### Planning Phase - Planning Team

- Paleontology / archaeology specialists to carry out site assessments prior to start of construction and submission of any required Section 35 applications need to be submitted to HWC based on the site assessments and any resources identified. One assessment must take place and area to include portions A, B and C.

### Construction Phase - Planning Team:

- Construction managers/foremen should be informed before construction starts on the possible types of archaeological / paleontology sites they may encounter and the procedures to follow when they find sites.

### Construction Phase – Construction and Planning Teams

- ESO to supervise site clearing
- If resources are unearthed during construction, the find brought to the immediate attention of the developer and all work is to be stopped immediately and reported by the ECO accompanied by photographs and coordinates. This must be sent to WC Heritage as soon as possible to inspect the findings. Any recommendations followed from such an investigation must be carried out.
- Any discovered artefacts shall not be removed under any circumstances without consent from the WC Heritage Authority.
- Sites may include:
  - Dense accumulations of marine shell – evidence of prehistoric shell midden
  - Concentrations of shell associated with pieces of bone, pottery and stone artefacts



- Concentrations of fossilized bone
- Concentrations of blue and white china, pieces of irons, coins etc.
- Human remains including burials

#### **Operational Phase - Operational and Planning Teams**

- Operational Phase – follow procedure if any artefacts discovered by residents in operational phase

### **3. TERRESTRIAL BIODIVERSITY AND INDEIGENOUS VEGETATION**

#### **Planning Phase - Planning Team**

- Very large Milkwood tree on site (*Sideroxylon inerme inerme*; Lat: -34.028242 Lon: 23.05104) (Portion B) may not be disturbed; and must be cordoned off during construction phase and retained in the open space area on site.
- Two protected seedlings found on the site (*Podocarpus latifolius* and *Afrocarpus falcatus*) must be retained in open space area (Portion B)
- Permits to be applied for transplanting of yellowwood seedlings to designated open space areas within boundaries of the erf;
- Search for plants that will require permits must take place prior to start of construction of each Portion; relevant permits must be applied for. Allow 3 months for this process.

#### **Construction phase – Planning Team (for each portion)**

- Once permits are in place, collection of plants must take place and retained in an onsite nursery
- Any additional SCC and indigenous plants with a high survival likelihood that are observed during construction within a development footprint must be rescued (soil in-tact) and added to the rescued plants in the indigenous nursery / planted in open space area.
- Identify area on site which will not be disturbed by construction activities for establishment of an on-site indigenous plant nursery on site and area to store removed topsoil / vegetation
- Rescued plants must all be placed in suitable containers / bags
- Cordon off protected trees and no-go areas

#### **Construction Phase – Construction team (for each portion)**

- All construction activities must remain within development footprint.
- Movement of workers must be limited to areas under construction.
- Ongoing removal of AIS within construction footprints by contractor/s
- Staff should also be told that plants may not be collected outside of the search and rescue operation.
- Gathering of firewood / plants in adjacent areas is not permitted.
- Record of permits for removal / transplanting of sensitive species of conservational concern / protected trees to be kept on record in EM file for audit purposes.
- Contractual fines to be imposed on any employee who is found attempting to remove indigenous flora.
- The site ESO to oversee topsoil and indigenous vegetation clearing and storage. Topsoil and indigenous vegetation removed must be stockpiled together for use in rehabilitation and landscaping on the site.
- Materials used during construction must be sourced and transported responsibly to minimise the risk of introducing new invasive plants.

#### **Post construction – Construction team (for each portion)**

- Revegetation of areas disturbed by construction activities is an essential part of concluding the construction phase
- Undertake revegetation of the disturbance envelope outside of the permanent disturbance footprint.

- Construction sites must be cleared of all waste material, rubble, and debris associated with the construction phase at regular intervals during, and at the conclusion of the construction phase.
- Site preparation – remove all non-native weeds from the site of revegetation to reduce competition with native plant species.
- Post planting care - Regularly water & monitor the newly planted fynbos, particularly during the establishment phase. Apply a thin layer of mulch to conserve moisture and suppress weeds. Continue removing any invasive species that may reappear.
- If more plants are required for successful coverage of disturbed areas, augmentation with sourced plants can be done. Species selection – Base additional species selection first on important species listed for Garden Route Shale Fynbos (Refer to Appendix C – Terrestrial Biodiversity and flora report)

Applicant to ensure the following actions are carried out

Construction and Operational Phase – applicant to ensure following is carried out:

- Old AIS material to be cleared from site and disposed at registered landfill site – no dumping or burning permitted
- Ensure invasive species in the wetland and drainage lines on Erf 7614, like bug weed (*Solanum mauritianum*), black wattles (*Acacia mearnsii*), and canna lilies (*Canna x generalis cf. indica*), have first priority for alien clearing efforts on the site and clearing starts during construction phase.
- All AIS removed to be stockpiled for offsite disposal / some AIS can be sold for firewood / some AIS (without seed bearing material) can be chipped and used as mulch / composted for use in rehabilitation / landscaping

#### Operational Phase

- Landscaping with indigenous vegetation
- Trimmings used for mulch - Cut vegetation should not be consolidated (gathered into piles) and left next to the side of the road where clearing took place. Instead, the cut vegetation should either be removed from site, or disposed of in a scattered/spread-out manner within the immediate surrounding of where it was cut
- No removal of plants from open areas with exception of AIS
- No NEMBA listed invasive plants (e.g., kikuyu grass, *Cenchrus clandestinus*) permitted.

## 4. FIRE RISK

### Planning, Construction and Operational Phase - Planning, construction and operational Teams

- A fire prevention, response and management plan must be designed for the site for both construction and operational phase.
- Fire-proof hedges (Esler et al., 2014) can be made with indigenous species to reduce fire risk around the built environment. Some of the species that could be planted for this purpose include *Osteospermum moniliferum* (Bietou), *Diospyros dichrophylla*, *Searsia glauca*, *Pterocelastrus tricuspidatus* (Candlewood), *Ekebergia capensis* (Cape Ash), *Grewia occidentalis* (Crossberry), *Carissa bispinosa*, and *Euclea racemosa* (Gwarrie).
- Fire preparedness and response
  - Job specific training to be provided to individuals responsible for dealing with fire management.
  - If a fire is detected it must be attended to immediately;
  - Adequate fire-fighting measures must be available and readily accessible on site.
  - No open fires permitted on construction site.
  - During operational phase fires may only be permitted in designated areas equipped with fire safety features; no designated fire areas permitted in southern fynbos area.
  - No cigarette butts or burning substances are permitted to be released into the environment. All cigarette butts to be extinguished first and then disposed of in a waste receptacle (sand buckets) provided.

- Implement alien invasive vegetation mitigation measures.
- Separate fire water reticulation to be provided.
- Health and safety obligations as required by applicable National regulations and municipal bylaws to be implemented
- Ensure all emergency numbers are in place and visible at all times
- Ensure security guard and key personnel has all emergency numbers on hand at all times

## 5. FAUNA HABITATS AND FAUNA SPECIES

### Planning – Planning and Design

- Given the multistorey development plans, an effort should be made to prevent any possible bird collisions with infrastructure, wires or antennae with the use of anti-collision devices
- Implementation of alien plant control measures and revegetation measures, especially along the western slopes where no development footprint is intended
- Preserving native trees and indigenous vegetation occurring in the north-east of the site for provision of habitat and assist with visual and noise mitigation in this area
- Site walkovers to be conducted by fauna search and rescue team prior to commencement of construction of each portion;
- Any permits for sensitive fauna species of conservational concern to be in place prior to construction of each portion as required. A permit is required for activities that disturb protected bird species, particularly during the breeding season. Sites with eggs or chicks are considered to be protected sites. Allow 3 months for this process. Some animal species that potentially occur in the project area are protected under CITES and the PNCO. Although the status of these species is not necessarily equivalent to that of SCC, a permit is required for their removal where appropriate. For example, tortoises are listed on Schedule 2 of the PNCO and will require permits for their removal and relocation to similar habitat.

### Construction - Planning team

- Keep records of any fauna search and rescue permits and reports.
- Some animals may move onto site once construction is underway. A person to assist with rescue should be on call for such circumstances.
- No animals are to be harmed or killed; Contractual fines to be imposed on any employee who is found attempting to harm fauna on site and in surrounding areas.
- Movement of workers must be limited to areas under construction. Access to surrounding areas is not permitted; these must be designated as no-go areas during construction.
- Keep clearing activities to the minimum; clear areas in a phased manner to allow any smaller animal species to move into safe areas
- All open excavations must be securely fenced or barricaded. Excavations must be checked daily for trapped fauna. Trapped animals are to be rescued and released.
- Establish strict speeding regulations during construction phase. All personnel and visitors to abide to speeding regulations.
- No feeding of wildlife is permitted, and no disposal/discarding of any food waste (bones, scraps, fruit pips/cores) within the surrounding environment is allowed.
- 

Guidelines for encounters with all animal species encountered (regardless of whether they are SCC or not) during any stage of development (construction / operation) on site.

- If any animals are seen on site, a photo or video should be taken if at all possible (to assist in identification) and all fauna encountered on site should be reported to the ECO immediately. This is particularly important when:
- An animal is harmed or compromised in any way during construction.
- Ground-dwelling animals, their nests or eggs are unearthed during earthworks (e.g. moles, tortoise eggs, terrapins/frogs estivating).
- Any animal with limited mobility is found on site (e.g. tortoises, moles, chameleons).
- Any potentially dangerous animal is encountered, examples: potentially venomous animal (e.g. snakes, scorpions), medium-large animal that has become cornered in a room/enclosed area such that it cannot escape (e.g. porcupines, monkeys, baboons, antelope). It is critical in the case of snakes/scorpions to get pictures/videos to aid in identification and appropriate treatment of anyone needing medical assistance.
- Any animal that shows reluctance to escape or move away from the construction site, thereby increasing its exposure to harm or increasing the risk of injuring people on site.
- The ECO should provide guidance or assistance to get all animals to safety, treating any injured animals and issuing instructions on when to continue with construction (once they are satisfied that all animals have been removed from site) or put additional measures in place to protect animals on the site from harm.

Contact details to be kept on hand:

- For any injured animals / relocation of - local SPCA can collect and treat most animals and should be a first point of call for assistance.
- If they cannot directly assist, they will revert and notify the relevant authorities/vets. Garden Route - SPCA George: 044 878 1990; SPCA Mossel Bay: 044 693 0824
- Assistance with snake removals/relocations, identifications, or bite treatment:
- African Snakebite Institute (all details available on [www.africansnakebiteinstitute.com](http://www.africansnakebiteinstitute.com));
- General Enquiries: +27 73 186 9176; Snakebite Emergencies: +27 82 494 2039

## 6. Aquatic systems and stormwater management

Planning:

- Alternative 1 places houses in the delineated wetland. This plan is therefore not recommended, and an alternative layout is recommended to be proposed due to impact on sensitive aquatic features.
- Place structures outside delineated area and update stormwater management plan.
- Mitigation is to replan the development layout and stormwater management measures around the wetland feature including the recommended buffer area of 15m. The alternative development scenario of development in the wetland area to any degree would trigger the need for identification of an offset area to compensate for the wetland loss which is not recommended as it is not likely this is available within the same catchment area and is a complex (but not impossible) process.
- Keep the retention dam indicated in Portion B as this is not aligned to a natural wetland and provides an excellent regional control for stormwater from this section of development.
- The retention dam indicated for Portion E of the development could be constructed to function more like a wetland than the drainage line of its current state which is modified. But this area should retain a natural range of indigenous wetland plants similar to those in the wetland on Portion A to achieve this which means the entire area may not be functional as public open space as indicated in the layout.
- For Portion A, a retention structure in the wetland could be considered at the lowest end of the wetland before it is channelled beneath the existing housing complex as this is currently the poorest area of habitat.
- Rerouting stormwater north of Rio Road into a retention dam north of the road is not supported because this will create a channelled flow with higher volumes into the wetland on Portion A which could promote

channelisation and erosion of wetland habitat. Consider an alternative method of conveying stormwater through Portion B to the retention dam on that site.

- Focus efforts on source and local controls to reduce dependence on the retention dams. Ensure rainwater tanks are installed throughout. These can be plumbed into use for toilet flushing.
- Use open / grass block pavers as a substitute for closed paving on walkways and parking areas to encourage better water infiltration and less runoff.
- Use landscaped / garden areas as stormwater attenuation zones. Using appropriate layering these areas can function as soakaways and be placed below gutters of buildings to catch runoff before it is distributed further.
- Planted trees and gardens in public areas should be lowered below hard surfaces or have 'gappy' curbs to encourage the retention and filtration of surface runoff. Some examples are provided including tree pits.
- Incorporate vegetated swales with periodic check dams instead of concrete drains where runoff may occur throughout the development.
- Any stormwater outlets directing runoff towards the wetland area must discharge into the buffer to a stilling basin
- Detailed site Development plans will be submitted for each phase before building plan approval. Detailed SDP and SWMP to be sent to aquatic specialist for review and assessment;
- Detailed SDP and SWMP and accompanying reports to be submitted to DFFE for approval prior to construction.
- Detailed SDP and SWMP to be submitted to DWS for water use license authorization. Allow 300 days for this process.

#### **Stormwater management - Construction Phase**

- Proactively plan ahead to limit and contain the amount of sediment-laden runoff that leaves the site during a storm event.
- As far as possible the objective is that only clear-flowing water should leave the site.
- In addition to the mitigation measures provided, the ECO must apply adaptive management and may apply any feasible methods to achieve these objectives as the project progresses.
- Daily and weekly site meetings must consider forecasted rainfall to avoid working during such periods, and to plan accordingly for predicted high rainfall events. Work on the site must cease altogether during rainfall.
- The site office must have a store of materials suitable for rapid response to erosion control such as shade-cloth (silt-fencing), haybales (check-dams), wooden droppers, hessian fabric, and fencing wire.
- All building material stores should be kept on flat areas and bunded to prevent material loss during rainfall.
- Consider only commencing with bulk earthworks in one portion of the erf at a time to limit the extent of vulnerable areas to be managed.
- Prior to bulk earthworks, install a continuous silt fence along the lower extent of the site to catch soil and silt. The silt fence must be inspected regularly to check for failure or areas that must be cleared to maintain function.
- Monitor the site during / following periods of rainfall, and install haybale check dams at any concentrated flow paths.
- Following rainfall, any sediment-laden water that must be pumped out of pools in excavated areas must not be directed to the wetland, streams or stormwater drains (as these lead to streams). A temporary haybale coffer dam can be constructed to contain water until it seeps into the ground, evaporates or slowly disperses through the haybales which act as a filter.
- Monitoring of the entire area of exposed soil before, during and after rainfall is essential to ensure proactive measures can be taken preventing the runoff of sediment-laden water to aquatic systems.

### **Wetland management – Construction Phase**

- Sensitive aquatic features that are to be preserved must be clearly delineated and communicate to all personnel associated with the construction works for the full duration.
- An Environmental Control Officer (ECO) must be employed for the duration of construction to monitor implementation of mitigation measures relating to all environmental authorisations.
- Pre-construction, temporary fencing must be erected along the wetland and stream buffers.
- Delineation of the buffer must be undertaken with the site surveyor.
- Use materials that are least likely to be stolen such as wooden stakes and orange mesh construction-type fencing.
- Signage indicating the wetland, stream and buffers as No-go areas for vehicles and personnel must be placed in multiple areas on fencing.
- Once temporary fencing is established and before any bulk earthworks occur, all contractors must attend a site induction with the ECO and be briefed that vehicles, workers, equipment and materials may not encroach into No-Go areas around wetlands.
- Any indigenous / protected trees or other vegetation to be preserved on the site should be boarded or fenced off for protection during the construction phase (Appendix C – Terrestrial Biodiversity and flora Report)
- The contractor may implement fines or the termination of contracts for encroachment into the No-Go area as any damage must be rehabilitated under guidance by an aquatic specialist.

### **Operational Phase**

- Ensure the wetland is maintained in a near natural state while the surrounding buffer provides a mixed use function which could contribute to green space within the development.
- The edge of the wetland should be delineated by sinking wooden bollards (with no lighting) approximately every 50m along the wetland. This is preferable to fencing off the wetland.
- Garden and maintenance staff must be informed that no maintenance (apart from removal of aliens and litter), herbicide application, or dumping of garden waste can take place in the wetland.
- Mowing, weed-eating, brush-cutting or trimming of the wetland vegetation is not permitted.
- Buffer areas may include a number (4-5) of cleared, mowed and maintained areas for recreation (e.g. jungle gym or bird hide) linked by pathways through natural indigenous vegetation in the buffer (not the wetland).
- No herbicides can be used to maintain pathways in the wetland area or buffer.
- Encroachment of recreational areas into the wetland, and infilling of any sort is not permitted.
- Do not plant any kikuyu grass in the buffer. If areas must be grassed, then kweek (*Cynodon dactylon*) or buffalo grass (*Stenotaphrum secundatum*) is recommended



## 7. Alien Invasive Management

Landowners are under legal obligation to control alien plants occurring on their properties. Alien Invasive Plants require removal according to the Conservation of Agricultural Resources Act 43 of 1983 (CARA) and the National Environmental Management: Biodiversity Act (10 of 2004; NEMBA): Alien and Invasive Species Lists (GN R598 and GN R599 of 2014).

Large tracts of alien invasive trees will be cleared; Correct AIS management can result in a decrease in alien invasives on the site.

### Construction Phase - Planning and construction – Construction Team

- ESO must be familiar with AIS currently on site and potential AIS that could be introduced
- ESO to oversee:
- Area on site to be designated for storage of removed alien trees
- All removed alien trees must either be removed from site and disposed of at a registered waste disposal facility. Alternatively, and preferred, the plant material (not seed bearing) can be mulched using a woodchipper on site to assist with erosion and dust control throughout construction and rehabilitation activities. Any seed-bearing material is to be disposed of at a registered landfill.
- Materials used during construction must be sourced and transported responsibly to minimise the risk new invasive plants
- Ongoing hand removal of alien invasive plants must be done throughout construction phase as soon as the plant is detected.
- During rehabilitation, Check ensure topsoil is weed free.
- During construction and rehabilitation check for weed regrowth and manage timeously (before seed is set)

Keep records of removal and disposal method

### Operational Phase

- It is the legislated responsibility of the landowner to manage aliens on their property.
- Immediately following conclusion of construction the entire site (Erf 7614) must be thoroughly inspected for remnant alien plants.
- Operational management to include ongoing removal of alien invasive trees from the property; open space area to be kept free of alien trees and weeds.
- Alien invasive management to continue during operational phase as follows:
- Alien clearing is to continue outside of the proposed development footprint in clear management blocks. All alien clearing needs to occur in a planned manner on the site as per an alien management and eradication plan; Areas that have recently been cleared of aliens need to be prioritised as the second highest priority areas of alien clearing effort.
- Ongoing removal of invasive species in the wetland and drainage lines on Erf 7614, like bug weed (*Solanum mauritianum*), black wattles (*Acacia mearnsii*), and canna lilies (*Canna x generalis cf. indica*)
- Cleared outside of the proposed development area on Erf 7614 must be revegetated with naturally occurring forest species (i.e Milkwood, yellow wood) / species occurring within Garden Route Shale (i.e., *Passerina corymbosa*, *Protea aurea*, *protea neriifolia*, *Searsia lucida* (erosion prevention), *Pelargonium cordifolium*, *crassula orbicularis*, *Crassula roggveldii* etc, Refer terrestrial report.
- Small seedlings must be hand-pulled or removed with tree poppers,
- Bigger trees must be ring-barked or cut with a chainsaw and the stump treated with herbicide. This applies to both the wetland and buffer areas. However, herbicide cannot be used in the wetland area.

- Landscaping with indigenous vegetation; steep areas to be kept vegetated with suitable species to assist with runoff and erosion control
- Duties of operational landscaping to include ensuring the ongoing removal of alien invasive trees and weeds on the property.
- Where alien invasive plants are removed at the root; suitable indigenous vegetation recommended to be planted to hold the soil.
- Follow-up inspections and control must take place on a 6-monthly (bi-annual) basis to ensure aliens are consistently controlled and removed from the site. This must be continued until the site can be declared 'weed-free' for the most part.
- A significant effort should be made to revegetate any bare areas of the site with indigenous plants found in the area.
- Open space areas at the very least should contain plants from the area given the high rates of infestation of open spaces with alien and exotic plants in Knysna.
- Under no circumstances may removed alien plants be discarded in the wetland or surrounding open space.
- Management must inform the landscaping / gardening team that no dumping of vegetation or discarding of waste material may happen in the wetland or buffer area.

## 8. Soil Management

### Planning Phase - Planning Team

- Alternative concept layout 1 is not recommended
- Development on areas with 1:4 gradient or steeper is not recommended.
- Design the proposed development site to follow natural contour lines as far as possible.

### Construction and Operational Phase – Construction and operational (as required / applicable) Team

- Prepare method statement to indicate how soil will be managed during site clearing and must include these mitigation measures:
- Site clearing to be done in phased manner. No blanket clearing of vegetation is permitted to avoid large areas of unconsolidated soils;
- Topsoil should be cleared in a phased manner. Topsoil includes 150 to 250 mm of soil and needs to be stripped separately. Topsoil from vegetation on the site in new excavation areas must be stripped to a maximum depth of 30cm, or in cases where the bedrock is shallower than this, then the entire soil layer is to be removed. Topsoil is to be kept in designated piles of maximum 1 m in height, to prevent anaerobic conditions from smothering seeds and rendering them inviable and must be suitably covered with shade cloth (or another breathable material with a fine mesh) to prevent any additional invasive species seeds from falling in and establishing in the soil.
- Designated areas for storage of topsoil and subsoil to be on level areas - Designated area/s for storage of topsoil to be selected in conjunction with ESO and ECO; area/s selected should be an area which will not be disturbed from construction activities for duration of construction period. This must be done to avoid double handling of topsoil stockpiles. Stockpile subsoils separately in designated and demarcated area; used as fill material for levelling.
- Topsoil cleared to be placed on designated area; the topsoil will be invaluable during rehabilitation otherwise the project will need to buy in topsoil / mulch / plants for landscaping.
- Excavated material generated on site to be used as fill material for site levelling.
- Do not create multiple tracks
- Prepare method statement to indicate how dust will be prevented during construction and include the following
- Cover all fine building materials with shade cloth to prevent dust

- Topsoil and subsoil stockpiles are not to be higher than 1.5 m.
- Topsoil and subsoil stockpiles should be covered, wetted or otherwise stabilised:
- Cover subsoils with shade cloth; Cover topsoil with shade cloth / vegetate if it will be kept for longer for 3 months.
- Exposed areas should be wetted during windy / dry conditions
- Ensure appropriate storm water control mechanisms are implemented.
- Ongoing rehabilitation throughout construction with stored topsoil and vegetation

## 9. Waste pollution and hazardous materials

### General Waste - Construction Phase – Planning

- Determine waste streams and quantities to ensure provision of adequate waste management facilities on site; Investigate disposal / reuse/ recycling services.
- Include details of waste stream and preferred management option in general waste method statement.
- Receptacles (covered, labelled) to be provided for smaller general waste items generate on site. If waste will be recycled, provide separately labelled receptacle as required per waste stream.
- Food waste bins provided are to be wildlife proof.
- Workers must be provided with a designated break area including bins, clean water and toilets nearby. All located outside of the wetland and buffer areas.
- No laydown areas / driving permitted in wetland area.
- Receptacles (covered, labelled) to be provided for smaller general waste items generate on site. If waste will be recycled, provide separately labelled receptacle as required per waste stream. All waste is to be collected in designated bins with lids that can be secured or stored in a secure area when construction is not taking place (evenings, weekends, holidays, etc.) to prevent interference by animals.
- All waste, particularly food waste, should be regularly removed from the property and disposed of appropriately to prevent the scent of old products increasing the attractiveness to the disposal area and surrounding development for wildlife / if it is composted on site it must be done using combination of anaerobic and aerobic process within sealed room / container.
- General Waste receptacles should be emptied on a regular basis.

### Construction Team

- General Waste receptacles should be emptied on a regular basis.
- Excavated material from site levelling will as far as possible be used on-site as fill material. Excess excavated material that cannot be used in this way will be exported from the site and reused as fill at other construction activities elsewhere in Knysna LM or disposed of at an appropriately licensed waste disposal facility. Construction waste (e.g. packaging material, unused concrete) not reused / recycled must be disposed of at an appropriately licensed waste disposal facility.
- Area for storage of rubble not for reuse to be designated and demarcated.
- Alien invasive material with seeds to be placed in bags and sealed for disposal at registered waste site. Waste that is not reused / recycled must be disposed of at an appropriately registered and licensed waste disposal facility.
- Ensure good housekeeping of the site (i.e. no litter) at all times.
- Vervet monkeys were observed on the site making the secure and disciplined disposal of food waste a very high priority. These animals have limited options for dispersal beyond this area so care must be taken when interacting with them.
- Portable toilets to be provided at SHEQ standards of 1 per 10-15 workers. Cleaned regularly with easy access.
- The site must be kept free of litter and waste (e.g. packaging) which can be blown around.

- Materials must be stockpiled on level ground outside of wetland and buffer areas. Loose materials must be banded with sandbags or similar and/or covered with a geotextile to prevent migration of material during rainfall.
- No burning of waste.
- No dumping or burial of waste
- Record of disposal / recycling kept.

## **Hazardous materials - - Construction Phase – Planning and Construction Teams**

### **Construction – Planning team**

- Prepare method statement indicating what hazardous substance (fuel, oil, sewage etc) will be on site and how they will be managed.
- Complete spill kits with accompanying storage container required to be on site equipped with hazardous bin for placement of spills cleaned up using absorbents
- Any fuel and other hazardous substances to be stored on site in banded area equipped with roof under lock and key with appropriate signage
- If generators are refuelled on site, they must be placed on trays, which rest on clean sand and once construction is complete this must be removed from the site and disposed of at an appropriately registered waste disposal facility.

### **Concrete, cement, plastering, and painting:**

- Mixing areas be clearly defined on the site and must be surrounded by an impermeable material (i.e. create a temporary coffer dam with sandbags and thick plastic sheeting) to prevent any runoff and absorption into the surrounding soils.
- The designated mixing areas should be limited to areas that will become future hard surfaces on the site. No concrete and cement mixing is allowed in areas outside of the proposed hardened surfaces of the camping block.
- No concrete and cement mixing is allowed in areas outside the site development plans (SDPs).
- Cleaning of cement, plastering & paint equipment must be done into a designated, banded, & lined slurry sump or container to avoid contaminating the environment.

### **Construction – Construction Team**

- Drip trays required to be placed under all equipment using fuels /oils.
- Hazardous bins required for storage of any hazardous waste materials.
- Wash station to be provided for cleaning of hazardous paint / building materials
- Do not leave machinery / vehicles running unnecessarily. Service machines and vehicles regularly to prevent unnecessary fumes and leaks.
- Records of any hazardous waste disposal to be kept
- No mixing of cement may take place within the wetland or buffer areas.
- Vehicles must be checked daily for leaks and are not permitted on site if leaking fuel until they have been repaired.
- Fuel stores and vehicle refuelling areas must be located outside wetland and buffer areas on level ground. Materials for cleaning up spills must be available on site.

### **Waste management - Operational Phase**

- Provide adequate number of waste management facilities required for number of units. Waste areas must be made rodent and scavenger proof

- Recycling and reuse is encouraged to prevent excessive landfill disposal. Ongoing investigations into recycling options encouraged throughout operational phase.
- On site composting is recommended for green waste; compost can be used in landscaping.
- Provide waste management area for general and hazardous waste bins. Ensure the waste storage areas are designed in line with the refuse storage chamber design guidelines; the design should include, inter alia, suitably bunded area, non-permeable flooring, provision of a water tap for easy cleaning, suitable access to waste service providers, lockable doors, adequate ventilation, adequate roofing.
- Ensure weekly waste collection services are in place
- Ensure the site is litter free for the life of the operation and suitable waste receptacles are provided in landscaped areas which are correctly maintained and emptied regularly  
House rules for each portion (no litter, scavenger proof bins, no feeding wildlife etc)

## 10. Social and economic aspects

### Planning

- Determine the space available on the site excluding steep areas and wetland areas and determine density for the final site development plans based on developmental area available and the minimum density that can be developed to ensure the project is financially feasible to provide housing to middle income class group.
- Design and plan to fit in with surrounding land uses as far as possible

### Construction Phase - Employment

- Use local labour.
- Use local suppliers of required materials and services where possible.
- Advertise locally making use of local resources for this purpose.
- Weekly toolbox talks to be held to upskill labour force
- Use reputable agencies / avenue (i.e. Department of Labour) to screen staff employed.
- There must be strict access control to and from the site.
- A security guard stationed on site for the duration of the construction phase and guard the site 24 / 7.
- Movement of all personnel and workers must be limited to areas under construction. Access to surrounding areas is not permitted.
- No employment to take place on site. Employment should take place through reputable recruitment agencies / avenues.
- No wages to be paid on site.
- Restrict employment to local residents as far as possible.
- No weapons / alcohol / narcotics allowed on site
- Severe contractual fines imposed for personnel / contract workers bring weapons / alcohol / narcotics on site.
- Workers are not to be housed on site but to return to their homes after hours.

### Operational Phase

- There must be strict access control to and from the development.
- Ensure a security measures are in place (i.e. lighting, cameras, security guard)

## 11. Traffic Management

### Planning and operational

- Any updates to TIA based on final SDPs to be carried out for approval of TIA by Knysna Municipality
- Sight distance of 120m to the north when exiting Access 2 is achievable provided that the building line is set back, the fence line is positioned lower than the road and the verge is kept clear of vegetation that may hinder visibility;

- Sight distance of 90m to the south when exiting Access 2 is achievable provided that the building line and fence line is set back and the verge is kept clear of vegetation
- No upgrading of the road network other than that required to provide access to the proposed development is required to be implemented by the developer.

#### **Construction Phase – Planning and Construction Team**

- Appropriate road and construction signage in place. Road signage should be erected and provided to full municipal standards.
- Ensure strict access control to and from the construction site at all times.
- All construction vehicles are to be monitored to ensure they are not overly full so the likelihood of spillage of debris is prevented.
- Any loose materials transported to / from site must be covered.
- Surrounding area and roads should be monitored for debris and materials associated with the proposed development and cleaned up as soon as such becomes apparent.
- All materials to be delivered in a safe manner at designated delivery area located within footprint of the development site; ensure sufficient space is allocated in the construction site plan to provide safe turning for larger trucks.
- Speed travelled by construction vehicles must be kept to a minimum and speed limits enforced.
- No transport of construction machinery / materials to or from the site to take place on public holidays or weekends

### **12. Noise management**

#### **Construction Phase - Construction Team**

- No loud music to be allowed on site.
- All vehicles and machinery must be kept in good working condition.
- Working hours and deliveries / collections to be restricted to day time hours (i.e. 8 am to 5pm)
- No construction work to take place after hours or on Sundays or on public holidays.
- A complaints register should be kept to document complaints and the corrective action taken.

#### **Operational Phase – Operational Team**

- Ensure municipal bylaws applicable to noise in residential areas are included in “house rules” distributed to owners / residents
- Any maintenance work carried out on site during the life of operation complies to construction phase mitigation measures.
- Landscaped and open space areas will assist to absorb noise impacts on adjacent residents.

### **13. Visual Management**

#### **Planning Team**

- Final SDP to take advantage of slope to mitigate visual impacts and take into account restrictions required to ensure protection of views from surrounding residential properties.

#### **Construction Phase - Construction Team**

- Ensure good housekeeping measures on site and compliance with construction EMP

#### **Operational Management**



- Ensure good housekeeping measures on site; house rules to include relevant mitigation measures to reduce visual impacts.

## 14. Water demand

### Planning and operational

- Maintenance plan to maintain sewage and water reticulation infrastructures; Avoid leaking taps and pipes / unnecessary water waste / sewage leaks.
- Incorporate rainwater tanks and re-use of water into final SDPs

### Construction Phase

- Water uses during construction phase include, for example, drinking water, wash water, dust control water, mixing water. Water requirements to be calculated by resident engineer and sources of water to be confirmed prior to the start of construction.
- Avoid leaking taps and pipes / unnecessary water waste.

## 15. Energy demand (non-renewable)

### Planning and operational

It is recommended that energy saving measures and reduction on fossil fuel be investigated for the site. Some measures include:

- Energy efficient lighting (i.e. LED / compact fluorescent)
- Solar roofing
- Solar lighting

## 16. Aviation

### Planning and Operational Phase - Planning Team:

- The authority will be requested to comment on the draft BAR and EMPr.

## 6. EMP Targets – Planning, Construction, Operations

Aspect: Planning Activities

Impact: Noncompliance to conditions of Environmental Authorisation can have financial implications and lead to delays in the project. Insufficient budget, planning and responsibility allocated for environmental management will result in unmitigated impacts.

Responsibility: Holder of EA, engineers, town planners as applicable

The following is a summary checklist that can be used to ensure compliance to mitigation measures for planning phase:

### Targets:

- ✓ Detailed design and approval of Final SDP developed after applicable planning mitigation measures have been considered
- ✓ Paleontology /archaeological assessment carried out and recommendations in place
- ✓ Detailed design and approval of SWMP
- ✓ Approval of TIA
- ✓ Rezoning in place
- ✓ Knysna bulk services SLA in place
- ✓ EA in place

- ✓ WULA in place
- ✓ Permits in place (trees, flora, fauna)
- ✓ EM file in place

**Aspect: Construction Activities**

**Impact:** Noncompliance to conditions of Environmental Authorisation can have financial implications, loss of indigenous plants and animals, spread of alien invasive plants, erosion and polluting activities.

Insufficient budget, planning and responsibility allocated for environmental management will result in unmitigated impacts.

**Responsibility:** Holder of EA, contractors / maintenance contractors as applicable

The following is a summary checklist that can be used to ensure compliance to mitigation measures for construction activities

**Targets:**

- ✓ Site ECO
- ✓ EM file in place
- ✓ Specialist appointed to do search of plants and permits and search and rescue report in EM file.
- ✓ Search for plants taken place on construction footprint prior to site clearing; nursery, plants transplanted as required with specialist guidance
- ✓ Any SCC permits and search and rescue reports on record
- ✓ Necessary training provided as per scope of work and records kept i.e., toolbox talks
- ✓ Working hours: Restrict to weekdays between 07:00 to 17:00; Saturday 08:00 to 13:00; no Sundays or public holidays
- ✓ No blanket clearing of vegetation.
- ✓ Designated footprint and demarcated laydown area, no unnecessary disturbance to vegetation (2meter disturbance); Laydown, stockpiles areas, waste management area, turning areas, access roads selected and designated - Pegs / tape / screening material for demarcation of site clearing footprint
- ✓ No go areas designated
- ✓ Topsoil separated; stockpiled at 1 m height, suitably mulched and reused
- ✓ Subsoils reused where necessary; excess is disposed correctly
- ✓ No disturbance of indigenous plants outside development footprint
- ✓ No AIS in construction footprint
- ✓ No disturbance to archaeological artefacts
- ✓ No disturbance to fauna
- ✓ Ablution facilities (Ratio of 1:10)
- ✓ Waste management measures in place, no burning / dumping of waste / no litter
- ✓ No refuelling on site; no service of vehicles on site
- ✓ Drip trays, spill kits and hazardous waste bin
- ✓ Mixing containers and plastic liners (cement)
- ✓ Water cart / shade cloth for dust control
- ✓ Fire prevention training provided, and records kept
- ✓ Sand bucket for disposal cigarettes
- ✓ Fire response measures in place; emergency numbers on hand
- ✓ No off-road driving
- ✓ Swales / stormwater control / water erosion prevention measures in place
- ✓ Code of conduct
- ✓ Incident / complaint register in place

- ✓ Records of waste management / toilet service
- ✓ External monthly audits carried out and kept on record
- ✓ Close out audits and any actions required

Aspect: Operational Activities

Impact: Noncompliance to conditions can result in unnecessary loss of indigenous plants, spread of alien invasive plants, erosion and polluting activities

Insufficient budget, planning and responsibility allocated for environmental management will result in unmitigated impacts.

Responsibility: Holder of EA and HOA / maintenance staff / contractors as applicable

The following is a summary checklist that can be used to ensure compliance to mitigation measures for operational activities

- ✓ EM file in place
- ✓ Stormwater management measures in place as per approved design
- ✓ AIS management plan in place Internal monitoring of AIS as required
- ✓ Indigenous landscaping
- ✓ No feeding of wildlife
- ✓ Rainwater tanks
- ✓ Solar Panels
- ✓ Effective Waste management measures in place – receptacles, recycling measures, composting
- ✓ Fire prevention measures in place and response plan in place and fireproof hedge / firebreak in place as required
- ✓ Annual external audit

**Project Aspects to be completed by construction team / maintenance team**

Activity:	Description of activity (i.e. AIS clearing, construction of road, maintenance activity)			
Responsible person:				
Aspect	Nature / Description	Required		Notes
		✓	✗	
Scope of work	Description of scope of work and accompanying method statement / s	✓		
Site office	Required? Location if required?			
Designs / Plans completed	As required for scope of work			
Environmental Training	Environmental training required (i.e. excavations – archaeology; ongoing – litter; AIS)			
Health and safety	As required – HS File, first aid etc.			
Workforce	Number of workers required?			
	Required environmental management training (i.e. waste, soil management etc)			
	Community engaged with to source local labour			
Transport and traffic	Transport required for site workers?			
	Access and parking requirements			
Site clearing	Area to be cleared			
	Permits on hand; Plants removed and transplanted elsewhere in resort			
	No disturbance to vegetation outside footprint	✓		

Activity:	Description of activity (i.e. AIS clearing, construction of road, maintenance activity)			
Responsible person:				
Aspect	Nature / Description	Required		Notes
		✓	✗	
Vegetation management	Remove alien invasive from footprint as required	✓		
	Pegs / screening material for designating footprint			
Topsoil management	Top 300 mm soil with indigenous vegetation intact			
	Stockpile separately			
	Compost separately as mulch elsewhere in landscaping / public open space area			
Earthworks and subsoil management, erosion control	Area and depth to be excavated			
	Volume of material to be excavated per component			
	Duration of earthworks component			
	Where will excavated material be stored on site; subsoils covered; Rocks for landscaping; excess for landfill;			
	Shade cloths / water cart – dust control			
Building material and equipment	Nature of required materials and equipment			
	Storage requirements / laydown areas for materials / equipment			
	Hazardous materials / substances – sealed containers, bunded area, non-permeable flooring, secure, equipped with roof.			
Waste management	Ablution facilities – Required? Number? Service Provider? Record of service to be kept	✓		
	General waste bins			
	Drip trays, cement mixing trays, plastic liners,			
	Spill kits, hazardous waste bins			
	Skip			
	Service providers			
	Construction rubble – designated area / skip as required			
	General waste – General waste bins with lids and labelled / storage area			
Drinking water and lunch area	Hazardous waste – drip trays / spill kits / storage area			
	Quantity required? Lunch area provided? Source of drinking water?			
Existing structures	Location of existing structures / infrastructures that may be in construction footprint			
Working hours	Working hours – no Sundays, no public holidays, no night time.			

## 7. COMPLIANCE WITH THE EMPr

### 6.1 Monitoring and Compliance

The monitoring and compliance of the development should take place as follows:

- The ECO has the authority to instruct the Applicant to cease a particular operation causing or liable to cause significant environmental damage, and issue fines or penalties for non-compliance of the Environmental Management Programme/ EMPr.
- An Environmental Control Officer (ECO) must audit the site and compile an audit report on a monthly basis until rehabilitation is successful.
- The holder of the environmental authorisation (the Applicant) is responsible to ensure that an environmental audit report is submitted to the DFFE as per the timeframes stipulated in the Environmental Authorisation (EA).

### 6.2 Auditing Process

The terms of reference for the audits must comprise the following:

- Develop a checklist against which the criteria can be referenced during the audit.
- During the audit process, key individuals involved with the management of the project are to be given the opportunity to comment on issues being audited and will be invited to accompany the auditor during the site inspection.
- Compile an audit report on the implementation of the EMPr and compliance to the Environmental Authorisation and submit this report to the competent authority (DFFE).

Compliance ratings against which the listed criteria are assessed are as follows:

Symbol	Rating	Interpretation
Y	Yes	Evidence of compliance
P	Partial	Evidence of partial compliance
N	No	Evidence of non-compliance
NR	Not Relevant	The condition or commitment is not relevant at this stage of the development or it is inappropriate
NA	Not Audited	Not audited

### 6.3 Non-Compliance

#### Definition

The non-compliance is defined as, and will be issued for:

- Any deviation by the Applicant from the environmental conditions and requirements as set out in the EA and EMPr, or;
- Any contravention by the Applicant of environmental legislation, or;
- Any unforeseen environmental impact resulting from direct or indirect actions or activities on site that would be considered as a significant impact. Significance will be determined by the Environmental Control Officer (ECO) but will be informed by geographic extent, duration, lasting effects of the impact and extent of remediation to the impact.

## **Types of non-compliances issued**

Two types of non-compliances may be issued:

### **A. Stop Works Non-Compliance**

Stop Works Non-Compliance will require that all works as described in the non-compliance will stop immediately and may only continue on a formal written permission from the ECO.

Stop Works Non-Compliance will be issued under the following conditions:

- Total disregard by the Applicant to the environmental conditions and requirements listed in the EA and EMPr;
- An activity that if left unattended will escalate the degree, severity or extent of the environmental impact.

### **B. General Non-Compliance**

A general non-compliance will allow work and activity by the receiving party to continue while the corrective action takes place.

## **6.4 Issuing a Non-Compliance**

Non-compliance may be issued to:

- The Applicant
- Any representative of the Applicant

## **6.5 Process of Issuing Non-Compliance**

The appointed Environmental Control Officer (ECO) may issue a formal non-compliance to the Applicant. A copy of the non-compliance issued will be placed in the EMPr file. The Applicant will be responsible for returning a formally signed off corrective action (as per template) to the ECO to be placed in the EMPr file. The ECO will be required to sign-off on the corrective action, indicating that it has been completed within the timeframes and to the satisfaction of the ECO.

In the event of damage being caused, the contractor will be responsible for the cost of cleanup, repair and /or rehabilitation as necessary, as well as being liable for the fine. Where there is erosion damage, pollution to the environment, or contravention of the no-go policy, the contractor is required to reinstate the conditions to normal as determined by the ECO. Spot fines up to a maximum value of R10 000 per offence can be instituted at the discretion of the ECO for any breach or non-compliance in terms of the EMPr. Fines issued will increase exponentially for repeat offences.

## **6.6 Failure to complete corrective actions**

In the event that the Applicant fails or refuses to complete the corrective action, either at all or within the allocated timeframe, the ECO shall,

- Inform DFFE in writing that a condition of approval for the project is not being met.

The DFFE office is responsible for resolving the impasse with the Applicant.

The Applicant is deemed not to have complied with the EA and EMPr if:

- Within the boundaries of the site and site extensions there is evidence of contravention of clauses;

- Environmental damage occurs due to negligence; inappropriate actions taken by the Applicant or any of his staff.

On receiving a notice of non-compliance the Applicant is required to swiftly address the issue/s taking all corrective actions required to rectify the situation. Penalties will be applied for non-compliant situations. Penalties/fines are advocated to ensure corrective measures are successfully undertaken and the necessary standard of rehabilitation is achieved.

The penalty associated with a chemical spill is not a set amount but will depend on the nature and extent of the spill; the cost of any soil and /or groundwater monitoring and any soil and /or groundwater remediation required by authorities will be to the Applicant's account.

The imposition of such a penalties / fines shall not preclude the relevant competent authority from applying an additional penalty in accordance with statutory powers.

Failure to redress the cause shall be reported to the relevant authority for them to deal with the transgression as deemed fit.

## **6.7 Unlawful Activity/ies**

NEMA and its Regulations entitle environmental authorities to administer a fine not exceeding R 5 million or 10 years imprisonment and/or a fine and imprisonment for a person guilty of an unlawful activity. The Act makes allowance for the rectification of unlawful activity and may charge up to R1 million administration fees over and above the remediation costs.

NEMA makes provision for damages to be awarded by the courts where loss or damage has occurred as a result of a contravention of other environmental statutes. Importantly, NEMA provides for the liability of conviction of employees, managers, agents and directors for any offences resulting from the failure to take all the reasonable steps that were necessary under the circumstances to prevent the commission of an offence.

## **8. AMENDMENTS TO THE EMPr**

This EMPr outlines the environmental practices and mitigation measures to be adhered to during the construction, operational phases, and rehabilitation in order to curtail and/or minimise potential negative impacts and promote sound environmental practises.

Any major issues not covered in the EMPr as submitted, will be addressed as an addendum to this EMPr, and submitted for approval. The EMPr is a living document and is subject to change from time to time in consultation with the DFFE. Any required amendments to the EMPr will require approval from the DFFE.

## **9. ENFORCING THE EMPr**

The holder of the Environmental Authorisation (EA) has a responsibility to ensure that all those people involved in the project are aware of and familiar with the environmental requirements for the project (this includes casual labour, etc.). The EA and EMPr shall be part of the terms of reference for all stakeholders.

All senior and supervisory staff members shall familiarise themselves with the full contents of the EA and EMPr. They shall know and understand the specifications of the EA and EMPr and shall be able to assist other staff members in matters relating to the EA and EMPr.



**TABLE OF RESPONSIBLE PARTIES BELOW:**

<b>Responsibility</b>	<b>Name of Responsible Party</b>
<b>Applicant</b>	Bugali Investments CC
<b>Town Planner</b>	
<b>Engineer/s</b>	
<b>Contractor/s</b>	
<b>Site Environmental Control Officer</b>	
<b>External Environmental control Officer</b>	
<b>Homeowners Associations / s</b>	

## 10. DRAFT STAFF CONDUCT CONTROL AND INFORMATION SHEET

<b>ALL STAFF MUST OBEY THE FOLLOWING RULES:</b>	
1	<b>DO NOT</b> tamper with or destroy nesting sites, lairs or any other form of animal shelter.
2	<b>DO NOT</b> feed the native animals.
3	<b>DO NOT</b> leave the project site untidy and strewn with rubbish that will attract pests.
4	<b>DO NOT</b> bring any pets onto the project site.
5	<b>DO NOT</b> trespass onto private properties not linked to the project.
6	<b>DO NOT</b> carry a weapon onto the project site or in the vehicles transporting workers to and from the site.
7	<b>DO NOT</b> set fires.
8	<b>DO NOT</b> cause any unnecessary disturbing noise
9	<b>DO NOT</b> drive a vehicle under the influence of alcohol.
10	<b>DO NOT</b> exceed the national speed limits on public roads or exceed the recommended speed limits in this management plan (where applicable)
11	<b>DO NOT</b> drive a vehicle that is generating excessive noise / leaking / excessive fuels (such vehicles must be reported and repaired as soon as possible).
12	<b>DO NOT</b> litter along the roadsides, including both public and private roads.
13	<b>DO NOT</b> remove or destroy vegetation around the site without the prior consent of the Applicant and Environmental Control Officer.
14	<b>DO NOT</b> tamper with, destroy or remove vegetation from any areas that have been fenced off or marked.
17	<b>DO NOT</b> operate critical items of mechanical equipment without having been trained and certified.
18	<b>ALL</b> employees must undergo the necessary safety training and wear the necessary protective clothing at all times.

19	<b>NO</b> unsocial behaviour will be permitted e.g., excessive shouting, hooting etc.
20	<b>NO</b> ad-hoc activities are to be undertaken e.g. fires for cooking, the use of surrounding bush as a toilet facility is strictly forbidden
21	<b>NO</b> trespassing on private / commercial properties adjoining the site is forbidden.
22	<b>NO</b> worker may be forced to do work that is potentially dangerous or for what he / she is not trained to do.

## 11. RESPONSIBILITIES

The “Responsibility” column is merely a guide and does not relieve the Applicant of his responsibilities in terms of overall compliance with the EA and EMPr.

FUNCTION	RESPONSIBILITY
<b>Applicant / Holder of EA (if attained)</b>	<ul style="list-style-type: none"> <li>The Applicant is ultimately responsible for the ensuring compliance with all the requirements associated with the construction, operation, rehabilitation and decommissioning phases of the project.</li> <li>The Applicant is responsible to ensure that all necessary communication and submission of required documentation concerning this project is submitted to the relevant authorities.</li> </ul>
<b>Contractor / s / Subcontractor/s</b>	<ul style="list-style-type: none"> <li>The Contractor is required to adhere to the EMPr and is responsible to ensure that all staff appointed also adhere the EMPr.</li> <li>Ensures that all staff are made aware of the need to conduct activities in an environmentally responsible manner.</li> <li>(Contractor) On instruction by the ECO, ensures that storm/surface water controls are established.</li> <li>Ensures prompt remediation of any sewage spills.</li> <li>Stockpiles are protected from aeolian effects, stormwater effects, or being driven over by workers.</li> <li>Ensures that a “clean-site” policy is applicable at all times.</li> <li>Ensures that all complaints by residents are dealt with promptly.</li> <li>Is responsible for any contravention/s by staff or any non-compliance with the EMPr.</li> </ul>
<b>Site ECO</b>	<ul style="list-style-type: none"> <li>On site ECO is required to carry out daily requirements of the EMPr</li> <li>The sensitive vegetation, sensitive fauna and possibility of archaeological materials as well as ongoing waste, soil, and stormwater management requires an on-site ECO for this development</li> </ul>
<b>Environmental Control Officer (ECO)</b>	<ul style="list-style-type: none"> <li>An external ECO is to have access to the site at all times, for the purpose of inspections to ensure that the environmental conditions of the EMPr as well as the conditions stipulated to in the EA and the recommendations made in the EIR are being implemented and adhered to.</li> <li>The ECO to carry out monthly audits to ensure compliance with EMPr and EA (if attained) and submit the reports to project team and relevant authorities</li> <li>The need for any deviations or variations in the environmental conditions must be reported to the DEDEAT for approval prior to these being undertaken.</li> <li>The ECO must be fully cognisant with the contents of the Environmental Authorisation as well as this EMPr and any other applicable legislation</li> </ul>
<b>Competent Authority - DFFE</b>	<ul style="list-style-type: none"> <li>The Compliance Officer appointed by the Competent Authority is responsible for the ensuring that the Applicant, Contractor, and ECO are compliant with the provisions of the EA and EMPr.</li> </ul>
<b>Department of Water and Sanitation</b>	<ul style="list-style-type: none"> <li>Issuing of water use license authorisation</li> <li>Ensuring compliance of conditions of WULA</li> </ul>
<b>Cape Nature</b>	<ul style="list-style-type: none"> <li>Responsible for issuing any SCC permits for fauna and smaller plants</li> </ul>
<b>Department of Forestry</b>	<ul style="list-style-type: none"> <li>Responsibility for issuing permits for protected trees</li> </ul>
<b>Heritage WC</b>	<ul style="list-style-type: none"> <li>Responsible for issuing of permits required for any discovered artefacts during excavation / site clearing activities</li> </ul>

**ACKNOWLEDGEMENT FORM**

Record of signatures providing acknowledgment of being aware of and committed to complying with the contents of this Environmental Management Programme (EMPr), which relates to the environmental mitigation measures for the project outlined below, and the environmental conditions contained in all other contract documents.

**PROJECT NAME:**

**PROPOSED residential DEVELOPMENT on Erf 7614, Leilieskloof, Knysna Municipality, Western Cape**

**DFFE REF:**

**APPLICANT:**

Signed: ..... Date: .....

**CONTRACTOR:**

Signed: ..... Date: .....

**SITE ENVIRONMENTAL CONTROL OFFICER**

Signed: ..... Date: .....

**EXTERNAL ENVIRONMENTAL CONTROL OFFICER**

Signed: ..... Date: .....

## **ANNEXURE 1: Updated Site Development Plan (based on recommendations)**

To be included into EMPr once developed

