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Final BAR: Appendix H – 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 MEDIUM TO HIGH DENSITY RESIDENTIAL DEVELOPMENT ON RE / ERF 2074, MARINE WAY, BITOU LOCAL MUNICIPALITY, WESTERN CAPE

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DATE:	**3 February 2024**

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:-

(a) Details of – (i) The EAP who prepared the EMPr; and (ii) The expertise of the EAP to prepare an EMPr, including a curriculum Vitae;	This EMPr was prepared by Claire De Jongh. of Eco Route. Please see attached CV of the EAP (Annexure 3).
(b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 5 - ENVIRONMENTAL MANAGEMENT PROGRAMME
(c) a map at an appropriate scale which superimposes the proposed activity, it associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Annexure 1 and 2
(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 – (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Appendix J – Impact assessment Report
(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 – (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practises; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	Section 5 - ENVIRONMENTAL MANAGEMENT PROGRAMME
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 5 - ENVIRONMENTAL MANAGEMENT PROGRAMME Section 6 -EMP Targets – Planning, Construction, Operations Section 7 - COMPLIANCE WITH THE EMPr
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 6 -EMP Targets – Planning, Construction, Operations Section 7 - COMPLIANCE WITH THE EMPr
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 6 of draft EMPr
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 5 - ENVIRONMENTAL MANAGEMENT PROGRAMME

	Section 6 -EMP Targets – Planning, Construction, Operations 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 / RESIDENT CONDUCT CONTROL AND INFORMATION SHEET
(n) any specific information that may be required by the competent authority.	Draft EMPr and Appendix J – Impact Assessment

Glossary of Terms

BAR	**Basic Assessment Report –** 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.
DFFE	**Department Forestry Fisheries and Environment**– the national authority for sustainable environmental management and integrated development planning.
DEADP	**Department of Environmental Affairs and Development Planning** – the provincial authority for sustainable environmental management and integrated development planning.
CBA	**CBA Critical Biodiversity Area** – Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.
EAP	**Environmental Assessment Practitioner –** An EAP and a specialist, appointed in terms of regulation 12(1) or 12(2) must – (a) be independent. (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. (c) Ensure compliance with these Regulations (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. (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 (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 – i. Any decision to be taken with respect to the application by the competent authority in terms of these regulations; or 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. (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. (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).
ECO/ESO	**Environmental Control Officer** – A site agent who needs to ensure that all environmental authorisation and conditions are adhered to during the construction phase of the project
EMPr	**Environmental Management Programme –** 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".

ESA	**Ecological Support Area –** 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.
MMP	**Maintenance Management Plan –** means a maintenance management plan for maintenance purposes defined and adopted by the competent authority
NEMA	**National Environmental Management Act (Act 107 of 1998) as amended 2017** – national environmental legislation that provides principles for decision-making on matters that affect the environment.
PA	**Protected Area -** 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.1 The NPAES distinguishes between land-based protected areas, which may protect both terrestrial and freshwater biodiversity features, and marine protected areas.

Contents

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 final Basic Assessment Report and all related appendices dated February 2025. 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 DEADP 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 DEA&DP 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). (Planning and construction Phase)

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

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 Impact Assessment Report (Appendix J) and is not repeated here.

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

- Loss of indigenous vegetation
- Loss of habitats and disturbance to fauna
- Susceptibility of some areas to erosion
- Increased runoff from increased hard surfaces
- Impacts on social environment - traffic, noise, bulk services,
- Impacts on social environment - change in land use to medium / high density residential
- 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 recommended 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 the 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 notify the competent authority of the commencement of maintenance management activities 14 days prior to such commencement taking place.

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

- Secure the protection and 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;
- Environmental Method Statements;
- Non-conformance Reports;
- 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

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 2074 requires a number of approvals to be in place prior to the start of construction. Two plans have been proposed for this development. Alternative layout 1 had a density of 250 units / 5 ha and is not considered further. Alternative Layout 2 (228 units) is assessed; recommendations and mitigations on this layout will inform the final site development plans (SDPs).

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, 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 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 AND PALAEONTOLOGY

Planning Phase - Planning Team

- Incorporate heritage buildings into planned development.
- Follow the chance Palaeontological Finds Procedure should a significant fossil discovery is made during construction.

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

PROCEDURE FOR CHANCE PALAEONTOLOGICAL FINDS

Extracted and adapted from the National Heritage Resources Act, 1999 Regulations Reg No. 6820, GN: 548.

The following procedure must be considered in the event that previously unknown fossils or fossil sites are exposed or found during construction of the road:

1. Surface excavations should continuously be monitored by the ECO and any fossil material be unearthed the excavation must be halted.
2. If fossiliferous material has been disturbed during the excavation process it should be put aside to prevent it from being destroyed.
3. The ECO then has to take a GPS reading of the site and take digital pictures of the fossil material and the site from which it came.
4. The ECO then should contact a palaeontologist and supply the palaeontologist with the information (locality and pictures) so that the palaeontologist can assess the importance of the find and make recommendations.
5. If the palaeontologist is convinced that this is a major find an inspection of the site must be scheduled as soon as possible in order to minimise delays to the development.

From the photographs and/or the site visit the palaeontologist will make one of the following recommendations:

a. The material is of no value so development can proceed, or

b. Fossil material is of some interest and a representative sample should be collected and put aside for further study and to be incorporated into a recognised fossil repository after a permit was obtained from SAHRA for the removal of the fossils, after which the development may proceed, or:

c. The fossils are scientifically important, and the palaeontologist must obtain a SAHRA permit to excavate the fossils and take them to a recognised fossil repository, after which the development may proceed.

7. If any fossils are found then a schedule of monitoring will be set up between the developer and palaeontologist in case of further discoveries.

3. TERRESTRIAL BIODIVERSITY

Planning Phase - Planning – Design Team

- Reduce project area of influence can be reduced by retaining the road as a footpath; removing buildings from the CBA and not allowing for further tracks / roads to be developed in the southern area. Only 1200m2 development permitted in area mapped as CBA (WCBSP) due to flatter gradient as opposed to developing on adjacent steeper gradient not mapped as CBA.
- The gazebo development footprint must be planned to use the existing disturbed footprint.
- Permeable pavers may be used on existing southern road, but must be retained as a footpath;
- No vehicles are permitted in the southern area; no driving permitted in southern section; only foot traffic
- The southern boundary of Erf 2074 should preferably remain unfenced - Should a fence be planned along the southern edge of Erf 2074 (as opposed to just along the southern boundary of the proposed development) this

fence (and potential associated fire breaks – consult the Southern Cape Fire Protection Association) will present additional management impact which is currently addressed in this report. This southern area is unlikely to pose a significant security threat to residents as the property borders a steep slope/cliff acting as a natural barrier for criminals.

- No development where gradients are steeper than 1:4
- Palisade fencing is best used for the rest of the site as this offers some permeability for smaller wildlife, requires little maintenance, and is not as susceptible to damage by fire as other fencing options

Construction Phase - Planning – Construction Team

- Careful planning is required - A turning and parking area for construction and delivery vehicles may only take place in areas that are already cleared or part of the permanent disturbance footprint of the development plan; this must be indicated on the contractors site plan prior to start of construction.
- Schedule vegetation clearance during the winter in order to minimize impact on plant life cycles & pollination
- Maximum disturbance envelope of 2m along the edges where it intersects fynbos vegetation; areas outside direct area of influence to be designated as no go areas and signage placed to indicate such areas to contractors.

Construction activities – Construction Team

- Method statements for construction of the gazebo area must be compiled by the construction team and approved by the ECO prior to construction.
- All construction activities must remain with development footprint.
- The disturbance footprint of proposed developments should be clearly defined and demarcated to prevent unnecessary damage to the surrounding environment - have a maximum disturbance envelope of 2m along the edges where it intersects fynbos vegetation
- Movement of workers must be limited to areas under construction. Access to natural area in the south is not permitted; these must be designated as no-go areas during construction.
- Mitigation measures to mitigate impacts on flora, fauna, alien invasives, soil and aquatic systems to be implemented.

Operational Phase

- Put in place all required operational phase mitigation measures

4. INDIGENOUS VEGETATION AND FLORA SPECIES OF CONSERVATIONAL CONCERN

Construction Phase - Planning – Construction Team

- Conserve identified SCC and protected trees by marking them off during construction and incorporating the vegetation into landscaping on the site.
- Any permits for sensitive flora species of conservational concern to be in place prior to construction. Allow 3 months for this process.
- Search and rescue of flora SCC (succulents and geophytes) must take place on site prior to start of construction. This vegetation must be transplanted (where possible) or seeded in suitable ecosystems identified close to the site (southern CBA section)
- Identify a suitable specialist to assist with a suitable method to remove, store and / or transplant identified flora species of special concern
- Identify area on site which will not be disturbed by construction activities for establishment of an on-site indigenous plant nursery on site and are to store removed topsoil / vegetation

- Rescued plants must all be placed in suitable containers / bags
- These must then to be transported with care to a nursery that should preferably be set up on the site in an existing disturbed area. Alternatively, arrangements with a suitable nursery / available receptor site should be made to keep and care for removed plants during the construction phase of the project.
- The rescued plants must be planted back with the aid of botanists and / or horticultural specialists within the
- 2m disturbance footprint around the permanent disturbance footprints.
- In areas in the fynbos where alien clearing results in bare patches that could use some aid to enhance their recovery. This will promote the regeneration of natural fynbos abound the developments and reduce the possibility of negative edge effects on the site.

Construction– Construction Team

- Materials used during construction must be sourced and transported responsibly to minimise the risk new invasive plants.
- Staff, if suspected may be checked when they leave to ensure no plants have been poached from the natural surrounding environment. Staff should also be told that plants may not be collected outside of the search and rescue operation.
- Any additional SCC and 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.
- 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.
- Site clearing to be done in phased manner. No blanket clearing of vegetation is permitted.
- Areas within the development footprint, that can be used for the duration of the construction phase, must be selected for stockpiling of indigenous material including logs and rocks that can be used in landscaping.
- 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.
- Gathering of firewood / plants in adjacent areas is not permitted.
- Contractual fines to be imposed on any employee who is found attempting to remove indigenous flora.

Post construction – Construction team

- Revegetation of bare soil following construction 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.
- Plant during the cooler, wetter months to reduce transplant shock and ensure moisture availability. This would ideally be during winter (June, July). Space plants according to their natural distribution & spacing, which will be visible in the surrounding remaining natural vegetation on the site. So not add any additional organic matter to the soil, as some fynbos species are sensitive to nutrient stress in a way most typical garden species are not.
- 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 – Choose a mix of pioneer species and slower-growing species to ensure quick coverage and long-term sustainability. Some species that could be considered include: *Helichrysum petiolare, H. odoratissimum, H, cymosum, Metalasia muricata, M. pungens, Osteospermum moniliferum, Searsia chirindensis, Senecio crenatus, Agathosma ovata, Chironia baccifera, Restio eleocharis, Passerina corymbosa,* etc. Base additional species selection first on important species listed for South Outeniqua Sandstone Fynbos (Refer to Appendix G – Specialist reports), and then only on availability from local nurseries.
- Adaptive management – Be prepared to adapt strategies based on monitoring results and environmental conditions.
- The rehabilitation of the 2m disturbance footprint with topsoil and plants rescued on the site must occur as soon as possible after the conclusion of construction.
- The rescued plants must be planted back with the aid of botanists and / or horticultural specialists within the 2m disturbance footprint around the permanent disturbance footprints.

Operational Phase – Planning and Operational Team

- Existing road recommended to be used as a footpath only for residents; no other footpaths / roads permitted to be created in southern section.
- The existing development footprint of unfinished building recommend to be converted to a lookout point for residents. No fires permitted in this area.
- No removal of indigenous vegetation in the southern No-go area;
- If gardens need to be considered, they can be designed to be water wise (avoid erosion) and friendly to wildlife and the greater natural habitat. Fynbos Life in Cape Town is an inspirational indigenous landscaping project with very useful tips allowing a garden to add biodiversity value, instead of detract value.
- Gardens & the built environment should be planned with rainfall, slope/aspect, wind direction, & microclimates in mind. Gardens could be planned to capture rainfall & slow water loss. Create a grey-water wetland if there is a need for water filtration & absorption of extra nutrients.
- No garden waste may be dumped in any remaining natural area and must be disposed of in a responsible manner.
- No NEMBA listed invasive plants (e.g., kikuyu grass, *Cenchrus clandestinus*) permitted. Better grasses to plant in areas that are erosion prone or in lawns include kweek (*Cynodon dactylon*), Eragrostis capensis, Kangaroo grass (*Themeda triandra*), Rats tail grass (*Sporobolus africanus*), and buffalo grass *(Stenotaphrum secundatum*)
- Select locally indigenous plants for gardens, making use of as many of the rescued plant species as possible. Avoid plants that are hybrids and cultivars (Refer to Terrestrial biodiversity and Plant species Assessment in Appendix G)
- Plant during the rainy season (early winter May/June) and add a 10cm thick layer of wood chip to keep in moisture.
- Reduce or replace lawns with water-wise groundcovers or enlarging shrub beds.
- Add local edible and aromatic plants to avoid water & nutrient intensive vegetable gardens.
- Ensure soft landscaping is used as opposed to hard landscaping
    - Soft landscaping refers to natural spaces around constructed buildings that contain plants. The plants used are often trees, shrubs, and herbs that perform valuable ecosystem functions and services. Soft landscapes support biodiversity if local indigenous species are planted, or better yet, if the natural vegetation is left to recover and grow with minimal to no planting of man-made gardens. Grasses and shrubs are as effective at converting Carbon dioxide as are trees. Keeping fynbos & Strandveld vegetation allows groundwater attenuation and minimisation of erosion risk
    - Hard landscaping are spaces around buildings that have been transformed into impermeable surfaces, such as pavements, and concrete driveways. Hard landscapes have negative impacts on the

natural environment. Hard landscaping results in the absorption and reflection of heat, which makes them hotter than the surrounding natural areas. Furthermore, they speed up the flow of rainwater. No plants can really grow on these surfaces making groundwater attenuation problematic

- Clearly delineate maintenance zones and employ low-impact maintenance techniques
- Schedule major maintenance activities to avoid critical periods such as flowering, seed dispersal, and pollination periods (for most species this is during spring between September to November).
- Minimize soil disturbance and compaction, such as using hand tools instead of heavy machinery. Use specialized equipment designed to reduce environmental footprint, like lightweight mowers or trimmers.
- When chemical treatments are necessary, use targeted applications that minimize exposure to non-target species.
- Stabilize disturbed soils promptly with native vegetation or erosion control materials. Erosion control measures should be in place.
- Vegetation clearing along road verges should be kept to a minimum, and avoided in areas where it poses no risk to vehicles. Where essential, vegetation along the road verges should only be cleared up to a maximum width of 1m on either side of the road.
- 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, so as not to smother other plants or create concentrated fuel loads for fire.

5. FAUNA HABITATS AND FAUNA SPECIES

Construction Phase – The construction phase will have the highest impacts on fauna species due to increased moving vehicles, noise and habitat destruction associated with these activities.

Planning – Planning and construction team

- Transplanting should follow best practice guidelines and on-going monitoring and maintenance (i.e. watering, temporary shading, etc.) of each transplanted plant needs to occur to ensure the best chances of survival. The new location of each plant needs to be marked (GPS point and a physical marker next to the plant) to allow the plant to be revisited for monitoring and maintenance purposes, which can cease once a Botanical Specialist considers the plant well established within its new environment.
- No further development is permitted to take place in the core of the green fynbos space in the south of the property with the exception of an upgrade of the existing gazebo with the same footprint (no expansion). The existing road is to be used as is or formalised using grass blocks and retained as a footpath
- Existing road and gazebo footprint in the south to be cordoned off to ensure footprint remains as small as possible. A clear method statement for construction methods in the south required prior to start of construction.
- The southern extent of the footprint of the development needs to be assessed by a Botanical Specialist for the presence of butterfly larval host plants: *Aspalathus spp*. (especially *A. acuminata, A. laricifolia* and *A. cymbiformis, Chrysanthemoides incana, C. monilifera, Indigofera erecta, Lebeckia plukenetiana, Osteospermum polygaloides, Thesium spp, Zygophyllum spp*.)
- If located, a botanical specialist needs to oversee the transplanting of these species from the development footprint into an appropriate natural environment (outside the development footprint) closest to where the plant was originally found. By limiting the distance that the plant is moved from its original location, impacts on associated faunal communities and changes to its growing conditions (microclimate, soil texture, soil moisture) are reduced.

- A walk through and search should be conducted to ensure that any birds are not nesting in vegetation prior to clearing of aliens and construction. If a nest with eggs is encountered, construction must be halted and a wildlife rehabilitation facility contacted.
- During laying season for Knysna Woodpecker (August to November) a dedicated search for the SCC must be conducted by a Faunal Specialist in the agricultural fields and non-natural gardens habitat to check if the species is present.
- If a Knysna Woodpecker nest is found, no construction should take place in the dwelling and non-natural garden and old agricultural field habitat for 6 weeks hence (time for incubation and development of the nestling before it can relocate) and in October (peak laying month to account for other Knysna Woodpeckers that may not have nested in a place that is as conspicuous as those found).
- Any permits for sensitive fauna species of conservational concern to be in place prior to construction. Allow 3 months for this process.
- Site walkovers to be conducted by fauna search and rescue team prior to commencement of construction;
- Permits required for fauna search and rescue (i.e., tortoises) must be obtained before any construction commences. 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, therefore, require permits for their removal during the construction phase of the project.
- Threatened species should be removed to similar habitat within proximity of the project area by a suitably qualified person where appropriate. Reptiles such as lizards are less mobile compared to mammals, and some mortalities could arise.

Planning – Construction Team

- Prior to construction, the disturbance footprint of the development should be clearly defined and demarcated to prevent unnecessary additional damage to the surrounding environment:
- Construction netting or fencing must be used to clearly indicate construction areas.
- Access roads must be clearly marked so there is no confusion as to where the tracks are or how wide the road is.
- Clear signs for “no-go” areas for vehicles and personnel should be placed strategically on the site and along access roads. No-go areas are anywhere outside of the direct area of influence of the construction phase and especially in the green space area in the south of the site.
- A turning area for construction vehicles should be demarcated within the existing footprint of proposed hard surfaces like roads or houses.
- All new staff must be briefed about the layout of the construction site and must be made aware of the no-go areas as the surrounding environment is sensitive and must not be disturbed.
- Staff must be made aware what all SCC looks like and to report all fauna occurring on site to the site ECO who will report to external ECO.
- Weekly toolbox talks should be held, during which the ECO should remind all staff of construction phase mitigation measures
- Put in place vegetation mitigation measures
- Put in place waste management mitigation measures
- Put in place soil management and dust control measures
- Construction should happen in phases, such that construction related activities are confined to one area at a time on the property and can be monitored for faunal impacts appropriately.
- Suggested order for phases of construction should prioritize constructing access roads to completion before focusing on dwellings

- After the footprint of the development has been clearly demarcated a faunal specialist should do a walk-through to search for bird nests and eggs.
- 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.
- After grubbing has been completed, a Faunal Specialist should do a second walk-through to look for signs of fauna with limited mobility and escape potential (i.e. tortoise, chameleon, etc.) with particular attention given to the Fynbos Golden Mole SCC.
- Should signs of fauna with limited mobility or an SCC be found within the demarcated area, a search and rescue operation should be undertaken to relocate fauna to a suitable location on the property.
- No construction may commence until the Faunal Specialist is satisfied that all fauna with limited mobility and/or SCC have been successfully removed from the demarcated footprint area.

Construction - Construction Team

- 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 records of fauna search and rescue permits and reports.
- Faunal search and rescue to be conducted before construction commences, however, experience has shown that there could still be some mortalities as these animals may move onto site once construction is underway. A search should be on call for such circumstances. Before construction commences for any new earthworks at the start of new phase, an ECO should do a walk-through of the demarcated area and access roads that will be used to look fauna for with limited mobility. These animals should be removed from the demarcated area to an adjacent location, and where appropriate a Faunal Specialist contacted for assistance or guidance.
- It is important that clearing activities are kept to the minimum and take place in a phased manner; this allows any smaller animal species to move into safe areas and prevents wind and water erosion of the cleared areas.
- At any point during the day (during construction), if an animal with limited mobility is observed on site, this should be reported to the ECO and construction temporarily halted.
- Construction can commence once the ECO is satisfied that all such fauna is removed from the construction area.
- No animals are to be harmed or killed during the course of operations.
- 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. The recommended speed is 20 km/hour on sites of this kind. Signs should be put up along the roads to remind people of speed limits, as well as warnings to look out for small animals on the roads.
- Contractual fines to be imposed on any employee who is found attempting to harm fauna in surrounding areas.
- If any animals are seen on site, a photo or a video should be taken if possible (to assists 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. This includes any potentially venomous animal (e.g. snakes, scorpions) or any medium-large animal that has become cornered in an enclosed area such that it cannot escape (e.g. porcupines, monkeys, baboons, antelope). It is critical in the case of snakes/ scorpions o get pictures/videos to aid in identification and appropriate treatment of anyone needing medical assistance.
- Any animal that shows a 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.
- For any injured animals or animals to be removed from site (domestic or wild):
- 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 mitigation measures in place to protect animals on the site from harm.
- A local SPCA or animal welfare society can collect and treat most animals and should be the first point of call for assistance. If they cannot directly assist, they will revert and notify the relevant authorities/vets.
- For any assistance with snake removals/relocations, identifications, or bite treatment contact the African Snakebite Institute. The contact details of a suitably qualified snake handler are provided at the following link: https://snakeremoval.co.za/plettenberg-bay. Also available are the following emergency contacts:

SNAKEBITE EMERGENCIES:	
Poisons Information Helpline	+27 861 555 777
Dr Jenna Taylor	+27 83 631 4816
Dr Christoff Bell	+27 73 174 0199
Johan Marais	+27 82 494 2039
Jason Seale	+27 82 781 8498
Arno Naude	+27 83 739 9303
Dr PJC Buys	+26 481 127 5109 (Namibia)

GET THE FREE APP:

(Scan this code with your phone's camera.)

Operational Phase - Planning and Operational Team

- 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.
- Put in place waste management mitigation measures to prevent attraction of wildlife to food waste areas
- If pets permitted:
    - Residents on the property should be limited in their ability to keep pets (i.e. how many pets and what types of pets). It is highly recommended that no outdoor cats be allowed on the property as they are known to actively hunt small animals and can have detrimental effects on the wildlife of an area.
    - Dogs are to be kept in fenced areas around the property to prevent conflicts.
    - All dog walking in the green fynbos space is strictly prohibited and clearly visible signage should convey this to residents.
    - Residents on the property should be encouraged to keep their pets within enclosed areas around the houses. Dogs outside enclosed areas must be on leads at all times to prevent chasing of wild fauna in the area.
- No insect zappers should be allowed on site, nor the general application of insecticides around infrastructure. Ecofriendly repellents are readily available (i.e. citronella oil/lotions) and should be used instead.
- No driving in the southern fynbos area in the south of the property. Some animals are blinded by the lights of a car, which reduces their ability to escape from collisions.
- The strict enforcement of speed limits along all roads on the property. This speed limit should be reduced to 30km/h in areas where road-side visibility is reduced (i.e. due to dense vegetation).

- Speedbumps or other speed reducing techniques can be incorporated into the road design to assist in keeping speeds to a minimum.
- In areas where there is dense vegetation along the road verges, consideration should be given to clearing a narrow road margin (i.e. maximum of 1m on each side of road). This can assist in preventing roadkill by improving the driver's ability to see an animal before it appears on the road and have adequate response time (through the implementation of a speed limit) to avoid collisions. Vegetation clearing for this purpose needs to be balanced with the amount of habitat lost due to this activity.

6. ALIEN INVASIVE SPECIES

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).
The property should implement the removal of alien plants in accordance with an alien management plan, best practices guidelines and legal requirements. Particular attention should be given to the dense stands of Blackwood (A. melanoxylon) in the middle of the property, in addition to the Pine and Black Wattle (A. mearnsii) observed throughout 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 - Some sections of the site (central section) are heavily invaded with alien tress. Some of the fynbos on the site contains thicket elements and is invaded by wattles (Acacia cyclops, A. mearnsii, A. melanoxylon, A. saligna), pines (Pinus radiata), cotoneaster (Cotoneaster glaucophyllus), and purpletop vervains (Verbena bonariensis). The most serious invasion on the site is Blackwood wattles (A. melanoxylon).
- 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, the plant material can be mulched using a woodchipper on site. 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. –
- Alien plant removal operations must not be planned in September / October since the SCC may rely on these for nesting. A walk through and search should be conducted to ensure that any birds are not nesting in vegetation prior to clearing of aliens. is encountered, construction must be halted and a wildlife rehabilitation facility contacted.
- During rehabilitation, 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

- An alien management and control plan needs to be in place for the remaining open space on Erf 2074. This is a requirement by law.
- Operational management to include ongoing removal of alien invasive trees from the property; fynbos in the south recommended to be managed naturally and kept free of alien trees and weeds.

- In areas in the fynbos where alien clearing results in bare patches that could use some aid to enhance their recovery. This will promote the regeneration of natural fynbos abound the developments and reduce the possibility of negative edge effects on the site.
- Landscaping with indigenous vegetation only
- Duties of operational landscaping to include ensuring the ongoing removal of alien invasive trees and weeds on the property - Alien plant removal must not take place September / October since the fauna SCC may rely on these for nesting. A walk through and search should be conducted to ensure that any birds are not nesting in vegetation prior to clearing of aliens
- When chemical treatments are necessary, use targeted applications that minimize exposure to non-target species.
- Where alien invasive plants are removed at the root; suitable indigenous vegetation recommended to be planted to hold the soil.

7. FIRE RISK

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

- Due to the fire risk inherent for any fire driven ecosystem (fynbos), it is important that this application be reviewed by the Southern Cape Fire Protection Association (SCFPA) so they can provide comments on the development layout, and management recommendations from a fire risk reduction perspective.
- It is recommended that the landowner/ s of Erf 2074 become a member of the Southern Cape Fire Protection Association (SCFPA). The SCFPA provides a number of services including, wildfire risk assessments, wildfire prevention and response plans, alien invasive clearing teams, conduct prescribed or ecological burns on behalf of the landowner(s).
- The current gravel road on Erf 2074 may be utilised as a fire access road in the event of a wildfire. Fire breaks may not be necessary along fence-lines that are not directly adjacent to dwellings - Consult with the SCFPA for recommendations relating to the necessity of fire breaks.
- 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).*
- The proposed development will be situated within Fynbos vegetation which is fire prone and could experience burning in the largely open green space in the south. Measures must be taken to secure infrastructure such as the maintenance of fire breaks around houses forming part of the development that share a boundary with the fynbos area as well as the gazebo/ function venue in the south of the site in the green space.
- Fire Management plan recommendations:
    - Mechanical clearing
    - Selectively thin areas where the veld is old, or where invasive species are becoming more dominant.
    - The thinning and cutting of vegetation will mimic an aspect of the effect of fire.
    - Utilisation of biomass cleared (excluding that of cleared invasive or alien plants):
    - Shred or chip cut fynbos. This can be used for paths, or as mulch in areas where aliens have been cleared. Distribute chipped material evenly and thinly to avoid fire hazards.
    - Use small-scale biochar kilns to convert biomass into biochar (these kilns can easily be made at a low cost should these not be available ready-made).
    - The ash and carbon can be spread back over the fynbos of Erf 2074 to improve soil health, and hopefully mimic the effect of fire.

- Biochar production can be done with minimal smoke and emissions.
- The burning of biomass does not always need to be complete, as fynbos fires are often cooler, and therefore not all biomass should be converted to ash.

- 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 and fire management plan.
  - 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

8. Soil Management

Planning Phase - Planning Team

- Development on areas with gradients steeper than 1:4 is not recommended.
- Design proposed development site to follow natural contour lines as far as possible.
- Ensure the site is appropriately levelled to fit in with current topography levels of adjacent developments.

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 measure:
  - 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. Aquatic Environment

Planning Phase – Planning Team

- Buffer of 48 meters from adjacent drainage line; exclude development in buffered area

Construction and Operational Phase - Construction and Operational Teams

- Prevent pollution of freshwater ecosystems by the proper disposal of construction waste, sewage, and hazardous materials (NFEPA; Nel et al., 2011).
- Put in place stormwater management mitigation measures
- Put in place soil erosion mitigation measures
- Put in place waste management measures

10. Stormwater management

Planning Phase - Planning Team

- Detailed modelling and finalization of permeable paving and swale areas to be undertaken in the Detailed Design Phase.
- Finalization of stormwater management designs including rainwater tanks, ponds, permeable paving, swale details to be carried out in the Detailed Design Phase.
- Concentrate higher density development on the northern section of the property's watershed where stormwater runoff can be diverted towards existing stormwater drains with low risk of erosion or major impacts to any watercourse; Minimise development on the southern section of the watershed as management of stormwater will be challenging in this area.
- The stormwater on site is to be managed for the 1: 100-year stormwater events. Implement SUDS-type stormwater management systems to encourage water infiltration, improve quality of runoff, and minimise runoff velocities throughout the proposed development.
- The swales and permeable paving areas will be designed to detain the runoff the pre-development flow rates.
- In the Northern Catchment an underground piped system will collect the runoff from the swales and permeable paved areas and convey it to the discharge position at the north-eastern corner of the site, where it will be connected to the existing Municipal stormwater system in Marine Drive.
- In the Southern Catchment an underground piped system will collect the runoff from the permeable paved areas and convey it to the swales positioned along the western boundary. From the swales the discharge will be released on surface in a manner engineered to simulate the existing spread of surface flow across the full area of discharge. Therefore, the detained runoff will be distributed on surface without concentration.

Construction and Operational phase – Construction / operational teams

- Permanent detention channel swales which are specified on the western and northern boundaries of the site to be constructed on commencement of construction. Elsewhere along the southern, western and northern boundaries of the site a grass lined stormwater containment berm will be constructed.
- The detention channel swales and berms will contain all concentrated and silt contaminated stormwater flow from running off to the underlying property during the construction period. The desilting maintenance of these facilities to be undertaken on a regular basis.
- Minimizing impervious surfaces and implementing green infrastructure for stormwater management to reduce habitat disturbance and water pollution;
- The stormwater pond must be lined with suitable groundcover and indigenous vegetation to manage erosion and stormwater absorption
- Some of the parking bays are proposed to be paved with permeable "green" pavers; this will lessen the degree of soil compaction in these areas, improve stormwater absorption and soften the amount of hard surfacing within the development.
- All open ground areas must be vegetated with suitable groundcover and indigenous vegetation to manage erosion and stormwater absorption. Make use of vegetated strips instead of concrete wherever possible.
- Ensure sustained vegetation cover to protect soil from erosion; Any bare areas should be mulched, and indigenous vegetation planted; plant indigenous vegetation where alien invasive plants removed to hold soil.
- Rainwater tanks to be installed to allow catchment of stormwater from roof structures; Each house unit should be equipped with a rainwater collection tank which should ideally be plumbed into some sort of permanent household use such as toilet flushing in the design phase.
- Any construction of stormwater outlets, pipes or associated infrastructure directing stormwater into the drainage line on the neighbouring property will require an impact assessment and a Water Use Authorisation in terms of the National Water Act.
- Do not discharge any stormwater directly off the edge of the cliff due to high velocity flow creating erosion where it lands.
- Stormwater management measures for the southern section to be implemented to ensure no erosion / increased runoff will occur; implement suitably sized stormwater management pond / attenuation dams, vegetated swales and dispersion methods. Volumes required to mitigate post development runoff have been calculated by the appointed civil engineer and dictate the sizing.

11. Noise Management

Planning Phase – Planning team

- A maximum density of 228 units proposed at 100 – 130m2 per unit is recommended.
- Higher density buildings are recommended to be placed in northern, central and western areas (BLM Restructuring Zone) away from quieter eastern residential areas and sensitive southern fynbos area. Lower density buildings recommended to be planned for the east (quieter adjacent residential area) and environmentally sensitive southern sections (i.e. gradation of building heights from west (tallest) to east (lowest)).
- Final plans must ensure the long-term privacy of neighbours bordering erf 2074 (i.e. Thulana Hills, Cutty Sark residents) (i.e. direction of units, window positions etc.)
- The final SDPs could include a central road as opposed to road alongside the cutty area if this will improve privacy and reduce noise levels.

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/ s

- 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.
- Noise should be minimised on the site and loud sirens/alarms must not be permitted unless there is an emergency. If security is a concern, then a silent alarm system should be implemented i.e. motion detection cameras
- To reduce levels of noise disturbance, plantings of indigenous trees and tall shrubs should be introduced to the interface between the development and the fynbos area (if fire breaks are not recommended by fire protection agencies, in which case these plantings would be within the fynbos alongside the fire break). Fire-proof indigenous hedge species are suggested.

12. Visual Management

Planning Phase – Planning team

- A maximum density of 228 units proposed at 100 – 130m2 per unit is recommended.
- Higher density buildings are recommended to be placed in northern, central and western areas (BLM Restructuring Zone) away from quieter eastern residential areas and sensitive southern fynbos area. Lower density buildings recommended to be planned for the east (quieter adjacent residential area) and environmentally sensitive southern sections (i.e. gradation of building heights from west (tallest) to east (lowest)).
- Final plans must ensure the long-term privacy of neighbours bordering erf 2074 (i.e. Thulana Hills, Cutty Sark residents) (i.e. direction of units, window positions etc.)
- The final SDPs could include a central road as opposed to road alongside the cutty area if this will improve privacy and reduce noise levels.

Construction Phase - Construction Team

- Construction should take place during daylight hours so that the site can be adequately monitored for fauna during work hours, and also to prevent the use of artificial lighting at night which attracts many animal species (predominantly insects and associated predators) and subjects them to the risks of construction.
- Ensure good housekeeping measures on site; put in place all construction mitigation measures to reduce visual

Operational Phase - Planning and Operational Teams

- Keep artificial lighting along roads and around infrastructure to a minimum and consider lighting colour, brightness and design options with minimal impact on biodiversity.
- Wherever possible in the designing phase consider 'no lighting' options to encourage dark areas and reduce light pollution, especially close to the southern part of the site, closer to natural fynbos. No lighting options should only be considered where this does not threaten safety and security of residents (no applicable to the southern end of the site which is bounded by the river. Where this is not possible, the impacts of lighting can be reduced through the selection of the colour/brightness (select yellow, dim lights which are less attractive to insects than bright white or blue lights) and design elements (lights facing down towards the ground rather than facing up towards the sky).

- Light pollution must be reduced and avoided wherever possible during the operational phase of the project. White LED lights have the worst negative effects for the environment, therefore dimmer lights with more natural warm light colours must be used. This must be outlined to residents.
- Permanent lighting along roads must be avoided but should be balanced with maintaining nighttime visibility in higher traffic areas to decrease the incidence of roadkill
- To reduce levels of light disturbance, plantings of indigenous trees and tall shrubs should be introduced to the interface between the development and the fynbos area (if fire breaks are not recommended by fire protection agencies, in which case these plantings would be within the fynbos alongside the fire break).
- Fire-proof indigenous hedge species are suggested.

13. Waste pollution and hazardous materials

General Waste - Construction Phase – Planning and Construction Teams

- 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. 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 should be stored in a double-container fashion, in such a way that it does not serve as an attractant to wildlife attempting to access the secure location (i.e. all waste products put into closed/sealed rubbish bags/containers and then placed within larger sealed containers/bins).
- All food waste or general waste should be kept in a secure location (i.e. a lockup cage or sealed outside room) which is not accessible to any wildlife.
- 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.
- Any small items or building materials which can be carried away by medium-large animals (i.e. baboons) should be safely stored in containers or locked away in a designated area to prevent interference from animals, causing possible harm to them and preventing them from removing such items from site.
- 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 Bitou 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.
- No burning of waste.
- No dumping or burial of waste
- No littering, waste dumping or burning is allowed on the site or in the surrounding environment.
- All waste is to be transported to a registered waste disposal / recycling facility off site - Record of disposal / recycling kept.

Hazardous materials - - Construction Phase – Planning and Construction Teams

- Prepare method statement indicating what hazardous substance (fuel, oil, sewage etc) will be on site and how they will be managed.
- Any fuel and other hazardous substances to be stored on site in bunded 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.
- Drip trays required to be placed under all equipment using fuels /oils.
- Complete spill kits with accompanying storage container required to be on site equipped with hazardous bin for placement of spills cleaned up using absorbents
- 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

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, bunded, & lined slurry sump or container to avoid contaminating the environment.

Waste management (General and Hazardous) - Operational Phase - Operations Team/s

- 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 waste management plan.
- 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 to prevent interference by animals.
- All waste should be stored in a double-container fashion, in such a way that it does not serve as an attractant to wildlife attempting to access the secure location (i.e. all waste products put into closed/sealed rubbish bags/containers and then placed within larger sealed containers/bins).
- All food waste or general waste should be kept in a secure location (i.e. a lockup cage or sealed outside room) which is not accessible to any wildlife.
- 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.
- Any small items or building materials which can be carried away by medium-large animals (i.e. baboons) should be safely stored in containers or locked away in a designated area to prevent interference from animals, causing possible harm to them and preventing them from removing such items from site.
- 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
- During routine maintenance of infrastructure on the property, adequate management of materials should be implemented to reduce any unnecessary habitat loss. For example, all new building materials should be stored in areas within the disturbance footprint of the developments as far as possible to reduce additional damage to the natural (undisturbed) surroundings. Any old/removed building materials or rubble should be removed from site as soon as possible during maintenance activities and disposed of appropriately off-site. This will reduce the amount of additional space (natural surrounding habitat) lost or damaged for unnecessary storage of materials

14. Social Aspects

Planning Phase - Planning Team:

- Planning must ensure that long term social conflict is avoided, and social wellness is ensured by ensuring sufficient space is allocated per unit and for the required open space areas, bulk services and roads. A maximum density of 228 units proposed at 100 – 130m2 per unit is recommended.
- Higher density buildings are recommended to be placed in northern, central and western areas (BLM Restructuring Zone) away from quieter eastern residential areas and sensitive southern fynbos area. Lower density buildings recommended to be planned for the east (quieter adjacent residential area) and environmentally sensitive southern sections (i.e. gradation of building heights from west (tallest) to east (lowest)).
- Final plans must ensure the long-term privacy of neighbours bordering erf 2074 (i.e. Thulana Hills, Cutty Sark residents) (i.e. direction of units, window positions etc.)
- The final SDPs could include a central road as opposed to road alongside the cutty area if this will improve privacy and reduce noise levels.
- Use local labour.
- Use local suppliers of required materials and services where possible.
- Advertise locally for labour and suppliers making use of local resources for this purpose.
- Use reputable agencies / avenue (i.e. Department of Labour) to screen staff employed.

Construction Phase - Construction Team

- Use local labour.
- Use local suppliers of required materials and services where possible.
- Weekly toolbox talks to be held to upskill labour force

- There must be strict access control to and from the site.
- A security guard should be 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
- Sever 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 – Operational Team

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

15. Traffic Management

Planning and Operational Phase - Planning Team:

- The Traffic Impact Assessment (EAS, 2024) be approved by the Bitou Local Municipality;
- The main access to the development be provided from Marine Way (MR00383) at the Challenge Drive intersection;
- Secondary locked access gates be provided at Cutty Sark Avenue and Ariel Drive for use **ONLY** in the event of emergency(ies);
- The main access gate to erf 2074 be set back a minimum of 20m from the erf 2073 access road and the access be configured with two entering lanes as indicated on Figure 15 of the TIA with the cost of access arrangements being met by the developer.

Construction Phase - Construction Team

Construction and Planning teams

- Entrance to the site **only permitted from Marine Drive** (**STRICTLY -** not the emergency access points on Ariel drive and Cutty Sark Avenue)
- 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 a 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.

Operational Phase – Operational management

- The main access to the development **only** from Marine Way (MR00383) at the Challenge Drive intersection;
- Secondary locked access gates be provided at Cutty Sark Avenue and Ariel Drive for use **ONLY** in the event of emergency(ies);

16. Energy demand

Planning and Operational Phase - Planning Team:

The following measures are recommended to be incorporated into the design to reduce energy demands of the residential development on the grid:

- Solar panels on roofs
- Energy efficient lighting (i.e. LED / compact fluorescent)
- Energy saving designs and materials

17. Aviation

Planning and Operational Phase - Planning Team:

- Obstacle assessment / relevant SACAA approval / comment must be in place prior to commencement.
- Comment from SACAA recommended prior to start of construction.

18. SEWAGE MANAGEMENT

Construction Phase - Construction Team:

- Portable ablutions provided at ratio of 1 toilet per 15 workers; ablutions must be kept clean and in good working order and regularly serviced.
- Ensure ablution facilities are secure.
- Records of ablution services to be kept

Operational Phase - Planning and Operations:

- Services Level Agreement to be concluded with Bitou as a prerequisite for the Development to proceed.

19. Water Use

Construction Phase - Construction Team:

- 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.
- Put in place rainwater tanks to harvest water off site offices etc.

Operational Phase - Planning and Operations:

- The developer of Erf 2074 in Plettenberg Bay will be liable for the payment of a Development Contribution (as calculated by Bitou Municipality) for bulk water infrastructure as per Council Policy. Over and above this contribution the developer will be liable for the construction of any link services items to connect to the existing water and sewer services and any augmentation levies as per council tariffs
- Avoid leaking taps and pipes / unnecessary water waste.
- It is recommended that rainwater collection tanks

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:

- ✓ EA in place
- ✓ EM file in place
- ✓ Detailed design and approval of SWMP
- ✓ Approval of TIA
- ✓ Detailed design and approval of Final SDP developed after applicable planning mitigation measures have been considered
- ✓ Rezoning in place
- ✓ Bitou bulk services SLA in place
- ✓ Permits in place (trees, flora, fauna)
- ✓ SACAA approval / comment

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 house: 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 / palaeontological artefacts – paleontology change find procedure followed as required
- ✓ No disturbance to fauna
- ✓ The main access to the development **only** from Marine Way (MR00383) at the Challenge Drive intersection;
- ✓ Secondary locked access gates be provided at Cutty Sark Avenue and Ariel Drive for use **ONLY** in the event of emergency(ies);
- ✓ 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
- ✓ The main access to the development **only** from Marine Way (MR00383) at the Challenge Drive intersection;
- ✓ Secondary locked access gates be provided at Cutty Sark Avenue and Ariel Drive for use **ONLY** in the event of emergency(ies);
- ✓ AIS management plan in place Internal monitoring of AIS as required
- ✓ Indigenous landscaping
- ✓ Effective Pet control measures
- ✓ No fencing in southern section
- ✓ 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
- ✓ No driving in south / no additional paths / tracks / roads created
- ✓ Annual external audit

Project Apects 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 • The main access to the development **only** from Marine Way (MR00383) at the Challenge Drive intersection; • Secondary locked access gates be provided at Cutty Sark Avenue and Ariel Drive for use **ONLY** in the event of emergency(ies);			
Site clearing	Area to be cleared			
	Permits on hand; Plants removed and transplanted elsewhere in resort			
Vegetation management	No disturbance to vegetation outside footprint	✓		
	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			

Activity:	**Description of activity (i.e. AIS clearing, construction of road, maintenance activity)**			
Responsible person:				
Aspect	**Nature / Description**	**Required**		**Notes**
		✓	✘	
	Construction rubble – designated area / skip as required			
	General waste – General waste bins with lids and labelled / storage area			
	Hazardous waste – drip trays / spill kits / storage area			
Drinking water and lunch 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 Department of Environmental Affairs and Development Planning (DEA&DP) 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 (DEA&DP).

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;

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- 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.

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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 DEA&DP in writing that a condition of approval for the project is not being met.

The DEA&DP 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 DEA&DP. Any amendments to the EMPr will require approval from the DEA&DP.

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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:

Responsibility	Name of Responsible Party
Applicant	**DUINESAND Pty Ltd** **Gerhard de Vos**
Town Planner	
Engineer/s	
Contractor/s	
Site Environmental Control Officer	
External Environmental control Officer	
Homeowners Associations / s	

10. DRAFT STAFF / RESIDENT CONDUCT CONTROL AND INFORMATION SHEET

ALL STAFF MUST OBEY THE FOLLOWING RULES:	
1	**DO NOT** tamper with or destroy nesting sites, lairs or any other form of animal shelter.
2	**DO NOT** feed the native animals.
3	**DO NOT** leave the project site untidy and strewn with rubbish that will attract pests.
4	**DO NOT** bring any pets onto the project site.
5	**DO NOT** trespass onto private properties not linked to the project.
6	**DO NOT** carry a weapon onto the project site or in the vehicles transporting workers to and from the site.
7	**DO NOT** set fires.
8	**DO NOT** cause any unnecessary disturbing noise
9	**DO NOT** drive a vehicle under the influence of alcohol.
10	**DO NOT** exceed the national speed limits on public roads or exceed the recommended speed limits in this management plan (where applicable)
11	**DO NOT** drive a vehicle that is generating excessive noise / leaking / excessive fuels (such vehicles must be reported and repaired as soon as possible).

12	**DO NOT** litter along the roadsides, including both public and private roads.
13	**DO NOT** remove or destroy vegetation around the site without the prior consent of the Applicant and Environmental Control Officer.
14	**DO NOT** tamper with, destroy or remove vegetation from any areas that have been fenced off or marked.
17	**DO NOT** operate critical items of mechanical equipment without having been trained and certified.
18	**ALL** employees must undergo the necessary safety training and wear the necessary protective clothing at all times.
19	**NO** unsocial behaviour will be permitted e.g., excessive shouting, hooting etc.
20	**NO** 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	**NO** trespassing on private / commercial properties adjoining the site is forbidden.
22	**NO** worker may be forced to do work that is potentially dangerous or for what he / she is not trained to do.

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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
Applicant / Holder of EA (if attained)	• 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. • The Applicant is responsible to ensure that all necessary communication and submission of required documentation concerning this project is submitted to the relevant authorities.
Contractor / s / Subcontractor/s	• The Contractor is required to adhere to the EMPr and is responsible to ensure that all staff appointed also adhere the EMPr. • Ensures that all staff are made aware of the need to conduct activities in an environmentally responsible manner. • (Contractor) On instruction by the ECO, ensures that storm/surface water controls are established. • Ensures prompt remediation of any sewage spills. • Stockpiles are protected from aeolian effects, stormwater effects, or being driven over by workers. • Ensures that a "clean-site" policy is applicable at all times. • Ensures that all complaints by residents are dealt with promptly. • Is responsible for any contravention/s by staff or any non-compliance with the EMPr.
Site ECO	• On site ECO is required to carry out daily requirements of the EMPr • 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
Environmental Control Officer (ECO)	• 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. • 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 • The need for any deviations or variations in the environmental conditions must be reported to the DEDEAT for approval prior to these being undertaken. • The ECO must be fully cognisant with the contents of the Environmental Authorisation as well as this EMPr and any other applicable legislation
Competent Authority - DEADP	• 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.
Cape Nature	• Responsible for issuing any SCC permits for fauna and smaller plants
Department of Forestry	• Responsibility for issuing permits for protected trees
Heritage WX	• Responsible for issuing of permits required for any discovered artefacts during excavation / site clearing activities

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 2074, Marine Drive, Plettenberg Bay, Bitou Local Municipality, Western Cape

DEA&DP REF:

APPLICANT:

Signed: …….. Date: …….....

CONTRACTOR:

Signed: …….. Date: …….....

SITE ENVIRONMENTAL CONTROL OFFICER

Signed: …….. Date: …….....

EXTERNAL ENVIRONMENTAL CONTROL OFFICER

Signed: …….. Date: …….....

ANNEXURE 1: Mapping of Environmentally Sensitive Areas

Figure 1: Southern section of development showing 48 meter buffer of western drainage line, CBA and steep gradient in the south

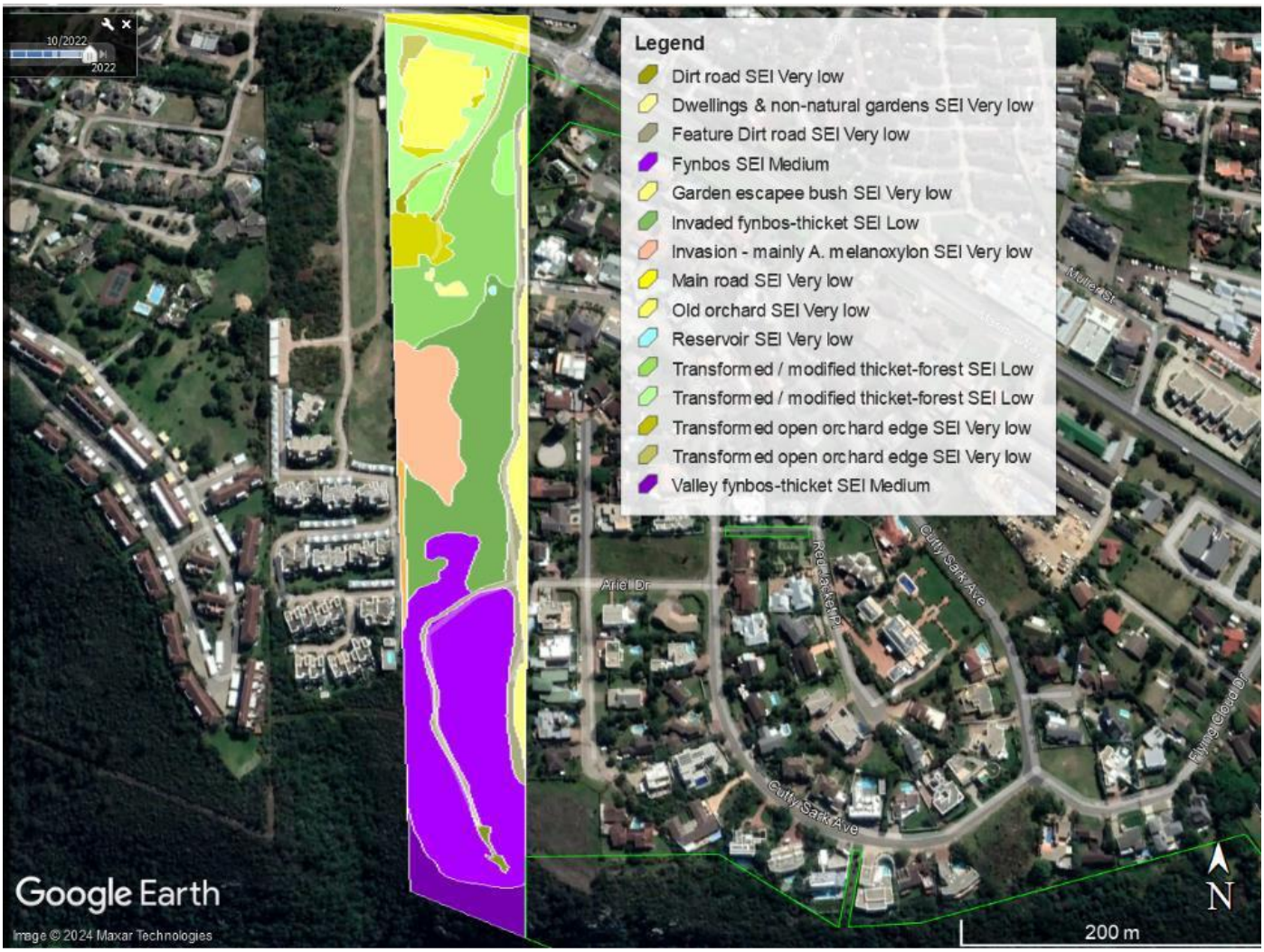

Figure 2: Mapped vegetation on site by botanist

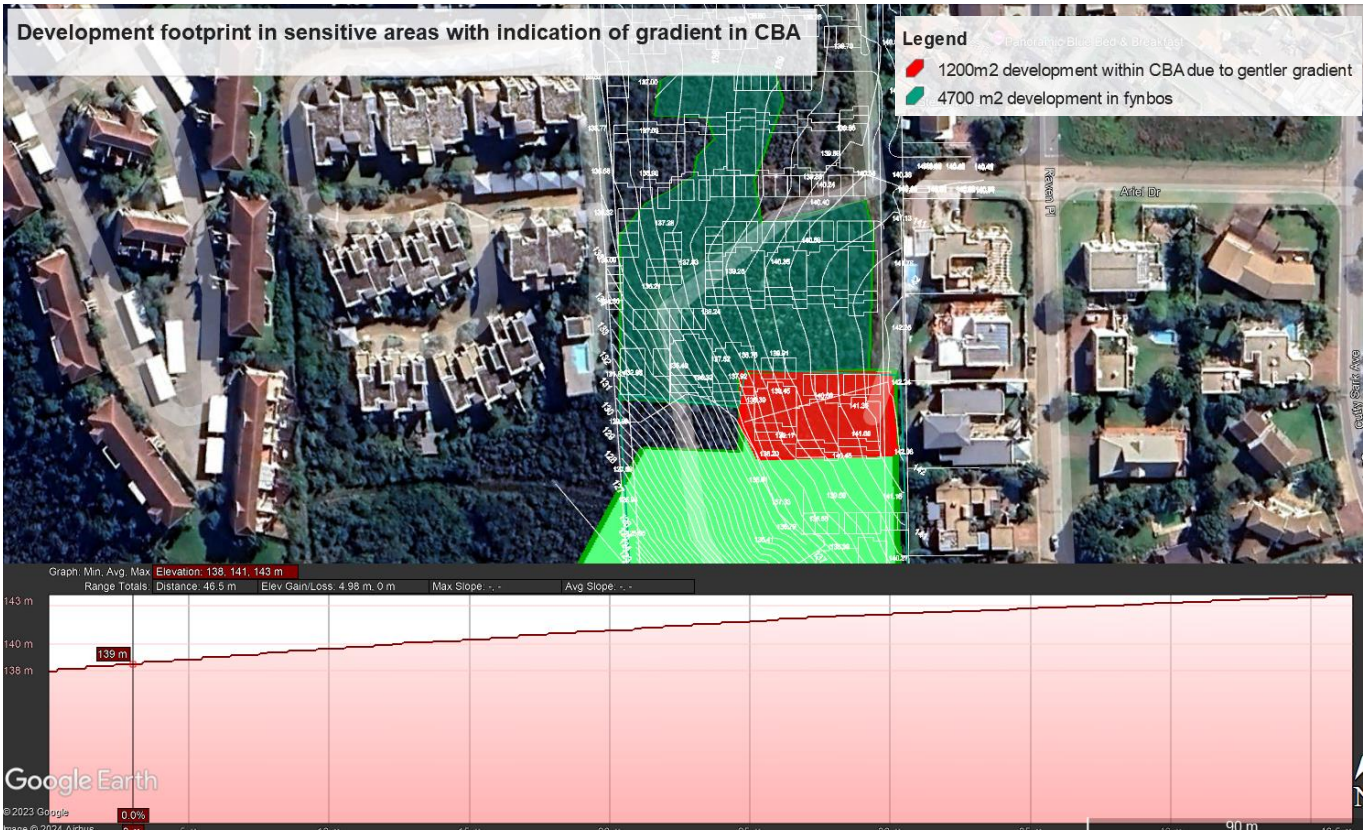

Figure 3: Development (100m2) preferred on gentler gradient falling within NE section of mapped CBA

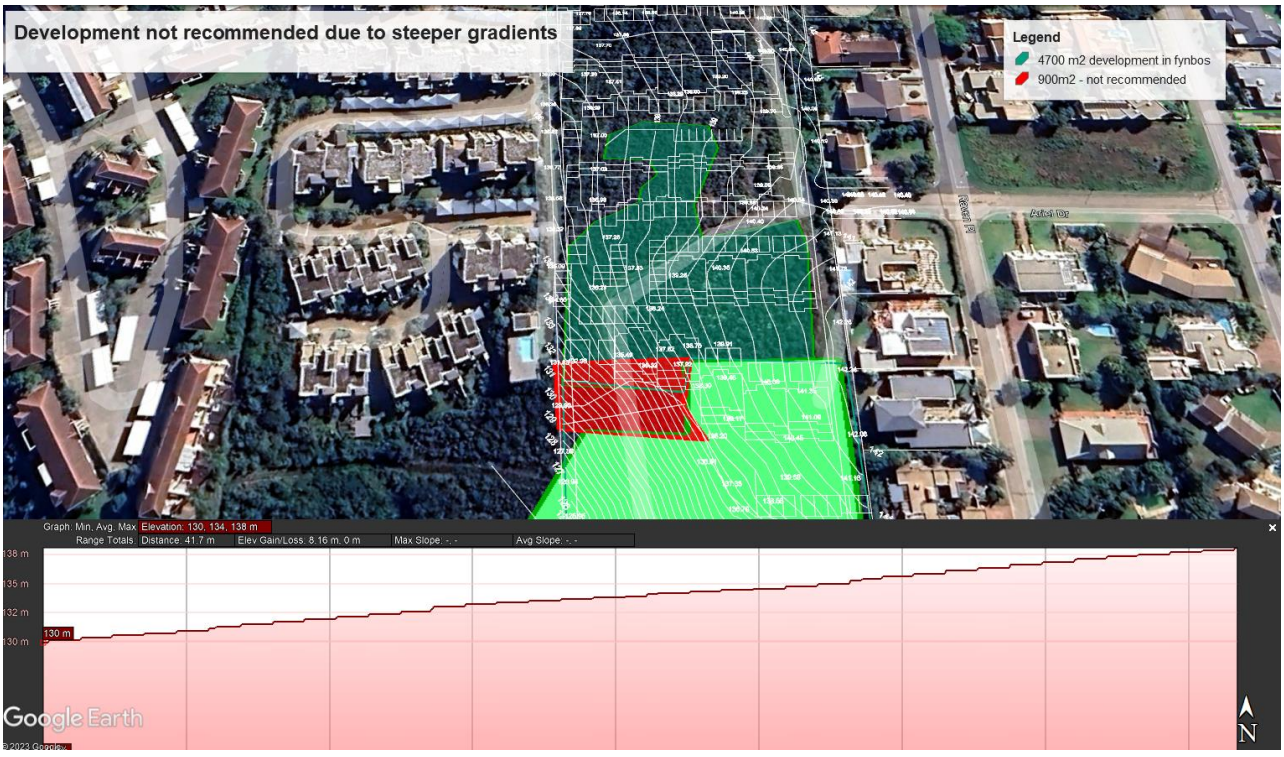

Figure 4: Development (900m2) not preferred on steeper gradient west of the NE section of mapped CBA

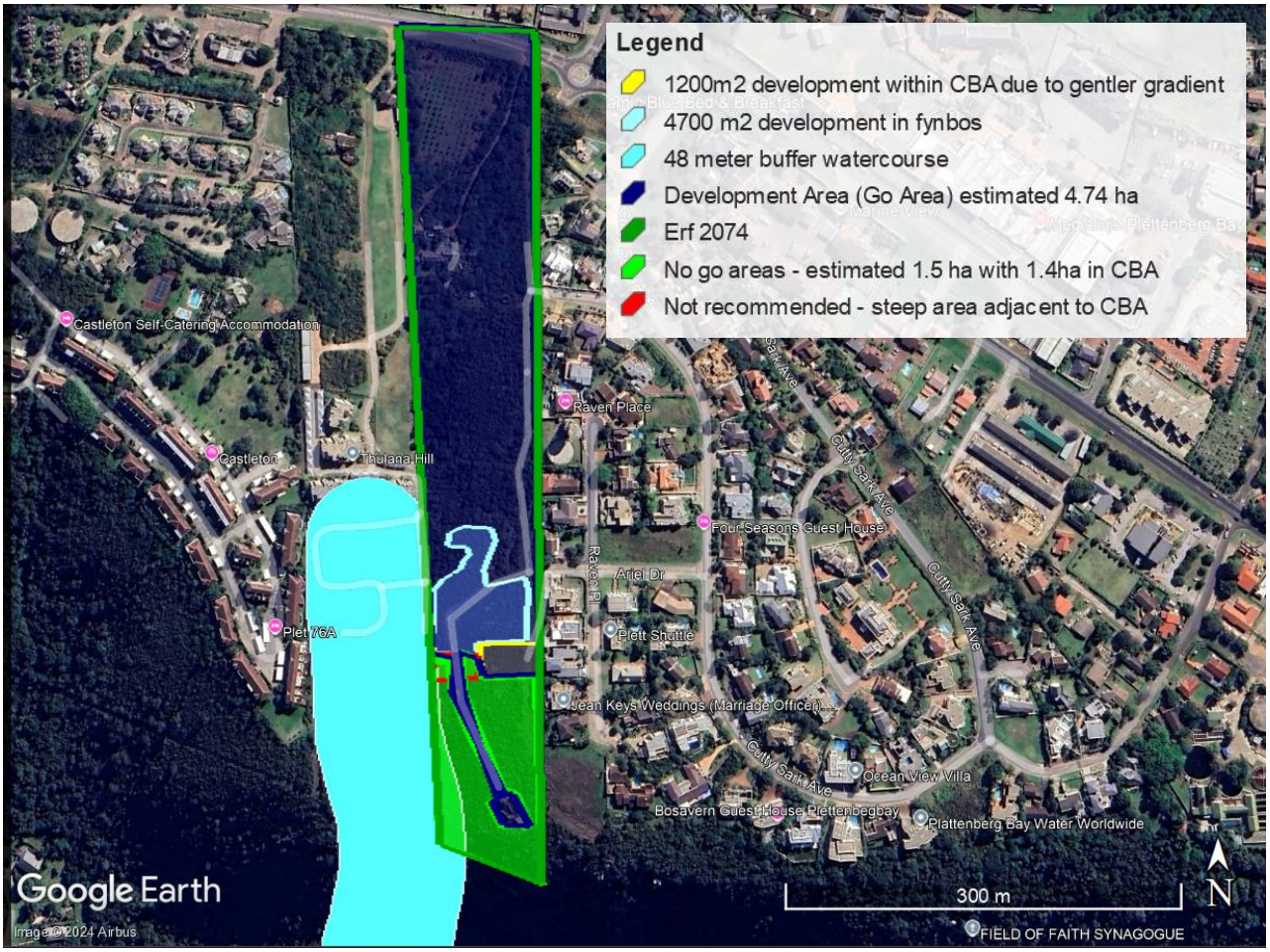

Figure 5: Map showing no go areas (CBA, steeper gradient, 48 meter buffer) and go area

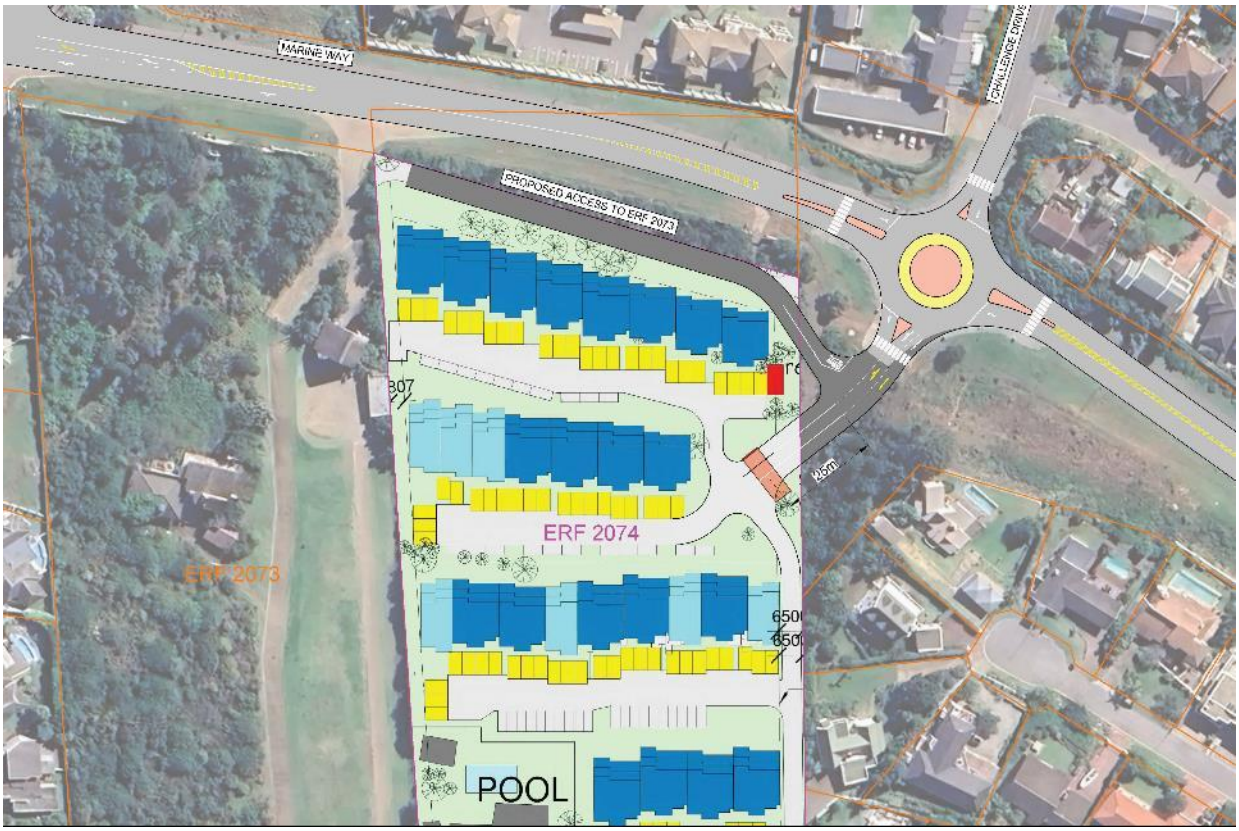

Figure 6: Road and access layout (adapted from figure 15, TIA, EAS, 2024)

ANNEXURE 2: Updated Site Development Plan (based on recommendations)

To be included into EMPr once developed

ANNEXURE 3: CV of EAP

Claire De Jongh

Curriculum Vitae

Current Position	Environmental Assessment Practitioner
Current Location	Port Elizabeth, South Africa
Date of birth	13 July 1983
Year of Birth	1983
Specialisation	Environmental Management
Nationality	South African
Years of experience	15 years
HDI status and gender	White Female
Languages	English (Excellent – Reading, Writing, Speaking, Presenting) Afrikaans (Fair – Reading, Writing, Speaking)
Contact Details	+27846074743 / clairejarvis@hotmail.co.za
Career Profile	Claire's career in the environmental field spans 15 years. Her work involves:

- Basic Assessment Reports
- Scoping and full environmental impact assessment Reports
- Waste management licences
- Coastal Water Discharge Permits
- Water use licence applications
- Project coordination, authority liaison, specialist team management
- Environmental management programmes reports
- Methods statements and procedures
- Environmental management systems
- Environmental Auditing
- Rehabilitation strategies and implementation
- Aspect / impact registers and implementation of environmental management systems in line with ISO14001
- Environmental training
- Environmental monitoring
- Environmental awareness education
- Management, coordination and implementation of environmental and social development projects

Career History	Environmental Assessment Practitioner and ECO (current) Environmental subconsultant at Eco Route Environmental Consultancy (current) Environmental Consultant at CEN Integrated Management Unit February 2015 to date Senior Environmental Consultant Ethical Exchange sustainability Services (Pty) Ltd June 2011 to January 2015 Environmental Consultant BSc Honours (Environmental Monitoring and Modelling) 2009 to 2011 WESSA (BushPigs Outdoor Environmental Education Centre) 2007 to 2009 Environmental Education Programme Coordinator Green Gain Consulting 2005 to 2007 Environmental Consultant: Environmental Management Systems; Training
Education and Courses	BSc (Hons) Environmental Monitoring and Modelling, 2012. BSc Environmental Management: Zoology Stream, 2007. IEMA Accredited Environmental Auditor Training Course: Aspects International, 2011. Environmental Awareness and Legal Liability Course, 2006 (2 days). Field Guiding Association of South Africa (FGASA) Level 1. ICDL, 2004, (Microsoft word, excel, access, PowerPoint, outlook).
Professional Affiliations	EAPASA Registered EAP (Number 2021/3519) SACNASP: Certificated Natural Scientist (Registration 115390). Member of the International Association for Impact Assessment (IAIA). Member of the Field Guiding Association of South Africa (FGASA).
Main Sectors of Expertise	Waste management, Residential, Eco-tourism, Agriculture, Water Treatment, Energy, linear infrastructure
Areas Worked	Throughout South Africa.

Professional Competency Statement:

Claire's career in the environmental consulting field spans 15 years. Claire has been involved in a number of environmental impact assessment projects. Her roles have included being the Environmental Assessment Practitioner (EAP), Project Manager and Environmental Scientist for EIA related projects. Her responsibilities have included undertaking environmental assessments, compilation of regulated EIA's (i.e. scoping reports, EIA reports, Basic assessments and Environmental Management Plans), carrying out the public participation process, compiling fauna reports, and incorporating specialists into the EIA team. Claire has been involved in environmental compliance audits and has compiled the required audit protocols and audit reports. Claire has compiled environmental management systems compliant with ISO14001.

Claire has worked extensively throughout South Africa. Claire's strengths lie with understanding and application of environmental legislation, data collection and collation, research, compilation of reports, accuracy, effective communication and effective time management.

List of Experience:

Environmental Impact Assessments and Environmental Management Programme reports

- Development of fuel storage facility: Basic assessment and EMP and EA application in Nelson Mandela Bay Municipality, Eastern Cape (2023).
- Expansion of fuel storage facility: Basic assessment and EMP and EA application in Nelson Mandela Bay Municipality, Eastern Cape (2023).
- Port Alfred Reverse Osmosis Project: Basic assessment and EMP and EA, WUL and CWDP application for 5Ml reverse Osmosis project on behalf of Ndlambe Local Municipality, Eastern Cape (Current).
- Addo Lodge: Basic assessment and EMP and EA application for lodge and tented camp in Addo, Eastern Cape (2021 - 2023).
- Langkloof Bricks: Operational EMP for renewal of air emissions license application (2021)
- Somerset East Powerlines: Construction EMP for installation of H frame poles and overhead powerlines between substation and Industrial Park (2021)
- Clarkson WWTW: Integrated EA and WML and EMP for expansion of Clarkson WWTW and upgrading of sewage infrastructure (2018 – 2022)
- Farm 717, Addo: Scoping and Environmental Impact Assessment and EMP for 150 ha citrus and irrigation on behalf of Coega Kamma Citrus (2019 – current)
- Erf 168, Walker Driver: Basic Assessment and EMP for housing project on behalf of developer, Port Elizabeth (2018 – 2020)
- Oyster Bay Lodge: NEMA Section 24G Application on behalf of landowner, Eastern Cape (2018 – 2020)
- Erf 3783, Summerstrand: Basic Assessment and EMP for residential development, Port Elizabeth (2018 – 2019)
- Kwandwe Staff Village: Basic Assessment and EMP on behalf of Kwandwe, Makana Municipality, Eastern Cape (2017 - 2018)
- Feasibility study: Screening assessment of properties on behalf of NMBM (2016)
- Wells Estate Conservancy Tanks: Basic Assessment process for Expansion project on behalf of NMBM (2016)
- Driftsands Waste Water Treatment Works: Integrated Environmental and Waste Management License; Coastal Water Discharge Permit; Water Use License Application for Expansion project on behalf of NMBM (2016 - 2017)
- Sundays River Citrus Corporation: Basic Assessment process for Expansion projects at Summerville and Hermitage on behalf of SRCC (2015 – 2017)
- Walmer Cosmo/ Erf 1953: Basic Assessment process for integrated residential development on behalf of Privivox cc, Eastern Cape (2015 - 2016)
- Milkwood Gardens / Erf 1953: Amendment Application for change of ownership; update construction and environmental management programmes on behalf of Own Haven (2015 – 2017)
- Sardinia Bay: Basic Assessment process for public access facilities at Sardinia Bay on behalf of NMBM, Eastern Cape (2015 - 2016)
- Sardinia Bay Public Access Facilities: Amendment Application for change of site (2016 – current)
- Bayethe Luxury tents: Basic Assessment Process on behalf of Bayethe Lodge, Eastern Cape (2015 – 2016)
- Bayethe: NEMA 24G rectification for luxury tents on behalf of Bayethe Lodge, Eastern Cape (2015 - 2017)
- Cascades Iron Ore Mine: EIA process on behalf of Mkhombi Mining, Mpumalanga (2014).
- Zuurberg Road Upgrade: Basic Assessment process on behalf of the Department of Rural Development and Land Reform, Eastern Cape (2014).
- New Largo Colliery: EIA process, state of the environment report, closure and rehabilitation plan and waste management license on behalf of Anglo American Inyosi Coal, Mpumalanga (2011 to 2015).
- Mobile Water Treatment Plant: Waste management license for a mobile water treatment plant to supply water to the Phola-Kusile Coal Conveyor, on behalf of Anglo American Inyosi Coal, Mpumalanga l (2011 to 2015).
- Monitoring Weirs: Basic assessment process and Environmental Management Programme for monitoring weirs as part of reserve determination required by DWA, for Anglo American Inyosi Coal, Mpumalanga (2012 to 2014).
- Phola-Kusile Coal Conveyor: Environmental impact assessment and environmental management programme on behalf of Anglo American Inyosi Coal, Mpumalanga (2011 to 2014).
- St Albans: Public Participation Process carried out on behalf of Department of Public Works, Eastern Cape (2014).
- Grootegeluk Mine Backfill Conveyor System: Environmental impact assessment and EMP amendment, on behalf of Exxaro Coal, Limpopo (2011).

ECO, Monitoring, Auditing Environmental Management Systems

- Upgrading of Clarkson WWTW: ECO for construction phase (2023 – current)
- Addo Ecolodge: ECO for construction phase (2023 – current)
- Upgrading of Pumpstations, Motherwell and Stanford, NMBM: ECO for construction phase (2022 – current)
- St Francis Bay Residential Development, Kouga Local Municipality: ECO for construction phase (2022 – current)
- The Edge Hospital, NMBM: ECO for construction phase (2021 – 2022)
- River Oaks Residential Development, NMBM: ECO for construction phase (2021 – 2023)

- Coegakop Wellfield, NMBM: ECO for construction phase (2021 – current)
- Erf 3783, Summerstrand: ECO for construction phase (2019 – current)
- Sardinia Bay Public Access Facilities: ECO for construction of parking area (2018)
- Sardinia Bay Public Access Facilities: ECO for demolition of structures within 100m of HWM (2016 – 2017)
- Coega Manganese Terminal Air Quality Monitoring: Coordination of PM10, PM2.5 and dustfall baseline monitoring for the proposed Manganese Terminal at Coega, Eastern Cape (2013 - 2015).
- Tharisa Mine: External Compliance audit in terms of WUL and EA, North-West (2013).
- Formalchem: Land Contamination Monitoring and Assessment: Coordination of Land contamination Assessment for mothballed glue manufacturing company in Berlin, Eastern Cape (2012-13).
- Formalchem: Remediation plan and progress report prepared for DEA on behalf of client, Eastern Cape (2012-2014).
- Elitheni Coal Mine: Compilation of legal audit protocol (EMP, Water use license, waste management license, environmental authorisation), Eastern Cape (2013).
- Pikitup Roodepoort Waste Site: Site audit and report compilation, Gauteng (2009).
- Sun International: Compilation of aspects / impacts register and environmental management system for entire Sun International Group, all SA provinces (2006 - 2007).
- Sun International: Environmental management system training for the environmental managers, all SA provinces (2006 - 2007).
- Lonmin Platinum: Compilation of aspect impact register and environmental management system, North West (2006).

Guidelines, Environmental Awareness, Education and Training

- Part of team responsible for development of Albany Thicket Ecosystem Guidelines on behalf of SANBI (2017 – current)
- Part of team responsible for development of Savanna Ecosystem Guidelines on behalf of SANBI (2017 – current)
- Development of sustainable educational programmes (2009 - 2014).
- ZAMA: Coordination of corporate social sponsorships, Eastern Cape (2012 - 2013).
- Environmental Education: Coordination and development of environmental education programmes, Limpopo (2007-09).
- Richards Bay Minerals: Assist with basic environmental awareness training at Richards bay Minerals, kwaZulu Natal (2005).
- Tiger Brands: Environmental awareness training for employees of all Tiger brands, all SA provinces (2006 - 2007).
- Dairy Belle: Environmental awareness training for employees of all Dairy Belles, Western Cape, Eastern Cape, North-West, Free State, Gauteng, kwaZulu Natal (2006 - 2007).

Administration and engagement

- Engagement with relevant government authorities, stakeholders and clients
- Management of specialist teams
- Compilation of tenders and proposals for Environmental services
- Report writing
- GIS and map compilation
- Presentations and Training

Environmental Studies (BSc and BSc Honours)

- Undergraduate - Animal Behaviour: Behaviour of the Marsh Owl. Achieved 100 % (2003).
- Honours - The abundance of the South African Lepidopteran pest organism, Busseola fusca, found on genetically modified Bt maize, conventional pesticide- sprayed maize, and polyculture-farmed maize, to determine the best practice farming method with regards to pest control. Achieved 97 % (2011)

UNISA

UNIVERSITY OF SOUTH AFRICA

We certify that

Claire Elizabeth Jarvis

having complied with the requirements of the Higher Education Act

and the Institutional Statute, was admitted to the degree of

BACHELOR OF SCIENCE

with specialisation in Environmental Management: Zoology Stream

at a congregation of the University

on 11 June 2008

Vice-Chancellor

University Registrar

Executive Dean

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UNISA

UNIVERSITY OF SOUTH AFRICA

We certify that

CLAIRE ELIZABETH JARVIS

having complied with the requirements of the Higher Education Act
and the Institutional Statute, was admitted to the degree of

HONOURS BACHELOR OF SCIENCE

in Environmental Monitoring and Modelling

at a congregation of the University
on 12 June 2012

Vice-Chancellor

Executive Dean

University Registrar

10556835576839G05061

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Claire Elizabeth De Jongh

Registration Number: 115390

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Certificated Natural Scientist)

Effective **20 July 2016** Expires **31 March 2025**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

Environmental Assessment Practitioners Association of South Africa

Registration No. 2021/3519

Herewith certifies that

Claire Elizabeth de Jongh

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 March 2024

Expires: 28 February 2025

Chairperson

Registrar

SAQA
SOUTH AFRICAN QUALIFICATIONS AUTHORITY