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ENVIRONMENTAL MANAGEMENT PROGRAMME

Proposed Development of a Deck and Boardwalk Within 100 Meters Inland of the High-Water Mark of the Sea, Erf 9706, Plettenberg Bay, Western Cape

DEA&DP REF: 16/3/3/1/D1/15/0005/26

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

PREPARED FOR THE APPLICANT:	ANDREW BEVERIDGE
PREPAPRED BY:	ECO ROUTE ENVIRONMNETAL CONSULTANCY
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DATE:	APRIL 2026

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Candidate Signature: Lgenade

ISSUED BY:
Eco Route Environmental Consultancy

Submitted to:
Department of Environmental Affairs and Development Planning (DEA&DP)

Document Reference:
APRIL 2026 – Environmental Management Programme (EMPr)/9706

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STATEMENT OF INDEPENDENCE

I, **Samantha Teeluckdhari** of Eco Route Environmental Consultancy, in terms of section 33 of the NEMA, 1998 (At No. 107 of 1998), as amended, hereby declare that I provide serviced as an independent Candidate Environmental Assessment Practitioner (EAPASA reg: **2023/6443**) with the assistance of Lizelle Genade (EAPAS Reg: **2023/7793**) and receive remuneration for services rendered for undertaking tasks required in terms of National Environmental Management Act, 1998 (Act No. 107 of 1998), and the Environmental Impact Assessment Regulations, 2014 (as amended). I have no financial or other vested interest.

ENVIRONMENTAL MANAGEMENT PROGRAMME REQUIREMENTS:

Appendix 4 of Regulation 982 of the 2014 EIA Regulations 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:

(1) 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 Samantha Teeluckdhari of Eco Route Environmental Consultancy. Samantha has a BSS Geography and Environmental Management degree and has 11 years' experience as an Environmental Assessment Practitioner, of which she has spent 10 years at Eco Route. Lizelle Genade of Eco Route Environmental Consultancy has assisted with the compilation of this EMPr. Lizelle has a BA. Honours in Environmental Management and is a candidate EAP.
(b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 2 provides specific project details.
(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;	Section 4 provides mapping which superimpose the proposed activity onto environmentally sensitive areas.
(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;	Addressed in Sections 3, 4 and 10.
(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;	Addressed in Sections 3, 4 and 10.

(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;	
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Addressed in Section 10.
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 7.1 and 10.
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 5 and 10.
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Sections 10.
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 10.
(l) a program for reporting on compliance, taking into account the requirements as prescribed by Regulations;	Section 7.
(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 and 10.
(n) any specific information that may be required by the competent authority.	Sections 10 and 14.

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.
DEA&DP	**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 applicant 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 applicant 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 Environmental Affairs & Tourism (DEAT) 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 EMPr must be read in conjunction with the Environmental Impact Assessment Report dated October 2022 and the accompanying specialist reports. All recommendations, relevant conditions and mitigation measures provided in these documents must also 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 construction 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 need to evolve during its implementation period so that it recognises any new issues that may arise; or changes in the parameters of identified issues and can address these issues with the required/amended mitigation.

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 operation of the proposed housing development. The EMPr focuses on avoiding damage or loss on ecosystems and the services they provide, and to enhance positive environmental impacts where possible.

The EMPr is a living document that is flexible and responsive to new and changing circumstances, however, should a change be made within the EMPr permission from DEA&DP must first be obtained.

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 All contractors.
3 Sub-contractors and construction staff.
4 The appointed ECO monitoring the construction phase.

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

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.

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.

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.

Fines are to be paid to a fund held by an independent party and used for environmental rehabilitation of the area as instructed by the ECO.

2. PROJECT DETAILS

The property is zoned Residential. Andrew Beveridge, the owner is applying for the development of a deck and boardwalk within 100 meters inland of the High-Water Mark of the sea, Erf 9706, Plettenberg Bay, Western Cape. The site can be accessed at GPS Coordinates: 34.091161°S 23.370694°E

Figure 1: Proposed deck and boardwalk – preferred alternative

Preferred Alternative/ Alternative 1:

This alternative will now consist of the construction of a timber deck and boardwalk that will terminate within the applicant's property boundary. The boardwalk was previously existing and originally extended beyond the property boundary into State-Owned land (see below figure 1). This was assessed in the previous Draft Basic Assessment Report/ BAR but has since been revised to align with the recommendations of various organs of state, hence this revised report. The biodiversity assessment was commissioned to assess the entire existing boardwalk area within the boundary of Erf 9706 and within the State-Owned land. There is only a minor portion – 20.5m2 of the proposed boardwalk that will follow a new route before terminating at the property boundary.

3. LOCATION INFORMATION

Province:	Western Cape
District Municipality:	Garden Route Municipality
Local Municipality:	Bitou Local Municipality
Ward number(s):	Ward 2
Nearest town(s):	Plettenberg Bay
Erf number:	Erf 9706

4. PROPERTY INFORMATION

Erf number	Erf 9706
Surveyor General 21 digit code:	C03900080000970600000
Zoning:	Residential
Urban Edge:	Yes
Applicant name:	Andrew James Beveridge and Katharine Josephine Beveridge
Registration number (if applicant is a company):	N/A
Trading name (if any):	N/A
Responsible person name:	Andrew James Beveridge
Applicant/ Responsible person ID number:	6508205134089
Responsible position, e.g. Director, CEO, etc.:	N/A
Physical address of applicant:	4 Whale Rock Beach, Plettenberg Bay, 6600
Postal address:	Same as above
Postal code:	6600
Telephone:	+27(0) 83 300 8665
Fax:	
E-mail:	andrew@beveridge.co.za

5. SITE DEVELOPMENT PLAN

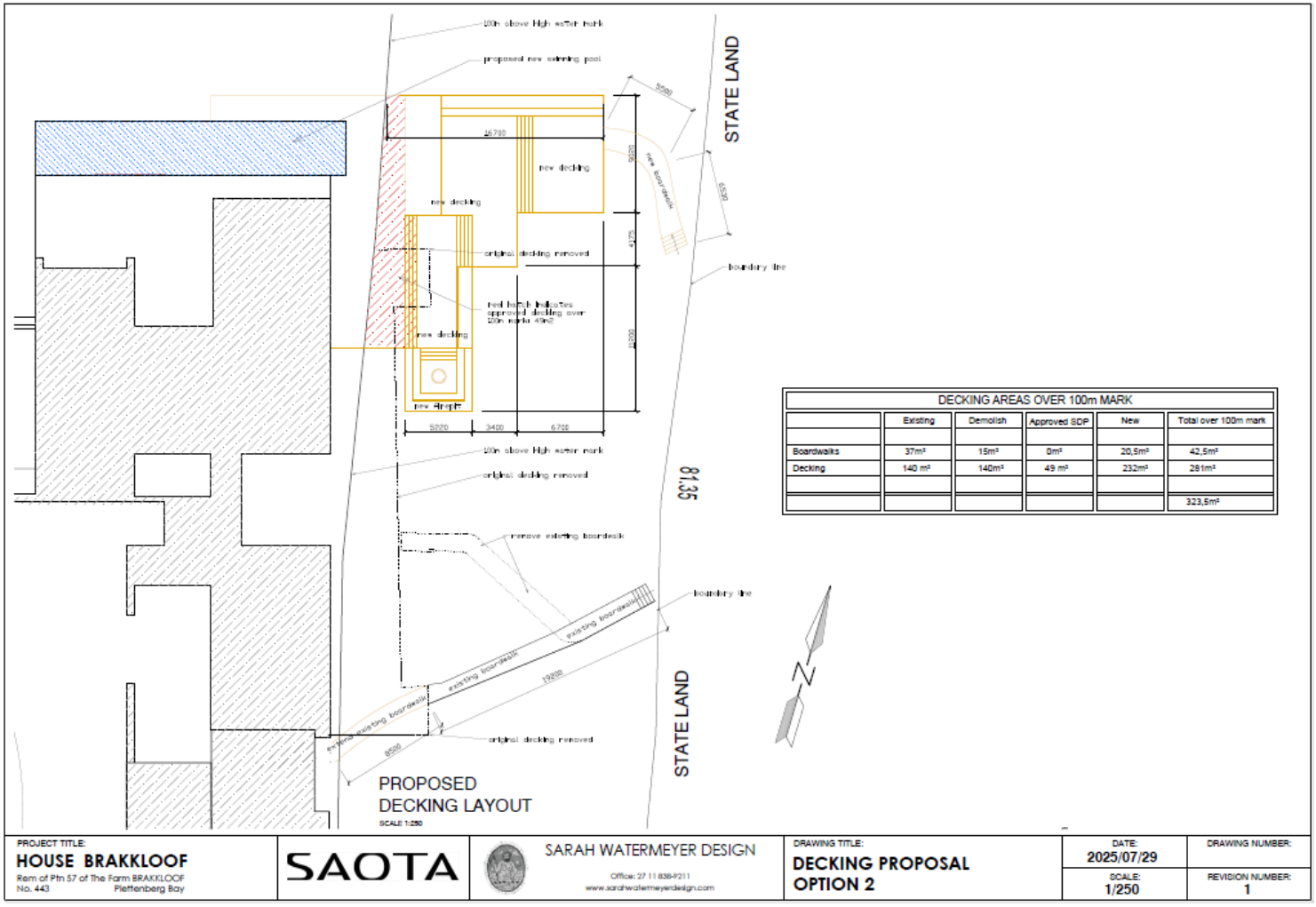

Figure 2: Preferred Site Development Plan – see Annexure 1 for full size plan

Figure 3: No-Go Area

Figure 4: Coastal Management of Erf 9706

6. MITIGATION AND MANAGEMENT MEASURES

Key Issues

These are issues of importance and should be addressed during the Construction and Development Phases as well as the future management of the property.

Dune Stabilisation - This would require the use temporary stabilisers (brushes, mulch, coir logs, sand fences, etc.) until vegetation re-establishes.

Rehabilitation Plan must be implemented focussing on erosion control measured, revegetation strategy.

Alien Invasive Species Management. Long-term control and monitoring programme and management of AIS.

Protection of Milkwood Trees (Sideroxylon inerme)

Rescue of Brunsvigia orientalis Bulbs

Construction Phase Controls of which would focus on limited access, storing of materials, minimization of erosion and soil disturbance, and stormwater management.

Impacts foreseen during the design and planning phase:

PREFERRED/ ALTERNATIVE 1

Alternative:	
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Destabilisation of dunes due to construction and/or operation of boardwalk.
Nature of impact:	Impact affects a negligible portion of the overall biodiversity resource
Extent and duration of impact:	Extends for a limited distance – remains in site boundary. Long term: Project life, 10-25 years
Consequence of impact or risk:	Vegetation would be impacted. Possible minor erosion.
Probability of occurrence:	Probable without mitigation
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Medium
Indirect impacts:	Erosion of dune

Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Temporary stabilisers can be used to provide a surface cover until more permanent vegetation becomes established. They protect the sand surface and can encourage sand trapping. These include temporary stabilisers such as brushes and mulches, liquid sprays, and cover crops, and the installation of erosion control structures like sand fences and coir logs. • Encourage revegetation of bare areas through natural dune successional processes.
Residual impacts:	N/A
Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Negligible

PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Clearance of vegetation for the construction of the deck and boardwalk
Nature of impact:	Loss of sensitive dune vegetation.
Extent and duration of impact:	Very Limited, to immediate surroundings only.
Consequence of impact or risk:	Loss of sensitive dune vegetation
Probability of occurrence:	Certain
Degree to which the impact may cause irreplaceable loss of resources:	Low. No SCC were noted on site.
Degree to which the impact can be reversed:	High
Indirect impacts:	Loss of sensitive dune vegetation.

Cumulative impact prior to mitigation:	Loss of sensitive dune vegetation.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	Moderate
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• The removal and translocation of protected plants if found should be undertaken prior to construction clearing activities. A permit is required prior to removal. • Protected plants must either be moved to a safer, no -go area on the property or taken to a nursery for temporary storage until rehabilitation takes place. • No heavy machinery allowed on site. • Only areas necessary for the development footprint should be cleared and the remainder of the property should be left natural. • During the construction phase of the proposed development, disturbance to the primary dune system must be avoided. • Laydown areas for construction materials must be contained within the clearing footprint of the proposed development.
Residual impacts:	After mitigation possible loss of some rescued and replanted vegetation.
Cumulative impact post mitigation:	The impact would result in insignificant cumulative effects
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low

PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Invasion by alien invasive plants
Nature of impact:	The potential impact affects a negligible proportion of the vegetation type, but can spread easily and become more problematic over wider areas.

Extent and duration of impact:	Site & surroundings: Extends for a limited distance beyond site boundaries. Long term: Project life, 10-25 years.
Consequence of impact or risk:	At a local scale, the impact could be of MODERATE to HIGH intensity, since it would result in processes temporarily ceasing or continuing in a highly modified way
Probability of occurrence:	High Probability
Degree to which the impact may cause irreplaceable loss of resources:	Resource is critically rare / loss has already well exceeded persistence thresholds (CR, Protected) without mitigation.
Degree to which the impact can be reversed:	Partly reversible: Recoverable with more intense mitigation . Reversal of alien invasion is partly REVERSIBLE - vegetation can be restored to its current state through active rehabilitation in combination with natural succession, but requires high input
Indirect impacts:	Spread of AIS
Cumulative impact prior to mitigation:	At a local scale, the impact could be of MODERATE to HIGH intensity, since it would result in processes temporarily ceasing or continuing in a highly modified way.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control. • Undertake regular monitoring to detect alien invasions early so that they can be controlled, as per the Alien Management Plan.
Residual impacts:	After mitigation not applicable
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low

PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Waste Pollution
Nature of impact:	Pollution caused by waste generated by the construction process.
Extent and duration of impact:	Very limited. Brief
Consequence of impact or risk:	Pollution of dune area.
Probability of occurrence:	Low probability with mitigation
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Pollution of dune area.
Cumulative impact prior to mitigation:	Pollution of dune area.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• All construction waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported. • All construction waste materials must be collected and disposed of at a suitable waste facility. • No dumping of construction material in any unlicensed facility or sensitive areas may take place. • A buffer must be established and monitored on a weekly basis to clean-up any waste that may have been blown from the construction site; and • Adequate sanitary facilities and ablutions must be provided for all personnel throughout the project area. Use of these facilities must be enforced (these facilities must be kept clean so that they are

	a desired alternative to the surrounding environment.
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low

PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Noise pollution
Nature of impact:	Noise caused by machinery and staff
Extent and duration of impact:	Limited. Brief
Consequence of impact or risk:	Nuisance to neighbours.
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	Nuisance to neighbours.
Cumulative impact prior to mitigation:	None
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	Low
Degree to which the impact can be managed:	Low
Degree to which the impact can be mitigated:	High

Proposed mitigation:	• Construction activities must only take place during normal working times between 07:00-17:00 on weekdays. • Machinery may be fitted with silences to dampen noise. • Staff must be reminded that noise levels must be kept low.
Residual impacts:	None
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low Some extent of noise pollution during construction is expected; however, with mitigation the impact will be reduced.

PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Visual impact
Nature of impact:	Visual & aesthetic consequences of the proposed project
Extent and duration of impact:	Limited. Short term.
Consequence of impact or risk:	Temporary visual impact
Probability of occurrence:	High probability but mitigable.
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	High
Indirect impacts:	None
Cumulative impact prior to mitigation:	None
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	Medium
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Due to the proposed construction of deck and boardwalk, temporary construction would be inevitable.

	• Shade cloth around construction site. • Ensure site is neat and tidy at all times.
Residual impacts:	**None**
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low As construction is temporary it will reduce visual impact.

PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Employment, no risk
Nature of impact:	Empowerment of the local community members living in the area relating to temporary employment opportunities
Extent and duration of impact:	Local. Short term.
Consequence of impact or risk:	Temporary employment
Probability of occurrence:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	N/A
Indirect impacts:	Temporary income generation for local community
Cumulative impact prior to mitigation:	N/A
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be avoided:	Medium
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Due to the proposed construction of deck and boardwalk, temporary construction would be inevitable. • Employment of the local community should take place for the duration of construction.
Residual impacts:	N/A
Cumulative impact post mitigation:	Minor upliftment for the local community.

Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Due to the proposed development being on a small-scale, there is a low difference in impacts between without mitigation and with mitigation. However, as the impact would be positive for the local community to be employed during construction, mitigation is recommended to ensure this occurs.

PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Stormwater runoff and erosion.
Nature of impact:	Erosion from exposed surfaces / minor earthworks for installation of deck and boardwalk.
Extent and duration of impact:	Limited. Limited to the site and its immediate surroundings Short term. Impact will last between 1 and 5 years
Consequence of impact or risk:	Erosion from exposed surfaces / minor earthworks for installation of deck and boardwalk.
Probability of occurrence:	Probable
Degree to which the impact may cause irreplaceable loss of resources:	Medium
Degree to which the impact can be reversed:	Partly reversible: Recoverable with more intense mitigation
Indirect impacts:	Erosion. Loss of topsoil.
Cumulative impact prior to mitigation:	Erosion. Loss of topsoil.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium-High
Degree to which the impact can be avoided:	Medium
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Adequate drainage and erosion protection must be provided around the site and where necessary. • Erosion prevention and control measures must be implemented. This may be by the use of mulch bags or silt fences. • Wind erosion should be limited by using mesh netting set up around any cleared footprints as soon as clearing has taken place.

	• Revegetate all bare areas of soil post-construction with indigenous vegetation.
Residual impacts:	With mitigation no runoff and erosion should occur.
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low

PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	Geotechnical restraints due to sandy soils
Nature of impact:	Settlement issues
Extent and duration of impact:	Very limited. Short term.
Consequence of impact or risk:	Settlement issues, slope stability problems, potential erosion.
Probability of occurrence:	Low Probability
Degree to which the impact may cause irreplaceable loss of resources:	Low
Degree to which the impact can be reversed:	Mostly reversible: requires minor mitigation
Indirect impacts:	Settlement issues, slope stability problems, potential erosion.
Cumulative impact prior to mitigation:	Settlement issues, slope stability problems, potential erosion.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Areas that are disturbed through building activities (such as the excavations for pole foundations) should be suitably rehabilitated without delay. Failure to do so will have a knock-on effect on biodiversity in the form of an increase in wind erosion, soil exposure and a loss of the soil micro - organisms that are essential for plant growth.

	• Use of complete cover of locally chipped woody material (for example Acacia cyclops stems and branches but not the seed pods).
Residual impacts:	With mitigation impact would be minimal.
Cumulative impact post mitigation:	None
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low

OPERATIONAL PHASE	
Potential impact and risk:	Invasion by alien invasive plants
Nature of impact:	The potential impact affects a negligible proportion of the vegetation type, but can spread easily and become more problematic over wider areas.
Extent and duration of impact:	Site & surroundings: Extends for a limited distance beyond site boundaries. Long term: Project life, 10-25 years.
Consequence of impact or risk:	At a local scale, the impact could be of MODERATE to HIGH intensity, since it would result in processes temporarily ceasing or continuing in a highly modified way
Probability of occurrence:	High Probability
Degree to which the impact may cause irreplaceable loss of resources:	Resource is critically rare / loss has already well exceeded persistence thresholds (CR, Protected) without mitigation.
Degree to which the impact can be reversed:	Partly reversible: Recoverable with more intense mitigation . Reversal of alien invasion is partly REVERSIBLE - vegetation can be restored to its current state through active rehabilitation in combination with natural succession, but requires high input
Indirect impacts:	Spread of AIS
Cumulative impact prior to mitigation:	At a local scale, the impact could be of MODERATE to HIGH intensity, since it would result in processes temporarily ceasing or continuing in a highly modified way.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium

Degree to which the impact can be avoided:	High
Degree to which the impact can be managed:	High
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control. • Undertake regular monitoring to detect alien invasions early so that they can be controlled, as per the Alien Management Plan.
Residual impacts:	After mitigation not applicable
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low

7. SPECIALIST RECOMMENDATIONS/MANAGEMENT ACTIONS

7.1 Limitation of Development Footprint

- The construction footprint must be strictly limited to the approved layout as assessed in the EIA.
- No works or access may extend into undisturbed dune vegetation or beyond the demarcated construction area.
- The boardwalk alignment and deck location must remain consistent with that assessed and approved in terms of the EIA.

7.2 Protection of Vegetation and Protected Trees

- No removal or pruning of protected Milkwood trees (Sideroxylon inerme) may occur without a valid permit issued in terms of the National Forests Act, 1998 (Act No. 84 of 1998).
- Brunsvigia orientalis bulbs identified within the construction footprint must be rescued and relocated prior to commencement of site works, under supervision of the appointed Environmental Control Officer (ECO).
- Vegetation clearing may only occur after the ECO has verified the demarcation of the site boundaries and confirmed compliance with vegetation protection measures.

7.3 Dune Stability and Erosion Control

- Construction activities must not destabilise the existing dune system.
- No deep excavation or reshaping of dune profiles is permitted.
- The foundation system must consist of lightweight or elevated structures (e.g. timber or composite piles) as recommended by the geotechnical specialist.
- A dune rehabilitation and erosion control plan (using brush-packing, coir logs, or other natural stabilisers) must be implemented immediately after construction

7.4 Alien Invasive Plant Control

- An Alien Invasive Species Management Plan must be implemented as part of the EMPr.
- The proponent is responsible for long-term monitoring and removal of alien plant species within the development footprint and immediate surrounding area.

7.5 Construction Environmental Management

- All construction activities must be conducted under the supervision of an independent Environmental Control Officer (ECO), appointed prior to commencement.
- The ECO must:
    - Verify that all mitigation measures are implemented and maintained.
    - Conduct regular site inspections and maintain compliance records.
    - Submit compliance reports to the competent authority as required by the EA conditions.
- All contractors must be briefed on environmental obligations and sign a declaration of understanding prior to work commencing.

7.6 Rehabilitation and Monitoring

- All areas disturbed during construction must be revegetated with indigenous dune plant species as approved by the ECO.
- The rehabilitated areas must achieve a minimum of 80% vegetation cover within 12 months of construction completion.
- Post-construction monitoring must be conducted for at least one year to ensure rehabilitation success and dune stability.

7.7 Climate and Coastal Process Resilience

- The structure must remain elevated and demountable, allowing for future adjustment or removal should coastal retreat or storm damage occur.
- No hard engineering measures (e.g. gabions, sea walls) may be used to protect the structure against erosion or sea-level rise.

8. LEGISLATIVE REQUIREMENTS

8.1 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 Site Manager 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.

8.2. 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.

Title of legislation, policy or guideline:	**Administering authority:**	**Date:**
Constitution of the Republic of South Africa. (Act 108 of 1996)	All State and Provincial Departments as well as Local Authorities that have been identified as relevant Competent Authorities.	Relevant Consideration

Environmental Conservation Act (Act 73 of 1989)	Department of Environmental Affairs and Development Planning (DEA&DP)	Relevant Consideration
National Environmental Management Act (Act 107 of 1998)	Department of Environmental Affairs and Development Planning (DEA&DP)	
National Environmental Management: Biodiversity Act (Act 10 of 2004)	Department of Environmental Affairs and Development Planning (DEA&DP)	Relevant Consideration
National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008)	Department of Environmental Affairs and Development Planning (DEA&DP)Branch Oceans & Coasts (O&C)/ Department of Economic Development, Environmental Affairs &Tourism	Comment/ Relevant Consideration
National Environmental Management: Protected Areas Act (Act 57 of 2003)	SANParks	Relevant Consideration
National Water Act (Act 36 of 1998)	Department of Water and Sanitation / BOCMA	Relevant Consideration
Water Services Act (Act 108 of 1997)	Department of Water and Sanitation / BOCMA	Relevant Consideration
Sea Shore Act (Act 21 Of 1935)	Department of Environmental Affairs and Development Planning (DEA&DP)Branch Oceans & Coasts (O&C	Relevant Consideration
Conservation Of Agricultural Resources Act (Act 43 of 1983)	Department of Agriculture, Forestry and Fisheries	Relevant Consideration
National Heritage Resources Act (Act 25 of 1999)	Heritage Western Cape	Relevant Consideration

8.3. 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, Site Manager and the ECO.

The Site Manager and Contractors are responsible for the construction of the deck, boardwalk and associated infrastructure. The responsibilities indicated here are also relevant to Sub-Contractors. The responsibilities of the Site Manager 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.
- Brief all contractors, sub-contractor and delivery personnel on the Construction Phase Management Rules, appended to the EMPr.
- Provide Method Statements for the construction phase of the project including but not limited to stormwater, erosion, shoring (if required), dust control, stockpile and storage areas, site preparation and construction, spill (hazardous material and concrete).

All fines for noncompliance of EMPr to be predetermined by Site Manager, ECO and Project Applicant, this needs to be included in method statement. Breach of the Construction Phase Management Rules can be consulted in this regard.

9. REPORTING PROCEDURES

9.1. 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.

9.2. 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.

9.3. 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.

9.4. 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.

10. COMPLIANCE WITH THE EMPr

10.1 Monitoring and Compliance

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

- Appoint an Environmental Control Officer (ECO) to monitor implementation of the EA and EMPr and report to the Competent Authority.
- Compliance monitoring must be carried out **at least once a week** throughout construction (unless the ECO identifies issues to monitor more frequently) and a monitoring report compiled monthly.
- The ECO must prepare environmental monitoring reports **monthly**. These reports must contain photographic evidence and be submitted to Compliance Monitoring of the Department monthly.
- 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.
- 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).

10.2 Auditing Process

An independent auditor must be appointed to audit the site to identify and evaluate the effectiveness of the EMPr. An audit report in compliance with Appendix 7 of the NEMA EIA Regulations 2014, as amended must be sent to DEA&DP on closure of construction.

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

A checklist is taken to the site, detailing the requests and conditions. These are then verified on-site and documented in a report. Compliance with the conditions is monitored based on the following criteria –

Full Compliance (1) – Implemented actions fully comply with the requests and conditions as set out in the EIA, supported by evidence justifying the outcomes.

Partial Compliance (0.5) - Implemented actions partially comply with the requests and recommendation as set out in the EIA. In one way or another it does not meet the full requirements set out in the specified recommendations and / or mitigation measures, supported by evidence justifying the outcomes

Non – Compliance (0) – Implemented actions do not comply with the requests and condition as set out in the EIA, supported by evidence justifying the outcomes

Non - compliance actions will be weighed into three sub-criteria based on the impact on the environment.

Minor	The impact has no effect on the environment
Major	The impact has some (to be specified) effect on the environment
Critical	The impact has extreme (to be specified) effect on the environment

Assumptions (Not scored) – Certain stages throughout the audit may require the Auditor to make assumptions. All assumptions will be noted.

Not Monitorable (N/M) (Not scored) – The requests and condition outlined in the EIA is not monitorable and will be noted as such.

Noted (N) (Not Scored) – Additional to the actionable requests and condition outlined in the EIA, some requests and condition need to be included for general awareness and will be documented as noted.

- Each level of compliance will be assigned a score, after which total compliance will be calculated. The total compliance will be communicated based on the categories defined in the EIS.

Level of effectiveness	Score
Full Compliance	1
Partial Compliance	0.5
Non - Compliance	0
Assumptions	-
Not Auditable (N/A)	-
Noted (N)	-

* Only scored conditions will add towards the compliance score.

Calculations:

(Number of conditions) – (Number of assumptions, N/M, and N conditions)
= Total usable conditions

((Score of full compliance + partial compliance) / Total Usable conditions)) x 100
= Percentage Compliance

10.3 Non-Compliance

Definition

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

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

Types of non-compliances issued

Two types of non-compliances may be issued:

A. Stop Works Non-Compliance

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

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

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

B. General Non-Compliance

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

10.4 Issuing a Non-Compliance

Non-compliance may be issued to:

- The Applicant
- Any representative of the Applicant

10.5 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.

10.6 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.

10.7 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.

11. 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.

12. 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	**Mr. Andrew Beveridge**
Environmental Control Officer/ ECO	**(To be appointed)**
Site Manager	**Mr. Steve Brown (SGB Construction)**

13. ENVIRONMENTAL MANAGEMENT PROGRAMME

13.1 CONSTRUCTION PHASE

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Authorisations, Licences and Permits	**Environmental Authorisations**		
	All necessary authorisations, permits and licences must be obtained by the Applicant prior to construction commencement. This includes permits for the removal of protected plants.	Applicant	Once-off
Appointment of Environmental Control Officer	**Appointment of Environmental Control Officer**		
	An Independent ECO must be appointed at the Applicant's cost to monitor the implementation of the EMPr.	Applicant & ECO	Once-off
	Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence which includes site preparation and demolition.		
	The nomination of the ECO must be given to DEA&DP, in writing fourteen (14) days prior to construction commencement. The notification must include contact details for the ECO and details pertaining to the ECO's relevant experience.		
	Should the ECO for the development change at any time, this must be communicated, in writing, to DEA&DP, within fourteen (14) days of appointing the new ECO. The notification must include contact details for the ECO, details pertaining to the ECO's relevant experience and reasons for the change in ECO.		As required
Preparation of Method Statements	**Method Statements**		
	Method Statements must be submitted by the Applicant/ Contractor to the ECO and DEA&DP for approval. Method Statements must be adhered to by the Applicant/ Contractor. These relate to but are not limited to: ❖ Stormwater management ❖ Erosion control ❖ Shoring (if required) ❖ Dust control ❖ Stockpile and storage areas	Applicant/ Contractor	Prior to commencement of construction and during construction (if necessary)

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	❖ Site preparation and construction ❖ Solid waste management ❖ Storage of hazardous materials (if applicable) ❖ Standard emergency procedures		
	The ECO will monitor the implementation of the statements.	ECO	On-going
Notifying Relevant I&APs	**Notice of Environmental Authorisation (EA)**		
	A written notice must be given to all relevant I&APs notifying them of the EA. The notice must include a date on which the EA was received and the reference number for the EA. Commencement of construction may not begin until 21 days after the notification, provided no appeals have been lodged against the EA.	Applicant	Prior to commencement
Education of Site Staff on General and Environmental Conduct *A general regard for the social and ecological wellbeing of the site and adjacent areas is expected of the site staff.*	**Environmental Awareness and Training**		
	All contractors, sub-contractor and delivery personnel will be required to be briefed on the Construction Phase Management Rules (Appended to the EMPr). The main contractor must do these briefings before his staff will be allowed to work on the Estate. The main contractor remains the liable person.	Contractor	Once-off and as required
	Construction staff must be adequately educated by the ECO as to the provisions included in the EMPr, and in terms of general environmentally friendly practice.	ECO	Once-off and as required
	The ECO must ensure that all staff, and if applicable, Contractors / Sub-contractors / Suppliers / Service Providers are trained on the environmental, occupational safety and/or legal responsibilities expected from them. The training must take into account language and literacy requirements as well as measures to determine the effectiveness of the training. Proof of training must be attached to the ECO's audit reports.		
	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.		
	Consideration of the implications of the EA and EMPr must form part of the formal site induction for all contractors, sub-contractors and casual labourers, preferably in their native language. The induction training will, as a minimum, include the following:		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	➢ The importance of conformance with all environmental policies; ➢ The environmental impacts, actual or potential, of their work activities; ➢ The environmental benefits of improved personal performance; ➢ Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Consultant's environmental management systems, including emergency preparedness and response requirements; and ➢ The mitigation measures required to be implemented when carrying out their work activities.		
	Adaptive management – Be prepared to adapt strategies based on monitoring results and environmental conditions.	Contractor//PM/ECO	Ongoing
	All contractors, sub-contractors and casual labourers must acknowledge their understanding of the EMPr and environmental responsibilities by signing an induction attendance record.	Contractor/PM	Once-off
	Staff, operating equipment, shall be adequately trained and sensitised to any potential hazards associated with their tasks.	Applicant	During staff induction, followed by on-going monitoring
	Translators are to be used where necessary during staff training.	ECO	
	The ECO must be on hand to explain more difficult / technical issues and to answer questions which may be raised.	ECO	
	Staff must be made aware that they are not to make excessive noise e.g. shouting, hooting.	ECO & Applicant	
	All employees must undergo the necessary safety training and wear the necessary protective clothing at all times.		
	No alcohol / drugs to be present on site; no vehicles or machinery are to be operated whilst under the influence of alcohol or drugs.		
	No firearms allowed on site or in vehicles transporting staff to / from the site (unless used by security personnel).		
	No unsocial behaviour will be permitted.		
	Bringing pets onto site is forbidden.		
	Staff must make use of facilities provided for them, as opposed to ad-hoc alternatives (e.g. fires for cooking, the use of surrounding bush as a toilet facility is strictly forbidden).		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	No fires to be permitted on site.		
	Trespassing on private / commercial properties adjoining the site is forbidden.		
	No worker may be forced to do work that is potentially dangerous or for what he / she is not so trained		
	The staff conduct rules are described in a separate table of rules in the EMPr. This is aimed at providing staff with the basic information regarding worker conduct on site.		
Site Management	**Access**		
	All vehicles, construction or inspection, must only access the site via the planned, single track access roads as per the SDP (no additional roads, tracks to be made in the environment). Access road to be clearly marked to prevent drivers getting lost and creating additional tracks or unnecessarily widening the access road. A turning area for construction vehicles should be demarcated within the existing footprint of the dwelling under construction.	Contractor/ Site Manager	
	For any adhoc deliveries or visitors to site, clear signs on the nearby roads should be put up to guide drivers to the construction sites, thus avoiding divers getting lost and causing unnecessary damage to the environment.		
	No vehicles may drive onto the adjacent properties and any other no-go areas.	Contractor	On-going
	Speed limits should be imposed and monitored during construction phase, as collisions with vehicles (roadkill) pose a significant threat to many fauna species. The development site falls within a large natural area, increasing connectivity and ultimately the diversity of fauna that may be encountered and threatened by moving vehicles. Given the narrow access roads for this development, speed limits should be restricted at the discretion of the ECO to appropriate speeds to allow for driver alertness and ability to avoid collisions with fauna. Recommended speeds include 40 km/hour on main access roads with good visibility into the road verges, and 20 km/hour on smaller access roads with narrow or overgrown verges where visibility is reduced. 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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Site Management		
	To ensure that the ecological integrity of the surrounding environment is maintained and preserved, the applicant and contractor must ensure that the construction footprint is limited to the construction area. The extent of the construction must be marked out to satisfaction of the engineer and ECO.	Contractor	On-going
	The disturbance footprint of proposed development should be clearly defined and demarcated to prevent unnecessary damage to the surrounding environment. The proposed development must have a maximum disturbance envelope of 2m around the proposed development.		
	Construction netting and fencing must be used to clearly indicate construction areas. Shade cloth used as fencing should be hammered into the ground using wooden pegs.		
	Clear signs for "no-go" areas for vehicles and personnel should be placed strategically on the site. No-go areas are anywhere outside of the direct area of influence of the construction phase. Sections of undisturbed natural habitat within the development area, should not be impacted by the building activities and should be conserved as small islands of natural resources for the small wildlife of the area which includes skinks, rodents, birds and invertebrates.		
	The site must be stabilised where necessary using available materials, where possible. It is recommended that exposed soils are covered with wood chips, and tree branches used to create berms. Any cut alien vegetation on site can be utilised for this purpose if it is without seed.		
	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 dwelling currently under construction.		
	The Contractor must restrict all activities, materials, equipment, and personnel within the area specified or restricted activities to areas that are necessary to undertake the work.		
	Construction activities must be confined to clearly demarcated areas so as to prevent unnecessary disturbance outside of development footprint.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	The Contractor must ensure that materials are appropriately secured to ensure safe passage between destinations, should have appropriate cover to prevent pollution of adjacent properties.		
	The applicant will be held responsible for any clean-up in the dune environment resulting from failure by the contractors or suppliers to properly secure material.		
	Adequate drainage and erosion protection must be provided around the site and where necessary.		
	Access points and other cleared surfaces must be dampened whenever necessary and especially in dry and windy conditions to avoid excessive dust. Alternatively, a binding product such as Dustex (supplied by Patch Industrial Supplies) could be used.		
	Construction activities must only take place during normal working times between 07:00-17:00 on weekdays.		
	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.		
	Staff must be reminded that they are working within a residential area and noise levels must be kept low.		
	Conclusion of construction phase		
	The conclusion of any project is an essential, but often overlooked aspect of projects. This relates primarily to the cleaning up of the site once construction has concluded.		
	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.	Contractor/PM	Once off at end of construction
	Revegetation of bare soil following construction is an essential part of concluding the construction phase of the project. This should be done with indigenous plant species that occur naturally in the surrounding environment on the property.		
	Ablutions		
	Adequate ablution facilities must be provided for every construction project. Portable toilets will need to be used and these must be placed on a level platform and must be secured in case of strong		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	winds before construction starts within the footprint of the access roads or housing sites. At least one toilet per ten to fifteen construction staff should be available – refer to SHEQ guidelines.		
	Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation).	Contractor/ Site Manager	Immediately & on-going
	Contractors must make adequate provision for drinkable water and temporary toilets situated on the building site for the use of their employees until such time as the water-borne sewer drainage is available. This must be done prior to any work done on site.		
	All site temporary toilets are to be serviced and cleaned at least once a week. The contractor is to keep an onsite weekly record of the servicing/emptying of the temporary ablution facilities.		
	Unauthorised spilling of waste from the septic tank into the environment and burying of waste are strictly prohibited.		
	Ablution facilities must not cause any pollution to any water resource, and it must not be a health hazard to the general public.		
	Communication Between Site Manager, Site Staff and I&APs		
	Should the staff be approached by members of the public or other stakeholders, they must assist them in locating the Site Manager, or provide a number on which they may contact the Applicant/ Site Manager.	Site Manager	On-going
	The conduct of the staff when dealing with the public or stakeholders shall be in a manner that is polite and courteous at all times.		
	Drivers of heavy-duty vehicles must exercise care when travelling to and from the site – and adhere to all legally enforceable requirements.		
	Storage Areas		
	Choice of location for equipment lay-down and storage areas must take into account prevailing winds, distances to "No Go" areas, general on-site topography and water erosion potential of the soil. Impervious surfaces, bunded areas or drip trays must be provided where necessary.	Site Manager & Contractor	On-going
	Material stockpiles must be protected against rain and flooding.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Equipment lay-down and storage areas for construction materials must be contained within the clearing footprint of the proposed development and must be designated, demarcated and signed.		
	All stockpiles of fine textured building materials and soils must be covered by a geotextile or plastic covering, which must also be bunded (e.g. with sandbags) when not in use. This will prevent material being lost to the environment and fauna from accessing stockpiles and possibly subjecting them to harm during construction.		
	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.		
Topsoil Management	**The stockpiling of topsoil for use in rehabilitation is required.**		
	Protection and reuse of topsoil can be critical for the success of rehabilitation of dune vegetation following construction processes as it contains valuable seedbank of indigenous plants that regenerate after the soil is replaced. The topsoil will be vital for the success of rehabilitation of dune vegetation following construction processes and must therefore be treated with care for all the proposed developments on the property.	Site Manager & Contractor	Ongoing
	Topsoil from dune vegetation on the site (excluding topsoil under dense stands of invasive plants) in new excavation areas must be stripped to a depth of ca. 30cm and kept in designated piles.		
	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.		
	Topsoil piles must be suitably covered and bunded (e.g., with sandbags). This will prevent the material from washing away and contaminating the substrate of the site which likely still contains useful seeds and soil organisms.		
	The topsoil piles must be clearly labelled so that it does not mix with subsoils excavated or any other construction material for the site.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	If the SDP of the proposed development does not have enough space for the storage and protection of topsoil within the disturbance envelope, then the Contractor must identify an alternative temporary stockpile area that is already transformed and where it can easily be retrieved for post-construction rehabilitation.		
	The topsoil piles must be clearly labelled so that it does not mix with subsoils excavated or any other construction material for the site		
	Stockpiles must not exceed 1.5m in height, must be covered with shade cloth or similar, to prevent erosion and any invasive alien species that begin to grow within it must be removed.		
Heavy machinery and vehicles on site	**Access by heavy machinery should be limited on the site.**		
	Machinery may be fitted with silences to dampen noise.	Site Manager & Contractor	On-going
	Excavators and all other machinery and vehicles must be checked for oil and fuel leaks daily. No machinery or vehicles with leaks are permitted to work on site.		
	Vehicles with leaks and other problems are not allowed to operate on the site until they have been repaired.	Site Manager & Contractor	
	No vehicles are to park or operate within no-go areas as determined by Botanist and/or ECO.		
	Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills. These areas must not be located within any natural drainage areas or preferential flow paths.		
	Soil erosion and runoff		
	Where vegetation will be cleared to make way for construction, filled sandbags, silt socks or a silt fence must be used to reduce the intensity of water runoff and flow over the site and thereby reduce erosion potential. This should be placed around the perimeter of the downslope disturbance footprint and needs regular inspection and adaptive management to ensure the integrity of the system for reducing erosion. This is pertinent for the dwelling in the south of the property against a slope of the dune where the risk of runoff is expected to be greatest.	Site Manager & Contractor	On-going Ongoing
	Adequate drainage and erosion protection must be provided around the site and where necessary. Erosion prevention and control		Throughout the duration of the project

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	measures must be implemented. This may be by the use of mulch bags or silt fences		
	Pipelines to be placed in consultation with and to recommendations of the ECO.		
	Install a series of berms across the internal access road to retard flow from higher areas.		
	Building sites need to be surrounded with a trench and berm arrangement to contain all building site runoff		
	Wind erosion should be limited by using mesh netting set up around any cleared footprints as soon as clearing has taken place.		
	Revegetate all bare areas of soil post-construction with indigenous vegetation.		
	Erosion prevention and control measures must be implemented. This may be by the use of mulch bags or silt fences. The engineer must provide a method statement for site specific erosion methods.		
	Provision shall be made for storm water management measures that will ensure effective run-off control and prevent erosion at run-off points.		
	Continuous monitoring for evidence of erosion must be undertaken around the site.		
	Stockpiles must not exceed 1.5m in height, must be covered with shade cloth or similar, to prevent erosion and any invasive alien species that begin to grow within it must be removed.		
	Soil disturbance during the removal of alien invasive plants must be minimised as much as possible.		
	The site must be stabilised where necessary using available materials, where possible. It is recommended that exposed soils are covered with wood chips, and tree branches used to create berms. Any cut alien vegetation on site can be utilised for this purpose if it is without seed.		
	All drainage structures must be checked to ensure that there are no blockages or pollution that is blocking the free flow of water over the site; these checks will prevent erosion during and after the construction phase that could have potentially far-reaching implications beyond the footprint for the proposed development.		
	Dune Stabilisation		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Temporary stabilisers must be used to provide a surface cover until more permanent vegetation becomes established. They protect the sand surface and can encourage sand trapping. These include temporary stabilisers such as brushes and mulches, liquid sprays, and cover crops, and the installation of erosion control structures like sand fences and coir logs.		
	Encourage revegetation of bare areas through natural dune successional processes. This can be formalised in a Rehabilitation Plan, which should include details of erosion control methods, a detailed revegetation plan, a monitoring schedule, and performance indicators.		
	Fauna and Flora		
	Plants with a high likelihood of survival in the 2m disturbance strip must be rescued, and specific important sections in the permanent disturbance footprint must be identified and added to the rescue operation prior to the commencement construction.		
	Stands of plants could be removed carefully to preserve as much as possible of the soil around the roots of the plants. These could then be temporarily planted elsewhere for the duration of the construction phase		
	Schedule vegetation clearance during the winter in order to minimize impact on plant life cycles & pollination if possible.		
	The removal and translocation of protected plants if found should be undertaken prior to construction clearing activities. A permit might be required for certain species prior to removal.		
	Protected plants must either be moved to a safer, no-go area (on site nursery) on the property or taken to a nursery for temporary storage until rehabilitation takes place.		
	The rescued plants must be kept in 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. This will promote the		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	regeneration of natural dune vegetation around the developments and reduce the possibility of negative edge effects on the site.		
	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.		
	No natural vegetation beyond the disturbance area may be cleared without prior permission from the ECO and if applicable from any relevant authority. Indigenous vegetation that is removed is to be replanted either back to the point from which it was taken or must be replaced by new relevant indigenous vegetation.		
	All alien invasive plant species must be continuously removed around the site. The best way to do this is to remove the plants from the roots by hand and leave the plants in the sun to dry out and die before disposal. Please refer to the Alien Plant Control Programme.		
	Disturbance to birds, animals and reptiles and their habitats must be minimized wherever possible.		
	Protected tree species		
	Retain existing trees within proposed development.		
	If any trees need to be removed or pruned then a permit is required, according to the National Forests Act.		
	Preservation of natural habitats		
	Prior to the commencement of clearing the proposed building site, the contractor must undertake vegetation search-and-rescue on the site. This operation is a legal requirement to ensure that any endangered vegetation species is transplanted prior to work commencing on the erf.		
	Permission must be attained from the relevant authority (DFFE) to remove any protected trees such as Milkwood trees (Sideroxynon inerme).		
	Alien vegetation removal		
	Soil disturbance during the removal of alien invasive plants must be minimised as much as possible.		
	Materials used during construction must be sourced and transported responsibly to minimise the risk new invasive plants.	Site Manager/ Contractor & ECO	Immediate and On-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control.		
	The invasive alien vegetation must be removed from the dunes to restore the fragmented areas along the dune. This must be done under the guidance of an Invasive Alien Plant Control Plan.		
	Undertake regular monitoring to detect alien invasions early so that they can be controlled, as per the Alien Management Plan.		
Waste Management	**On-Site Waste Management**		
	The excavation and use of rubbish pits is forbidden.		
	Burning of waste is forbidden. A possible exception to this may be that the alien invasive vegetation which is removed from the site should be burned to prevent the spread of the plants. The transportation of Alien Invasive Plants is strictly forbidden in terms of the Conservation of Agricultural Resources Act (CARA), especially if in seed; unless stored in a completely sealed container.	Site Manager & Contractor	On-going and monitored weekly
	No littering, waste dumping or burning is allowed on the site or in the surrounding environment. 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 (i.e. baboons). All waste is to be transported to a registered waste disposal facility off site.		
	An adequate number of general waste bins must be arranged around the site to collect all domestic refuse, and to minimise littering.		
	All food waste (leftovers, bones, pips, apple cores) are to be disposed of in designated bins and NOT to be disposed of in the surrounding environment within or outside the designated construction areas. Food sources serve as a major attractant for fauna and will expose them to unnecessary harm in the vicinity of the construction site. All food waste should be removed from site on a daily basis and disposed of appropriately.		
	All construction waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported.		
	Waste must be removed from the site and disposed of at a suitable waste facility on a weekly basis.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	The contractor must make adequate provision for removal of building rubble and excess material. No material or building rubble will be spoiled on the Estate. Stockpiling of sand to be completely covered with netting or hessian.		
	No dumping of construction material may take place.		
	The area must be monitored on a weekly basis to clean-up any waste that may have been blown from the construction site.		
Handling of Hazardous Materials (if necessary)	**Hazardous Materials**		
	Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs must additionally include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes.		
	Cement and other potential environmental pollutants must be stored within an impermeable bunded, roofed and sign posted area.	Site Manager & Contractor	On-going
	The mixing of cement must be done on Rhino board.		
	All empty contaminated containers must be stored within a hazardous bunded area until collection by a reputable hazardous waste collection company. Waybills must be presented to the ECO for review and filing purposes.		
	No vehicles transporting hazardous materials to the site may be washed on or near site. They must return to the supplier of such material to be cleaned out.		
	Sandbags or sawdust should be available and accessible on the site to ensure that any accidental oil spills are contained and stopped quickly.		
	Any contaminated soil on the site must be removed by a registered hazardous waste service provider (e.g. Spill Tech, Interwaste, EnviroServ., etc.).		
	Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills. These areas must not be located within any natural drainage areas or preferential flow paths.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly.		
	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, or that are already transformed and likely to remain transformed or on rhino boards and not directly onto soil.		
Concrete, cement, plastering, and painting	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.		
Cultural Environment	**Archaeology and Artefacts**		
	No structures older than sixty years or parts thereof are allowed to be demolished altered or extended without a permit from Heritage Western Cape.		
	If any archaeological sites/materials are exposed, mitigation regarding the finds must be conducted with the Heritage Western Cape regarding the destiny of the material. Examples of heritage resources are as follow: • Human remains • Coins/Gold/Silver • Fossils • Fossils shell middens/ marine shell heaps Pottery/ceramics		
	If Heritage Western Cape agrees to the removal of the material, an archaeologist must apply for a permit to scientifically excavate/collect the material.	Site Manager & Contractor	Immediate and On-going
	All costs must be financed by the applicant. This may include: • All monitoring and mitigation expenses regarding the excavations/collecting of material, travel, accommodation		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	and subsistence, analysis of the material, radiocarbon date(s) of the site(s) and a one-off curation/storage fee payable to the Western Cape Repository for Archaeological material.		
	Safety and Security On-Site		
	Material stockpiles or stacks must be stable and well secured to avoid collapse and possible injury to site workers / local residents.		
Safety and Security			
	No unauthorised person may be permitted to enter the site without prior permission of the site manager.		
	Fire Management	Site Manager & Contractor	On-going
	Firefighting equipment should be present on site at all times as per Occupational Health and Safety Act.		
	No fires will be allowed on any part of the Estate including the building site. Fire extinguishers are required to be on all sites at all times.		
	All project staff must be trained in fire hazard control and firefighting techniques and know the proper procedure in case of a fire occurring on site.		
	All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances.	Site Manager & Contractor	On-going
	No open fires will be allowed on site.		
	Smoking must not be permitted in areas considered to be a fire hazard.		

13.2. OPERATIONAL PHASE

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Vegetation Rehabilitation – progressive rehabilitation must be carried out	**Vegetation**		
	All disturbed areas, or areas which have been disturbed for the purpose of the development, are to be re-vegetated. This will aid in preventing erosion within the site. A 100% indigenous planting plan must be adhered to in terms of all planting carried out on the site.	Contractor & ECO Contractor Contractor & ECO Site Manager / Contractor & ECO	Project completion
	Erosion prevention and control measures must be implemented. Organic mulch or sandbags must be used to contain all sediment and prevent erosion during rehabilitation.		
	All rehabilitated areas must be maintained through weekly inspections until an acceptable success rate has been achieved.		Rehabilitation
	Encroachment of invasive alien plants in this regard will need to be monitored on a regular basis to prevent re-infestation. This would need to be undertaken by the ECO or a designated specialist.		Post Construction/ Maintenance Phase
	Limited additional vegetation clearing should take place on the property for activities, even if these are low impact, as the cumulative effects can be substantial (i.e. camping grounds, mountain biking/hiking trails, picnic areas).		
	Landscaping		
	All disturbed open space areas are to be rehabilitated using locally occurring indigenous vegetation		
	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.		
	Plant during the rainy season (early winter May/June) and add a 10cm thick layer of wood chip to keep in moisture.		
	The establishment of indigenous gardens or the complete absence of gardens (i.e. fully rehabilitating any disturbed areas) within the footprints of the development will promote natural biodiversity. It is also highly recommended that indigenous, locally occurring, fire resistant vegetation be planted around the dwelling to aid in protecting buildings in the event of a fire (i.e. some indigenous species can be planted to form a fire-proof hedge). Some commercially available indigenous plant species that were also found on the property (locally occurring), including some to be used as part of fireproof hedges.		
	Permeable fencing		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Wherever fences are needed in the development area and on its boundary, it will be necessary to ensure that wildlife can move through the fences to enable their movement across the landscape.		
	Fencing around the property must be visible to wildlife, including birds, by fitting reflective or colourful weather-resistant flags (e.g., aluminum, or plastic strips) to the wire.		
Landscape connectivity	**Alien plant eradication**		
	All invasive alien plants should be completely cleared from the property, and where a tree or bush cover is desired, replaced with suitable indigenous species. Section 11 details methods for Alien Invasive Plant Control.	Proponent/ Site Manger	Project completion
	An Alien Invasive Plant Control Plan must be implemented, as encroachment of alien vegetation may increase as a result of the construction process disturbances.	Proponent/ Site Manger	Project completion
	Any action taken to control and eradicate a listed invasive species must be executed with caution and in a manner that may cause the least possible harm to biodiversity and damage to the environment.		
Alien Invasive Plants	The methods employed to control and eradicate a listed invasive species must also be directed at the offspring, propagating material and re-growth of such invasive species in order to prevent such species from producing offspring, forming seed, regenerating or re-establishing itself in any manner.	ECO & Site Manager	Immediate and On-going
	Land	ECO & Site Manager	Immediate and On-going
	Rehabilitation must be executed in such a manner that surface runoff will not cause erosion of disturbed areas during and after rehabilitation.		
	Any rubble is to be removed from site to an appropriate disposal site. Burying of rubble on site is prohibited.		
	Re-vegetation and landscaping of open space areas with suitable indigenous vegetation.		
Land Rehabilitation	Indigenous landscape plan to be followed to protect the existing indigenous vegetation and for management of private and common areas.	Contractor & ECO	Project completion
	The site is to be cleared of all litter.	Contractor	Project completion

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	The surface of all disturbed areas must be left rough to facilitate binding of topsoil and vegetation.		
	Areas that are disturbed through building activities should be suitably rehabilitated without delay. Failure to do so will have a knock-on effect on biodiversity in the form of an increase in wind erosion, soil exposure and a loss of the soil micro-organisms that are essential for plant growth. Use complete cover of locally chipped woody material (for example Acacia cyclops stems and branches but not the seed pods).		
	Materials and Infrastructure	Site Manager & Contractor	Project completion and Maintenance
	All material used for the construction must be removed from site after construction.	Contractor	Progressive rehabilitation and on Project completion
	The Contractor must repair any damage that the construction works may have caused to adjacent areas.	Contractor	Progressive rehabilitation and on Project completion
	Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the ECO.		
Removal and Repair of Materials and Infrastructure	All areas where temporary services were installed are to be rehabilitated to the satisfaction of the ECO.	Contractor	Project completion
	Impervious surfaces and foundations	Contractor	Project completion
	Stormwater management must encourage infiltration of water into the soil profile and other onsite attenuation through the use of grass pavers etc.		
	Waste management		
	All hazardous materials and containers must be collected by a reputable hazardous waste collection company and disposed of appropriately.		
Stormwater management	Collection and disposal of non-hazardous waste to a registered landfill site must occur at least once a week.	Contractor	Project completion
	No garden waste may be dumped in any remaining natural area and must be disposed of in a responsible manner.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Waste	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.	Contractor	Project completion
	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).	Site Manager	During Operational phase
	Given that the waste area is secured against wildlife accessing it, allowances should still be made for the unlikely event that an animal does access the waste storage area, so that the waste is not easily accessed (i.e. use wildlife-proof dustbins/containers or lock the lids of larger containers). The double-container storage of waste (mentioned above) also prevents easy access of waste products to fauna, with all rubbish bags to be stored inside more solid containers.		
	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.		
Fire management	No burning of vegetation to be permitted, even as part of alien plant management.		
	Ensure that no refuse waste is buried or burnt on the site or surrounds.		
	Smoking must not be permitted in areas considered to be a fire hazard.		
	Undeveloped areas must be managed so that they do not pose a fire risk.	Site Manager	On-going
	The Southern Cape Fire Protection Association must be consulted regarding firebreaks, and fire management for the property in case of wildfires. **The applicant must become a member of the SCFPA.** The responsibilities of people in control of land - All owners on whose land a veldfire may start or burn or from whose land it may spread must: • prepare firebreaks on their side of the boundary if there is a reasonable risk of veldfire • have such equipment, protective clothing and trained personnel for extinguishing fires as are: prescribed (in the regulations) • If there are no regulations, reasonably required in the circumstances take all reasonable steps to notify the FPO of the local FPA (if there is one) when a fire breaks out do everything in their power to stop the spread of the fire.	Site Manager	On-going During Operational phase

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	The Act also requires that if the owner is absent, he or she must have a responsible person present on or nearby his or her land to: • extinguish a fire if one broke out, or assist others to do so. • take all reasonable steps to alert the neighbours and the FPA (if there is one). The owner may appoint an agent to act on his or her behalf to perform these duties.		
	Implement regulations/rules around "braai" fires /open flame fires especially when high fire danger weather conditions are predicted.		
	Ensure that access road is kept clear in order for firefighting vehicles to have unobstructed access to the structures/houses.		
	Work collaboratively with local authorities to develop an emergency preparedness plan that outlines the steps to take in the event of a fire. The plan should include protocols for notification, evacuation, and communication with local authorities.		
	The goal of the management plan should be to prevent wildfires from starting and spreading within the development and to minimize the impact of any fires that do occur.		During Operational phase
	Fire-proof hedges (Esler et al., 2014) can be made with indigenous species to reduce fire risk around the built enviornment. 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).		
	Emergency & cleaning supplies for waste spillage or fires should be accessible at each development proposed development on the property (e.g., keep lime, spades, first aid, fire extinguishers, etc. handy). Rainwater tanks can also be a useful source of water to aid in extinguishing fires, provided the water is readily accessible.		

13.3. REHABILITATION AND MAINTENANCE

***All rehabilitation measures must be implemented with consultation with an Alien Invasive Plant Control Plan**

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Vegetation Rehabilitation	**Vegetation**		
	A 100% indigenous planting plan must be adhered to in terms of all planting carried out on the site.	Applicant, Site Manager & ECO	On-going site maintenance
	Erosion prevention and control measures must be fully implemented (if necessary).		
	Encroachment of invasive alien plants in this regard will need to be monitored on a regular basis to prevent re-infestation.		
	Undertake revegetation of the disturbance envelope outside of the permanent disturbance footprint. Start with the plants that have been rescued on the site and remove all non-native weeds from the site of revegetation to reduce competition with native plant species.		
	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 are discussed in more detail in the aquatic specialist report		
	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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	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.		
	It is a requirement by law than an alien and invasive plant management plan be developed and implemented on the property.		
	Municipal by-laws need to be adhered to.		
Stormwater Management	**Stormwater**		
	Any negative stormwater effects, related to the operational phase, must be remediated.	Applicant & Site Manager	On-going site maintenance
	On-going monitoring and assessing of stormwater drainage must occur on site during the operational phase of the proposed project.		

14. ALIEN PLANT CONTROL PROGRAMME

Please consult a Botanical specialist before attempting to remove Alien Invasive Plants.

14.1 INTRODUCTION

Benefits of control

- Elimination of spread of these species into non-affected areas.
- Improvement of water quality and quantity.
- Legal compliance: landowners are required to eradicate or control declared weed and alien invader plants in terms of the Conservation of Agricultural Resources Act 43 of 1983 and the National Environmental Management: Biodiversity Act 10 of 2004.
- Improvement of biodiversity in conservation areas. Fast growing invader plants suppress indigenous flora, with a resultant loss in overall biodiversity.
- Commercial reasons: alien vegetation can spread from conservation areas into production land resulting in greater weed control costs.

Important factors influencing the effectiveness of a control programme

- Timeous implementation of control operations is important for alien plants.
- Operations must be directed towards killing alien vegetation. This is best achieved by using an effective herbicide chosen by the ECO and applied by using the "cut-stump; frilling or ring barking methods. Under no circumstances may spraying with a "Rose" or multi- stream nozzle head be done.

Requirements for an effective alien vegetation control programme

- Identify the problem: extent, location and species of problem plant.
- Divide the problem areas into manageable units, taking budget and resource constraints into account.
- Identify any sensitive ecosystems, rare or endangered plants etc. which may be affected by a control programme. Identify the original ecosystem applicable to the area.
- Make provision for a number of follow up operations. The initial clearing operation is only part of the total programme. Failure to follow up will result in a failure of the entire programme.

While the importance of removing or clearing of alien or exotic vegetation is recognised, there should be control over the way in which this takes place. Often what generally appears to be covered by alien vegetation, actually contains pockets of sensitive vegetation or protected species. It is for this reason that clearing of such areas must be undertaken by hand (*Guidelines for the Control and Management of Activities in Sensitive Coastal Areas, first edition, 1998*).

It is important to note that all of the above must be performed with instruction by the ECO, as well as in the presence of an ECO at all times.

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14.2 LEGISLATION

The National Environmental Management Act, No 107 of 1998, creates a duty of care towards the environment. Within the preface of this Act, it is stated thus:

"Everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development: the environment is a functional area of concurrent national and provincial legislative competence, and all spheres of government and all organs of state must co-operate with, consult and support one another."

Any person or business found to be responsible for illegally introducing an invasive plant or species, and allowing it to spread, may be compelled, by this Act to desist with their actions and remove the source of invasion.

The Conservation of Agricultural Resources Act, No 43 0f 1983 (CARA) was passed to protect soil, water resources and vegetation. This included measures to manage and control weeds and invader vegetation species. The CARA regulations declare several species of "weeds" or "invader plants." These species have been divided into three categories:

Category 1a Listed Invasive Species:

Category 1a Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the National Environmental Management: Biodiversity Act/ NEMBA (Act 10 of 2004) as species which must be combatted and eradicated.

A person in control of a Category 1a Listed Invasive Species must-

(a) comply with the provisions of section 73(2) of the NEMBA;

(b) immediately take steps to combat or eradicate listed invasive species in compliance with sections 75(1), (2) and (3) of the NEMBA; and

(c) allow an authorised official from the Department to enter onto land to monitor, assist with or implement the combatting or eradication of the listed invasive species.

If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

Category 1b Listed Invasive Species:

1) Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the NEMBA as species which must be controlled.

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2) A person in control of a Category 1b Listed Invasive Species must-

(a) control the listed invasive species in compliance with sections 75(1), (2) and (3) of the NEMBA.

(b) must allow an authorised official from the Department to enter onto the land to monitor, assist with or implement the control of the listed invasive species, or compliance with the Invasive Species Management Programme contemplated in section 75(4) of NEMBA.

3) If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

Category 2 Listed Invasive Species:

1) Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the NEMBA as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be.

2) Unless otherwise indicated in the Notice, no person may carry out a restricted activity in respect of a Category 2 Listed Invasive Species without a permit.

3) A landowner on whose land Category 2 Listed Invasive Species occurs or person in possession of a permit, must ensure that the specimens of the species do not spread outside of the land or the area specified in the Notice or permit.

4) Unless otherwise specified in the Notice, any species listed as Category 2 Listed Invasive Species that occurs outside the specified area contemplated in sub-regulation (1), must, for purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to Regulation 3 above.

5) Notwithstanding the specific exemptions relating to existing plantations in respect of Listed Invasive Plant Species published in *Government Gazette* No. 37886, Notice 599 of 1 August 2014 (as amended), any person or organ of state must ensure that the specimens of such Listed Invasive Plant Species do not spread outside of the land over which they have control.

6) If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

Category 3 Listed Invasive Species:

1) Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the NEMBA, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of the NEMBA, as specified in the Notice.

2) Any plant species identified as a Category 3 Listed Invasive Species that occurs in riparian areas, must, for the purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to regulation 3 below.

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3) If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

Should any invasive plant species occur, other than those stated in The Act, the land user must control them by species-specific control methods. Caution should ALWAYS be taken when dealing with noxious chemicals, and care should be taken to cause the least amount of harm to the environment.

14.3 Ways to Eradicate Invasive Alien Plants

This IAP eradication and control program comprises the following three steps:

Step 1

The first step of the Invasive Alien Plant Eradication Programme will be to undertake an inception and educational meeting, where the people employed to undertake this activity are able to identify the correct species as aliens and the manner in which to remove and control them.

Step 2

The second step will be to identify the Invasive Alien Plants (IAP) and start a process of removing the individuals that occur on the site. The removal of the alien species must be in a stepwise manner and be undertaken within a single area at a time. This will ensure that all individuals are removed at the same time to reduce re-infestations. Below are a number of methods that may be employed to undertake the activity of removing alien plant species. These methods are dependent on the size and nature of the plant that is to be removed.

Managing IAP Invasions

Once an invasion has been identified and quantified there are four methods that managers and landowners can take to deal with IAPs that includes prevention of new infestations and the early identification and eradication, containment or suppression of existing invasions. In the case of introduced, naturalised or invasive species, pre-introduction measures are no longer possible (apart from preventing additional introductions), therefore post-introduction management is focused on controlling infestations with chemical, mechanical or biological means.

- **Prevention**

This includes the monitoring of the area so that new infestations can be prevented. This also includes rehabilitating disturbed areas and keeping the disturbance of natural areas to a minimum.

- **Early identification and eradication**

When an IAP is spotted during prevention monitoring it must be swiftly dealt with using the methods described below.

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- **Containment, control, and suppression**

If there are already an established infestation of an IAP on site which cannot be eradicated, then it should be contained to the site. New propagules should be removed so that the infestation doesn't worsen. Efforts should be made to ensure the infestation is reduced as far as physically and economically possible.

Mechanical Methods

- ***Hand-pulling***

This method of removal is only really an option during the summer months and when the IAP that are requiring removal are very small, and their root system is not very well established. The only precautionary note here is that many alien plant species may look similar to indigenous species when they emerge, so the labour force must be extremely well versed in the individuals that will require removal.

- ***Up-rooting***

This method is similar to hand-pulling but is undertaken on slightly older individuals of the target species. It only has one drawback; a relatively large area can be disturbed with the soils being altered and opening the area up to re-infestation.

- ***Lasso & Winch***

This method is the upgraded version of the up-rooting, with the same principles applying, that is of trying to remove the entire plant with all the root system attached, to prevent re-growth. This can have a serious destabilizing effect on the receiving environment and should definitely not be undertaken on slopes or sandy soils.

- ***Cutting / Slashing***

This method is not a suitable method for control and long term management if used as a stand-alone technique because many of the IAP will simply coppice or re-sprout during the summer periods. Many, if not most, alien plants species are annual species, and through their natural life strategy (r-selected) are able to withstand disturbance, even extreme disturbance as in this instance.

- ***Ring-barking***

This involves the removal of bark in a 30 centimetre band. This technique is used to desiccate the plant through killing the phloem and xylem and thus preventing transpiration. Further it also facilitates pathogen infestation. It is very effective on large trees if undertaken correctly.

- ***Strip-barking***

As with ring-barking, just at a larger scale.

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- ***Frilling / Girdling***

Girdling and frilling are methods of killing standing trees that may be done with or without an herbicide. Girdling involves cutting a groove or notch into the trunk of a tree to interrupt the flow of sap between the roots and crown of the tree. The groove must completely encircle the trunk and should penetrate into the wood to a depth of at least 1.5 centimetres on small trees, and 2.5 to 4 centimetres on larger trees. Girdling can be done with an axe, panga or chain saw. When done with an axe or panga, the girdle is made by striking from above and below along a line around the trunk so that a notch of wood and bark is removed. The width of the notch varies with the size of the tree. Effective girdles may be as narrow as 2.5 to 5 centimetres on small-diameter trees, and as wide as 15 to 20 centimetres on very large-diameter trees. When a chain saw is used to girdle, two horizontal cuts between 5 and 10 centimetres apart are usually made completely around the tree when no herbicide is used and one horizontal cut is made completely around the tree when herbicide is used.

Frilling is a variation of girdling in which a series of downward angled cuts are made completely around the tree, leaving the partially severed bark and wood anchored at the bottom. Frilling is done with an axe or panga.

By themselves, girdling and frilling are physical methods to deaden trees that require very little equipment and may be done without herbicides. Both techniques require considerable time to carry out, particularly with an axe or panga. The effectiveness of girdling and frilling depends on the tree species and on the size and completeness of the girdle or frill. To be effective, girdles and frills must completely encircle the tree. Because frills can heal-over more easily, girdling is usually more effective.

The effectiveness of both girdling and frilling can be increased by using herbicides. With frilling and girdling, water soluble forms of herbicides are most commonly used to get maximum movement of herbicide within the plant. When using water-soluble herbicides, the herbicide/water mixture is commonly applied by squirting it on the girdle or frill until the cut surface is wet. Hand-held, spray bottles, such as those available at local garden stores, are ideal for applying herbicide to the girdle. Again, note that a single, rather than double chain saw girdle is used when a water soluble herbicide is to be applied.

Chemical Methods

The use of chemicals in controlling and removing of IAP should not be excluded as a possible option. Once the IAP are more manageable the use of chemicals should be reduced or excluded completely. The best option would be to pursue a combination of mechanical and chemical control in the early stages.

The only negative impact of the use of chemicals is that if used incorrectly may result in plant species being able to develop some form of resistance to the herbicide. If herbicides are used as a foliar spray, drift will cause non-target species to be impacted upon. The only method that should be undertaken is the cutting of the plants prior to the treatment of the remaining stems using a "stem painting" technique.

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It is imperative that the herbicides used are dye treated or that the end-user add a dye to ensure that all stems that have been treated are easily identified. Note, the application of the chemical solution must follow directly after the cutting of the vegetation. Therefore, a small area should be selected and all cutting and stem painting be undertaken on that area prior to moving to the next area.

DFFE herbicide quantity estimation (Invasive alien plant control management plan | Department of Environmental Affairs (dffe.gov.za)) is attached to this document as a guide.

Biological Control

This entails using a natural enemy (bacteria, fungus, weevils, mites) of the intended IAP to attack specific parts of the plant (roots, stem, flowers) to either kill the plant, reduce its vigour, or reduce reproductive output. Only certain species have registered bioagents, the most successful stories of biocontrol being the *Opuntia* genus and *Acacia species*. Please contact DFFE or SANBI for directions on how to obtain these agents.

DFFE have provided a guide on bio-control agents for terrestrial plant species (Invasive alien plant control management plan | Department of Environmental Affairs (dffe.gov.za)), attached to this document.

14.4 Environmental Safety

In order to minimise the impact of the operation on the natural environment the following must be observed.

- Area contamination must be minimised by careful accurate application with a minimum amount of herbicide to achieve good control.
- All care must be taken to prevent contamination of any water bodies. This includes due care in storage, application, cleaning equipment and disposal of containers, product and spray mixtures.
- Equipment should be washed where there is no danger of contaminating water sources and washings carefully disposed of at a suitable site.
- To avoid damage to indigenous or other desirable vegetation product should be selected that will have the least effect on non-target vegetation.
- Coarse droplet nozzles should be fitted to avoid drift onto neighbouring vegetation, e.g. TG-1 or equivalent.
- The correct protective clothing is to be used in line with manufacturer's instructions and / or the Occupational Health & Safety Act, Act 85 of 1993 (and amendments) and,
- All MSDS sheets are to be made available on site along with a Medical First Aid Kit.

Disposal of IAP Vegetation

- Plant material should be used beneficially wherever possible, as opposed to disposing of it at a landfill site where it takes up valuable airspace, or let it further propagate on unchecked, vacant land.
- Woody and dry material, provided no seeds are present, can be chipped and used as mulch or made available to the local community for firewood.
- Wet material and aquatic weeds should be combined with other organic matter and composed. Alternatively, it may be possible to use it for basket making, animal feed or other uses.
- Burning of alien vegetation waste material is prohibited.
- Burying of alien vegetation waste material in or near the stream, drainage lines, dams, wetlands and their buffer zones is prohibited.
- Any vegetation which is not viable for use must be disposed of at a registered disposal unit.

14.5 LIST OF INVASIVE ALIEN PLANT SPECIES

Please consult a Botanical specialist or Horticulturist to identify Invasive Alien Plants before attempting to undertake IAP removal.

IAP species that may occurring on the site:

RED EYE *(ACACIA CYCLOPS)*

TARGET TREE	METHOD	PRODUCT	RATE	COMMENTS	ESTIMATED PRODUCT/ HECTARE
SEEDLINGS & SAPLINGS	HAND PULL OR HOE			OPEN STAND	
	SPRAY	GARLON 4 / VIROAXE (TRICLOPYR ESTER 480g/l)	50ml/10L WATER	DENSE STAND	2l / ha
TREES UP TO 2m TALL	CUT LOW DOWN				
	FOLIAR SPRAY	GARLON 4 / VIROAXE (TRICLOPYR ESTER 480g/l)	50ml/10L WATER		4l / ha
LARGE TREES	CUT LOW DOWN			DO NOT APPLY HERBICIDE	
	FRILL	TIMBREL 3 A * (TRICLOPYR AMINE SALT 360g / l)	300ml /10L WATER		1.5 l / ha

NOTE: CUT DOWN LOW, TO PREVENT COPPICING.
* CONSULT THE WFW TECHNICAL ADVISOR.

15. SPECIES PLANTING LIST

Please see below the provisional plant species list compiled by the **specialist** based on the species recorded on site.:

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Scientific name	Common name	Notes
Agathosma apiculata	Garlic Buchu	Protected: Cape Nature and Environmental Conservation Ordinance 19 of 1974
Arctotheca populifolia	Sea Pumpkin	
Brachylaena discolor	Coast Silver-Oak	
Brunsvigia orientalis	Candelabra Lily	Protected: Cape Nature and Environmental Conservation Ordinance 19 of 1974
Carpobrotus sp	Sourfigs	Protected: Cape Nature and Environmental Conservation Ordinance 19 of 1974
Chironia baccifera	Christmas Berry	
Chloris gayana	Rhodes Grass	
Crassula expansa	Fine Stonecrop	
Cynodon dactylon	Quick Grass	
Felicia amoena	Soft Felicia	
Felicia echinata	Dune Felicia	
Ficinia lateralis	Side Clubrush	
Ficinia ramosissima	Branch Clubrush	
Gasteria acinacifolia	Coast Oxtongue	
Helichrysum asperum	Rough Everlasting	
Helichrysum teretifolium	Needle Everlasting	
Hellmuthia membranacea	Helmet Sedge	
Ipomoea pes-caprae	Goatsfoot Morning Glory	
Knowltonia vesicatoria	Common Burnleaf	
Maytenus procumbens	Dune Kokotree	
Metalasia muricata	Strandveld Blombush	
Morella cordifolia	Dune Waxberry	
Mystroxylon aethiopicum	Kooboo-Berry	
Olea exasperata	Dune Olive	
Osteospermum moniliferum	Bietou	
Passerina rigida	Beach Gonna	
Phylica sp	Hardleaves	
Polygala myrtifolia	September Falsepea	
Pterocelastrus tricuspidatus	Candlewood	
Restio eleocharis	Beach Pegreed	
Robsonodendron maritimum	Dune Saffronwood	
Roepera maritima	Beach Twinleaf	
Salvia aurea	Brown Sage	
Scaevola plumieri	Sea Grape	
Searsia crenata	Bluefruit Currantrhus	
Senecio sp	Ragworts	
Sideroxylon inerme	White Milkwood	PROTECTED (National Forests Act)
Solanum africanum	Drunken Berry	
Stipagrostis zeyheri		
Tarchonanthus littoralis	Coastal Camphorbush	
Tetragonia decumbens	Coast Seacoral	
Tetragonia fruticosa	Sprawling Seacoral	
Thesium fragile	Beach Rootthug	
Ursinia chrysanthemoides	Creeping Paraseed	

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16. STAFF 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 at the project site or at any designated worker collection/drop off points.
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 (noisy 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 site manager and Environmental Control Officer.
14	**DO NOT** tamper with, destroy or remove vegetation from any areas that have been fenced off or marked.
15	**DO NOT** pollute watercourses, whether flowing or not.
16	**DO NOT** drive through watercourses.
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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17. 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	• 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.
Contractor/Project Manager (PM)	• The Contractor is responsible to ensure that all necessary communication and submission of required documentation concerning this project is submitted to the relevant authorities. • 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. • (Site Manager) 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.
Environmental Control Officer (ECO)	• The 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 must report on the environmental aspects of the project to the responsible person/authority at agreed intervals. • 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	• The Compliance Officer appointed by the Competent Authority is responsible for the ensuring that the Applicant, Site Manager and ECO are compliant with the provisions of the EA and EMPr.

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 DEVELOPMENT OF A DECK AND BOARDWALK WITHIN 100 METERS INLAND OF THE HIGH-WATER MARK OF THE SEA, ERF 9706, PLETTENBERG BAY, WESTERN CAPE

DEA&DP REF: 16/3/3/1/D1/15/0005/26

APPLICANT:

Signed: …….. Date: …….....

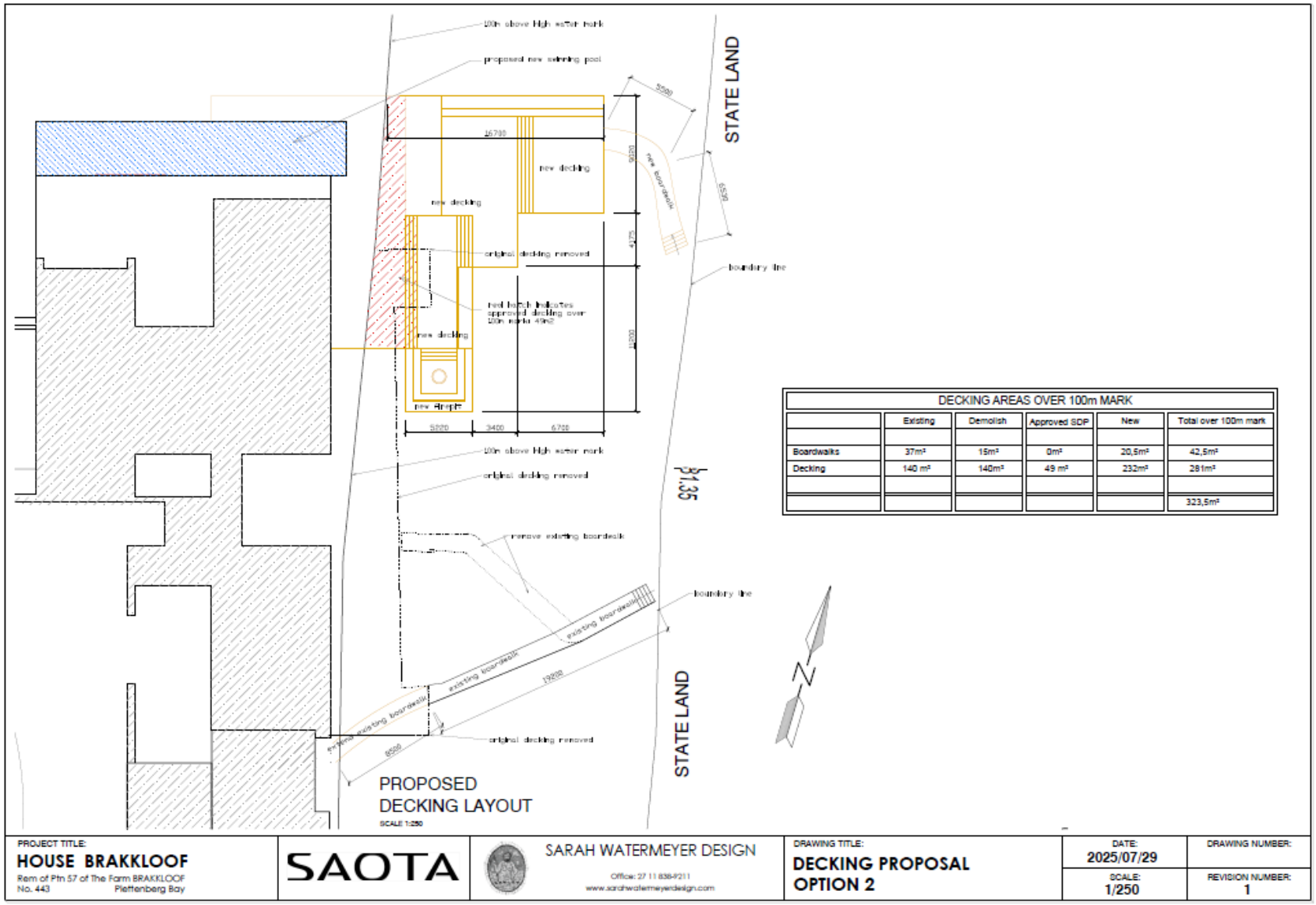
SITE MANAGER:

Signed: …….. Date: …….....

ENVIRONMENTAL CONTROL OFFICER

Signed: …….. Date: …….....

Annexure A: Site Development Plan



Annexure B: CV of the EAP

CURRICULUM VITAE (CV)

Position Title and No.	Environmental Assessment Practitioner
Name:	Samantha Janine Teeluckdhari, née Robertson
Date of Birth:	05/12/1991
Country of Citizenship/Residence	South Africa

Education: Bachelor of Social Science degree in Geography and Environmental Management **Institution:** University of KwaZulu-Natal
Year: (January 2010 – December 2012).

Employment record relevant to the assignment:

Period	Employing organization and your title/position.	Country	Summary of activities performed relevant to the Assignment
2013 -2014	Afzelia Environmental Consultants - Junior Environmental Practitioner	South Africa	Environmental Auditing, Environmental Management Programmes, Environmental Desktop Studies, Basic Assessment Reports - Road works - Retail development - Infrastructure construction and upgrades - Water Treatment Works - Gauteng Tourism

2016 - present	Eco Route Environmental Consultancy - Environmental Practitioner	South Africa	Environmental Impact Assessments & Environmental Impact Reports pertaining to: • Residential Developments • Agricultural Practises • Water use license applications • Air quality license applications • Permit applications for developments in identified sensitive areas Environmental Management Programmes/ Maintenance Management Plan & Licenses pertaining to: • Residential Developments • Agricultural Practises • Coastal protection management • Water use license applications • Alien Invasive Plant Management Programmes • Air quality license applications • Permit applications for developments in identified sensitive areas GIS Mapping using the following software: • Cape Farm Mapper • QGIS
			• Planet GIS • SANBI BGIS

Language Skills:

Languages	**Speaking**	**Reading**	**Writing**
English	Excellent	Excellent	Excellent

Adequacy for the Assignment:

Detailed Tasks Assigned on Consultant's Team of Experts:	Reference to Prior Work/Assignments that Best Illustrates Capability to Handle the Assigned Tasks
Environmental Impact Assessments & Section 24G EIR	1. BAR – Residential dwelling on Erf 23, Cape St Francis, EC (EAP) 2. BAR – Residential dwelling on Erf 62, Cape St Francis, EC (EAP) 3. BAR – Residential dwelling on Erf 154, Cape St Francis, EC (EAP) 4. BAR – Residential dwelling on Erf 347, Cape St Francis, EC (EAP) 5. BAR – Residential dwelling on Erf 8 Konkiebaai, EC (in progress - assistant EAP & reviewer) 6. BAR – Proposed Residential Apartments, Erf 155 Keurbooms, WC (in progress – EAP) 7. BAR – Residential dwelling on Erf 761 Brenton, Knysna, WC (EAP) 8. BAR – Demolition and reconstruction of a residential dwelling, Erf 1256, St Francis Bay, EC (in progress – assisting EAP) 9. BAR – Residential dwelling on Erf 1510, St Francis Bay, EC (in progress – assisting EAP) 10. Desktop Study – Proposed town houses, Erf 2301, Albertina (EAP) 11. S24G – Construction of a dam on Portion 3 of the farm 71 Roodeheuwel, Oudtshoorn, WC (EAP) 12. S24G - Clearance of indigenous vegetation, repair and enlargement of a dam, and the altering of watercourses On Portions 17 And 19 of Farm Avontuur 166, Hoekwil, George, Western Cape (assistant EAP) 13. S24G – Clearance of indigenous vegetation on Portion 7 of the farm Wittedrift NO.306, Plettenberg Bay, WC 14. S24G – Construction and operation of a sawmill & kiln, the Remainder of farm 288 Buffelsrivier, The Crags, WC (EAP) 15. S24G – Construction of an in-stream dam and infilling/blocking of a watercourse, Farm 178 Klaarstroom, Prince Albert, WC 16. Screening – Monkeyland KZN (EAP) 17. BAR - Residential dwelling on Erf 406, Oyster Bay, EC (EAP) 18. BAR – Residential apartments on RE/3420, St Francis Bay, EC (assistant EAP)

	19. S24G – Clearance of indigenous vegetation, expansion & clearance of littoral vegetation from in-stream dams, Portions

	66 and 9 of farm Redford no.232, Bitou Municipality, WC (EAP) 20. EA Part 2 Amendment – Raphaeli Waldorf School, Plettenberg Bay, WC (EAP) 21. Screening - Gauteng Tourism: West Rand Birding Route (EAP) 22. Screening - Gauteng Tourism: Johannesburg Cross-Border Shoppers Precinct (EAP) 23. Screening - Hammersdale Infrastructure Upgrades Project (EAP)

Environmental Management Programmes	1. Dippenaar boardwalk, Portion 111 on the farm Brakkloof no.443 and a portion of Erf 2132, Plettenberg Bay, WC (assistant EAP) 2. The reconstruction of a residential dwelling, Portion 161 Of the Farm Uitzicht no. 216, Knysna, WC (assistant EAP) 3. Residential dwelling on Erf 23, Cape St Francis, EC (EAP) 4. Residential dwelling on Erf 62, Cape St Francis, EC (EAP) 5. Residential dwelling on Erf 154, Cape St Francis, EC (EAP) 6. Residential dwelling on Erf 347, Cape St Francis, EC (EAP) 7. Residential dwelling on Erf 761 Brenton, Knysna, WC (EAP) 8. The reconstruction of Featherbed Restaurant, Portion 59 of farm 216, Knysna, WC (EAP) 9. S24G – Construction of a dam on Portion 3 of the farm 71 Roodeheuwel, Oudtshoorn, WC (EAP) 10. Construction of a grass berm around Lake Brenton Estate, Portion 92 of 53 of farm Uitzicht no.216 (assistant EAP) 11. MMP - Lake Brenton Estate sea wall repairs (EAP) 12. Dune stabilization, RE/1692, Sedgefield, WC (assistant EAP) 13. Residential dwelling on Erf 406, Oyster Bay, EC (EAP) 14. Residential apartments on RE/3420, St Francis Bay, EC (assistant EAP) 15. Clearance of indigenous vegetation, expansion & clearance of littoral vegetation from in-stream dams, Portions 66 and 9 of farm Redford no.232, Bitou Municipality, WC (EAP) 16. Extension of the Riverlea Airstrip, Underberg, KZN (EAP) 17. Upgrade of the Richards Bay Harbour Entrance Gate, KZN (EAP)
Environmental Control Officer	1. Featherbed Private Nature Reserve, Portion 59 of farm 216, Knysna, WC 2. The Construction of Residential Dwellings on Lake Brenton Estate, Knysna, WC 3. The Construction of Residential Dwellings on Portion 3 of the farm Ganse Vallei no.447, WC 4. Construction of N2 Mnini Interchange, KZN 5. Construction of N2-R56 Interchange, KZN

	6. Construction of the Mandeni Shopping Complex, KZN 7. Umzimkhulu WWTW, KZN
Outeniqua Sensitive Coastal Area Extension Regulations/OSCAER permits	1. Erf 2919, Knysna, WC 2. Portion 104 of farm 216, Knysna,WC 3. Erf 2787, Sedgefield, WC 4. Erf 3154, Knysna, WC 5. Erf 722, Knysna, WC
	6. Erf 314, George, WC 7. Erf 1086, George, WC 8. Erf 2143, George, WC 9. Erf 2477, George, WC 10. Erf 583, George, WC 11. Portion 222 of 192, Kleinkrantz, WC 12. Portion 317 of 192, Kleinkrantz, WC

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Postal : P.O. Box 1252
Sedgefield, 6570
South Africa

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience. I understand that any misstatement or misrepresentation described herein may lead to my disqualification or dismissal by the Client, and/or sanctions by the Bank.

S. Teeluckdhari

Mrs. Samantha Janine Teeluckdhari February 2026

Name of Expert Signature Date

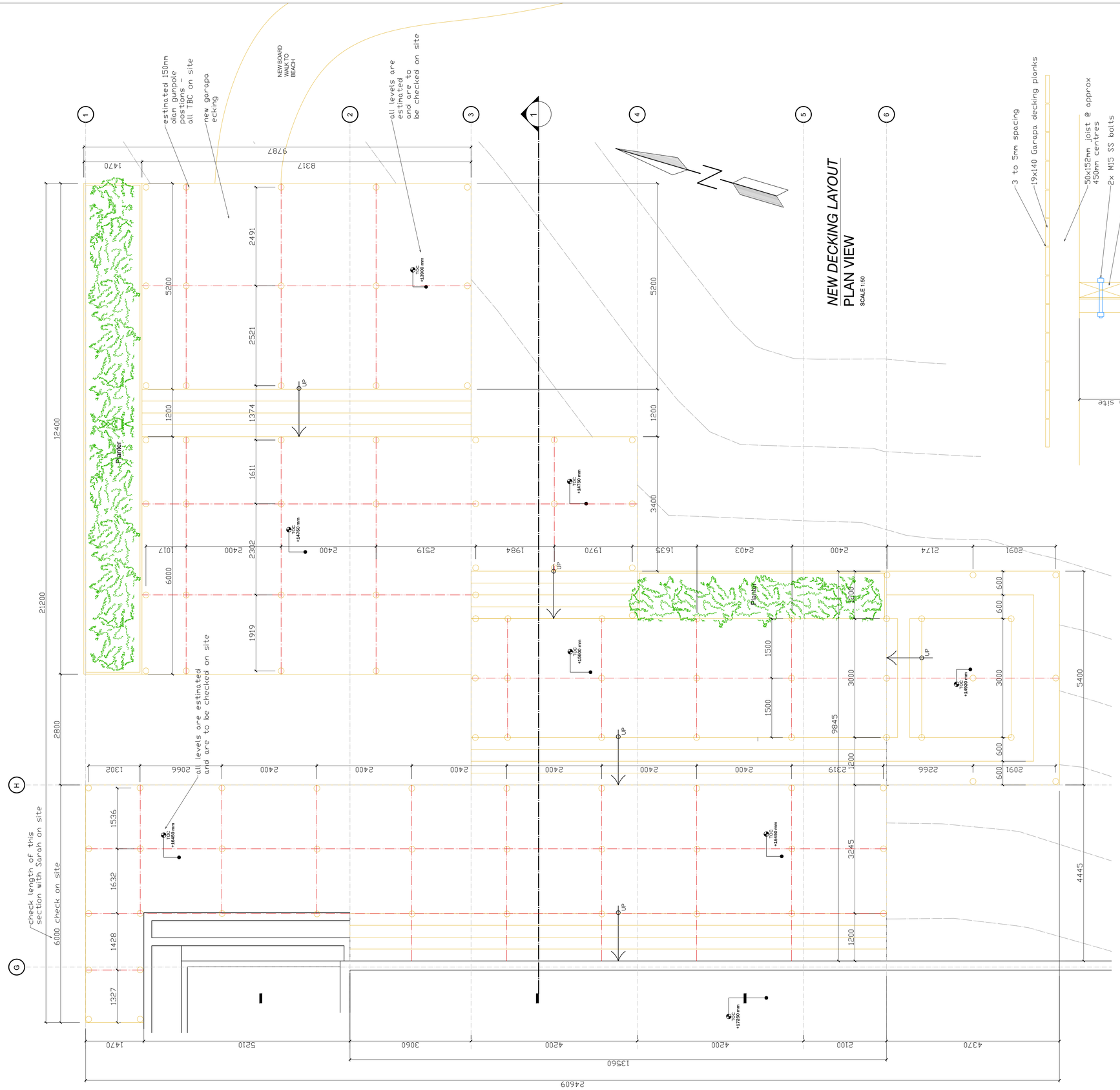
S A R A H W A T E R M E Y E R D E S I G N

Job Name	House Beveridge Brakkloof (Plettenberg Bay)
	Application for the proposed development of a deck on Erf 9706, Portion 57 of Farm 443 Brakkloof, Plettenberg Bay, Western Cape – Feedback on comments received from Garden Route District Municipality
Date	14th May 2026

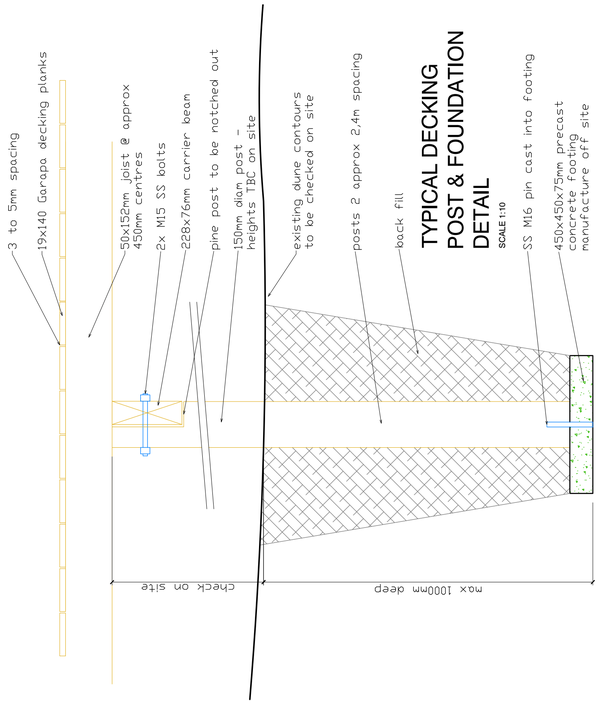
ITEM		
A	**1. Design and Structural Impacts on Dune Dynamics** • Elevated timber structures will be used and there are no permanent foundations. Premanufactured concrete pads with stainless steel pins are used which can be removed by hand at a later date. See technical drawing. • The holes are hand dug for each support. The pad (450 x 450 x 75) will be hand laid and post predrilled to fit pin. Once positioned they are hand backfilled with the dune sand that was removed to create the pit. • The treated 150dia. posts will be dug 750 – 1000mm into dune. (As per Engineers specification) • No concrete will be used. • See post layout as indicated on the attached plan. • See typical section as per Engineer- attached plan • See typical post fixing and detail	
B	**1. Fire Risk Associated with Proposed Fire Pit** • We are NOT going to install a fireplace. Client has agreed it is too much of a fire risk.	
C	**1. Stormwater and Erosion Management** • The position of deck has been elevated and designed to follow the natural contours of the existing dune. We are not cutting the deck into the dune. No retaining structures are required. • As per the aerial plan and technical drawing supplied, vegetation disturbance is minimal. 67 hand dug holes will be dug for the deck that is the subject of this application.	

	The diameter of each hole will be approximately 0.7m, resulting a ground surface disturbance of 47m². Vegetation (comprising Blombos and Bitou bush) covers approximately 50% of the area to be disturbed. The Client intends to rehabilitate any disturbed areas. • No stormwater and erosion management plan is required: a. The Garrapa planks are spaced at 5mm apart. Rainwater drains directly through the deck to the dune below and soaks away. b. During the 3-4 week construction period, sandbags will be utilised to stabilise any areas of concern.	

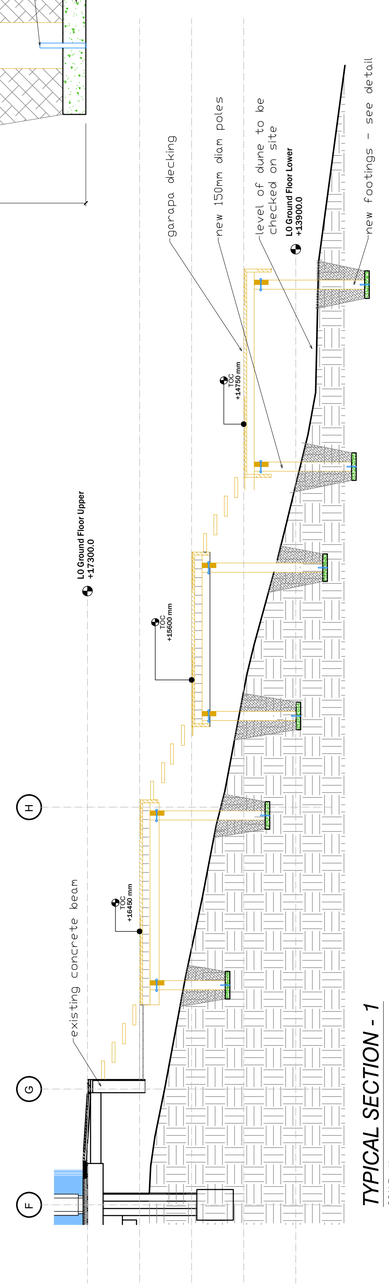
49 7th Ave Parktown North, Johannesburg 2193 tel 011 838 9211 email sarah@swdesign.co.za



NEW DECKING LAYOUT
PLAN VIEW
SCALE 1:50



TYPICAL DECKING POST & FOUNDATION DETAIL
SCALE 1:10



TYPICAL SECTION - 1
SCALE 1:50

PROJECT TITLE:
HOUSE BRAKKLOOF
Rem of Ptn 57 of The Farm BRAKKLOOF No. 443 Plettenberg Bay

SAOTA

SARAH WATERMEYER DESIGN
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DRAWING TITLE:
DECKING LAYOUT SKETCH

DATE: **2026/05/14**
DRAWING NUMBER:
SCALE: **A.S.**
REVISION NUMBER: **1**